COST VOLUME PROFIT ANALYSIS

(A Case study of Dairy Development Corporation)

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RECOMMENDATION

This is to certify that the Thesis

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Entitled:

COST VOLUME PROFIT ANALYSIS

(A Case Study of Dairy Development Corporation)

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

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VIVA-VOCE SHEET

We have conducted the viva-voce of the thesis presented

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DECLARATION

I hereby declare that the work reported in this thesis entitled **"COST VOLUME PROFIT ANALYSIS) (A case study of Dairy Development Corporation)"** Submitted to office to the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the Degree of Master of Business studies (MBS) under the supervision of **Jyoti Pandey** of **Nepal Commerce Campus.**

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The purpose of preparing this thesis is to fulfill the requirements for the degree of Masters of Business studies (MBS). It is carried out within the conceptual framework of profit planning and control. The main objective of this study is to review the practice and effectiveness of cost-volume-profit analysis of Dairy Development Corporation (DDC). I am extremely grateful to all of them who has helped me guided me and supervised me to complete this work.

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ABBREVIATIONS

ABC	: -	Activity Based Costing
B.S.	: -	Bikram Sambat
B/E	:-	Break - Even
BEP	: -	Break - Even Point
BMSS	: -	Biratnagar Milk Supply Scheme
BOD	: -	Board of Directors
C.C.	: -	Chilling Center
C.V.	: -	Co- efficient of variation
CA	: -	Current Assets
CEO	: -	Chief - Executive Office
CMPU	: -	Contribution Margin per Unit
CVP	: -	Cost- Volume - Profit Analysis
DDC	: -	Dairy Development Corporation
DOL	: -	Degree of Operation Leverage
DOV	: -	Degree of Variability
EOQ	: -	Economic Order Quantity
EXP.	: -	Expenses
F/Y	: -	Fiscal year
FC	: -	Fixed Cost
GDP	: -	Gross Domestic Product
Govt	: -	Government
HMSS	: -	Hetauda Milk Supply Scheme
KMSS	: -	Kathmandu Milk Supply Scheme
MBO	: -	Management by Objectives
MOS	: -	Margin of Safety
MPA	: -	Milk Producer's Association

MPCS	: -	Milk Produces' Co- Operative Societies
NPAT	: -	Net Profit after Tax
P.E. (r)	:-	Probable Error of Correlation
P/V	: -	Profit Volume
PEs	: -	Public Enterprises
PPC	: -	Profit Planning and Control
QA	: -	Quick Assets
ROI	: -	Returned on Investment
S.D.	: -	Standard Deviation
SR	: -	Sales Revenue
SRD	:-	Sita Ram Dairy
TC	: -	Total Cost
V.C.	: -	Variable Cost
V/V	: -	Variable Volume
VC	: -	Variable Cost
WFP	: -	World Food Program
ZD	: -	Zero Defect6

CHAPTER - I

INTRODUCTION

1.1. General Background

Nepal lies in the line of least development country of the world with per capita income of $ 316.3 (World Bank Report 2013). Agriculture is the backbone in the economy. It is the main source of employment and national income. More than 70% of the total populations are engaged in these sectors (Report of the World Bank and NRB 2069). Agricultural Sectors like fisheries, poultry, farming and dairy exist in urban areas of Nepal Dairy is one of the significant occupations. Milk is the best food for promoting the body growth. Buffalos and cows are remarkable combinations of food elements like protein. Carbohydrate, minerals and Vitamins that promote body growth. Dairy also represents the basic agricultural industry for the people engaging in production of milk and milk product. Agro- based country like Nepal must focused on agro- based industry. Among the agro based industry. Dairy sector plays a vital role. In Nepal, Dairy Development Corporation (DDC) is a Leader firm in Dairy industries.

Industry, business, trade and commerce development indicates the life state of the people of the country. For the rapid development of Nepal. it is essential to develop the industrial sector. And for the development of industrial sector, there should be adequate industrial infrastructure as well as appropriate technology and private sector can't alone result in economic development of the country. Thus, government can play a major role in establishing different kinds of public enterprises Public enterprises help many areas such as balanced regional development, pubic welfare to generate employment opportunities, export promotion etc.

"Public enterprises without a plan can achieve something a plan without public enterprises is likely to remain in papers." (Hanson; 1993: 347)

Government has established carious PEs in the different fields such as public utility, manufacturing enterprises, trading enterprises, financial enterprises, etc. Although Nepal is a poor country, development based virtually in the hands of the foreign aids or policy. Among Nepalese enterprise, dairy development corporation (DDC) is one of the public concerned established to bring improvements in production, processing, preservations, sales and distribution of milk and milk production i.e. Cheese, butter ghee, yoghurt, etc.

The whole population as well as the milk products user population of our country is increasing day by day. Therefore, their importance of milk and milk products has increased. The increasing trend of population is shown in Table: 1.1.

Table 1.1

Growth of population in 1911 - 2012

Year in B.S.	Population "000"	Growth Rate
1968	5639	-
1978	5574	-013
1988	5533	-0.07
1998	6284	1.16
2008	8473	2.3
2018	9413	1.65
2028	11556	2.07
2038	15023	2.66
2048	18491	2.08
2058	22700	2.20
2068	26494	1.67

Source: CBS (2012) Statistical Pocket Book, 2012.

The central Bureau of statistics has recorded that the number of people living in urban has increased to 4.5% in 2012 compared to 12.4% in 1911. The demand of the agricultural products, including milk for consumption purpose had increased due to increase in population, and also urbanization made the demand for milk and milk products high. The farmers, who lived near the city, were supplying milk products without consideration of nutrition and hygienic value, thereby affecting the health of the peoples.

Therefore, with the rising demand of market and to control the water mixing practices. Government realizes to install the dairy program inside the country after 2009 B.S. As a result, dairy development commission was converts into Dairy Development Board in 2019 B.S. (1962 A.D.)

Before 2007 B.S. the environment was also favorable to develop the industrial sector and the government had passed keeping the nation in political icons instance. From 2013 B.S> the government started 5 years development plans which are also running now and the government has been operation the development works according to these plans.

1.2. Concept of Cost Volume Profit Analysis

Individually 'Cost' means price paid to acquire produce/ accomplish/ maintain anything. 'Volume' a mass or quality of something or amount, and 'Profit' means the ration of such pecuniary gain to the amount of capital invested and analysis in resolution, separation or breaking into parts. In total CVP analysis is the effect on profit of changes in selling price4s, services fees, cost, income tax rates and the organization's mix of products and service. CVP analysis provides management with a comprehensive overview of the effects on the revenue and cost of all the kinds of short run financial changes. CVP analysis provided a sweeping overview of the effect on profit of all kinds of changes in sales, volume, expenses and product mix and sales price.

Usually the CVP analysis provides the answer to the following questions (Pandey: 1998:541)

- What minimum levels of sales need to be achieve to avoid losses?
- What should be the sales level to earn a targeted profit?
- What will be the effect of change in prices, cost and volume on profit?
- How will profit be affected when sales mix is changed?
- What will be the new BEP under changes in cost, prices, volume and sales mix?

The CVP analysis is of immense utility management as it provided an insight into the effects and interrelationship of factor, which influence profit of the firm. It is with the help of CVP analysis that the finance executive is enabled to present facts and figures in accurate reports and easily understood charts to management for action.

1.3. Introduction of DDC

Dairy Development Corporation (DDC) was established in B.S. 2026 (1996) under the corporation Act, B.S. 2021(1964). Under the corporation are to provided guaranteed market and fair price to the rural milk producers and to supply hygienic pasteurized milk and theirs standard dairy products to the urban consumers. Prior to the establishment of the corporation a separate Dairy Development Board was constituted to carry out the task of dairy development activities in Nepal started in Tusal Village of Kavre district B.S. 2009 (1952) on experimental basic with a small scale milk processing plant under the development of agriculture . In the year B.S. 2010/11, At the initiative of Development board, the central Dairy plant was established and it started milk collection, Processing and marketing activities from the year B.S. 2014/ (1957).

Major objectives of DDC

- Provide a guaranteed market for milk to the rural farmers with fair price.
- Supply pasteurized milk and milk products to urban consumers.
- Develop organized milk collection system to meet increasing demand for pasteurized milk and milk products.
- Develop and organized marketing system for milk and milk products.

1.4. Statements of the Problems

Profits are planned and managed. And profit planning and control is a tool that can handle organizations present situation smoothly. So, saying success is not the matter of chance of profit does not just happen. Cost- volume profit Analysis, under the profit planning control, provides techniques of profit planning framework.

DDC has suffered losses year after year. The inconsistent sales revenues, low contribution margin having high fluctuating variables and fixed cost, low productivity of the DDC, compelled and excited me to find out the causes of such losses and thus, view write my thesis of the topic.

In another side DDC generated profit from FY 2059/60, which is the giant leap of improvement as compared to the past continuous losses. But I see their great fluctuation in profit and losses every fiscal year. In FY 64/65 and 65/66 suffered from loss of RS.89790000 and 8609000 and in FY 66/67 and 67/68. DDC enjoys profits RS. 32263000 and 103563 and then in FY 2068/69 corporation get loss of Rs 164932000. This research also deals and provides the reason for such fluctuation performance.

The problems faced while across going into the corporation are listed below.

- Low profit earning
- Less productivity of labor
- Great fluctuation in profit
- Inconsistent revenues
- Maximum Leakages

1.5. Objectives of the Study

The main objectives of this study is to examine "Cost- Volume Profit analysis of DDC" to determine the relationship between cost. Volume, and profit and profitability of the DDC.

The following sub- objectives have been set to achieve the main objectives.

- To analyze the profitability and sensitivity of DDC in relation to sales.
- To analyze the productivity of the labor by using different productivity ratios.
- To evaluation the variance between budgeted and actual achievement of the corporation.
- To analyze the cost volume profit of the corporation and its impact on its profit planning.

1.6 Significance of the, study

This research work is the study of the practice of CVP analysis of DDC, This study will be useful to various parties in various ways and those are below.

- It examines the application of CVP analysis of the corporation.
- It provides necessary theoretical as well as contemporary situational conceptions to make appropriate decisions for DDC.

- It is also useful for interested parties, loan investor, foreign donors, suppliers etc.
- It may also help DDC to make corrective measures to the related department of the corporation.
- It provided literature to the researchers. Who want to perform further research in this field?

1.7. Limitations of the study

The effects of this research work have been made to present and analysis the facts clearly, truly and within the boundary. However non- availability of FY 2069/70 and data as, it is on the auditing process, confined this research work towards the analysis of past five years (i.e. 64/65 to FY 2068/69)

To sum up, this study enlists the following limitations:

- Used secondary data is a serious limitation.
- Shortage of time and sources to collecting data.
- The data FY 2069/70 and were not available was in the audition process.
- The study is based on secondary data (inclusion discussion and financial stating collected from company).
- This report has been confined to the data provided by the personnel of the company.
- It covers the CVP analysis of only five years (FY 64/65 to 68/69)

1.8. Organization of the study

The study has been organization into five major chapters. The chapters were outlined below:

Chapter - I	Introduction
Chapter - II	Review of Literature
Chapter - III	Research Methodology
Chapter - IV	Presentation and Analysis of Data
Chapter - V	Summary, Conclusion and Recommendation

Chapter - I: Introduction

This chapter contained the brief introduction of the subject matter i.e. General Background of the Study, Brief Overview of Public Enterprises, Brief Overview of DDC., statement of the problem, objectives of the study, significance of the study.

Chapter - II: Review of literature

This chapter dealt with the review of literature of related study. It contained conceptual review and major studies related with this research.

Chapter - III: Research Methodology

This chapter contained the research methodology used in this study. It included Research Design. Nature and sources of Data, Period covered, Data Processing Procedure, Financial and Statistical Tools used for the study.

Chapter - IV: Data presentation and Analysis

Various data were gathered by form applying the different methods. The collected data as computed as required by the research objectives. In this chapter the different types of data were interpreted and analyzed with the help of various analytical tools and techniques followed by findings.

Chapter - V: Summary, Conclusion and Recommendation

This chapter covered Summary, Conclusion and Recommendation of this study.

CHAPTER - II
REVIEW OF LITERATURE

2.1. Conceptual Framework

CVP analysis plays a vital role in profit planning. CVP analysis segregated the total cost into two parts: fixed and variables coasts. UP to a limit of production, fixed cost remains unchanged but variable cost increases and decreases with respect to the increment and decrement weather the capacity is fully utilized or not order to make profit. It is necessary to examine whether the capacity in cost may result the high differences in profit whereas, the efficient use of reasons any reduces the cost and it may give the opportunity to make more profits.

CVP analysis is effective in respect of short- term planning. It enables to study the effect of business activities on the expenses. Understanding of the aforementioned relationship plays a considerable role in correct prospective business planning and budgeting. CVP analysis helps managers to see the effect of different strategies and decisions on business activities. With the results of the analysis managers will be able to answer the following:

- What should be the levels of sales to cover all expense?
- What should be the volume of products enabling to get the required profit?
- How the increased business activities would affect precedes expense and profit?
- And many other questions.

CVP analysis can be used for, the whole organization and its small units departments. sections and productions lines. CVP analysis studies the interrelation of units. During the analysis we estimate these interrelations and, therefore, the organization's margin of profit.

In a single product organization, when cost behavior is accurately explained by fixed variable framework, CVP analysis is undoubtedly a precise, valuable tool for decision making unfortunately, this scenario rarely reflects reality. Most organizations are multi product and ABC would indicate that cost behavior is generally more complex than a simple fixed-variable framework would suggest.

The constant sales mix concept underlying most text book treatments of multi- product CVP assumes that fixed costs should be apportioned between products based on their shares of total weighted contribution margin.

The implicitly supposes that each fixed cost is incurred for the benefit of the all products. The ABC methodology suggests that this assumption is unlikely to be appropriate when products consume differing levels of overhead resources. Using more detailed analysis of fixed costs between product lines, 'direct' break- even points for individual products can be calculated.

Accounts and mangers need to have to clear understanding of the assumptions underlying CVP models Which they use for decisions making purpose and need to use the model which is most appropriate for decisions at hand.

2.1.1. Assumptions of CVP Analysis

It is essential that anyone preparing or interpreting CVP information should be aware of the underlying assumption on which the information has been prepared. If these assumptions are not recognized, serious errors may result and incorrect conclusions may be drawn from the analysis. They are as follows: (Drury: 200:248-253)

- **All other Variables Remain Constant**

It is assured that all variables other than the particular one under consideration have remained constant throughout the analysis. In other words, it is assumed that volume is the only factor that will cause cost revenues to change. however, changes other variables such as production efficient, sales mix, price levels and production methods can have an important influence on slaes revenues and costs. If significant changes in these other variables occur, the CVP analysis presentation will be incorrect.

- **Simple products or constant Sales Mix**

CVP analysis assumes that either a single product is sold or, range of products is sold, that sales will be in accordance with a predetermined sales mix. When a predetermined sales mix is used it can depict in the CVP analysis by assuming average revenues and average variables costs for a gives sales mix.

BEP is not a unique number; it varies depending on the composition of the sales mix. Because the actual sales mix is different from the budget sales mix, the actual average unit contribution is different from that used in the budget BVP calculations.

Thus, the BEP and the expected profit or losses at various output levels will also change. Any CVP analysis must therefore be interpreted carefully if the initial product mix assumptions do not hold.

- **Complexity - Related Fixed Cost does not Change**

CVP analysis assumes that complexity related cost remain unchanged. Cooper and Kaplan illustrate that many so- called fixed cost vary not with the volume of items unmanufactured but the range of items produced (i.e. complexity of the production process) Complexity - related cost do not normally vary significant in the short run with the volume of production. If a change in volume does not alter the range of production then it is likely that complexity- relates fixed costs will not after but if volume says constant and the range of items produced change then support department fixed cost will eventually change because of the increase or decrease in product complexity.

CVP analysis assumption will e violated if a firms seek to enhance profitability by production proliferation, i.e. by introducing new variants of products based on short - terms contribution margins. The CVP analysis will show that profits will increases a sales volume increase and fixed cost remains constant in the short term. The increased product diversity, however, will case complexity- related fixed cost to increase in future periods and there is a danger- which long- term profits may decline as result of products proliferation. The CVP analysis incorporate the fixed cost requires handling the diversity and complexity within the current product range, but the costs will remain fixed only if diversity and complexity are not increased further. Thus, CVP analysis will not capture the changes in complexity - relate arising from change in the range of items produced.

- **Profits are calculated on a Variable Costing Basis**

The analysis assumes that the fixed coast incurred during the period are charged as an expense for that period. Therefore, variable profit calculations are assumed. If absorption-coition calculations are used. it is necessary to assume that production equals to sales for the analysis to predict Absorption costing profit . If this situation does not occur, the inventory

levels will change and the fixed overheads allocated for the period will be different from the amount actually incurred during the period. Under Absorption Costing, Only when production equals to the amount of fixed overheads charged as expense.

- **Total Costs and the Total Revenues are Linear Functions of Output**

The analysis assumes that unit variable cost and selling price are constant. This assumption is only likely to be within the relevant range of production.

- **Analysis Applies to Relevant range only**

CVP analysis is appropriate only for decisions taken within the relevant production range and that it is incorrect to project costs and revenue figures beyond the relevant range.

- **Cost can be accurately divided into their Fixed Variable Elements**

CVP analysis assumes that costs can be accurately analyzed into their fixed and variable elements. Even though, separations of semi- variable costs into fixed and variable elements are extremely difficult in practice. Nevertheless, a reasonably accurate analysis is necessary, if CVP analysis relevant information for decision - making.

- **The Analysis Applies only to a short - terms time horizon**

In the short term, the costs of providing a firm's operating capacity such as property taxes and the salaries to the senor mangers are likely to be fixed relation to the change in activity. Decisions on the firms intended future potential level of operating capacity would determine the amount of capacity cost to be incurred. These decisions will have been made previously as part of the long term planning process.

Once these decisions will have been made, they cannot be easily reversed in short term. It takes time to significantly expand the capacity of plant machinery or capacity. Furthermore, plant investment and abandonment decisions should not be based on short term fluctuations in demand within a particular year. Instead, they should be reviewed periodically a part of the long term planning process and decisions based on predictions of long run demand over several years. Thus, capacity costs will tend to be fixed in relation to changes in activity within short term periods such as one year. However, over ling term period significant changes in volume or product complexity will causes fixed costs to change.

It is therefore, assumed that is the short term, some costs will be fixed and unaffected by changes in volume. In the short term, volume is the most important variable inflecting total

revenue, costs and profits. For this reasons, volume is given special attention in the form of CVP analysis. However, in the long run, other variables besides, volume, will cause costs to change. Therefore the long term analysis should incorporate other variables, besides volume and recognizes that fixed cost will increase or decrease in steps in response to changes in the explanatory variables.

2.1.2 Terms Used In CVP Analysis

Mostly used terms are as follow: (Fago: 2003:253-258)

- **Variable Cost**

The cost, which varies according to the level of production or output, is called variable cost. It fluctuation in total amount but total to retain unchanged per units as production activity changed. Material cost, direct cost, etc are variables cost. There is a linear relationship between the volume and variable cost i.e., the cost increase or decrease as the volume increased or decreases.

- **Fixed Cost**

The cost, which remains unchanged to an entire range of production or output, is called fixed cost. Thus, fixed cost is the cost, which remains constant in respect to the changes in the output within a relevant rage. The main characteristics of fixed costs are that it is fixed within a rage whereas in per unit cost, it will change. For example, rent insurance, etc.

- **Semi - Variable Cost**

Semi variable cost is the cost, which remains fixed to a certain range of output and caries thereafter in accordance with the change inactivity. In other words, the cost, which has characteristics of fixed and variable cost, is called Semi- variable cost. It is even called mixed cost. For example, Lighting, Indirect material. Indirect labor Cost of Overtime. Repair and maintenance, etc.

- **Step Fixed Cost**

It is the fixed cost, which remains constant up to certain level of capacity. After meeting the capacity, there is an increment in the fixed cost by certain amount. Regularly, the fixed cost will in increase up to the point, where the cost, meets its existing capacity.

- **Break Even Analysis**

Break - Even Analysis is a logical extension of Marginal Costing. It is based on the same principal of classifying the operating expense into fixed and variable. Now a same day, it has become a powerful instrument in the hands of policy makers to maximize profit.

The B/E/ analysis is a specific way of presenting and studying the inter- relationship between the cost volume and profit. It provides information to management in the most precise manner.

The B/E analysis established a relation between the revenues and cost with respect to the volume. It indicates the level of sales at which cost and revenue are in equilibrium. The equilibrium point is normally called BEP.

Break - even Point (BEP)

The BEP can be defined as that point of sales at which the total revenue is equal to all cost. For BEP to occur, it is necessary that firm same variable and fixed cost. If all the cost of the firms is variable no profit no loss of BEP would be at Zero sales volume. On the other hand, if all costs were fixed, the BEP would occur at a point where revenue is equal to total cost. The BEP can be computed in terms of units as well as Rupees.

$$\text{BEP (Unit)} = \frac{\text{Total Fixed Cost}}{\text{Unit selling price- unit variable cost}}$$

$$\text{BEP (Rs)} = \frac{\text{Total Fixed Cost}}{1 - \frac{\text{Unit variable cost}}{\text{Unit selling price}}}$$

In order to understand the B/E analysis three concepts should be understood.

1. Contribution Margin
2. P/V Ratio
3. margin of Safety

Contribution Margin

It is the difference between the sales and the marginal/ variable cost of sales and it contribution towards fixed expenses and profit.

Contribution Margin = selling - variable Cost

For e.g.

Selling Price	Rs 25
Less Variable cost per unit	Rs. 15
Contribution margin	Rs. 10

P/V ratio

It is an important tool in studying the profitability of a business. It establishes relationship between contribution and the sales value.

It can be also found the relationship between the change in the contribution and change in the sales. It is written in the form of percentage.

Example, in above case, if the fixed expenses is Rs 100,000/- and sales unit is 20,000, the contribution will be Rs. 20,000/- (20000x10) which is sufficient to meet fixed expenses and profit left is Rs. 100000/- and if the output is 10000, then the contribution will be Rs. 100000(i.e. 10000x10) which is just sufficient to beat the fixed expenses. And , if the output is 5000 units, contribution will be Rs. 5000/- which is not sufficient to meet fixed expenses and the result is a loss of Rs. 50000.

Margin of Safety = Actual sales - BE sales = $\frac{\text{Pr}\,ofit}{P/vRatio}$

Fore.g.

If present sales is Rs. 40, 0000 and BE sales is Rs 300000, margin of safety (MOS) will be Rs 100000(i.e. 400000- Rs 300000) or 25% (i.e. . . $\frac{100000}{400000} X100$)

2.1.3. Sensitivity CVP Analysis

Sensitivity of CVP analysis is the study of the CVP analysis in the different stages or in the different situation in which the related terms of CVP, cost (fixed and variable, volume and profit changes). If changes occur in one term, such as in cost (variable and fixed cost independently), we studied ifs effect or changes, which may be positive or negative, on profit, on sales volume, on contribution margin, on selling price, etc. respectively. It helps the company to maintain its original BEP in the change situation.

Small change is one factor of CVP can change the BEP of profit, or in other words, BE or profit is influence in response to the change in selling price, variable cost and fixed cost. When changes are expected in selling price, in ratio of variable cost factors, or in the amount of fixed cost, an analysis of the cost- volume - profit relationship can determine the effect of such changes on period's profit and BEP.

2.1.4. Method of Segregating Mixed and Semi Variable Costs

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

- **Levels of Output Compared to Levels of Expense Method**

According to this method, the output at two different levels in compared with corresponding level of expense. Since, the fixed cost remain constant, the variable overheads are arrived at y the ration of change in expense in output.

Variable Elements = $\frac{ChangeinAmountof\ \exp enses}{ChangeinActivityorquantity}$

- **Range Method**

This method is similar to levels of output compared to level expenses except that only the highest and lowest points of output are considered out of various levels. This method is also called "High and Low method".

Procedure:

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

Variable Rate= $\frac{Diffrenncein\cos t"y"}{DiffrenceinActivity"x"}$

Compute the Fixed cost as:

Fixed cost portion = (Total semi variable cost - variable cost)

- **Degree of variability method (DOV)**

In this method, the degree of variability is note for each of semi- variable expenses. Some may have 70% variability whole others may have 30% variability. The method is easy to apply but difficult is faced in determining the degree of variability.

- **Scatter - graph Method**

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

Procedure:

- The volume of production is plotted on the horizontal axis and the costs are plotted on the vertical axis.
- Corresponding to each volume of production costs is then plotted on the paper thus: several points are shown on it.
- A straight line of best fit is then drawn through the points plotted. This is the total cost line. The point where this line intersects the vertical axis is taken to be the amount of fixed elements.
- A line parallel to the horizontal axis is drawn from the point where the line of best fir intersects the vertical axis. This is the fixed cost line.
- The variable cost at any level can be known by noting difference between fixed coast and total lines.

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

- **Least square Method**

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

It is based on the mathematical techniques of fitting a equation with the help of number of observations. the linear e equation can be assumed as;

y=abs and the various sub- equation shall be,

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

$$\sum XY = a \sum X + \sum X^2$$

Similarly, the equation can be fitted for any number of orders of degree depending upon the number of observation available and the accuracy desired.

Unit variable cost and fixed cost can be computed by using the following formula.

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

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

Where,

Y= Total Cost

a= Fixed Cost

b= Unit variable Cost

N = No. of Series

X = Production Units

$\sum$ = Sum of

2.1.5. Special Problems in CVP Analysis

CVP analysis is applied to individual products or parts of a business and to company as a whole. In the latter case, there are three special problems may be encountered: (Drury; 2000:263-268)

The Activity Base

When two of more products or activities are combined for BEP analysis, the activity base is usually in amount. Product units are used for single product. The activity base is 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 many factoring, selling and administrative activities are expressed in combinations

.

The Change in Inventory

Normally, the budget change in inventories (i.e. finished goods and work - in process) is immaterial in amount and thus maybe disregarded in CVP analysis On the other hand. When the changes in budget inventory change in budget inventory are significant: it should be included in analysis, including the effect of inventory changes in CVP analysis requires subjective judgments about what management might do (about making inventory changes) at different volume and the conceptual precision is desired. Management considers two practical approaches or policies in inventory changes often used.

a. Disregarded the inventory changes
b. Include the inventory changes

The Non- Operating incomes and Expense

Non- operating income (gains) and expenses (losses) and extraordinary gains and losses, if material in amount, cause another problem in CVP analysis. The basic issue is whether they should be included or excluded. Extra- ordinary gains and losses are no- recurring and unusual: therefore, they should be exclude. Non operating incomes and expenses are recurring but they are not related to ongoing operations. Management considers the policy may be to :

a. Included the non- operating incomes and expense;
b. Excluded the non-operating incomes and expenses;

2.1.6. Utility of CVP or B/E Analysis.

Break - even analysis is the most useful technique of profit planning and control If is a device to explain the relationship between cost, volume and profits. The utility of the break- even analysis lies in the following advantages: (Brown & Howard: 1969: 353-355).

- It is simple basic device to understand accounting data.
- It is a useful diagnostic tool.
- It is provides basic information for further profit improvement studies.
- It is useful method for considering the risk implication of alternatives actions.

The breakeven analysis is a simple concept to comprehend and interpret the accounting data. Many business executives and others are unable to understand accounting data contained in financial statement and report . when these data are presented through break- even charts, becomes very easy to grasp and interpret them, However the executives using break even

analysis should remember the limitation of this device and should not attach too much value to it.

The break even analysis is a useful diagnostic tool. It indicates to management the cause of increasing breakeven point and falling profits. The analysis of these causes will reveal to management what actions should be taken. As a practical matter, knowledge of where the breakeven point lies can be quite useful to management in determining the need for action. however, an increasing breakeven point should not always be a matter of alarm to management. The important information to be analyzed is break even as a percentage of capacity. If the breakeven point as a percentage of capacity is increasing, it indicates unfavorable conditions. It is his kind of situation which needs immediate action. It is possible that due to plant expansion absolute breakeven point may increase, but capacity May be increase. This situation, where the break point as a percentage of capacity does not increase, is not unfavorable.

In the break even analysis, we compute BEP and P/V ratio prepare break even charts and P/V graphs and analysis and report the effect of changing factors on profits. These whole set of information is important to evaluate the reasonableness and usefulness of profits plans and other budgets and forecasts prepare by management. The break eve analysis, thus, provides the basic information for profit improvements studies and it is a useful starting point for detailed investigations.

The desirability of an action should be considered on the basic of the profit as well as risks. It profit alone is considered, a firm may commit to a risky action. The break - even analysis, to some extent, is a useful method for alternative actions. Considering the effects of the alternative actions on the break - even point can approach the problem of risk evaluation. From one alternative, a firm may expect higher profit and also a higher break- even point, while another alternative maybe produce comparatively lower profit but also entail a lower, break- even point. In taking a decision, the firm should not only consider the profiles expected from the alternative but also the probability of reaching the BEP. If the probability of achieving the BEP sales is low, the firms should prefer the second alternative where the BEP will be reached earlier.

2.1.7 Limitations of CVP or B/E analysis

The BEP or CVP analysis is a simple and useful concept. But it is based on certain assumptions, which have been discussed earlier. These assumptions limit the utility and general applicability of the B/E analysis.

Therefore, the analysis should recognize these limitations and adjust data, wherever possible, to get meaningful results. The CVP analysis suffers from the following limitations:

1. It is difficult to separate costs into fixed and variable components
2. It is not correct to assume that the total fixed cost would remain unchanged over the entire range of volume
3. The assumption of constant selling price and unit variable cost is not valid
4. The B/E analysis is a short- term concept and has a limited use in long rang planning
5. The B/E analysis is a static tool

2.1.8 Approaches of Calculating Break - Even Point'

There are two approaches to calculating the break - even point for a firm: the contribution-margin approach and the equation approach: (Dangol : 1997:557- 559)

1. The Contribution - Margin Approach

a. Based on Amount Profit Contributed

This approach is based on the concept of the contribution margin, or the amount that each unit contributes toward covering fixed expense and generating profit. Mathematically, the contribution margin per unit is calculated as follows:

Contribution Margin = Selling Price - Variable Expenses per Unit

b. Break - even is where fixed Expenses are covered

If the contribution margin is the amount the each unit contributes toward covering the fixed expenses, the break- even point in unit, or the point where the fixed expense are covered can be found in the following manner:

$$\text{Break - even sales (in Units)} = \frac{Fixedecpenses}{Contributionm\arg inperunit}$$

c. Break - even in Dollars

To find the break- even point in dollars simply multiply the break- even point in unity by the selling price. Alternatively, one can use the contribution margin ratio, which is the contribution margin expressed as a percentage of the selling price. Thus:

$$\text{Break - even Sales (in Dollars)} = \frac{Fixedecpenses}{Contributionm\arg inratio}$$

2. The Equation Approach

Sales - total Variable Expenses - Total fixed Expenses = Profit

Break- even sales (in dollars) = Total Variable Expenses + Total fixed Expense

$$\text{Sales (in units)} = \frac{FixedEcpenses + T\arg etNetIncome}{ContributionM\arg inperUnit}$$

Sales (in Dollars) = Total variable Exp + Total Fixed Exp + Target Net Profit

2.1.9. CVP Analysis with Multiple Products

1. Multiple Products Require weighting Sale Mix

Most firms have more than one product line, and analysis may be adapted for these firms. The same basic equations are used: however, the sales mix used weight the contribution margin. The sales mix is the number of units sold of a given product relative to the total units sold by the firm(Bairacharya Ojha, Shrma & Goe,: 2005: 260)

Example: If a company sells 8000 units of product A and 2000 units of product B, the sales mix is 80% A and 20% B.

2. Weighted Average Contribution Really a Market Basket

A weighted average unit contribution margin is calculated by multiplying a product's contribution margin by its sales mix percentage, and then summing the results for individual products. The result is often divided into fixed expenses (as before) to arrive at the break - even point in units. In this case, however the units are really a market basket of the various goods in the sales mix percentage (Bajracharya: Ojha, Sharam & Goet: 2005: 260)

3. Final step

As a final step, the sales mix percentage is multiplied by the number of "units" to calculate the individual product sales to break even. It should be evident that a change in a firm sales mix will alter the company's break/ even point)(Bajracharya, Ojha Shrma & Goet ; 2005: 260)

2.1.10. CVP Relationship and the Income Statement

Traditional Includes Cost- of Goods Sold

The traditional income statement for a manufacturer includes a cost of goods- sold figure that combines variable costs and fixed manufacturing overhead. The statement's format does not group costs by behavior but rather by function, this making CVP analysis difficult.

Contribution Highlights Cost Behavior

The contribution income statement is presented in a format that highlights cost behavior, Variable expenses are subtracted from sales to produce a total contribution margin. Next fixed expenses are subtracted the yield the period's net income. This format is used for variable costing.

2.1.11. Cost Structure and Operating Leverage

Cost structure refers to the relative proportion of fixed and variable existing in an organization. An automated manufacturing plant would have a high proportion of fixed costs whereas a direct labor- intensive plant would have a high proportion of variable costs. Any organization has some choice as to its cost structure.

A Company's cost structure has a significant effect on the way in which profits fluctuate in response to change in sales volume. The greater the proportion of fixed costs in a firm's structure, the greater will be the impact on profit from a given percentage change in sales revenue. This result from the fact that firm with relatively higher fixed costs (and relatively lower variable costs) will have a higher contribution margin ratio.

Operating leverage is a measure of how sensitive net income is to percentage change in sales. Operating leverage is greatest in companies, which have a high proportion of fixed costs relative to variable costs. A firm with high fixed costs and low variable costs has high

operating leverage,' the ability to highly increase net income from an increase is sales revenue. In other words, after the break- even point has been reached, a larger amount of contribution margin will fall to the bottom line in a high fixed cost structure than if the cost structure had been comprised mostly of continuing high variable costs, which continue to eat away at net income after the break - even point is reached. Of course, the risk is also grater because if the break- even point is not reached, losses will be greater in the firm with high operating leverage.

$$\text{Degree of Operating Leverage} = \frac{Contribution Marg in}{NetIncome}$$

2.2 Review of Thesis

Many studies have been conducted in the profit planning in the context of Nepalese business firms. But in the most, CVP analysis has given less priority than others or it can be side that only few studies are mainly focused on CVP analysis. And whatever few researches have been made, are not also in depth. Mostly CVP analysis is done only under the heading of profit planning and control in Nepal.

Few researches have been reviewed under the topic of profit planning and control in Nepal.

Badu, (1996) tried to point out some features and problems of "Profit Planning in Nepalese Manufacturing Public Enterprises and the Selected Dairy Development Corporation (DDC)" as a base for study.

The main objectives of his research work were:

a. To analyze the various functional budgets adopted in those enterprises.
b. To examine the capacity utilization of DDC.
c. To assess the financial performance of DDC using BEP analysis.

His research covered the time period of five year from 2049/50 to 2053/54. Research methodology was mostly through secondary procedure and only for some information, primary data were used.

Findings Produced:

1. DDC has practiced short term rather than long term planning
2. Lack of segregation of cost into fixed and variable
3. DDC has problem of maintaining the quality of the products.

4. No proper management to supply milk in the urban areas because of the difficulties in collecting surplus milk from rural market.
5. Financial position of the DDC is not good.

Dumre, (1997) has submitted the thesis on the topic "Profit Planning Practice in Nepalese Public Enterprise: A Case Study of DDC". The study was mainly concerned with the appraisal DDC and examines that in what extent, the company is applying PPC system. The main Objectives of his research work were:

1. To analyze the sales Revenue trend of DDC.
2. To analyze the various functional budget adopted by DDC.
3. To analyze the production function overhead expenses and other reasonable activities of DDC.

Findings Produced:

1. DDC has not been clearly defined its main objectives in annual goal or target.
2. The production plan depends upon sales plan but in case of DDC, the production plan is the basic plan of sales plan as supply side is given more importance.
3. The reasons of failure to raise profit in Nepalese manufacturing PEs are lack of knowledge about the market situation and lack of systematic planning.
4. Costing is done by traditional method and there is no segregation of cost into fixed and variable.
5. No proper planning for cost control mechanism and performance reporting.
6. Lack of budgeting experts, skilled planners and entrepreneurship. planning department has no adequate authority to decide and new ideas to formulate various plans.
7. Commercial performance of DDC is poor. So, DDC can't afford to finance into research and increase plant capacity by internal fund.

Aryal, (2000) has submitted a thesis on "Profit of manufacturing Enterprises: A case Study of DDC". The study mainly focused on the appraisal of DDC and examined that in what extent the corporation is applying with PPC. The main Objectives of his research work were:

1. To analyze the sales Revenue trend of DDC.
2. To analyze the various functional budget adopted by DDC.
3. To analyze the production function overhead expenses and other reasonable activities of DDC.

4. To analyze Variance and ratio analyze of DDC.

Findings Produced:

1. There is substantial gap between sales target and achievement of each year
2. Regression line about sales of DDC indicates a positive trend
3. DDC has not satisfactorily achieved its specific goals. Following are the main causes:
    a. Under capitalization
    b. Over staffing
    c. Not fully autonomy
    d. Corruption
4. DDC shows the following strengths and weaknesses:
    a. STRENGTH:- No problems of sales
        - Foreign Donors
        - Experienced Staffs
        - Local Milk
        - High Quality Product
    b. WEAKNESSES:- Political Jurisdiction
        - Competition with other private diary
        - Lack of skilled manpower
        - No sufficient stock/sales in summer season
        - Autonomy is a bank paper.

Thapa, (2000) has submitted thesis on the topic "Problems of Profile Planning in Manufacturing Public Enterprises: A Comparative study of DDC and Sita Ram Dairy". He has tried to:

Dig out some features and problems of profile planning in the context of Nepalese manufacturing enterprises.

Findings Produced:

1. DDC has concentrated its whole efforts on the survival of the company
2. Employees are not more careful of their duties sin DDC comparatively with SRD
3. Sales figures (target and achievement) of SRD are more in consistent than of DDC.
4. SRD has highly been successful to maintain co- ordination than DDC

5. Both companies have positive correlation between actual and target sales in both industries.
6. DDC has been producing 11 types of products and SRD has been producing only 3 types of products.
7. Both companies have not proposed PPC except sales and production plan
8. DDC and SRD have been suffering from operation losses for many years. The main cost are low contribution margin ratio, high fixed cast and under utilization of capacity.
9. Both companies pricing methods are cost plus pricing and standard cost pricing.

Kharel , (2003) has submitted thesis on the topic " Comprehensive Budgeting Process in Public Corporation in Nepal: A case Study of DDC. He had tried to examine profit planning and control system applied by DDC by using statistical tools like percentage, CVP analysis have been used to analyze the data.

Main objectives are as follows:

1. To analyze the functional budgets on sales and production sector of the DDC.
2. To analyze the various accounting ratios, measures the profitability and efficiency of the DDC
3. To analyze the budget target and its achievement along with reason of deviation, if any.

Finding Produced:

1. DDC has planned only short term or for coming fiscal period
2. DDC had not separate planning department and planning experts.
3. DDC has not collected all milk offered by the farmers. It has not been able to grant the loan to the farmer's requirement.
4. The government interferes to the price of raw milk and products. The Board of DDC lies as a showpiece.
5. DDC has not applied any inventory policy. The inventory has increasing trend.
6. The gap between actual production and actual sales are high.
7. The actual sales are lower than CEP sales
8. DDC has suffering the political pressure on employee's selection. Almost employees are appointed by the government directly latent than evaluation of candidate's ability

Adhikari, (2004) has submitted on the topic, " Profit planning in Manufacturing Enterprises: A case study of DDC." The following are the specific objectives of his study.

a. To analyze, the functional budgets on sales and production sector of the DDC.
b. To analyze, various accounting ratios, measure the profitability and efficiency of the DDC.
c. To analyze the budget target and its achievement along with the reasons of deviations, if any.

Findings Produced:

1. DDC has practiced short - term planning rather than long- term planning.
2. Production and sales of DDC is increasing annually although the growing rate is fluctuated.
3. DDC has no proper practice in segregating into fixed and variable.
4. Most of the budgeted figures are higher than actual figures
5. DDC has prepared direct labor budget only based on technical an administration. It has not prepared according to time and rate.
6. Capacity utilization is very high but the productivity ration is low
7. CVP analysis shows that DDC is operating below BEP sales.
8. Timely accounting and auditing works are not maintained.
9. Financial statement and accounting system are out of the financial rules.

Namdak, (2005) has submitted thesis on the topic " Cost- vohume - profit Analysis of Dairy Development Corporation". The following are the specific objectives of his study.

a. To analyze, profitability and sensitivity of DDC in relation to sales.
b. To analyze the relationship between cost volume and profit as a tool of budgeting
c. To analyze the productivity of labor along with different productivity ratios.

Finding Produced

1. DDC has not been practicing CVP analysis and so method adopted segregate fixed and variable cost.
2. DDC hasn't been segregating fixed and variable cost
3. DDC has practiced short term planning rather than long term planning.
4. DDC has low contribution margin ratio.
5. Corporation has high fixed cost
6. Low productivity of labor has been shown
7. DDC has no effective inventory policy
8. Over utilization of capacity of machines resulted high repaired and maintenance cost
9. Very low profitability in relation to sales.

Dhakal, (2006), has conducted research work on " Cost Volume Profit Analysis of Dairy Development Corporation". Main objectives are:

This study concerned to examine the practice of CVP analysis & its effectiveness in DDC. The time period covered by this research was five years.

Findings

- DDC hasn't been segregation fixed and variable cost, care has been taken in this research to differentiate fixed cost and variable cost with help of degree of variability method.
- DDC hasn't been practicing CVP analysis till now and there is no method adopted to segregate fixed and variable cost.
- DDC has low contribution margin ratio in all the five years under study
- DDC has high wages & either availability of manpower is more than requirement or inefficiency of workers resulting in low productivity of labor.

Rijal, (2007), has conducted a research on " Cost Volume profit Analysis 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 its impact in profit planning. It covers five years financial statement.

Findings

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 any computer tees, depreciation, interest, provident fund and subsides)
- Company has no effective inventory policy. The inventory management, raw material handling and controlling system are not efficient an 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.

Shrestha (2008), has conducted a research "Cost Volume And Profit Analysis of Commercial Bank: A case study of Himalayan Bank Limited."

This Study concerned to examine the practice of CVP analysis & its effectiveness in commercial Bank in this study the secondary data had been used mostly and related other information had collected by informal interview for segregating cost. Cost analysis contribution margin analysis. P/V ratio analysis & Break Even analysis. The time period Covered by this research was six years from FY 2061/62.

Findings

- CVP analysis has not practiced yet.
- There is no practice of segregating cost into fixed and variable. The costs are roughly classified and that classification is not scientific and appropriate.
- All the level of management is not involved in profit planning and decision making of the bank.
- There is no complete and comprehensive budgeting system.
- Lack of the system of SWOT analysis, Liberalized policy of Government, skill manpower, good management team, use of computer technology etc. are strength of Bank where as unable to provide service in rural area, market competition, conflict in Nation, Industries and Business closed down are weakness and threat.

Sijakhwo, (2008), has conducted a research entitled " study on Application of Cost- volume-profit Analysis as a Management Tool in Bhaktpur Craft Paper Ltd.

This study concerned to examine and study the practice of management accounting tools in the Company. This study is based on secondary data only and accuracy of this study is based on true response and the data available from the company. The time period Covered by this research was seven years from FY 2056/57.

Findings

- Different types of management accounting tools, which are taught in the colleges, are not found applied by the Company.
- There is no Practice of segregating cost into fixed and variable by using statistical technique i.e. least square method.
- Proper estimation is not used while making projected or budgeted costs, profit and volume of the company.

- Mixed costs or semi- variable costs were segregated by using least square method.

Pradha, (2009), has conducted a research entitled " Cost volume Profit Analysis of Public Enterprise of Nepal(A Comparative analysis between Nepal Telecom and Nepal Electricity Authority). The following are the specific objective of his study.

a. To analyze, profitability and sensitivity of DDC in relation to sales.
b. To analyze the relationship between cost volume and profit a s a tool of budgeting
c. To analyze the productivity of labor along with different productivity ratios.

Findings

- Segregation of fixed and variable cost is ignored by both enterprises. Cost volume profit analysis is not plasticizing by these enterprises no any method has been adopted to segregate to segregate cost into fixed or variable.
- Actual operating income of the NTC is increasing in fluctuation of trend.
- Variable cost NTC is very less compare to its fixed cost and contribution margin ratio of NTC is very high. But NEA has variable cost and its contribution margin ratio is less.
- NTC is running in profit but NEA is suffering from less. No any systematic plans have been implemented for preventing the loss and improve profit of these enterprises.
- Fixed cost of NTC is high in the comparison to variable cost. Employee cost and administration expenses are high. In NEA fixed cost like interest and depreciation are high. Long term loan in NEA are the main cause in increase interest.
- High PVC ratio of NTC reduced the breakeven level of the company where as NEA has less PV ratio and BEP sales are more. As a result NTC is earning profit but NEA is suffering loss.

Adhikari, (2009), has conducted a research entitled " Cost- volume- Profit Analysis of "Nepal Lube Oil Limited". This study concerned to examine the practice of CVP analysis & its effectiveness in company, in this study the secondary data had been used mostly and related other information had collected by informal interview for segregating cost. Cost analysis, contribution margin analysis, P/V ratio analysis & Break Even analysis. The time period Covered by this Research was seven years from FY 2056/57.

Findings

- CVP analysis has not practiced yet.

- There is no practice of segregating cost into fixed and variable. The costs are roughly classified and that classification is not scientific and appropriate.
- There is no complete and comprehensive budgeting system.
- As Nepal is proceeding towards globalization and net membership of WTO , companies are recommended to apply management accounting tools to fit with the global environment

Research Gap and Justification

There is a gap between the present research and the previous researches.

The previous research study dealt with profit and control, as an aggregate. And, mostly, all the researches applied are mostly similar-same financial tools, statistical tools and also results and recommendations also resembles very much.

Since DDC has been incurring losses year in-depth analysis should be done to find out the major causes of such losses. Broad profit planning and control techniques would not be effective to dig out the real causes.

So, CVP analysis, as being the major tool to find out the profitability of the short-term tactical plan, that's why, this study has been performed. In fact, it is a kind of fully fledged research work.

So, this study paper is designed to highlight the major causes of continuous losses recent improvement's reasons and high function and in profit and loss every year, which remained different from pervious researches.

CHAPTER - III
RESEARCH METHODOLOGY

3.1 Research Design

Research design provides the overall framework or plan for the activities to be undertaken during the research study. Since, this study revolves around the relationship between cost, volume and profit, intensive analysis of historical and descriptive research design is used to analyze the performance of past five years from FY 2059/60 to 2063/64. To fulfill the objectives of this study, primary and secondary data are used. It also focuses on the affect on profit to change in volume and cost.

3.2 Sources of Data

The sources of data are both primary and secondary collected from the central office of DDC. The primary data are collected through discussion with the concern authority. The secondary data are taken from annual reports, auditor's reports, balance sheet and profit and loss accounts, cost sheets, and unpublished pervious thesis relating with the DDC and other published data, etc.

3.3 Population and Sample

DDC is taken as population here, CVP analysis focused wholly on DDC and not centered to particular branch of DDC or particular product. Hence, there is no difference between sample and population in this case.

3.4 Data Collection and Analysis

"Collecting data is the connecting link to the world of really for the researcher" (Wolf and Pant; 2005:197). Data are collected from the concerning the differentiation of fixed and variable costs and other related elements of the P/L a/c from the concerned authority of central office of DDC. And since, they are not using CVP analysis, a thorough discussion with them provide a legitimate estimation of fixed and variable cost.

Secondary data are collected from annual reports, Sinhabalokan, auditor's report, balance sheet and P/L a/c, cost sheets and other thesis concerned mostly with the DDC.

The analysis of data are done by using different tools such as, averages, percentages, and all the CVP related ratios are used to find out the relationship among the three elements cost,

volume and profits. All the findings are presented in categorized, systematic, graphical and tabulated form.

3.5 Statistical Tools

Collected data were analyzed using accounting, statistical and mathematical tools. Tables, charts and graphs are demonstrated to make the report more comprehensive and striking. The accounting tools used are: contribution margin, break-even point, etc. The statistical tools used are: average, standard deviation, correlation etc. and the mathematical tools used are: percentage, mean and difference, etc.

Arithmetic Mean ($\bar{x}$) = $\frac{x_1 - x_2 + x_3}{n}$

Mean ($\bar{x}$) = $\frac{x_1 + x_2 + x_3 \ldots\ldots x_n}{n}$

where,

$\sum x$ = Sum of the size of items

($\bar{x}$) = Mean

N= Number of items

Standard Deviation (σ)

Karl Pearson first introduced the concept of standard deviation in 1983. Standard deviation is the positive square root of the arithmetic average of the squares of all deviation measured from the arithmetic overage of the series. The standard deviation measures the absolute dispersion of a distribution. The greater the standard deviation i.e. greater will be the magnitude of the values from their mean. A small standard deviation means a high degree of uniformity of the observation as well as homogeneity of a serves.

Standard deviation is denoting by a Greek letter 'σ' (sigma) and is calculating as follows:

Standard deviation (S.D.) (σ) = $\sqrt{\frac{\Sigma(xn - \overline{x})^2}{n-1}}$

where,

$\bar{x}$ = The average (mean)

X_n = the individual observation

n= Total number of observation

Correlation Coefficient

The correlation analysis is the technique used to measures the closeness of the relationship between the variables. It helps is in determining the degree of relationship between two or more variables. It describes not only the magnitude of correlation but also its direction. The coefficient of correlation is a number, which indicates to what extent two variables, are relate with each other and to what except variations is one leads to the variation in the other.

Simple Correlation Coefficient (r) = $$\frac{N\Sigma x_1 x_2 - (\Sigma x_2)(\Sigma x_2)}{\sqrt{N\Sigma x_2{}^2 - (\Sigma x_2)^2}\sqrt{N\Sigma x_2{}^2 - (\Sigma x_2)^2}}$$

Correlation may be positive or negative which lies between $\pm$ 1. Simple correlation between interest rate on deposit and deposit amount interest rate on leading and credit or lending amount and is compute in this thesis. The correlation between interest between interest rate on deposit and deposit amount is positive. Interest rate on lending and lending amount is negative when inflating increases, interest rate also increases in same direction and vice versa. For our study, following reference is used.

- Correlation may be positive or negative and ranges from - 1 to +1 when r = +1 there is positive or negative and ranges when r = 1 there is perfect negative.
- Correlation, when r =0, there is no correlation and when r < 0.5 then there is low degree of correlation.
- When 'r' ties between 0.7 to 0.999 (or -0.7 to -0.999) there is high degree of positive or negative correlation.
- When 'r' lies between 0.5 to 0.699, there is a moderate degree of correlation.

CHAPTER - IV

PRESENTATION AND ANALYSIS OF DATA

Profit planning and control helps in facilitating effective performance of management system. It is the ultimate objective of the management to maximize profit over the long terms, consistent with its social responsibility. In order to make profit it is necessary to examine whether the capacity is utilized properly or not or if there is any part to reduce cost because minor change in cost may result high difference in profit, whereas the efficient use of resources may reduce the cost and it may give opportunity of more profit and CVP analysis can be the most important technique to utilize the cost in effective an deficient way. CVP analysis is a way to quickly answer a number of important questions about the profitability of a company's products or services or company as a whole.

There is high demand of cheaper goods in Nepalese market. To produce cheaper goods, maintaining the profit, CVP relation of the firm should be properly analyzed. There are only two possible ways to get higher profit; one is to increase the price and the other is to reduce the cost of production. Increasing the price of the product would reduce the demand, which eventually reduce the profit. So increasing the price has long term and multiplying effects. The second alternative is to make possible reduction in the cost. This is determined by the CVP analysis. It finds out the ways to reduce the cost and increase the profit. CVP analysis deals with the relationship of cost, volume and profit and also helps in utilizing the resources in a better way to get the maximum return,

So, taking into account of these reasons, this study mainly focuses on the CVP analysis of the DDC. This chapter presents the data, analyzes and interprets the data collected. The data ate presented in a systematic manner and presented and tabulated in meaningful ways.

4.1. Sales Plan of DDC

The first step in development budgeting process of an organization begins with the preparation of sales budget. The sales planning is a necessary component of PPC because.

a. It provides to the basic management decisions, about marketing and.
b. Based on those decisions, it is an organized approach for developing a comprehensive sales plan.

If the sales plan is unrealistic, most of the other portions of the overall plan also will be unrealistic.

DDC is the market leader in the dairy industry. Now after the establishment of the dairy in private sector, DDC is gradually losing is market share. DDC produces large varieties of product such as pouch milk, skimmed milk, milk powder, curd, ghee, butter, cheese, different varieties of Ice- creams, paneer etc.

Table : 4.1

Sales Description

From 2064/65-2068/69

(Rs. In '000')

Products	2064/65	2065/66	2066/67	2067/68	2068/69
Milk	1448158	1798192	2132896	2319276	250824
Butter	38761	38907	46796	57098	72890
Ghee	142725	130805	1782105	210273	255159
Cheese	43663	54087	67018	76806	93100
Curd	87166	119905	143866	183237	221506
Ice- cream	8116	8974	12219	13180	16311
Cream	1404	1735	1975	1465	1498
Panner	18327	26661	32023	42699	53274
Lassi	138	217	1451	3600	3357
Rasbari	4635	5136	7183	6847	5610
Lalmohan	4346	5758	7296	9154	8442
Pedaa	1775	2463	2796	2663	2849
Gupdak	234	51	97	71	-
Bay	-	-	512	-	30
Ladykeni	-	-	10	-	95
Skimmed milk powder	23	29	7	1	-
Mohi	1193	379	384	464	532
Balushahi	-	-	6	46	28
Total	1800673	2193309	2628350	2926888	3242939

Source: Annual Report of DDC 2064/65 - 2068/69

The table 4.1 shows the trend on yearly basic of different products produced by the DDC.

Table : 4.2

Milk and Ghee's percentage to Overall sales

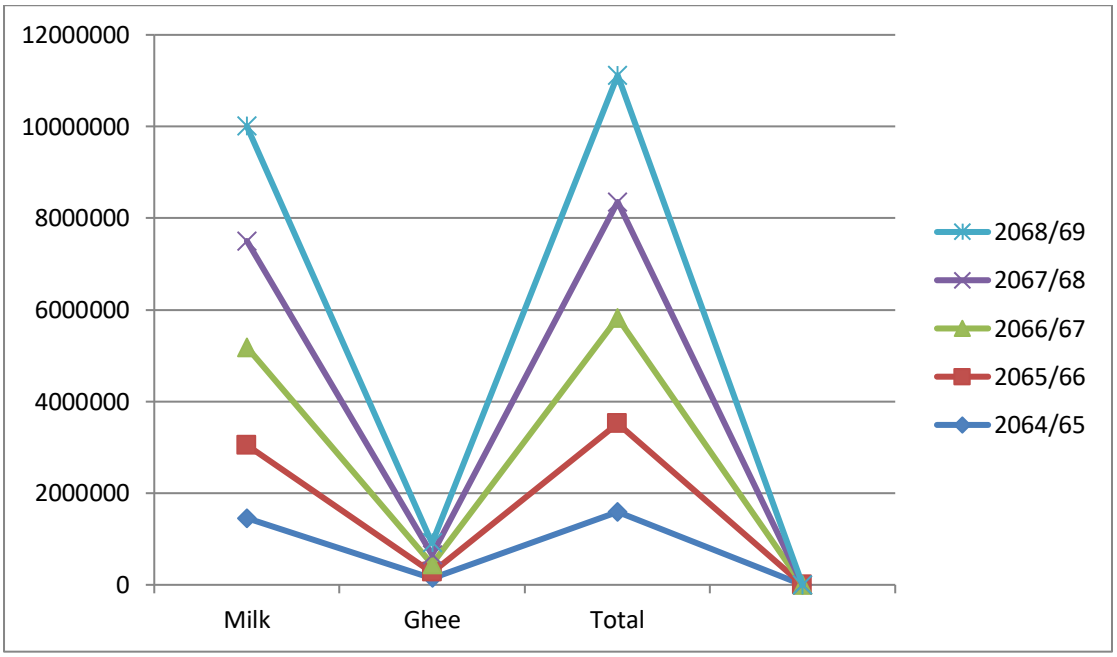
(Rs. In '000')

Particular	2064/65	2065/66	2066/67	2067/68	2068/69
Milk	1448158	1798192	2132896	2319276	2508248
Ghee	142725	130805	172185	210273	255159
Total	1590883	1928997	2305001	2529549	2763407
Sales	1800673	2193309	2628350	2926888	3242939
Percentage	88.35%	87.95%	87.70%	86.43%	85.21%

Source: DDC Annual Report 2064/65 to 2068/69

Figure 4.1

Contribution of Milk and Ghee to Overall Sales



Milk and Ghee constitutes almost87% of total sales revenue in each year. Milk constitutes 80.42% in F/Y 2064/65, 81.99% in F/Y 2065/66, 81.15% in F/Y 2065/66, 81.15% in F/Y 2066/67 and 79.24% in F/Y 2067/68, 77.35% in F/Y 2068/69. and Ghee Constitutes 7.93% in F/Y 2064/65, 5.96% in F/Y 2065/66, 6.55% in F/Y 2066/67,7.19% in F/Y 2067/68, 7.86 in F/Y 2068/69.

Milk, being the dominant product, although revenue generated from it is increasing in 2065/66 and slowly decreasing in another financial year as to overall percentage of milk to total sales.

And Ghee's demand is increasing and its contribution to sales revenue is increasing. This seems like Ghee will be the contributor to sales revenue in the coming years too along with

milk. Other products like cheese, butter, curd, Ice cream, etc. constitute only 13% to the total sales revenue From the fiscal year 2059/60 to 2063/64.

The following table represents FY 2064/65 to 2068/69.

Table 4.3

Year	Budgeted	Actual	Achievement
2064/65	1895445	1800673	95%
2065/66	2410229	2193309	91%
2066/67	2986761	2628350	88%
2067/68	3147191	2926888	93%
2068/69	3643751	3242929	93%
Total	14083377	12792159	

The above table 4.3 and figure 4.2 shows the compression between the budgeted annual sales revenue and actual sales revenue of DDC.

The budgeted actual sales are in increasing trend, however the percentage of increasing in fluctuation. The difference in budgeted sales and actual sales is not more than 10%. The trend shows that the achievement of actual sales towards budgeted sales is increasing.

Table: 4.4

Calculation of Different Statistical Tools

	Budgeted Sales (X)	Actual Sales (Y)
Mean X, Y	2816675	2558431
Standard Deviation (O)	510586	573740
Co- efficient of Variation (C.V)	18.12%	22.42%
Correlation Co- efficient (r)	0.8944	
Probable Error of Correlation (P.E. (r)	0.0954	

The above table 4.4 shows the coefficient of variation of budgeted and actual sale. The distribution with smaller C.V. is considered to be more homogeneous or less variable or uniformly distributed. And in this calculation, budgeted sales are more homogeneous or less variable than actual annual sales, which indicated the low efficiency of planning department. The actual sales were more heterogeneous or with 22.42% C.V. more variable than budgeted sales having 18.12% C.V.

The widely- used statistical tool 'Correlation of Co- efficient' has been used to analyze the degree of relationship between the budgeted and actual sales. "Karl Pearson's Correlation Co-efficient" is the most widely used in practice for calculating correlation coefficient between the two variables. X and Y, and is usually denoted by 'r'.

For calculating 'r' budgeted sales are denoted by x (independent Variables) and actual sales are denoted by Y (dependent Variable). It is assumed that there will be linear relationship between budgeted sales and actual sales.

The probable error (P.E) of the correlation Co- efficient (r) is and old measure of ascertaining the reliability of the value of sample Pearson co- efficient of correlation. It is used to test whether the calculated value of sample correlation co- efficient is significant or not. If

a. r < P.E. (r), then the value of r is not significant.
b. r > P.E. (r), then the value of r is definitely significant
c. In other situations, nothing can be conclude

The value of r is greater than 6 P.E (r) (i.e. 0.8944> 0.3621). It means the value of r is very and highly significant. So, it can be said that actual sales will go in the same direction as budgeted sales.

The regression line can also be fitted to show the degree of relationship, between budgeted and actual sales. The correlation analysis refers to the degree of relationship between the variable. But it does not say about which variables is cause and which is effect. While regression analysis established, the nature of relationship between two or more variables and then estimate the unknown variables (dependent variables) with the help of known variables (Independent Variables)

For this, actual sales have assumed to be dependent upon the budgeted sales. as independent.

So, regression line is actual sales "Y" on budgeted sales "X" is as follows.

$$y - \bar{y} = \frac{ray}{ax}(x - \bar{x})$$

$$\text{Or, } Y - 2558431 = 0.8944 \times \frac{573740}{510586}(x - 2816675)$$

$$Y - 1587615 = 1.005\,(x - 2816675)$$

$$Y = 1.005x - 2830758 + 1587615$$

$$y = 1.005x - 1243143$$

It shows positive relationship between the budgeted sales and actual sales. with this equation we can forecast the likelihood of actual sales achievement of the year 2069/70.

4.2 Cost Structure of DDC

Cost planning and control focuses not only on reducing the costs but also considering the effect of breakdown of machines, frustrating employees, lower quality of productions, etc caused y reduction of cost. Efficient and effective utilization of cost is the major demand and purpose of cost planning.

Cost is defined as an expenditure that is entirely recorded as an asset and becomes an expense when it is used up in the future. Cost can be controllable and non- controllable. In short run, all the variable expenses are controllable and all the fixed expenses are non controllable.
The cost or expenses of DDC are categorized into four sectors. They are:

- Collection Expenses
- Processing Expenses
- Selling or Distribution Expenses
- Administration Expenses

All the expenses are collected and analyzed with support from the DDC personnel regarding the cost behavior and distributed as below, into fixed, variable and semi- variable cost. Since, they weren't practicing CVP analysis, there were no distinction among cost into fixed or variable, so degree of variability method is used to distinguish the semi- variable cost into fixed and variable cost (Maheswari ; 2000)

Semi- variable cost are distributed according to the degree of variability (70:30) (Hellion: 1997) since, DDC hasn't been practicing CVP analysis and being so vast product line distributed in different regions and branches, degree of variability seems appropriate to distribute semi- variable cost into fixed and variables.

Collection Expenses

Collection expenses includes all the expenses related with collecting milk from various milk formers, and the cost relating to it, such as purchase of milk, porters' wages and transportation expenses, salaries, provident fund, gratuity expense of those works engaged in the collection of milk and necessary raw materials. The detailed distributions of collection expenses are presented in the following table 4.5 distributing the cost into fixed and variable and semi-

variable expenses are distributed according to the degree of variability method, popularly as 70:30 basic of separation.

Table: 4.5

Distribution of Collection Expenses into fixed, Variable and Semi- Variable Cost

Variable Cost	Fixed cost	Semi- Variable cost Basic : DOV (70:30)	
Purchase of milk	Salaries	No Entry	
Fuel and other provision	Provident Fund	Water and Electricity	FC = 30% VC = 70%
Chemicals and Detergents	House and land Rent	Machine Repairs	FC= 70% VC= 30%
Other Dairy Goods	Tax and Charges	Building Repairs	FC= 70% VC= 30%
Allowance	Bank Commission Charge	Motor Repairs	FC= 70% VC= 30%
Traveling Expenses	Insurance	other Repairs	FC= 70% VC= 30%
Cleaning Transportation	Gratuity Expense	Stationery and Printing	FC= 70% VC= 30%
Other Transportation Exp.		Ticket, wire, Telephone	FC= 70% VC= 30%
		Non- durable Office Goods	FC= 70% VC= 30%
		Prize Given to Farmers	FC= 70% VC= 30%

Source: Appendix - 3

Processing Expenses

Processing Expenses is a part of production cost which relates with raw materials, packaging, chemicals and detergents, fuels and other provision, water expenses electricity expenses, repairs of machines, motors, buildings, etc., salaries, provident fund, etc of the workers associated with the processing of milk and milk products.

Table: 4.6.

Distribution of Processing Expenses into Fixed, Variable and Semi- variable Cost

Variable Cost	Fixed cost	Semi- Variable cost Basic : DOV (70:30)	
Skimmed Milk Powder Expenses	House and Land Rent	Transportation Exp of Butter, Cheese, etc	FC= 70% VC= 30%
Raw Material Expenses	Salaries	powder Transpiration Expenses	FC= 70% VC= 30%
Packaging Goods	Provident Fund	Water and Electricity	FC= 30% VC= 70%
Chemicals and Detergents	Insurance	Motor Repairs	FC= 70% VC= 30%
Fuel and Other Provision	Gratuity Expenses	Machine Repairs	FC= 70% VC= 30%
Allowances	Bank Commission Charges	Other Repairs	FC= 70% VC= 30%
Travelling Expenses		Stationery and Printing	FC= 70% VC= 30%
Processed Milk Loss		Non-durable Office Goods	FC= 30% VC= 70%
Feed Purchased		Ticket, Wire, Telephone	FC= 30% VC= 70%

Source: Appendix - 4

Selling Expenses

Selling Expenses or Distribution Expenses includes all the costs relating to selling, distribution and delivery of products to customers. It includes salaries, provident fund, insurance, and gratuity expenses of the marketing staffs of DDC and also travelling expenses, Milk and Milk product loss etc.

Table: 4.7

Distribution of Selling Expenses into Fixed, Variable and Semi-Variable Cost

Variable	Fixed Cost	Semi-Variable Cost Basis: DOV(70:30)	
Allowance	Salaries	Stationery and Printing	FC= 70% VC= 30%
Fuel & Other Provision	Provident Fund	Water and Electricity	FC= 30% VC= 70%
Travelling Expenses	House and Go down Rent	Motor Repairs	FC= 70% VC= 30%
Milk & Milk Product Loss	Insurance	Building Repairs	FC= 70% VC= 30%
Dealer's Facilities	Tax and Charge	Other Repairs	FC= 70% VC= 30%
Milk & Milk Product Commission Exp.	Gratuity Expenses	Milk Transportation Expenses	FC= 70% VC= 30%
		Business Promotion Expenses	FC= 70% VC= 30%
		Non-durable Office Goods	FC= 30% VC= 70%

Source: Appendix - 5

Administration Expenses

Administration expenses include those expenses other than manufacturing and distribution. They are incurred in the responsibility centers that provides supervision of and service of all functions of all the enterprises, rather than in the performance of any one function. Salaries,

allowance, Provident Funds, Employees Training Expenses, Employees Welfare Expenses, Insurance, etc. are included under this sector.

Table: 4.8

Distribution of Administration Expenses into Fixed, Variable and Semi-Variable Cost

Variable Cost	Fixed Cost	Semi-Variable Cost Basis: DOV (70:30)	
Allowance	Membership Charges	Water and Electricity	FC= 30% VC= 70%
Fuel and other Provision	Salaries	Ticket, Wire, Telephone	FC= 30% VC= 70%
Travelling Expenses	Provident Fund	Stationary and Printing	FC= 70% VC= 30%
Guest Entertainment Expenses	House and Go down Rent	Motor Repairs	FC= 70% VC= 30%
Donation	Office Equipment Expenses	Building Repairs	FC= 70% VC= 30%
Examination Expenses	Employees Welfare Expenses	Other Repairs	FC= 70% VC= 30%
Adjustment Expenses	Employees Training Expenses	BOD Meeting Expenses	FC= 70% VC= 30%
Deferred Expenses	Auditor's Expenses	Non-durable Office Goods	FC= 30% VC= 70%
Loss on Sale of Assets	Sub-Committee Fee	Business Promotion Expenses	FC= 70% VC= 30%
Association Development Exp.	Advisory Cost	Meeting Expenses	FC= 70% VC= 30%

Source: Appendix - 6

DDC classified its total cost of collection; processing, selling and administration Expenses into fixed and variable cost for CVP analysis sensitivity analysis. According to the name nature of the data, costs are classified as under:

4.2.1 Variable Cost of DDC

Variable Expenses vary in direct proportion to changes in output or activity in a responsibility center. Variable expenses are activity-based because they are incurred as a direct result of output, productive activity, or work done. They would not exist if not for the performance of some activity. Variable expenses increases or decreases directly with changes in outputs, therefore, if output is doubled, the variable expenses is doubled; or if output decreases by 10% the variable expenses also decreases by 10%. All the variable costs of collection, processing, selling and administration expenses of DDC are depicted in below table 4.9 table 4.12.

Table: 4.9

Variable Collection Expenses

(Rs. In '000')

Collection Expenses	2064/65	2065/66	2066/67	2067/68	2069/70
Purchase of Milk	1103473	1295786	1545567	1902930	2234227
Fuel and Other Provision	44704	52595	52867	74559	79853
Chemical & Other	742	1008	1505	1850	1949
Other Diary Goods	692	975	1015	1663	1573
Water & Electricity	3674	3135	3693	3209	3165
Allowance	3888	3003	6298	6602	6558
Machine Repairs	1012	873	1123	1339	1407
Building Repairs	124	72	187	254	358
Motor Repairs	3665	3945	4829	6197	6141
Other Repairs	74	64	69	116	132
Stationary & Printing	134	121	154	127	163
Travelling Expenses	3929	5141	7210	11953	20120
Ticket, Wire & Telephones	137	113	138	132	136
Non-Durable office goods	43	48	58	83	80

Clean	128	106	134	265	221
Other Transportation Expenses	-	-	93	208	-
Total	1166419	1366975	1624940	2011560	2356083

Source: Extracted from Appendix - 3-6

The variable collection expenses increased to Rs. 1366975000 in F/Y 2065/66 from Rs. 1166419 in F/Y 2064/65. In F/Y 2066/67 it increased by Rs 257965000 in relations to F/Y 2065/66. In F/Y 2067/68 total variable expenses amount Rs 201156000 which is increased by 23.80%, in F/Y 2068/69 variable expenses increased by 1189664000 in relation to FY 2064/65. This increased % is 102% so variable cost is in increased in every financial year.

Table 4.10 shows the variable processing expenses as DDC. In this variable processing expenses increased by Rs 154776000 (57%) in FY 2065/66 and in F/Y 2066/67 by Rs 153148000 (36%). And then in F/Y 2067/68 it is decreased by Rs 252026000 (43.57%) and in F/Y 2068/69 increased by Rs 78997000.

Table: 4.10

Variable Processing Expenses

(Rs. In'000')

Processing Expenses	2064/65	2065/66	2066/67	2067/68	2068/69
Skimmed Milk Powered Exp.	78418	193444	225585	16525	18757
Raw Materials and Other	5780	6914	11387	12826	11847
Packaging Goods	87757	99536	98048	113501	142614
Chemical and Detergents	5041	6541	7102	9022	11264
Other Diary goods	1762	2073	2138	2774	2915
Cheese butter etc. Transportation Exp.	502	819	970	947	892
Water and Electricity	15042	15366	16638	19345	22123
Fuel and other provision	59240	75126	75071	96318	139355
Allowance	7810	7457	14997	16465	14314
Machine Repairs	3354	3739	5375	8710	11130
Building Repairs	784	472	637	1151	831
Other Repairs	163	153	156	170	186
Travelling Expenses	994	1409	1547	1688	1637
Stationary and Printing	136	175	165	200	219
Non-durable office Goods	82	56	46	86	87

Processed Milk Loss	11937	118504	42855	10931	10931
Ticket, Wire Telephone	21	18	19	14	15
Total	270459	425235	578383	326357	405354

Source: Extracted from Appendix-3-6

Table: 4.11

Variable Selling Expenses

(Rs. In '000')

Selling Expenses	2064/65	2065/66	2066/67	2067/68	2068/69
Allowance	3845	3424	6087	6560	5938
Stationery & Printing	333	323	329	452	457
Water & Electricity	196	198	184	183	193
Fuel & Other Provision	4643	4518	4509	5997	5882
Motor Repairs	845	852	835	1061	954
Building Repairs	6	70	68	39	119
Other Repairs	20	19	22	30	26
Milk Transport Exp.	7109	7647	8227	9135	10662
Travelling Expenses	130	180	180	345	295
Business Promotion Exp.	1765	1833	1752	1898	3225
Products Loss	109	133	107	120	162
Non-durable office goods	27	20	37	30	48
Total	19037	19217	22337	25856	27961

Source: Extracted from Appendix-3-6

In table 4.11 shows that Variable selling expenses increase in every financial year. if started to increase from F/Y 2065/66 by Rs. 180000 and in 2066/67 by Rs 3120000 in F/Y 2067/68 by Rs 3519000 lastly in FY 2068/69 by Rs. 2105000.

Table: 4.12

Variable Administration Expenses

(Rs. In '000')

Administration Expenses	2064/65	2065/66	2066/67	2067/68	2068/69
Allowance	5928	5242	9049	9364	8381
Water & Electricity	21	7	23	13	20
Ticket, Wire & Telephone	1040	1072	1041	1129	1144
Stationery & Printing	813	1011	937	1060	1287
Fuel & Other Provision	316	330	321	482	418
Motor Repairs	217	303	370	336	451
Other Repairs	1621	2744	2626	5683	4800
Travelling Exp.	1602	1771	2323	2968	2959
Entertainment Exp.	44	39	39	70	120
BOD Meeting Fees	205	131	112	7	293
Recruitment Cost	353	316	342	444	513
Non- durable office goods	688	765	679	571	644
Donation	16	178	1105	-	-
Total - Annual day Exp.	50	-	10	29	1438
Adjustment Exp.	-	3	-	3911	3166
Business Promotion Exp.	330	135	681	30	20
Deferred Exp.	71	47	54	43	147
Meeting Exp.	857	82	966	-	-
Seminar Exp.					
Total	16141	16279	19063	28637	29200

Source: Entranced From Appendix - 3-6

In table 4.12 shows that variable administration expense increased year after year. In F/Y 2065/66 it is increased by Rs. 138000 in F/Y 2066/67 by Rs. 2784000 in F/Y 2067/68 and FY 2068/69 increased by Rs. 9574000 and Rs. 563000.

Variation in variable expenses is due to various factors. It can be due to change in volume, cost of production', inflation, competition, different in the tastes and preferences of customers, elasticity of demand, seasonal variations etc.

4.2.2 Fixed Expenses of DDC

Fixed expenses are those that do not vary with output. They occur primarily with the passage of time, i.e. they are time expenses. They remain constant in amount for a given short-term period within a relevant range of activity. Fixed expenses are caused by the holding of assets and the other factors of production in a state of "readiness to produce".

Therefore, they are frequently called capacity costs. Fixed costs are of two types:

a. Executive management decisions establish commitments to certain fixed expenses. E.g. Depreciation, tax, insurance etc.
b. Some fixed expenses are set by management discretion on a short-term basis, e.g. Salaries, advertisement and research expenses.

They may fluctuate by reason of changes in the basic structure of the business, operating methods and discretionary changes in management policy. The following table shows the different fixed cost under collection, processing and selling and administration headings.

Table 4.13

Fixed Collecting Expenses

(In Rs '000')

Collecting Exp	2064/65	2065/66	2066/67	2067/68	2068/69
Water and Electricity	1575	1343	1582	1375	1357
Salaries	31409	37846	40809	41019	67781
Provident Fund	1892	2189	2503	2582	3853
Machine Repair	2362	2014	2622	3125	3283
Building Repair	289	167	435	593	834
Motor Repair	8552	9205	11267	14459	14328
Other Repair	172	148	161	270	307
House & land Rent	1184	1474	1612	1859	2027
Stationary & Printing	312	281	359	296	382
Tax	1317	1541	1361	2646	1618
Bank Commission	321	1442	1492	846	688
Ticket	58	49	59	56	58
Insurance	728	528	779	1009	1305
Non-durable office goods	100	112	137	195	187
Gratuity Exp.	1598	-	997	-	-
Total	52869	58339	66175	70258	98008
Add/Less Excess Gratuity Exp.	2215	-	3867	-	-
Total	55084	58339	70042	70258	98008

Source: Extracted from Appendix-1 & 3-6

In table 4.13 increased of fixed collecting expenses was shown, in FY 2065/66. It is increased by 5.90% as like in F/Y 2066/67 it is increased by 20.06%. F/Y 2067/68 and 68/69 slowly increased by Rs. 216000 and Rs. 27750000.

Table 4.14

Fixed Processing Expenses

(In Rs '000')

Processing Expenses	2064/65	2065/66	2066/67	2067/68	2068/69
Chess, Butter Trans Exp.	1172	1912	2262	2210	2080
Water and Electricity	6446	6585	7130	8290	9481
House & Land Rent	491	468	565	533	607
Salaries	50633	74675	84911	83013	120447
Provident Fund	2998	4086	4993	5089	6459
Machine Repair	7827	8723	12541	20322	25971
Building Repairs	1828	1102	1488	2685	1938
Other Repairs	379	356	364	398	434
Insurance	541	473	529	523	634
Stationary & Printing	318	410	386	468	512
Tax	10	8	81	4	-
Non-durable office good	193	131	109	202	203
Ticket, Wire, Telephone	48	42	44	33	36
Gratuity Exp.	3123	-	-	-	-
Bank Commission	54	91	141	132	111
Total	76061	99062	115544	123902	168913
Add/Less: Additional/Access Gratuity Exp.	4431	-	-	-	-
Net FC	80492	99062	115544	123902	168913

Source: Extracted from Appendix-1 & 3-6.

In table 4.14 fixed processing expenses are shown in increasing trend. They are increased in FY 2065/66, 2066/67, 67/68 and 68/69 by Rs. 18570000 or (23.07%), Rs. 16482000 or (16.64%) Rs. 8358000 or (7.23%) Rs. 45011000 or (36.33%).

Table 4.15

Fixed Selling Expenses

(Rs in '000')

Selling Expenses	2064/65	2065/66	2066/67	2067/68	2068/69
Salaries	18770	23890	26406	26653	40185
Provident Fund	1085	1368	1543	15451	2081
House & Store Rent	401	430	411	428	463
Stationary & Printing	143	138	141	194	196
Water & Electricity	84	85	79	79	82
Motor Repairs	1972	1989	1947	2476	2227
Building Repairs	13	164	159	90	278
Other Repairs	48	46	51	70	60
Milk Transport Exp.	16587	17844	19198	21314	24878
Business Promotion Exp.	756	786	751	814	1382
Insurance	34	244	206	240	267
Tax	520	405	601	379	657
Non-durable Goods	63	46	88	70	112
Gratuity	2782	-	-	-	-
Total	43318	47435	51581	54352	72868
Add/Less Gratuity	3877	-	-	-	-
Net FC	47195	47435	51581	54352	72868

Source: Extracted from Appendix-1 & 3-6.

According to above table 4.15 fixed selling expenses as five financial years from 2064/65 to 2068/69 are in increasing trend. Such increase in percentage is in FY 2065/66, 2066/67, 2067/68 and 2068/69 are 0.51%, 8.74%, 5.37%, and 35.36%.

Table 4.16

Fixed Administration Expenses

(Rs In '000')

Administration Exp.	2064/65	2065/66	2066/67	2067/68	2068/69
Salaries	43280	52370	53911	52369	76871
Provident Fund	2603	3155	3393	3375	4297
House & Land Rent	108	173	192	265	312
Water & Electricity	50	18	54	30	47
Ticket, Wire & Telephone	445	459	446	484	490
Stationary & Printing	348	433	401	454	551
Motor Repairs	736	769	749	1125	977
Building Repairs	376	149	157	2009	660
Other Repairs	507	708	864	784	1052
Employee Welfare Exp.	425	202	140	1744	263
Employee Training Exp.	821	1556	2233	1692	2085
BOD meeting fees	103	90	92	163	280
Auditor	306	202	366	203	565
Recruitment cost	479	305	260	15	682
Sub-committee cost	510	420	502	677	1051
Advisory cost	199	222	240	1142	704
Advertisement	2864	2460	2324	1743	2072
Bank Commission	87	290	285	583	324
Non-durable office goods	151	135	146	190	220
Newspaper and Magazine	146	151	127	193	215
Tax	558	692	935	1263	1568
Sanitation Exp.	525	298	452	620	688
Insurance	12647	19829	26018	28424	31053
Member	26	14	33	37	54
Gratuity	30922	19337	12394	24072	42486
Annual day	911	1454	2173	2406	2369
Business Promotion Exp.	-	6	-	9125	7386

Bus Fair	2028	1209	1075	1491	1538
Legal	21	-	-	144	492
Meeting	167	110	126	101	344
Software	95	-	1083	1120	1210
Total	101524	107216	114889	138043	184125
Add/Less	44863	73064	51363	23632	159983
Total	146387	80280	166252	161675	344108

Source: Extracted from Appendix-1 & 3-6.

According to table 4.16 fixed Administration expenses increased in F/Y 2065/66 by Rs 33893000(or 23.15%) and later in F/Y 2066/67 decreased by Rs 14028000(or 7.78%). As like above in F/Y 2067/68 and 2068/69 first decreased by Rs 4577000 and increased by 182433oo or (112.84%) which is more than 100%.

From above analysis it is seen that fixed expenses are in fulmination due to different reason, which are also called factors that fixed cost depend to variation those are:

- Different level of output.]
- Change in number as product produce
- Change in the price rate
- Employer Behaviors
- Proportion as distribution of cost etc.

4.2.3. Semi - variable Expenses of DDC

Semi- variable costs are those cost that are neither fixed not variable because they passes some characteristics of both. As output changes, semi- variable expenses change in the same direction but not in same proportion to the change in output.

The variability of semi- variable expenses is caused by the combined effect of

a. Passage of time
b. Activity or output
c. Discretionary management decision

Semi- variable expenses frequently represent a significant portion of company expense.

As the DDC is not practicing CVP analysis, it didn't made separation of the cost into fixed and variables. While considering the situation o f the DDC, degree of variability (DOV)

methods seems to be the appropriate method to separate semi- variable cost into fixed and variables.

Separations of semi- variable cost are made according to degree of variability method. The determinations of degree of variability (popularly 30%: 70% Proportion) are done with considering the view of Account Department Personnel, nature of expenses and own intuition judgment.

The use of other methods to differentiate fixed and variable from semi- variable cost seems almost impossible as the DDC is not practicing CVP analysis and its market spread over among different districts and wide varieties of products.
All the semi- variable costs are distributed to fix and variable cost and these costs are presented in their respective fixed cost and variable cost.

Like all the semi- variable cost of collection expenses are separated into fixed and variable cost and included in fixed all the other sectors expense are allocated in their respective expenses. And the basic of separating the different cost into fixed and variable is done on the basic as shown in the collection, processing, selling and administration expenses of DDC in table above (4.5- 4.8)

4.3. Different of Gratuity Expenses

The differences in the gratuity expenses stated in the profit and loss account of DDC are distributed to the different sectoring to the percentage of gratuity expenses incurred in their respective sectors.

Table: 4.17

Distribution of gratuity Expenses difference in cost structure

(In Rs, "000")

Gratuity Exp In year	Total	Collection Exp.	Processing Exp.	Selling Exp.	Administration Exp.
2064/65`	38420	1598	3123	3782	30922
%	100%	4%	8%	7%	81%
000	55386	2215	4431	3877	44863
2065/66	19337	-	-	-	19337
%	100%	-	-	-	100%
000	73064	-	-	-	73064
2066/67	13391	997	-	-	12394
%	100%	7%	-	-	93%
000	55230	3867	-	-	51363
2067/68	24072	-	-	-	24072
%	100%	-	-	-	100%
000	23632	-	-	-	23632
2068/69	42486	-	-	-	42486
%	100%	-	-	-	100%
000	159983	-	-	-	159983

Source: Extracted from Appendix- 1

Gratuity expenses are allocated to according to above table in their appropriate fixed collection, selling and administration expenses.

4.4. Sundry Incomes of DDC

Sundry Income of DDC constitutes the following income generated by the DDC in their respective years. It constitutes interest received from investment interest from bank, goods auctioned fines and deposit forfeiture and other income. The detailed sundry incomes are presented below in table

Table 4.18

Sundry Income of DDC

(In Rs '000')

Statement	2064/65	2065/66	2066/67	2067/68	2068/69
Interest	1733	3898	1989	21143	23326
Interest on Investment	5737	2084	11039	-	-
Tender from Sales	315	456	349	325	407
Good Auctioned	84	339	-	-	-
Fines and Deposit Forfeiture	217	211	114	360	759
Other Income	3327	7466	4041	5613	9234
Reduced Transport Cost	1174	-	-	-	-
Skimmed Milk Sales	27	301	-	-	-
Materials Sales	1140	225	8	1607	1044
Total	13756	14981	17541	29049	34771

Source: Annual Report of DDC F/Y 2064/65 - 2068/69.

4. 5 Inventory Consideration of DDC

Volume of production and that sales almost never be same for any given period of company's activity. Either sales will exceed production or vice-versa.

The term inventory includes the stock in hand of raw materials, work-in-progress, finished products, etc. The main reason for holding inventories by the company is to supply goods regularly without delays and continue their work effectively and efficiently in general, investment in inventory is considered to be burden of cost so, investment in inventory is unnecessary and extra burden of cost. Sales, production and inventory are interrelated with each other. Finished goods inventory bridges the gap between the production and sales. If a sale exceeds production, then inventory covers the deficit and if production excesses sales, then the over production is stocked as inventory.

Table 4.19

Inventory Balance from 2064/65 to 2068/69

(In Rs '000')

Particulars	2064/65	2065/66	2066/67	2067/68	2068/69
Milk	5345	8977	11433	15982	14719
Butter	1241	2286	45047	48049	56011
Cheese	7332	11325	12431	2254	2245
Ghee	543	3463	6869	1755	9119
Curd	194	1103	981	591	1755
Ice cream	12	335	626	459	591
Paneer	301	457	506	2122	1163
Skimmed Milk Power	212	540	1367	967	573
Rasbari	6523	32889	53691	41980	35636
Peda	66	80	150	250	25
lalmohan	42	57	58	09	25
Fresh Milk	28	146	141	103	96
Mohi	100	146	239	65	70
Ledikeni	03	13	21	88	95
Balu Shani	01	7	4	27	24
Khuwa	08	7	12	3	4
Gudpak	09	4	7	7	9
Total Closing stock	27939	61443	134422	121875	229935
Less Opening Stock	(91296)	(27939)	(61443)	(134422)	(121875)
Balance (increase/decrease)	(63357)	33504	72979	(125470	108080

Source: Annual Report as DDC 2064/65 to 2068/69.

After the analysis of above table there is no inventory policy as DDC. There is wide fluctuation in inventory level as DDC in F/Y 2065/66 inventory increased by Rs. 335000 then decreased in F/Y 2067/68 by 12547000 after such decrease in F/Y 2068/69 again it increase by Rs. 108080000.

4.6 Capacity Utilization of DDC

Capacity utilization is one of the ways to improve the financial performance of any organization. Large sum of money is being spent and invested acquire fixed assets. So proper utilization of the fixed assets is possible with efficient to utilization of the fixed assets. Under-utilization increases the cost of productions and over utilization of capacity reduces the life of the machines. DDC has a total production capacity of 3,30,000 liters holding capacity and per shift production capacity (in 5 hrs) of DDC is as follows.

Table 4.20

Capacity utilization of DDC

S.N.	Particular	Production Capacity	Holding Capacity	Per shift production Capacity (5 hour)
1.	Kathmandu	15000	135000	75000
2.	Hetauda	3000	60000	15000
3.	Biratnagar	5000	90000	15000
4.	Lumbhani	2000	21000	10000
5.	Du. Pa	2000	21000	10000
6.	Nepalgung	2000	21000	10000
7.	Janakpur	2000	21000	10000
8.	Dhangadi	2000	21000	10000
	Total	33000	390000	155000

Source: Prospectus (2068/69)

4.7 CVP Analysis of DDC

CVP enables to study the effect of business activities on the expenses. Understanding of the aforementioned relationship plays a considerable role in correct prospective business planning and budgeting. CVP analysis helps managers to see in advance the effect of different strategies and decisions on business activities. It is an analysis tool used to study the behavior of profit in response to the changes in volume, cost and prices.

It is a device used to determine the usefulness of the profit planning process of the firm. In fact, the entire field of profit planning has become associated with the CVP interrelationships. CVJP analysis helps to determine the minimum sales volume to avoid losses and the sales

volume at which the profit goal of the firm will be achieved. As an ultimate objective, it helps management in seeking the most profitable cost and volume. A dynamic management therefore uses CVP analysis to predict and evaluate the implications of its short-run decisions about fixed cost, variable cost, volume and selling price for its profit plans on a continuous basis.

CVP analysis is a way to quickly answer a number of important questions about the profitability of a company's products or services. CVP analysis can be used with either a product or service.

DDC hasn't been practicing CVP analysis. So while analyzing CVP analysis constant care has been taken to differentiate the various cost into fixed and variables. Here, we find out the different important ratios to dig out the reasons for the losses of DDC.

Under this headings.

1. Contribution margin
2. P/V ratio or C.M. Ratio
3. BEP with four assumptions:
    a. Omit inventory change and include other Sundry incomes.
    b. Omit both inventory change and other Sundry incomes.
    c. Include inventory change but omit other Sundry incomes.
    d. Include both inventory change and other Sundry incomes.
4. Margin of safety with different BEP, etc are analyze here.

The below table 4.21 and table 4.22 are the income statement for the CVP analysis of DDC from 2064/65 to 2068/69.

Table 4.21

Income statement for CVP analysis as 2064/65

(In Rs '000')

2064/65			U
	Total	FC	VC
Sales	**1800673**		
Less Manufacturing Cost			
Collecting Exp.	1221467	55048	1166419
Processing Exp.	350951	80492	270459
Total Manufacturing Cost	**1572418**	**135540**	**1436878**
Percentage	100	8.62	91.38
Add inventory	63357	5461	57896
Cost as good sold	**1635775**	**141001**	**1494774**
Gross margin	**164898**		
Less selling and Administration Exp.			
Selling Expenses	66232	47195	19037
Administration Expenses	162528	146387	16141
Depreciation Expenses	362134	36434	-
Interest Expenses	3250	3250	-
Total Selling Expenses	**268444**	**233266**	**35178**
Operating profit/loss	**(103546)**		
Non operating income	**13756**		
Net income (loss)	**89790**		
TFC & TVG excluding inventory		368806	1472056

Table 4.22

Income Statement for CVP analysis of 2065/66 & 2066/67

(Rs. In '000')

2065/66			2066/67			
	Total	FC	VC	Total	FC	VC
Sales	**2193309**			**2628350**		
Less MC						
Collections	1425314	58339	1366975	1694982	70042	1624940
Processing	524297	99062	425235	693927	115544	578383
Total MC	**1949611**	**157401**	**1792210**	**2388909**	**185586**	**2203323**
%	100%	8.07%	91.93%	100%	7.77%	92.23%
Less inventors	(33504)	(2704)	(30800)	72979	(5670)	(67309)
Cost of Goods Sold	**1916107**	**154697**	**1761410**	**2315930**	**179916**	**2136014**
Gross Margin	**277202**			**312420**		
Less selling & Administration Exp.	-	-	-	-	-	-
Selling Exp.	66652	47435	19217	73918	51581	22337
Administration Exp.	185315	180280	16279	185315	166252	19063
Deprecation	36666	36666	-	36963	36963	-
Interest	915	915	-	1502	1502	-
Total Selling & Adm.	**300792**	**265296**	**35496**	**297698**	**256298**	**41400**
Operating Income	**(23590)**			**14722**		
Non Operating Income	**14981**			**17541**		
Net Income	**(8609)**			**32263**		
TFC & TVC excluding inventory	422697	1827706			441884	2244723

Table 4.23

Income Statement for CVP analysis of 2067/68 & 2068/69

(Rs. In '000')

	2067/68			2068/69		
	Total	FC	VC	Total	FC	VC
Sales	**2926888**			**3242929**		
Less Man Cost						
Collecting	2081818	70258	2011560	2454091	98008	2356083
Processing	450259	123902	326357	574267	168913	405354
Total Manu. Cost	**2532077**	**194160**	**2337197**	**3028358**	**266921**	**2761437**
%	100%	7.67%	92.33%	100%	8.81%	91.19%
Add/Less	12547	962	11585	108080	(9522)	(98558)
Cost of goods sold	**2544624**	**195122**	**2349502**	**2920278**	**257399**	**2662879**
Gross Margin	**382264**			**322661**		
Less Selling & Administration						
Selling	80208	54352	25856	100829	72868	27961
Administration	190312	161675	28637	373308	344108	29200
Depreciation	37016	37016	-	44288	44288	-
Interest	214	214	-	3939	3939	-
Total	**307750**	**253257**	**544930**	**522364**	**465203**	**57161**
Operating P/L	**74514**			**(199703)**		
Non Operating	**29049**			**34771**		
TFC & TVC		447417	2392410		732124	2818598

4.7.1 Contribution Margin

Contribution Margin is the different between the sales and the marginal variable cost of sales and it contributes towards fixed expenses and profit.

Contribution Margin = Selling price- Variable Cost

Table 4.24

Contribution Margin

Fiscal Year	Contribution Margin
2064/65	Rs.270721
2065/66	Rs.396403
2066/67	Rs. 450936
2067/68	Rs. 522893
2068/69	Rs. 522889

The contribution margin of five financial year are not is same trend. First four years enjoying increasing and last one year suffer few decrease even though. This is not satisfactory. Higher the contribution margin, greater is the chance to meet the fixed cost and earn a margin for the non-operating expenses and create reserve and pay dividend etc.

4.7.2 P/V Ratio

It is an important tool is studying the profitability of a business. It established relationship between contribution and the sales value.

It can also be found from the relationship between the change in the contribution and change in the sales. It is written in the form of percentages. It is also known as contribution margin ratio (C.M. Ratio)

$$\text{P/V Ratio} = 1 - \frac{b}{p} \quad \text{or} \quad \frac{contribution margin}{sales}$$

Where, b = Variable Cost

p = sales

Table 4.25

P/V Ratio

Fiscal Year	Contribution Margin
2064/65	$1 - \frac{270721}{1800673} = 0.1503 = 15.03$
2065/66	$1 - \frac{396403}{2193309} = 0.1807 = 18.07$

2066/67	$1-\frac{450936}{2628350}=0.1716$
2067/68	$1-\frac{522893}{2926888}=0.1787$
2068/69	$1-\frac{522889}{3242929}=0.1612$

Higher the contribution margin ratio, higher will be the profit. DDC should try to reduce the variable cost or increase the sales volume to get the higher C.M. Ratio or P/V Ratio to result higher profit.

4.7.3 Break-Even Analysis of DDC

Breakeven (B/E) analysis is a logical extension of marginal costing. It is based on the same principle of classifying the operating expenses into fixed and variable. Now a days it has become a powerful instrument in the hands of policy makers of maximize profit.

The breakeven analysis is a specific way of presenting and studying the inter-relationship between the cost, volume and profit. It provides information to management in the most precise manner. The B/E analysis established a relation between the revenues and cost with respect to the volume. it indicates the level of sales at which cost and revenue are in equilibrium. The equilibrium point is normally called BEP.

The BEP can be defined as that point of sales at which the total revenue is equal to total cost. For BEP to occur, it is necessary that firm have same variable, and fixed cost. If all the costs of the firms are variable, no profit no loss or BEP would be at zero sales volume on the other hand, if all costs were fixed, the BEP would occur at a point where revenue is equal to total fixed cost. The BEP can be computed in terms of units as well as rupees.

$$\text{BEP (Units)} = \frac{TotalFixedCost}{Selling\ \text{Pr}iceUnit - VariableCostPerUnit}$$

$$\text{BEP (Rs)} = \frac{TotalFixedCost}{1-\frac{VCPU}{SPPU}}$$

This formula is appropriate when there is stable inventory and there is no other source of incomes.

Keeping in view about BEP can be calculated considering the following four assumptions.

Assumption 1: Exclude Inventory Change and Include other Sundry Incomes.

$$\text{BEP} = \frac{FixedCostExcludingInventory - otherSundryincomes}{1 - \frac{VariableCostConsistwithSales}{Sales} or \frac{P}{V} Ratio}$$

Assumption 2: Exclude both - Inventory Change and other Sundry Incomes

$$\text{BEP} = \frac{FixedCostExcludingInventoryChange}{1 - \frac{VariableCostConsistwithSales}{Sales} or \frac{P}{V} Ratio}$$

Assumption 3: Including Inventory change and excluding other Incomes

$$\text{BEP} = \frac{FixedCostIncludingInventoryChange}{1 - \frac{VariableCostConsistwithSales}{Sales} or \frac{P}{V} Ratio}$$

Assumption 4: Including both - Inventory Change and other Sundry Incomes

$$\text{BEP} = \frac{FixedCostIncludingInventoryChange - OtherIncome}{1 - \frac{VariableCostConsistwithsales}{Sales} or \frac{P}{V} Ratio}$$

Table 4.26

Calculation as BEP sales under different assumption

BEP Calculation	**2064/65**	**2065/66**	**2066/67**	**2067/68**	**2068/69**
Assumption 1	2362275	2256314	2472861	2341175	21356011
Assumption 2	2453799	2339220	2575082	2503733	4541712
Assumption 3	2490133	2324256	2542040	2509611	4482643
Assumption 4	2398610	2241350	2439819	2346559	4266942

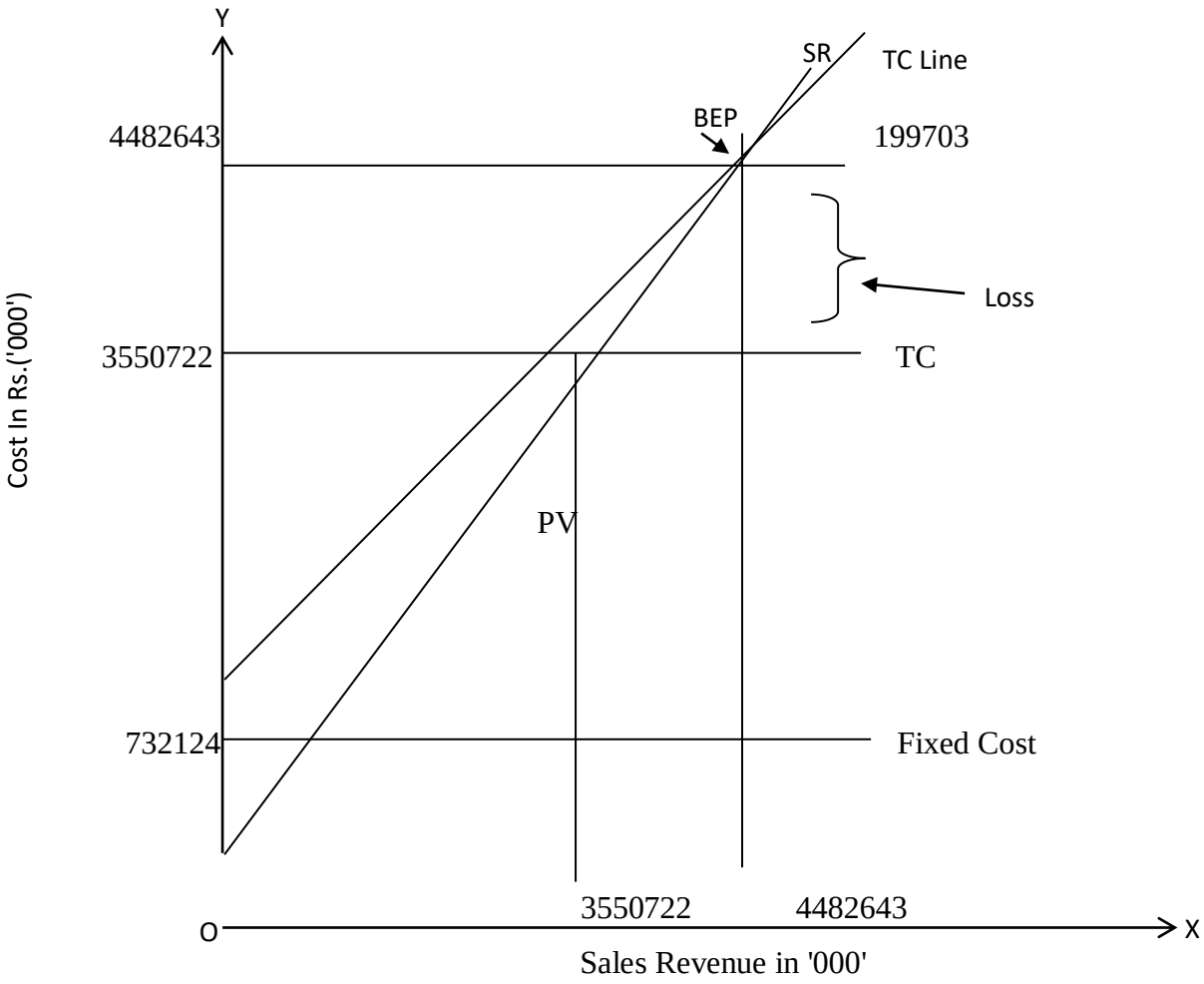
Source: Appendix-8

The below figure 4.3 is presented to point out the BEP sales, considering no change in inventory and Sundry Incomes. In this X-axis is treated as sales revenue and Y-axis is graphed as cost in amount. Since, fixed cost is constant over a year; the fixed cost curve is parallel to x-axis. The total cost increase with the increases in sales revenues. So total cost curve slope upward to right side Total cost curve starts from fixed cost of Rs. 732124000. The Rs. 732124000 is also total cost when sales revenue is zero. Sales revenue curve starts from zero as sales revenue will be zero, when sales volume is zero. This chart also shows that sales revenue is also slopping upward to the right.

The point at which the sales revenue and total cost lines intersect is the BEP sales. Here in F/Y 2068/69, when inventory change and other Sundry Incomes are not considered, BEP sales are Rs. 4482643000. If actual sales are more than BEP, then the profit will occur, otherwise, if actual sales are less than BEP sales, loss will occur. Here, actual sales Rs. 3242939000 is less than total cost Rs. 3550722000, which leads to an operating loss of Rs. 199703000.

Figure: 4.3

Break-Even Chart of DDC 2063/64



Calculating as M.O.S. under different assumption

M.O.S. Calculating	2064/65	2065/66	2066/67	2067/68	2068/69
Assumption 1	(561602)	(63005)	155489	585713	1083072
Assumption 2	(653126)	(145911)	53268	423155	1298773
Assumption 3	(689460)	(130947)	86310	417772	1239704
Assumption 4	(597937)	(48041)	188531	580329	1024003

Source: Appendix-8

Table 4.27

Overall statement as C.V.P. analysis under four assumptions F/Y 2064/65.

(In Rs '000')

Statement	**Assumption 1**	**Assumption 2**	**Assumption 3**	**Assumption 4**
Sales	**1800673**	**1800673**	**1800673**	**1800673**
Less VC	1472056	1472056	1529952	1529952
Contribution Margin	328617	328617	270721	270721
Less Fixed Cost	368836	368806	374267	374267
Operating Income	**(40189)**	**(40189)**	**(103546)**	**(103546)**
Add Sundry Income	13756	-	-	13756
Net Income (Loss)	(26433)	(40189)	(103546)	(89790)
P/V ratio	**15.03%**	**15.03%**	**15.03%**	**15.03%**
BEP	**2362275**	**2453799**	**2490133**	**2398610**
M.O.S.	**(561602)**	**(653126)**	**(689460)**	**(597937)**
%Variables Cost to sales	82%	82%	85%	85%
% Fixed Cost to sales	18%	18%	15%	15%

Source: Appendix-8

The contribution margin for F/Y 2064/65 is Rs 328617000 or contributes margin ratio is 15.03% which is too low to cover the fixed cost which is 18 to sales in considering to assumption land 2, as like contribution margin ratio is nearly equal to fixed cost to sales 15% in assumption 3 & 4. DDC has incurred loss in every assumption in F/Y 2064/65. it is also seen that other sundry income also contribute lot to DDC overall revenue. In all our assumption m.o.s is also negative.

Table 4.28

Overall statement of C.V.P. analysis under four assumptions F/Y 2065/66.

Statement	**1**	**2**	**3**	**4**
Sales	**2193309**	**2193309**	**2193309**	**2193309**
Less VC	1827706	1827706	1796906	1796906
CM	365603	365603	396403	396403
Less FC	422697	422697	419993	419993
Operating Income	**(57094)**	**(57094)**	**(13590)**	**(23590)**
Add Sundry Income				14981
Net Income	(42113)	(57094)	(23590)	(8609)
P/V Ratio	**18.07**	**18.07**	**18.07**	**18.07**
BEP	**2256314**	**2339220**	**2334256**	**2241350**
M.O.S.	**(63005)**	**(145911)**	**(130947)**	**(48041)**
% VC to Sales	83%	83%	81%	81%
% FC to Sales	17%	17%	19%	19%

Source: Appendix-8

Contribution margin to F/Y 2065/66 is Rs. 365603 thousand or P/V ratio is 18.07 which cover the fixed cost 17% to sales in assumption 1 and 2 and 19% in Assumption 3 and 4 leading to a loss of 42113, 57094, 23590, 8609 thousand Under four respective assumption. Therefore BEP sales in four assumptions 2256314, 2339220, 2324256, 2241350 is greater than sales 2193309 in thousand respectively m.o.s is all negative.

Table 4.29

Overall statement of C.V.P. analysis under four assumption

F/Y 2066/67

(In Rs. '000')

Statement	**1**	**2**	**3**	**4**
Sales	**2628350**	**2628350**	**2628350**	**2628350**
Less VC	2244723	2244723	2177414	2177414
CM	383627	383627	450936	450936
Less FC	441884	441884	436214	436214
Operating income	**(58257)**	**(58257)**	**14722**	**14722**
Add Income	17541	-	-	17541
Net Income	(40716)	(58257)	14722	32263
P/V Ratio	**17.16**	**17.16**	**17.16**	**17.16**
BEP	**2472861**	**2575082**	**2542040**	**2439819**
M.O.S.	**155489**	**53268**	**86310**	**188531**
% VC to Sales	85%	85%	83%	83%
% FC to Sales	15%	15%	17%	17%

Source: Appendix-8

The contribution margin for F/Y 2066/67 is Rs. 383627 in thousand and contribution margin ratio is 17.16% which is higher than fixed cost to sales 15 in assumption 1 and 2 but similar 17% Occurs loss and next two occurs profit due to the effect of inventory charge and not income. BEP in such assumption as F/Y 2066/67 are below sales value as Rs2628350 so all margin as safety are positive.

Table 4.30

Overall statement of C.V.P. analysis under four analyses

F/Y 2067/68

(In Rs. '000')

Statement	1	2	3	4
Sales	2926888	2926888	2926888	2926888
Less VC	2392410	2392410	2403995	2403995
CM	534478	534478	522893	522893
Less FC	447417	447417	448379	448379
Operating Income	87061	87061	74514	74514
Add Sundry Income	29049	-	-	29049
Net Income	116110	87061	74514	103563
P/V Ratio	17.87	17.87	17.87	17.87
BEP	2351175	2503733	2509116	2346559
Moss	585713	423155	417772	580329
%VC	85%	85%	84%	84%
% FC	15%	15%	16%	16%

The contribution margin for 2067/68 was Rs. 534478 thousand with percentage 17.87% which is higher than the fixed cost which is 15% in assumption 1 and 2 and 16% in assumption 3 and 4 leading to a profit as 116110, 87061, 74514, 103563 thousand under the four assumption are 2351175, 2503733, 2509116, 2346559 thousand which is less then sales 2926888 thousand. Moss is also positive in your assumption.

Table 4.31

Overall statement of C.V.P. analysis under four assumptions F/Y2068/69

(In Rs. '000')

Statement	**1**	**2**	**3**	**4**
Sales	**3242929**	**3242929**	**3242929**	**3242929**
Less VC	2818598	2818598	2720040	2720040
CM	424331	424331	522889	522889
Less FC	732124	732124	722601	722601
Operating Income	**(307793)**	**(307793)**	**(199712)**	**(199712)**
Add Sundry Income	34771	-	-	34771
Net Income	(273022)	(307798)	(199712)	(164941)
P/V ratio	**16.12**	**16.12**	**16.12**	**16.12**
BEP	**4326011**	**4541712**	**4482643**	**4266942**
M.O.S	**(1083072)**	**(1298773)**	**(1239704)**	**(1024003)**
% VC	77%	77%	78%	78%
% FC	23%	23%	22%	22%

The contribution margin as F/Y 2068/69 Rs 424331 thousand and contribution margin ratio 16.12 in which is lower than fixed cost 23% in assumption 1 and 2 but in assumption 3 and 4 is 22% respectively leading to the loss as Rs. 273022, 307798, 199712, 164941 under the four respective assumption. Therefore BEP sales in F/Y 2068/69 was 4326011, 4541712, 4482643, 4266942 thousand which is more than sales Rs. 3242929000 and m.o.s is also negative under our assumption.

4.8. Sensitivity of CVP Analysis

Sensitivity of CVP analysis is the study of the CVP analysis in the different stages or in the different situation in which the related terms of CVP cost (Fixed and Variable), volume and profit changes. If changes occur in one term, such as in cost (Variable and Fixed cost independently), its effect or changes, which may be positive or negative, on profit, on sales volumes, on contribution margin, on selling prices etc. respectively. It helps the company to maintain its original BEP in the change situation.

Small changes in one factor of CVP can change the BEP or profit or in the words, BEP or profit is influence in response to the changes in selling price, variable cost and fixed cost, when change are expected in selling price, in ratio of variable cost factors, or in the amount of fixed cost, and analysis of the cost-volume profit relationship can determine the effect of such changes on period's profit and BEP.

Table 4.32

Effect of 10% increased decrease in Sales Value

(In Rs. '000')

Particulars	**Actual**	**Change in sale value**	
		10% Increase	**(10% Decrease)**
Sales	3242929	3567222	2918636
Less VC	2818598	2818598	2818598
CM	424331	748624	100038
Less FC	732124	732124	732124
P/L	(307793)	16500	(632086)
Other Sundry income	34771	34771	34771
Net Income (Loss)	(273022)	51271	(597315)
PV Ratio	16.12%	20.98%	3.43%
BEP	4266942	3489628	20330991

Where BEP $= \frac{FC - SundryIncome}{P/Vratio}$

P/V ratio $= \frac{CM}{Sales}$

From above table it is shown that 10% increase in sales BEP is reduced to 3489628000 from 4266942000. Similarly 10% decrease in sales value BEP increased by 20330991000 from 4266942. This shows the inverse relationship between BEP and Sales.

Table 4.33

Effect of 10% increase or decrease in variable cost

(In Rs. '000')

Particulars	Actual	**Change in variable Cost Value**	
		10% Increase	10% Decrease
Sales	3242929	3242929	3242929
Less VC	2818598	3100457	2536739
CM	424331	142472	706190
Less FC	732124	732124	732124
Profit/Less	307793	(589652)	(25934)
Other Sundry Income	34771	34771	34771
Net Income/Less	(273022)	(554881)	8837
P/V ratio	16.12	4.39%	-
BEP	4266942	15885034	3201804

$$\text{P/V ratio} = \frac{CM}{Sales}$$

$$\text{BEP} = \frac{FixedCost - Sundryincome}{P/Vratio}$$

Above table shown that 10% increased in variable cost BEP increased to 15885034000 from 4266942000 or (272%) 10% decreased in variable cost BEP reduced to 3201804000 from 4266942000 or (24.96%) from this it was shown that variable cost and BEP sales are positively related but not proportionately.

Table 4.34

Effect as 10% increase or decrease in FC

(In Rs.'000')

Particulars	Actual	Change in Fixed Cost	
		10% Increase	10% Decrease
Sales	3242929	3242929	3242929
Less VC	2818598	2818598	2818598
CM	424331	424331	424331
Less FC	732124	805336	658912
P/L	(307798)	(381005)	(234581)
Other Income	34771	34771	34771
Net Income	(273022)	(346234)	(199810)
P/V Ratio	16.12	16.12	16.12
BEP	4266942	4780179	3871842

$$\text{P/V Ratio} = \frac{Contribution margin}{Sales}$$

$$\text{BEP} = \frac{FC - Sundry margin}{P/V ratio}$$

Above table shown that 10% increase in fixed cost increase the BEP by Rs. 4780179000 from 4266942 or (12%) and decrease in fixed cost by 10% decreased the BEP by Rs. 3871842000 or (12% approx). it can be concluded that BEP and fixed cost are proportionately related.

$$\text{DOL of DDC for 2063/64} = \frac{262710}{21793} = 12.05 \text{ Times}$$

The greater the DOL, greater is the business risk. DOL of DDC for the year 2063/64 is 12.05 times, which means, if sales are increased by 100% the net income will increase by 1205%. It is clear that DDC has absorbed more fixed cost to aim to gain more profit. it indicates return efficiency area covers capital structure.

4.9 Operating Leverage of DDC

Operating leverage is a measure of how sensitive net income is to percentage changes in sales. Operating leverage is greatest in companies, which have a high proportion of fixed cost relative to variable costs. A firm with high fixed costs and low variable costs has high operating leverage, the ability of highly increase net income from an increase in sales

revenue. In other words, after the breakeven point has been reached, a larger amount of contribution margin will fall to the bottom line in a high fixed cost structure than if the cost structure has been comprised mostly of continuing high variable costs, which continue to eat away at net income after the breakeven point is reached of course, the risk is also greater because if the breakeven point is not reached, losses will be greater in the firm with high operating leverage.

Degree of Operating leverage (DOL) = $\frac{ContributionM\ \arg in}{NetIncome}$

4.10 Manpower Distribution

DDC is employing manpower on two department i.e. administration and technician. The table below shows the manpower in yearly basis without considering the indirect employment provident by the DDC.

From the table below figure shows that there has been constant effort to lay off of the inefficient administrative staff to avoid the unnecessary extra cost on the staffs

Table 4.35

Number of Employees Working in DDC Distributed to Administration and Technician

(In Rs.'000')

F/Y	Departments	No. of Employees	Percentage of Employment
2064/65	Administration	406	41.55
	Technician	571	58.45
Total		977	**100**
2065/66	Administration	406	41.55
	Technician	571	58.45
Total		977	**100**
2066/67	Administration	406	41.55
	Technician	571	58.45
Total		977	**100**
2067/68	Administration	344	32.48
	Technician	715	67.52
Total		1059	**100**
2068/69	Administration	344	32.48
	Technician	715	67.52
Total		1059	**100**

Source: DDC F/Y 2064/65-2068/69

Administrative staffs were reduced to 344 from 406 in the F/Y 2068/69 and skilled technicians were increased to 715 from 571 skilled technicians were appointed for the proper functioning of the DDC. Every new financial year decreased administrative staffs increase economic burden. Aggregate no. of employees increased in F/Y 2068/69 but in 2065/66 it was decreased by 82 these seems like DDC is moving towards wrong direction in some extent of increasing the extra. burden of cost by increasing of unwanted or inefficient employees in current financial year. But passive thing is here, decreasing administrative staffs. Like this manufacturing concern, there must be recruit highly skilled technical staffs and efficient managers.

4.11 Ratios that Measures Productivity of the DDC

Productivity refers to the relationship between the point and output it is technique that measures effectively and effectiveness of organization.

Productivity ratios used here is to analyze the productivity of the DDC. The following ratios are used:

a. Sales per Employee
b. Net Added Value per Employee
c. Labor Equipment ratio
d. Wage Distribution ratio
e. Wage Base.

a. Sales per Employee

$$\text{Sales per Employee} = \frac{NetSales}{No.ofEmployees}$$

1) 2064/65 $= \frac{1800673000}{977} = 1843064$

2) 2065/66 $= \frac{2193309000}{977} = 2244943$

3) 2066/67 $= \frac{2628350000}{977} = 2690225$

4) 2067/68 $= \frac{2926888000}{1059} = 2763822$

5) 2068/69 $= \frac{3242929000}{1059} = 3062256$

In F/Y 2064/65, sales per employee was Rs. 1843064 in F/Y 2065/66 was Rs. 2244943 in F/Y

2066/67 was Rs. 2690225 in 2067/68 was Rs. 2763822 and in F/Y 2068/69 was Rs. 3062256 (Appendix -9).

Sales per employs are not satisfactory. However, there is a little hope seeing the trend it is increasing. In last 2 years again it is in increases. It should either increase the sales or reduce the number of unproductive employee to further increase the sales per employee.

b. Net Added Value Per Employee

$$\text{Net Added Value per Employee} = \frac{NetAddedValue}{No.ofEmployees}$$

where,

Net Added Value = Sales -(Opening Inventory of raw material + Raw material purchased - Ending Inventory of Raw Materials

Opening and Ending raw material is zero in the case of DDC.

$$\text{Net Added Value per Employee} = \frac{Sales - Materials\,cost}{No.ofEmployees}$$

Table 4.36

Calculating of Net Value Added

(In Rs. '000')

Particulars	**2064/65**	**2065/66**	**2066/67**	**2067/68**	**2068/69**
Sales	1800673	2193309	2628350	2926888	3242929
Less materials cost					
Collection					
Milk Purchase	1103473	1295786	1545567	1902930	2234227
Fuel & other Provision	44704	52595	52807	74559	79853
Chemical and detergent	742	1008	1505	1850	1949
Processing					
Skimmed milk powder	78418	193444	225585	16525	18757
Raw materials and other	5780	6914	11387	12826	11847
Chemical & Detergent	504	6541	7102	9022	11264
Fuel and other Provision	59240	75126	75071	96318	139355
Total materials cost	**292861**	**1631414**	**1919024**	**2114030**	**2497252**
Net value added	**1507812**	**561895**	**709326**	**812858**	**745677**
No. of Employers	**977**	**977**	**977**	**1059**	**1059**

Source: Extracted from Appendix 1 and 3-6

The net added value per employee for F/Y 2064/65 was Rs. 1543308 in F/Y 2065/66 was Rs. 575123 2066/67 was Rs. 726025 in F/Y 2067/68 was Rs. 767571 in F/Y 2068/69 was Rs. 704133 and in F/Y 2063/64 Rs. 441057 (Appendix -9)

Net added value for employee was also very low. DDC has high material cost. DDC should try to reduce the material cost, increases sales and reduce the unproductive employees to increase the productivity of the labor.

c. Labor Equipment Ratio

$$\text{Labor Equipment Ratio} = \frac{Net Fixed Assets}{No. of Employees}$$

Labor equipment ratio for F/Y 2064/65 was Rs. 249382 for 2065/66 was Rs. 256880 for F/Y 2066/67 was Rs. 268721 for F/Y 2067/68 was Rs. 287959 and for 2068/69 was Rs. 319771.

DDC has distributed fixed Assets into:

- Presently in use.
- Installed but not yet used.

Here only presently in use fixed assets are considered. Labor equipment ratio is also not in good position.

d. Wage Distribution Ratio

$$\text{Wage Base} = \frac{Gross Wages}{Net Added Value}$$

Wage distribution ratio for F/Y 2064/65 was 17.77% for F/Y 2065/66 was 55.36% for F/Y 2066/67 was 45.60% for F/Y 2067/68 was 37.19% and for F/Y 2068/69 was 80.41% (Appendix-9).

The percentage of wages cost to value added is high in 2068/69. Before and after that DDC seems to have noticed the excess cost on wages and unproductive employees and still increasing no. of employee to 1059 from 977. Even though, the wages distribution ratio is not highly satisfactory.

e. Wage Base

$$\text{Wage Base} = \frac{Gross Wage}{No. of Employees}$$

Table:4.37

Calculating of Gross Wages

(In Rs '000')

Cost Structure	**2064/65**	**2065/66**	**2066/67**	**2067/68**	**2068/69**
Collection					
Salaries	31409	37846	40809	41019	67781
Allowance	3888	3003	6298	6602	6558
Provident Fund	1892	2189	2503	2582	3853
Gratuity	1598		977	-	-
Processing					
Salaries	50633	74675	84911	83013	120447
Allowance	7810	7457	14997	16465	14314
Provident Fund	2998	4086	4993	5089	6459
Gratuity	3123	-	-	-	-
Selling					
Salaries	18770	23890	26406	26653	40185
Allowance	3845	3424	6087	6566	5938
Provident Fund	1085	1368	1543	1545	2081
Gratuity	2782	-	-	-	-
Administration					
Salaries	43280	52370	53911	52369	76871
Allowance	5928	5242	9049	9364	8381
Provident Fund	2603	3155	3393	3375	4297
Gratuity	30922	19337	12394	24072	42486
Add/Less Gratuity	55386	73064	55230	23632	159983
Total	267952	311106	323521	302346	599634

Source: Excreted from Appendix 3-6

Wage base for 2064/65 was Rs. 274260 for F/Y 2065/66 was Rs. 318430 for F/Y 2066/67 was Rs. 331137 for F/Y 2067/68 was Rs. 285510 and for F/Y 2068/69 was Rs. 566227. (Appendix-9).

However, with small deduction in 2067/68 than 2066/67 it is still very high enough.

The overall productivity of labor wasn't rough satisfactory. DDC should focus more on the productivity of labor in the coming year as wages constitutes major cost in the overall expenses of DDC.

4.12 Profitability Ratios in Relation to Sales for DDC

Profit is essential for the growth and survival of the business. Without which, no business can stay for too long. Hence it is regarded as the life blood of the business. it is the engine that drives the business and indicates economic progress. Profitability ratios are calculated to measure the overall efficiency of the business. Profitability ratio is calculated with either in relationship to sales or in relation to investment.

Here, the profitability ratios in relationship to sales are considered. Under which, three ratios are calculated.

- Gross Margin Ratio
- Net Profit Margin
- Operating Ratio

- **Gross profit Margin**

Gross Profit margin is the commonest ratios in operating analysis. It is calculated of gross profit as percentage of net sales. It expresses the relationship between gross profit and sales and is usually expressed in percentages.

$$\text{Gross Margin} = \frac{GrossM\,\text{arg}\,in}{Sales}$$

Gross profit margin for F/Y 2064/65 was 9.15% for F/Y 2065/66 was 12.64% for F/Y 2066/67 was 11.88% for 2067/68 was 13.06% and for F/Y 2068/69 was 9.94% (AOM Appendix -10). Production of the firm is relatively low. Since DDC has very low gross profit Ratio, it is definitely a danger sign to analyze the detailed factors for such cause.

- **Net profit Margin**

Net profit ratio is the ratio of net profit to net sales. it measures the overall profitability of the firm by established the relationship between the net profit and sales. Net profit margin indicates the manager's ability to operate the business with sufficient not only to cover the cost of production compensation to the owners for providing their capital at risk.

$$\text{Net Profit Margin} = \frac{Net\,\text{Pr}\,ofit}{Sales}$$

Net profit ratio for F/Y 2064/65 was (0.05%) for F/Y 2065/66 was (0.0039%) for F/Y 2066/67 was 7.23 for F/Y 2067/68 was 1.0% and for F/Y 2068/69 was (5.08%) without considering the other sundry income (From Appendix -10).

Higher the net profit margin, greater is the organization's ability to stand with the adverse economic conditions. Since DDC is operating in negative net profit margin in few financial years. it should consider the detailed reasons responsible for it. However, it seems DDC is on right track since from F/Y 2066/67; there has been constant improvement in net profit ratio from-(0.0039%) to 1.23%. it seems 2068/69 the corporation had generating bad amount loss.

- **Operating Ratio**

It is the ratio of operating cost to sales. Operating include cost of goods sold and operating expenses. Operating expenses includes all the selling and administration expenses with the inertest on borrowed fund, discount allowed and debts etc.

$$\text{Operating Ratio} = \frac{OperatingExp.}{Sales}$$

Operating Ratio for F/Y 2064/65 was 105.75% for F/Y 2065/66 was 101.08% for F/Y 2066/67 was 99.43% for F/Y 2067/68 was 97.45% and for F/Y 2068/69 was 106.16%, (From Appendix- 10).

Lower the operating ratio, higher is the operating profit available for non-operating expenses and funds to pay dividend, create reserves, etc. DDC has been incurring higher operating ratio more than 100% in few fiscal years.

However, there has been gradual decrease in operating ratio. Which is good sign for DDC?

Even though, the overall profitability of the DDC is very weak and management should focus on all the possible causes and reasons for such situations.

4.13 Major Findings

The findings of this study based on the analysis of data are presented below:

- **Sales**

The corporation's sales trend is in fluctuating but it is increasing trend. The value of 'r' is greater than 6PE (r) (i.e. 0.3621). It shows that there is a positive correlation between the budgeted and actual sales: Irrespective of the fact that DDC doesn't have a sound system of forecasting.

- **Segregation of Fixed and Variable Cost**

DDC hasn't been practicing CVP analysis till now and there is no method adopted to segregate fixed and variable cost.

- **Variable Cost**

DDC hasn't been segregating mixed cost, even though; care has been taken in this research to differentiate fixed cost and variable cost with the help of degree of variable methods (70:30). The variable cost is too high compared to actual sales. It constitutes 85% in F/Y 2064/65 82% in F/Y 2065/66 85% in F/Y 2066/67 in F/Y 2067/68 and 77% in F/Y 2068/69.

- **Contribution Margin Ratio or P/V Ratio**

DDC has low contribution margin ratio in all the five years under study. The contribution margin ratio for F/y 2064/65 was 15.03% for F/Y 2065/66 was 18.07% for 2066/67 was 14.16% for F/Y 2067/68 was 17.87% and for F/Y 2068/69 was 16.12% At least DDC should have20% P/V ratio to recover fixed cost (Drury; 2000).

- **Fixed Cost**

The corporation has high fixed costs, be it salaries or depreciation, interest on loan provident fund, gratuity expenses, etc. having maximum of 18.07% P/V ratio, among the five fiscal years, fixed cost to sales percentage under four different assumptions in five years are:

Assumption- 1&2

Exclude inventory change but include other sundry incomes and exclude both inventory change and other sundry incomes is to percentage of fixed cost to sales in F/Y 2064/65 was 18.0% considering Assumption 1 and 2, in F/Y 2065/66 was 17.0% in F/Y 2066/67 was 15.0% in F/Y 2067/68 was 15.0% and in F/y 2068/69 was 13%.

Assumption- 3&4

Include inventory change but exclude other sundry incomes and include both inventory change and other sundry incomes. And considering assumption 3 and 4. Percentage of fixed cost to sales for F/Y 2064/65 was 15.0% for F/Y 2065/66 was 19.01% for F/Y 2066/67 was 17.0% for F/Y 2067/68 was 16.0% and for F/Y 2068/69 was 22.0%. At least, DDC should have 20% P/V ratio to recover the fixed cost.

- **Inventory Policy**

DDC has high wages. The reasons may be; availability of manpower is more than requirement or inefficiency of the workers resulting in low productivity of labor.

- **Inventory Policy**

The corporation has no effective inventory policy. whatever, left over of production is considered as inventory. The inventory production ratio is not constant. The wide fluctuation are seen during the five fiscal year, there was Rs. 63357000 increase in inventory in F/Y 2064/65 Rs. 33504000 increase in inventory in F/Y 2065/66 Rs. 72979000 increase in 2066/67 Rs. 12547000 decrease in F/Y 2067/68 and Rs. 108080000 increase in inventory in the F/Y 2068/69.

- **Profitability in Relation to Sales**

Profitability in relation to sales is also too low in the five fiscal year (i.e. F/Y 2064/65 to F/Y 2068/69. Gross margin is very low. Net margin is negatively low in few fiscal years. Operating costs constitutes more than sales value in all the five years.

- **Breakeven Sales:**

The Breakeven sales was more than more than the sales in F/Y 2064/65, in F/Y 2065/66 and in F/y 2068/69 which shown that those financial year net income are negative. In finical year 2066/67 and 2067/68 breakeven sales are then actual sales so it lads the DDC to positive earning. Which are shown by the passive marginal safety?

Form such analysis it can be concluded that in two financial year 2066/67 and 2067/68 performance of DDC was satisfactory but in year 2068/69 it performance is too bad which causes loss as Rs 164941000.

CHAPTER - V

SUMMEARY, CONCLUSIONS & RECOMMEDATION

5.1. Summary

Profit planning and control is an important approach developed for facilitating effective performance of management system mainly in profit - oriented enterprises. And management is the key element, which controls overall aspects of the organization for the overall efficiency.

It is the ultimate objective of management to maximize profits over the long term consistent with its social responsibility.

CVP analysis is among the most important fool in the profit planning and control process. It is a device used to determine the use fullness of the profit planning process of the firm. In fact, the entire field of profit planning has associate with the CVP interrelationships. CVP analysis helps to determine the minimum sales volume to avoid loses and the sales volume at which the profit goal of the firm will be achieved. As ultimate objectives, it helps management in seeking the most profitable cost and volume. A dynamic management, therefore, use CVP analysis to predict and evaluate the implications of its short- rum decisions about fixed cost, variable cost, volume and selling price for its profit plans on a continuous basic.

CVP analysis is a way to quickly answer a number of important questions about the profitability of a company's products or services.

The performance of almost all public enterprises is not satisfactory. They are incurring losses year after year and DDC is not apart from this. The main causes of losses are:

- Lack of sound system of forecasting
- CVP analysis not applied.
- High fixed cost by over staffing.
- Low productivity of labor
- Shortage of effective inventory policy
- High fluctuation is sales.

Some other reasons might be

- Ambiguous goals and objectives.

- Inadequate knowledge and use of PPC
- Govt. intervention in decision.
- Lack of co- ordination and communication between departments.

DDC, being public enterprises, started with the aim of providing services to the urban peoples by producing and supplying milk and dairy products and also improving the economic conditions of rural people by promoting livestock occupation.

The main objective of the present research was to analyze CVP analysis in relation to DDC. It has observed that, even though, holding large marker shares, DDC has been incurring losses year after year. But in this study except in 2064/65, 2065/66 and 2068/69 in which it got losses of Rs 89790000, 8609000,164932000 fiscal years succeed to earned profit. Which is very good signal.

As per study, primary and secondary data are analyzed with historical and descriptive approach for sales cost, inventory, productivity rations, profitability rations, contribution margin analysis, P/V ration analysis, BEP analysis, etc, are used. The Data used are evenly distributed, tabulated, wherever necessary.

From the analysis, it shows that DDC has low contribution margin. Low P/V ratio, high BEP sales (less than actual sales) except in 2066/67,2067/68. The sensitivity analysis showed that increase in cost, in cost, increase BEP while decrease in cost, decreases BEP which shows that cost and BEP are positively correlated whereas the relationship of sales to BEP are negatively correlated.

DDC profit situation is improving. In the year 2066/67, 2067/68 DDC has generated profit. But if omit inventory change and other sundry income BEP is more than actual sales.

The distribution of operation of Dairy in various districts and lack of detailed information regarding the cost structure and wide varieties of products with little knowledge of PPC seems to be the main causes of not practicing CVP analysis by the DDC.

5.2. Conclusion

On the basic of the different analysis, observation, and informal discussion, etc, resulted in the following conclusions:

- DDC has been planning only on short term basic
- The goals and objectives of the corporation are ambiguous to the lower level of employees. There is a wide fluctuation in the targeted sales and actual achievements.
- The practice of CVP analysis has not been used yet.
- There is no practice of segregating cost into fixed and variable.
- DDC has low contribution margin with high variable cost.
- DDC has also high fixed cost with low contribution margin, resulting in high BEP sales.
- There is no effective inventory policy. If production exceeds sales, then it is considered as inventory. Otherwise there is no such inventory policy followed which result in high fluctuation in inventory.
- The availability of manpower is more than is requirement, resulting in overstaffing, and confusion of delegation of authority and responsibility, which caused low productivity of labor.
- The profitability of the DDC is also very poor.
- All these causes are affecting DDC's high fluctuating sales revenues, low P.V. ratio, high V.C. ratio, too low profitability rations and low productivity ratios of labor.

5.3. Recommendations.:

On the basic of this study, the following recommendations are excepted to be fruitful to the management of the corporation and other concerned office.

- First and foremost, DDC should clearly define its objectives into long- term goals and short term goals.
- Secondary, the delegation of authority and responsibility should be clear among the different levels of management.
- There should be separate planning and control department. The trained and qualified planning experts should be recruited or hired and all the employs should be well trained.
- DDC should consider demand, market study its own products, The unproductive products should be dropped or if needed, devised the price of the products.
- Variance analysis should be made to dig out the cause of unfavorable variance and timely correct them.
- BEP analysis should be done while planning segregating the cost.

- DDC should lay off unproductive employees who are causing extra burden of cost in the form of salaries, provident fund and gratuity expenses.
- DDC should also consider the variable costs. It should reduce as much as it can so as to increases contribution margin ratio.
- DDC should also consider in buying new production plant that might reduce the unproductive employees and the over- utilization of old pant, resulting in less investment in repairs and maintenance on such assets.

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APPENDICES

Appendix - 1

Comparative Profit and Loss Account from 2064/65 to 2068/69

(In Rs. '000')

particular	**2064/65**	**2065/66**	**2066/67**	**2067/68**	**2068/69**
Sales Revenue	1800673	2193309	2628350	2926888	3242929
Sundry Income	13756	14981	17541	29049	34771
Total Income	**1814429**	**2208290**	**2645891**	**2955937**	**3277700**
Collecting Expenses	1219288	1425314	1691115	2081818	2454091
Processing Exp.	346520	524297	693927	450259	574267
Selling Exp.	62355	66652	73918	80208	100829
Administration Exp.	117665	123495	133952	166680	213325
Add Gratuity Exp.	55386	73064	55230	23632	159983
Depreciation	36434	36666	36963	37016	44288
Interest on Loan	3250	915	1502	214	3939
Total Exp.	**1840862**	**2250403**	**2686607**	**2839827**	**3550712**
Add/Less Stock	63357	(33504)	(72979)	12547	(108080)
Net Exp.	1904219	2216899	2613628	2852374	3442632
Last year Income Balance	(246089)	335879	(344489)	(325080)	(265762)
Net Profit & Loss	(89790)	(8609)	32263	103563	(164932)
Tax Provision	-	-	6452	18641	-
Accumulated Loss	**(335879)**	**344489**	**(325080)**	**265762**	**(432604)**

Appendix-2

Balance Sheet (From 2064/65-2068/69)

(In Rs. '000')

Particulars	**2064/65**	**2065/66**	**2066/67**	**2067/68**	**2068/69**
Assets					
Fixed Assets					
(a) Present in Use	234316	246655	245284	279362	318782
(b) Installed but not Used	9329	4316	17256	25586	19855
Foreign Commands Grant	-	7001	17854	2201	2201
Current Assets	463426	583782	680992	744432	774843
Deferred Exp.	-	-	-	-	-
Accumulated Loss	335879	344489	325080	265762	432604
Total Assets	**547229**	**1186243**	**1286466**	**1337145**	**1568086**
Liabilities					
Corporate Fund	286488	286488	286488	197140	197140
Foreign Grant Capital	264314	331370	331370	331370	331370
Long Term Loan	79026	6650	3327	-	-
Current liabilities	413123	506515	613061	667065	898006
other Grand	-	52220	52220		
Total Liabilities	**547229**	**1186243**	**1286466**	**1337145**	**1568086**

Appendix-3

Collection expenses from 2064/65 to 2068/69.

(In Rs '000')

Statement	**2064/65**	**2065/66**	**2066/67**	**2067/68**	**6068/69**
Milk Purchase	1103473	1295786	1545567	1902930	2234227
Fuel and Other Provision	44704	52595	52867	74559	2234227
Chemical and Detergent	742	1008	1505	1850	1949
Other dairy goods	692	975	1015	1663	1573
Water and Electricity	5249	4478	5275	4584	4522
Salary	310409	37846	40809	41019	67781
Allowance	3888	3003	6298	6602	6558
Provident Fund	1892	2189	2503	2582	3853
Maintenance Machine	3374	2877	3745	4404	4690
Repair as Building	413	239	622	847	1192
Motor Repair	12217	13150	16096	20650	20169
Other Repair	246	212	230	386	439
House and Land Rent	1184	1474	1612	1859	2027
Stationary and Printing	446	2102	513	423	545
Travelling Exp.	3929	5141	7210	1859	2027
Tax Charge	1317	1541	1361	423	545
Bank Commission	1321	1442	1492	11953	20120
Ticket, Wire, Telephone	195	162	197	-	194
Insurance	728	528	779	1009	1305
Non Durable Office Goods	143	160	195	279	267
Gratuity Exp.	1598	-	997	-	-
Cleaning and Sanitation	128	106	134	265	-
Other Exp.	-	-	93	208	221
Total	**1219288**	**1425314**	**1691115**	**2081818**	**2454091**

Appendix-4

Processing Expenses from 2064/65-2068/69

(In Rs '000')

Statement	**2064/65**	**2065/66**	**2066/67**	**2067/68**	**2068/69**
Skim Milk Power	78418	193444	225585	16525	18757
Raw Materials	5780	6914	11387	12826	11847
Packing Goods	87757	99536	98048	113501	142614
Chemical Detergent	5041	6541	7102	9022	11264
Other Dairy Goods	1762	2073	2138	2774	2915
Transport Cost	1674	2731	3232	3157	31604
Water and Electricity	21488	21951	23768	27636	31664
Fuel and Other Provision	59240	75126	75071	96318	139355
Building and Land Rent	491	468	565	533	607
Salary	50633	74675	84911	83013	120447
Allowance	7810	7457	14997	16465	14314
Provident Fund	2998	4086	4993	5089	6459
Machine Repair	11181	12462	17916	29032	37101
Building Repair	542	509	520	568	620
Other Repair	5425	509	520	568	620
Insurance	541	473	529	523	634
Travelling Exp.	994	1409	1547	1688	1637
Stationary & Printing	454	585	551	668	731
Tax Charge	10	8	81	4	-
Non-Durable Goods	275	187	155	288	290
Processing Milk Loss	-	11977	118504	42855	10931
Ticket, Wire, Telephone	69	60	63	47	51
Gratuity Exp.	3123	-	-	-	-
Bank Commission	54	91	141	132	111
Total	**346520**	**524297**	**693927**	**450259**	**574267**

Appendix-5

Selling Expenses From 2064/65-2068/69

(In Rs.'000')

Statement	**2064/65**	**2065/66**	**2066/67**	**2067/68**	**2068/69**
Salaries	18770	23890	26405	26653	40185
Allowance	3845	3424	6087	6566	5938
Provident Fund	1085	1368	1543	1545	2081
House and Store Rent	401	430	411	428	463
Printing and Stationary	476	461	470	646	653
Water and Electricity	280	283	263	262	275
Fuel and Other Provision	4643	4518	4509	5997	5882
Motor Repair	2817	2841	2782	3537	3181
Building Repair	19	234	227	129	397
Other Repair	68	65	73	100	86
Milk Transport Expenses	23696	25491	27425	30449	35540
Visiting Exp.	130	180	180	345	295
Business Promoting Exp.	2521	2619	2503	2712	4607
Milk Loss	109	133	107	120	62
Insurance	94	244	206	240	267
Tax Charge	520	405	601	379	657
Non Durable Goods	90	66	125	100	160
Gratuity Exp.	2782	-	-	-	-
Total	**62355**	**66652**	**73918**	**80208**	**100829**

Appendix-6

Administration Expenses from 2064/65-2068-69

(In Rs '000')

Statement	2064/65	2065/66	2066/67	2067/68	2068/69
Salaries	43280	52370	53911	52369	76871
Allowance	5928	5242	9049	9364	8381
Provident Fund	2603	3155	3393	3375	4297
House and Land Rent	108	173	192	265	312
Water and Electricity	71	25	77	43	67
Ticket, Wire, Telephone	1485	1531	1487	1613	1634
Stationary and Printing	1161	1444	133	1514	1838
Fuel and Other Provision	1969	2103	2103	2497	3393
Motor Repairs	1052	1099	1070	1607	1395
Building Repairs	376	149	157	2009	660
Other Repairs	210	163	1234	1120	1503
Office Goods Repairs	514	848	-	-	-
Visiting Exp.	1621	2744	2626	5683	4800
Guest Welcome	1602	1771	2323	2968	2959
Staff Training	821	1556	2233	1692	2085
Staff Welfare	425	202	140	1744	263
General Meeting	147	129	131	233	400
Recruitment Fee	684	436	372	22	975
Auditing Fee	306	202	366	203	565
Sub Committee Cost	510	420	502	677	1051
Advisor Cost	199	222	240	1142	704
Advertisement and Publications	2864	2460	2324	1743	2027
Bank Commission	87	290	285	583	324
Non Durable Office Goods	504	451	488	634	733
News Paper	146	151	127	193	215
Tax Charge	558	692	935	1263	1568
Sanitary Exp.	525	298	452	620	688

Insurance	12647	19829	26018	28424	31053
Donation	688	765	679	571	644
Membership Fee	26	14	33	37	54
Gratuity Exp.	30922	19337	12394	240472	42486
Annual day Exp.	991	1454	2173	2406	2369
Concession Exp.	50	-	10	29	1438
Business Promoting Exp.	-	9	-	13036	10552
Deterred Exp.	330	135	681	30	20
Bus Fair	1028	1209	1075	1491	1538
Emergency Exp.	10	178	1105	1491	1538
Legal Charge	21	-	-	144	492
Meeting Operation	238	157	180	1120	1210
Software Exp.	95	-	108/3	144	1761
Seminar	857	82	966	-	1471
Total	**117665**	**123495**	**133952**	**166680**	**213325**

Appendix-7

Computation as Efficient as Variance on Correlation Coefficient

(In Rs. '000')

Year	Budgeted		Actual	
	Sales (X)	$(X-\bar{x})^2$	Sales X	$(Y-\bar{y})^2$
2064/65	1895445	848664712900	1800673	574197186564
2065/66	2410229	165198350916	2193309	133314074884
2066/67	2986761	28929247396	2628350	4888666561
2067/68	3147191	109240826256	2926888	135760560849
2068/69	3643751	684054709776	3242939	468551202064
	Σ x = 14083377	$\Sigma (x-\bar{x})^2$	Σ y = 12792159	$\Sigma (y-\bar{y})^2$

1) Mean $\bar{x} = \frac{\sum x}{n} = \frac{14083377}{5}$

$= 2816675$

$$\bar{x} = \frac{\sum y}{n} = \frac{12792159}{5}$$

$$= 2558431$$

2) Standard Deviation

For S.D. of x = $\sqrt{\frac{\Sigma(x-\bar{x})^2}{n-1}}$

$$= \sqrt{\frac{1042792311212}{5-1}}$$

$$= 510586$$

For S.D. of y = $\frac{\sqrt{\Sigma(y-\bar{y})^2}}{n-1}$

$$= \sqrt{\frac{1316711690922}{5-1}}$$

$$= 573740$$

3) Coefficient as Variance (CV) = For x = $\frac{\sigma x}{\bar{x}}$

$$= \frac{510586}{2816675}$$

$$= 18.12\%$$

For y = $\frac{\sigma y}{\bar{y}}$

$$= \frac{573740}{2558431}$$

$$= 22.42\%$$

4) Computation as (r) = $\frac{\frac{\Sigma(x-\bar{x})(y-\bar{y})}{n-1}}{\sigma x \sigma y}$

$$= 0.8944$$

Appendix-8

Calculation of Break-Even Sales and Margin of Safety with four Assumptions

For 2064/65

Assumption 1: Exclude Inventory Change and Include Sundry Incomes

$$\text{BEP Sales} = \frac{368806 - 13756}{0.1503}$$

$$= 2362275$$

M.O.S. Sales = 1800673-2362275

= (561602)

Assumption 2: Exclude Inventory Change and Excluding Sundry Incomes

$$\text{BEP Sales} = \frac{368806}{0.1503}$$

$$= 2453799$$

M.O.S. Sales = 1800673-2453799

= (653126)

Assumption 3: Exclude Inventory Change and Inventory Sundry incomes

$$\text{B.E.P. Sales} = \frac{368806 - 5461}{0.1503}$$

$$= 2453799$$

M.O.S. Sales = 1800673-2490133

= (689460)

Assumption 4: Include both- Inventory Change Sundry Incomes

$$\text{B.E.P. Sales} = \frac{368806 + 5461 - 13756}{0.1503} = 2398610$$

M.O.S. Sales = 1800673-2398610

= (597937)

For 2065/66

Assumption 1: Exclude Inventory Change and Include Sundry Incomes

$$\text{B.E.P Sales} = \frac{422697 - 14981}{0.1807} = 2256314$$

M.O.S. Sales = 2193309 -2256314 = (63005)

Assumption 2: Exclude Inventory Change and Exclude Sundry Incomes

B.E.P Sales $= \frac{422697}{0.1807} = 2256314$

M.O.S. Sales = 2193309-2339220 = (145911)

Assumption 3: Exclude Inventory Change and Include Sundry Incomes

B.E.P. Sales $= \frac{422697 - 2704}{0.1807} = 2324256$

M.O.S. Sales = 2193309 -2324256 = (130947)

Assumption 4: Include both-Inventory Change Sundry Incomes

B.E.P. Sales $= \frac{422697 - 2704 - 14981}{0.1807} = 2241350$

M.O.S. Sales = 2193309 -2241350 = (48041)

For 2066/67

Assumption 1: Exclude Inventory Change and Include Sundry Incomes

B.E.P. Sales $= \frac{441884 - 17541}{0.1716} = 2472861$

M.O.S. Sales = 2628350 -2472861 = 155489

Assumption 2: Exclude Inventory Change and Exclude Sundry Incomes

B.E.P. Sales $= \frac{441884}{0.1716} = 2575082$

M.O.S. Sales = 2628350 -2575082 = 53268

Assumption 3: Exclude Inventory Change and Exclude Sundry Incomes

B.E.P. Sales $= \frac{441884 - 5670}{0.1716} = 2542040$

M.O.S. Sales = 2628350 -2542040 = 86310

Assumption 4: Include both-Inventory Change Sundry Incomes

B.E.P. Sales $= \frac{441884 - 5670 - 17541}{0.1716} = 2439819$

M.O.S. Sales = 2628350 -2439819 =188531

For 2067/68

Assumption 1: Exclude Inventory Change and Include Sundry Incomes

B.E.P. Sales $= \frac{447417 - 29049}{0.1787} = 2341175$

M.O.S. Sales = 2926888 -2341175 = 585713

Assumption 2: Exclude Inventory Change and Exclude Sundry Incomes

B.E.P. Sales $= \frac{447417}{0.1787} = 2503733$

M.O.S. Sales = 2926888 - 2503733 = 423155

Assumption 3: Exclude Inventory Change and Include Sundry Incomes

B.E.P. Sales $= \frac{447417 + 9620}{0.1787} = 2509116$

M.O.S. Sales = 2926888 -2509116 = 417772

Assumption 4: Include both-inventory Change Sundry Incomes

B.E.P. Sales $= \frac{447417 + 962 - 29049}{0.1787} = 2346559$

M.O.S. Sales 2926888 -2346559 = 580329

For 2068/69

Assumption 1: Exclude Inventory Change and Include Sundry Incomes

BEP Sales $= \frac{`732124 - 34771}{0.1612} = 4326011$

M.O.S. Sales = 3242929-4541712 = (1083072)

Assumption 2: Exclude Inventory Change and Exclude Sundry Incomes

BEP Sales $= \frac{732124}{0.1612} = 45417012$

M.O.S Sales = 3242329-454172 = (1298773)

Assumption 3: Exclude Inventory Change and Include Sundry Incomes

BEP Sales $= \frac{732124 - 9522}{0.1672} = 4482643$

M.O.S. Sales = 3242329-4482643=(1239704)

Assumption 4: Include both - Inventory Change Sundry Incomes

BEP Sales $= \frac{7232124 - 95 - 34771}{0.1612} = 4266942$

M.O.S Sales = 3242929-4266942= (1024003)

Appendix -9

Productivity Ratios

Sales per Employee = $\frac{Netsales}{No.ofEmplyees}$

For 2064/65 $\frac{1595907000}{1279}$

For 2065/2066 $= \frac{2193309000}{977} = 2244943$

For 2066/67 $= \frac{2628350000}{977} = 2690225$

For 2067/68 $= \frac{2926888600}{1059} = 2763822$

For 2068/69 $= \frac{3242929000}{1059} = 3062256$

Net Value Added per Employee = $\frac{Netaddedvalue}{No.ofEmplyess}$

For 2064/65 $= \frac{1507812000}{977} = 1543308$

For 2065/66 $= \frac{561895000}{977} = 575123$

For 2066/67 $= \frac{709326000}{977} = 726025$

For 2067/68 $= \frac{812858000}{1059} = 767571$

For 2068/69 $= \frac{745677000}{1059} = 704133$

Labor Equipment Ratio = $\frac{NetFixedAssets}{No.ofEmployees}$

For 2064/65 $= \frac{243645961}{977} = 249381$

For 2065/66 $= \frac{250972679}{977} = 256880$

For 2066/67 $= \frac{262540456}{977} = 268721$

For 2067/68 $= \frac{304949346}{1059} = 287959$

For 2068/69 $= \frac{338637632}{1059} = 319771$

Wages Distribution Ratio $= \frac{GrossWages}{NetAddedValue}$

For 2064/65 $= \frac{267952}{1507812} = 17.77\%$

For 2065/66 $= \frac{311106}{561895} = 55.36\%$

For 2066/67 $= \frac{323521}{709326} = 45.60\%$

For 2067/68 $= \frac{302346}{812858} = 37.19\%$

For 2068/69 $= \frac{599634}{745677} = 80.41\%$

Wages Base $= \frac{Grosswages}{No.ofEmplyess}$

For 2064/65 $= \frac{267952000}{977} = 274260$

For 2065/66 $= \frac{311106000}{977} = 318430$

For 2066/67 $= \frac{323521000}{977} = 331137$

For 2067/68 $= \frac{302346000}{1059} = 285501$

For 2068/69 $= \frac{599634000}{1059} = 566227$

Appendix - 10

Profitability Ratios

Gross Margin Ratio = $\frac{Grossm\arg in}{Sales}$

For 2064/65 = $\frac{164898000}{1800673000} = 9.15\%$

For 2065/66 = $\frac{277202000}{2193309000} = 12.64\%$

For 2066/67 = $\frac{312420000}{2628350000} = 11.88\%$

For 2067/68 = $\frac{382264000}{2926888000} = 13.06\%$

For 2068/69 = $\frac{322661000}{32429000} = 9.94\%$

Net Profit Ratio = $\frac{Netprofit}{Sales}$

For 2064/65 = $\frac{(89790000)}{18000673000} = (0.05\%)$

For 2065/66 = $\frac{(8609000)}{2193309000} = (0.0039\%)$

For 2066/67 = $\frac{32263000}{2628350000} = 1.23\%$

For 2067/68 = $\frac{29049000}{2926888000} = 1.0\%$

For 2068/69 = $\frac{(164932000)}{3242929000} = (5.08\%)$