A COMPARATIVE STUDY ON COST-VOLUME-PROFIT ANALYSIS OF DAIRY DEVELOPMENT CORPORATION AND SITARAM GOKUL MILKS (K.) LTD. KAKTHAMANDU

A Thesis

Submitted By:

ALOK KUMAR KARNA

T.U. Reg. No.: 7-2-14-693-2004

Campus Roll No.: 21 /2064-066

Exam Symbol No.: 140003/ 066

R.R.M. Campus Janakpur

Submitted to:

Office of the Dean

Faculty of Management

Tribhuvan University

in partial fulfillment of the requirements for the degree of

Master of Business Studies (MBS)

May, 2011

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RECOMMENDATION

This is to certify that the thesis

Submitted by:

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Entitled:

A COMPARATIVE STUDY ON COST-VOLUME-PROFIT ANALYSIS OF DAIRY DEVELOPMENT CORPORATION AND SITARAM GOKUL MILKS (K.) LTD. KATHAMANDU

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

Lect. Binod Lal karna	**Prof. Dr. Bharamdev Jha**	**Lect. Jugeshwar sah**
Thesis Supervisor	Chairman (Research Committee)	Asst. Campus chief
Date:	Date:	Date: .....

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Campus chief
Date: .....

VIVA-VOCE SHEET

We have conducted the viva-voce examination of
the thesis presented
by
ALOK KUMAR KARNA

Entitled:

A COMPARATIVE STUDY ON COST-VOLUME-PROFIT ANALYSIS OF DAIRY DEVELOPMENT CORPORATION AND SITARAM GOKUL MILKS (K.) LTD.

and found the thesis to be the original work of the student written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment for Master's Degree in Business Studies (MBS)

Viva-voce Committee

Chairperson (Research Committee) ……..

Member (Thesis Supervisor) …….....

Member (Research Committee) ……..

Expert ……..

Expert ……..

Date: .....

DECLARATION

I hereby declare that the work reported this thesis entitled "***A Comparative Study on Cost- Volume Profit Analysis of Dairy Development Corporation and Sitaram Gokul Milks Kathmandu Ltd*** ", submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirements for the Master in Business Studies (MBS) under the supervision and guidance of supervisor Mr. Binod Lal Karna, Lecturer, R. R. M. Campus, Faculty of Management, Tribhuvan University.

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ALOK KUMAR KARNA

Researcher

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ABBREVIATIONS

ADB	:	Asian Development Bank
AGM	:	Annual General Meeting
Alt	:	Alternatives
BE	:	Break-even
BEP	:	Break-even Point
C.V.	:	Coefficient of Variation
CBS	:	Central Bureau of Statistics
CM line	:	Contribution Margin Line
CM ratio	:	Contribution Margin Ratio
CM	:	Contribution Margin
Co.	:	Company
C-V-P Analysis	:	Cost-Volume-Profit Analysis
DDC	:	Dairy Development Corporation
DP	:	Desire Profit
DPAT	:	Desire Profit After Tax
DPBT	:	Desire Profit Before Tax
Ed	:	Edition
Exps.	:	Expenses
FC	:	Fixed Cost
FG	:	Finished Goods
FNCCI	:	Federation of Nepal Chamber of Commerce and Industry
MC	:	Marginal Contribution
MNCs	:	Multinational Companies
MOF	:	Ministry of Finance
MOICS	:	Ministry of Industry, Commerce and Supplies
MOS (M/S)	:	Margin of Safety
NA	:	Not Available
NEBICO	:	Nepal Biscuit and Confectionary
NI	:	Net Income
NIDC	:	Nepal Industrial Development Corporation
NRB	:	Nepal Rastrya Bank
Nubiz	:	New Business Age
P.E.	:	Probable Error of Correlation Coefficient

P/F	:	Provident Fund
P/V	:	Profit - Volume
PERT	:	Project Evaluation Review Technique
PPC	:	Profit Planning and Control
Prod^{n}	:	Production
Pvt.	:	Private
Q	:	Quantity or Output
R&D	:	Research and Development
R/M	:	Raw Material
Rs.	:	Rupees
Req.	:	Requirement
S	:	Sales
S.D.	:	Standard Deviation
SGML	:	Sitaram Gokul Milks (Katmandu) Limited
SPPU	:	Selling Price per Unit
SAFTA	:	South Asian Free Trade Area
T.U.	:	Tribhuvan University
TC	:	Total Cost
VAT	:	Value Added Tax
VC	:	Variable Cost
VCPU	:	Variable Cost per Unit
VDC	:	Village Development Committee
WTO	:	World Trade Organization

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Business managers are required to make a variety of decisions regarding the operation of their companies. Many decisions involve the relationship of cost, volume and analysis. Analysis using this approach is called cost-volume-profit analysis. Cost volume profit analysis, is an important tool of profit planning. Cost volume profit analysis is a technique, often used to determine the effect on profit due to change in volume, cost, price or product mix. In other words, it stresses the relationship between the various factors affecting profit. Such an analysis can help management to ascertain which of products is the most profitable one, what effect a reduction in sale price will have on profits, what will be the effect on cost if profit and sales volume will be increased and vice versa.

Every business organization needs frequent cost information about business activities to plan accurately for the future, to control the business results and to make proper appraisal for the performance of persons working in an organization. To aid decisions manager want to know the cost of something they want to do or acquire. This something is called a cost objective or cost object, which may be defined as any activity for which a separate measurement of cost is desired. The fulfillment of these goals requires details about the cost incurred. Costs are divided into three categories: fixed costs, variable cost and semi-variable cost. Fixed cost arises essentially as a result of capacity creation and is invariant with respect to changes in output. Variable costs on other hand vary proportionately with output. Semi-variable costs have a fixed element and a variable element. Cost is mostly influenced by the external environments. Literally, cost is the expenditure on goods or services required to carry out the operation of an organization.

Cost volume profit analysis can be used to determine the level of sales necessary to achieve the desired profit & the desired profit may be either fixed or variable with respect to volume. A fixed profits objective is an absolute desired profit not related to sales and is commonly expressed as a percentage return on assets. A variable profit objective is stated as a function of sale.

Cost volume profit analysis or break even analysis, is used to compute the volume level at which total revenue is equal to total cost. When total cost and total revenues are equal, the business organization is said to be "Break Even". The analysis is based on a set of linear equations for a straight line and the separation of variable and fixed costs.

Any type of business firms in the particular industries are organized to make profit. Profit represents the excess of sales revenue above the relevant cost for a specific product, product line or proposal. Profit is the primary measure of success of business enterprises. Profit is the most motivational factor that triggers the organization towards the best performance, so profits are the acid test to business enterprises performance. Profit doesn't just happen. Profits are managed. An economist will say that profit is reward for entrepreneurship for risk taking. Generating required profit is a good deal of managerial capability and managerial talent. The accountants define it simply as the excess of firm's revenue over the expenses of producing revenue in a given fiscal period.

Management thinks of profit as a tangible expression of the goals it has set for the firm; a measure of performance for the achievement of its health, growth and continuity of the company (Lynch and Williamson, 1995:100).

Combining the above three sophisticated elements of an organization managerial desk could have many questions and queries towards their planning and budgeting such as:

1. What minimum level of sales need be achieved to avoid losses?
2. What should be the sales level to earn target profit?

3. What will be the new break even point under changes in prices, costs, volume or sales mix?
4. Which product is most profitable and which one is the least profitable?
5. And many more.

Hence, cost volume profit analysis is only analysis, that can provide the reasonable answer to the above questions and queries left many more which are not expressed above.

Company's Introduction

Nepal is a least developed mountaneous country. Private sector is not excited for the development of industry and business. Before 2007 B.S., the environment was also unfavorable to develop the industrial sector and government had also no vision about these matters. After democracy 8 years passed keeping the nation in political consistency. Government started 5 years development plan which is still running & the government is conducting the development works according to these plans. In these years, many of manufacturing organizations are also established. Manufacturing means any industry that make product from raw material by the use of machines and labours, which are usually carried out systematically with a division of labour.

The Dairy development activities in Nepal started in Tusal Village of Kavre district along with the establishment of "Central Dairy Plant" on experimental basis with a small scale milk processing plant under the department of agriculture in the year 2010 B.S, at initiative of Dairy Development Board.

The Dairy Development Commission was formed in 2012 B.S. since the demand of milk and dairy products has been increasing day by day, the dairy plant became necessary. The "Central Dairy Plant" which was established in 2010 B.S at Bhotahity shifted to Lainchaur in 2013 B.S. due to inadequacy of space. The Dairy Development Commission was constituted to guide the Dairy Development section. At that time Dairy expertise were provided by "Swiss

association for Technical Assistance. Then it started milk collection, processing and marketing activities from 2014 B.S. The Dairy Development Commission was converted into Dairy Business Development Committee in 2019. Ultimately in B.S, 2026 Shrawan 1, the Dairy Development Corporation was established under the Corporation Act, 2021 by the help of foreign grants and loans such as World Food Programme (WFP) of New Zealand & Denis Government. The Corporation is located at industrial area of Balaju, Katmandu. Its nature is domestic, so products are supplied all over the Nepal only.

Before establishment of Dairy Development Corporation, there was no potential market for the farmer to provide reasonable price for the milk products of rural side and DDC presently is also producing pasteurized milk working from its present setup. The demand of milk is in increasing order because of rapid increase in population. So, the DDC has been trying to collect milk from the occupation base. DDC has its branch office in different parts of countries such as Kathmandu, Biratnagar, Hetauda, Pokhara, Lumbini, etc. It produces milk, butter, ghee, ice-cream, sweets, etc and supplies sufficient quantity & quality of products at reasonable price. Dairy Development Corporation is one of the leading figures of Nepalese industrial sector & its brand name is DDC.

The Sitaram Gokul milks (Kathmandu) Ltd. is perceived as the pioneer in the modern dairy industry from the private sector. Sitaram Gokul milks (Katmandu) Ltd. is also a manufacturing & processing company, which was established on 4th day of Ashadh 2052 B.S under Company Act. It is located at Dudha pokhari-7, kirtipur municipality. It is running successfully since 13 years & is collecting milk from farmers of villages & selling pure as well as healthy milk and milk products between the costumers and consumers of cities and town. It is been running as the biggest private dairy among all the private dairies with qualified accessories.

The company has been selling the various dairy products with pasteurized as well as homozonised standard milk (3% Fat and 8% S.N.F.). It produces pasteurized milk, butter, ghee, ice-cream, peda, sweets etc and supplies sufficient quantity & quality of products at reasonable price. Its main aim is to use & promote the living of the villagers by collecting the milk from them in exchange of money from cities, as well as using the country's economy inside it. Sitaram Gokul milks does have 14 milk cooling centers in Nawalparasi, Rupandehi, Chitwan, & Kavre districts, it has been collecting milks with 20 dairies & 80 government dairies. In this way the collected milk from different places are purified in highly qualified machines. Then after the milk is sent for selling to the consumer in very efficient way. Nutrients essential for the human body such as protein, lipids, calcium and potassium are contained in its milk. These nutrients which are necessary for healthy body and usual body developments & which are concerned as essential from early age is found in its milk. Even in this modern age the importance of milk for healthy body and body development is proved. In the up coming days it will be satisfying the customers more and more with other milk products as Milk sake, Flavourmilk, Cheese, Paneer & Dahi. Its brand name is "Sitaram." It is a public limited company and promoted by Kedia organization. The enterprise does not have any collaboration. Mr. Anil Kedia is the managing director & Mr. Sumit Kedia is the director of the company.

1.2 Statement of the Problem

The prime concern of every nation of the world is economic development. Under-developed countries are facing several problems in the process of economic development. Nepal is not exception to this condition. The majority of people have not been able to get even basic facilities. The industrialization process in Nepal is being developed very slowly. Profit is the main objective of any business organization or firm. Besides other objectives they have to achieve, the maximization of the profit is also included in it. Due to low volume of production these types of production need high cost per unit which

tends to the high selling price, which doesn't match with the satisfaction level of the public those are anxious to search for the technology. The utilization of fixed assets to their optimum level is very rare in this field and it is the other problem that these types of production houses is suffering from and due to the under utilization of the capacity, the cost increases significantly.

The research questions that will mainly be posed in this research are:

1. Does the industry practice the CVP analysis?
2. What are the difficulties facing the industry in the application of CVP analysis?
3. What step should be taken to improve the CVP analysis in the industry?
4. Comparative analysis of productivity of both companies in contest of CVP analysis.

1.3 Objective of the Study

Cost, volume, profit analysis examines the response of change in profit due to changes in sales volume. The main objective of this study is to examine the effectiveness of cost-volume-profit analysis in "Dairy Development Corporation" and Sitaram Gokul milk (K) ltd.

Other specific objectives are as follows:

- To examine whether or not CVP analysis is practiced and to evaluate its effectiveness.
- To explore the current situation of CVP analysis and to provide appropriate suggestions.
- To analyze the relationship of cost-volume and profit as an applicable tool for budgeting.

1.4 Significance of the Study

The research study mainly concern with the CVP analysis of the manufacturing companies which is one of the most important tool of PPC. This study have been tried to fill out the gap of the managerial disability towards the CVP analysis or in other words this research work really researches the elements and the factors affecting the cost- volume and profit those the managerial level has not yet studied. It explores the sensitivity of cost-volume-profit variables and also examines the relationship of CVP as an applicable tool of budgeting. It examines the application of CVP analysis in the company comparatively. The study is useful for entrepreneurs, decision makers, Researcher and Managers because it deals with practice of CVP analysis of manufacturing industry as a very important tools of PPC. It also helps in short run decision about fixed cost, variable cost, volume and selling price for its profit plan on continuous basis.

So, every organization has to pay attention towards their cost volume analysis system. This comparative study of CVP analysis of DDC and Sitaram Gokul Milk (K)Ltd. helps to know BEP level, sales revenue to achieve target profit, safety margin and other information and to take correct action to control unusual cost of both enterprises. So, formulation and implementation of the plan of enterprises can success. Hence the policy makers and researcher in the area of dairy corporations would be benefited from this study.

1.5 Limitation of the Study

This research study covers the comparative study of CVP analysis as a tool of PPC of Dairy Development Corporation and Sitaram Gokul Milks (k) Ltd. The study is strictly based on primary as well as secondary data i.e. questionnaire, interview and financial statement collected from the company. The cost-volume and profit are the elements of study so this research will not consider other factors of the DDC and Sitaram Gokul milk (K) ltd. CVP analysis will cover the period of last five years only. Time and resources for the study will be the major constraints.

1.6 Organization of the Study

These research papers content only 5 chapters, they are as follows:

Chapter I: Introduction

Chapter II: Review of literature

Chapter III: Research methodology

Chapter IV: Data presentation and analysis

Chapter V: Summary, Conclusion and Recommendation

Chapter I:- Details with introduction, this includes background of the study, statement of the problem, objective of the study, significance of the study, limitation of the study and organization of the study.

Chapter II: - This chapter has included conceptual framework, approaches to CVP analysis, extension of CVP analysis, CVP analysis for a multiple product firm, and for segments, review of books, journals and articles and review of previous research and reports with research gap etc.

Chapter III: - This chapter has included research design, population and sample, source of data, variable studies and tools of data analysis.

Chapter IV: - This chapter has included analysis of sales, fixed costs, variable costs and semi-variable costs. In addition, computation of BEP, CM analysis, MOS and PV analysis are also computed for analysis and interpretation to fulfill objectives of the research. Major finding are also pointed out.

Chapter V:- This last part provides summary, conclusion and recommendations as well as suggestions for further improvement.

Bibliography, appendix and other supported documents are also incorporated at the end of the study.

CHAPTER II

REVIEW OF LITERATURE

2.1 Conceptual Framework

An Organization is established to achieve some goals & it has its own objectives. To achieve the goals of organization objectives should be clearly defined. “In this competitive globalize business age an organization whether it is public or private profit is essential. Profit is not chance, it is result of successful management. The management of an enterprise requires continuing performance of certain managerial responsibilities. These responsibilities collectively are called the function of management. Planning, organizing, staffing, human resource management, leading and interpersonal influence and controlling are major functions of management. Planning is the process of developing enterprises objectives and selecting future course of action to accomplish them. It reduces uncertainty and provides effective direction to the employee by determining the course of action in advance. Controlling means evaluating the firm's activities against the plan and deciding what should be done if the plan is not being followed” (Lynch & William, 1995:18). In business organization there may involve various parties like, competitors, employees & trade unions, Government, community representative, Investment analysts, suppliers, lender/Bankers, managers, owners, customers, etc.

These all parties require various information of decision making for their own purpose. Actual position of the enterprises can be found from financial statement. It shows the clear picture of enterprise’s profit & loss position, assets & liabilities, etc. These are not sufficient to measure the firm's performance and plan. There are various tools and techniques to measure and analyze the financial performance and determining various plans in management accounting. Cost volume profit analysis (CVPA) is one the major and popular tool to analyze the financial statement of the firms. It is one of the important part of profit planning & control and budgeting.

Cost volume profit analysis (CVPA) is the process of examining the relationship among revenue, cost and profits for a relevant range of an activity and at a particular time frame. It is one of the most important and powerful tool that managers have at their command in short term planning. It helps managers to understand the inter relationship between cost, volume and profit in an organization by focusing on interaction between the following five elements.

a. Price of product
b. Volume or level of activity
c. Per unit variable cost
d. Total fixed cost
e. Product Mix sold

"CVP analysis can be extended to cover the effect on profit because of changes in selling price/service fees, cost, income tax rate, product mix etc. It estimates 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" (Munakarmi, 2003: 401).

"Cost volume profit (CVP) analysis examines the behaviour of total revenues total cost and operating income as changes occur in the output level, the selling price, the variables cost per unit & or fixed cost of a product" (Homgreen Datar & Foster, 2003:15).

"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 subject to number of underlying assumptions and limitations. Nevertheless it is powerful tool for decision making in certain situations" (Drury, 2000:112).

“Most of the business fails after few years, sometimes even after some months of starting because they tend to do anything for volume without thinking how it's going to affect the bottom line. CVPA is a management accounting tool to show the relationship between the elements of profit planning. Profit planning is a function of the selling price of product demand, variable costs, fixed cost taxes etc. The whole picture of profit planning is associated with cost volume profit interrelationships” (Bajracharya, Ojha, Goet & Sharma, 2004:225).

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

A popular technique to study CVP relationship is break even analysis (BEP). Break even analysis is concerned with the study of revenues and cost in relation to sales at which the firm's revenues and total cost will be exactly equal or the net income will be zero. It is no profit no loss situation. This point is cornerstone of profit planning, cost volume profit analysis (CVPA) is popular analysis tool of management. It is very useful in profit planning & control, management decision in cost control, budgeting etc.

2.2 Importance of CVP Analysis

“Planning controlling and decision making are the essential management functions. CVPA helps the manager to plan for profit to control cost & make decision”. “It helps:

- To determine the break even point in terms of unit or sales value.
- To ascertain the margin of safety.

- To estimate profits or losses at various level of output.
- To assess the likely effect of management decisions such as an increase or decrease in selling price, adoption of new method of production to reduce direct labor cost 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 maximum sales volume to avoid losses.
- To determine most profitable and least profitable product.
- To determine new break even point for changes in fixed or variable cost.

(Munakarmi, 2003:401-402)

Generally CVPA provides information regarding".

- Minimum level of sales to avoid losses.
- Sales level to earn target profit
- Effects of changes in prices, costs & volume of profits.
- New break even point for changes
- Effect of changes in sales mix on profit.
- Impact of expansion plan on CVP relationship.
- Products those are most profitable & least profitable.
- Whether to continue or discontinue the sales of product or operation of plan.
- Effect on operating profit with the increase in fixed cost.
- Whether to close the firm or not the for a short term".

(Munakarmi, 2003:402)

2.3 Application of Cost Volume Profit Analysis

"Cost volume profit analysis is applied specially for break even analysis and profit planning. Profit planning is fundamental part of overall management function. Profit planning can be done only when the management has information about the cost of product and selling price of the product. The most important factors that affect the planning for profit are cost (fixed & variable) & volume of sales. CVP analysis can be applied in the following respects" (Dangol, 2004:120).

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

2.4 Contribution Margin Analysis

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

income changes as the volume of sales changes. It can be expressed as:

Contribution Margin = sales - variable cost or

Contribution Margin = Fixed cost + profit

Contribution Margin Per unit (CMPU) = Selling price per unit - Variable cost per unit.

2.4.1 Contribution Margin Ratio (C/M Ratio)

Contribution Margin ratio (C/M Ratio) is also known as profit volume ratio (P/V Ratio). C/M Ratio is equal to contribution margin divided by revenue. The analysis of relationship between profit & volume is known as profit volume analysis, profit/volume ratio (P/V ratio) or C/M ratio establishes a relationship between the contribution & sales value. Percentage of contribution margin to total sales is referred to as the C/M ratio. C/M ratio can be calculated by using either per unit or total revenue minus total variable cost information as follows. Sales revenue-Van able costs

$$\text{C/M Ratio} = \frac{\text{Sales revenue} - \text{Variable cost}}{\text{Sales Revenue}}$$

$$\text{C/V ratio or C/M ratio} = \frac{\text{SPPU - VCPU}}{\text{SPPU}}$$

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

P/V or C/M ratio = 1- Variable cost ratio

$$\text{P/V or C/M ratio} = 1 - \frac{\text{Variable Cost}}{\text{Sales Revenue}}$$

Since fixed costs does not changes within the relevant range in the short run, net profit changes by the same amount as the contribution margin changes.

$$\text{P/V Ratio} = \frac{\text{Changes in Contribution Margin}}{\text{Changes in Sales Revenue}}$$

$$= \frac{\text{Changes in Net Profit}}{\text{Changes in Sales}}$$

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

VC = sales (1-P/V ratio)

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

The variables usually used in cost volume profit analysis are:

a. Sales value: The sales value actually includes the quantity of total sales multiplied by selling price per unit. Total sales revenue is income of the company.

b. Variable cost: Variable cost is that cost which is directly affected by change in the activity level. Direct material, direct labour cost and overhead, etc are variable cost. Per unit variable cost always remains constant. If the output is increased, variable cost also increases and if it is decreased variable cost also decreases. Changes of variable cost effects to P/V ratio, BEP & Net income.

c. Fixed cost: Fixed cost remains constant in total amount when there is change in the level of output. Depreciation, rent, interests, etc are fixed costs. It is also called capacity cost. Per unit fixed cost changes but total fixed cost remains constant.

d. Mixed cost: Mixed cost contains both variable and fixed cost. Repair and maintenance, electricity expenses, telephone, supervision, etc are some mix costs. These costs can't be categorized as purely fixed or variable. Mixed cost is also known as semi variable cost. Semi variable costs should be separated to find total variable & fixed cost.

e. Jumping Cost: Some costs remain fixed over a wide range of activity but jump to a different amount for activity level outside that range. Such costs are called jumping costs or step fixed cost or moving fixed cost or ladder fixed costs.

2.5 Break Even Analysis

"Break even analysis, more precisely the break even point tells what quantity of output be sold at which the total sales revenues becomes equal total costs. Break even point is that quantity of output sold at which the operating income is zero. Cost volume profit analysis is sometimes referred to simply as a break even analysis. This may be misleading because break even analysis is just one part of the entire CVP concept. It is always taken as an important part of profit planning as it gives the planner many insights into the data with which he or she is working. Profit planning of each firm begins from break even analysis. Break even point is the bridge between the loss area and the profit area. Profit begins from the break even point. It is survival point where all firms must at least remain to sustain or continue the business. Business firm running under BEP can be justified only under the following circumstance" (Bajracharya, Ojha, Goet & Sharma, 2004: 23):

- Introduction stage of product life cycle
- Unusual general business condition
- Economic depression

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

2.5.1 Approaches to Cost Volume Profit and Break-Even Analysis

The cost volume profit relationships & the break even point can be analyzed

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

a. Contribution Margin Income Statement Approach

The contribution margin income statement approach to CVPA allows the preparation of Pro-forma statement from the available information. BEP & other required CVP relationships can be explained through a contribution margin statement. A contribution margin statement is the variable costing income statement whose philosophy is fixed costs is period costs that should be deducted from the contribution margin of the same period. Only the variable costs vary proportionately to the level of output or sales.

b. Formula Approach

"The most popularly practiced approach to the break even point & cost volume profit analysis is the formula approach also known as the equation approach. The formula approach uses an algebraic equation to calculate the breakeven 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 breakeven point units is always done upward because this will provide a small profit rather than the small loss that would be shown from rounding downward" (Rainbom, Barfield and Kinney, 1993).

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.

Table No. 2.1

Formula Approach

Contribution Margin Approach	**Symbol or Equation**
Sales Volume (units)	Q
Selling Price Per Unit	P
Sales Revenue (Rest)	Q × P
Less: Variable Costs	Q × VCUP
Contribution Margin	Q × P – Q × VCPU
Less: Fixed Costs	FC
Net Profit	Q × P – Q × VCPU – FC

Source: Rainbom, Barfield and Kinney, 1993.

Sales – variable expenses – fixed expenses = Net profit

or, Sales = Variable expenses + Fixed Cost + Net Profit

or, Q × P = Q × VCPU + FC + Profit

Therefore,

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

Where,

SPPU – VCPU = CMPU

Break even (BEP Units) = $\frac{Fixed\ cost}{CMPU}$ and BEP (Rs) $\frac{Fixed\ cost}{C/M\ Ratio}$

There is no profit no loss at BEP.

Required Sales unit = $\frac{Fixed\ cost + Target\ profit}{CMPU}$

and required sales (Rs) = $\frac{Fixed\ cost + Target\ profit}{C/M\ Ratio}$

$$\text{Required sales for desired profit after tax (in units)} = \frac{\text{Fixed cost} + \frac{\text{DPAT}}{1-\text{Tax Rate}}}{\text{CMPU}}$$

$$\text{and required sales (Rs)} = \frac{\text{Fixed cost} + \frac{\text{DPAT}}{1-\text{Tax Rate}}}{\text{C/M Ratio}}$$

The contribution margin & equation approaches are two equivalent techniques for finding the BEP. Both methods reach the same conclusion, so personal preference dictates which approach should be used. Yet it is especially useful in situation in which Unit price & Unit variable costs are not clearly identifiable.

c. The Graphic Approach

The BEP can also be computed graphically. A break-even chart portrays a pictorial view of the relationship between costs, volume, and profit. The BEP indicated in the chart will be one at which total cost line and total sales line intersects**.**

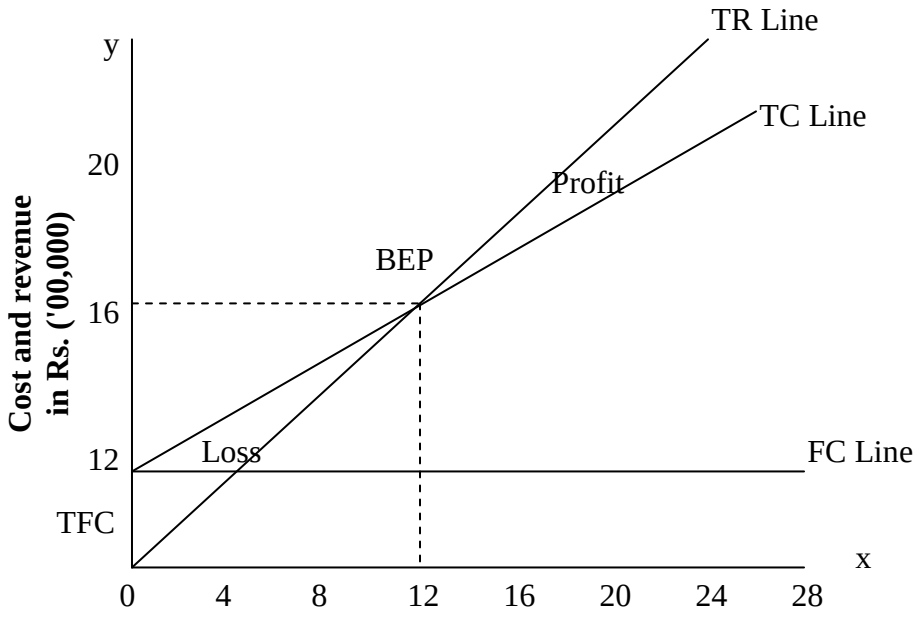


Figure 2.1: Break-even Chart

Source: Rainbom, Barfield and Kinney, 1993.

“The following steps are involved in constructing the BEP chart (for cost and revenue approach)” (Matz and Usry, 1976:745-746):

1. Sales Line: Sales volume is plotted on horizontal axis. Sales volume may be expressed in terms of rupees, units or as a percentage of capacity. Equal distances are cut along the horizontal line to show sales volume at different activity levels.

2. Cost and Revenue Lines: Vertical axis is used to represent revenue and fixed & variable costs. The vertical line is also spaced in equal parts. A similar vertical line may be drawn on the right hand side of the chart to complete the square.

3. Fixed Cost Line: The FC line, parallel to the horizontal axis, can be drawn through the fixed cost point.

4. Sales and Cost Lines: The total sales and total cost line can be drawn by marking budget level of total sales Rs. 12, 00,000 and total cost Rs. 12, 00,000 on the right hand vertical line. To draw total sales, the zero sales point should be connected with the sales budget point (Rs. 12, 00, 000) on the right hand vertical line. Similarly total cost line can be drawn by connecting fixed costs point (Rs. 4, 00,000) with the total cost budget point (Rs. 12, 00,000) on the right- hand vertical line.

5. Angle of 45 degree: If the vertical and horizontal lines are spaced equally with the same distances, sales line will be connected on the opposite corner of the graph at angle of 45 degree.

The point of intersection between sales and total cost lines is the BEP. The angle formed by the intersection of sales and total costs lines in known as the angle of incidence. Larger this angle, lower the BEP and vice-versa. The area to the left of the BEP is the loss area and represents the uncovered fixed costs, while to the right of it, there is the profit area. The variable cost is represented by the gap between the total cost and the fixed cost.

BEP can be computed by contribution approach as:

- Break-even Line: The break even line, parallel to the horizontal axis can be drawn through the zero contribution point.
- Fixed Cost: The fixed costs are located in the negative vertical line.
- Contribution Line: It is drawn from the fixed cost point and forwarded by intersecting BE line where BEP lies.

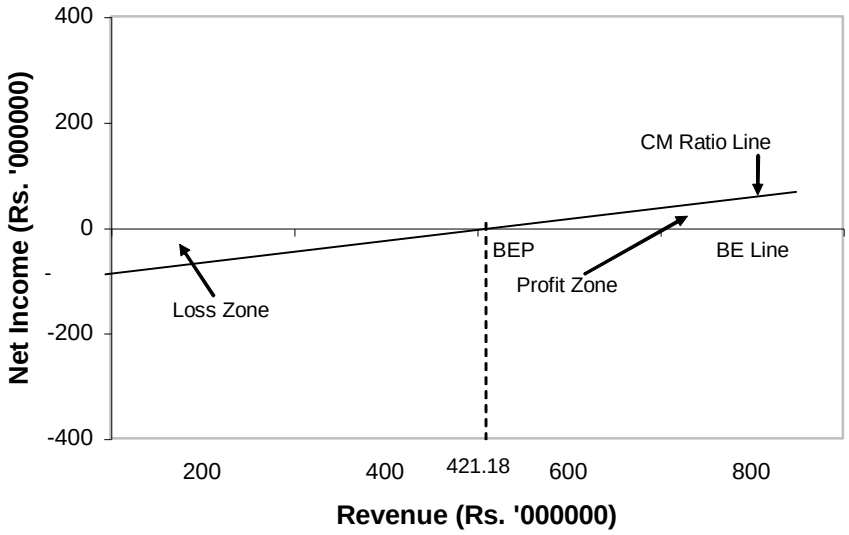


Figure 2.2: BE Graph by Contribution Approach

Source: Matz and Usry, 1976.

2.5.2 Application of Break Even Analysis

"Break even concept can be used to formulate different policies in a business enterprise; Some of these applications are:

- Determination of profit at different level of sales and margin of safety.
- To find the level of output to get the desired profit.
- Effect of price reduction on sales volume and changes in sale mix
- Effect of fixed cost or variable cost changes on sales volume.
- Selection of most profitable alternative, make or buy decisions and drop and or add decisions" (Maheshwari, 2000: 182).

2.5.3 Assumptions of Break Even Analysis

"Contribution analysis and break even analysis are based on a specific set of assumptions that should be clearly understood. These underlying assumptions are:

- All cost can be classified into two parts, fixed cost and variable cost. There are no costs other than fixed and variable.
- There is a relevant range of validity (activity) for using the results 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.
- Efficiency and productivity per person will remain essentially unchanged in the short run" (Maheshwari, 2000: 182-183).

If any of the above assumption were changed, revised budget would be needed for a new analysis.

2.5.4 Limitation of Break-even Analysis

Break even analysis in many business situations can be used for effective decision making, but there are many short comings or limitations in its analysis & interpretations. "Some of these can be listed as:

- The assumptions of producer's market phenomenon not holds goods for all types of commodities.

- The fixed cost may remain constant as well as the variable costs may not vary in fixed proportions at different levels of output.
- With variation 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" (Maheswari, 2000: 183-184).

2.6 Economic Characteristics of Cost Volume Profit Analysis

"Where cost volume profit analysis are reasonably accurate, they can help management in decision making. Essentially, CVP analysis offer greater insight into the economic characteristics of a company and may be used to determine the approximate effect of various alternatives. CVP analysis is based on estimates, however, the arithmetical manipulations generally involve averages, and hence the results should never be interpreted as precise. Rather, the analysis may be characterized approximately as a 'slide-rule' approach that may be used to develop and test, with a minimum of effort, the approximate effect on costs and profits of several types of management decisions" (Welsch, 1979: 467-468).

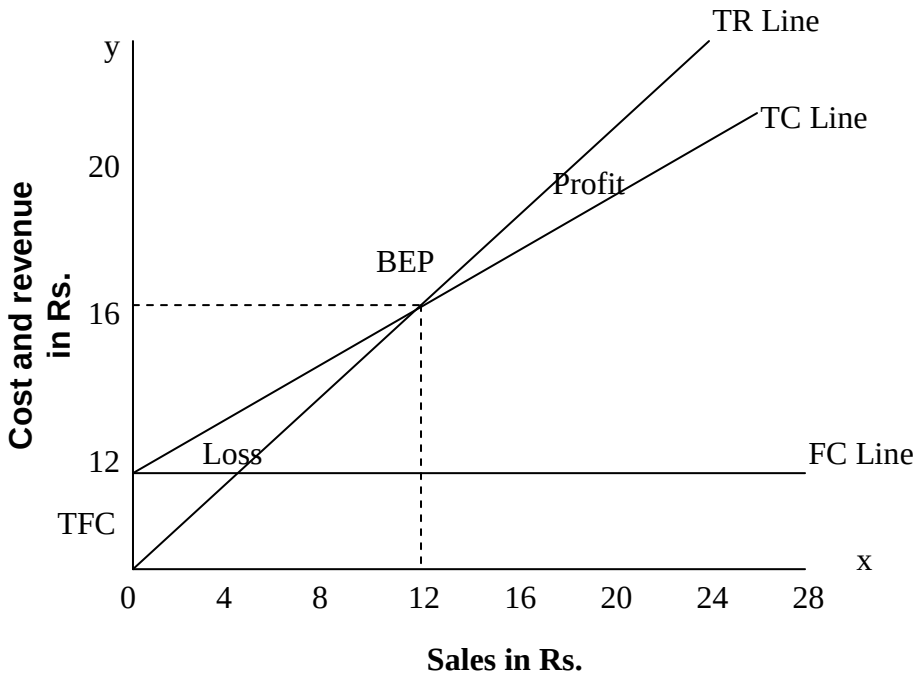


Figure 2.3: Break-even Chart

Source: Welsch. 1979.

Above break even chart with economic characteristic indicate few of the economic characteristics of a business, "which are:

- Fixed cost, variable costs and total costs at varying volumes.
- The profit and loss potential before & after income taxes at varying volumes.
- The margin of safety is the relationship of budget volume to break even volume.
- The preferred dividend or danger point below which preferred dividends are not earned.
- The dead point, the point where management earns only the "going" rate on the investment.
- The common dividend or unhealthy points below earnings are insufficient to pay the preferred dividends and the expected dividend on the common stock" (Welsch, 1979:468).

All these points and others can be completed if data are developed for cost volume profit purposes.

2.7 Margin of Safety

"Margin of safety is the excess of budget or actual sales over the break-even sales volume. It is the difference between the budgeted or actual sales revenue. It is a position above the BEP. It states the amount by which sales can drop before losses begin to in cure. It gives management a feel for how does projected operations are to be organized to cover break even point. Manager often considers the size of the company's margin of safety for making decisions about various business opportunities. Margin of safety is the amount at which sales can drop before reaching the break even point and thus provides a certain amount of 'cushion' from losses. The margin of safety can be expressed as units, value or a percentage" (Munakarmi, 2003: 405). "Formulae are:

i. Margin of Safety = Actual sales - BE sales (units & Value)

ii. Margin of Safety (in value) = $\frac{\text{Profit}}{\text{P/V Ratio}}$

iii. Margin of Safety (in units) = $\frac{\text{Profit}}{\text{UCM}}$

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

v. Margin of Safety ratio = $\frac{\text{Margin of Safety}}{\text{Actual Sales}} \times 100\%$

The larger is the safety margin the greater is the chance for the company to earn profit (i.e. larger the margin of safety safer the company). A high margin of safety is particularly significant in times of depression when the demand for the company's or firm's product is falling. Low margin of safety may be result of firm which has low contribution ratio. When both margin of safety and the P/V ratio are low, management should think the possibilities of increasing the

selling price if it does not adversely affect the sales volume or reducing variable costs by bringing improvement in manufacturing process" (Munakarmi, 2003: 407).

The following steps are needed to rectify margin of safety:

- With increasing selling price
- With increasing sales volume, if the capacity of fixed cost is not fully utilized.
- With reducing fixed cost if possible.
- With reducing variable cost (with reducing the cost of raw materials, wages and other direct cost).
- With substituting product, like by more profitable one.

2.8 Cost Volume Profit Analysis for Multi Product Firms

"Sale mix can be defined as the relative combination of two or more product represented in total. It is not only the sales revenue that makes profit. The proportion of sales contributed by different products greatly changes the amount of profit. Managers try to achieve that combination or mix that will yield the greatest amount of profit. If a company sells more than one product, these may not be equally profitable. So, the company's profit will depend upon the ratio of each products sale to total sales revenues. Profit will be greater if high margin item make up a relatively large proportion of total sales than if sales consist mostly of low margin items. Changes in sales mix can cause great variations in a company's profit. A shift to low margin item can cause the total profit to decrease even though total sales increase on the contrary, a shift in the sales mix from low margin items to high margin items can cause the reverse effect on total profit and may increase even though total sales decrease" (Bajracharya, Ojha, Goet & Sharma, 2004:260).

To calculate BEP for sales mix or multi products:

- Calculate contribution margin or profit volume ratio for each product.
- Calculate proportion of sale mix in units or values as follows:

$$Sales\ Mix = \frac{\text{Individual Product's sales units or value}}{\text{Total of all product's sales units or value}}$$

Calculate weighted average for all products as follows:

- Weighted average = [sales mix (units) x unit contribution margin]

  = [sales mix (value) x P/V ratio] Calculate Break - even point (BEP)

- $\text{Break even point} = \frac{\text{Total Fixed Cost}}{\text{Weighted average (CMPU)}}$

2.9 Cost Volume Profit Analysis and Limiting Factors

Because of some critical factors like, raw materials or labour or finishing machine the firm cannot produce any number of output of it choices. So, profit planning & decision making of the firm will affect while CVPA is done.

2.9.1 CVP Analysis with a Single Constraint

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

2.9.2 CVP Analysis with Multiple Constraints

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

2.10 CVP Analysis under Condition of Uncertainty

CVP analysis can be used for various purposes such as choosing between machine and products, planning of profit and most significant fixing up of the selling price. Management uses this as a convenient tool of profit planning with giving consideration of risk and uncertainty involved in it.

Although, margin of safety ratio explains the degree of sensitivity of the project and product in general but it fails to explain certainty in the product and also between the alternatives. To overcome such a difficulty risk and uncertainty analysis like in any other management decision making can also be used in CVP analysis. The objective in CVP analysis under condition of uncertainty is to assess the probability distribution of the profit volume under given distribution of one or more factors, sales price or profits.

"Probability distribution approach is a simple statistical tool which may be used to measure the risk and uncertainty involved in CVP analysis. A probability distribution theory normally suggests for postulation of various possibility of happening of the event in consideration. This may be done either by taking into consideration of the experience in the past or may be done by considering the personal intuition of the persons doing so. In business reference, past experience are hardly available, not a person is likely to behave in the same manner in the similar situation in different time. Therefore, personal judgment plays significant role in the management decision making. The conditions thus postulated are assigned probability (i.e. ones judgments towards likeliness of happening of the condition forecasted). It must be understood that probability assigned here is a subjective probability based on personal judgments of the man making such an analysis" (Pandey, 2003:17).

2.11 Assumptions Underlying CVP Analysis

"Break even analysis is the most useful technique of profit planning & control. It is a device to explain the relationship between cost volume & profit. The discussion of the CVPA (or breakeven analysis) so far is based on the following assumptions:

- Cost Segregation: The total cost can be separated into fixed and variable components. Constant fixed cost is the total fixed cost that remains unchanged with changes in sales volume. Constant unit variable cost is the variable cost per unit and total variable cost changes in direct proportion to the sales volume.
- Constant Selling price: The selling price per unit remains the constant that it does not change with volume or because of other factors.
- Constant sale mix: The firm manufactures only one product or if there are multiple products, the sales mix does not change.
- Synchronized production and sales: Production and sales are synchronized, that is inventories remain the same" (Pandey, 1994: 241).

2.12 Limitation of CVP Analysis

Assumption limits the utility and general applicability of the CVPA. Therefore the analysis should recognize these limitations & adjust data, wherever possible, to get meaningful results. “The CVPA suffers from the following limitations:

- It is difficult to separate costs into fixed and variable components.
- It is not correct to assume that total fixed cost would remain unchanged over the entire range of volume.
- The assumptions of constant selling price and unit variable cost are not valid.
- It is difficult to use the break even analysis for a multi product firms.
- The break even analysis is a break run concept and has a limited use in long range planning.
- The break even analysis is a static tool” (Pandey, 1999:214).

2.13 Special Problems in Cost Volume Profit Analysis

“Cost volume profit analysis is applied to individual products or parts of a business and all the product or activities combined. In later case, there are three special problems that may be encountered” (Welsch, Hilton and Gordon, 2001:513-518).

2.13.1 The Activity Base

When two or more products or activities are combined for break even analysis the activity base must be in additive units using a common denominator of volume or output in multiple products. Therefore for the company as a whole, net sales amount are usually the only satisfactory common denominator because manufacturing, selling and administrative activities are expressed in combination.

2.13.2 The Change in Inventory

Usually the budgeted changes in inventories (i.e. finished goods and work in progress) are in material in amount and thus may be disregarded in cost volume profit analysis. On the other hand, when the change in budgeted inventory is significant, it should be included in the analysis. Including the effect of inventory changes in CVPA requires subjective judgment about what management might do (about making inventory changes) at different volume, levels and the conceptual precision that is desired. Management considers two practical approaches or policies in inventory changes of used a) Disregard and inventory changes b) include the inventory changes.

2.13.3 The Non Operating Income & Expenses

Non operating incomes (gains) and expenses (loss) and extra ordinary gains and losses of material in amount cause another problem in CVPA. The basic issue is whether they should be included or excluded. Extra ordinary gains and losses are none recurring and unusual, therefore they should be excluded. Non-operating incomes and expenses are recurring but they are not related to ongoing operations. Management considers the policy may be to (a) include the non operating incomes & expenses (b) exclude the non operating incomes & expenses.

2.14 Sensitivity 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 factors, 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 of changes in volume price or cost factors on net profit. In other words, sensitivity analysis is the measurement of responsiveness in outcome with the changes in determinant variables. We know that the goal of a business enterprise is to maximize profit. Profit is the excess of revenue over the total

costs.

Profit = Total sales revenue - Total costs

Net profit = Sales units x SPPU - Sales units x VCPU - fixed cost - Taxes

So that, profit = F (Sales volume, selling, price VC, FC, taxes etc.) Means profit is the function of volume, price, VC, FC, taxes and so on.

“But none of the factors remain unchanged: sometimes the manager can intentionally change the price and cost factors as a part of strategic decision. But the strategy should focus more on the factor, which is 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, Ojha, Goet & Sharma, 2004:245).

2.15 Risk Measurement: The Operating Leverage and Break Even Point

Operating leverage tells us how profit changes because of change in sales. It is evident that profit changes 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 declines proportionately. But fixed costs do not decline, so the net operating income decline more rapidly. Same thing applies in the case of increase as well. Sales revenue changes but some parts of costs, known as fixed costs, remains unchanged. This is because net operating income changes more rapidly. This change is called operating leverage.

“Operating leverage can be measured in terms of "Degree of operating leverage" (DOL). DOL shows the times of percentage change in net operating income of the given percentage change in sales. DOL may be defined as the percentage change in net operating income (N01) or EBIT associated with a given percentage change in sales” (Pandey, et.al, 2004).

$$DOL = \frac{\text{Percentage Change in Net Operating income}}{\text{Percentage change in sales}}$$

Alternatively

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

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

Where, Q = Total units in demand

SP = Selling price per unit

VCPU = Variable cost per unit

As we know, BEP (units) = $\frac{\text{Fixed Cost}}{\text{SP} - \text{VCPU}}$

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

"Higher fixed cost increases the DOL and they also increase the break even point, so there is close relationship between the degree of operating leverage and the break even point. A high DOL and high BEP both are the indicators of higher risk" (Bajracharya, Ojha, Goet and Sharma, 2004:249).

2.16 Impact of Changes on Profits

"Profit is the function of variety of factors, it is affected by change in volume, costs & price. Profits may be affected by the change in the following factors:

a. Effect of price changes: An increase in the selling price increase P/V ratio and as a result will lower the break even point. On the contrary, a

decrease in selling price reduces the p/v ratio and therefore, results in a higher break even point.

b. Effect of volume changes: A change in volume not accompanied with a change in the selling price and or costs, will not affect P/V ratio. As a result the break even point remains unchanged. Profit will increase with an increase in volume and will be reduced with a decrease in volume.

c. Effect of price and volume changes: A change in price invariable affects volume. 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 the demand and thus, reduce volume. The impact on profits under these circumstances in not obvious. Profit may increase with a price reduction if volume increase substantially. Similarly, a price rise may reduce profits if there is material fall in volume.

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

e. Effect of changes in fixed costs: A changes in fixed cost 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 depreciation or salaries of managers may be the result of management decision.

f. Effect of Changes in a combination of Factors: The financial manager or the management accountant, evaluating the profit plans or budgets, must

realize that a change in one factors leads to a changes in another factors. Therefore, all such their net impact on profit must be seen" (Pandey, 1999:203-208).

2.17 Review of Previous Thesis

Review of literature is an essential part of all studies. It is the way to discover what other research in the area of our problem has uncovered. It is also a way to avoid investigating problems that have already been definitely answered. Review of literature provides the foundation for developing a comprehensive theoretical frame work from which hypothesis can be developed for testing. It also minimizes the risk of pursuing the dead ends in research. But there are very few research paper concerning comparative cost volume profit analysis has been conducted. Few dissertations have been submitted relating to cost volume profit analysis & the study is limited of various constraints. So this study is attempted to review the previous research work on profit planning & control as well as management accounting. As CVP analysis is one of the major tools of PPC, the previous studies related to PPC are reviewed which will helpful to further study.

Ojha (1995) has done a research on "*profit planning and control in manufacturing public enterprises in Nepal"*. For case study he has selected two public enterprises namely Royal Drugs limited (RDL) & Herbs production & processing company limited (HPPCL). His research was in partial fulfillment of MBA, submitted to the central Department of Management, Tribhuvan University. The study has covered a five years period from FY 2046/47 to 2050/51.

The objectives are:

- To analyze the trend of Profit planning.
- To compare between production and sales plan.
- To examine the variation between production plan and actual production.

Ojha has pointed out various finding based on the analysis of data and information. Some of the major findings are as follows:

- Objectives of Nepalese public enterprise are 'not clear, conflict between social objectives and profit objectives are hindering profit planning program of PEs.
- Inadequate planning's of profit due to lack of skilled planner.
- Inadequate authority and responsibility to planning department.
- Failure due to inadequate forecasting system.
- Cost volume profit (price-cost-volume) relationships are not considered when developing sales and pricing strategy.
- Lack of entrepreneurship & commercial concept in overall operations of the enterprises.
- Inadequate planning of profit due to lack of skilled manpower.
- Inadequate evaluation of internal and external variables.

Namdak (2005) has conducted research work on topic of "CVP Analysis of DDC". The study has covered five years of period from FY 2055/56 to 2059/60.The general objective of the study was evaluate the relationship between, cost volume profit and profitability of the DDC.

The objectives are:

a) To study the relationship between cost volume and profit as a tools of budgeting.

b) To evaluate the profit ability and sensitivity of DDC in relationship to sales.

c) To analyze the productivity of the labour by single different productivity ratio.

d) To analyze the CVP of the corporation and its impact on its profit planning.

Major findings:

- DDC has been planning only on short term basis.
- The practice of CVP analysis has not been used yet.
- There is no practice of segregating cost into fixed and variable.
- Over utilization of capacity resulting in increasing operation and maintains cost in every year.
- DDC has low contribution margin with high variable cost.
- DDC has also high fixed cost with low contribution margin, resulting in high BEP sales.
- The profitability of DDC is also very poor.

Thakur (2001) has conducted research work on topic of "*cost control mechanism of Jankpur cigarette factory limited"* for partial fulfillment of MBA, Submitted to the central department of management, Tribhuvan University. The study has covered five years of period from FY 2051/52 to 2055/56. The general objective of the study was to evaluate the cost control technique of JCF has for various finding by Thakur.

The objectives are:

a) To analyze the budget and cost control mechanism for the company.
b) To analyze the problems faced by company in terms of budget formulation.
c) To analyze the cost and profit trend of the company in the light of Budget.
d) To analyze the cost-volume-profit analysis for the company
e) To provide suggestions for improving the budgeting problems.

Major Findings:

- The cost volume profit analysis has indicated that contribution margin of JCF is not sufficient to meet all its fixed costs. The factory's break even

sales during the study period always exceeded the actual sales volume. It is observed that the company has not sufficient margin of safety, which was loss figure. The high proportion of variable cost contribution margin was not able to met increasing fixed costs. In the JCF observing the data loss was occurring yearly but sale figure has fluctuating trend. It means decreased sales over total cost did not bring profit but invite losses.

- Overtime, idle time and absenteeism are found most responsible for labour cost increasing.
- JCF was running in loss during study period due to high production cost, high selling & distributing cost, excess labour cost and material cost. So JCF has to make proper plan to control unusual cost. It should be entrusted with responsibility of categorizing the costs on product wise basis.

Sharma (2002) has conducted a research work on "*Management Accounting practices in listed companies of Nepal*." He has focused his study to examine and study to practice of management accounting tools in the listed companies of Nepal. Mr. Sharma's research study is based only on primary data. Stratified random sampling with proportionate allocation of percentage is followed to draw the sample.

The objectives are:

a) To identify the areas where management accounting tools can be applied to make strengthen the companies.

b) To identify the present practice of management accounting tools in Nepalese Manufacturing Enterprises.

c) To identify the problem faced by Nepalese Manufacturing Enterprises in applying management accounting tools.

d) To make recommendations to avoid difficulties in applying management accounting tools in Nepalese Manufacturing Enterprises.

Major Findings are:

- Management accounting is to help managers in overall managerial activities by providing information and helping in planning, controlling and decision making.
- Lack of information & extra cost burden are the main reason behind not practicing such tools.
- Different types of management accounting tools which are taught in the colleges are not found applying by the listed companies of Nepal.
- Nepalese listed companies are in infant stage in practicing of management accounting tool such as capital budgeting, annual budgeting, cash flow, ratio analysis, activity costing, cost volume profit relation etc.
- Regarding the tools practiced by the Nepalese manufacturing companies for measuring and controlling their overall performance. From the study it is cleare that 60% of the manufacturing companies measure their performance on the basis of profit or loss made by them during the year while 26% of the companies practiced for measuring and controlling performance of the company. Whereas budgetary costing & break-even point both were followed by 7%.
- Regarding the techniques practiced by the Nepalese manufacturing companies for pricing the product. From study it is cleare that 60 % of the companies practice cost plus pricing, while 26 % of the companies practice going rate for pricing and 7 % of the companies practiced target return pricing and break even pricing for their product. Therefore, from the study it is cleared that cost plus pricing technique is widely used by Nepalese manufacturing companies.
- Regarding the joint cost allocation tools practiced by the Nepalese manufacturing companies. From the study 47 % of the companies practiced joint cost allocation for a unit or production basis. 40 % of the

manufacturing firm had their own method for joint cost allocation. Such as ratio method, department wise and 13 % of the manufacturing companies practice sales value methods for allocating joint cost.

- Regarding the practice of transfer price in the Nepalese manufacturing companies, it is cleare that 67 % of the manufacturing companies practiced cost base transfer pricing 26% of manufacturing companies practiced market based transfer pricing whereas 7% of the manufacturing companies practiced negotiated transfer price for their product.
- Regarding the decision-making and control process followed by Nepalese manufacturing firm, it is cleared that 73% of Nepalese manufacturing companies practiced control during the work period. 20% practiced control before work has to be start technique, where as 7% practiced controls after finishing the work. From the table, control during the work period is most practiced techniques for decision-making and control process.
- Regarding the cost and revenue estimation practice of Nepalese manufacturing firm, it was found that 80 % of the manufacturing companies practiced historical trend for cost and revenue estimation while 20 % manufacturing firm practiced market survey. Whereas, no company practiced zero based budgeting and judgment analysis for their cost and revenue estimation purpose.
- Regarding the present problem faced by Nepalese manufacturing companies in decision-making process, it is cleared that 53 % Nepalese manufacturing companies face the problem of skilled manpower in decision-making process. 27% of manufacturing companies face the problem of undefined objective and 20% companies face infrastructure problem in decision-making process. While no one companies has lack of knowledge in decision-making process.

Rijal (2005) has conducted a research on "*cost volume profit analysis a tools to measure effectiveness of profit planning and control; A case study of NEBICO private limited*." He has centered his study to examine CVP analysis as a tool in manufacturing industry and to analyze the CVP and it is impact on profit planning. For the practical fulfillment of MBS submitted to shaker Dev Campus, Tribhuvan University, Rijal has analyzed the five years financial statement and has pointed out various objectives and findings:

The objectives are:

a) To analyze the cost –volume -profit for the company.

b) To compare between production and sales plan.

c) To examine the variation between production plan and actual production.

The major findings are:

- The company's variable cost is in proportion than fixed cost in total cost amount, which contribute for lower contribution Margin.
- The company has high fixed cost (i.e. salary and wages, technical & computer fees, deprecation interest, provident fund & subsidies)
- Company has no any plan to reduce cost. There is lack of effective cost control programs or techniques.
- The profit trend of the company is not satisfactory. As compared to profit, proportion is very low with fluctuated trend.
- The company has no detail of any systematic expenses plan. The fixed cost, variable cost, mixed expenses plan are the necessary elements for profit planning & control.
- The company has no effective inventory policy. The inventory management, row material handling and controlling system are not efficient and effective.

- The board of directors is the main authority in price fixing and it directly interferes to price of biscuit and confectionary products.
- Nebico Pvt. Ltd. Has not proper practice of segregating the costs into fixed and variable or controllable and non controllable.
- There is no proper co-ordination among production, administration, distribution, inventory and sales department.
- Nebico has not utilized its capacity.

Dhakal (2005) has conducted research work on "*Cost volume profit analysis as a tools to measure the effectiveness of profit planning and control: A case study of Gorkhakhali Rubber industry limited*" in the partial fulfillment for MBS, submitted to Shanker Dev Campus, T.U. Dhakal has covered five years period for FY 2056/57 to 2060/61 and listed some objectives and finding.

The objectives are:

a) To analyze the cost –volume –profit for the company.
b) To measure the effectiveness of profit planning and control tools.
c) To examine the variation between production plan and actual production.

Major Findings are:

- Sales plan of GRIL is not properly maintained. The industry uses the various methods for sales planning like market survey, distribution network etc. but up to date record are not maintained. So they have poor budgeting system.
- GRIL is not practicing the scientific and appropriate cost classification technique costs are classified into fixed and variable as per the decision of the management.
- Out of the total cost of GRIL, variable cost is almost 60% in every year which cause the low contribution margin.

- GRIL is in high interest bracket, out of the total fixed costs almost 60% is to be paid for interest. And the profitability of the company is greatly influenced by high fixed cost.
- This industry does not have any detailed and systematic practice of planning of cost which is one of the essential elements of profit planning and control.
- Lack of coordination between top and lower level of management.
- GRIL is facing problem fluctuating international price of rubber. Sometimes it also faces the problem of row material scarcity as well.
- Out of the two main product truck tyres, the truck tyres are more profitable than non truck tyres as shown by the product contribution margin.
- The financial position of the industry is not satisfactory. Gross profit margin ratio and net profit margin ration are not satisfactory.

Dahal (2005) has submitted a research on "*profit planning system and financial condition of Nepal electricity authority*." He has covered five years period from 2054/55 to 2058/59.

The objectives are:

a) To analyze the profit planning tools for the company.
b) To analyze the cost –volume –profit for the company.
c) To segregate the costs of company into fixed and variable costs and unit variable cost.

Major Findings are:

- NEA has a practice of preparing both systemic (long range) and (tactical short range) profit plan.
- Overheads are not classified systematically and it creates problem to

analyze is expenses properly.

- NEA is paying a huge amount of interest every year and it is suffering from high fixed costs.
- CVP analysis of the authority has the satisfactory position and also flexible budget analysis, the authority is able to earn operating profit of its utilized capacity.
- The authority does not maintain its periodic performance report systematically.
- The company had not practice of classification of costs in to fixed costs and variable cost.
- The total fixed costs of the company were increasing annually.
- Advertisement, salary and allowance, communication expenses, insurance premium, depreciation and interest on long term loan were higher portion of total fixed cost and the amount of these items were in highly incremental condition.
- The variable costs were also at increasing trends, and vital items were material with direct expenses on purchase, royalty, sales promotion expenses, transportation and insurance expenses, salary and wages, leakage and breakage, complementary expenses, traveling expenses, and water.

Bhusal (2006) has conducted research on *"Use of cost volume profit analysis to the plan in Nepalese manufacturing comprises; A case study of Bottlers Nepal Ltd."* He has centered his study to examine the use of CVP analysis to plan the profit in Bottlers Nepal Ltd. His research was based on secondary data.

The objectives are:

a) To study the present application of CVP analysis in Bottlers Nepal Ltd.

b) To study the profitability and financial position of Bottlers Nepal Ltd.

c) To analyze the CVP and its impact in profitability of Bottlers Nepal Ltd.

Major Findings:

- The company has not maintained the broad and long range objective and periodic report and objective are limited to the high ranking official.
- Sales and production target are not achieving because there is not an effective forecasting system.
- BNL has not proper practice of segregating the costs into fixed and variable or controllable and non controllable.
- There is no any effective plan for cost reduction and control. And lack of effective cost control programme.
- The profit trend of the company is not satisfactory.

2.18 Research Gap

Many public or private enterprises are not practicing various accounting tools and techniques to measure its performance in Nepal. Researcher should face problem for analyzing financial statement. Though there is significant gap between present researcher work and the previous research works. Most of the researches, profit planning tools are analyzed in one way or the other but impacts are rarely explained. Especially comparative CVP analysis in public or private enterprises have not been done yet by other researcher. For this purpose practice of CVPA in DDC & Sitaram Gokul Milk (K) Ltd. is studied. It will also clear the contribution of public enterprises to build strong economic condition of the nation.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Introduction

The research methodology is the process of arriving to the solution of the problem through planned and systematic dealing with collection, analysis and figure. Research and methodology are two sides of the same coin. To research, various tools, techniques and methods are used systematically that is called research methodology. Research methodology is a format or a set of methods that has to be followed as guiding principles in scientific study. Research methodology helps us to study the research problems and to identify the objectives.

To obtain the above objectives, the methodology consists of research design, types and sources of data, population and sample, tools of data analysis and limitation of the study.

3.2 Research Design

"In order to make any types of research a well research design is necessary, which fulfills the objectives of the study. The research design is the strategy for conducting research. It describes the general framework for collecting, analyzing and evaluating data after identifying (i) what the researcher want to know, and (ii) what has to be dealt with in order to obtain required information" (Wolf and Pant, 1999:209).

This study attempts to show the relationship among cost, volume and profit margin of safety, BEP and effective application within the conceptual framework. Comparative cost volume profit analysis of these two public and private enterprises are presented and analyzed by descriptive research design and analytical method. But the qualities aspect of the research such as effectiveness of CVP in enterprises, views of various manager and personnel and the theoretical prescription are explained in words wherever necessary.

3.3 Population and Sample

The research had been defined as per nature and size of population and sample, which are as follows:

3.3.1 Nature and Size of Population

The nature of population were to include public enterprises of Nepal. And size of population was included all players in public service sector. Population means terms of elements, sampling units, extent and time. Two Samples comprises some observations selected out of the 175 population. DDC and Sitaram are the sample and population in itself. Due to various circumstances it could not be possible to attempt all the number of research population in this research. So, researcher has taken two public and private enterprises DDC and Sitaram Gokul Milk (k) Ltd.

3.4 Types and Sources of Data

There are vital role of data in research to clear and complete research objectives. Without the data, methodology cannot be utilized to bring the conclusion. It is be better to collect only proper and required data from needed sources.

For the purpose of C-V-P Analysis of the DDC and Sitaram, data were collected mainly from both sources, which are as follow:

3.4.1 Primary Data

Primary data is original in nature. For the purpose of research work, primary data were collected. Basically, following techniques were adopted:

a) Observation

b) Direct meeting

c) Personal Interview through questionnaires etc.

3.4.2 Secondary Data

It is the second hand data. The data has already been used by others. Only primary data can't fulfill the requirement of the research work. If it be possible, there need to face several problems. So, adoption of secondary data is also suitable to accomplish the objectives of study. The following procedures of collection of secondary data were adopted:

a) Library

b) Companies publications

c) Books and Journals/Magazines

d) Booklets, and

e) Internet and websites etc.

The output of the research work depends upon accuracy of the applied data. So, the researcher had been tried to collect up to date data and accurate data as far as possible.

3.5 Variables Studies

A variable is a symbol to which numerals or values are assigned. In other words, a variable can take on values. The researcher had used two types of variables-independent and dependent variables. Variables studies are as follows:

(i) **Independent Variables:** It is the variables which can change other variables. In other words, a cause of it changes others.

(ii) **Dependent Variables:** It is the opposite of independent variables. It depends upon other variables. It changes causes of other variables.

The researcher has defined the term C-V-P Analysis in the first chapter. 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 three factors are dependent variables. But, testing relationship between these variable following criteria are assumed:

Table No. 3.1

Classification of Variables

	Independent Variables		Dependent Variables
a.	Cost	a.	Profit
b.	Volume (Sales)	b.	Profit
c.	Cost and Volume	c.	Profit

3.6 Tools of Data Analysis

Collected data must be explained and analyzed to clear objectives of the study. Basically, following two techniques are used to explain the collected data.

3.6.1 Descriptive Techniques

These techniques were used to simplify the research report for better understanding as well as analysis and interpretation of collected data in theoretical form.

3.6.2 Quantitative Techniques

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

C-V-P Analysis Tools

C-V-P analysis was included the following extension computations:

(i) $\text{BEP in Units} = \frac{\text{Total fixed costs}}{\text{SPPU} - \text{VCPU}}$

(ii) BEP in Rs. = $\frac{\text{Total fixed costs}}{1 - \frac{\text{Variable Cost}}{\text{Sales Price}}}$

(iii) Contribution margin = Sales - Variable Cost or FC + Profit

(iv) Contribution margin ratio = $1 - \frac{\text{Variable Cost}}{\text{Sales}}$

(v) BEP (% of Capacity) = $\frac{\text{BEP}}{\text{Total Capacity}}$

(vi) Cash BEP in Rs. = $\frac{\text{Fixed Costs} - \text{Non Cash outlays}}{1 - \frac{\text{Variable Cost}}{\text{Sales} - \text{Non cash items}}}$

(vii) Sales in Units for desired profit = $\frac{\text{FC} + \text{Profit}}{\text{SPPU} - \text{VCPU}}$

(viii) Sales in amount for desired profit = $\frac{FC + Profit}{CM\%}$

(ix) Sales in amount (to earn desired profit after tax) = $\frac{\text{FC} + \frac{\text{DPAT}}{1 - \text{Tax rate}}}{\text{CM ratio}}$

(x) Margin of Safety = Planned or Actual Sales - BEP

(xi) Margin of Safety Ratio = $\frac{\text{Planned or Actual Sales} - \text{BEP}}{\text{Planned or Actual Sales}}$

3.6.3 Statistical Tools

The Statistical tools were included the following techniques to examine the relationship between the variables; and analysis:

(a) Measurement of Standard Deviation and Coefficient of Variation (C.V.).

(b) Regression Analysis

(c) Correlation Analysis.

(a) Measurement of Standard Deviation and C.V.

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

$$\text{C.V.} = \frac{\sigma}{\bar{X}} \times 100$$

(b) Regression Analysis

It is used as a tool to determine the strength of relationship between two variables

Regression equation of actual sales(y) depends upon the time (x), which is expressed as

$$Y = a + bx$$

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

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

$$\sum xy = a\sum x + \sum bx$$

(c) Correlation Analysis

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

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

Where, X = distribution

N = No. of distribution

U = X – assumed Mean

V = Y – assumed Mean

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Data presentation and analysis is the important part of the research work. It is known as the heart of research. Major findings of the research depend on data presentation and analysis. Here, the researcher has tried to present and interpret the collected data in systematic manner and meaningful ways. Mainly to fulfill the objectives of the study, the required factors about CVP analysis are presented and analyzed. CVP analysis is important and very popular tools to measure the financial statement of the organization. It shows the relationship among the variables. Cost volume profit analysis of these public and private enterprises, DDC and Sitaram Gokul Milks (k.) Ltd. are comparatively presented. For that purpose sales revenue, profit, income statement, contribution margin and sensitivity test are done. These are the major variables of cost volume profit analysis.

This study has tried to cover the activities of DDC and Sitaram Gokul Milks Ltd. for last six years (i.e. 2002 to 2007).

4.1 Sales Plan of Dairy Development Corporation and Sitaram Gokul Milks (K.) Ltd.

Sales planning are the necessary components of profit planning and control. It provides the basic management decision about marketing and helps to develop comprehensive sales plan. Every organization prepares sales plan. If the sales plan is unrealistic it will not be beneficial to the organization. Revenues of the organization should manage and try to increase profit continuously.

DDC is one of the major company of Nepal. It has given very high revenue to Nepal government since its establishment. The DDC still commands the highest market share than other dairies in Nepal, i.e. approximately 55%. Assuming that no milk is exported outside the country and there is no import of

liquid milk from abroad.

An analysis of past sales has been made to find out previous sales trend and to forecast the possible future the trend of DDC.

The following Table No. 4.1 shows actual sales revenue of DDC for six years period covering FY 2002 to FY 2007.

Table No. 4.1

Sales Revenue of DDC

(Amount Rs. in '000')

Year	Sales Revenue Rs	Amount Change	% Change
2002	1548240	-	-
2003	1595910	47670	3.07
2004	1535810	60100	3.76
2005	1589660	53850	3.50
2006	1936340	346680	21.80
2007	2557600	621260	32.08

Source: Annual Report of DDC, 2007.

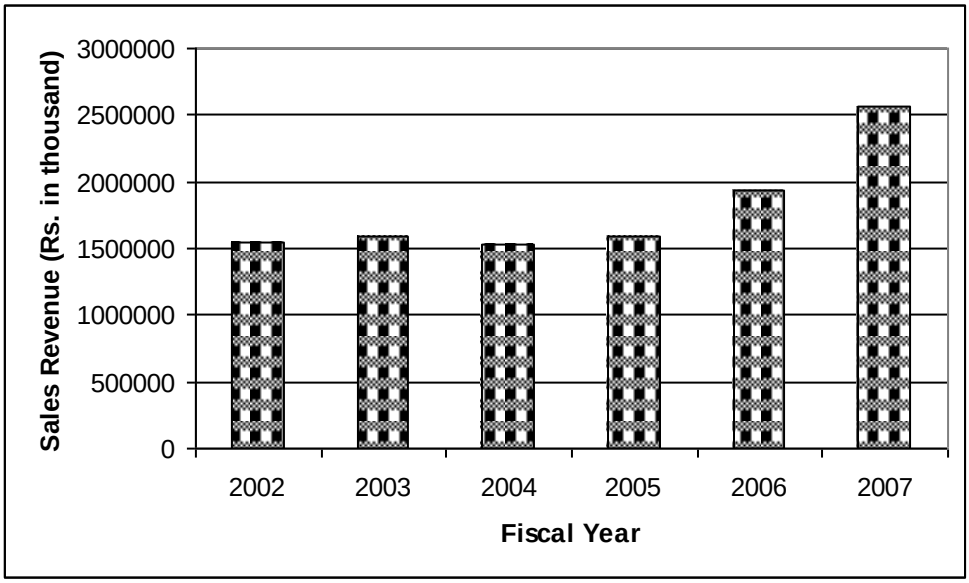
Above table shows the actual sales of DDC. The revenues of DDC are affected by various factors. There are many competitions going on in this sector because of mushrooming of dairy companies in Nepal. Though the share market of DDC is high, in compare to other companies and the production of DDC has succeeded to reach at different corners of the country, it hasn't reached every village. DDC can increase its sales if that is achieved. Revenue of DDC in fiscal year 2002 is Rs. 1548240 thousand; Company is able to increase its sales by 3.07% in fiscal year 2003. During the fiscal year 2004, the company has Rs. 1535810 thousand revenue which is less than amount of previous years but in percentage is has increase nearly by 0.70%. In fiscal year 2005, the company has Rs. 1589660 thousand revenues which are more in amount of previous years but in percentage it has reduced by 0.26%. In year 2006and 2007,

company has revenues of Rs. 1936340 thousand and Rs 2557600 thousand respectively. It is only able to increase its revenue by 21.80% in comparison to previous year amount but in year 2007 revenue amount is increased than year 2006. DDC's sales revenue increased percent is not satisfactory. Various factors like political, legal, and economic as well as private sectors participation is main cause to reduce company's revenues.

The presentation of the above total sales revenues figure will be more effective by following figure.

Figure No. 4.1

Sales Revenue of DDC



To analyze the trend of actual sales of the company Regression Analysis method can be used to forecast possible future sales for given time or year. A Regression Analysis shows the relation between time and actual revenue (sales) of this relevant year. In this method it is assumed that the sales consistently changes with change in the time and such change 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. Then the Regression line trend of actual sales 'Y' depends upon the time 'x', which is expressed as:

Y=a+bx

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

$$\sum y = Na + b\sum x.....(i)$$

$$\sum xy = a\sum x + b\sum x^2 .....(ii)$$

(Calculations are made to find the value of a and b are shown in APPENDIX-III)

The value of a and b are identified as follows:

a= 1181732.67

b= 174912.57

Thus, Y=1181732.67+ (174912.57) x, is the Regression line of sales which shows the positive sales revenue in the future.

By using this trend we can estimate the actual sales for the 2008, 2009 and 2010

Here,

2008	2009	2010
Y=1181732.67+174912.57×7	Y=1181732.67+174912.57×8	Y=1181732.67+174912.57×9
= 1181732.67+1224387.99	=1181732.67+1399300.56	=1181732.67+1574213.13
= 2406120.66 thousand	= 2581033.23 thousand	= 2755945.80 thousand

Therefore, if the trend does not change, the possible sales of DDC for the year 2008, 2009 and 2010 will be Rs. 2406120.66 thousand, 2581033.23 thousand and 2755945.80 thousand respectively.

Sitaram Gokul Milks (Kathmandu) Ltd. has been playing crucial role in the sector of dairies. Sitaram service is very essential to every people. It is not able to fulfill the demand of market. The Sitaram Gokul Milks (K) Ltd. is running in

loss since five years. Sitaram Gokul Milk is earning profit from operation but net loss is occurred after deducting interest and depreciation. Sales plan is essential for its better performance and improvement. A Sitaram product has not succeeded to different corner of the country. Sitaram can increase its sales if that is achieved.

Sitaram Gokul Milks (k) Ltd. is perceived as the pioneer in the modern dairy industry from the private sector. The Sitaram market share is high in comparison of private sector i.e. approximately by 15%.

Sales Revenue of Sitaram has been presented in table for six years from fiscal year 2002 to 2007.

Table No. 4.2

Sales Revenue of Sitaram Gokul Milks (K.) Ltd.

Amount Rs. (in '000')

Year	Sales Revenue in Rs.	Rs. Change	% Change
2002	119564	-	-
2003	187554	67990	56.86
2004	260278	72724	38.77
2005	228536	(31742)	(12.20)
2006	287538	59002	25.81
2007	343329	55791	19.40

Source: Annual Report of Sitaram Gokul Milks (K.) Ltd., 2007.

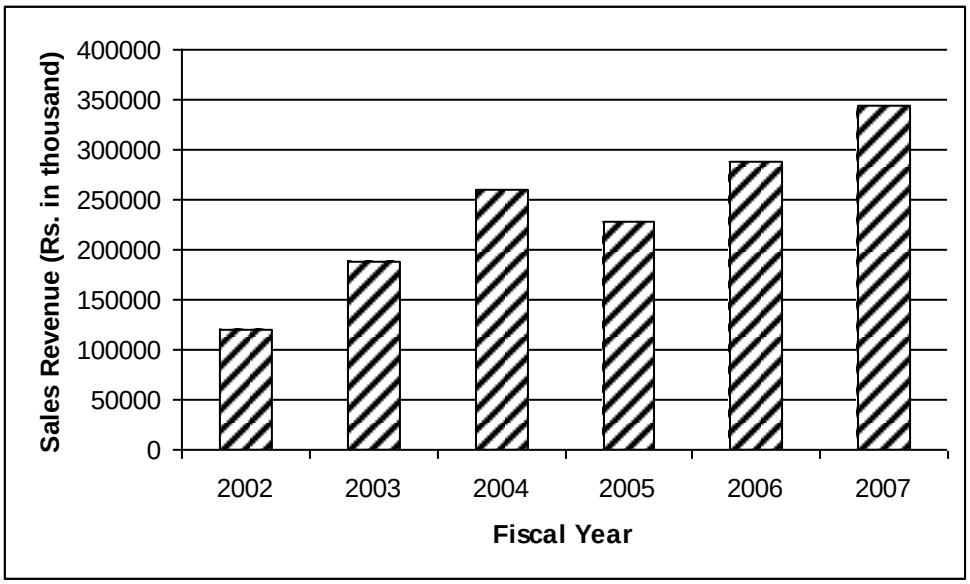
Above table No. 4.2 shows the sales revenues of the Sitaram for six years FY 2002 to 2007. The sales revenue of Sitaram is increasing from year 2002 up to year 2004, but in percentage it is decreasing. In fiscal year 2005 sales revenue i.e. Rs. 228536 thousand, which is less than amount of previous year and in percentage it has also decreased nearly by 26.57%. During the fiscal year 2006, the company has Rs. 287538 thousand revenues which are more in amount of previous year and percentage also increased by 13.6%. In year 2007 company

has revenues of Rs. 343329 thousand, which is more than previous year but in percentage it is decreased nearly by 6.4%. Sales revenue of Sitaram in recent year is not satisfactory. It may be due to more competition in private sector and weakness of market survey.

The presentation of the above sales revenue of Sitaram will be more effective by following figure.

Figure No. 4.2

Sales Revenue of Sitaram



To analyze the trend of actual sales of the company least, square method can be used to forecast possible future sales for given time or year.

Regression line trend of actual sales (y) depends upon time (x), which is expressed as

$$y = a+bx$$

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

$$\sum y = Na + b\sum x .....(i)$$

$$\sum xy = a\sum x + b\sum x^2 .....(ii)$$

(Calculations are made to find the value of a and b are shown in APPENDIX-IV)

The value of a and b is identified as follows:

a= 100694.6

b= 39458.54

Thus, Y= 100694.6+39458.54x is the trend line of sales which shows the positive sales revenue in the future.

By using this trend we can estimate the actual sales revenue for the 2008, 2009 and 2010.

2008	2009	2010
Y=100694.6+39458.54×7	Y= 100694.6+39458.54×8	Y= 100694.6+39458.54×9
=100694.6+276209.78	=100694.6+315668.32	=100694.6+355126.86
=376904.38 thousand	=4163632.92 thousand	=455821.46 thousand

Therefore, if the trend does not change, possible sales of Sitaram for the year 2008 and 2009 will be Rs. 376904.38 thousand, 4163632.92 thousand and 455821.46 thousand respectively.

4.2 Cost Plan of DDC and Sitaram Gokul Milk K. Ltd.

The cost is the amount which is expense for production of goods and services or used in operation. When we take any goods or service we have to pay some amount for that. Organization has to bear various types of costs. Like variable cost, fixed cost or semi-variable cost. Variable cost can be controlled, so it is also called controllable cost. But fixed cost cannot be controlled and it is known as uncontrollable cost. For operation of business cost is required but it should control to earn profit. Different organization bears different types of cost. For the cost volume profit analysis production and operation cost should be segregated. Variable cost and fixed cost is very much necessary to find for

CVP analysis. Every organization can segregate their various types of cost into fixed and variable. Both DDC and Sitaram have same types of cost or expenses. But the public enterprises in Nepal have not practice of CVP analysis. So they don't have segregated the cost into fixed or variable.

Different types of cost under different headings are shown below about both the enterprises.

Cost of DDC

1) Collection cost

Cost of purchase of milk, Transportation fuel, Chemical cost, Repair and maintenance cost, Rent, Telephone Expenses and Office welfare fund etc.

2) Processing cost

Skim milk power, Raw material, Packaging cost, Chemical, cheese related cost, Wages, bonus, insurance fees, fax, telephone, bank commission cost etc.

3) Administrative expenses

Advertisement, Traveling expenses, Training expenses, Rent rates, Postage, Special charge, Subscription and donation, Bank charge, Legal and professional fees, Entertainment Expenses on loss of goods, Office furnishing, Royalty/ contribution on Rural Dev. Fund, Insurance, Miscellaneous expenses, Statutory and tax audit fee, Obsolete and damaged fixed assets, Bad debts, Licenses fee, Provision for doubtful debt, Deferred revenue expenditure, Commission, Security expenses, Meeting fees expenses, Membership fee, Printing and stationery, Telephone expenses etc.

4) Selling Cost

Cash discount, Export expenses, Loading, Unloading, Discount on sales, Sales promotion, Sales bonus etc.

Cost of Sitaram

1) Collection cost

Cost of purchase of milk, Transportation fuel, Chemical cost, Repair and maintenance cost, Rent, Telephone Expenses and Office welfare fund etc.

2) Processing cost

Skim milk power, Raw material, Packaging cost, Chemical, cheese related cost, Wages, bonus, insurance fees, fax, telephone, bank commission cost etc.

3) Administrative expenses

Advertisement, Traveling expenses, Training expenses, Rent rates, Postage, Special charge, Subscription and donation, Bank charge, Legal and professional fees, Entertainment Expenses on lost of goods, Office furnishing, Royalty/ contribution on Rural Dev. Fund, Insurance, Miscellaneous expenses, Statutory and tax audit fee, Obsolete and damaged fixed assets, Bad debts, Licenses fee, Provision for doubtful debt, Deterred revenue expenditure, Commission, Security expenses, Meeting fees expenses, Membership fee, Printing and stationery, Telephone expenses, Prior period expense, Loss on sales of assets, Vehicle running expenses etc.

4) Selling Cost

Cash discount, Export expenses, Loading, Unloading, Discount on sales, Sales promotion, Sales bonus, Showroom rent, Showroom electricity, Delivery expenses etc.

4.3 Variable Cost of DDC and Sitaram Gokul Milks (K.) Ltd.

Variable cost varies in proportion to change in output or activities level but per unit variable cost is constant within a certain period. Variable costs are controllable cost so management has to give priority to control variable cost. In

DDC and Sitaram cost volume profit analysis is not practicing. So, costs are not segregated into variable and fixed. Based on the nature of the costs and assumption various types of cost of both enterprises are segregated into fixed and variable cost. Variable cost of DDC and Sitaram are as follows:

Table No. 4.3

Variable Cost of DDC

Amount in Rs.('000') Round Figure

Particulars	**2003**	**2004**	**2005**	**2006**	**2007**
Collection cost	266600	376500	394200	405200	592200
Processing cost	262300	258000	298300	335200	465500
Administrative cost	465400	380300	302300	333200	457500
Selling cost	275300	204300	260400	255600	379800
Total variable cost	1269600	1219100	1255200	1329200	1895000
Change %	-	(3.98%)	2.96%	5.89%	42.57%
Variable cost of Sitaram					
Collection cost	101000	149800	152300	179000	187400
Processing cost	19400	25810	24320	22130	24820
Administrative cost	3854	5960	3740	6720	5450
Selling cost	7210	11900	12210	15020	15910
Total variable cost	131460	191470	192570	222870	233580
Change %	-	4.86%	9.48%	(1.03%)	26.30%

Source: Annual Report of DDC and Sitaram, 2007.

Above Table 4.3 shows that the variable cost of variations of variable cost i.e. collection cost, processing cost, administrative cost and selling cost. All variable cost is fluctuated trend.

In DDC total variable cost in the year 2003 is Rs. 1269600 thousand and decreased by 3.98% in this year 2004. In year 2005 variable cost are increased by 2.96%. In year 2006 variable cost of DDC is increased by 5.89%, which is greater than previous year. But in year 2007 Variable cost is increased by 42.57%. Variable cost is controllable cost. So, management should try to reduce this cost.

In Sitaram variable costs is increased by 4.86% in year 2003 and reached the amount to Rs. 191470 thousand in years 2004. In fiscal year 2004 the variable cost of Sitaram is increased by 9.48% and reached the amount to Rs. 192570 in year 2005. In year 2006 the variable cost is reduced by 1.03%. In year 2007 variable cost is increased by 26.30% i.e. Rs.233580 thousand. The reason behind fluctuating and decreasing the variable cost is because of strike in different part of country.

4.4 Fixed cost of DDC and Sitaram Gokul Milks K. Ltd.

Fixed costs remain constant in total despite of change in the level of activity within every year, when production cost or service cost are changed but fixed cost remains same. The per unit fixed cost may decrease when the numbers of production units are increased. Though, fixed cost in total may vary for different fiscal year. The fixed costs of DDC and Sitaram presented here are based on the assumption and nature of cost. Because of cost segregation tools are not applied in these enterprises. Fixed cost of DDC and Sitaram is presented in table below.

Table No. 4.4

Fixed Cost Analysis of DDC

Amount in Rs. (000) Round Figure

Particulars	**2003**	**2004**	**2005**	**2006**	**2007**
Collection cost	33000	28000	35000	49000	38000
Processing cost	61000	42000	49000	59300	42000
Selling cost	18000	16000	21000	24000	20000
Administrative cost	64000	46000	62000	66000	68000
Depreciation	30000	29000	30000	35000	29000
Interest	12000	4000	5000	7000	6000
Total fixed cost of DDC	218000	165000	202000	240300	203000
Change procedure	-	(24.31%)	22.42	18.96%	23.55%
Fixed cost analysis of Sitaram Rs. ('000')					
Collection cost	22000	24600	25100	24500	21000
Processing cost	10100	13900	13400	12040	9800
Selling cost	5460	13500	9450	14530	10000
Administrative cost	6780	7120	5320	7760	8290
Depreciation	4840	6320	5240	5290	5490
Interest	10120	8170	5470	4150	5780
Total fixed cost of sitaram	59300	73610	63980	68270	60360
Change %	-	24.13%	(13.08%)	6.71%	(11.59%)

Source: Annual Report of DDC and Sitaram, 2007.

From the table no. 4.4 there is fluctuating trend in the fixed cost of DDC. In the year 2003 total fixed cost is Rs. 218000 thousand but in years 2004 fixed cost decreased by 24.31% which is in amount Rs. 165000 thousand. In year 2005 fixed cost increased by 22.42%. It is more than year 2004. In year 2006 fixed

cost again increased by 18.96% i.e. in amount Rs. 240300 thousand. In fiscal year 2007 fixed cost increased by 23.55% which is more than previous year, i.e. Rs. 203000 thousand.

On the other hand, Sitaram's total fixed cost is increasing in fluctuation trend. Total fixed cost of Sitaram is Rs. 59300 thousand in year 2003 and increased by 24.13% and reached 73610 thousand in year 2004. In year 2004 its total fixed cost is decreased by 13.08% and reached Rs. 63980 thousand in year 2005. In fiscal year 2006 fixed cost is increased by 6.71% but in year 2007 fixed cost reduce by the company i.e. 11.59%. The total cost of Sitaram is high because of high amount of interest and depreciation. High fixed cost increase the break even level. So, unusual fixed cost should control if possible.

4.5 Semi Variable Cost Analysis

Semi variable cost is combined cost both fixed and variable. Fixed cost should bear for certain level and if the level of output or services is increased excess amount should spend that cost can be taken as variable cost. For example repair and maintenance, supervision, fuel, energy, etc. Costs consists both fixed and variable cost. DDC and Sitaram have not segregated the cost into variable or fixed. So, semi variable cost also accumulated in total cost. Therefore above mentioned costs are classified into variable and fixed as per suggestion and detail by the guide and senior staff of the enterprises.

4.6 Cost Volume Profit Analysis of DDC and Sitaram Gokul Milks (k) Ltd.

Cost volume profit analysis is a popular and very reliable management accounting tool to measure and analyze the financial performance of the organization. It is a part profit planning and control. CVP analysis can be extended to cover the effects on profits of changes in selling price or service fees, cost, income, tax rate and product mix. CVP analysis provides the management with a comprehensive overview of the effects on revenue and

costs of all kinds of short run financial changes. CVP analysis helps to determine the minimum sales volume to avoid losses and the sales volume at which the profit of the company will increase. When the management has detail information about variable and fixed cost, selling price and sales volume of the product then the company can determine the break even level of its product. Income statement shows the picture of company, how it is earning profit. Here, the income statements of DDC and Sitaram are shown based on its revenues, variables and fixed costs etc.

Table No. 4.5

Income Statement of DDC for the Year 2003 to 2007

Amount Rs. In '000'

Particulars	2003	2004	2005	2006	2007
1.Sales Revenue	1595910	1535810	1589660	1936340	2557600
2.Total variable cost	1269600	1219100	1255200	1329200	1895000
3.Contribution margin (1-2)	326310	316710	334460	607140	662600
4. Total fixed cost including other exp.	218000	165000	202000	240300	203000
5. Profit (3-4)	108310	151710	132460	366840	459600
6.Other income (non operating income)	14500	12320	13300	17522	21500
7.Profit including non operating income (5+6)	122810	164030	145760	384360	481100
8. Profit % on revenue	7.70%	10.68%	9.17%	19.85%	18.81%

Source: Annual Report of DDC, 2007.

Table 4.5 shows the income statement of DDC. DDC's earning profit is fluctuating in increasing trend. Variable and fixed costs are also increasing.

Profit in revenue is 7.70% and 10.68% in year 2003 and 2004 respectively. In year 2005 profit is 9.17% which is less than previous year. In year 2006 company is able to earn increased profit of 19.85% but in year 2007 company has earned 18.81% profit on sales revenues. It is less than previous year. But the company can earn more than this percent because of its market share is high. The main reason of fluctuating income and profit is because of rained situation of Nepal.

Table No. 4.6

Income Statement of Sitaram Gokul Milks (K) Ltd.

For the Year 2003 to 2007

Amount in Rs.('000')

Particulars	**2003**	**2004**	**2005**	**2006**	**2007**
1.Sales revenue	187554	260278	228536	287538	343329
2.Total variable cost	131460	191470	192570	222870	233580
3.Contribution margin (1-2)	56094	68808	35966	64668	109749
4.Total fixed cost	59300	73610	63980	68270	60360
5.Profit loss (3-4)	(3206)	(4802)	(28014)	(3602)	49389
6.Other income	408	_	2505	3482	4566
7.Profit loss including other income	(2798)	(4802)	(25509)	(120)	53955
8.Profit (loss) % on sales revenue	(1.49%)	(1.84%)	(11.16%)	(0.02%)	15.71%

Source: Annual Report of Sitaram, 2007.

Table no. 4.6 shows that Sitaram Gokul Milks (K.) Ltd. is suffering from loss since 2003 to years 2006. Loss on sales is 1.49% in year 2003. In FY 2004 loss on sales is 1.84% which is more than previous year. In year 2005 and 2006 there are 11.16% and 0.02% loss respectively. But in year 2007 there is profit in sales by 15.71%. This shows Sitaram profit position or financial performance is not good. It should find out its break even level of sales revenue to earn profit. Despite the increasing trend of sales the company has increased the loss because of high expenses in depreciation and interest. No systematic plans have been implemented for preventing the loss and improve the profit.

4.7 Analysis of Contribution Margin (Profit Volume) Ratio, BEP, Margin of Safety

In cost volume profit analysis we have to compute various ratios which are important part of CVP analysis. Cost volume profit analysis aim will fulfill when we are able to analyze these all parts of CVP's tools. Contribution margin is the difference between sales revenue and variable cost. This amount equals with fixed cost and profit. Contribution margin=sales-variable cost. Contribution margin is known as profit volume ratio (P/V ratio) or C/ M ratio. This can be computed by dividing the sales to contribution margin. Break even point (level) is "no profit no loss" point. Where cost and sales revenue become equals. It is very necessary to know the BEP for every organization. BEP can be computed in Rs. or (level of output) unit.

$$\text{BEP in unit} = \frac{Fixed\ \cos t}{CMPU}$$

$$\text{and BEP in (Rs)} = \frac{Fixed\ \cos t}{P/V\ ratio}$$

Margin of safety is the excess of budgeted or actual sales over the break even level sales volume. The firms does not incurred loss on safety margin because it is higher than BEP. The firm earns profit in this level.

Table No. 4.7

Computation of Various Ratios of DDC

Amount Rs. In million

Particulars	**2003**	**2004**	**2005**	**2006**	**2007**
1.Sales	1596	1536	1590	1936	2558
2.Contribution margin	326	317	334	607	663
3.P/V ratio (CM/ sales)	0.20	0.21	0.21	0.31	0.26
4.Fixed cost including other expenses	218	165	202	240	203
5.BEP (fixed cost/ PV ratio)	1090	786	962	774	781
6.BEP % on sales	68.29	51.17	60.50	39.98	30.53
7.Margin of safety (AS-BE)	506	750	628	1162	1777
8.MOS as percentage of sales	31.70	48.82	39.50	60.02	69.47
BEP considering other income and other expenses BEP Rs.= $\frac{Fixed\ \cos t - other\ income + other\ \exp enses}{P/V\ ratio\ (C/M\ ratio)}$					
1.Fixed cost	218	165	202	240	203
2.Non operating income (other income)	15	12	13	18	21
3.Fixed cost after deducting other income	203	153	189	222	182
4.PV ratio	0.20	0.21	0.21	0.31	0.26
5.BEP (3/ PV ratio)	1015	729	900	716	700
6. BEP as percentage to sale	63.60	47.46	56.60	36.98	27.37
7.Margin of safety (AS-BE)	581	807	690	1220	1858
8.MOS as percentage of sales	36.40	52.54	43.40	63.02	72.63

Source: Annual Report of DDC, 2007.

Table No. 4.7 shows the detail cost volume profit system of DDC. Relationship among various variables shows the actual position of DDC about contribution margin, BEP level, and safety margin and its percentage. As well as BEP volume of the DDC is computed including other income this shows different break even volume that when excluding it in previous part.

P/V ratio of DDC is 0.20, 0.21, 0.21, 0.31 and 0.26 in fiscal years 2003 to 2007 respectively. Company is in profit position because it's reached their BEP level. If margin of safety of DDC's is not greater than Break Even sales from

FY 2003 to 2005, the company has earned profit because margin of safety is not in negative. In FY 2006 and FY 2007, the company has to earn more profit because margin of safety is higher than BE Sales volume. Percentages of BEP on sales are 68.29%, 51.17%, 60.50%, 39.98%, and 30.53% from year 2003 to 2007 respectively. DDC has Rs. 506 million safety margin in 2003 which is 31.70% of actual sales revenue. The MOS are 48.82%, 39.50%, 60.02% and 69.47% in remaining four years. MOS is Rs. 1777 million in year 2007.

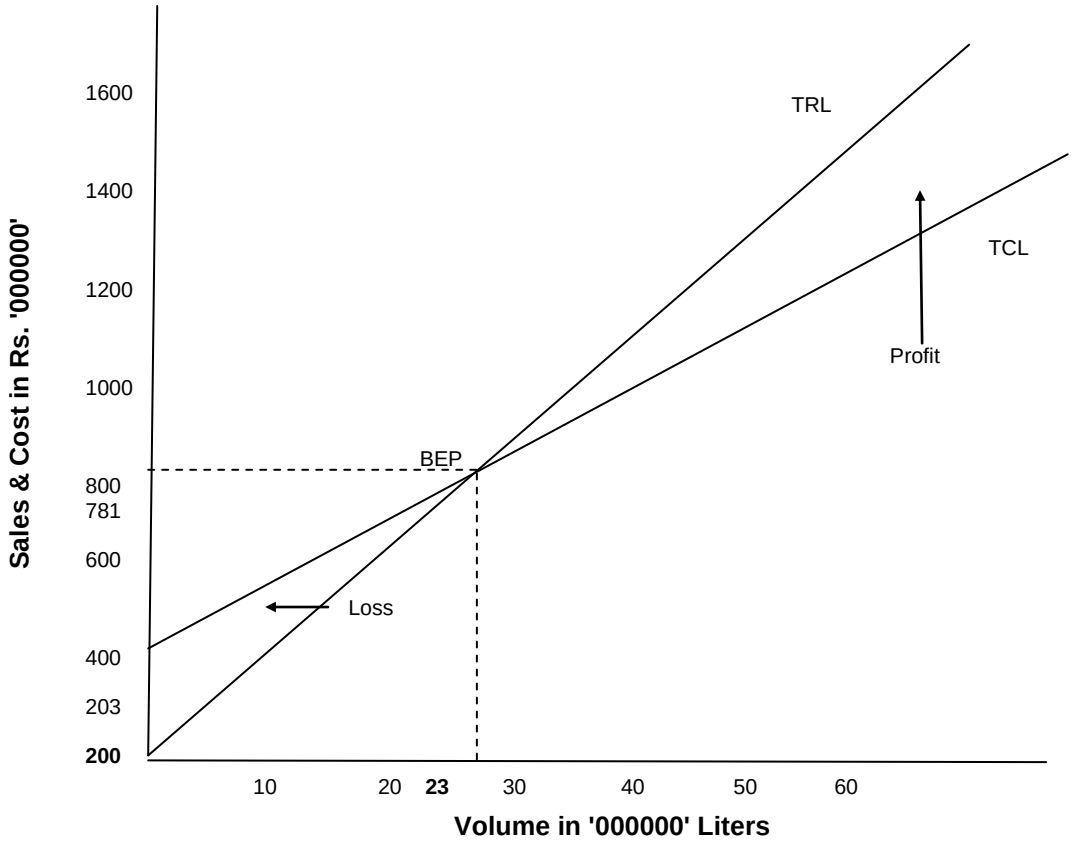
Other income, which is non operating income of DDC is including in fixed cost and computed BEP and margin of safety. It has reduced the BEP volume and increased the safety margin and its percentage. Lower the break even volume is good for the company to earn profit.

The computation can be represented in graphical form which is as follows:

Graphical presentation of BEP in Rs. and in Liters for the FY 2007

Figure No. 4.3

Break Even Level of DDC



Here,

Selling price per unit (SPPU) = Rs. 35

Fixed cost = Rs. 203 million

Variable cost = Rs. 1895 million

Total cost = Rs. 2098 million

Sales revenue = Rs. 2558 million

BEP sales = Rs. 781 million

BEP in liters. = 23 million

Profit = Rs. 460 million

Source: Selling price per liter of the milk is determining after observing the market study.

A simple break even chart of DDC for the fiscal year 2007 is shown above. Sales units are shown in X-axis and sales revenue and cost amount is shown in Y-axis required information.

From the above chart, the total fixed cost of the company is Rs. 203 million. It is parallel to X-axis. Variable cost directly varies with cost of production; therefore it is sloping upward to right side. If no operation of the company variable cost become zero but the company should bear the fixed cost. Total sales revenue curve originates from the origin because sales revenue is zero when sales volume is zero. And service or sales volume increase sales revenue also increases. The equilibrium point where sales revenue and total cost line is crossed this point is line called break even level or volume. Below this point the company cannot cover its cost as a result it suffers loss. And above this point sales revenue exceeds the total cost which provides the profit to the company. In the figure DDC has higher sales revenue than cost.

Total sales revenue is Rs. 2558 million whereas total costs is Rs. 2098 million. As a result the DDC is able to earn Rs. 406 million profit.

Table No. 4.8

Computation of Various Ratios of Sitaram

Amount Rs. in million

Particulars	2003	2004	2005	2005	2007
1. Sales revenue	188	260	229	289	343
2. contribution margin	56	69	36	65	109
3. P/V ratio (CM/ sales)	0.30	0.27	0.16	0.22	0.32
4. Fixed cost	59	74	64	68	60
5. BEP (fixed cost/ PV ratio)	197	240	400	309	188
6. BEP % on sales	104.78	92.31	175.44	165.44	54.81
7. Margin of safety (AS-BE)	(9)	20	(171)	(20)	155
8. MOS as percentage of sales	(4.79)	7.70	(74.67)	(6.92)	45.19
BEP (Rs.) considering other income and expenses					
9. Other income	0.408	-	3	3	5
10. FC after deducing other income (4-9)	58.59	74	61	65	55
11. BEP (Rs.) 10/PV ratio	195	274	381	295	172
12. BEP as percentage to sale	103.72	105.38	166.37	102.07	50.14
13. Margin of Safety (1-11)	(7)	(14)	(152)	(6)	171
14. MOS% (MOS/ Sales revenue)	(3.72)	(5.38)	(66.38)	(2.08)	49.85

Source: Annual Report of Sitaram Gokul Milks (K) Ltd., 2007.

Above table 4.8 shows the contribution margin C/M (P/V) ratio, break even sales, margin of safety and its percentage as well as BEP and margin of safety is calculated again considering other income of Sitaram. In cost volume profit analysis calculation of these ratios are compulsory. Contribution margin of Sitaram is not satisfactory. Contribution margin ratio of Sitaram in FY 2003 is 0.30. In this year Sitaram's break even sales is higher than actual sales revenue so safety margin is in negative and less by 4.79%. Similarly the Sitaram's P/V ratio is very less in year 2005 by 0.16% and break even sales is higher than

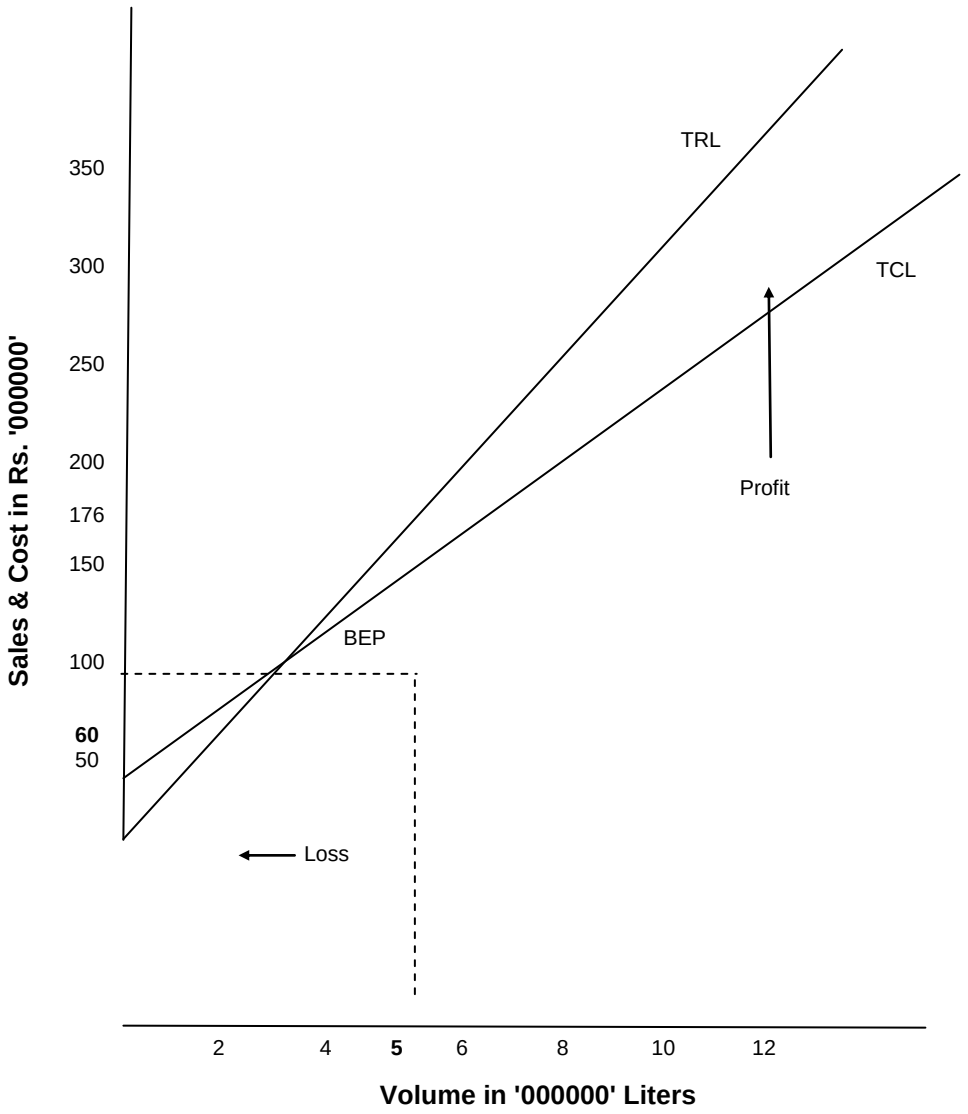
actual sales. Sitaram is suffering from loss so its financial position is not good. BEP sales are excess than actual sales and margin of safety has incurred very high loss than previous years. Contribution margin of Sitaram is very low as well as fixed cost is high. It increases BEP and margin of safety becomes negative.

When, other income is considered and deducted from total fixed cost. This is because, income reduces the cost as a result; BEP sales level of Sitaram is decreased than previous time. Margin of safety is also reduced than prior time.

Graphical presentation of BEP in Rs. and in Liters for the FY 2007

Figure No. 4.4

Break Even Sales of Sitaram



Here,

SPPU= Rs. 35

Fixed cost= Rs. 60 million

Variable cost= Rs. 234 million

Total cost= Rs. 294 million

Sales revenue= Rs. 343 million

BEP sales= Rs. 176 million

BEP sales in liters.= 5 million

Profit = Rs. 49 million

Source: Selling price per liter of the milk is determined after observing the market study.

Above graph shows the sales, cost and break even level of the Sitaram. Fixed cost and variable cost, total amount is total cost of Sitaram. Break even level of sales in liters are shown in Y-axis. Sales and Cost are shown in X-axis. Break even sales of Gokul Milk is not higher than actual sales. So, the Sitaram is earning profit in FY 2007.

4.8 Measuring Risk: Degree of Operating Leverage (DOL)

To measure the risk of the organizations, it is suitable to calculate Degree of Operating Leverage. And operating leverage is most suitable to measure the risk which shows us how profit change with the change in sales volume. Generally highly labour intensive organizations have high variable costs and low fixed costs and this has low operating leverage and a relatively low break even point. Conversely, organizations that are highly capital intensive have a cost structures that includes low variable and high fixed costs which reflects high operating leverage with high break even point. In other words, the firm with high operating leverage has proportionally high fixed expenses; the firm break-even point will be relatively high. Here, degree of operating leverage of sampled organizations is calculated for different years and comparisons are made.

As we know,

$$DOL = \frac{\text{Percentage Change in Net Operating income}}{\text{Percentage change in sales}}$$

Or, $$DOL = \frac{\text{Contribution Margin}}{\text{Net Operating income}}$$

Or, $$DOL = \frac{\text{CM}}{(\text{CM} - \text{TFC}) + \text{Interest}}$$

Now,

In Year 2003,

$$\text{DOL of DDC} = \frac{326 \text{ million}}{120 \text{ million}}$$

$$= 2.72$$

$$\text{DOL of Sitaram} = \frac{56 \text{ million}}{7 \text{million}}$$

$$= 8$$

Hence, above calculation shows that the degree of operating leverage of sitaram is higher (i.e. 8) than of DDC (i.e. 2.72). By comparing it, it is found that Sitaram is higher riskier organization than DDC in year 2003.

Similarly,

In Year 2004,

$$\text{DOL of DDC} = \frac{317 \text{ million}}{155 \text{ million}}$$

$$= 2.05$$

$$\text{DOL of Sitaram} = \frac{69\text{ million}}{3\text{ million}}$$

$$= 23$$

In Year 2005,

$$\text{DOL of DDC} = \frac{335\text{ million}}{138\text{ million}}$$

$$= 2.43$$

DOL of Sitaram is not calculated due to its EBIT in negative in the year 2005. In such cases, DOL is not calculated.

In Year 2006,

$$\text{DOL of DDC} = \frac{607\text{ million}}{373\text{ million}}$$

$$= 1.63$$

$$\text{DOL of Sitaram} = \frac{65\text{ million}}{1\text{ million}}$$

$$= 65$$

In Year 2007,

$$\text{DOL of DDC} = \frac{663\text{ million}}{466\text{ million}}$$

$$= 1.42$$

$$\text{DOL of Sitaram} = \frac{110\text{ million}}{55\text{ million}}$$

$$= 2$$

Above calculations show that the degree of operating leverage of Sitaram are higher in all years than of DDC. It shows that Sitaram is riskier than of DDC. In fiscal year 2007, the difference in DOL is very low between two organizations. It is 2 of Sitaram and 1.42 of DDC. So the risk is approximately similar.

4.9 Net Profit Position of DDC and Sitaram

Profit is excess amount over the total cost. Every organization needs profit. Without profit organization cannot run smoothly and fail to achieve its goal. Profit earning is compulsory to every company or firm. Here the profit/ loss position of DDC and Sitaram is shown in table as follows:

Table No. 4.9

Profit and Loss Position of DDC and Sitaram

Amount in Rs. (Million)

Year	DDC			Sitaram		
	Profit/ loss Rs.	Rs. Change	% change	Profit/ loss Rs.	Rs. change	% change
2003	108	-	-	(3)	-	-
2004	152	44	44.74	(4)	(1)	(33.33)
2005	132	(20)	(13.15)	(28)	(24)	6
2006	367	235	178.03	(4)	25	89.28
2007	460	93	25.34	49	53	1325

Source: Annual reports of DDC and Sitaram, 2007.

Table 4.9 shows the profit trend of DDC and Sitaram. Profit position of DDC is increasing in fluctuating trend. DDC is able to earn profit all the year without one year i.e. year 2005. In fiscal year 2003 DDC's net profit is Rs. 108 million, it is increased by 44.74% and earns the net profit Rs. 152 million in 2004. In this year company has decreased its profit by 13.15% and net loss is Rs. 132 million in year 2005. In year 2006 profit is Rs. 367 million which is more than previous year. It is 178.03% increased on previous year profit. In year 2007

company has Rs. 460 million profits which are 25.34% more than fiscal year 2006.

On the other hand, Sitaram is suffering from loss since FY 2004 to FY 2007. Sitaram is not earning profit because of high fixed cost and variable cost. Sitaram has loss of Rs. 3 million in FY 2003. It is increased by 33.33% in this year and the net loss is Rs. 4 million in year 2004. In FY 2005 net loss is Rs. 28 million which is 6% greater than FY 2004. In FY 2006 Sitaram has Rs. 4 million losses which are 89.29% less than FY 2005. Sitaram has Rs. 49 million profits on year 2007 which is 13.25% of FY 2006. In this year Sitaram has earn very high amount profit than previous year.

4.10 Major Findings of the Study

Every research work is done to find something new, based on the objective of the study. From analysis of various data collected by primary and secondary sources, the major findings of the study are as follows:

a) Actual operating income of the DDC is increasing in fluctuating trend. Its forecasted sales are Rs. 2406120.66 thousand for fiscal years 2008. Sales plan of DDC is not systematic. So, it has not achieved its target to increase operating income. In Sitaram as sales revenue is increasing constantly by two years gap. Sales revenue of Sitaram is not sufficient to cover the cost. Forecasted sales revenue of Sitaram is Rs. 376904.38 thousand for the fiscal year 2008.

b) Segregation of fixed and variable cost are ignored by both enterprises. CVP analysis is not practicing by these enterprises. No any method has been adopted to segregate cost into fixed or variable or controllable and non controllable.

c) Contribution margin ratios of DDC are 0.20, 0.21, 0.21, 0.31 and 0.26 from FY 2003 to FY 2007 respectively. Similarly contribution margin ratios of Sitaram are 0.30, 0.27, 0.16, 0.22 and 0.32 from FY 2003 to FY 2007 respectively.

d) Sitaram has been suffering from loss almost in sampled years. It had made profit in the year 2007 only. Whereas, DDC has been making profit all years. So, it is found comparing both enterprises that DDC is profitable than Sitaram.

e) After doing sensitivity analysis, it is found that the Sitaram is riskier organization than that of DDC. Degree of Operating Leverage of Sitaram is higher in all years. It shows that small change (decrease) in sales of Sitaram brings huge change in profit in negative than of DDC and vice versa.

f) Fixed cost of DDC is high in the comparison to Sitaram. Processing cost, administration expenses and depreciation are also high in DDC. But in Sitaram fixed cost like interest and depreciation are very high. The portion of long term loan of Sitaram is the main cause to increase interest expenses which is the main part of fixed cost.

g) Low PV ratio of DDC reduced the break even level of the company whereas Sitaram has high PV ratio and it has high break even level.

h) Margin of safety in DDC is near about 50% in average but in Sitaram, margin of safety is negative because break even sales is higher than actual sales.

i) DDC has launched various services to its customers to increase revenue but in rural area it is not able to fulfill demand of customer. Sitaram also plans various products but not complete in time and cost of production are increased and services are not satisfactory.

j) Profit position of DDC is good but not satisfactory as being very high competition in dairies sector. Sitaram is earning profit only in year 2007. Its percentage of profit has been increased in recent year. Both the enterprises have not systematic plan. Operating profits are satisfactory but net profit is not good. A popular and very reliable accounting tool, CVP analysis is not applying to analyze the financial performance of enterprises.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Nepal is least developing country in the world. The main source of income is agriculture. For the socio-economic development of the nation industrialization is essential. Science and technological advancement plays vital role in industrialization of the nation. But it is not enough only the advancement of science and technology for development of the country. Management of all these sectors is very essential. Without good management organization cannot achieve its goal and objectives. Government of Nepal has established so many public enterprises to facilitate the people. Most of public enterprises are suffering loss, whether the government has invested huge amount of resources. There is no any concept of effective and appropriate planning system and procedure. Lack of expert, qualified and skilled manpower in the field of management, available resources, capacity and efficiency are not utilized properly. So many popular and systematic tools and technique of management are ignored. These tools are not practicing in public enterprises for measurement of financial statement.

Two large public and private enterprises, Dairy Development Corporation and Sitaram Gokul Milks (K) Ltd. have glorious history in the field of dairies services. Government of Nepal has invested huge amount in these enterprises. DDC is running smoothly by earning profit. Sitaram is suffering loss till 2006. Profit shows the good financial position of the company. Loss shows the weak financial position. Profit is necessary to every organization. Profit is excess amount over the cost. Financial position of the company can analyze in various ways like financial performance, cash flow statement, ratio analysis, profit and loss account, balance sheet, and budgeting etc. Cost volume profit analysis is one of the most popular tools of management account. It is part of profit planning control. It shows the relationship among the variables like selling

price, sales volume, cost, profit, break even level, safety margin etc. When the organization finds its BEP of sales it can determine the prices, volume and cost for profit earning. The main objectives of the study were to highlight the cost volume profit analysis of DDC and Sitaram and comparatively study its sales revenue, profit volume ratio, BEP sales, safety margin etc. As per the objectives of the study various primary and secondary data were collected for six years from FY 2002 to 2007. The collected data were analyzed with descriptive and analytical approach. Sales revenue, analysis, sales trend analysis, costs analysis, PV ratio analysis, BEP analysis, sensitivity analysis profitability analysis were done with the help of various financial tools. Primary data were collected by direct interview with concerned employee and senior staff of both enterprises. Secondary data were drawn from the various document like annual report, journals published by these enterprises and concerned authority. From the analysis of CVP variables, the enterprises showed the different results. DDC has high contribution margin, its operating income is increasing in fluctuating trend. Variable cost of DDC is very less in comparison to fixed cost. So, profit volume ratio is high as a result BEP is less. Operating revenue of DDC is over the BEP. So, it is able to earn profit. Sitaram has less contribution margin. Sales revenue of Sitaram is in increasing trend. Because of high variable cost contribution margin is very less, PV ratio is nearly 30% as well as fixed cost is high. So, BEP is more than sales revenue. As a result Sitaram is in loss since FY 2002 to 2006. High fixed cost of Sitaram is interest on long-term loan and depreciation. Sensitivity analysis of the DDC and Sitaram has shown that some changes in contribution margin, BEP and profit volume ratio. DDC is earning profit and profit is in increasing trend for every year without year 2005. But Sitaram is suffering loss and its loss amount is increasing every year but in year 2007, it's earning high profit. Both the enterprises have not practice CVP analysis techniques as a toll to measure the effectiveness of profit planning and control. In Nepal most of public enterprise as well as private companies have ignored the CVP analysis tools. Its applications and practices are very least in Nepal.

5.2 Conclusion

In Nepal, most of the theoretical knowledge is not applied in practical. There is vast gap between theory and practice. There are so many tools and technique to measure the financial performance of the company but in proactive very few tools are used. Cost volume profit analysis, its shows the relationship among the variables related to cost, sales price profit etc. but this tool is not applied or practice in Nepalese public enterprises. In cost volume profit analysis it is necessary to segregate different types of cost into variable or fixed. Two large public and private enterprises DDC and Sitaram have into practice CVP analysis. So costs are not segregate into fixed or variable in these enterprises. Here, costs of the enterprises were segregated on the basis of nature of cost and assumptions. And contribution margin, P/V ratio, BEP margin of safety are computed and analyzed. Being a monopolist company in dairy sectors, DDC has not satisfactory operating revenue. The company has not able to expand its services to rural area. Its capacity is not effectively utilized. Though, DDC has high contribution margin. Fixed cost is higher than variable cost. BEP operating incomes is less than actual income. So, DDC is in profit position. On other hands DDC's products are qualities and are demand is increasing trend, but DDC is not getting more profit due to traditional management system.

Sitaram is bearing loss because of high variable and fixed cost. High depreciation and high interest are the major problems in Sitaram. These are reducing the Sitaram's profit actually. Sitaram is not able to facilitate its services to nationwide. Being second dairy in Nepal, Sitaram cannot increase their sales revenue. Due to the negligence of cost reduction plan, Sitaram suffering from expensive loss. It has no policies and programmes for the research and development of cost control. Due to lack of these factors Sitaram is not producing sufficient qualities of variety in products. Co- ordination between top level and middle level, influenced by political sectors etc is the main factors of Sitaram, suffering from loss.

To run these enterprises smoothly there is need of cooperation among the various factors; participative management approach, expert, qualified manpower, out of from government intervention and controlling usual cost is the essential remedy.

5.3 Recommendations

Based on the above study the following suggestions are recommended to improve the cost volume profit analysis system of public and private enterprises mainly in DDC and Sitaram.

1. In Nepal most of public or private enterprises have not practiced CVP analysis in systematic manner. So, it is suggested that every public or private enterprises should apply or practice CVP analysis.
2. CVP analysis shows the relationship among the variables related to cost, revenue, profit. So, this tool is very much useful to every organization.
3. Two large public and private enterprises, DDC and Sitaram, who have many experts and skilled manpower, are not applying CVP analysis. Various types of semi-variable costs are not segregated systematically into fixed and variable. It is essential to classify the costs.
4. Cost plan of both enterprises are not systematically maintained. So, cost of every sector should plan properly.
5. Sales revenue of both enterprises is in increasing trend but it is not sufficient to cover the cost and earn desired profit. Sales plan of these enterprises should clearly maintain and improve.
6. DDC is running smoothly by earning profit whereas Sitaram is suffering loss till the year 2006. Sitaram should learn the lesson from the DDC’s management and its success. Though, DDC's profit is not sufficient it should control fixed cost. Sitaram has bearing very high cost both fixed and variable. Interest on long term loan increased the

fixed cost of Sitaram. So, long term loan of the Sitaram should be reduced.

7. Contribution margin ratio is near about 24% in DDC because of high variable cost whereas Sitaram has near about 30% contribution margin ratio because of high variable cost. It is suggested to both companies to control variable cost and to increase contribution margin.

8. Breakeven level of DDC is less than sales revenue but Sitaram's sales revenues are less than breakeven level. So, DDC is earning profit and Sitaram is bearing loss. Sitaram should reduce its breakeven sales by reducing variable cost and fixed cost as well as increasing sales revenue.

9. Margin of safety is nearly 50% in DDC but Sitaram has negative safety margin nearly 6%. So, Sitaram should improve its safety margin by maintaining BEP sales.

10. While other income and expenditure is considered to determine the BEP sales. Both the enterprises' BEP have decreased because of reducing other income from fixed cost. It shows that the enterprises can determine their BEP considering other income which will provide information about BEP sales.

11. Degree of Operating Leverage of enterprises has shown that the times of percentage change in operating income to the given percentage change in sales.

12. Cost reduction program should be established to reduce the cost in overall production process which may help to increase sustainable profit.

13. Most of the Nepalese enterprises are facing the problem of government interference and their programs are not implemented properly. DDC is facing these kinds of problem. So, it should control government interference in decision making and planning.

14. There are many new and popular management theory like, management by objective, participative management etc. this principle can be more effective to every organization. DDC and Sitaram should apply this theory for better performance of the enterprises.
15. Regular inspection, evaluation, monitoring activities should be undertaken by the central level to different department of both enterprises.
16. Most of public and private enterprises like DDC and Sitaram are facing problem of poor communication among various departments. So, the strong coordination and communication is needed.
17. To satisfy the needs of customers and facilitating quality services at reasonable price. DDC and Sitaram should control the costs and improve the quality of services.
18. The costs are main factors to increase price of the products. So, controllable costs should minimize if possible.
19. To measure strength and competitiveness of the organization. CVP analysis tools should be used. It is recommended to analyze cost and benefit of the tools.
20. DDC and Sitaram's management performance do not show the satisfactory results about profit, BEP level and contribution margin. So, management of these enterprises should perform their program and task in planning way.

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APPENDIX-I

Income Statement of DDC

For the year 2003 to 2007

Amount in Rs. ('000000')

Particulars/Years	2003	2004	2005	2006	2007
Sales revenue	1596	1536	1590	1936	2558
Less: Variable cost					
Collection cost	267	376	394	405	592
Processing cost	262	258	298	335	465
Variable Mfg. cost	539	634	692	740	994
Add: Beginning Inventory	66	65	64	63	72
Cost of good available for sales	595	699	756	803	1066
Less: Ending inventory	65	64	63	72	11
Variable cost of good sold	530	635	693	731	1055
Variable selling expenses	275	204	260	265	380
Variable administration expenses	465	380	302	333	458
Total variable cost	1270	1219	1255	1329	1893
Contribution margin	326	317	335	607	665
Less: Fixed cost					
Collection cost	33	28	35	49	38
Processing cost	61	42	49	59	42
Selling cost	18	16	21	24	20
Administration cost	64	46	62	66	68
Depreciation cost	30	29	30	35	29
Interest on loan	12	4	5	7	6
Total fixed cost	218	165	202	240	203
Less: Other income	14	12	13	18	21
Adjusted fixed cost	204	153	189	222	182
Net income	122	164	146	385	483

APPENDIX-II

Income Statement of Sitaram Gokul Milks (K.) Ltd.

For the year 2003 to 2007

Amount in Rs. ('000000')

Particulars/Years	2003	2004	2005	2006	2007
Sales revenue	188	260	229	289	343
Less: Variable cost					
Collection cost	101	149	152	179	187
Processing cost	19	25	24	22	25
Selling expenses	4	5	4	7	5
Administrative expenses	7	12	12	15	15
Total variable cost	131	191	192	223	232
Contribution margin	57	69	37	66	111
Less: Fixed cost					
Collection cost	22	25	25	25	21
Processing cost	10	14	13	12	10
Selling cost	5	14	9	15	10
Administration cost	7	7	5	8	8
Depreciation cost	5	6	5	5	5
Interest on loan	10	8	6	4	6
Total fixed cost	59	74	63	69	60
Less: Other income	0.4	-	3	3	4
Adjusted fixed cost	58.6	74	60	66	56
Net income	(1.6)	(5)	(23)	(0)	(55)

APPENDIX-III

Regression Analysis, Fitting Regression-Line Trend by Least Square Method of DDC

Amount in Rs. ('000')

Year	Income 'y'	Time 'x'	x2	xy
2002	1548240	1	1	1548240
2003	1595910	2	4	3191820
2004	1535810	3	9	4607430
2005	1589660	4	16	6358640
2006	1936340	5	25	9681700
2007	2557600	6	36	15345600
n=6	$\sum y = 10763560$	$\sum x = 21$	$\sum x^2 = 91$	$\sum xy = 40733430$

Substituting the value of table in equation (i) and (ii)

$\sum y = Na + b\sum x .....(i)$

10763560= 6a+21b……. (iii)

$\sum xy = a\sum x + b\sum x^2 .....(ii)$

40733430= 21a+91b ……. (iv)

Multiplying equation (iii) by 21, (iv) by 6 and subtracting equation (iii) from equation (iv) we get,

244400580=126a+546b

226034760=126a+441b

18365820 = 105 b

Therefore, b = 174912.57

Now, putting the value of b in equation (iii) we get,

10763560 = 6a + 21* 174912.57

Therefore, a = 1181732.67

APPENDIX-IV

Regression Analysis, Fitting Regression Line trend by Least square method of Sitaram Gokul Milks (K) Ltd.

Year	Income 'y'	Time 'x'	x2	xy
2002	119564	1	1	119564
2003	187554	2	4	375108
2004	260278	3	9	798834
2005	228536	4	16	914144
2006	287538	5	25	1437690
2007	343329	6	36	2059974
n=6	$\sum y = 1432797$	$\sum x = 21$	$\sum x^2 = 91$	$\sum xy = 5705314$

Regression line trend of actual sales (y) depends upon time (x), which is expressed as

y = a+bx

Substituting the value in equation (i) and (ii)

$\sum y = Na + b\sum x .....(i)$

1432797= 6a+21b……. (iii)

$\sum xy = a\sum x + b\sum x^2 .....(ii)$

5705314= 21a+91b ……. (iv)

Multiplying equation (iii) by 21, (iv) by 6 and subtracting equation (iii) from equation (iv) we get,

34231884=126a+546b

30088737=126a+441b

4143147 = 105 b

Therefore, b= 39458.54

Now, putting the value of b in equation (iii) we get,

1432797 = 6a + 21* 39458.54

Therefore, a = 100694.60