COST VOLUME PROFIT ANALYSIS OF PARAMOUNT CARPET INDUSTRY

(A case study)

By

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In partial fulfillment of the requirement for the Degree of

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RECOMMENDATION

This is to certify that the Thesis

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Submitted by:

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

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VIVA-VOCE SHEET

We have conducted the viva –voce of the thesis presented

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DECLARATION

I hereby declare that the work reported in this thesis entitled **"Cost Volume Profit Analysis of Paramount Carpet Industry (A case study)"** submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the Masters Degree in Business Studies (MBS) under the supervision of **Associate Prof. Dr. Prithbi Bikram Rai** of Mechi multiple campus.

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Bhupendra choulagain

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ABBREVIATIONS

%	**:**	**Percentage**
σ^2	**:**	**Variation**
BEP	**:**	**Break Even Point 7**
CCA	**:**	**Central Carpet Association**
CDM	**:**	**Central Department of Management**
CM	**:**	**Contribution Margin**
CMPU	**:**	**Contribution Margin per Unit**
CV	**:**	**Coefficient of Variation**
CVP	**:**	**Cost Volume Profit**
DPAT	**:**	**Desire Profit after Tax**
FC	**:**	**Fixed Cost**
MBS	**:**	**Master of Business Studies**
No.	**:**	**Number**
P.E.	**:**	**Probable Error**
P/V	**:**	**Profit-Volume**
PCI	**:**	**Paramount Carpet Industry**
PPC	**:**	**Profit Planning and Control**
r	**:**	**Correlation Coefficient**
S.D. (σ)	**:**	**Standard Deviation**
SD	**:**	**Standard Deviation**
SP	**:**	**Selling Price**
SPPU	**:**	**Selling Price per Unit**
T.U.	**:**	**Tribhuwan University**
TC	**:**	**Total Cost**
VC	**:**	**Variable Cost**
VCPU	**:**	**Variable Cost per Unit**

Chapter-I

INTRODUCTION

1.1 Background of the Study

Cost Volume Profit analysis is the study of interrelation among the cost volume profit that includes following three elements:-

Cost: The monitory benefits are sacrificed in the process of manufacturing any

goods and services are called cost.

Cost = total cost = fixed cost + variable cost

Where:

Fixed costs are plant and material, land and building, depreciation, insurance, repairs and maintenance, etc.

Variable costs are direct material, labor, manufacturing overhead, selling and distribution overhead, etc.

Volume: production units and sales in units and in rupee

Profit : Profit before tax

A success of the business depends on the performance of the organization which is measured in terms of Profit. Profit is the primary measurement and the blood of 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 firm/enterprises are more attractive to the holders of the available capital. These firms can attract capital, which they need to buy the other resources.

Profit is the ultimate goal of every business house. They involve in business for making profit. Profit cannot be achieved easily. It should be

managed well with better managerial skill. So, profit is the planned and controlled output of management. By element, profit is the difference of revenue and cost. Profit plan, thus, refers to the planning of revenue (i.e. increase the revenues) and planning of cost (i.e. increase the efficiency of cost). 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 helps to run efficiently towards the competitive environment.

Control can be defined as the process of measuring and evaluating performance of each organizational component of an enterprise and initiating corrective action when necessary to ensure efficient accomplishment of enterprise objectives, goals, policies and standards. Planning establishes the goals objectives, policies and standards of an enterprise.

Thus, profit planning and control is an important approach, mainly in profit-oriented enterprises. Profit planning is merely a tool of management. It is not an end of management or substitute of management. It facilitates the managers to accomplish managerial goals in a systematic way.

Out of various profit planning tools, C-V-P analysis is the most important tool. The systematic analysis of relationship between cost, volume and profit is known as cost-volume-profit analysis. It is an analytical tool for analyzing the relationship among cost, price, profit, sales and production volume. Mainly

there are three elements in cost-volume-profit analysis. They are cost, sales or production volume and profit. All these terms are interconnected and depended on one another. 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.

1.2 A brief sketch of carpet industry:-

Prior to 1984, no machineries were used in the production process. The art of weaving is an old tradition in the Kingdom of Nepal, especially in the mountainous region of the country. Radii, Pakhi, Bakkhu, Darhi (with pile) are well-known Nepalese products produced in these regions using indigenous wool. The marketing of these products was confined to the domestic market.

The development of an export quality carpet was initiated with the influx of the Tibetan refugees in the early sixties. Credit goes to the Swiss Agency for Technical Assistance (SATA) for their contribution, in the development of the carpet industry in Nepal through financial & technical support to the Tibetan refugee's re-settlement programs. In the beginning, it was launched as a source of livelihood for the Tibetan refugees and marketing was limited to tourists visiting the kingdom. Efforts to gain access in the international market arena paid-off in 1964 when the first commercial shipment left to Europe, namely Switzerland. With vision and entrepreneur skill it transformed into a nationally

recognized commercial commodity and remains the most important export product from Nepal.

The Nepalese- Tibetan carpets contain a very high degree of hand processing and qualities ranging from 60-150 knots per square inch. Regularity safe guards are in place to ensure that only highest quality fleece wool is imported for use in these carpets.

The traditional design of the Nepalese-Tibetan carpet are basically influenced by Buddhism but in recent years the Nepalese manufacturers have introduced modern design and colors in line with the present day market tastes. The traditional size has been replaced by a wide range of sizes from 0.25 Sq.m. to 56m2 in shapes such as round, octagon and customs shapes. The desired designs, styles and shades are the creation of local designers & engineers with regular feedback from the market.

At present, 95 percent of the production of carpet is concentrated in the Kathmandu valley with the remaining 5 percent is spreading over a number of other districts of the country.

One of the most important carpet industries is **Paramount Carpet Industries: -** some details are as followed:-

Membership No: 23

Proprietor/Partner: Mr. Deepak Kumar Bhattarai

Office Address:- Baneshwor, word no :- 34 Kathmandu, Nepal

Factory Address: Gothatar VDC -8 Kandaghari

P.O. Box No. 8725 Kathmandu

Tel: 499123/499124

Fax: 499123

Mobile: 9851020568

Email: para@mos.com.np

Website: paramountcarpet.com

1.3 Statement of the Problem

The study is basically designed to solve the following problems:-

- Shortage of skill development program relating to CVP analysis like other accounting techniques. Absence of necessary materials regarding CVP analysis,
- Weak managerial functioning existed in the manufacturing company,
- Lack of knowledge of technique to be used,
- Shortage of economic support,
- Few knowledge regarding cost classification,
- Lack of the new innovation of the product and the product lines as required.

So, this research works is directed toward investigating the following questions:-

- What sales volume is needed to break even?
- What sales volume is necessary to earn a desired net profit?
- How will the change in selling price affect the profit position of the company?
- How will the change in cost affect profit?
- Which product or product mix is profitable?
- Which product or operation of a plant should be discontinued?
- What will be new break even sales if these certain changes on fixed and variable cost? etc.

1.4 Objectives of the Study

The main objective of this study is to examine the cost volume profit analysis of

paramount carpet industry and the Specific objectives of the study are:-

- To calculation the sales volume to break even.
- To calculation of profit resulting from a budgeted sales volume.
- To calculation the sales volume to produce desire profit.
- Effect of change on price, cost and profit.
- To study the relationship of cost-volume-profit analysis & its applicability as a tool of budgeting
- To define the cost classification practice of the company.
- To suggest & recommend on the carpet industry based on major findings.

1.5 Significance of the Study

This study will be significant is the following ways:-

- It highlights the relationship between cost - volume & profit as an applicable tool of profit planning.
- This study would be very useful to the potential Managers Accountants Policy maker & Researcher because of its deals with practice of cost-volume-analysis of carpet industry as an important tool of profit planning & controlling.
- This study is helpful to the related department of carpet industry by providing necessary recommendations.
- It is also useful for interested parties, investor, shareholders & other stake holder.

1.6 Limitation of the Study

These are the main limitations of the studies are as follows:-

- The study covers the data of 6 year only (2005/06-2010/11).

- Primary as well as secondary data are based on the information provided by the industry.
- Resources constraint such as time, financial, & other many more limit the scope of the study.
- Analysis is concentrated in cost-volume-profit & it doesn't cover the other area of the industry.

1.7 Organization of the Study

Chapter-I Introduction

The first chapter includes background of study an introduction of carpet industry statement of problem objectives importance & limitation of the study and chapterization.

Chapter-II Review of Literature

The second chapters consist in review of literature under which the terms cost-volume-profit have been described. Theoretical review for books, review of research writes.

Chapter-III Research Methodology

The third chapters includes, the research methodology adopted to achieve the purpose of the study which includes research design, period covered nature & sources of data tools used to analysis the data & research variables etc.

Chapter-IV Presentation and Analysis of Data

The fourth chapter relates to the analysis and presentation of data collected through the various sources have been presented. It manly consist the analysis of sales plan, variable cost plan fixed cost plan

& other relevant factors are analyzed from profit & loss account balance sheet .A part from this sensitivity analysis & cost-volume-profit analysis with product mix has also been analyzed & finding has been summarized.

CHAPTER- II
REVIEW OF LITERATURE

The purpose of reviewing the literature is to develop some expertise in one's area to see what new contribution can be made and to receive some ideas for developing a research design. Their relevant finding issues, arguments logics and suggestion, which will give a glimpses guide line to go further depth of the study. In other words there has to be continuity in research. This continuity in research is ensured by linking the present study with the post research studies.

2.1 Theoretical Review

2.1.1 Concept of Profit

A payment or commitment to a person undertaking the hazards of enterprise, remuneration or reward for uncertainty bearing, "pure" profits a residual and cannot ordinarily be predetermined. By the way of contrast, risk, it is being calculable in advance, like rent, and frequently insurable, as a cost rather than a profit. In any objective probability sense, profit can be accurately measured only in expected; hence any preliminary imputation of profit is wholly subjective in character and is labeled accordingly (Koheler, 1975:379-380).

Several economists have their different views in respect of the term profit. According to F.B. Hawley, profit is the reward for risk taking in business Schumpeter expressed that an entrepreneur earns profit as a reward for his introducing innovation. J.M. Keynes held the view that profit resulted from favorable movements of general price level. Robinson and chamberlain opined that the greater the degree of monopoly power, the profit made by the entrepreneur (Kapur, 1993:115).

In marketing, excess of selling price over all cost and expenses incurred in making a sale.

In finance, the reward to the entrepreneur for the risks assumed by him or her in the establishment, operation and management of a given enterprise or undertaking (Jerry, 1983:396).

2.1.2 concept of Planning

Planning is essential for accomplish goals. It reduces uncertainty and provides direction to employees by determining the course of action in advance, formal planning, indicates the responsibilities of management and provides an alternative to grow. Planning on the other hand involves, the determination of what should be done, how the goals may be received as what individuals are to assume responsibility and to be held accountability (Chaudhari, 1972:10).

The planning process of the enterprise would generally involve four fundamental steps (Pandey, 1985:216).

- Establishing the objectives.
- Determining the short-range objectives or goals.
- Developing strategies.
- Formulating profit plan or budgets.

Planning is deciding in advance who will do what a certain time and how it is to be achieved. In order to achieve anything of importance it is necessary to look ahead and plan. It focuses in on making thing happen. It is the first management function. Planning involves the determination of objectives based on intelligent forecasting and development of prosperity of any organization in a competitive and ever-changing environment. Planning is essential to accomplish goals. It reduces uncertainty and provides direction to the employees by determining the course of action in advance (Pandey, 2003:238)

2.1.3 Profit Planning and Control

Once the planning is determined, it must be carried out under control. Controlling shares management activity and for this, managers compare actual performance against the planned performance and find out the decision taking remedial steps to remove the deviations. Immediate action should be taken to remove the deviations to make an improvement in the performance because promptness is the essence of an effective control. Controlling is the measurement and correction of performance in order to make sure those enterprise objectives and the plans devised to attain them are accomplished (Kothari, 1990:69).

Profit planning involves streaming activities in order to get employees profit minded and to secure maximum benefit from minimum effort and expenditure. A best result seems to be obtained from a single product. The planner is a given the right to prove economics, the organization, the made of operation, the pricing m the marketing or any other fact of making and selling the product that in his judgment affects profit acquiring from that product. The concentration of profit efforts upon to gross traditional boundaries of the enterprise to translate needs from one group to another and to obtain consumed profit building efforts among these who can affect profits are the fundamental factors that contribute to the success of profit planning (Chamberlain). Profit planning is a comprehensive plan expressed in financial terms by which an operating program is effective for a given period of time. Business managers are continually involved in planning, organizing and controlling the operation of both large and small business organizations. Budgeting is one of the most important management tool used to plan and control business operations. Budgets are financial plans prepared as a guide to plan and control business operations. A financial plan must be designed to serve as a guide for the activities. Best results

are obtained when the planning period is the same as the company"s fiscal year.

The annual budget is broken down by months, weeks and days of operations. The budget should be designed to co-ordinate the effort of the sales department and the other entire department (Bajracharya et.al, 2004:344).

Controlling means evaluating the firm"s activities against the plan and deciding what should be done if the plan is not being followed. It is a process of ensuring that actual activities confirm to plan activities. Control helps in correction. Therefore, planning and controlling are the major functions of management (Lynch and Williamson, 1995:112).

Of course, it is difficult to confess the actual meaning and definition of PPC. But now a days it has been realized that PPC is somewhat, rather than narrow traditional view of a budget as a critically derived set of quantitative schedules prepared by an accountant. In the past year, there has also been a tendency to view the budget primarily as mathematical model for an organization development by computer programmers.

- These views completely overlook the three most relevant aspect of the PPC concept.
- PPC requires major planning decisions by management.
- PPC entails pervasive management control activities.
- PPC recognizes many of the critical behavioural implication through the organization.

In comprehensive sense we can say that, PPC one of the most important approaches that has been developed to facilitates effective performance of the management process.

2.1.3.1 Principle and Purpose of Profit Planning and Control

The main principle and purpose of profit planning are as follows:

- To provide a realistic estimate of income and expenses for a period and the financial position at the close of the period detailed by areas of management responsibility.
- To provide a co- ordinate plans of action, which is designed to active the estimates reflected in the budget.
- To provide a comparison of actual results with those budgeted and an analysis and interpretation on of deviation on by areas responsibility to indicate course of corrective action and to lead to improvement in procedures in building future plan.
- To provide a guide for management decision in adjusting plans and objectives as uncontrollable conditions change.
- To prove a ready basis for making forecasts during the budget period to guide management in making day-to-day division (Welsch, 1992: 255).

2.1.3.2 Advantages and Importance of Profit Planning and Control

A profit planning is financial narrative expression of the expected results from the planning decision. It is called the profit plan or budget because it states the goals in terms of time expectations and expected financial result (return on investment profit costs.) for each major segment of entity. Many benefits are derived from budgeting although it is a means not as end in itself. PPC is a feed forward process, it makes and evaluation of the variables likely to affect future operations of the enterprise. It predicts future with reasonable precision and removes uncertainty to a great extent (Pandey, 2003:112).

The main advantages or importance of comprehensive profit planning and control are as follows:

- PPC focuses basic policies to initiatives.
- It sets responsibilities of employees in relation to each function.
- It creates the feeling of co-operation and understanding between different departments of enterprises.
- It leads to maximum and most economical utilization of material, labour, capital and other sources with a view to ensure maximum return.
- It forces the management to keep adequate and correct historical data in the business.
- **In competed management to plan future, the budgeting process forces management to look a need and become more effective and efficient administration in the business operations.**
- It forces the management to take necessary steps for getting satisfactory results.
- It improves the quality of communication. The enterprises objectives budget, goal, plan, authority and responsibility and procedures to implement plans are clearly written and communicates through budgets to all individuals in the enterprise. This results in better understanding and harmonious relations among managerial and sub-ordinates.
- Develops and atmosphere of profit mindedness and cost consciousness.
- It highlights upon the efficiency of lack of it in the business and thus helps the management to take remedial action.
- It tends to remove the cloud of uncertainty that exists in many firms especially among lower levels of management relative to basic policies and enterprises objectives.

- Profit planning necessitates a periodical and critical appraisal of every elements of a business.

2.1.3.3 Basic Assumption and Limitation of Profit Plan

There are so many assumptions for using profit-planning programs. First of all it is required to measure the basic plan in terms of money. Secondly co-ordination every aspect of the business for the optimum profit goals and thirdly, profit gives guidelines about what to do? It things happened as forecast but it also gives guidelines of things workout differently from the forecast.

- In developing and using of profit planning and control program, the following additional limitations should be kept in mind.
- The profit plan based on estimates.
- PPC program must be continually adopted to fit changing circumstances.
- Execution of a profit plan will not occur automatically.
- The profit plan is not a substitute of management.

2.1.4 Cost-Volume-Profit Analysis as a Tool of Profit Planning and Control

CVP analysis is an important tool of profit planning because it provides the information about the behavior of cost in relation to volume, volume of production or sales where the business will break-even sensitivity of profit due to variance of output, amount of profit for a projected sales volume and quantity of production and quality of production and sales for the target profit level etc. Therefore CVP analysis may be defined as a managerial tool showing the relationship between various ingredients of profit planning. CVP analysis is an important media through which the management can have an insight into effects on profit on account of variance in cost and sales

and take appropriate decisions. CVP analysis is great helpful in managerial decision-making. Especially 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 the product and selling price of the product.

2.1.5 Concept of Cost-Volume-Profit Analysis

In dictionary we find that cost is price paid to acquire, produce, accomplish or maintain anything volume in mass or quantity of something or amount, profit is the ratio of such pecuniary gain to the amount of capital invested and analysis is resolution, separation or breaking into parts. In facts, CVP analysis is an analytical tool for studying the relationship between volume, cost, price, and profit. Basically CVP analysis is the technique involves finding the most favorable combination of different types of costs. CVP analysis provides the managers with a powerful tool for identifying those courses of action that will or will not increase profitability. CVP analysis is the technique that explores the relationship, which exists, between cost, revenue, output level and resulting profit. CVP analysis can be extended to cover the effects on profit of changes in the selling prices or service fees, cost, income tax rate, total cost, total revenue, and profit at various sales volumes. CVP analysis provides the management with a comprehensive overview of the effects on revenue and costs of all kinds of short-run financial changes. It is related to profit, sales volume and cost. CVP analysis provides information regarding (Munankarmi, 2003:4.01).

- Minimum level of sales to avoid losses
- Sales level to earn target profit
- Effects of changes of price, cost and volume of 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 plan
- Effects on operating profit with the increase in fixed costs.

CVP analysis can be extended to cover the effects on profits of changes in selling price service fees, cost, income tax rate, product mix etc. It estimate total cost, total revenue and profit at various sales volume. It provides only an overview of the profit planning process. CVPA provides management with comprehensive overview of the effects on revenue and costs of all kinds of short run financial changes. It is related to profit, sales volume and cost (Munankarmi, 2003:4.01).

Cost volume profit (CVP) 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 fixed cost of a product (Horn Green, Dater and Foster, 2003:136).

Cost volume profit analysis is the analysis of three variables cost, volume and profit. Such an analysis explores the relationship existing amongst cost, revenue, activity levels and the resulting profit. It aims at measuring variances of cost with volume. On the profit planning of a business, cost volume profit (CVP) relationship is the most significant factor. The CVP analysis is an extension of marginal costing. It makes use of principle of marginal costing. It is an important tool of planning. It is quite useful in making short run decisions, the institute of Chartered Accountants of India, Sep 2004:2.16).

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 their relationship CVP analysis simplifies the real world conditions that a firm will face like most models, which are abstractions from reality. CVP analysis is a subject to number of underlying assumptions and limitations. Never the less it is powerful tool for decision making in certain situation (Drury, 2000:17).

2.1.5.1 Use of CVP Analysis in Profit plan:

Planning, controlling and the decision-making are the essential managerial functions. CVP analysis helps the managers to plan for profit, to control cost and make decision. As such it helps (Munankarmi, 2002:123-124).

- To determine the break -even point in terms of unit or sales value
- To determine the margin of safety.
- To estimate profits or losses at various level of output.
- To assess the likely effects of management decisions such as an increase or decrease in selling price, adoption of new method of production to reduce direct labour and increase output.
- To help management to find the most profitable combination of costs and volume.
- To determine the optimum selling price.
- To determine the sales volume at which the profit goal of the firm will be achieved.
- To determine the most profitable and least profitable product.
- To determine new break-even point for changes in fixed or variable cost.

2.1.5.2 Application of CVP Analysis

Business organization is run to earn a 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 product, variable cost, fixed cost and selling price of the product. Profit of a business organization is affected by selling price of the product, volume of sales, unit variable costs, fixed cost and sales mix. The most important factor that affects the planning for profit is cost (both fixed and variable) and volume of sales. The CVP relationship will be established by break-even analysis. CVP analysis is applied especially for (Munankarmi, 2003:4.01-4.02).

- Contribution Margin Analysis
- Break-Even Analysis
- Profit-Volume Analysis

2.1.6 Computation of CVP Analysis

2.1.6.1 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 CVP analysis. Break-even analysis is a special case of CVP analysis.

Break-even analysis uses the same concepts as contribution analysis. However, it emphasizes the level of output or productive activity at which sales revenue exactly total costs that is there is no profit or loss. Break- even analysis rests upon the foundation of cost variability-separate identification and measurement of the fixed and variable components of cost. It is usually applied on a "total company" basis (Saksena, 1995:112-113).

The break-even point is that point where total revenue equals total costs incurred. Thus it is the point at which a company begins to earn a profit. There is neither a profit nor a loss at the BEP. Although management typically plans for a profit each period, the break-even point is concern, if sales fall below the BEP, losses are incurred. Management must determine the break-even point

in order to compute the margin of safety. When planning new venture or product lines, management can quickly measure the likelihood success finding the projects BEP.

2.1.6.2 Determining the Break-even Point

The following three approaches can be used to compute the break-even point.

- Contribution Margin Approach (Income Statement)
- Formula Approach (Equilibrium Method)
- Graphic Approach

a. Contribution Margin Approach

Contribution margin is the excess of revenue over all variable costs related to particular sales volume. A product lines contribution margin represents its net contribution to pay off fixed cost and to profit. Adding contribution margin CVP analysis changes the make up of the equations as well as the format of the income statement. The equation now becomes.

S-VC = CM-FC = NI (i.e. Contribution)

Contribution margin may be expressed as total absolute amount, a unit absolute amount, a ratio and a percentage. The variable cost ratio or variable cost percentage is defined as all variable costs divided by s ales. Thus a contribution margin ratio of 20% means that the variable cost ratio is 80 percent (Hongren and Sundem, 1995:49)

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

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

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

The CM ratio of 20% or 0.20 indicates that 20% of sales are available to cover fixed costs and generate profit. In the other words, Rs 0.20 of Rs. 1 sales is available to cover fixed costs and earn a profit. Since profit at the BEP is zero, dividing fixed costs by the contribution margin ratio gives the sales volume that is necessary to cover total fixed costs.

b. Formula Approach

The most popular practical approach to the break-even pint and cost volume profit analysis is the formula also known as the equation. The formula approach uses an algebraic equation to calculate the break-even point. The answer provided by solving the equation may sometimes need to be rounded to whole numbers of units or lot sizes. The rounding of break even point unit is always done upward because this will provide a small profit rather than the small loss that would be shown from rounding downward (Rainborn, 1993:89). The BEP can be computed in terms of unit or in terms of monetary value of sales volume or as a percentage of estimated capacity while formula approach is followed. 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. To develop the cost volume profit equation.

Contribution Margin Approach	**Symbol or Equations**
Sales volume (units)	Q
Selling price per unit	p
Sales revenue (Rs.)	Q× P
Less: Variable cost	Q×VCPU
Contribution margin	Q×P─Q×VCPU
Less: Fixed cost	FC
Net profit	Q×P─Q×VCPU─FC

The table helps to understand the computation of the net profit easily, in which the multiplication of the sales volume and selling price per unit has

generated the total sales revenue. When we deduct variable cost from the sales revenue then the result comes as a contribution margin. Contribution margin measures the organizations profitability and higher the contribution margin shows better position of an organization but it is not sufficient indicator at all where the fixed cost included in fixed assets are not included. Net profit is that profit which shows the proper profitability position of an organization and it is taken as a basic indicator to measure the financial position of an organization.

2.1.6.3 Application of Break-even Analysis

Break-even analysis concept can be used to formulate different policies in a business enterprise. Some of these applications 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
- Effects of fixed cost or variable cost changed on sales volume.
- Selection of most profitable alternative, make or buy decision and drop and or add decisions.

2.1.6.4 Assumptions of Break-even Analysis

Contribution analysis and break-even analysis are based on a specific set of assumption that should be clearly understood. These underlying assumptions are (Maheshwari, 2000:182-83).

- All cost can be classified in to two parts, fixed cost and variable cost.
- There is a relevant range of validity (activity) for using the result of the analysis and sales change.
- There is only one product or in case of multi products, the sales mix among the products remains constant.

- Basic management policy about operation will not change materially in short run.
- The general price level (inflation/deflation) will remain essentially stable in the short run.
- Sales and production levels are synchronized, that is inventory remains essentially constant or zero.
- Effectively and productivity per person will remains essentially unchanged in the short run.
- If any of the above assumptions were changed, revised budget would be needed for a new analysis.

2.1.6.5 Limitations of Break-even Analysis

Break-even analysis in many business situations can be used effective decision making, but there are many short coming s or limitations in its analysis and interpretations. Some of these can be listed as (Maheshori, 2000:183-84).

- The assumptions of producer's market phenomenon not hold goods for all types.
- The fixed cost may remain constant as well as the variable costs may not vary in fixed proportion at different level of output.
- With variance in the prices of the items or services, which also depend on the factors, affecting the demand and supply will certainly affect the demand of the commodity. This phenomenon is not covered in break-even analysis.
- Identification of fixed and variable costs involved in production process is very complicated. A shift in product mix may change the break-even point.
- Customers may be given certain discount on purchase to promote sales.

- This revenue may not be perfectly variable with level of sales output.

2.1.6.6 Application of Break-even Analysis

The applications of break-even analysis are as follows:

- Sales volume required to produce desired operating profit/target net profit.
- Sales volume required to produce the desired profit after tax.
- Operating profit at a given level of sales volume.
- Effect on operating profit at a given % increase in sales volume (in Rs).
- Additional sales volume required offsetting a reduction in selling price or sales volume needed to maintain present profit level or a sales volume to offset reduced selling price.
- Effects of changes in fixed cost (Munankarmi, 2002:132).

2.1.7 Sensitivity analysis on CVP Analysis

Sensitivity analysis is the measurement of elasticity of the change in CVP factors on break-even point or given profit. The strategist should focus more on the factor, which is more sensitive or responsive for profit. To measure the sensitivity of CVP factors one can see the impact of certain percentage or amount change in volume price or cost factors on net profit. I n other words, sensitivity analysis is the measurement of responsiveness in outcome with the changes in determinant variables. We know that the goal of business enterprises is To Whom It May Concern: maximizing profit. Profit is the excess of revenue over the total cost.

Profit = Total Sales Revenue – Total Cost

Net Profit = Sales Unit × SPPU – Sales Unit × VCPU – Fixed Cost – Taxes

So that, Profit = F (Sales volume, selling price, VC, FC, tax etc.)

Means profits are the function of volume, price, VC, FC, Taxes and so on. But none of the factors remain unchanged: some times the manger can intentionally change the price and the cost factors as a part of strategic decision. But the strategy focuses more on the factor, which is 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 of change in volume, price or cost factors on net profit (Bajracharaya et.al., 2004:245).

2.1.8 Risk Measurement on CVP Analysis as Operating Leverage

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 declines more rapidly. The some tiling applies in the case of increase well. Sales revenues changes but some part of costs, known as fixed cost, remains unchanged. This usually net operating 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 net operating income (NOI) or EBIT associated with a given percentage change in sales (Pandey, 2004:245).

$$DOL = \frac{\text{Change Percentage in net Operating Income}}{\text{Percentage Change in Sales}}$$

Alternatively,

$$DOL = \frac{\text{Contributi Margine}}{\text{Net Operating Income}}$$

$$DOL = \frac{Q(SP-VCPU)}{Q(SPVCPU) \text{ fixed cost}}$$

Effect of price and volume change: A change in price invariable affects volumes. A price reduction may increase demand of the product and consequently, may result in increased volume. On the other hand, increase in price may adversely affect tile demands and thus reduce volume in crease substantially. Similarly, a price rise may reduce profits if there is a material fall I volume.

Effect of changes in variable costs: The impact of the changes in variables cost on profit is straight forward if it dose not cause any changes in selling price & or volume. An increase in variables costs will lower P/V ratio, push up the BEP and reduce profits. On the other hand if the variable costs decline, P/V ratio will increase BEP will be increase and profits would rise.

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

Effect of Changes in a Combination of Factors: The financial manager or the management accountant, evaluation the profit plans or budget, must realize that a change in one factors leads to a change in another factors. Therefore, all such their net impact on profit must be seen. 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.

BE sales values = FC + VC ± profit.

Therefore, BE Sales Value = FC + VC ±

BE sales unit × SPPU = FC + (BE sales × VCPU) ± Profit

The Graphic Approach to CVP Analysis

A break-even chart is to graphically depict the relationships among revenues, variable costs, fixed costs and profit (losses). The no profit, no loss point (the break even point) is located at the point where the total cost & total revenue lines cross. Below this point, the firm losses, and above this point, the firm earns profit (Bajracharya et al., 2004:122).

In the graph given below the find costs remain constant within the relevant range, the fixed cost curve is parallel to 'OX'axis, variable cost slope downward from the origin to right but the slope depends on variable cost ratio. Te total cost curve parallels the variables cost curve. So, the angle 'O'equals the angle 'V'. It is because Total Cost = Total Fixed Cost + Total variables cost at volume 'Q'.

Total costs = TFC + Q × VCPU

At volume 'Q + n'

Total costs = TFC + (Q + n) × VCPU

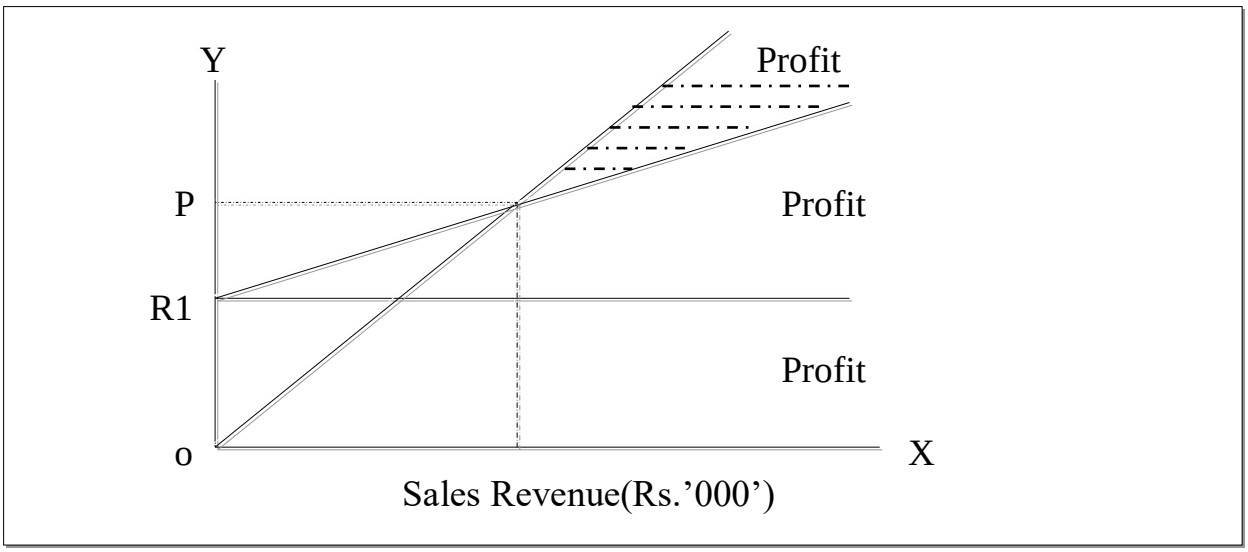
ΔTotal costs = Q = n × VCPU

ΔTotal costs = Δvariable costs.

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

Figure -3.1

Graphical Approach to CVP



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

Total Sales Revenue = Total Costs

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 break even point also. No DOL is to be said when the DOL occur '1' and in this situation BEP comes to '0'.

Higher fixed cost increase the DOL also increase and also increase the BEP, so there is closed relationship between the degree of operating leverage and the break-even point. A high DOL and high BEP both are indicators of higher Risk (Bajracharya, et. Al., 2004:249).

2.1.9 Measurement of Profitability in CVP Analysis

Profitability analysis helps in critically analyzing and interpreting the current and prospective earning capacity a business corporation within and outside the business. The indices of profit are considered as reliable indicators of the operational efficiency and organization effectiveness of the firms in utilizing its resources to earn satisfactory earning. Profitability in relation to the sales indicates the profit margin on sales. The measure of return on the capital employed can be used to evaluate and to compare profitability of different division of an enterprises as well as the enterprise as a whole. It indicates how well the management has used the funds supplied

by creditors and owners. It measures profitability as well as productivity (Chaudhari, 2007:121-22).

Profitability analysis becomes all the more important when within the business there is an earning goal that helps to guide the behavior of the managers and other employees. Outsides the business to distribution of earning to stockholders, creditors, governmental bodies and other is the basis for social influence and pressure on the activities of the firm. Thus both within and out sides of business, the indices of profit are considered the reliable indicator of the operational efficiency and organizational effectiveness of the firm in utilizing its resources to earn satisfactory earning (Das, 2006:110).

Profitability is the end result of a number of corporate policies and decisions. It measures how effectively the firm is being operated and managed. Besides owners and managers, creditors are also interested to know the financial soundness of the firm. Owners are eager to know their returns whereas managers are interested in their operating efficiency. So they calculate profitability ratios because expectations of both owners and managers are evaluated in terms of profit earned by the firm. Following are the major ratios used to measure the profitability of a firm (Gupta and Radhaswamy, 2000: 47).

1.6 Net Profit Margin:

Net profit margin is the ratio between net income and sales of the firm. It shows the firm's ability to generate net income per rupee of sales and is calculated as:

Net Profit Margin= Net income/Sales

Higher the net profit margin is preferred by the owners, management as well as creditors.

Gross Profit Margin:

It is the ratio between gross profit and sales of firms and is calculated as:

Gross Profit Margin = Gross profit/Sales

Higher the gross profit margin is preferred as it allows greater cushion to absorb other expenses.

Operating Ratio:

The operating ratio explains the change in the profit margin ratio. It is calculated by dividing operating expenses. Like as cost of good sold plus selling and administrative expenses (excluding interest) by sales. It is calculated as:

$$\text{Operating Ratio} = \frac{\text{(Cost of goods sold + operating expenses)}}{\text{sales}}$$

Lower the operating ratio indicates the higher operating profit and higher the operating ratio shows the lower operating profit.

2.2 Review of Related Studies

The main purpose of the literature review is to find out the work have been done in the area of research problem under the study. Moreover what has not been done in the field of the research study being undertaken?

There are some research papers concerning CVP analysis in the area of the profit planning and control. Very few dissertations have been submitted with the relation to CVP analysis. Out of the previous research studies only three researches are conducted under the CVP analysis. Therefore, the study is attempted to review the previous research work on profit planning and control as well as management accounting. The previous related studies to CVP analysis are as follows:

Bhusal, Bishal (2000) has submitted the thesis on the topic *"A Comparative Study on Profit Planning in Manufacturing and Non-manufacturing Public*

Enterprise of Nepal". He had focused his study to highlight the current practice of profit planning and its effectiveness in Nepalese public enterprises. The study covers only 5 year 2051/052 to 2054/055. In his research paper he has used primary as well as secondary data.

Major findings of his study were as follows:-

- There is no adequate and clear-cut co-ordination among various units in the organization.
- Objectives of the enterprises are controversial. There is conflict between profit and social goals.
- There is inadequate planning of profit due to lack of planning experts.
- There is lack of entrepreneurship and commercial concept in over all operation of the enterprises.
- The plans are based on adhoc and unrealistic forecast.
- There is red-tapism and delay in the implementation phase as shown by the achievement to below the targets.

Thapa, Kumar (2001) has conducted a research entitled *"Profit Planning in Manufacturing Enterprises A Case Study of Birjung Sugar Factory Limited"*. She has focused her research in the application of profit planning in manufacturing companies.

Thapa's study is based on primary as well as secondary data. The study period has covered 5 years from FY 2051/052 to 2055/056. In her research, she has pointed out the various findings and recommendation, which are as follows:

Findings of the Study:

- The management of the BSFL applied annual sales and production budget. There is substantial gap between sales target and achievement each year.

- Objectives of BSFL are not clear and measurable and top-level management executives are only involved in planning and decision.
- There is not intra and inter department co-ordination and lack of co-ordination with other concerned authorities.
- There is poor policy as to sales, production, inventory and material budgets. Attention toward cost structure and control program is not existed.
- There is no system of systematic forecasting.
- Expenses are not identified as fixed and variable and BSFL is unable to use contribution margin analysis approach.
- There is no practice of preparing budget like raw materials, capital expenditure, direct labor budget, cash budget, performance report etc.

Thapa, Rajiv (2000) has tried to point out some features and problems of *"Profit Planning in the Context of Nepalese Manufacturing Enterprises: A Comparative Study on Profit Planning of Dairy Development Corporation and Sita Ram Dairy Milk",* submitted to the Central Development of Management, TU. Thapa has listed the following major findings.

- DDC has concentrated its whole effort on the survival of the company.
- Sales figure (both targeted and achievement) of SRD are more inconsistent variable than that of DDC.
- Both companies have positive correlation between actual and target sales.
- SRD's capacity utilization is poorer than that of DDC's capacity utilization.
- SRD has highly been successful to maintain so-ordination than DDC.
- Overall responsibility of profit planning is under finance department in SRD whereas it is under account department in DDC.
- Both companies have not proposed profit planning except sales and production plan.

- DDC and SRD have been suffering from operating loss for many years. The main cause is low contribution margin ratio, high fixed cost and underutilization of capacity.

Adhikari, Binod (2004) has done the research on *"Profit Planning in Manufacturing Enterprises: A case study of DDC"* with the objectives of:

- To analyze the functional budgets on sales and production sector of DDC.
- To analyze various accounting ratios, major the profitability and efficiency of DDC, analyze the budget target and its achievement along with reason of deviation (if any), provide valuable recommendations and suggestions based on analysis.

Adhikari has summarized his remarkable findings are:

- DDC has practice short term planning rather than long term planning; the time is covered by interim period any by product.
- Production and sales of DDC is increasing annually although the growth rate is fluctuated, the correlation between actual and targeted sales is positive.
- The corporation has no proper practice in suggestion cost into fixed and variables.
- There is positive correlation between target actual productions of milk.
- Most of the budget figures are higher than actual figure.
- DDC has applied stable inventory policy with opening stock of inventory but this policy is not applied in practices. It has 1% store losses and 0.5% distribution losses of milk.
- DDC has prepared direct labour budget only based on technical and administration; it is not prepared according to the time and rate.
- Capacity utilization is very high but production ratio is very low.

- The CVP analysis shows that DDC is operating below the break-even point and flexible budget of DDC shows 90% variable cost of sales revenue.
- DDC utilized corporate fund as long-term loan and from international agencies like US aid.
- DDC has not clear attainable objectives, policies and strategies, timely accounting and auditing work are not maintained, financial statements accounting are out of the financial rules.
- The present management doesn't have any program of perfect profit planning.

Dhakal, Ramesh (2005) has submitted a thesis on the topic of "*Cost-Volume-Profit analysis as a Tool to Measure the Effectiveness of Profit Planning and Control: A Case Study of Gorkhkali Rubber Industry Limited."* He has focused his study to examine CVP as a tool to measure the effectiveness of profit planning and control by using both primary and secondary data. Dhakal had point out some remarkable findings of research and are:-

- Sales plan are not properly maintained by GRIL
- Appropriated cost classification technique are not practices in GRIL
- There is very low contribution margin of GIRL
- GIRL is in very high interest bracket.
- GIRL does not have a detailed and systematic practice of planning.
- Goals and objectives are not communicated to the lower level of management.
- GRIL produces very high quality and exportable product but the production cost is high.
- The profitability of the industry is very poor and suffering a high degree of losses.

- GRIL is utilizing only 35% capacity.
- The industry is in risk where operating leverage is high.

Rijal, Mohan (2006) has conducted a research *" Cost- Volume-Profit Analysis as a Tool to Measure Effectiveness of Profit Planning and Control: A Case Study of Nebiko Private Limited."* He has centered his study to examine CVP analysis as a tool in manufacturing industry and to analyze the CVP and its impact in profit planning. Rijal had point out some remarkable findings of research and which are:

- **Nabiko's variable cost is high in portion than fixed cost, whichcontributes for lower contribution margin.**
- Lack of effective cost control and program or technique
- The profit proportion of the company is very low.
- There is no effective inventory policy in the company.
- The company has no detailed of any systematic plan.
- The board of director is the main body of price determination and he interferes directly in the price decision.
- Nebiko has not proper practice of segregation of cost.
- There is not proper co-ordination among production, administration, distribution, inventory and sales department.

Neupane, Ganesh (2007) has made research on "A Study of Cash Management in Nepalese Public Enterprises, A Case Study of Salt Trading Corporation Ltd."; In this study Neupane has pointed out following objectives and major findings.

Objectives:-

- To avail the daily necessary things to the general people in the reasonable price;
- To carry out the export and import business;

- To act as an agent for domestic as well as foreign companies;
- To make investments in new as well as old industries;
- To import and distribute chemical goods and fertilizer;

Major Findings:-

- **Cash Management in the STCL is primary based on the traditional practices lacking in scientific approach. A more serious aspect of cash management has been the absence of any formalized system of cash planning and cash budgeting in STCL.**
- The STCL could not make the best use of available cash balance prudently.
- The average cash turnover time in a year is found 40 times which is in fluctuating trend over the study period.
- Management has taken liberal credit policy to sales of goods. Hence, the cash and bank balance of the study period is minimal of account receivable.
- Modern practices with respect to debt collection, monitoring the payment behavior of customers and relevant banking arrangements in connection with collection of receivables have been virtually ignored in STCL.
- No optimum cash balance is maintained. The cash & bank balance with respect to current assets has been fluctuating trend similar is the case with respect to the total assets.

Thapa, Amit (2008) has conducted a research on the topic " *Profit planning and control:*

A Case Study of Nepal Telecom". Thapa has pointed out the following objectives and major finding.

The main objectives of the study were.

- To examine the present comprehensive profit planning system applied by NTC.
- To evaluate the targeted variable and actual variables of NTC.
- To analyze the gap between budgeted and actual revenue.
- To examine the financial performance the NTC.

The major findings were as follows.

- NTC is lacking the proper System of Performance report.
- NTC has not practices of control policy considered controllable and inconsolable variables affecting the organization.
- The sales plan and achievement is satisfactory to some extent.
- Financial Performance of NTC is not so good.
- NTC does not consider the use of flexible subjective.

Ghimire, Anjila (2008) has made research on *"Impact of Budgeting on Profitability, A Case Study of NEA"*, In this study. Ghimire has pointed out following objectives and major findings.

Objectives:-

- To analyze the various functional budget of NEA.
- To obtain a true picture of profit planning diversification of NEA.
- To analyze the variance between budget and actual achievements of the authority.
- To printout the major shortcomings and recommended suggestive measures;

  Major findings.
- Actual sales are more fluctuating than budgeted sales and budgeted sales is more fluctuating than actual production.
- NEA has a practice of preparing both strategic and tactical budgeting but tactical short range plan is prepared for external purpose and strategic plan is prepared for internal purpose.

- NEA has been paying huge amounts of interest on long term loan.
- There is perfect correlation between budgeted and actual sales and budgeted and actual production.
- Actual sales are always less than actual production due to power loss which is a main problem of NEA.

Shrestha, Ajit (2009) has made research on *"Profit Planning in Public Utility Sector of Nepal – A Case Study of NEA".* In this study Mr. Shrestha has pointed out following objectives and major findings.

Objectives:-

- To examine profit planning system applied by NEA;
- To analyze the financial performance of NEA by using various financial tools;
- To observe the various functional budgets of NEA associated with comprehensive profit planning;
- To evaluate budgeted and actual achievement of NEA;
- To provide a package of recommendations and suggestions to be taken instantly and further to be encountered with identified budgeting & profit planning problems on the basis of findings;

Major Findings

- Budgeted sales are more variable than actual sales.
- Budgeted production is more fluctuating than actual production.
- Authority formulates various functional budgets as a part of comprehensive profit plan.
- NEA has been paying a large amount of interest on long term loan. Power leakage is significantly high in NEA.

Bhattarai, Samir (2010) has submitted his thesis on the topic "*Cost Volume Profit Analysis of Bottlers Nepal Limited*" with some remarkable objectives for measuring the applicability of CVP analysis on budgeting, for finding the profitability of the Bottlers Nepal Pvt. Ltd as a tool of financial performance analysis, for the examination of the risk position, and then Mr. Katwal concluded some remarkable finding with respect to these objectives are as follows:

- **BNL does not practice the scientific and appropriate cost classification technique.**
- BNL has not maintain proper sales plan
- Out of total cost of BNL, variable cost is almost 60% in every year, which causes the low contribution margin.
- The company has moderate risk.
- The actual sales of BNL have crossed the BEP for five years. So, the company is in profitable condition.
- The financial position of the company is profitable.
- The company has not maintained the broad and long-term objectives.
- Only the top executives are involved in planning and decision-making and lower participation is not encouraged.
- The fixed cost of BNL is fluctuated trend. It means the BNL is unable to manage the fixed cost.
- There is not systematic purchasing of necessary equipment and fixed assets.
- The company does not apply any appropriate and effective sales forecasting technique.

2.3 Research Gap

There is the gap between the present research and the previous researches. Previous researches were mainly conducted on profit planning and control and budgeting practices in the manufacturing companies especially in public enterprise.

The previous researcher did not disclose which of the profit planning and control tools are in practices in, which are not and why. But few of the researches were conducted on simple cost volume profit analysis of public and private limited companies. But to fill gap, it examines the multi product cost volume profit analysis as a tool of profit planning and control, in the Paramount Carpet Industry Limited.

CHAPTER –III
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, complication, 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 useful for future application. The research that involves the discovery of new techniques, a modification of old concepts or a knocking off an existing theory, concept or technique. It may develop a hypothesis and test it by established relationship between different variables and identify the means for problem solving.

Research methodology is the process of arriving at the solution of the problems through a planned and systematic dealing with the collection analysis and interpretation of the facts and figures.

Research methodology is the way to solve systematically about the research problem. It consists of the research design, research population and sample, sources and types of data, variables and method of analysis and presentation.

3.2 Research Design

The research design is an organized approach and an integrated system that guides the researcher in formatting, implementing and controlling the study. Useful research design can produce the answer 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 attempts to show the relationship among cost, volume, profit and various functional budgets for their achievement and effective application within the conceptual framework of profit planning for solving the problems that had occurred in Paramount Carpet Industry. It is an intensive study based on analysis of the past financial performance.

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

3.3 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.

Total top 10 carpet industries are taken as population due to largest top 10 carpets industries which exports more than 19000 SQM. It couldn't be possible to attempt all the number of research population in this research. Paramount Carpet Industry is the largest exporter Industry in Nepal in 2009. So researcher has taken. Paramount Carpet Industry as a sample among 10 Industries. The number and size of population and sample is presented in appendix X.

Table 3.1

Population and Sample of Carpet Industry

Population	Sample
10	1
Total Top Carpet Industry	Paramount

Sources Appendix-XI

3.4 Source and Types of Data

Data may be obtained from several sources; it is not easy to list them in detail.

Each research project had its own data needs and data sources. However, the

general classification of data sources has the following dimensions.

Primary Source of Data

Primary source of data are the data which are collected by direct visit by the researcher himself \herself to the field. These data are not used by other people & are collected by the researcher for the fulfillment of his research work. Some of the data are collected through questionnaire as well as interviews with the concerned officer, manager & consultants by the researcher himself for the special need of this report work.

Basically following technique were adopted for the collection of primary data;-

Questionnaire.

Sources Appendix-I

Secondary Source of Data

Data which are already collected by others and used are the secondary source of data. Following are the main secondary source of data of the industry used in this study:-

Library, books & journal/magazines, annual reports of the company, booklets, Company publication, various cost records, Internet & websites etc

3.5 Variable of Studies

Variables are characteristics of person, things groups, object 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 research had used

two types of variables, independent variable and dependent variables, which are presented as below:

A. Independent 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 production.

B. Dependent Variable

A variable is called dependent variable if its values depend upon the other variables. The investigator's 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 C-V-P analysis, which are interconnected and dependent on one another.

So these factors are depending variables. But, testing relationship between theses variable following criteria are assumed:

Table 3.2

Classification of Variables

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

3.6 Methods of Data Collection

Both primary and secondary data were used in the study. The secondary data were collected from the company's annual reports and other related document, company's website and books published reports etc.

The primary data were obtained through questionnaire method followed in most cases fill by the fifteen respondents of the company. They are divided in to three categories due to their position and responsibilities.

Table 3.3

Profiles of Respondents

S.N.	Categories of Respondent	Questionnaires	
		Number	**%**
1	Top Level	2	10%
2	Middle Level	5	25%
3	Lower Level	13	65%
Total		**20**	**100%**

Source: Opinion Survey 2011 Questionnaire No -3

3.7 Methods of Analysis and Presentation of Data

Analysis and presentation of the data is used the core of each and every research work. In order to get the concrete results from this research, data were analyzed by using different types of tools. Basically, following two techniques were used to explain the collected data.

3.7.1 Descriptive Technique

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

3.7.2 Quantitative Technique

Descriptive techniques would not be enough of prepare excellent research report. To fill in the gap, or make the research report attractive and for

better understanding the following profit planning and statistical tools were used:

CVP Analysis Tools C-V-P Analysis was included the following techniques:

1. Contribution Margin (CM) = Sales – Variable Cost

2. Contribution Margin Ratio = 1– Variable Cost / Sales

3. Break Even Point (BEP) in units = Total Fixed Cost / VPCU – SPPU

4. Break Even Point (BEP) in Rs. = Total Fixed Cost / WeightedCMRatio

5. Break Even Point (% of capacity) = BEPinUnits/Rs / Total CapacityinUnits/Rs

6. Cash BEP (in Rs) = Fixed Cost - Non Cash Outlay / 1 - Variable Cost / Sales - Non Cash Outlay

7. Require sales for desired profit (in units) = FC + DesiredProfit / CMPU

8. Require sales for desired for DPAT = FC + DesiredProfit / CMRatio

9. Require sales in units for DPAT = FC+ DPAT / (1- T) / CMPU

10. Required sales in Rs for DPAT = FC+ DPAT / (1- T) / CMRatio

11. Safety margin (in Units) = Actual sales units-BEP in unit

12. Safety margin (in Rs) = Actual sales Rs.-BEP in Rs

13. Margin of safety Ratio = Actual/BudgetedSales - BESales / Actual/BudgetedSales

For Multi Product Firm

Overall BEP (in units) = TotalFixed Cost

Overall BEP in Rs = $\frac{\text{TotalFixed Cost}}{\text{WeithtedCMPU}}$

Required Sales for desired profit (in units) = $\frac{\text{FC+ DesiredProfit}}{\text{WeithtedCM PU}}$

Required Sales for DP (in Rs.) = $\frac{\text{FC+ DesiredProfit}}{\text{WeithtedCM Ratio}}$

Required Sales for DP after tax (in Units) = $\frac{\text{FC+ } \frac{\text{DP T A}}{\text{(1- T)}}}{\text{WeightedCMPU}}$

Required Sales for DP after tax (in Rs) = $\frac{\text{FC+ } \frac{\text{DP T A}}{\text{(1- T)}}}{\text{WeightedCM Ratio}}$

i. Statistical Tools

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

ii. 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 bars represents the given figures and the width may be of any size.

iii. Mean

The sum of all observation divided by the number of observation is called mean. In such cases all the items are equally devoted by X. if is defined by the following formula: Mean(X) = $\sum X/N$

Where, $\sum X$ = The sum of observations

N = No. of observation

iv. <u>Standard Deviation (S.D.)</u>

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 δ (Small sigma).

The SD is calculated by the following formula:

$$\text{Standard Deviation (SD)} = \sqrt{\frac{\sum X^2}{N} - \left(\frac{\sum X}{N}\right)^2}$$

v. Coefficient of Variation (C V)

The relative measure of dispersion based on SD is called coefficient of SD.

Thus Coefficient of $S\overline{D} = \delta/X$

100 times coefficient of SD is called coefficient of variation. It is denoted by C.V. Thus,

Coefficient of Variation $= \delta/\overline{X} \times 100$

vi. Times Series Analysis (Trend Analysis)

The collection of reading or data regarding to different time is called time series. There are two variables in this case one most be time and other variables may be population, production, sales, profit etc. A widely and most commonly used method to describe the trend is the method of least square. The straight line is given by the following:

$$Y = a + bx$$

Where,

Y = Values of dependent variables

a = y-intercept

b = slope of the trend line

x = values of independent variables (times)

vii. Correlation Analysis

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

It can be calculated by following formula:

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

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

viii. Co-efficient of Determination (r^2)

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

$$\text{Co-efficient of determination } (r^2) = \frac{N\sum XY - \sum X.\sum Y^2}{N\sum X^2 - \sum X^2 - N\sum Y^2 - \sum Y^2}$$

Or.

$r^2 = rxr$

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

CHAPTER - IV

PRESENTATION AND ANALYSIS OF DATA

4.1 Introduction

Profit panning is used for development and acceptance of proper objective and goals for an organization. It is also used to move the organization efficiently to achieve to preset objectives and goals. In profit planning, cost-volume-profit analysis can be the most important devices to utilize the cost with effective and efficient way. CVP analysis has becomes a powerful instrument in managerial decision making specially cost control and profit planning. The CVP analysis is a specially way of presenting and studying the inter-relationship between cost, volume and profit. The basic objective of this study is to examine the present practice of CVP analysis and identify the area where CVP analysis could be applied to strengthen the Paramount Carpet Industry. This chapter presents the analysis and interpretation of data.

4.2 Analysis of Budgeted and Actual Sale

PCI is the multi-product manufacturing company producing and selling different types of products such as Radii, Pakhi, Bakkhu, Darhi etc. This section attempt to present and analyze the previous budgeted sales and actual sales performance. The following table presents the budgeted and actual sales achievement from fiscal year 2005/06 to 2010/11.

Table 4.1
Total Budgeted and Actual Sales Volume of PCI (Rs. in Million)

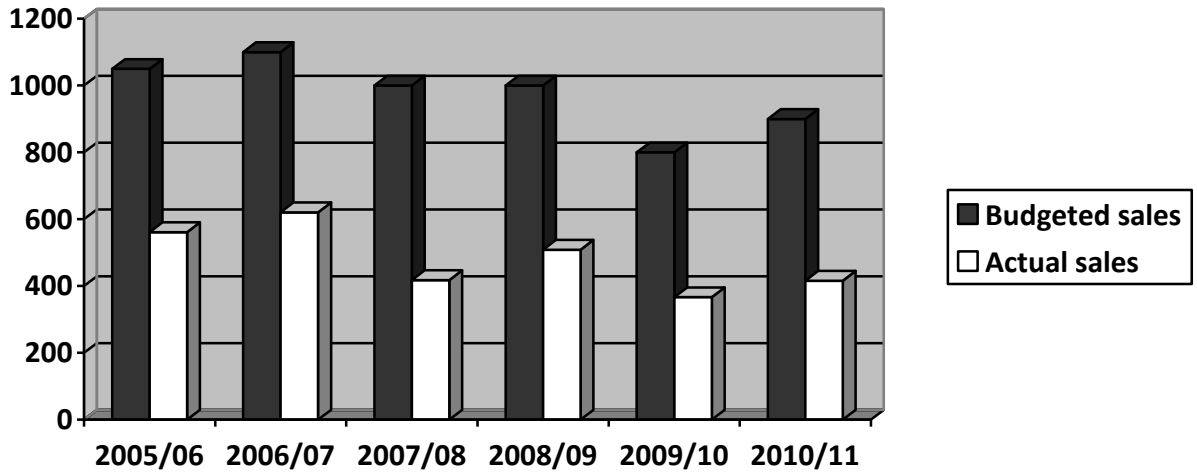
Fiscal Year	Budgeted Sales	Actual Sales	Achievement in %
2006/07	1050	561.281	76.39
2007/08	1100	620.59	80.60
2008/09	1000	417.690	59.68
2009/10	1000	508.739	72.68
2010/11	800	366.576	65.46
2011/12	900	415.756	71.46

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

From the above table, it becomes clear that the total sales unit of PCI is fluctuating. There are various reasons, which cause the variation. The actual sales shown on the table above are according to invoice issued. The sales revenue, taxation and charges were shown in the balance sheet of the company as current liabilities

The above table shows that there is high gap between actual sales and budgeted sales. The sales trends have unfavorable because actual sales of all fiscal years are very less than budgeted sales. But the percentages of achievement are fluctuating.

Figure 4.1
Budgeted and Actual Sales of PCI



In the above Figure shows that there is high gap between actual sales and budgeted sales. The sales trends have unfavorable because actual sales of all fiscal years are very less than budgeted sales.

Table 4.2
Summary of Statistical Calculation of PCI

Statistical Tools	Actual Sales(X)	Budgeted Sales(Y)
Mean(X)	481.77	975
Standard Deviation (δ)	98.95	89.49
Coefficient of Variation (C.V)	20.53	9.178
Correlation Coefficient (r)	0.89	

Coefficient of determination (r2)	0.792
Probable Error	0.572

Source: Calculation from appendix-II

The calculation value of different statistical tools presented above in table no. 42 shows that budgeted sales mean is grater than actual sales mean. But standard deviation of actual sales is greater than the budgeted sales. The coefficient of variation of actual sales is more than coefficient of variation of budgeted sales. This shows that the budgeted sales fluctuation less than actual sales for the company. Having smaller C.V budgeted sales are more homogenous or homogenous or less variable or uniform of more consistent that actual sale.

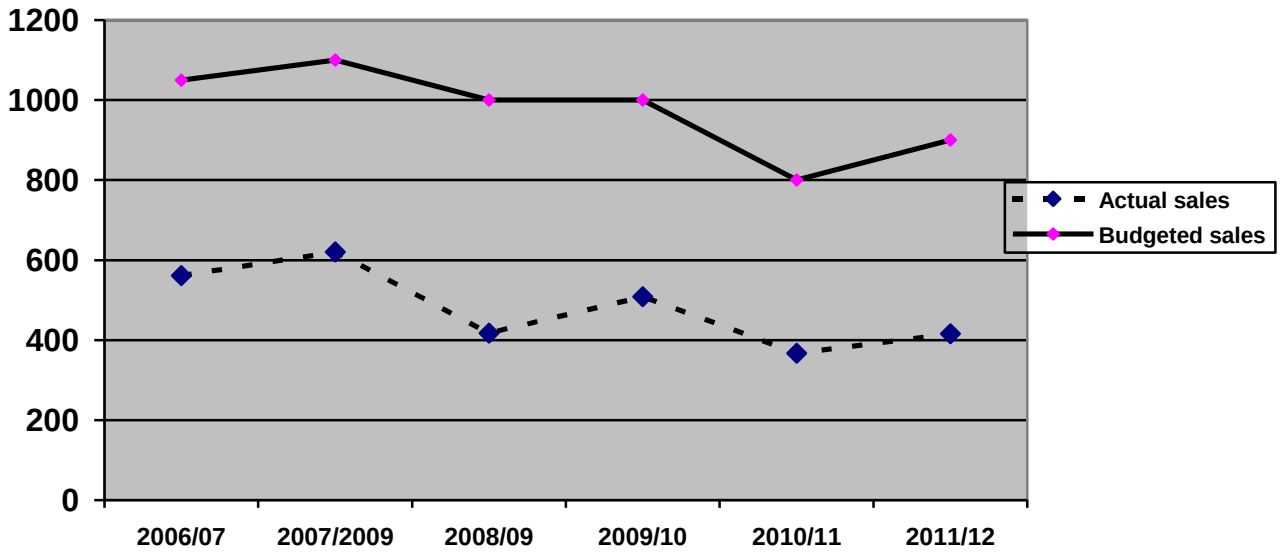
Similarly, the correlation co-efficient between two variable (i.e. Budgeted sales and Actual sales) is 0.879. It shows that there is positive correlation between two variables of the PCI.

The significance of correlation is tested with probable error. The value of correlation coefficient is greater than 6 PE (i.e. $0.51>6\times0.035$) the calculation value of r is signification for PCI.

Trend Analysis

Figure 4.2

Actual sales and budgeted Sales Trend line of PCI



To analyze the trend of actual sales least square method can be used to estimate the possible future sales for given time or year. A straight-line trend will show the relationship between time period and actual sales of the relevant year. In this method, it is assumed that the sales consistently changes (increase or decrease) with the change in time and such can be expressed by the component of time factor. In this method time factor is considered as independent factor and sales is considered as dependent factor upon time. The straight line trend of actual sales (Y) depends upon the times (X),

which is expressed as: $Y = a + bX$ ……(1)

For the calculation the value of a (constant) and b (variable) can be obtained by solving the following two equations:

$$\sum Y = na + b \sum X \text{..... (1)}$$

$$\sum XY = a \sum X + b \sum X^2 \text{.....(2)}$$

Table 4.3

Calculation of the Trend of Total Sales of PCI (Rs in Million)

Fiscal Year(X)	Total Sales(Y)	X= (x-2008/09)	XY	X^2
2006/07	561.281	-3	-1683.843	9
2007/08	620.590	-2	-1241.184	4
2008/09	417.690	-1	-417.690	1
2009/10	508.739	0	0	0
2010/11	366.576	1	366.576	1
2011/12	415.756	2	831.512	4
Total	**∑Y=2890.634**	**∑X=-3**	**∑XY=(2144.629)**	**∑X^2=9**

Therefore, a = 461.79 and b = (39.96)

Thus, y = 461.79 + (39.96) X, is the trend line of sales figure which shows the positive sales revenue in the future.

By using this trend equation we can estimate actual sales, for the F/Y 2011/12

Y = 461.39 + (39.96) ×3 = Rs. 341,910,000

Therefore, if the trend doesn't changes, the possible sales for year will be Rs 341,910,000

4.2.1 Analysis of Sales for Selected Product Lines

Three product lines 150 knot, 100 knot, and 60 knot are selected for further analysis and interpretation the following table shows the sales figure of selected product lines.

Table 4.4

Sales Figure of Selected Product Lines (Rs in 000)

Fiscel Year	150 Knot			100 Knot			60 Knot		
	Rs	SQM	USP(Rs)	Rs	SQM	USP(Rs)	Rs	SQM	USP(Rs)
Ref…	1	2	1/2	4	5	4/5	7	8	7/8
2006/07	12133	12133	10000	20120	22355.5	9000	50431	6003.69	8400
2007/08	13000	12322.27	10550	20800	21666.7	9600	55125	6409.88	8600
2008/09	7125	6477.27	11000	12120	11824.3	10250	41232	4717.62	8740
2009/10	8321	8081.41	11300	14120	13447.6	10500	50313	5602.78	8980
2010/11	6452	5467.79	11800	10232	9452.19	10825	37123	4124.7	9000
2011/12	9132	6710.48	12400	11230	9721.65	11500	32326	3298.57	9800

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

The above table shows that the sales figure is in increasing trend. Higher sales volume recovers higher portion of fixed cost, and it assists to maximize profit. The unit selling price (USP) is calculated by dividing total sq. m. sold (unit) to total sales revenue. Total sales and total sq. m. are not speared as different sizes like 70/140, 140/200 etc. The company had not proper sales records of different size of product lines. The unit-selling price of the 150 knot,100 knot & 60 knot was in fluctuation condition. The number of unit sold of selected product lines was growing trend. By using time series regression equation the forecasted sales of 150knot, 100knot and 60knot for FY 2010/11 is Rs 56908200, Rs.73549500 and Rs 3088000 respectively. (Appendix III).

4.3 Profit (Loss) Pattern of PCI

Profit is the major element of each and every business endeavor for survival, further development and fulfilling social expectation. In modern business, effectiveness and efficiency of any business organization or management are measured form profit. But PCI is suffering loss from the beginning of its operation year. The profit pattern of PCI is presented below. The profit (loss) pattern is analyzed on the basis of actual sales achievement.

Table 4.5
Profit (Loss) Trend of PCI **(Rs '000')**

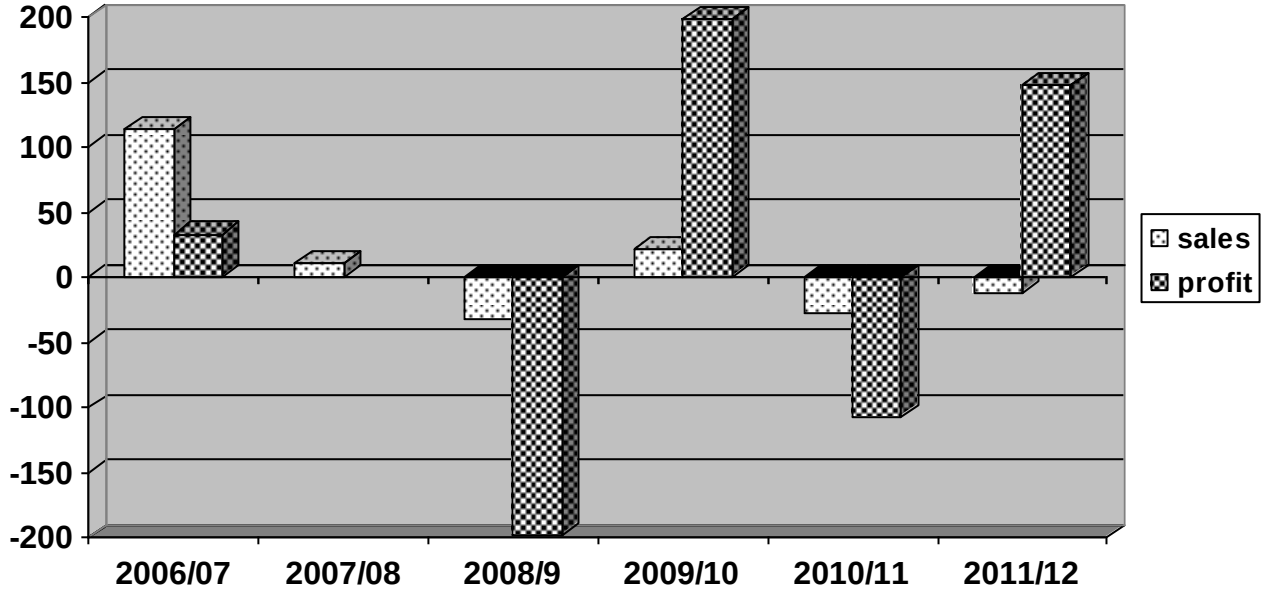
Fiscal Year	Sales		Profit	
	Rs.	% Change	Rs.	% Change
2006/07	561281000	114.13	10331237	33.28
2007/08	620592000	10.56	12755260	23. 46
2008/09	417690000	(32.56)	(12629308)	(199)
2009/10	508739000	21.79	12466047	198.7
2010/11	366576000	(27.94)	(976873)	(107.83)
2011/12	415756000	(11.82)	14408797	147.49

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

The above mentioned figures show that the profit (loss) trend is flucating annually. The flucating rate of loss in abnormal condition. The decreasing rates of losses are 33.28%, 23.46%, (199%), 198.7%, (107.83%) and 147.49% in fiscal year 2006/07, 2007/08, 2008/09, 2009/10, 2010/11 and 2011/12 respectively.

Figure 4.3

Sales and Profit Trend of PCI



In this above figure shows that sales percentage of fiscal year 2007/08 are very high. Similarly year 2008/09 and 2010/11 shows the losses due to the fluxing rate of abnormal condition and year 2011/12 shows highest profit among around these 6 yr.

4.4 Cost Analysis

Cost planning and control id not reduction in cost but it means better utilization of limited resources. Expenses planning and controlling should focus on the relationship between expenditure and benefits derived from those expenditure. Cost analysis is necessary to attain enterprise goals. There are

different types of cost incurred in the company. Generally costs are classified in to four categories, which are

- Cost of production
- Administrative expenses
- Selling and distribution expenses
- Financial expenses

Cost of Production

The costs which are relater with production and included raw materials, packaging materials, direct expenses, water and electricity, repair and maintenance, blending charge, other expenses etc.

Administrative Expenses

Administrative expenses are a part of management cost. it includes salary and allowance, P/F contribution, printing and stationary, water and electricity, communication expenses, bank charges, repair and maintenance, meeting fesses, traveling expenses, conveyance and fuel expenses, computer software expenses, AGM expenses, rent, taxes and fees, guest entertainment, notices publication expenses security expenses, members fees and subscription, legal and professional fees, insurance premium, training and recruitment expenses, miscellaneous expenses etc.

Selling and Administrative Expenses

It is the cost incurred for selling and distribution of the product and included: transportation cost and insurance expenses, advertisement, hoarding board rental, distributions meeting exp traveling, expenses of sales man, complementary expenses, sales promotion expenses, leakage and breakage etc.

Financial Expenses: - It includes interest on overdraft, interest on term loan etc.

4.4.1Fixed Cost Analysis of PCI

Such costs are those in which the total fixed costs remain constant over a relevant range of volume/out put, while the unit fixed costs vary with out put. As the production units increase fixed cost per unit decrease, it is because same cost will be dispersed in more production unit. Fixed cost in total are variable for different fiscal year affected by internal and external environment factor of the company. The fixed cost of PCI is presented in the table below.

Table 4.6
Fixed Cost Details of PCI (in Rs.)

Details\Years	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Repair &	50000	51322	50325	54085	56089	58076
Maintenanc	145728	152579	180933	191334	190267	190070
Electricity	42660	43290	39680	51857	65955	68725
Telephone	10350	9750	10020	10882	10568	14332
Water	14520000	16000000	18000000	20000000	22000000	20120000
Salary	0	1000000	1000000	1000000	1000000	1000000
Deprecation	1000000	100000	120000	120000	120000	120000
Audit Fees	100000	880000	970000	1080000	1200000	1500000
Rent	800000	1100000	900000	1100000	850000	90000
Bank Charge	900000	3600000	4200000	4800000	5000000	490000
Export Expenses	30000000	24535000	21667000	2078800	2078800	4078000
Interest On Loan	25493000	2079000	2401000	3290000	3790000	5200453
InsuranceCharges	2161000					
Total Fixed Cost	**49434238**	**49550941**	**4938958**	**33776958**	**31861679**	**32929656**

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

The items included in the field cost production expenses all are semi-variable cost. The amount shown in the table above regarding Telephone, water, electricity and repair and maintenance were segregated into fixed cost. Similarly, the items included in the fixed selling and distribution expenses and administrative expense, all are fixed cost nature.

Salary and wages of production department increasing trend all year. The rent expenses are in increasing trend up to all year. The deprecation expenses are Fixed pattern all year.

The bank charge and insurance charge are fluctuating nature. The audit fee is

increasing nature. The export expenses are increasing trend. AT last the interest on loan is decreasing trend.

4.4.2. Analysis of Fixed Cost for Selected Product Lines

Table 4.7

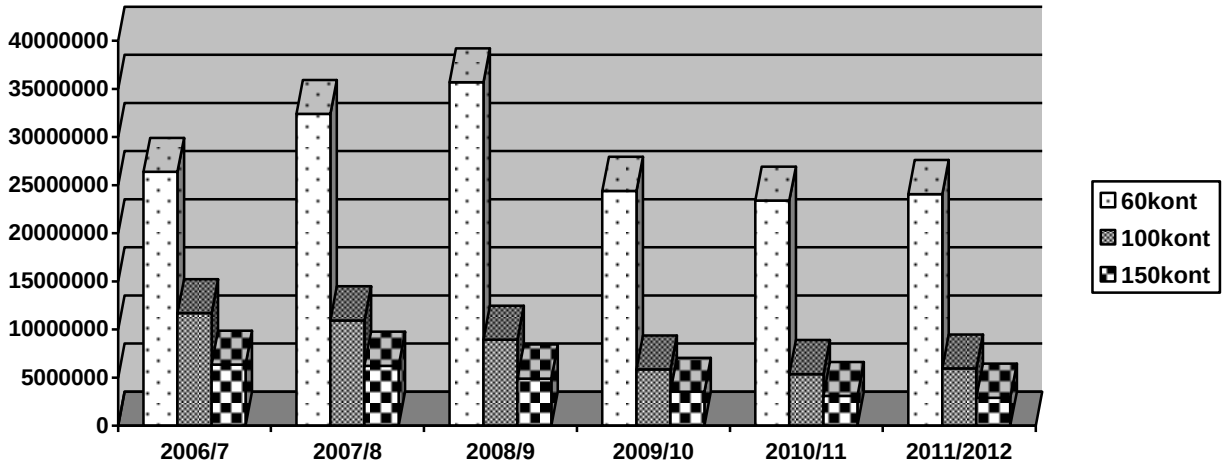
Specific Fixed Cost for Selected Product Lines

Fiscal Year	60knot(Rs)	100knot(Rs)	150knot (Rs)
2006/07	26373900	11691256	6345232
2007/08	32380790	10945351	6224800
2008/09	35692381	8946031	4900547
2009/10	24400680	5856564	3519356
2010/11	23398067	5361915	3101697
2011/12	24069407	5956149	2904100

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

The specific cost of the selected product lines are segregated on the basis of Production Proportion. The specific fixed costs of selected product lines are increasing annually. By using time series regression equation the forecast fixed cost of 150knot, 100 knot and 60 knot for F/Y 2011/12 are Rs 1703672.66, Rs. 2208013.33 and Rs. 19267202 respectively and total fixed cost is 21504500.74 (Appendix IV).

Figure 4.4
Specific Fixed Cost for Selected Product Lines



4.4.3 Analysis of Variable Cost

Variable costs are those in which the total cost are assumed to change in direct proportion to changes in volume/out put within the relevant range, while the unit cost remains constant, variable cost appear on a graph as a straight line with a positive slope, the lines rises as the production volume increases.

To produce finished goods and transfer these goods to the market, the company bears different types of variable cost. The company's variable cost per unit is varying in different years according to PCI's cost detail sheet; the variable costs are presented in the table below.

Table 4.8
Statement of Detail Variable Cost of PCI (Amount in Rs)

Details\Years	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Materials used	441006500	487608000	328185000	399723500	288024000	318202300
Repair &	200000	205288	201301	216340	224356	246354
Maintenanc	1068672	1118911	1326841	1403116	139588	1513927
Electricity	383940	389610	357120	466718	593595	596270
Telephone	58650	55250	56780	61668	59882	57268
Water	639320	101210	1000000	2400000	2400000	23400000
Wages	4473749	8588130	8081230	8381250	7172520	8283143
Transportation	1650000	2350000	2125000	2450000	17200000	2230000
Traveling	1200000	1400000	1600000	1700000	2100000	1500000
Sampling	2650000	2450000	2200000	2000000	1800000	2100000
Administrativ	74894	99610	44488	87203	37453	96250

e						
Other Mis Expen.						
Total Vari. Cost	453405725	505092199	34485350	418889795	304270394	358225512

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

The costs of material consumed are included raw materials, weaving charge and packaging material. The costs of material consumed are included direct expenses of purchase. Telephone charge, water charge, electricity charge, and repair and maintenance are semi-variable cost nurture. It is separated as fixed and variable cost and cost variable cost portion is shown in the table above. Out of these items are variable cost natures.

Similarly, all items under Variable cost expenses are variable cost nature. Material consumed transportation Telephone, water, and electricity expenses are fluctuating nature. Only sampling expense is increasing annually. Water charge is 2009/10 is decreased on the comparison of other year and electricity also same condition. But other year is increased both. Repair and maintenance is increased all year. Other expenses of cost of goods sold and miscellaneous expenses are fluctuating, and administrative expense is decreasing.

The total variable cost is highly increased in the F/Y 2007/08 to Rs. 505092199 from Rs 453405725, which is 11.39% of the F/Y 2006/07. In the year 2008/09, the total variable cost is decreased by 31.72% from Rs 505092199 and reached to Rs. 344856350. In the F/Y 2009/10, the variable cost reached to Rs. 418889795 by increasing 21.46% as compared to F/Y 2009/10. In the final year of the study i.e. 2010/11 the variable cost is decreasing by 27.36% and reached to Rs 304270394 from Rs 418889795 of the previous year 2065\66. In the final year of the study i.e. 066107 the variable cost is increasing 15.06% and reached to Rs. 358225512 from Rs. 304270394.

Therefore, the total variable cost of the PCI is fluctuating annually. By using time series regression equation the expected variable cost for F/Y 2010/11 is Rs. 322935620.70 (Appendix VI).

4.4.3.1 Analysis of Variable Cost for Selected Product Lines

The variable costs for different product lines are not same. Different product line had different combination of material, labor and other expenses. Since, not availability of detail variable cost item of each selected product lines are presented lines, the total variable cost and unit variable cost of selected product lines are presented at total form in the table below.

Table 4.9

Statement of Variable Cost for Selected Product Lines (Amount in Rs)

Particular	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
150 knot						
A. Total Variable cost	90997500	97500000	53437500	68490000	48390000	61736416
B. Production in SQM	12133	12322.27	647727	8081.41	5467.79	6710.48
C. Unit vari. cost(A÷B)	7500	7912.50	8250	8475	8850	9200
100 knot						
A. Total Variable cost	12072000	12480000	72720000	84720000	61392000	65961395
B. Production in SQM	0	0	11824.39	13447.6	9452.19	9721.65
C. Unit vari. cost(A÷B)	22355.55	21666.68	6150	6300	6495	6785
60 knot						
A. Total Variable cost	22693950	24806250	18554400	22640850	16705350	13569404
B. Production in SQM	6003.690	6409.88	4717.62	5602.783	4124.7	3285.57
C. Unit vari. cost(A÷B)	3780	3870	3933	4041	4050	4130

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

The total variables costs of selected products lines are increasing causes of increase in production units. The variable cost of 150knot is increasing all year. Similarly, unit variable cost of 100knot and 60knot are increase. Internal and external environment, managerial decisions, productions process and technology factor affect to change in variable cost. Increasing unit selling price and also increasing unit variable cost is negative

signal of higher CM per unit it helps to maximize operation profit. By using time series regression equation the expected variable costs of 150knot, 100knot and 60knot for F/Y 2011/12 are Rs. 42233601, Rs 5609843 and 1324446 respectively. (Appendix-V)

4.4.4 Analysis of Semi-Variable or Semi-Fixed Costs

The semi variable costs are the one which remain same for certain relevant range and then change as per the activity level. Semi variable expenses have some of the characteristics of both fixed and variable costs. Semi variable

expenses are changed by combined effect of passage of time, activity/ output and management discretion decision. The company PCI had also incurred some costs like semi variable or semi fixed costs nature, which is shown in the table below.

Table 4.10
Statement of Semi Variable Costs (Amount in Rs)

Particulars	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Repair & Maintenance	250000	256610	251626	270425	280445	262045
Electricity	1214400	1271490	1507774	1594450	1585555	1483222
Telephone	426600	432900	396800	518575	659550	690500
Water	69000	65000	66800	72550	70450	75550

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

The company has not particular method to segregate the semi-variable costs into fixed and variable cost. According to the high financial officer and other managerial personal, semi-variable costs are classified into variable and fixed by relevancy, their nature and the judgment of the related officers. The total semi-variable costs are increasing causes of increasing in production units from F/Y 2004/05 to 2009/10. By using time

series regression equation the expected semi-variable cost for F/Y 2011/12 is Rs 3218830 (Appendix VI)

To simplify the problem discussion were done with company"s senior officers or PCI. At last, the above mentioned semi variable costs were classified into variable and fixed as per the suggestion and details given by the senior staffs of the company. The semi variable costs variable costs are classified in the following way, which is shown in the table below.

Table 4.11
Classification of Semi-Variable Cost (Amount in Rs)

Particulars	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Production Expenses						
Repair & maint.	250000	256610	251626	270425	280445	262045
Electricity	1214400	1271490	1507774	1594450	1585555	1483222
Telephone	426600	432900	396800	518575	659550	690500
Water	69000	65000	66800	72550	70450	75550
Total SVC	**1960000**	**2026000**	**2223000**	**2456000**	**2596010**	**2511317**
Variable Cost						
Repaire& maint.80%	200000	205288	201301	216340	224356	209636
Electricity88%	1068672	1118911	1326841	1403116	139588	1305235
Telephone90%	383940	389610	357120	466718	593595	621450
Water 85%	58650	55250	56780	61668	59882	64217
Total VC	**1711262**	**1769059**	**1942042**	**2147842**	**1017421**	**2200538**
Fixed Cost						
Repair &maint20%	50000	51322	50325	54085	56089	52409
Electricity12%	145728	152579	180933	191334	190267	177986
Telephone10%	42660	43290	39680	51857	65955	69050
Water 15%	10350	9750	10020	10882	10568	11332
Total FC	**248738**	**256941**	**280958**	**308158**	**1578589**	**310777**

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

4.5 Analysis of Sales and Cost Relationship of PCI

Cost structure refers to the relative proportion of fixed and variable cost in an organization. There is no categorical answer possible of which cost structure is best. A firm might have many fixed costs but few variable cost or

mixed cost and vice versa. A firm"s cost structure can have a significant impact on decision; in the matter of risk etc. company with high fixed cost will incur losses much more quickly than the company with lower fixed cost if the reversionary condition strikes the industry. In sum, company with high fixed cost will experiences wider movement in net income as changes take place in sales, with greater profit in good year and greater loss on year. Company with low fixed cost will enjoy some what greater stability in net incomes, but if will do so at the risk of losing substantial profit if sales trend upwards in the long run.

The cost analysis of PCI is briefly analyzed in the below table no 4.12 for the fiscal year from 2006/07 to 2011/12.

Table 4.12

Cost Structure Analysis of PCI

(Rs.000)

Fiscal Year	Sales Revenue	Total VC	Total FC	Total Cost
2006/07	561281000	501515525	49434238	550949763
2007/08	620592000	55828579	49550941	607836740
2008/09	417690000	380780350	49538958	430319308
2009/10	508739000	462495995	33776958	496272953
2010/11	366576000	335691194	31861679	67552873
2011/12	415756000	375231200	32929656	408160856

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

Table 4.13

Cost Structure Analysis of PCI in Percentage

Particulars	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
% of Variable cost to Total Cost	91.02	91.84	88.48	93.19	91.33	93.49
% of Variable Cost	89.35	89.96	91.16	90.91	91.57	90.25

to Sales Revenue						
% of Variable Cost Increase	14.78	10.16	(31.79	21.46	(27.41)	9.05
% of Fixed Cost to Total Cost	8.98	8.16	11.52	6.81	8.67	8.07
% of Fixed Cost to Sales	8.8	7.98	11.86	6.64	8.69	7.92
% of Sales Increase	14.13	10.56	(32.69)	21.79	(27.94)	13.34

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

Table 4.13 presented above shows that the proportion of variable cost and fixed cost of PCI for fiscal year 2006/07 to 2011/12 are 91.02 %, & 8.98%, 91.84% & 8.16%, 91.84% & 8.16%, 88.48% & 11.52%, 93.19% & 6.81%, 91.33% & 8.67% and 93.49% & 8.07% respectively. Overall the proportion of variable cost is higher than the fixed cost of the company. Similarly the proportion of variable cost and fixed cost to total sales of PCI for the F/Y 2006/07 to 2011/12 are 89.35% & 8.8%, 89.96% & 7.98%, 91.16% & 11.86%, 90.91% & 6.64%, 91.57% & 8.69 and 90.25% & 7.92% respectively. Here, the proportion of variable cost to sales revenue is almost higher but the proportion of fixed cost to sales revenue is changing. Again, the percentage of sales also changing and the percentage of variable cost of PCI for the F/Y 2006/07 to 2011/12 is 10.16% & 10.56%, (31.79)% & (32.69)%, 21.46% & 21.79%, (27.41)% & (27.94)% and 9.85% & 13.34% respectively. It shows that when sales fluctuating then the variable cost also fluctuating.

4.6 Cost-Volume-Profit Analysis of PCI

Cost volume profit is management accounting tool to show the relationship between the ingredients of profit planning. Profit planning is the function of selling price of the product and unit sold. The entire gamut of profit planning is associate with CVP interrelationship. CVP analysis is the technique that explores the relationship, which exists among costs, revenue, output level and resulting profit. Cost-Volume-Profit analysis can be

extended to cover the effects of changes in selling prices or services fees, cost, income tax rate and product mix. The aim of CVP analysis is to have a fair estimate of total costs, total revenue and profit at various sales volumes. CVP analysis provides the management with the comprehensive overview of the effects on revenue and costs of all kinds of short run financial changes. It is related to profit, sales volume and costs. CVP analysis helps to determine the minimum sales volume to avoid losses and the sales volume at which the profit goal of the company will be achieved. And this analysis is possible only when the management has information about variable and fixed costs and selling price of the product or sales revenue. On the calculation of BEP in PCI, following assumptions should be considered:-

Activity base is Selected in Term of Sales Revenue

The concept of cost variability is valued so cost can be classified as fixed and variables Other type of income (non operating income) is not included in the revenue. There is no opening and closing stock Sales mix ratio among the product remain costing

Table 4.14

Income Statement of PCI for the F.Y. 2006/07 - 2011/12(In Rs.)

Particulars	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
A. Sales Revenue	561281000	620592000	417690000	508739000	366576000	415756000
B. Variable Cost:	501515525	558285799	380780350	462495995	335691194	375231200
C. Contribution Margin (A-B)	59765475	62306201	36909650	462430005	30884806	40524800
D. Fixed Cost:	49434238	49550941	49538958	33776958	31861679	32929656
E. P/L (C-D)	10331237	12755260	(12629308)	12466047	(976873)	7595144
F. P/V ratio = (CM/Sales)	0.1065	0.1004	0.0808	0.0909	0.0843	0.0974
G. BEP = (FC/P/V ratio)	464171249	493535269	562942704	371583696	366367806	338086817
(A-G)	97109751	127056731	(145252704)	137155304	208194	77669183

Src:- Annual Report of PCI (F/Y 2006/07-2011/12) Base on Table no 4.1, 4.6 & 4.8

4.6.1 Computation of BEP

To fulfill the objectives of the study, BEP and other related computation are necessary to complete. These are BEP in Rs. For the entire form of the company, BEP in units and Rs. of selected product lines, BEP percentage of capacity and cash BEP etc.

4.6.1.1 Analysis of BEP in Rupees for the Entire Company

The table no 4.14 shows that the BEP in Rs. Of each fiscal year 2009/10 is very high than actual sale. In other words, the actual sale of each fiscal year 2009/10 is not reached at BEP. But other fiscal year is good. It indicates that the company has fluctuated at that point because of the political instability and economic inflection. The actual sales of F/Y 2006/07, 2007/08, 2008/09, 2009/10, 2010/11 and 2011/12 are Different in BEP by Rs. Rs. 97109751, Rs. 1127056731, Rs. (145252704), Rs. 137155304, Rs. 208194 and Rs. 77669183 respectively.

Low Actual Sales and High Variable Cost

Since actual sales of each fiscal year were low, this results the lower contribution margin course of higher variable cost.

Low CM Ratio

Since low sales and low contribution margin, the CM ratio was less than 20%. The low CM ratio recovers low portion of fixed costs, this results there were need of high sales revenue to reach at BEP.

Higher the Fixed Costs

The fixed cost of PCI is increasing every year. Not recovery of higher portion of

fixed cost results higher BEP.

Comparatively low difference between actual sales and BEP sales were the results of increasing CM ratio and decreasing fixed costs to variable

cost ratio. By using time series regression equation the expected BEP for F/Y 2011/12 is Rs. 265815989.8 (Appendix-VII)

4.6.1.2 Computation of BEP for Selected Product Lines

To find out either sales revenue of selected product lines were met the BEP, for selected product lines assists to analysis, which product is profitable and which one is poor, or which needs to push, or continue or drop. The following tabular computation shows the BEP of selected product lines.

Table 4.15
Computation of BEP for Selected Products Lines (In Rs.)

Particulars	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
150 knot						
A. Specific FixedCost(Rs)	6345232	6224800	4900547	3519356	3101697	2904100
B. Unit Selling Price (Rs)	10000	10550	11000	11300	11800	12400
C. Unit Variable Costs(Rs)	7500	7912.50	8250	8475	8850	9200
D. CM per unit (Rs)(B-C)	2500	2637.5	2750	2825	2950	3200
E. CM Ratio (D÷B)	0.25	0.25	0.25	0.25	0.25	0.25
F. BEP in units (A/D)	2538	2360.11	1782	1245.79	1051.42	907.53
G. BEP in Rs.	25380000	24899160	19602000	14077427	12406756	11253372
H. Actual Sales in units	12133	12322.27	6477.27	8081.41	5467.79	6710.48
(H-F)	9590	9962.16	4695.27	6835.62	4416.37	5802.95
100 knot						
A. Specific FixedCost(Rs)	11691256	10945351	8946031	5856564	5361915	4356149
B. Unit Selling Price (Rs)	9000	9600	10250	10500	10825	11500
C. Unit Variable Costs(Rs)	5400	5760	6150	6300	6495	6785
D. CM per unit (Rs)(B-C)	3600	3840	4100	4200	4330	4715
E. CM Ratio (D÷B)	0.4	0.4	0.4	0.4	0.4	0.4
F. BEP in units (A/D)	3247.57	2850.38	2181.96	1394.42	1238.31	923.891
G. BEP in Rs.	29228130	27363360	22365090	14641410	13404706	10624754
H. Actual Sales in units	22355.5	21666.67	11824.39	13447.6	9452.19	9721.65
(H-F)	19107.98	18816.32	9642.43	12053.18	8213.88	8797.76
60 knot						
A. Specific FixedCost(Rs)	26373900	32380790	35692381	24400680	23398067	18855754
B. Unit Selling Price (Rs)	8400	8600	8740	8980	9000	9800
C. Unit Variable Costs(Rs)	3780	3870	3933	4041	4050	4130

D. CM per unit (Rs)(B-C)	4620	4730	4807	4939	4950	5670
E. CM Ratio (D÷B)	0.55	0.55	0.55	0.55	0.55	0.55
F. BEP in units (A/D)	5575.877	6845.83	7425.08	4940.41	4726.88	3325.53
G. BEP in Rs.	46837367	58874138	64895199	443648818	42541200	32590192
H. Actual Sales in units	6003.69	6409.88	4716.72	5602.783	4124.7	3298.57
(H-F)	427.813	435.95	(2708.36)	662.373	(602.18)	(26.96)

Src:- Annual Report of PCI (F/Y 2006/07 to 2011/12) base on table no 4.4, 4.7 & 4.9

The BEP in SQM of 60 knot is Lower than actual sales of all fiscal year. In other word, the actual sales of 60knot crossed the BEP expect 2007/08, 2009/10 & 066/67. The actual sale is excess than BEP by 435.95 SQM, 662.373 SQM, than other are below the BEP, they are (2708.36) SQM, (602.18) & (26.96) of F/Y, 2007/08, 65/66, & 2010/11 respectively. The BEP in rupee is also calculated in the above. The contribution margin per SQM is in constant condition, because the contribution margin is higher, but actual sales is crossed the BEP. The main cause of that is lower the fixed cost. Another way, the product had produced has produced at huge quantity, where high portion of fixed cost is utilized that directly increases than operating profit.

100 and 150 knot were started to produce and distribute from F/Y 2006/07. The contribution margins of 100knot and 150knot are in also constant condition. But the CM ratio of 150knot is0.25 all year and CM ratio of 100knot is 0.44. Constant the CM ratio indicates utilization of same portion of variable cost and vice versa. In this way actual sales of 150knot and 100knot are also crossed the BEP. The actual sale of 150knot is higher than BEP by 9595SQM, 9962.16SQM, 4695.27SQM, 6835.62SQM, 4416.37SQM and 5802.95 SQM of F/Y 2006/07 to 2011/12 respectively. The actual sale of 100knot is also higher

than BEP by 19107.93SQM, 18816.32SQM, 9642.43SQM, 12053.18SQM, 8213.88SQM and 8797.76SQM of F/Y 2005/06 to 2010/11 respectively. So,

these two products lines are also in profitability.

The two-product lines 150knot and 100knot are producing and distributing under the customer demand. The products were well established may years ago. As a result, extra product launch cost, advertisement and other fixed costs are saved. Causes of lower fixed costs, mass production and customer demand, the 150knot crossed the BEP. In addition, the 100knot is crossed the BEP. By using time series regression equation the expected BEP of 60knot, 150knot and 100knot for F/Y 2011/12 are Rs. 342739100, Rs.668095000 and 267626000. Respectively **(Appendix – VII)**

4.6.1.3 Computation of BEP as Percentage of Capacity

In the case of entire from of the company, the computation of BEP as percentage of estimated sales may be suitable rather than capacity. It is known that PCI is the manufacturer of multiple products. The BEP of PCI had calculated in Rupees for entire from. The following table shows the computation of BEP as percentage of estimated sales of PCI

Table 4.16

Computation of BEP as Percentage of Capacity

Particulars	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
A. BEP in Rs	464171249	493535269	562942704	371583696	366367806	268131447
B. Estimated sales in Rs	1050000000	1100000000	1000000000	1000000000	8000000000	9000000000
C. BEP as % of estimate sales (A/B×100)	44.20%	44.86%	56.29%	37.16%	45.79%	29.79%

Src:- Annual Report of PCI (F/Y 2006/07-2011/12) Base on Table no 4.1 and 4.14

From the above table, BEP in Rs. F/Y 2006/07 to 2011/12 are 44.20%, 44.86%, 56.29%, 37.16%, 45.79% and 29.79% of corresponding estimated sales. Of the company would be met the estimated sales, there would be profit.

Similarly, computation of BEP as percentage of capacity had possible to compute regarding selected product lines. The production capacity of PCI is to produce 400 SQM daily where six categories of products. 150knot, 100knot, 60knot, Palpa, Banana shaggy and 80knot are produced in the combined form regularly. To total production of six products might be not more than 400SQM daily. Following the computation shows the annual production capacity.

Annual Production Capacity = Daily production capacity × Working days in year

= 400 × 300 days (assumed)

= 120000 SQM.

Following table shows the computation of BEP as percentage of capacity for selected product lines.

Table 4.17

Computation of BEP as Percentage of Capacity for Selected Product Lines

Particulars	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
A. Annual Prodn capacity(SQM)	120000	120000	120000	120000	120000	120000
100 knot B.BEP In Units(SQM)	2538	2360.11	1782	1245.79	1051.42	907.53
C.BEP/production capacity [F/A × 100]	2.15%	1.97%	1.485%	1.039%	0.88%	0.76%
D. Total BEP in SQM (B+D+F)	3247.57	2850..35	2181.96	1394.42	1238.31	923.89
E. TotalBEP/Prodn. capacity [H/A × 100]	2.7%	2.3%	1.8%	1.1%	1.00%	0.77%
60knot F.BEP In Units(SQM)	5575.877	6845.83	7425.08	4940.41	4726.88	3325.53
G.BEP/production capacity [F/A × 100]	4.6%	5.7%	6.1%	4.1%	3.9%	2.77%
H. Total BEP in SQM (B+D+F)	11361.45	12056.29	11389.04	7580.62	7016.610	5157.25
I. Total BEP/Prodn. capacity [H/A × 100]	9.4%	10%	9.4%	6.3%	5.8%	4.30%

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12) Base on Table no 4.15

and the Memorandum of the Company

From the above table, BEP in cases of 150knot is recovered only 2.15%, 1.97%, 1.485%, 1.039% and 0.88%, and 0.76 in the F/Y 2006/07 to 2011/12 respectively. The 100knot's BEP as percentage of capacity is 2.7%, 2.3%, 1.8%, 1.1%, 1.00% and 0.77 in F/Y 2006/07 to 2011/12 respectively. Similarly, BEP as percentage of capacity of 60knot is 4.6%, 5.7%, 6.1%, 4.1% , 3.9% and 2.77% in F/Y 2006/07 to 2011/12 respectively. Its percentage is also increased expect in F/Y 2008/09 and 2009/10. The total BEP in SQM of selected product lines are 11361.447SQM, 12056.29SQM, 11389.04SQM, 7580.62SQM, 7016.61SQM 5157.25SQM in F/Y 2005/06 to 2010/11 respectively. Selected three product lines are utilized the total production capacity by 9.4% 10%, 9.4%, 6.3%, 5.8% and 4.30% in F/Y 2006/07 to 2011/12 respectively.

4.6.1.4 Computation of Cash BEP of PCI

Table 4.18

Computation of Cash BEP of PCI

Particulars	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
A. Total Fixed costs (Rs.)	49434238	49550941	49538958	33776958	31861679	32929656
B. Deprecation (Rs)	1000000	1000000	1000000	1000000	1000000	1000000
C. Net Fixed Costs in Rs. (A-B)	48434238	48550941	47538958	32776958	30861679	31929656
D. D. Total Sales	561281000	620592000	417690000	508739000	366576000	415765000
E. Debtors (Rs.)	949413	1360867	18143958	21182367	12852160	18418390
F. Cash sales Rs.(D-E)	560331587	619231133	399546042	487556633	353723840	397346610
G. Variable Cost in Rs.	501515525	558285799	380780350	462495995	335691194	375231200
H. Contribution Margin (F-G)	58816062	60945334	18765692	25060638	18032646	22115410
I. CM Ratio (H÷F)	0.104	0.098	0.046	0.051	0.05	0.056
J. Cash BEP in Rs.(C/I)	465713827	495417765	1033455608	642685450	61723580	570172429
(F-J)	94617760	123813368	-633909566	-155128817	2 9200260	-172825819

Src:- Annual Report of PCI (F/Y 2006/07 to 2011/12) base on table no 4.1, 4.6 & 4.8

The cash BEP in Rupees in computed at entire from of the company. The following table shows the computation of cash BEP in Rs. of PCI for F/Y 2006/07 to 2011/12.

The cash sales of F F/Y 2006/07 to 2011/12 are reached at cash BEP and 2009/10 to 2011/12 are not reached at cash BEP. So, out of debtors and depreciation, the company had at profitability condition in F/Y 2006/07, 2007/08 and 2008/09. The expected cash BEP in F/Y 2011/12 is Rs. 346790556 (Appendix-VIII)

4.6.2 Break Even Analysis of Multi-Products and Sales Mix

Sales mix can be defined as the relative combination of product represented in the total sales. Most companies have several products, and PCI has also more than 6 products, which are not equally profitable. Profit depends to some extent on the sales mix that company is able to achieve. Profit will be greater if high margin items make up a relatively large proportion of total sale consist mostly low margin items.

The break even analysis of multi product company like as PCI is complex because different products will have different selling prices, different costs and different contribution margins. Break even point depends on the mix which the various products are sold.

Over BE Sales = Total fixed cost/ Average Weighted CMRatio

For PCI,

Overall BE Sales = 32929656/0.3655 = 90094817

The details calculation is presented in appendix –IX. The sales mix and CM ratio of each product are classified on the basis of sales. In the calculation, the break even point of PCI is Rs. 265815989.8 in sales for the F/Y

2011/12. This is computed by dividing the fixed costs by the company's average CM ratio. But Rs. 90082470.03 represents BEP for the company. If the sales mix changes, than the BEP will be change. The details sales of each product of PCI at BEP for the F/Y 2011/12 are presented below in table no 4.19.

Table 4.19
Product wise BEP Sales of PCI

S.N	Products	Sales(„000)	Sales Mix	Product wise BEP (overall BEP × Sales mix)
1	150 knot	83209952	**0.37**	30787682
2	100 knot	111798975	**0.49**	54781497
3	60 knot	32217786	**0.14**	4525638
Total		**227246713**		**90094817**

Source: Base on Appendix IX

In the above figure the product wise BEP of 150 knot, 100 knot and 60 knot is 30787682, 54781497 and 4525638 respectively. Similarly, the sales mix of three products is 0.37, 0.49, and 0.14 respectively.

4.6.2.1 Comparison of Individual BEP and Overall BEP of Selected Products

The following table shows the individual and overall BEP of selected products:-

Table 4.20
Comparison of BEP

S.N.	Products	Individual BEP	Products Wise BEP
1	150 knot	83209952	30787682
2	100 knot	111798975	54781497
3	60 knot	32217786	4525638
		Overall BEP	**90094817**

Source: Base on Table no.4.15 and 4.19

In the above table, individual BEP of each product is less than the product wise BEP. This is due to the fixed cost. In the individual BEP, we use the separate fixed costs of the respective product. But in the overall BEP we

use the total fixedcost of the company as a whole to calculate the BEP. The main cause of difference between individual BEP and product wise BEP is fixed cost plays the vital role in cost-volume and profit analysis.

4.6.3 Analysis of Contribution Margin

Contribution Margin is the different between sales amount and variable cost. In other words, fixed cost plus the amount of profit is equivalent to contribution margin. Contribution margin can be as follows:-

Contribution margin (CM) = Sales Value – Variable Cost

Or Contribution margin (CM) = Profit + Fixed Cost

The analysis of contribution margin is divided into two parts, which are: Analysis of contribution margin is entire from of PCI, and Analysis of contribution margin for selected product lines.

4.6.3.1 Analysis of Contribution Margin in Entire form of PCI

The contribution margin is fluctuating trend form F/Y 2006/07 to 2011/12 according to previous table no 4.14. The contribution margin ratio is also fluctuating trend. Fluctuating the CM ration is indicated that uncertainty of fixed costs. But this ratio is less than 20%. Since higher fixed cost at increasing trend; and lower CM ratio, the company actual sales are crossed at BEP. Except 2008/09. For higher CM ratio, sales must be increasing and variable must be decreased. Other way fixed cost should be constant or controlled or sales and production should be done in mass.

4.6.3.2 Analysis of Contribution Margin for Selected Product Lines

According to table 4.15, the contribution margin of 150 knot is in increasing condition. The CM ratio are less than 30%, But the CM ratio are 25% all year. In sprit of lower CM ratio, the actual sales 150 knot are crossed

the BEP. Causes is that lower fixed costs and comparative maximum production and sales.

Similarly, the contribution of 100 knot is in also increasing condition but CM ratio is also in constant condition. The CM ratios are higher than 30% i.e. 40% all year, lower fixed costs and market monopoly sales, the product had also crossed the BEP. Another product, 60 knot the Contribution margin is in increasing condition too. The CM ratio is in constant trend too. The CM ratios are more than 30% i.e. 55% all year. Since, lower fixed costs and mass production and selling, 60knt had crossed the BEP.

In this way, the CM ratios of selected product lines are nearly and higher 30%. To increase the CM ratio of selected product and variable cost should be minimized as far as possible by using proper decision making

4.6.4 Analysis of Safety Margin of PCI

The margin of safety (MOS) can be defined as the excess of sales over the break even volume of sales. It states the amount by which sales can drop before to be incurred in an organization. The formula for its calculation is:-
Margin of safety (MOS) = Total sales – Break even sales

Although the PCI is not reached at BEP and its CM ratio is also low. In addition to find out either high or low margin of safety of PCI, it is needed to compute margin of safety. It is known that high margin of safety is particular significant in times of depression. Following the table shows margin of safety in entire form of the company.

Table 4.21

Computation of MOS of PCI

Particulars	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
A.Budgeted sales(Rs)	1050000000	1100000000	1000000000	1000000000	800000000	900000000
B. BEP in Rs	464171249	493535269	562942704	371583696	366367806	268131447

C.Margin of safety (A-B)	585828751	606464731	437057296	628416304	433632194	631868553
D.MOS ratio (C/A × 100)	55.80%	55.14%	43.69%	62.8%	54.2%	70.20%

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

According to table 4.21, MOS ratio is high all year. The high MOS ratio is the result of low CM ratio. Since, low actual sales comparative than BEP, there are not raised condition of suffering fluctuation regarding sales fall, because actual sales are fluctuating annually.

When actual sales be crossed BEP and there be arise low CM ratio and MOS ratio then the management should be think of the possibilities of increasing the price of sales or reducing variable cost by adopting in the manufacturing process.

Similarly, according to previous table no. 4.15 show, difference amount of actual sales and BEP are highly positive selected products lines. It is indicated that there is high MOS ratio. As a result, it could be ensure that selected products lines, 150 knot, 100 knot, and 60 knot would be profitable at depression period where demand of the products be lower or falling conditions.

4.6.5 Profit-Volume Analysis

Profit volume ratio established a relationship between the contribution and sales volume. The two factors profit and volume are interconnected and dependent with each other. Profit depends upon sales; selling price to a great extent will depend upon the volume of production. It can be presented by:-

Profit Volume (P/V) Ratio = Margin on Contributi/ Sales

Since, total BEP in Rs. of PCI is higher than actual sales of all presented fiscal years. For the short term profit planning the management should adjust the price, volume and costs. The actual sales must be nearly BEP

and then profit volume analysis may have proper meaning. By the way, target profit, required sales and adjustable costs can be forecasted by using P/V analysis for future operation planning.

P/V analysis is also divided into two parts which are:

P/V analysis in entire form of the company:

P/V analysis for selected product lines:

4.6.5.1 P/V Analysis in Entire form of the PCI

The above table 4.14 shows the profit volume ratio of PCI for the year 2061/62 to 2010/11. Profit volume ratio is also known as contribution margin ratio. As the contribution margin fluctuates generally, but CM ratio also fluctuation and the case is same here. The P/V ratio is minimum 0.0843 in F/Y 2010/11 and maximum 0.1115 in the fiscal cost is assumed to be constant at certain level of activity. Higher contribution margin ratio is better and management always put effort to increase this ratio. Management tries to increase the value of the ratio by reducing the variable cost or by increasing the selling price.

4.6.5.2 P/V Analysis for Selected Product Lines

The above table 4.15 shows the P/V ratios of 150 knot 100 knot and 60 knot. The P/V Ratio 150 knot in F/Y 2006/07 to 2011/12 are constant 0.25 all year. The P/V Ratio of all is constant condition.. Similarly, the P/V ratio of 100 knot is also in increasing condition. The P/V ratios are 0.44, in F/Y 2006/07, to 2010/11 respectively. But the P/V ratio of 60 knot is increasing annually but The P/V ratios are constant 0.55 in the F/Y 2061/62, 2006/07, 2007/08, 2008/09, 2009/10 and 2010/11 respectively. Since, higher the P/V ratio increases the profit. So, management always put effort to increase the P/V ratios.

4.7 Summary of the Projection

In the above study we are forecasted the various factors of PCI like sales, variable cost, fixed cost etc for the coming fiscal year 2011/12 by using time series regression equation which can be presented in the following table;

Table 4.22

Summary of the Study of PCI (In Rs)

Particular	Past yr.	Past yr.	Past yr.	Past yr.	Past yr.	Past yr.	Budgeted yr
Sales	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**	**2011/12**
Year	561281000	620592000	417690000	508739000	366576000	415756000	341910000
V. Cost	501515525	558285799	380780350	462495995	335691194	375231200	322935620
Fixed Cost	49434238	49550941	49538958	33776958	31861679	32929656	20596041
P & L	10331237	12755260	(12629308)	12466047	(976873)	7795144	(1621661)
BEP	464171249	493535269	562942704	371583696	366367806	268131447	265815989
Cash BEP	465713827	495417765	1033455608	642685450	61723580	448500054	598087719

Source:- Annual Report of PCI (F/Y 2006/07 to 2011/12)

4.8 Analysis of Primary Data

The outcomes of the questionnaires distributed to the sample size of 15 employees and management who used to work in PCI. Many transactions are involved in budgeting procedure. Some organizations follow one types of procedure and other follow the next. different organization follow the different procedure as their requirement criteria of planning external and internal forces planning of different activities using of different managerial planning tools adoption of controlling practice. Practice of decision-making and planning clarity of sales goals responsibility accepted by different level of management commitment for development of budget by different management level participation of personnel in decision-making and

implementation and other so many factors are involved in budgeting procedure. To analyze the production procedure of PCI researcher used the questionnaire filled by the respondents.

The outputs of questionnaire are presented below and analyzed all by using percentage and diagram.

4.8.1Analysis of Sales Plans

The following Table No-4.23 is occasionally shows the company Sale plans

based on Different category.

Table 4.23

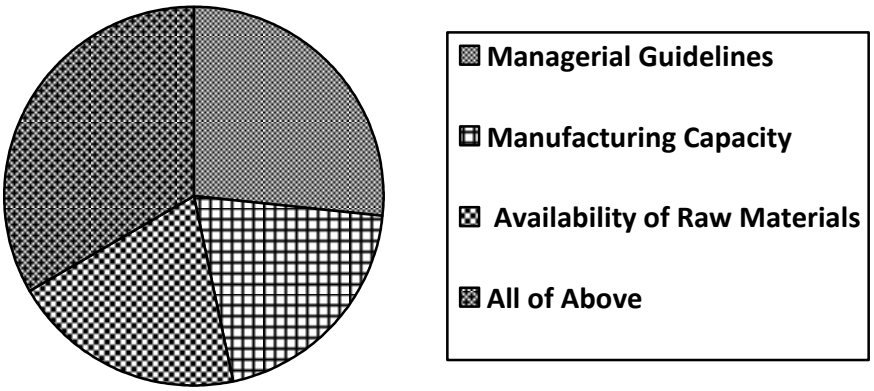
Sales Plans of PCI

S. N.	Answer	No of Respondent	%
1	Managerial Guidelines	**4**	26.6%
2	Manufacturing Capacity	**3**	20%
3	Availability of Raw Materials	**3**	20%
4	All of Above	**5**	33.4%
Total		**15**	**100**%

Source: Opinion Survey 2011 Questionnaire No -1

Figure 4.5

Sales Plans of PCI



The table 4.24 shows the 26.6% respondent wrote the Managerial guidelines, 20% wrote Availability of raw materials and Manufacturing Capacity and 33.34% respondent wrote all of above. So the sale plan is based on managerial guidelines, manufacturing capacity and availability of raw materials.

4.8.2 Analysis of Sales Forecasting

The following Table No-4.24 is shows the company Sale Forecasting based on Different methods and tools.

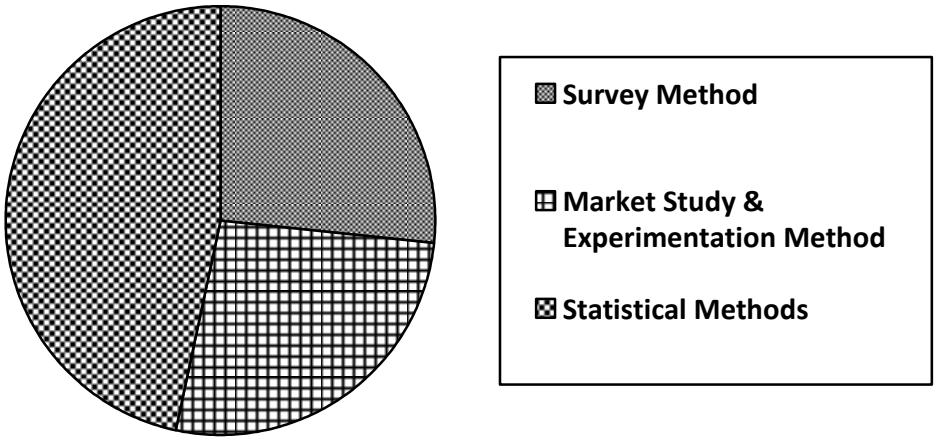
Table 4.24

Forecasting of Sales in PCI

S. N.	Answer	No of Respondent	%
1	Survey Method	**4**	26.7%
2	Market Study & Experimentation Method	**4**	26.7%
3	Statistical Methods	**7**	46.6%
4	Total	**15**	**100**%

Source: Opinion Survey 2011 Questionnaire No -2

Figure 4.6
Forecasting of Sales in PCI



From the above table and figure the statistical method is 46.6 %, it shows that the statistical method is very high for forecasting of sales in PCI.

4.8.3 Responsible for Preparing Sales Plans

The following Table 4.25 is shows the company Sale Forecasting based on Different methods and tools below;

Table 4.25

Responsible for Preparing Sales Plans of PCI

S. N.	Answer	No of Respondent	%
1	Top Level management	**4**	46.6%
2	Middle Level Management	**4**	33.4%
3	Lower Level Management	**7**	20%
4	Total	15	**100**%

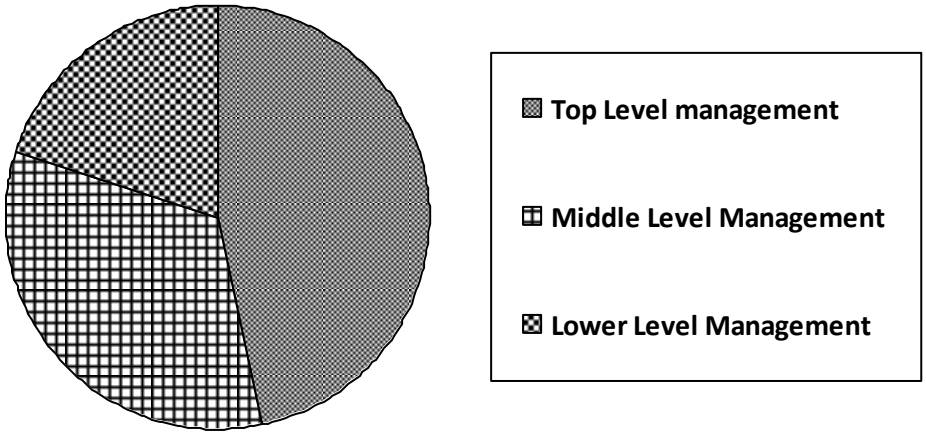
Source: Opinion Survey 2011 Questionnaire No -3

The table no-4.25 shows the 46.6%respondent pointed for top management 33.4% for middle management and 20% for lower management. So the decision should be top management is more

responsible for preparing sales plan. The responsible for preparing sales plan in PCI is depicted in figure:

Figure 4.7

Responsible for Preparing Sales Plan of PCI



In the above figure the top management is very high than middle management and lower management it shows that the top management is responsible for preparing sales plan of PCI.

4.8.4 Criteria followed by PCI in Preparing Sales Plan

Different organization follows the different criteria preparing sales plan. The table 4.26shows the criteria followed by PCI while preparing sales plan.

Table 4.26

Criteria Followed by PCI in Preparing Sales Plan

Criteria		Frequencies				Total	Mean
	1	2	3	4	5	Score(X)	
Intuition	4	2	2	7		42	2.8
past experience				3	12	72	4.8
External Experiences	2	4	7		2	41	2.7
Statistical		3	7	5		47	3.13

Source: Opinion Survey 2011 Questionnaire No -4

The table 4.26 shows the different mean value for different criteria, the mean value of intuition, past experience, external experts and statistical method are 2.8,4.8,2.7 and 3.13respectively past experiences have highest mean value i.e. 4.8. It means that PCI uses the past experience as basis to prepare sales plan. The next important criteria followed by PCI to prepare sales plan is statistical method, which have the 2nd highest mean value 3.13. And PCI gives less priority for intuition and external experts. Assume that the number of score is denoted by "X" and individual criteria are denoted by "Y" respectively.

4.8.5 External and Internal Forces in Plan

External and internal forces are very important for each and every organization. PCI is also affected by different types of both forces. Such as the external forces as political, legal, economical etc. and internal forces as employees, work station, etc. External and internal forces considered by PCI to prepare sales plan is shown by the table 4.27.

Table 4.27

External and Internal Forces in Plan

Forces		**Frequencies**					
	1	2	3	4	5	**Total Score**	**Mean**
External Forces			2	4	9	67	4.46
internal Forces	2	3	4	6		44	2.93

Source: Opinion Survey 2011 Questionnaire No -5

The table 4.27 shows the total score and mean value of external forces and internal forces considered by PCI. The mean value of external forces and internal forces 4.46 and 2.93respectively. Both of them mean value of external forces is higher (4.46) than internal forces (2.93). So we can make conclusion that the PCI give high consideration for the external forces and the

lower value 2.93for internal forces. So the PCI give less priority for internal forces. Assume that the number of score is denoted by "X" and external and internal forces are denoted by "Y" respectively.

4.8.6 Clarity of Sales Goals

For effective sales plan, sales goal should be clear and reliable. If there is vague sales goals then planning of sales will be very difficult. Table no 4.28 shows the clarity of sales goals of PCI.

Table 4.28

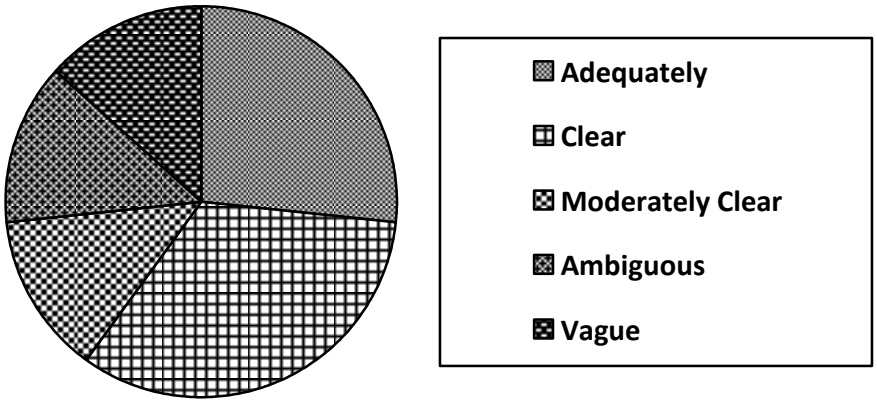
Clarity of Sales Goals

Level of Linearity	No of Respondent	%
Adequately	4	26.7%
Clear	5	33.4%
Moderately Clear	2	13.3%
Ambiguous	2	13.3%
Vague	2	13.3%
Total	15	100%

Source: Opinion Survey 2011 Questionnaire No- 6

The table 4.28 shows that 33.4% respondents express their view for clear sales goals and 26.7% respondents express their view for adequately clear sales goals. So the conclusion is the sales goal of PCI is clear. Clarity of sales goals of PCI is shown in figure.

Figure 4.8
Clarity of Sales Goals



From above figure the clarity of sales goals of PCI is clear because the number of respondents is more than other level of linearity.

4.9 Major Finding of the Study

4.9.1 Major Finding of Secondary Data

From the analysis of various data collected by primary and secondary sources and on the basis of observation and discussion, the following major findings have been draw Sales plan of PCI is not properly maintained. There is a deviation between budgeted sales and actual sales.

- For profit achievement, the company should be adjusted fixed cost, variable cost, sales and profit by ratio analysis.
- Due to the raw materials cost increasing yearly; the unit variable cost of carpet also is increasing annually.
- Sales trend of PCI is fluctuating yearly. It shows that the net loss shell be decreased in future. Expenses trend of PCI is increasing year by year.
- The company has no details and systematic expenses plan. The Fixed cost variable cost and mixed cost expenses plan is necessary elements for the profit planning and control.
- The Unit selling price also increasing annually.
- The cost of PCI is classified into fixed and variable. There is no practice of identifying semi variable and their segregation into variable and fixed by using scientific techniques.
- The total fixed cost of the company is increasing annually.
- Due to the political & economical environment the sales of company decreasing condition.

4.9.2 Major Finding of Primary Data

The outcomes of the questionnaire distributed to the sample size of 15 employees and management who used to work in PCI are abstained different organization followed the different procedure as their requirement criteria of planning external and internal forces planning of different managerial planning clarity of sales goals responsibility accepted by

different management level participation of personnel in decision making and implementation and others many factors are involved in budgeting procedure to analyze the production procedure of PCI PVT LTD. researcher used the questionnaire filled by the respondents. The major finding from primary data are presented as follows:-

- The study showed the 26.7% survey method, 26.7% market study and experimentation methods and 46.6% statically methods. So the company applied sale forecasting method is statically method.
- Study showed that 33.64% respondents express their view for adequately clear sales goals. So the conclusion is the sales goal of PCI is clear.
- The study showed that 26.6% respondents pointed for managerial guide lines 20% manufacturing capacity 20% availability of raw materials and 33.4%. So, the sales plan based on all of above.
- The study showed the total score and mean value of external and internal forces considered by the PCI. The mean value of external forces and internal forces 4.46 and 2.93 respectively both of them mean value of external forces is higher (4.46) than internal forces. We can make conclusion that the PCI give high consideration for the external force and the lower value ie.2.93 for internal. So the PCI give less priority for internal force. For more effective present at total score computed in external forces in preparing sales plan.
- The study showed the different mean value for different criteria. The mean value of intuition, past experience, external experts and stastical method are 2.8, 4.8, 2.7, and 3.13 respectively. Past experiences have highest mean value ie. 4.8. It means that PCI uses the past experience as basis to prepare sales plan. The next important criteria followed by PCI to prepare sales plan is statistical method which have the 2nd highest mean value 3.13 and PCI give less priority for intuition and external experts.

- The study showed the 46.6% respondents pointed for top management 33.4%for middle management and 20% for lower management. So the decision should be top management is more responsible for preparing sales plan.

CHAPTER - V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The C-V-P analysis occupies an important place in profit planning and control. This study mainly aims to analyze the relationship between cost, volume and profit of PCI. In Nepal, the manufacturing sector is very weak in every aspect of performance. Numbers of manufacturing industries are very few in Nepal. Among them only 32 manufacturing industries are listed in NEPSE. Here Paramount Carpet Industry is taken as sample for the purpose of the study. In the study, researcher has analyzed the sales, fixed costs, variable cost and profit (loss) of the PCI and selected product as well.

As per the need of the study, the researcher has analyzed the primary as well as secondary data. The needed secondary data were collected from the period of fiscal year 2006/07 to 2011/12. The financial statement i.e. balance sheet, income statement and other related data were found from annual report of the PCI, Which was provided by the company. The needed primary data were collected from designed questionnaire. Those questionnaires were given to the staffs of the PCI.

The main objectives of the research is to analyze different components of cost as per cost behavior to analyze the impact of fixed cost on profit and to analyze break-even-point of overall firm as well as individual product. For the purpose completion of the study, the related books, articles, journals and published thesis were studied by the researcher, which is presented in the second chapter the review of literature.

To accomplish the objectives of the research, the accounting and statistical tools and techniques have been used, which are presented in the chapter four data analysis.

Management effectively achieves organizational objectives through the efficient use of scarce resource in a changing environment. Future is uncertain which creates risk and reduce risk; the only reliable weapon is good management. C-V-P analysis is an analytical technique for studying the relationship between volume, cost and profit which helps to manage future cost and profit. Profit planning is a management technique and it is a written plan in all aspect of business operation for specific future period. C-V-P analysis is a device used to determine the usefulness of profit planning process of the firm. In fact, the entire field of profit planning has become associated with C-V-P inter-relationship.

Cost-volume-profit analysis, a most important tool of planning means of predicting the effect of changes in cost and sales levels on the Income of business. In its simplest form, it involves the determination of sales levels at which a company neither earns a profit nor incurs a loss, or in others word the point at which it breaks even. Often break-even analysis is known as C-V-P analysis. But break-even analysis is a special case of C-V-P analysis. however C-V-P analysis techniques is included to find out sales volume to earn a zero profit or desired profit, to affect income by changes in selling price, to check income if new machine will be installed, to examine operating profit if fixed cost as well as unit variable cost will be changes etc. solving such alternative C-V-P analysis is more appropriate then break-even analysis.

In this way company may use C-V-P analysis as planning tool when sales volume, unit selling price and variable and fixed cost are known, then to find out profit, as target profit at certain sales volume. By using C-V-P analysis tools the management of the company can control the costs also.

The C-V-P analysis tool is applied in the Paramount Carpet Ltd. to find out whether the tool is practicing or not. Paramount Carpet ltd. , one of the

leading weaving manufacture which is the largest player in international market and for decades has been synonymous with quality product, had not practicing C-V-P analysis tools, costs are not segregated as fixed costs and variable costs where there are not proper mechanism to segregate semi-variable or semi-fixed costs into fixed and variable cost. To solve the problems regarding C-V-P analysis and not application, some objectives are formulated: cost segregation as fixed and variable cost, unit variable by adopting suitable mechanism and computation of C-V-P analysis by its extension tools. To fulfill the objectives of the study, historical as well as managerial research design is adopted.

Hence, descriptive and quantitative technique are used to analyze and interpretation the data. After it, some finding: major and others are also achieved.

5.2 Conclusion

Different types of profit planning tools, which are used in the academic field, are not found applied by PCI. It shows the gap between the theory and practice. C-V-P analysis is not applied by PCI as no segregation of cost in to 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 PCI has not been able to use C-V-P analysis and make the realistic and smart budget.

Since, not adopting C-V-P analysis tool for profit planning, before and after operation of venture, the company had incurring profit and loss annually changing condition. The actual sales of the F/Y 2008/09 to 2010/11 are not reached at BEP. The huge amount had invested into fixed costs. The contribution margin is very low cause of higher unit variable cost. Depreciation and interest on long-term loan is increasing annually. Other

controllable cost is also increasing. Since lower sales than BEP or estimated sales, the MOS ratio is satisfactory.

The actual loss of other products and departments are recovered by selected product lines profit. Since limited Nepalese liquor market and selling and distribution activities, production and sales are comparatively low than production capacity.

Hence, avoiding C-V-P analysis tool and not utilizing full capacity, the company is bearing loss. Promoter and director, and staff of the company are enjoying by achieving allowance and salary respectively. Other part, general shareholders are not achieving dividend and government couldn't claim for income tax since loss and loss recovery situation.

5.3 Recommendations

On the basis of the study of C-V-P analysis as a tool to measure effectiveness of profit planning and control (PPC) of PCI, it seems necessary to develop, implement and improve the process of C-V-P 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-fit managerial strategies development. As the completions are very high in the context of liberalization, company should provide attention towards cost minimization rather than profit maximization. For this, C-V-P analysis tools can be of great help. Thus the following recommendations based in the finding of research study are made.

- Classification of expenses item as variable and fixed or controllable and non controllable must be made within specific framework of responsibility and time.
- Expenses planning and controlling should focus on the relationship between

  expenditure and benefits derived from those expenditure.

- Separate cost control dependent should be established for the effective management and reduction.
- PCI should consider about the product line to improve its profit. Market studies on demand, supply and pricing of product should be carried out and loss oriented costs should be identified and control.
- PCI should consider BEP analysis which preparing sale plan, production

  plan and selling price of its products.
- PCI is multi Product Company; more emphasis should be provided the

  product having high contribution so as have more profit.
- Some portion of fund should be allocated to research and development program so that new technology could be found which provide more competitiveness in the market.
- System of periodical performance reports should strictly followed to be conscious about poor performance and take corrective action immediately and timely.
- New market should be identified for the coverage of increased activities of companies.
- For overall profitability of the company, the company should analyzed other profit planning tools i.e. decision making where department wise, product wise, make or buy, drop or continue, decision are provided. The company PCI is also multiple products producer and its products some materials like ENA, denature sprit and GNA for self consumption. There may be high cost rather then consider supplier. So decision- making tool also can adopt for profit planning purpose.

- A systematic approach should be toward comprehensive profit planning. This can considerably contribute to the increase in profitability to PCI. Since separate of costs into their fixed and variable elements is at the heart of C-V-P analysis, all decision makers sought to be fully aware of, and understand, the cost structure of their operation; otherwise C-V-P analysis will provide meaningless information. Above recommendation are concerned with short-term profit planning (c-v-p analysis) which might be helpful to plan the profit and future operation for PCI. Hence, the recommendation would be improve C-V-P
  relationship of PCI.

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APPENDICES

Appendix – I
Questionnaire

Request Letter

I would like to introduce myself as the student of Mechi Multiple Campus (T.U) MBS (final Year). In order to fulfill the partial requirement of masters degree in Management, I am conducting a research work entitled **"Cost volume profit analysis of Paramount carpet industry (A case study)"** I would very much appreciate if you kindly spare few of your busy and valuable time for completing my research work. Your views are purely used for my academic purpose only. I anticipate your suggestions as soon as possible.

Name of Respondent:
Position:
Department:

Please help the researcher by giving correct information of the questions listed in this questionnaire. The 1scategory that is general questions you can wrote & tick (√) what question demand and 2nd special question please tick (√) for correct answer, give the rank of options and give the marks for options according to the nature of questions.

Some Questionnaire Question
General Questions

1) When & Where Paramount carpet industry is established?
   1. BS
   2. Zone
   3. District
   4. VCD\Municipality word No

2) What are the main objectives to establish this industry?
   1. .....
   2. .....
   3. .....
   4. .....

3) What kind of raw material are being used?
   1. .....

2. .....
3. .....
4. .....

4) What are the product producing of the industry?

1. .....
2. .....
3. .....
4. .....

5) Does the industry meet the target sales& earning target (sufficient) income?

1. Yes
2. No

6) If not, what is the reason?

1. Variable cost is high
2. Fixed cost is high
3. Negligence of Personnel
4. All of above

7) Is the industry practicing cost volume profit analysis tools to forecast or evaluate cost volume & profit?

1. Yes
2. No
3. Occasionally

8) If YES which tools of cost volume profit is practiced?

1. Contribution margin
2. Break even point
3. Margin of safety
4. Any other

9) Is the cost volume profit analysis is important for profit planning?

1. Yes
2. No

10) What are the major problem being faced in the application of cost volume profit analysis?

1. .....
2. .....
3. .....

Special Questions

1. What is the base of sales plan?
    1. Managerial guidelines ( )
    2. Manufacturing capacity. ( )
    3. Availability of raw materials ( )
    4. All of above ( )

2) What methods & tools is used for sales forecasting?
    1. Survey method ( )
    2. Market study & experimentation methods ( )
    3. Statistical methods ( )

3) Who in your organization are responsible for preparing sales plan?
    1. Top Management ( )
    2. Middle Management ( )
    3. Lower ( )

4) To what extent are the following criteria followed in preparing sales plan?

	Very High	High	Moderate	Less	Very Less
1) Intention	( )	( )	( )	( )	( )
2) Past experience	( )	( )	( )	( )	( )
3) External experts	( )	( )	( )	( )	( )
4) Statistical Method	( )	( )	( )	( )	( )

5) To what extent are the following internal and external forces evaluated and considered in preparing sales plan?

	Very High	High	Moderate	Less	Very Less
1) External	( )	( )	( )	( )	( )
2) Internal	( )	( )	( )	( )	( )

6) What are the sales Goals of your organization?
    1. Adequately clear ( )
    2. Clear ( )
    3. Moderately Clear ( )
    4. Ambiguous ( )
    5. Vague ( )

Appendix - II

Let Actual and Budgeted Sales be Denoted by x & y respectively

6 Year	X(0000000)	Y(0000000)	U=X-A	V=Y-B	U2	V2	UV
2006/07	561.281	1050	52.572	50	2760.66	2500	262710
2007/08	620.592	1100	111.853	100	12511.09	10000	11185.3
2008/09	417.690	1000	91.049	-	8289.92	-	-
2009/10	508.739	1000	-	-	-	-	-
2010/11	366.576	800	-142.163	(200)	20210.31	40000	28492.6
2011/12	415.756	900	-92.983	-100	8645.83	10000	9298.3
N=6	**X=2890.634**	**Y=5850**	**161.8**	**V=(150)**	**U2 =52417.83**	**V2 = 6200**	**UV =51603.3**

For actual sales:

$$\text{Mean } (\bar{X}) = \frac{\sum X}{N} = \frac{20890.634}{6} = 481.77$$

For Budgeted Sales:

$$\text{Mean } (\bar{Y}) = \frac{\sum Y}{N} = \frac{5850}{6} = 975$$

Let,

A=Assumed Mean for X = 481.77

B=Assumed Mean for Y = 975

Computation of Standard deviation (δ)

For Actual Sales:

$$(\delta) = \sqrt{\frac{\sum U^2}{N} - \left(\frac{\sum U}{N}\right)^2}$$

$$= \sqrt{\frac{52417.83}{6} - \left(\frac{-161.8}{6}\right)^2}$$

$$= 89.49$$

For,
Budgeted Sales:

$$\sqrt{\left(\quad\right)^{115}}$$

$$(\delta) = \frac{\sum V^2}{N} - \frac{\sum V}{N}^2$$

$$= \sqrt{\frac{62500}{6} - \left(\frac{-150}{6}\right)^2}$$

$$= 98.95$$

Computation of C.V

For Actual Sales:

$$C.Vx = \frac{\delta x}{X} * 100 = \frac{89.49}{481.77} = 18.75\%$$

For Budgeted Sales:

$$C.Vy = \frac{\delta y}{Y} * 100 = \frac{20890.634}{975} = 10.148\%$$

Computation of Correlation Co-efficient (r)

$$\text{Co-efficient of determination } (r^2) = \frac{N\sum UV - \sum U.\sum V}{\sqrt{N\sum U^2 - \sum U^2} - \sqrt{N\sum V^2 - \sum V^2}}$$

$$= \frac{6*512417.83-(-160.8)*(-150)}{\sqrt{6*52417.83 - (-161.8)^2} - \sqrt{6*62500 - (-150)^2}}$$

$$= 0.89$$

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

$$= 0.6745 \times \frac{1-0.89^2}{\sqrt{6}}$$

$$= 0.572$$

Appendix-III

Calculation of the trend lines of sales of 150k. (Rs. In '0000')

Fiscal yr	Total(Y) Sales(0000)	X= 2009/10	XY	X^2
2006/07	12133	(3)	(36399)	9
2007/08	13000	(2)	(26000)	4
2008/09	7125	(1)	(7125)	1
2009/10	9132	0	0	0
2010/11	6452	1	6452	1
2011/12	8321	2	16642	4
total	**Y=56163**	**X=(3)**	**XY=(46430)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

$Y=a + bx$ …….. (i)

Where,

Y = Values of total sales.

a = total assets

b = rate of changes of total sales

x = Year

For the calculation of a sales of 150 knot in can be obtained by solving the following two equations.

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

56163 = 6a-3b ……..……(i)

-46430 = -3a+19b……..…….(ii)

By solving the above equation:

We get,

a= 13710.99 b =-2118.68

We Know,

Y= a+bx

Y= 13710.99+(2118.68)x3

Y= 7354.95

Calculation of the trend lines of sales of 100k. (Rs. In '0000')

Fiscal yr	**Total(Y) Sales(0000)**	**X= 2009/10**	**XY**	**X^2**
2006/07	20120	(3)	(60360)	9
2007/08	20800	(2)	(41600)	4
2008/09	12120	(1)	(12120)	1
2009/10	14120	0	0	0
2010/11	10232	1	10232	1
2011/12	11230	2	22460	4
total	**Y=88622**	**X=(3)**	**XY=(81388)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

$Y=a + bx$ …….. (i)

Where,

Y = Values of total sales.

a = total assets

b = rate of changes of total sales

x = Year

For the calculation of a sales of 150 knot in can be obtained by solving the following two equations.

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

88622=6a-3b…….(i)

-81388=-3a+19b……..... (ii)

By solving the above equation

We get,

a= 8836.25 b=-1048.48

We Know,

Y=a+bx

Y= 8836.25+(1048.48)x3

Y= 5690.82

Calculation of the trend lines of sales of 60k. (Rs. In '000')

Fiscal yr	**Total(Y) Sales(0000)**	**X= 2009/10**	**XY**	**X^2**
2006/07	50431	(3)	(151293)	9
2007/08	55133	(2)	(110250)	4
2008/09	41232	(1)	(41232)	1
2009/10	50313	0	0	0
2010/11	37123	1	37123	1
2011/12	32326	2	64652	4
total	**Y=266558**	**X=(3)**	**XY=(201000)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

Y=a + bx …….. (i)

Where,

Y= values of total sales.

a = total sales.

b = rate of change of total sales.

x = year.

For the calculation of a (constant) and b (variable) can be obtained by solving the following two equations:

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

266558 = 6a + b (-3) ……..... (i)

-201000 = a (-3) + b 19 ……. (ii)

By solving the above equation

We get,

a = 42490 and b = -3870

We know,

Y = a + bx

Y = 42490 + (-3870) × 3

Y =30880

Appendix-IV

Calculation of the Trend of Total Fixed cost of PCI (in Rs)

Fiscal yr	**Total Fixed cost (Y)(Rs 0000)**	**X= 2009/10**	**XY**	**X^2**
2006/07	4943.4238	(3)	(14830.2714)	9
2007/08	4955.0941	(2)	(9910.1882)	4
2008/09	4953.8958	(1)	(4953.8958)	1
2009/10	3377.6958	0	0	0
2010/11	3186.1679	1	3186.1679	1
2011/12	3292.9656	2	6585.9312	4
Total	**Y=24709.2430**	**X=(3)**	**XY=(22647.6375)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

Y=a + bx …….. (i)

Where,

Y= values of total Fixed Cost

a = total Fixed Cost.

b = rate of change of total Fixed Cost.

x = year.

For the calculation of a (constant) and b (variable) can be obtained by solving the following two equations:

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ …….... (ii)

24709.2430 = 6a + b (-3) …… .(i)

-22647.6375 = a (-3) + b 19 …… (ii)

By solving the above equation

We get,

a = 3824.1210 b = -588.1713

We know,

Y = a + bx

Y = 382.4210 + (-588.1723) × 3

Y = 20596.0410

Calculation of the trend of 150 knot Fixed cost of PCI (in Rs)

Fiscal yr	Total Fixed cost(Y)	X= 2009/10	XY	X^2
2006/07	6345232	(3)	(19035696)	9
2007/08	6224800	(2)	(12449600)	4
2008/09	4900547	(1)	(4900547)	1
2009/10	3519356	0	0	0
2011/11	3101697	1	3101697	1
2011/12	2904100	2	5808200	4
total	**Y=26995732**	**X=(3)**	**XY=(27475946)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

Y=a + bx …….. (i)

Where,

Y = Values of total Fixed Cost.

a = total Fixed Cost

b = rate of changes of total Fixed Cost

x = Year

For the calculation of a 150 knot fixed cost can be obtained by solving the following two equations.

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

26995732 = 6a + b (-3) ……..... (i)

-27475946 = a (-3) + b 19 …… (ii)

By solving the above equation

We get,

a = 4099914.95 b = -798747.43

We Know,

Y = a + bx

Y = 4099914.95 + (-798747.43) × 3

Y = 1703672.66

Calculation of the Trend of 100 knot Fixed Cost of PCI (in Rs)

Fiscal yr	**Total Fixed cost(Y)**	**X= 2009/10**	**XY**	**X^2**
2006/07	11691256	(3)	(35073768)	9
2007/08	10945351	(2)	(21890702)	4
2008/09	8946031	(1)	(8946031)	1
2009/10	5856564	0	0	0
2010/11	5361915	1	5361915	1
2011/12	4356149	2	8712298	4
total	**Y=47157266**	**X=(3)**	**XY=(51836288)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

Y = a + bx

Where,

Y = Values of total Fixed Cost.

a = total Fixed Cost

b = rate of changes of total Fixed Cost

x = Year

For the calculation of a 100 knot fixed cost can be obtained by solving the following two equations.

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

47157266 = 6a + b (-3) ……..…(i)

-51836288 = a (-3) + b 19 …… (ii)

By solving the above equation

We get,

a = 7052182.76

b = -1614723.14

We know,

Y = a + bx

Y = 7052182.76 + (-1614723.14) × 3

= 2208013.33

Calculation of the trend of 60 knot Fixed cost of PCI (in Rs)

Fiscal yr	**Total Fixed cost(Y)**	**X= 2009/10**	**XY**	**X^2**
2006/07	26373900	(3)	(79121700)	9
2007/08	32380790	(2)	(64761580)	4
2008/09	35692381	(1)	(35692381)	1
2009/10	24400680	0	0	0
2010/11	23398067	1	23398067	1
2011/12	18855754	2	37711505	4
total	**Y=161101572**	**X=(3)**	**XY=(118466083)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

Y=a + bx …….. (i)

Where,

Y= values of total Fixed Cost

a = total Fixed Cost

b = rate of change of total Fixed Cost

x = year.

For the calculation of a (constant) and b (variable) can be obtained by solving the following two equations:

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ …….... (ii)

161101572 = 6a + b (-3) ……..…... (i)

-118466083 = a (-3) + b 19 ……. (ii)

By solving the above equation

We get,

a = 25766967.71 b = (2166588.57)

We know,

Y = a + bx

Y = 25766967.71 + (2166588.57) × 3

= 19267202

Appendix - V

Calculation of the Trend of Total Variable Cost of PCI (in Rs)

Fiscal yr	Total(Y)Sales(0000)	X= 2009/10	XY	X^2
2006/07	501515525	(3)	(1504546575)	9
2007/08	558285799	(2)	(111657158)	4
2008/09	380780350	(1)	(380780350)	1
2009/10	462495995	0	0	0
2010/11	335691194	1	335691194	1
2011/12	375231200	2	750462400	4
total	**Y=2614000063**	**X=(3)**	**XY=(910830489)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

$Y=a + bx$ …….. (i)

Where,

Y= values of total Variable Cost.

a = total Variable Cost.

b = rate of change of total Variable Cost.

x = year.

For the calculation of a (constant) and b (variable) can be obtained by solving the following two equations:

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

2614000063 = 6a + b (-3) …….. (i)

-910830489= a (-3) + b 19 ……. (ii)

By solving the above equation

We get,

a = 347782637.70 b = (8282339)

We know,

Y = a + bx

Y = 347782637.70 + (8282339) × 3

= 322935620.70

Calculation of the trend of 150 knot Variable cost of PCI (in Rs)

Fiscal yr	**Total(Y) Sales(0000)**	**X= 2009/10**	**XY**	**X^2**
2006/07	909975	(3)	(2729925)	9
2007/08	975000	(2)	(1950000)	4
2008/09	534375	(1)	(534375)	1
2009/10	684900	0	0	0
2010/11	483900	1	483900	1
2011/12	617364	2	1234728	4
total	**Y=**4205514	**X=(3)**	**XY=(**3495672**)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

$Y = a + bx$ ……(i)

Where,

Y = Values of total Variable Cost

a = total Variable Cost

b = rate of changes of total Variable cost

x = Year

For the calculation of a (constant) and b (variable) can be obtained by solving the following two equations:

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ …….... (ii)

4205514 = 6a + b (-3) …….. (i)

-3495672= a (-3) + b 19 …….(ii)

By solving the above equation

We get,

a = 661121.43 b = (79595.14)

We know,

Y = a + bx

Y = 661121.43 + (79595.14) × 3

= 422336.01

Calculation of the Trend of 100 knot Variable Cost of PCI (in Rs)

Fiscal yr	Total(Y) Sales(0000)	X= 2009/10	XY	X^2
2006/07	120720	(3)	(362160)	9
2007/08	124800	(2)	(249600)	4
2008/09	72720	(1)	(72720)	1
2009/10	84720	0	0	0
2010/11	61392	1	61392	1

2011/12	65961	2	131922	4
Total	**Y=530313**	**X=(3)**	**XY=(491166)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

$Y = a + bx$ ……..(i)

Where,

Y = Values of total Variable Cost

a = total Variable Cost

b = rate of changes of total Variable cost

x = Year

For the calculation of a 100 knot variable cost can be obtained by solving the following two equations.

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……... (ii)

530313= 6a + b (-3) …….. (i)

-491166= a (-3) + b 19 ……. (ii)

By solving the above equation

We get,

a = 94842.91 b = (12914.83)

We know,

$Y = a + bx$

$Y = 94842.91 - 12914.83 \times 3$

$= 56098.43$

Calculation of the Trend of 60 knot Variable Cost of PCI (in Rs)

Fiscal yr	Total(Y) Sales(0000)	X= 2009/10	XY	X^2
2006/07	2269395	(3)	(6808185)	9
2007/08	2480625	(2)	(4961250)	4
2008/09	1855440	(1)	(1855440)	1
2009/10	2264085	0	0	0
2010/11	1670535	1	1670535	1
2011/12	1356940	2	2713880	4
total	**Y=11897020**	**X=(3)**	**XY=**(9240460)	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

$Y=a + bx$ …….. (i)

Where,

Y= values of total Variable Cost.

a = total Variable Cost.

b = rate of change of total Variable Cost.

x = year.

For the calculation of a (constant) and b (variable) can be obtained by solving the following two equations:

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

11897020= 6a + b (-3) …….. (i)

-9240460= a (-3) + b 19 ……. (ii)

By solving the above equation

We get,

a = 1888780.95 b = (188111.43)

We know,

Y = a + bx

Y = 1888780.95 + (188111.43) × 3

= 1324446.67

Appendix -VI
Calculation of the Trend of Total Semi-Variable cost of PCI

(in Rs)

Fiscal yr	Total VCost(Y)(Rs000)	X= 2009/10	XY	X^2
2006/07	1960	(3)	(5880)	9
2007/08	2026	(2)	(4052)	4
2008/09	2223	(1)	(2223)	1
2009/10	2456	0	0	0
2010/11	2596	1	2596	1
2011/12	2511	2	5022	4
total	**Y=13772**	**X=(3)**	**XY=(4537)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

Y=a + bx …….. (i)

Where,

Y= values of total Sami-Variable Cost.

a = total Sami-Variable Cost.

b = rate of change of total Sami-Variable Cost.

x = year.

For the calculation of a (constant) and b (variable) can be obtained by solving the following two equations:

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

13772 = 6a + b (-3) …….. (i)

-4537= a (-3) + b 19 ……. (ii)

By solving the above equation

We get,

a = 2427.26 b = 263.857

We know,

$Y = a + bx$

$Y = 2427.26 + 263.857 \times 3$

$= 3218.83(000)$

Appendix -VII

Calculation of the Trend of Total BEP of PCI (in Rs)

Fiscal yr	Total BEP(Y)(RS.000)	X- 2009/10	XY	X^2
2006/07	464171249	(3)	(1392513747)	9
2007/08	493535269	(2)	(987070538)	4
2008/09	562942704	(1)	(562942704)	1
2009/10	371583696	0	0	0
2010/11	366367806	1	366367806	1
2011/12	268131447	2	536262894	4
Total	**Y=2526732171**	**X=(3)**	**XY=(2039896289)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

$Y=a + bx$ …….. (i)

Where,

Y= values of total Break Even Point

a = total Break Even Point

b = rate of change of total Break Even Point.

x = year.

For the calculation of a (constant) and b (variable) can be obtained by solving the following two equations:

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

25266732171 = 6a + b (-3) …….. (i)

-2039896289= a (-3) + b 19 ……. (ii)

By solving the above equation

We get,

a = 398935451.50 b = (44373153.91)

We know,

Y = a + bx

Y = 398935451.50 + (44373153.91) × 3

= 265815989.8

Calculation of the Trend of 150 knot BEP of PCI **(in Rs)**

Fiscal yr	Total BEP(Y)(000)	X-2009/10	XY	X^2
2006/07	25380	(3)	(76140)	9
2007/08	24899.16	(2)	(49798.32)	4
2008/09	19602	(1)	(19062)	1
2009/10	14077.427	0	0	0
2010/11	12406.756	1	12406.756	1
2011/12	11253.372	2	22506.744	4
total	**Y=107618.715**	**X=(3)**	**XY=(110086.82)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

Y = a + bx ……(i)

Where,

Y = Values of total Break Even Point

a = total Break Even Point

b = rate of changes of total Break Even Point

x = Year

For the calculation of 150 knot BEP of PCI can be obtained by solving the following two equations.

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ …….... (ii)

107618.715 = 6a + b (-3) …….. (i)

-110086.82= a (-3) + b 19 ……. (ii)

By solving the above equation

We get,

a = 16328.53 b = (3215.86)

We know,

Y = a + bx

Y = 16328.53 + (3215.86) × 3

= 6680.95(000)

Calculation of the trend of 100 knot BEP of PCI (in Rs)

Fiscal yr	Total BEP(Y)(Rs000)	X-2009/10	XY	X^2
2006/07	29228.13	(3)	(87684.39)	9
2007/08	27363.36	(2)	(54726.72)	4
2008/09	22365.09	(1)	(22365.09)	1
2009/10	4641.41	0	0	0
2010/11	13404.706	1	13404.706	1
2011/12	10624.754	2	21249.508	4
total	**Y=107627.45**	**X=(3)**	**XY=(130121.986)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

Y = a + bx

Where,

Y = Values of total Break Even Point

a = total Break Even Point

b = rate of changes of total Break Even Point

x = Year

For the calculation of 100 knot BEP can be obtained by solving the following two equations.

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ …….... (ii)

107627.45 = 6a + b (-3) …….. (i)

-130121.986= a (-3) + b 19 …… (ii)

By solving the above equation

We get,

a = 15757.67 b = (4360.47)

We know,

Y = a + bx

Y = 15757.67 + (4360.47) × 3

= 2676.26

Calculation of the Trend of 60 knot BEP of PCI (in Rs)

Fiscal yr	**Tatal BEP(Y)(Rs)**	**X-2009/10**	**XY**	**X^2**
2006/07	46837.366	(3)	(140512.10)	9
2007/08	58874.138	(2)	(117748.76)	4
2008/09	64895.199	(1)	(64895.199)	1
2009/10	44364.880	0	0	0
2010/11	42541.200	1	42541.200	1
2011/12	32590.192	2	65180.38	4
total	**Y=290102.975**	**X=(3)**	**XY=(215434.479)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

Y=a + bx …….. (i)

Where,

Y= values of total Break Even Point

a = total Break Even Point

b = rate of change of total Break Even Point.

x = year.

For the calculation of a (constant) and b (variable) can be obtained by solving the following two equations:

$\sum X = na + b\Sigma Y$……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

290102.975 = 6a + b (-3) ……. (i)

-215434.479= a (-3) + b 19 ……(ii)

By solving the above equation

We get,

a = 46339.55 b = (4021.88)

We know,

Y = a + bx

Y = 46339.55 + (4021.88) × 3

= 34273.91

Appendix-VIII

Calculation of the Trend of Cash BEP of PCI (in Rs)

Fiscal yr	**Total BEP(Y)(Rs)**	**X-2009/10**	**XY**	**X^2**
2006/07	465713827	(3)	(1397141481)	9
2007/08	495417765	(2)	(990835530)	4
2008/09	1033455608	(1)	(1033455608)	1
2009/10	642685450	0	0	0
2010/11	61723580	1	61723580	1
2011/12	448500054	2	897000108	4
total	**Y=3147496284**	**X=(3)**	**XY=(2462708931)**	**X^2=19**

Calculation of value of a and b

We know,

The straight line trend is give by the following formula.

Y=a + bx …….. (i)

Where,

Y= values of total Break Even Point

a = total Break Even Point

b = rate of change of total Break Even Point.

x = year.

For the calculation of a (constant) and b (variable) can be obtained by solving the following two equations:

∑X = na + bΣY……. (i)

$\sum XY = a\sum X + b\Sigma X^2$ ……..... (ii)

3147496284 = 6a + b (-3) …….. (i)

-2462708931= a (-3) + b 19 ……(ii)

By solving the above equation

We get,

a = 499183834 b = (50797759)

We know,

Y = a + bx

Y = 49918334 + (50797759) × 3

= 346790556

Appendix-IX

Calculation of Overall BEP sales of PCI

For the fiscal year2010\11

S. N	Products	Sales	Sale Mix	VC of each Product	CM of Each Product	CM Ratio	Weighted CM ratio (CMratio x sales Max)
1	150knot	83209952	0.37	61736416	21473536	0.25	0.0925
2	100knot	111798975	0.49	65961395	45837580	0.40	0.196
3	60knot	32237786	0.14	13623094	18614692	0.55	0.077
Total		**227246713**					**0.3655**

Appendix-X

Name of Respondents

Serial Number	Company	Name of Respondent	Designation of Respondent	Categories of respondent
1	PCI	Mr. Deepak K. Bhattrai	Managing Director	**Top level**
2	PCI	Mr. S B Shaha	Sr. Manager(export	
3	PCI	Mr. Deep Shahi	Sr. Manager(Import)	

4	PCI	Mr. Meen K. Luitel	Dyeing Manager	
5	PCI	Mr. Madhav Neupane	Data Entry Officer	**Middle Level**
6	PCI	Mr. Raju Chalise	MR. Officer	
7	PCI	Mr. Rameshwor Subedi	Production Officer	
8	PCI	Mr. Karna Bdr. Poudel	Account Officer	
9	PCI	Miss Anju Shrestha	Ass. Data Entry	
10	PCI	Mr. Pradeep Nepal	Ass. Export	
11	PCI	Mr. Ishwor Rimal	Store In-charge	
12	PCI	Mr. Bal Kirshna Poudel	Ass. Production	
13	PCI	Mr. Upendra Mandal	Supervisor Washing	
14	PCI	Mr. Munna Singh	Supervisor Streaching & Bending	**Lower level**
15	PCI	Mr. Mohamad Muslim	Supervisor Cutting	

Appendix-XI

Name of Top 10 Carpet Industries in Nepal

Serial Number	**Name of carpet industry**	**Export 2010 (sqm)**
1	Paramount Carpet Industry	52850
2	Sherpa Carpet Industry	46230
3	Senon Carpet Industry	41130
4	Himalayan Art Industry	28750
5	TT Carpet Industry	27960
6	Pioneer Carpet Industry	26760
7	Exoticoriental Crafts Industry	25660
8	Garma Rug Industry	24570
9	Pari Carpet Industry	22170
10	Himali Rug House	21270

Source: Carpet Magazine from the land of Himalayan No-12 January 2011