

CHAPTER - I

INTRODUCTION

1.1 General Background

CVP analysis is an analytical tool for studying the relationship between volume, cost and profit. There are three factors of CVP analysis which are interconnected and dependent on one another CVP analysis examines the behavior of total revenues, total cost and operating income as changes occurs in the output level, the selling price, the variable cost per unit and fixed cost of a product. CVP also helps to make or buy decision on sub-assembly or part.

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

CVP analysis is a systematic method of examining the relationship between changes in activity (i.e. output) and changes in total sales revenue, expenses and net profit. As a model of these relationships CVP analysis simplifies the real world conditions that a firm will face. Like most models, which are abstractions from reality, CVP analysis is subject to a number of underlying assumptions and limitations. Nevertheless, it is a powerful tool for decision-making, in certain situations (Drury, 2000:235).

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

Decision-making is a fundamental part of management. Decision about the acquisition of equipment, mix of product, method of production, and pricing of product and services confronts manager in all types of organizations (Hilton 2002: 602).

Decision-making is one of the most crucial tasks of management. Manger is constantly failed with problems of deciding what products to sell, what production methods to use, whether to make or buy component, parts what prices to charge, what channels of distribution is to use, whether to accept special orders at special prices and so forth. In decision-making, cost is always a key factor. The cost of one alternatives must be compared against the cost of other alternatives as one step in the decision-making process. To be successful decision-making, manager must have tools at their disposal to assist them (Bajracharya, et al., 2005: 344).

“Cost volume profit analysis includes the related concepts of (a) Contribution analysis and (b) Break even analysis. This concept entered the mainstream of management accounting starting in the 1930’s with major emphasis in the 1950’s.”

Both concepts rest upon the concept of variability (i.e. flexible or variable expenses budgets), contribution analysis involves a series of analytical techniques to determine and evaluate the effects on profits on change in sales volume, sales prices, fixed expenses and variable expenses. Basically, it applies the concept of a contribution margin income statement: Revenues minus variable expenses equals contribution margin, and contribution margin minus fixed expenses equals profit (Gyawali, et al. 2064).

History of Dairy Development in Nepal

The production of yak cheese had been started in Langtang in 1952. But formally the dairy development activities in Nepal has been started in Tusal, a village of Kavre District in 1954 on experiment basis with a small scale milk processing under the department of agriculture. In the year 1956, as the initiative of Dairy Development Board, the central dairy plant was established and started milk collection at the rate of 500 lt/hr in processing and marketing department. The first five-year plan stressed upon the need of development modern dairy industries in public sector. As the demand of milk and milk product was increased day by day. Dairy Development Corporation was established in 1969. It has been difficult for DDC to fulfill the increase demand of people; hence private dairies have been started in 1980. The status of dairy sector in Nepal has been as presented as follows:

Table 1.1: Status of Dairy Sector in Nepal

Livestock sector contribution	15% in GDP
Dairy sector contribution	2/3 of livestock sectors
Growth of milk production	30% in last 10 years
Annual milk production	1.35 million mt. (3227mt./day)
Total milk market in Nepal	16% of the total production

Source: Record of Dairy Development Corporation, 2011.

Kathmandu Dairy in Nepal

Kathmandu Dairy today has been making the finest quality dairy products. It has been enjoying well establish reputation of “The Cream of Dairy”. Kathmandu Dairy safeguards the interest of the rural milk producers by providing highly competitive price. Kathmandu Dairy is committed for providing the highest quality product to its consumers’ at the most reasonable price. Milk and milk products are getting wide acceptance by general consumers day by day. In the mean time the challenge of providing safe and hygienic milk and milk products are standing a head in the Nepalese context.

Kathmandu Dairy aims to be the leading Dairy and food processing industry in country. It has been successfully introducing varieties of dairy products harmonizing with the changing taste of upcoming generation. It is firmly committed to high quality production of world- class standard at most reasonable price and giving consumer’s services of high satisfaction. It is aimed to do the based create conducive environment to its customers at its various outlet. From the angle of national interests its whole effort has been found to center around at solving the national problem of milk holiday at the services of poor milk farmers.

Kathmandu Dairy Pvt. Ltd focuses its business model to be the industry leader by producing and marketing of a milk product with assured quality an affordable price. The strategies of the Kathmandu Dairy to achieve its goals are:

- Add more value to dairy products for the more profit margins.
- Extend the life of the products
- Focus on investing on information technology to keep track of research and development, scheduling, accounting and customer

information. Management trading partners across your supply chain and raw material intake.

- A better way to reduce linkage and wastage to reduce the operation cost.

Goal of Kathmandu Dairy

The following goals of Kathmandu Dairy are as:

- a. Kathmandu dairy aims to be the leading dairy and food processing industry in Nepal.
- b. We have successfully introducing varieties of dairy products harmonizing with the changing taste of upcoming generation.
- c. We are firmly committed to high quality production of world-class standard at most reasonable price and giving consumer's services of high satisfaction.
- d. We do our best to create conducive environment to our customers at our various outlets.
- e. From the angle of national interest, our whole effort is found to center around at solving the national problem of milk holiday at the service of poor milk farmers.

1.2 Statement of the Problem

Nepalese organizations are still in infancy position. Despite various alternative and liberal policies of the government of Nepal for public corporation, new public corporations were not profitable. Such conditions of established corporation are not acceptable for their betterment. There may be various and different reasons for the poor performance of public enterprises. Such reasons should be investigated and enforce corrective actions for improvement in their performance.

Success is not a matter of chance. Profit does not just happen. It is to be planned and managed. Management accounting provides techniques to aid management functions. Nepalese companies are not performing well as is evident from their annual reports. Poor performance is the outcome of poor planning, controlling and decision-making. This has raised the question whether Nepalese managers are competent enough? CVP analysis is a supplementary tool of decision-making. CVP analysis is immensely helpful for developing alternative strategies in sales planning and cost estimation.

Like an every business organizations, Kathmandu dairy is also established to earn certain amount of profit. Mostly success is measured in terms of profit. To earn desired level of profit, it is to be planned and managed. Cost-volume-profit analysis provides the technique of profit planning framework based on the annual report published. Performance of Nepalese industries cannot be considered as satisfactory. Poor performance is the outcome of poor planning, controlling and decision-making. This has raised the question whether Nepalese managers are competent enough? Do they practice CVP tools and technique to carryout planning controlling function and decision-making? KD is currently facing problem to have fair estimate of total cost, total revenue and profit at various sales volume. Due to the lack of application of profit planning tools, they can't forecast budgeted sales to recover total cost and to achieve profit. In the above light, the study attempts to answer the following research questions.

- a. Is the company practicing CVP analysis for its profit planning and decision-making?
- b. What is the profitability and performance of KD?
- c. How is the risk associated with KD?
- d. What are the major difficulties faced by KD in the application of CVP analysis?

1.3 Objectives of the Study

The main objective of this study is to examine cost-volume profit analysis as a tool to measure the effectiveness of Kathmandu Dairy. To achieve this, the following specific objectives have been carried out:

- a. To find the application of CVP analysis as a tool of budgeting and decision-making.
- b. To investigate and report on the status of CVP analysis practices in private company (KD).
- c. To analyze the profitability and financial performance of KD.
- d. To examine the risk of the company with the help of operating leverage technique.

1.4 Significance of the Study

Because of the globalization, today market has become very competitive. A few studies has been made in relation to the tools of profit planning in Nepalese context and most of the studies are related to the profit planning and control of the public enterprises where CVP as one of the tools of PPC is hardly studied. This study is significant in the sense that it has treated to study the CVP analysis of the dairy company, which is one of the most important tools of PPC and decision-making. This study is further significant because it highlight the relationship of CVP as applicable tool of budgeting and it also highlight the sensitivity of cost profit volume variables. The study would be very useful for entrepreneurs, decision makers, researchers and the managers because it deals with the practices of CVP analysis of KD as a very important tool of decision-making and PPC.

1.5 Limitations of the Study

This study consists of some limitations, which can be presented as follows:

- a. The study covers the data of five years only i.e. 2062/63 to 2066/67.
- b. The focuses limit over the availability of data and sufficient literature.
- c. Analysis is concentrated in some managerial, financial and accounting aspect and it does not cover the areas of enterprises.
- d. The comprehensive and the accuracy of the study are based on the data available from the management of KD.
- e. Being a researcher as a student and due to the limited resources constraints, the study is neither comprehensive nor extensive.
- f. The research is purely based upon the secondary data.

1.6 Organization of the Study

The whole study has been categorized into five major chapters as:

Chapter I: Introduction: First chapter is the introductory part of the research which comprises of general background, statement of the problem, objectives of the study, significance of the study and limitations of the study.

Chapter II: Review of related literature: Chapter two deals with review of theoretical as well as empirical part. All the theoretical concepts have been described in theoretical part and previous studies relating to CVP analysis have been reviewed in empirical part of the study.

Chapter III: Research methodology: Chapter three is the methodology part of the study which guidelines the way to do research, comprises research design, population and sample, nature and sources of data, data collection tools, data analytical tools.

Chapter IV: Data presentation and analysis: Chapter four is the main body of the research which deals with systematic presentation and analysis of relevant data and information.

Chapter V: Summary, conclusion and recommendations: Fifth chapter is the concluding part of the research which comprises summary of the study, conclusion of the study and recommendations for further improvement.

Finally, bibliography and appendices are also included at the last of the research.

CHAPTER - II

REVIEW OF LITERATURE

Conceptual framework and review of the literature is supported to revise the eminent literatures relating to the study. Various books, articles, journals, bulletins, reports, news, statements and thesis etc are the basis for preparing it. Some philosophers, writers or researches have given the contribution on it since many years.

2.1 Concept of Cost-Volume-Profit Analysis

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

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

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

- a. Minimum level of sales to avoid losses
- b. Sales level to earn target profit
- c. Effects of changes of price, cost and volume of profit
- d. New break-even point for changes
- e. Impact of expansion plan on CVP relationship
- f. Products those are most profitable and least profitable
- g. Whether to continue or discontinue the sales of product or operation of plan
- h. Effects on operating profit with the increase in fixed costs.

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

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

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

Cost volume profit analysis is a systematic method of examining the relationship between changes in activity (i.e. output) and changes in total sales revenue, expenses and net profit. As a model of their relationship CVP analysis simplifies the real world conditions that a firm will face like most models, which are abstractions from reality. CVP analysis is a subject to number of underlying assumptions and limitations. Never the less it is powerful tool for decision-making in certain situation (Drury, 2000:17).

2.2 Use of CVP Analysis in Profit Planning

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

- a. To determine the break -even point in terms of unit or sales value
- b. To determine the margin of safety.
- c. To estimate profits or losses at various level of output.
- d. To assess the likely effects of management decisions such as an increase or decrease in selling price, adoption of new method of production to reduce direct labor and increase output.
- e. To help management to find the most profitable combination of costs and volume.

- f. To determine the optimum selling price.
- g. To determine the sales volume at which the profit goal of the firm will be achieved.
- h. To determine the most profitable and least profitable product.
- i. To determine new break-even point for changes in fixed or variable cost.

2.3 Profit

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

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

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

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

2.4 Planning

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

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

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

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

2.5 Profit Planning and Control

Once the planning is determined, it must be carried out under control. Controlling shares management activity and for this, managers compare actual performance against the planned performance and find out the

decision taking remedial steps to remove the deviations. Immediate action should be taken to remove the deviations to make an improvement in the performance because promptness is the essence of an effective control. Controlling is the measurement and correction of performance in order to make sure those enterprise objectives and the plans devised to attain them are accomplished (Kothari, 1990:69).

Profit planning involves streaming activities in order to get employees profit minded and to secure maximum benefit from minimum effort and expenditure. A best result seems to be obtained from a single product. The planner is a given the right to prove economics, the organization, the made of operation, the pricing in the marketing or any other fact of making and selling the product that in his judgment affects profit acquiring from that product. The concentration of profit efforts upon to gross traditional boundaries of the enterprise to translate needs from one group to another and to obtain consumed profit building efforts among these who can affect profits are the fundamental factors that contribute to the success of profit planning (Chamberlain). Profit planning is a comprehensive plan expressed in financial terms by which an operating program is effective for a given period of time. Business managers are continually involved in planning, organizing and controlling the operation of both large and small business organizations. Budgeting is one of the most important management tool used to plan and control business operations. Budgets are financial plans prepared as a guide to plan and control business operations. A financial plan must be designed to serve as a guide for the activities. Best results are obtained when the planning period is the same as the company's fiscal year. The annual budget is broken down by months, weeks and days of operations. The budget should be designed to co-ordinate the effort of the sales department and the other entire department (Bajracharya, et.al, 2004:344).

Controlling means evaluating the firm's activities against the plan and deciding what should be done if the plan is not being followed. It is a process

of ensuring that actual activities confirm to plan activities. Control helps in correction. Therefore, planning and controlling are the major functions of management (Lynch & Williamson, 1995:112).

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

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

In comprehensive sense we can say that, PPC one of the most important approaches that has been developed to facilitate effective performance of the management process (Lynch & Williamson, 1995:112).

2.5.1 Principle and Purpose of Profit Planning and Control

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

- a. To provide a realistic estimate of income and expenses for a period and the financial position at the close of the period detailed by areas of management responsibility.
- b. To provide a co- ordinate plans of action, which is designed to active the estimates reflected in the budget.
- c. To provide a comparison of actual results with those budgeted and an analysis and interpretation on of deviation on by areas responsibility

to indicate course of corrective action and to lead to improvement in procedures in building future plan.

- d. To provide a guide for management decision in adjusting plans and objectives as uncontrollable conditions change.
- e. To provide a ready basis for making forecasts during the budget period to guide management in making day-to-day division (Welsch, 1992: 255).

2.5.2 Advantages and Importance of Profit Planning and Control

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

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

- a. PPC focuses basic policies to initiatives.
- b. It sets responsibilities of employees in relation to each function.
- c. It creates the feeling of co-operation and understanding between different departments of enterprises.
- d. It leads to maximum and most economical utilization of material, labour, capital and other sources with a view to ensure maximum return.
- e. It forces the management to keep adequate and correct historical data in the business.

- f. In competed management to plan future, the budgeting process forces management to look a need and become more effective and efficient administration in the business operations.
- g. It forces the management to take necessary steps for getting satisfactory results.
- h. It improves the quality of communication. The enterprises objectives budget, goal, plan, authority and responsibility and procedures to implement plans are clearly written and communicates through budgets to all individuals in the enterprise. This results in better understanding and harmonious relations among managerial and subordinates.
- i. Develops and atmosphere of profit mindedness and cost consciousness.
- j. It highlights upon the efficiency of lack of it in the business and thus helps the management to take remedial action.
- k. It tends to remove the cloud of uncertainty that exists in many firms especially among lower levels of management relative to basic policies and enterprises objectives.
- l. Profit planning necessitates a periodical and critical appraisal of every elements of a business.

2.5.3 Basic Assumptions and Limitations of Profit Plan

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

- a. In developing and using of profit planning and control program, the following additional limitations should be kept in mind.

- b. The profit plan based on estimates.
- c. PPC program must be continually adopted to fit changing circumstances.
- d. Execution of a profit plan will not occur automatically.
- e. The profit plan is not a substitute of management.

2.6 Cost-Volume-Profit Analysis as a Tool of Decision-making

Decision-making is one of the most crucial tasks of management. CVP is a greater helpful in managerial decision-making, especially cost control and profit planning. It provides attention-decision-making and problem solving backgrounds for important planning decisions, such as selecting distribution channels, pricing, special promotion and personnel hiring. “Know your cost” is an essential theme for any managers. And CVP analysis helps to direct managerial attention to important problems and paves. Some examples of decisions where Cost-Volume-Profit analysis can provide help are:

- What price(s) should we charge for our products or services?
- How many units of a product should we produce?
- Should we spend more on advertising?
- Should we add or delete a product line?
- Should we accept or decline a special order?
- What sales mix (different products) should we strive for?
- What is the effect of a change to a different raw material supplier?
- Should we increase or decrease our work force?
- How should we make our products?

CVP analysis is an important tool of decision-making because it provides the information about the behaviour of cost in relation to volume, volume of production or sales where the business will break-even sensitivity of profit due to variance of output, amount of profit for a projected sales volume and quantity of production and quality of production and sales for the target

profit level etc. Therefore CVP analysis may be defined as a managerial tool showing the relationship between various ingredients of profit planning. CVP analysis is an important media through which the management can have an insight into effects on profit on account of variance in cost and sales and take appropriate decisions. CVP analysis is great helpful in managerial decision-making. Especially cost control and profit planning is possible with the help of CVP analysis. Profit planning is the fundamental part of the overall management functions. Profit planning can be done only when the management has the information about the cost of the product and selling price of the product.

2.7 Application of CVP Analysis

CVP analysis involves the analysis of how total costs, total revenues and total profits are related to sales volume, and is therefore concerned with predicting the effects of changes in costs and sales volume on profit. It is also known as 'breakeven analysis'.

The technique used carefully may be helpful in the following situations:

- a) Budget planning. The volume of sales required to make a profit (breakeven point) and the 'safety margin' for profits in the budget can be measured.
- b) Pricing and sales volume decisions.
- c) Sales mix decisions, to determine in what proportions each product should be sold.
- d) Decisions that will affect the cost structure and production capacity of the company.

Business organization is run to earn a profit. Planning is the fundamental part of the overall management function. Profit planning can be done only when the management has the information about the cost of product, variable cost, fixed cost and selling price of the product. Profit of a business organization is

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

- a. Contribution Margin Analysis
- b. Break-Even Analysis
- c. Profit-Volume Analysis

2.8 Computation of CVP Analysis

2.8.1 Break-even Analysis

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

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

In any business the manager of a business has to make irrespective of what they produce they have to ensure that the products they produce maximize owners equity. That is the products and services they offer can make a profit and to identify loss making products and introduce new products if they have a profitable market. In addition, they must have a cost control system, which can minimize overheads and direct cost of producing goods and services.

Break-Even analysis is one of the simplest method for a business to make the above mentioned decisions, where the enterprise or business entity produces very limited number of products. As well, the cost can be analysed in to fixed and variable cost accurately. That is, it has a costing system, which can identify variable and fixed cost. Fixed cost are costs, where the cost over a period is constant irrespective of the volume of production to a level. Variable costs are costs that varies with the level of business activity or level of production. Manly, for most businesses material costs and production labor costs are variable costs and some overheads like fuel costs are to some extent variable. However, most overhead costs for most businesses are fixed over a volume of production and there fore fixed costs. However, some costs have an element of variable and fixed cost elements called semi-fixed or semi-variable costs. These cosst have to be separeted using statistical regression analysis. That is the costing sytem has to produce for each product what is the unit variable cost, selling price of each unit, fixed cost for a period. maximum sales possible, which is estimated for a future period. Then one can determine the production point where the profit is zero. For some products the break-even point will be at higher level and for some products the break even point will be at a lower level of production. As well, the margin of safety that the excess profit that can be earned after the break even point also varies. There fore, to maximise profit earned from each product is to reduce variable cost and reduce overhead and increase sales by cost effective promotions and advertising and improving the quality of the products comapred to its competitors. There fore break-even analysis gives a tool for a manger to analyse the mix of products that maximize profit for a period and have cost control systems so that it can minimize waste and improve productivity of labor force and stremling production methods and operations.

In effect break even analysis enable business managers to make effcive decisions based on sound rational basis and based on cost information and

other limiting factors. As well, it gives the manager how a manager can improve profitability of the business as a whole in a dynamic and uncertain market place by monitoring cost and improving the efficiency of the organization on a continuous basis.

2.8.1.1 Determining the Break-even Point

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

- a. Contribution Margin Approach (Income Statement)
- b. Formula Approach (Equilibrium Method)
- c. Graphic Approach

a. Contribution Margin Approach:

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

$$S - VC = CM - FC = NI \text{ (i.e. Contribution)}$$

Contribution margin may be expressed as total absolute amount, a unit absolute amount, a ratio and a percentage. The variable cost ratio or variable cost percentage is defined as all variable costs divided by sales. Thus a contribution margin ratio of 20% means that the variable cost ratio is 80 percent.

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

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

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

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

b. Formula Approach:

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

The BEP can be computed in terms of unit or in terms of monetary value of sales volume or as a percentage of estimated capacity while formula approach is followed. The calculation in the equation approach is similar to that of the contribution margin statement approach. The equation is merely a restatement of the other. To develop the cost volume profit equation.

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

The table helps to understand the computation of the net profit easily, in which the multiplication of the sales volume and selling price per unit has generated the total sales revenue. When we deduct variable cost from the sales revenue then the result comes as a contribution margin. Contribution margin measures the organizations profitability and higher the contribution margin shows better position of an organization but it is not sufficient indicator at all where the fixed cost included in fixed assets are not included. Net profit is that profit which shows the proper profitability position of an organization and it is taken as a basic indicator to measure the financial position of an organization.

2.8.1.2 Assumptions of Break-even Analysis

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

- a. All cost can be classified in to two parts, fixed cost and variable cost.
- b. There is a relevant range of validity (activity) for using the result of the analysis and sales change.
- c. There is only one product or in case of multi products, the sales mix among the products remains constant.
- d. Basic management policy about operation will not change materially in short run.
- e. The general price level (inflation/deflation) will remain essentially stable in the short run.
- f. Sales and production levels are synchronized, that is inventory remains essentially constant or zero.
- g. Effectively and productivity per person will remains essentially unchanged in the short run.
- h. If any of the above assumptions were changed, revised budget would be needed for a new analysis.

2.8.1.3 Limitations of Break-even Analysis

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

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

2.8.1.4 Application of Break-even Analysis

The applications of break-even analysis are as follows:

- a. Sales volume required to produce desired operating profit/target net profit.
- b. Sales volume required to produce the desired profit after tax.
- c. Operating profit at a given level of sales volume.
- d. Effect on operating profit at a given percentage increase in sales volume (in Rs).

- e. Additional sales volume required offsetting a reduction in selling price or sales volume needed to maintain present profit level or a sales volume to offset reduced selling price.
- f. Effects of changes in fixed cost (Munankarmi, 2002:132).

2.9 Sensitivity analysis on CVP Analysis

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

Profit = Total Sales Revenue – Total Sales

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

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

Means profits are the function of volume, price, VC, FC, Taxes and so on. But none of the factors remain unchanged: some times the manger can intentionally change the price and the cost factors as a part of strategic decision. But the strategy focuses more on the factor, which is the more sensitive or responsive for profit. So to measure the sensitivity of CVP factors, we can see the impact of certain percentage or amount of change in volume, price or cost factors on net profit (Bajracharaya, et al., 2004:245).

2.10 Risk Measurement on CVP Analysis as Operating Leverage

Operating leverage tells us how profit change in sales. It is evident that profit change more rapidly than sales. Why do profit change more rapidly than the sales? It is because some costs do not change say if sales decline variable costs also decline in the same ratio so that contribution margin also decline proportionately. But fixed costs do not decline so the net operating income declines more rapidly. The same thing applies in the case of increase well. Sales revenues changes but some part of costs, known as fixed cost, remains unchanged. This usually net operating income changes more rapidly. This change is called the operating leverage.

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

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

Alternatively,

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

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

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

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

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

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

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

BE sales values = FC + VC ± profit.

Therefore, BE sales value = FC + VC ±

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

The graphic Approach to CVP Analysis

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

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

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

At volume 'Q + n'

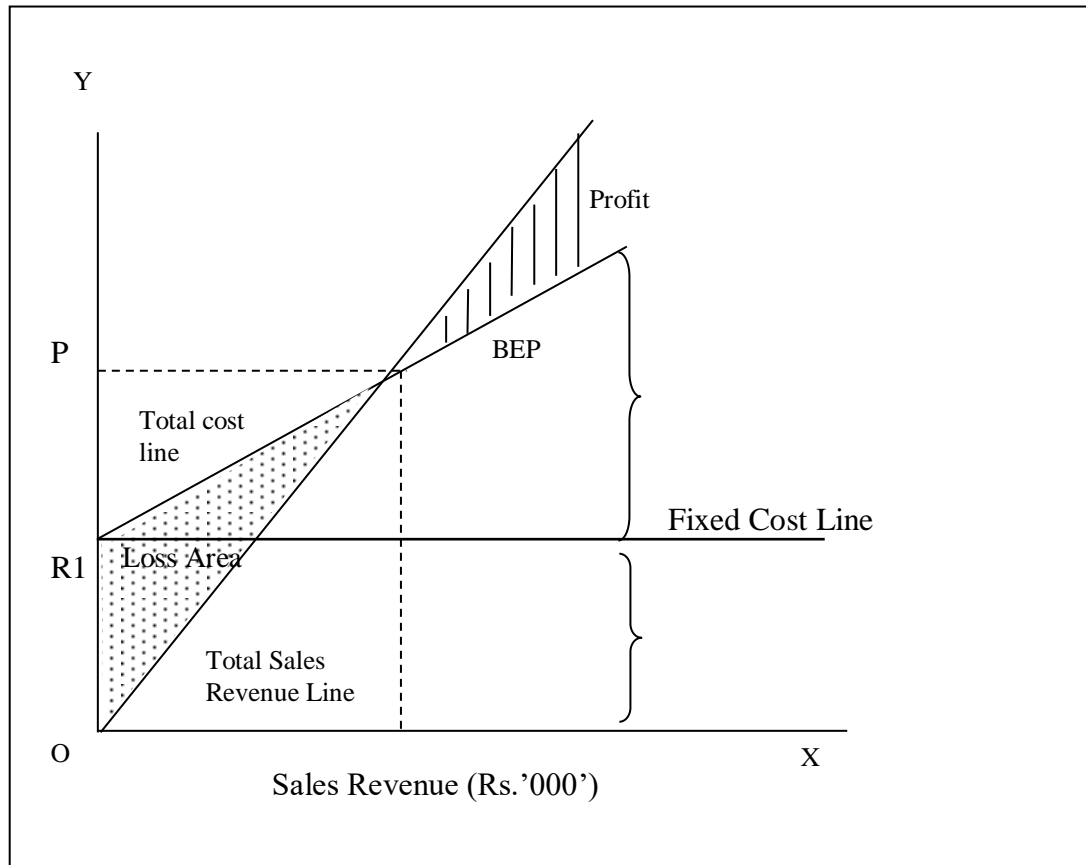
$$\text{Total costs} = \text{TFC} + (Q + n) \times \text{VCPU}$$

$$\Delta \text{ Total costs} = n \times \text{VCPU}$$

$$\Delta \text{ Total costs} = \Delta \text{ variable costs.}$$

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

Figure 2.1: Graphical Approach to CVP



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

$$\text{Total Sales Revenue} = \text{Total Costs}$$

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

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

2.11 Measurement of Profitability in CVP Analysis

Profitability analysis helps in critically analyzing and interpreting the current and prospective earning capacity a business corporation within and outside the business. The indices of profit are considered as reliable indicators of the operational efficiency and organization effectiveness of the firms in utilizing its resources to earn satisfactory earning. Profitability in relation to the sales indicates the profit margin on sales. The measure of return on the capital employed can be used to evaluate and to compare profitability of different division of an enterprises as well as the enterprise as a whole. It indicates how well the management has used the funds supplied by creditors and owners. It measures profitability as well as productivity (Chaudhari, 2007:121-22).

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

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

Net Profit Margin:

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

$$\text{Net Profit Margin} = \text{Net income} / \text{Sales}$$

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

Gross Profit Margin:

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

Gross Profit Margin = Gross profit/Sales

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

Operating Ratio:

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

Operating ratio = Cost of goods sold + operating expenses)/ sales

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

2.12 Review of Related Studies

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

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

Sharma (2002), had conducted a research entitled “*Management Accounting Practices in the listed Companies of Nepal*”. This study concerned to

examine and study the practice of management accounting tools in the listed companies in Nepal. This study is based on primary data only. Stratified random sampling with proportionate allocation of percentage is followed to draw the sample. No secondary data has been used for his study. Some remarkable findings were as follows:

- Different types of management accounting tools, which are taught in the colleges, are not found applied by the listed companies of Nepal.
- Management accounting is to help managers in overall managerial activities by providing information and helping in planning, controlling and decision making.
- Nepalese listed companies are in infant stage in practicing of management accounting tools such as capital budgeting, annual budgeting, cash flow, ratio analysis, zero based budgeting; activity based budgeting, activity costing, target costing and value engineering.
- Lack of information and extra cost burden are the main reason behind not practicing such tools.
- 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.

Dhakal, (2005), had conducted research work on "*Cost Volume Profit Analysis of Dairy Development Corporation*". This study concerned to examine the practice of CVP analysis & its effectiveness in DDC. The time period covered by this research was five years. The major finding are below.

- DDC hasn't been segregating 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 year 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 (2005), had 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 toll in manufacturing industry and to analyze the CVP and its impact in profit planning. It covers five years financial statement. The major findings are as follows:

- 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 and computer fees, depreciation, interest, provident fund and subsidies)
- Company has no any plan to reduce cost. There is lack of effective cost control programs or techniques.
- The 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 (2006), had conducted a research entitled "*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 2062/63. The major findings are as follows:

- 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 done are weakness and threat.

Pradhan (2006), had conducted a research entitled "*Cost Volume Profit Analysis of Public Enterprises of Nepal (A comparative analysis between Nepal Telecom and Nepal Electricity Authority)*".

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 adapted to segregate to segregate cost into fixed or variable.
- Actual operating income of the NTC is increasing in fluctuation of trend.

- Variable cost of 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 (2007), Had 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.

Sijakhwo (2008), had conducted a research entitled “*Study on Application of Cost- Volume-Profit Analysis as a Management Tool in Bhaktapur 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.

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

His objectives:

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

His major findings:

- Management of the company is not taking interest for BEP analysis.
- The company facing the political problem. So, government should take attention for the decision.

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

Dahal (2010) has studies on the topics of *"Cost Volume Profit Analysis as a Tool to Measure the Effectiveness of Profit Planning with Special Reference to Dabur Nepal Ltd "* this was submitted to Nepal Commerce Campus, TU in partial fulfillment of Master's Degree in the year 2006.

Objectives:

- Examine the variance between targets and actual sales and production.
- To show the capacity utilization of Dabur Nepal Ltd.
- To forecast future production and sales.
- To analyze financial performance.
- To analyze the CVP of company and its impact in profit planning.
- To analyze the trend of profit over the time covered by the study.
- To provide recommendations and suggestions for improving the profit planning systems of Dabur Nepal Pvt. Ltd

Major Findings:

- Dabur Nepal Pvt. Ltd. constitutes lack of adequate inventory policy.
- No control over external factor i.e. it has poor SWOT analysis.
- Dabur Nepal Pvt. Ltd. does not prepare strategic and policies for long term.
- Dabur Nepal Pvt. Ltd. is not able to coordinate among various departments.

- Dabur Nepal Pvt. Ltd. does not prepare raw material requirement budget and raw material purchase budget systematically.

Bhattarai (2011) has submitted the thesis on the topic “Cost-Volume profit Analysis as tools to measure Effectiveness of Profit Planning and Control: A case study of Nebico Private Limited.” The study is mainly concerned with the application of CVP as a profit planning tool in the NEBICO private limited. He has covered the data for five years. In his research paper he has used both primary data and secondary data by various sources.

Major findings:

- The company’s variable cost is high proportion than fixed cost in total cost amount.
- The company has high fixed cost.
- There is lack of effective cost control programs or techniques.
- The profit trend of the company is not satisfactory.
- There is not any special system of taking corrective action for the re-planning.
- The pricing policy of the company is not scientific.

Shrestha (2011) has conducted a research on the topics management accounting Practice in the Public Financial Sector in Nepal” an unpublished master level thesis submitted in Shankar Dev Campus. The main objectives of his study the state of practices of management Accounting Tools in Financial sector in Nepal. Mr. Shrestha’s research was based on only primary collection.

Major findings:

- The types of budget practiced in public financial sector of Nepal were operational Budget, Cash Budget, Master Budget and Program Budget.
- Almost public financial sector of Nepal practiced operational budget while some prepared master budget. Cash Budget and program Budget were practiced too and most of public financial sector of

Nepal practiced operational budget only for carryout operational activities.

- Reasons for not practicing Management Accounting Tools were lack of expertise, high cost/quite expensive, no information about the tools and governmental policy.

2.13 Research Gap

Research is a continuous process having no ending point. Every researcher tries his/her efforts to fulfill the gap, which has not been covered by the previous research work. It is based on the primary and secondary source of data. It examines the current practice of CVP as a tool of profit planning and decision-making. Most of the studies have been done in respect of comprehensive profit planning and control of manufacturing public enterprises but this study examines the current practice of CVP analysis as a tool of PPC and decision-making in KD as a private dairy sector. Previous studies have compared private dairy to DDC but this research has been contributed sole study on private dairy with reference to KD. This study gives a high degree of value as the process and the data used in a systematic way studies of CVP analysis. Previous studies have not covered risk measurement associated with KD but this study focuses the risk measurement with the help of operating leverage technique. Previous study have not covered CVP's role in decision-making. In decision-making, CVP analysis always a key factor. So this study will be fruitful to those interested person, scholars, students, teacher, civil society, stakeholders, businessman and government for academically as well as policy perspective.

CHAPTER – III

RESEARCH METHODOLOGY

Research methodology refers to the various steps undertaken by the researchers to find the optimum solution. Methodology helps to analyze, examine and interpret various aspect of research work. Methodologies state the method with which data have been used in interpretation of such data to fulfill the objectives. For this purpose following research method has been used in this study.

3.1 Research Design

Research design is the plan and strategy of investigation conceived so as to obtain answers to the research questions and to control the variance. Research design helps in the analysis of data related to research topic. It is a controlling media for the collection of data and it helps to collect accurate information relating to the research subject. Research design is the strategy for concluding research. It describes the general framework for collecting, analyzing and evaluating data.

For this study the researcher has been used both the analytical and descriptive research design for the purpose of CVP analysis. Descriptive design has been used for the conceptual development and scientific and systematic framework of the research and the analytical design has been used for the systematic interpretation of the numerical data used in this study.

3.2 Nature and Sources of Data

The primary and secondary data has been used in this study. Primary data are those, which are collected for the time, and thus happen to be original in character. A questionnaire used to collect empirical data. This facilitated access to respondent and provided sufficient data for statistical analysis. In

addition, face to face interviews and discussion were carried out to refine questionnaire.

Basically, secondary data has been collected from the annual reports of KD, company's publications, books and journals/magazines, booklets and Internet etc. Thus, secondary is the main source of data and other necessary information has been obtained throughout the research from authorized staff of KD, Babarmahal, Kathmandu. Some of these data were published while other was unpublished.

3.3 Population and Sample

A population is a collection of data whose properties are analyzed. The population is the complete collection to be studied; it contains all subjects of interest. A sample is a part of the population of interest, a sub-collection selected from a population. All the dairy milk companies are considered as the total population. Out of them, Kathmandu Dairy Pvt. Ltd, Kathmandu is considered as sample for the study.

3.4 Process of Data Collection

The research has been done within three months. The first one month has taken for the data collection, next month for analyzing the collected data and last one month for the preparing of the research report more prescribed and systematically.

3.5 Period Covered

This research study covers the last five years i.e. fiscal year 2062/63 to 2066/67 and Kathmandu Dairy's strength and weaknesses of managerial planning and other related things are identified.

3.6 Data Processing Procedures and Tools Used

Relevant data of this study are collected through primary and secondary sources. Tables, charts and graphs have been used as per requirement. Accounting, mathematical and statistical tools are also used to analyze collected data.

3.6.1 Accounting and Financial Tools

Generally, the accounting and financial are used for the purpose of the assessment of the financial position to a particular organization. They are as follows:

- a. Contribution Margin Ratio
- b. Break-Even Analysis
- c. Gross Profit Margin Ratio
- d. Net Profit Margin Ratio
- e. Operating ratio
- f. Degree of Operating Leverage

3.6.2 Mathematical and Statistical Tools

Generally, the statistical tools are used for attaining accuracy on analysis as well as on study. They are as follows:

a. Arithmetic mean (\bar{X})

Arithmetic mean is a set of observations in their sum divided by the number of observations. For e.g. the arithmetic mean (\bar{X}) of n observation x_1, x_2, \dots, x_n is given by:

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X$$

b. Standard Deviation (σ)

Standard deviation, usually denoted by the Greek letter small sigma (σ), is the positive square root of the arithmetic mean of the squares of the deviations of the given values from their arithmetic mean. For the frequency distribution of the given values from their arithmetic mean for the frequency distribution x_i/f_i , $i = 1, 2, 3, \dots, n$

$$\sigma = \sqrt{\frac{1}{N} \sum_i f_i (X_i - \bar{X})^2}$$

Where,

\bar{X} = Arithmetic mean of the distribution

$$\sum_i f_i = N$$

c. Coefficient of Variance (C.V.)

Hundred times the coefficient of dispersion based upon standard deviation is called coefficient of variance.

$$CV = 100 \times \frac{\sigma}{\bar{X}}$$

d. Karl Pearson's Coefficient of Correlation (r)

Among the several mathematical methods of measuring correlation, the Karl Pearson's method has been popularly known as Pearson's co-efficient of correlation is most widely used in practice. It is one of the very few symbols that are used universally for describing the degree of correlation between two series (Gupta, 1999: E- 10.11). It is denoted by 'r'. In the present context, the context, the coefficient of correlation is computed in order to measure the relationship between budgeted and actual sales of Kathmandu Dairy.

$$r = \frac{N\sum xy - (\sum X)(\sum Y)}{\sqrt{N\sum X^2 - (\sum X)^2} \sqrt{N\sum Y^2 - (\sum Y)^2}}$$

Here,

N = Number of pairs of x and y observed

X = Budgeted sales

Y = Actual sales

r = Person correlation coefficient

The correlation should always lie between ± 1 , $r_{xy} = +1$ denotes the perfect positive correlation between two variables. As such $r_{xy} = -1$ denotes the perfect negative correlation between two variables. $r_{xy} = 0$ denotes independent variables or say non-correlation between the two variables.

e. Probable Error [P.E. (r)]

The probable error of the coefficient helps in interpreting its value. With the help of probable error, it is possible to determine the reliability of the value of the coefficient in so far as it depends on the condition of random sampling (Gupta, 1999: E-10.25). The probable error of the coefficient of correlation is obtained by using the following formula:

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

Here,

0.6745 is the constant value

r = Coefficient of correlation

N = No. of pairs of observation

If the value of 'r' is less than probable error [i.e. if $r < P.E.(r)$]: there is no significant relation between X and Y.

If the value of r is more than 6 times the probable error [i.e. if $r > 6P.E.(r)$]; there is a very significant relation between X and Y.

CHAPTER - IV

PRESENTATION AND ANALYSIS OF DATA

The presentation of data is the basic organization and classification of the data for analysis. The analysis of data assists to interpret the facts and fulfill the objectives of the study by using different tools and techniques.

4.1 Analysis of Sales Variances

To identify the sales trend of past and to forecast the possible future trend of the Kathmandu Dairy, previous years budgeted sales and their achievement is presented in the table. To analyze the previous sales data of Kathmandu Dairy, the following table presents the budgeted sales and actual sales achievement (in Rs.) from FY 2062/63 to FY 2066/67.

Table 4.1: Sales Budget and Achievement

FY	Budgeted sales (Target) (Rs.)	Actual Sales (Rs.)	Achievement	Variance (unfavorable) = (Actual sales-Budgeted Sale)	
				In Amount	In Percentage
2062/63	18219606.13	16328411.01	89.62%	1891195.116	10.38%
2063/64	17861146.41	16475121.45	92.24%	1386024.962	7.76%
2064/65	19653611.07	18547112.77	94.37%	1106498.303	5.63%
2065/66	20631070.17	19682040.94	95.40%	949029.2277	4.60%
2066/67	29446904.67	25657088.04	87.13	3789816.631	12.87%

Source: P/L a/c and B/S of KD from FY 2062/63 to 2066/67 BS.

The above table depicts that Kathmandu Dairy is not able to achieve the budgeted sales during the study period of five years. So the sales performance of the enterprise is not quite satisfactory. The sales achievement of KD in the FY 2062/63 was 89.62 percent. However it is sharply increased by 2.62% and reaches to 92.24% in the FY 2063/64. Such increasing trends

came up to FY 2065/66 and at the end of FY 2066/67, the sales achievement decreased to 87.13%.

The above table also shows budgeted sales of the enterprise is in increasing order from FY 2062/63 and the actual achievement is also in increasing order. In FY 2065/66, the achievement percentage is 95.4%, which is the highest achievement during the study of 5 years and lowest achievement, is 87.13%, which is in the FY 2066/67. Non-achievement of the target set may be due to certain factors like, inefficiency of management, higher margin of budgeted sales, political disturbances, quality of products, delivery of products etc.

The above table clears that there is no favorable variance in any fiscal year. The unfavorable variance between target sales and actual sales are 10.38%, 7.76%, 5.63%, 4.60% and 12.87% in the FY 2062/63, 2063/64, 2064/65, 2065/66 and 2066/67 respectively. This unfavorable variance percentages shows that there is no systematic and scientific sales plan. To reduce or remove unfavorable variance percentage, the management should set the budgeted sales according to capacity of the enterprises.

Table 4.2: Summary of Statistical Value

Detail	Budgeted sales (X) (Rs. in '00000')	Actual sales (Y) Rs. in '00000'
Mean \bar{X}	211.62	193.378
SD (σ)	42.6	34.038
C.V.	20.13	17.60
Correlation (r)	0.988	
Probable Error (P.E.)	0.007196	

Source: Appendix III.

The above table no. 4.2 shows that budgeted mean sales of 211.62 is more than actual sales of 193.378. It shows that there is no any proper planning for

making budget and for achieving the target of the budget. Similarly, the standard deviation and coefficient of variance of actual sales is 34.038 and 17.60% respectively, which is less than standard deviation and coefficient of variance of budgeted sales i.e. 42.6 and 20.13%. It indicates that budgeted sales are more variable than actual sales. It may be due to inefficiency of the budget planner. The above table shows that the correlation between budgeted and actual sales is positive i.e. 0.988. It shows clearly that if budgeted sales increase, the actual sales also increase and vice-versa. The correlation (r) 0.988 between budgeted and actual sales is greater than 6 x P.E. ($6 \times 0.007196 = 0.04317$). It indicates that the value of r is highly significant. So, we can easily say that the actual sales of KD are in the same direction towards the budgeted sales.

Here, Budgeted sales (X) are assumed to be independent variable and actual sales (Y) is assumed to be dependent variable.

The regression line of Y on X be

$$Y - \bar{Y} = r \frac{\sigma_y}{\sigma_x} (X - \bar{X})$$

$$\text{Or, } Y - 193.378 = 0.988 \frac{34.038}{42.6} (X - 211.62)$$

$$\text{Or, } Y - 193.378 = 0.7894(X - 211.62)$$

$$\text{Or, } Y = 0.7894X - 167.052 + 193.378$$

$$\text{Or, } Y = 0.7894X + 26.325$$

From the above regression equation it can be concluded that there is positive relationship between the budgeted sales and actual sales. With the help of this line, we can estimate the expected actual sales in coming period.

4.2 Comparison between Actual Sales and Profit/Loss Trend of KD

KD is running in profit since the beginning period to fiscal year 2065/66 but the profit is not very satisfactory and is fluctuating. The main cause of it is

excess burden of fixed administrative and manufacturing costs. The following table shows the actual sales and profit/loss trend of the study period.

Table 4.3: Actual Sales and Profit/(Loss) Trend of KD

Fiscal Year	Actual Sales (Rs.)	Net Profit/(Loss) in (Rs.)
2062/63	16,328,411.01	410,171.28
2063/64	16,475,121.45	376,062.66
2064/65	18,547,112.77	500,974.49
2065/66	19,682,040.94	545,481.82
2066/67	25,657,088.04	630,956.96
Total	96,689,774.21	2,463,647.21
Average	19,337,954.84	492,729.44

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.3 shows that KD is earning profit but is not in the satisfactory level. From the analysis of this table, it is found that minimum profit of Rs. 376,062.66 is earned in the FY 2063/64 and maximum profit of Rs. 630,956.96 is earned in the FY 2066/67. The profit of KD seems to in increasing trend since FY 2063/64. If the corporation will control the administrative costs, other non-manufacturing costs, production costs and factory expenses, it would earn satisfactory level of profit in coming year.

4.3 Cost Plan of KD

Cost planning and controlling is necessary to maintain reasonable costs level to support objectives and planned programs of the organization. The organization should not focus itself on decreasing the costs only rather it should be for better utilization of limited resources. It should focus to establish the relationship between expenditures and the benefits derived from those expenditures. The organization can reduce costs temporarily but it may bring many difficulties like break down of machines, inefficiency in works

etc. In this study, all fixed and variable costs are categorized by cost of goods sold, administrative cost and distribution cost.

Cost of goods sold is also called production cost. Raw materials, production salary and wages, fuel and lubricant costs, electricity cost, water cost, lab chemical cost etc. are the example of cost of goods sold.

Administrative costs and management costs are those costs, which are not directly related with production. Administrative costs are salary and wages, allowances and incentives, donation, depreciation, interest etc.

Similarly, selling and distribution costs are those costs, which occur in selling activities of any organization such as transportation costs, promotional cost, advertisement etc.

The costs are segregated under administrative and distribution categories as per the view of KD's staffs, intuition judgments and nature of expenses. Like the transportation cost expenses for administrative purpose are categorized under variable administrative cost and the transportation cost expenses for selling and distribution purpose are categorized under variable selling and distribution cost. Hence transportation cost is segregated as 30% variable administrative and 70% selling and distribution cost. In the same way, telephone charges and miscellaneous expenses are categorized as 60% variable administrative and 40% selling and distribution cost. Salary given to administrative staffs is categorized under variable administrative cost and salary given to sales boy is categorized under variable selling and distribution expenses.

4.3.1 Variable Cost Analysis

Variable costs are based on activity. The variable costs should be zero activity. They change directly with change in activity level in a responsibility center. Therefore, if output is doubled, variable expenses is to be doubled, if

output increases by 15 percent, the variable expenses also increased by 15 percent, if output is zero, the variable cost also is zero. But variable cost per unit might be changed due to increase in price of material, labor and inventory costs etc.

Table 4.4 (a): Variable Cost Sheet

	(In Amount)				
FY	2062/63	2063/64	2064/65	2065/66	2066/67
Details					
Purchase of milk powder	1,827,532.50	685,675.00	1,957,819.00	4,300,765.75	3,078,215.98
Raw milk	9,548,120.00	9,974,762.00	10,406,427.00	10,340,750.00	13,362,004.00
Sugar	175,159.00	100,200.00	500,875.00	511,000.00	200,319.24
Chemicals	33,480.50	80,120.18	58,425.00	76,482.00	65,423.11
Spice	253,775.65	265,482.07	624,180.45	358,662.42	720,070.37
Ice-cream	38,215.00	14,400.00	111,200.00	49,200.00	110,400.00
Packing materials	1,320,573.50	1,700,827.00	983,195.00	1,678,382.80	1,610,138.11
Cheese	-	-	-	37,540.00	40,865.00
Purchase of Lubricant	-	-	357,784.88	-	-
Fuel consumption for production	207,429.75	277,758.33	0.00	328,696.99	313,934.77
Electricity	239,262.65	240,273.63	236,748.34	409,475.18	521,963.59
Wages and labor charges	540,000.00	440,470.00	540,000.00	436,500.00	436,500.00
Water charges for production	35,176.61	78,891.13	123,114.27	123,515.15	165,642.11
Total	14218725.16	13858859.34	15899768.94	18650970.29	20625476.28
Increase or Decrease	-	(0.0253)	0.1182	0.3117	0.4506

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.4 reveals all variable costs, which are used to produce dairy products in terms of cost of sales, administrative or operating costs and selling and distribution costs. It also depicts the trend of cost. In the above table, FY 2062/63 is taken as a base year. The cost of sales is in increasing trend. The highest increment is in FY 2066/67 by 0.4506. The reason of increase in cost may be attributed to high increase in purchase of milk

powder, raw milk, sugar etc. To reduce the cost of sales, KD should try to control in wastage of raw materials, milk powder expenses, and ice-cream con. Administrative cost is in decreasing trend upon FY 2063/64 after that is in increasing trend. The highest administrative cost is in FY 2066/67 and is lowest in FY 2063/64. The reasons for increase in administrative cost are higher expenses in telephone charges, transportation and various miscellaneous items. Similarly, selling and distribution expenses cost is also in increasing trend over the study period. The highest selling and distribution cost is in FY 2066/67 and is lowest in FY 2063/64. It can be concluded that KD doesn't have control over costs which proves that it is not using effective planning tools for cost control.

4.3.2 Fixed Cost Analysis

Fixed costs are the cost associated with those inputs, which do not vary with the change in volume of output or activity within a specified range of activity or output (relevant range). Fixed costs, thus, remain constant whether activity increases or decreases within a relevant range. For example, the rent of factory or office premises, property, insurance, senior executive's salary, lease payments, depreciation etc. remain the same whether there is an increase or decrease in the volume of activity.

Table 4.4 (b): Fixed Cost Sheet

		(In Amount)				
FY		2062/63	2063/64	2064/65	2065/66	2066/67
Details						
Factory Insurance Premium		14,045.00	17,957.00	9,365.00	-	-
Repair and Maintenance		61,272.56	84,868.08	64,535.78	7,096.20	64,283.68
Total		75,317.56	102,825.08	73,900.78	7,096.20	64,283.68
Increase or Decrease		-	0.3652	(0.0188)	(0.9058)	(0.1465)

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

Table 4.5: Administrative Cost

(In Amount)

FY Details	2062/63	2063/64	2064/65	2065/66	2066/67
Audit fee	20,000	20,000	20,000	20,000	22,283.79
Repair & Maintenance	76,414.04	81,679.72	61,955.36	127,230.26	144,182.58
Rent	30,000	31,200	32,400	33,600	35,160
Printing & Stationary	34,143	30,9143	37,559	79,472.80	163,808057
Newspaper	3,720	-	-	-	-
Donation	4,700	26,800	51,475	20.500	3,000.00
Rates & Taxes	34,144	37,502	51,350	2,500	6,200.00
Staff uniform	1,787	-	-	1,520	0.00
Medicine & Treatment	628	43	-	-	360.00
Director's Remuneration	66,000	66,000	66,000	132,000	216,000
Bad debt	612	-	77,317.50	-	39,609.55
Cleaning charge	2,400	9,931	33,812	18,800	18,000
Guest Expenses	-	-	-	22,101,77	12.311
Lab Expenses	-	-	-	2,517,74	5,816
Lab Expenses	-	-	-	4,605.00	-
Insurance of Staff	-	-	-	21,096.39	-
VAT on Non VAT able Goods	-	-	-	4,605.00	-
TDS paid for 060/61	-	-	-	-	19,090
Expenses Written Off	-	-	-	-	36,263.51
Staff Bonus	-	-	-	-	63,096
Depreciation	970,881.98	991,388.98	1,095,602.45	1,117,656.49	1,272,992.55
Total	1,245,430	1,295,459	1,527,471	1,603,600	2,058,173.55
Increase/Decrease	-	0.0402	0.2265	0.2876	0.6526

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

In the above table no. 4.5, it is observed that the fixed cost of sales of KD is more in other years than the FY 2062/63 as taken the base year. After the FY 2063/64, the fixed cost of sales of KD is decreased as compared with previous years. The fixed cost is highest in the FY 2063/64 and it may be attributed to the increase in expenses of repair & maintenance and factory insurance premium. Fixed administrative cost is in increasing trend over the study period. The fixed administrative cost is highest in the FY 2066/67 due to more expenses in repair & maintenance, printing & stationery, director's Remuneration, staff Bonus, depreciation. The lowest fixed administrative cost is in the FY 2062/63 over the study period. Fixed distribution cost is increased compared to the FY 2062/63 taken as a base year. It is highest in the FY 2066/67 due to the more expenses in advertisement. It can be concluded that KD is not using effective planning to control the fixed costs.

4.4 Profitability Ratio Analysis

The word 'profitability' may be defined as the ability of given investment to earn a return from its use. Profitability has been considered, to a great extent, as the main criteria to judge the extent to which the management has been successful in efficiently utilizing the funds at its disposal or in other words, how far the management has been successful in maximizing its profits or minimizing its losses, if any.

The word 'profitability' ratio measures the operating efficiency of the company. Besides management of the company, creditors and owners are also interested in the profitability in relation to investment. But the present study concerns only with the profitability in relation.

**Table 4.6: Income Statement for the year Ended From 2062/63 to
2066/67**

(In Amount)

Details	2062/63	2063/64	2064/65	2065/66	2066/67
Sales	16,328,411.01	16,475,121.45	18,547,112.77	19,6862,040.94	25,657,088.04
Cost of sales			-		
Variable cost	14,218,725.16	13,858,859.34	15,899,76.84	18, 650,9470.29	20,625,446028
Fixed Cost	75,317.56	102,825.08	73,900.78	7,096.20	64,283.68
Total	14,294,04	13,961,684.42	15,973,669.72	18,658,066.49	20,689,759.96
Add: Opening Stock of raw material	956,076.12	1,746,839.62	1,249,520.07	1,536,515.82	3,674,454.69
Add: Opening Stock of finished goods	1,633,972.71	1,370,532.89	1,791,233.08	2,252,693.24	2,734,427015
Less: Closing Stock of raw material	1,746,839.62	1,173,520.07	1,551,515.382	3,674,454.70	2989,432.71
Less: Closing Stock of finished goods	1,370,532089	1,1791,233.08	2,252,693.24	2,734,427015	2,846,550.50
Total	13,766,719.04	14,114,303.78	15,210,213.81	16,038,393.70	21,262,658.59
Gross Profit	2,561,691.97	2,360,817.67	3,336,898.96	3,643,647.24	4,394,429.45
Other Costs	-	-	-	-	-
Administrative Cost	-	-	-	-	-
Variable	419,325.00	268,165.51	412.420.87		
Fixed	1,245,430.22	1,245,430.22	1,527,471.31		
Selling & Distribution Cost	-	-	552,576.17		
Variable	347,423.25	268,165.51			
Fixed	116,895.50				
Total Cost	2,129,073.97				
Operating Income	432,618.00				
Add: Other Income	14,123028				
EBIT	446,741.28				
Less: Interest	36,570.00				
EBT	-				
Special tax Provision	12,305.00				
EAT	397,866.28				

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

Table 4.6 clearly shows the income statement from FY 2062/63 to FY 2066/67. Gross profit is seems in increasing trend in every fiscal year. From

this figure it can be concluded that Kathmandu Dairy is success to make gross profit.

4.4.1 Gross Profit Margin

Gross profit margin shows the relationship between gross profit and sales of the firm. It reflects the efficiency with which management produces each unit of product. A higher ratio indicates good management of the firm and vice versa. It is calculated by dividing gross profit by sales.

Table 4.7: Gross Profit Margin of the Years

FY	Sales Amount	Gross Profit	Gross Profit Margin
2062/63	16,328,411.01	2,561,691.97	15.6880
2063/64	16,475.121.77	2,360,817.67	14.3300
2064/65	18,547,112.77	3,336,898.96	17.9900
2065/66	19,682,040.04	4,394,429.45,	18.5100
2066/67	25,657,088.04	4,394,429.45	17.1300
Total	96689774.21	16297485.29	83.6480
Mean	19337954.84	3259497.06	16.7296

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.7 shows that the gross profit margin of KD is fluctuating. Maximum ratio over the study period is 18.51 in the FY 2065/66 and minimum ratio is 14.33 in the FY 2063/64. The mean gross profit margin is 16.7296, which is not so favorable condition for the company. It can be concluded that gross profit is very poor in every fiscal year.

4.4.2 Net Profit Margin

Net profit margin measures the relation between net profit and sales of the firm. A high profit margin indicates adequate return to the firm and thus enables in withstanding in adverse economic situations. When sales price is declining, cost of production is rising and demands for the product are

falling. A low profit margin shows just the opposite. Net profit margin is computed by dividing net profit by sales. We have,

$$\text{Net Profit Margin} = \frac{\text{Net Profit After Tax}}{\text{Sales}}$$

Table 4.8: Net Profit Margin of the Years

FY	Sales Amount (Rs.)	Net Profit (Rs.)	Net Profit Margin (%)
2062/63	16,328,411.01	410,171.28	2.51
2063/64	16,475,121.45	376,062.66	2.28
2064/65	18,547,112.77	500,974.49	2.70
2065/66	19,682,040.94	545,481.82	2.77
2066/67	25,657,088.04	630,956.96	2.46
Total	96,689,774.21	2,463,647.21	
Mean	19,337,954.84	492,729.44	2.55

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.8 shows that the net profit margin of KD is fluctuating over the study period. The highest net profit margin is 2.77% in the FY 2065/66 and lowest is 2.28% in the FY 2063/64. The mean net profit margin of KD is only 2.55%. It proves that the firm's net profit situation is still dissatisfactory.

4.4.3 Operating Ratio

The operating expenses ratio explains the change in the profit margin ratio. It is calculated by dividing operating expenses like as cost of goods sold plus selling expenses and administrative expenses (excluding interest) by sales. Lower the operating ratio indicates higher the operating profit and vice-versa. We have,

$$\text{Operating Ratio} = \frac{\text{Cost of Goods Sold} + \text{Operating Expenses}}{\text{Sales}}$$

Where,

Operating Expenses = Administrative Expenses (excluding interest) + Selling and Distribution Expenses.

Table 4.9: Operating Ratio of Years

FY	Sales Amount (Rs.)	Cost of Sales (Rs.)	Operating Expenses (Rs.)		Operating Ratio
			Administration Expenses	Selling Distribution Expenses	
			2062/63	16,328,411.01	
2063/64	16,475,121.45	13,961,684.42	1,526,323.21	391,731.59	0.96
2064/65	18,547,112.77	15,973,669.72	1,580,885.18	552,576.17	0.98
2065/66	19,682,040.94	18,658,066.49	2,003,888.14	649,011.28	1.08
2066/67	25,657,088.04	20,689,759.96	2,548,959.73	856,694.62	0.94
Total	96,689,774.21				
Mean	19,337,954.84				0.99

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.9 shows that the operating ratio of KD is high over the study period. It is 1 in the FY 2062/63 and more than 1 in the FY 2065/66. The operating ratio is less than 1 i.e. 0.96, 0.98, 0.94 in the FY 2063/64, 2064/65, 2065/66 respectively. But still it is not in good position for the company as it indicates that the high cost of good sold and operating expenses of KD resulting low operating profit. The mean operating ratio is slightly less than 1 so, it indicates that the firm is poor to minimize and control the cost of good sold and operating expenses. From the above table it can be concluded that the operating ratio is in fluctuating trend.

4.5 Degree of Operating Leverage

A ratio between contribution margin and EBIT is known as operating leverage or a ratio between the percentage changes in EBIT and percentage changes in sales amount is known as operating leverage. It measures the degree of business risk associated at a firm. Higher percent of fixed cost indicates higher degree of operating leverage. It is calculated by dividing contribution margin by EBIT. The greater degree of operating leverage indicates the greater amount of business risk and vice versa. We have,

$$\text{Degree of Operating Leverage} = \frac{\text{Contribution margin}}{\text{Earning Before Interest and Tax}}$$

Table 4.10: Degree of Operating Leverage of the Years

FY	Contribution (Rs.)	EBIT (Rs.)	DOL
2062/63	1,870,261.28	446,741.28	4.19
2063/64	1,974,568.76	413,363.66	4.78
2064/65	2,638,652.89	859,981.49	3.07
2065/66	2,618,077.39	768,981.49	3.41
2066/67	3,205,176.67	844,174.41	3.80
Total	12,306,736.99		19.24
Mean			3.85

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.10 shows that operating leverage of KD is 4.19, 4.787, 3.07, 3.41, and 3.80 in FY 2062/63, 2063/64, 2064/65, 2065/66 and 2066/67 respectively. The mean of DOL is 3.85 if a sale increases by 1% the amount of operating profit (EBIT) increases by 3.85%. From the above table it can be concluded that DOL is in fluctuating trend.

4.6 Cost Volume Profit Analysis

Analyses of various elements, which are used in Cost-Volume-Profit (CVP) Analysis, are:

4.6.1 Contribution Margin

Contribution margin is the difference between the sales revenue and variable cost of production. In other word, contribution margin is the fixed cost and profit. High contribution margin shows high profit and vice-versa. It is calculated by using following formula;

Contribution Margin = Sales Revenue – Variable Cost

Or, Contribution Margin = Fixed Cost + Profit

Table 4.11: Income Statement for the Year Ended from 2062/63 to 2066/67

	(Amount)				
Details	2062/63	2063/64	2064/65	2065/66	2066/67
Sales	16,328,411.01	16,475,121.45	18,547,112.77	19,682,040.94	25,657,088.04
Variable Cost					
Cost of sales	13,691,401.48	14,011,478.70	15,136,313.03	16,031,297.50	21,198,374.91
Administrative Cost	419,325.00	268,165.51	412,420.87	622,920.69	704,003.63
Selling and distribution cost	347,423.25	220,908.48	359,725.98	409,745.36	549,532.83
Total variable cost	14,458,149.73	14,500,552.69	15,908,459.88	17,063,963.55	22,451,911.37
Contribution Margin	1,870,261.28	1,974,568.76	2,638,652.89	2,618,077.39	3,205,176.67
Fixed cost					
Cost of sales	75,317.56	102,825.08	73,900.78	7,096.20	64,283.68
Administrative Cost	1,282,000.22	1,332,759.70	1,886,478.31	1,826,233.45	2,271,391.00
Selling and distribution cost	116,895.50	170,823.11	192,850.19	239,265.92	307,161.79
Total fixed cost	1,474,213.28	1,606,407.89	2,153,229.28	2,072,595.57	2,642,836.47
Less: Other Expenses	14,123.28	7,901.03	15,550.88	0.00	68,616.76
Net fixed cost	1,460,090.00	1,598,506.86	2,137,678.40	2,072,595.57	2,574,219.71
Profit	410,171.28	376,061.90	500,974.49	545,481.82	630,956.96

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The table no. 4.11 shows that the contribution margin of KD was increasing trend over the study period. Among five fiscal years, the maximum contribution margin is Rs. 3,205,176.67 in FY 2066/67 and minimum is Rs. 1,870,261.28 in FY 2062/63. It can be concluded that the net profit is in increasing trend except FY 2063/64.

4.6.2 Profit Volume Ratio

Profit volume ratio is the relationship between the contribution margin and sales revenue. The two factors profit and volume are interconnected and dependent with each other. Profit depends upon sales; selling price to a greater extent will depend upon the volume of production. It is calculated by dividing contribution margin by sales.

$$\text{We have, Profit Volume Ratio} = \frac{\text{Contribution Margin}}{\text{Sales}}$$

Table 4.12: P/V Ratio of the Years

FY	Sales Amount	Contribution Margin (Rs.)	P/V Ratio
2062/63	16,328,411.01	1,870,261.28	0.1145
2063/64	16,475,121.45	1,974,568.76	0.1199
2064/65	18,547,112.77	2,638,652.89	0.1432
2065/66	19,682,040.94	2,618,077.39	0.1330
2066/67	25,657,088.04	3,205,176.67	0.1249

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.12 shows the profit volume ratio of KD over the study period, which is in fluctuating trend. The highest P/V Ratio is 0.1432 in the FY 2064/65 and lowest is 0.1145 in the FY 2062/63. From the above table it can be concluded that PV ratio is in fluctuating trend.

4.6.3 Break – Even – Analysis

Break-even analysis is the most widely known form of the cost volume profit analysis. Therefore, cost volume profit analysis is also called break-even analysis.

The break-even point is used under Break-even analysis. Break Even Point is the level of activity at which total cost equals to total revenue. In other words, break-even point is a point of “no profit no loss”. If the sales or production is higher than the break-even point volume, there will be profit and if the sales or production is less than BEP sales, there will be loss. Break-even point can be determined by using these methods.

- a. Algebraic or Formula Method
- b. Graphic or Chart Method

a. Algebraic or Formula Method

$$\text{BEP} = \frac{\text{Total Fixed Cost}}{\text{Profit Volume Ratio}}$$

Table 4.13: Break Even Point of the Year

FY	Fixed Cost	P/V Ratio	BEP (Rs.)
2062/63	1,460,090.00	0.11	12,747,389.84
2063/64	1,598,506.86	0.12	13,337,390.52
2064/65	2,137,678.40	0.14	15,025,758.98
2065/66	2,072,595.57	0.13	15,581,247.15
2066/67	2,574,219.71	0.12	20,606,346.71

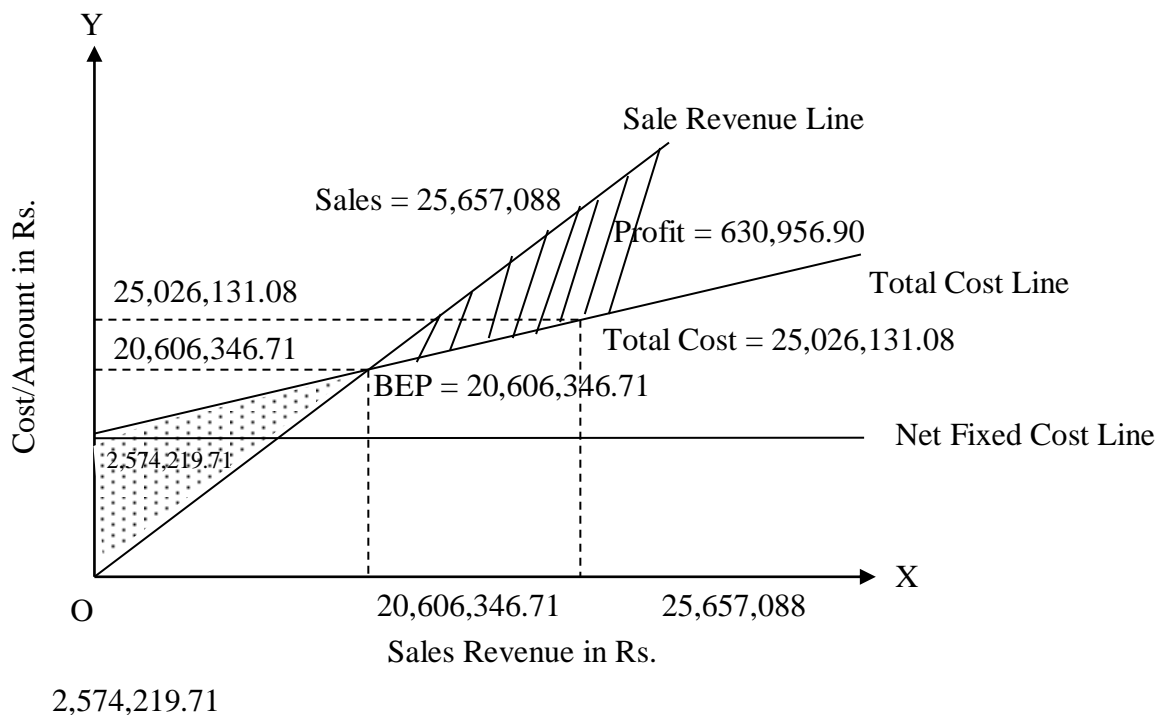
Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The BEP of KD is shown in table no. 4.13 and it is in increasing trend over the study period of 5 years. The highest BEP of KD is Rs. 20,606,346.71 in the FY 2066/67 and lowest BEP is Rs. 12,747,389.84 in the FY 2062/63.

b. Graphic or Chart Method

A specialized form of profit graph, called the break-even-chart, is frequently used to present diagrammatically significant cost-volume-profit relationship; relating total costs at various sales volumes to the expected revenue and profit or loss at each alternative volume. The break-even chart is also for determining the break-even point. The break even indicated in the chart is one at which total cost line and total sales line intersect with each other. The break-even chart of KD for various fiscal years is given below, where sales revenue is shown in x-axis and cost amount is shown in y-axis.

Figure 4.1: Graphic or Chart Method of Break – Even Analysis for the FY 2066/67



The above chart shows that fixed cost is always equal within a certain level of activity. So fixed cost curve is parallel to x-axis. The total cost curve is sloping upward to right side because total cost amount increases with increases in sales revenue (Sales Units x SPPU). Total cost curve starts from fixed cost line. The amount of fixed cost is Rs. 2,574,219.71 is also total cost when the sales revenue is zero. The sales revenue curve originates from the origin because sales revenue is zero when the sales volume is zero. The chart

shows that the sales revenue curve is slopping upward to right. An equilibrium point between total cost and total revenue curve is known as beak-even point where both the total cost and total revenue is equal to Rs. 20,606,346.71 if the actual sales amount is more than break even sales amount. The firm will suffer from loss. Above chart clearly shows that the actual sales amount Rs. 25,657,088.04 is greater than the total cost amount Rs. 25,026,131.08, which generates the profit of Rs. 20,606,346.71. In the similar way, the presentation of Graphic or Chart Method of Break – Even Analysis for other remaining fiscal years.

4.6.4 Margin of Safety

Margin of Safety is the difference between the budgeted or actual sales revenue and the break even sales volume. It states the amount by which sales can drop before loss begins to be incurred. Larger margin of safety saves the firm. A high margin of safety is particularly significant in times of depression when the demand for the firm’s product is falling. A low margin of safety may result for a firm, which has a low contribution ratio. Margin of safety can be calculated by using the following formula:

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

Table 4.14: Margin of Safety of the Years

(In Amount)

FY	Actual Sales	BEP Sales	Margin of Safety
2062/63	16,328,411.01	12,747,389.84	3,581,021.17
2063/64	16,475,121.45	13,337,390.52	3,137,730.93
2064/65	18,547,112.77	15,025,758.98	3,521,353.79
2065/66	19,682,040.94	15,581,247.15	4,100,793.79
2066/67	25,657,088.04	20,606,346.71	5,050,741.33

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.14 shows the margin of safety of KD over 5 years study period. The margin of safety is less in FY 2063/64 in comparison to FY 2062/63. After that it is increasing trend up to FY 2066/67. It can be concluded that margin of safety is in increasing trend in every fiscal year.

4.7 Change Effects and Relationship of CVP Analysis Factors

4.7.1 Change in Sales

The impact of changes in sales value will affect to P/V ratio and BE sales. Increase in sales value increases the profit volume ratio and decrease in BE sales. So, there is positive correlation with profit and negative correlation with BE sales. If sales decrease, the effect will be and vice – versa. If it is assumed that sales increase and decrease by 10 percent and other things remaining constant, and then following results are obtained for the FY 2066/67.

Table 4.15: Income Statement with Change of Sales Value for the FY 2066/67

(In Amount)

Details	Change of Sales Value		
	Original	10% Increase	10% Decrease
Sales	25,657,088.04	28,222,796.84	23,091,379.24
Less Variable Cost	22,451,911.37	22,451,911.37	22,451,911.37
Contribution Margin	3,205,176.67	5,770,885.47	639,467.87
Less: Fixed Cost (net)	2,574,219.71	2,574,219.71	2,574,219.71
Profit/(Loss)	630,956.96	3,196,665.76	(1,934,751.84)
P/V Ratio (CM/sales)	0.12	0.2045	0.0277
BEP (FC/PV ratio)	20,626,346.71	12,589,347.03	92,955,857.08

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.15 shows that with the increase in sales value by 10%, the profit increases by Rs. 2,565,708.80 and P/V Ratio increases from 0.12 to

0.2045 but BEP decreases to Rs. 12,589,347.03. Loss is occurred when sales value is decreased by 10%. P/V Ratio is decreased to 0.0277 and BEP is increased to Rs. 92,955,857.08. It shows that there is positive relationship between sales revenue and P/V ratio and negative relationship between sales revenue and BEP.

4.7.2 Change in Fixed Cost

In general sense, fixed costs do not change within the relevant range. But fixed cost may change due to different conditions. Firstly, the fixed cost may be higher than variable cost due to more amounts spent for administrative improvements and acquiring assets. It may happen for a new corporation, well developed and still in the process of establishment. Secondly, the fixed cost may increase from the previous level, but the rate of increase may or may not coincide with variable cost. The fixed costs may increase/decrease due to underestimation and over estimation of fixed costs in the previous year. When there is rise in administrative improvement making the best utilization of assets and from the given amount of variable costs. If it is assumed that the fixed cost increases and decreases by 10 percent other things remaining constant, then following result is obtained from the income statement of FY 2066/67.

Table 4.16: Income Statement with Change of Fixed Cost for the FY 2066/67

(In Amount)

Details	Change of Sales Value		
	Original	10% increase	10% decrease
Sales	25,657,088.04	25,657,088.04	25,657,088.04
Less: Variable cost	22,451,911.37	22,451,911.37	22,451,911.37
Contribution Margin	3,205,176.67	3,205,176.67	3,205,176.67
Less: Fixed cost (net)	2,574,219.71	2,831,641.68	2,316,797.73
Profit	630,956.96	373,534.99	888,378.94
P/V Ratio (CM/sales)	0.12	0.12	0.12
BEP (FC/PV ratio)	20,606,346.71	22,666,981.37	18,545,711.97

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.16 shows that there is no change in contribution margin and P/V ratio whether there is increase or decrease in fixed costs. P/V ratio is 0.12 and contribution margin is Rs. 3,205,176.67 in both cases. Only BEP is affected by change in fixed cost. If fixed cost is increased by 10%, the BEP is also increased to Rs. 2,831,641.68; BEP is also increased to Rs. 22,666,981.37. Similarly, when fixed cost is decreased to Rs. 2,316,797.73, BEP is also decreased to Rs. 18,545,711.97. It shows that there is positive correlation between fixed cost and BEP.

4.7.3 Change in Variable Cost

Change in variable cost mainly concerns with the operating efficiency of the corporation. The variable cost may increase due to increase in output and wastage caused by both controllable and uncontrollable factors. If the firm increases the output level, the firm has to make additional purchase of materials, employ more labors and bear more selling expenses. Secondly, the variable cost increase by wastage due to lack of skilled workers and leaders of workers being not responsible for increase in production overhead. Wastage in raw materials as well as uncontrollable factors such as increase in raw materials and other inputs are directly related to reduce production. The following income statement of 2066/67 shows the result outcomes from the changes in variable cost by 10 percent increases and decreases.

Table 4.17: Income Statement with Change of Variable Cost for the FY 2066/67

(In Amount)

Details	Change of Sales Value		
	Original	10% Increase	10% Decrease
Sales	25,657,088.04	25,657,088.04	25,657,088.04
Less: Variable cost	22,451,911.37	24,697,102.51	20,206,720.23
Contribution Margin	3,205,176.67	959,985.53	5,450,367.81
Less: Fixed cost (net)	2,574,219.71	2,574,219.71	2,574,219.71
Profit/(Loss)	630,956.96	(1,614,234.18)	2,876,148.10
P/V Ratio (CM/sales)	0.12	0.04	0.21
BEP (FC/PV ratio)	20,606,346.71	68,799,976.11	12,117,894.44

Source: Audited Report of KD from FY 2062/63 to 2066/67 BS.

The above table no. 4.17 shows that there are two conditions, first one, increase in variable cost by% shows inefficiency or occurrence of more wastage on materials and labor, then it undoubtedly, leads to loss of Rs. 1,614,234.18 and increase in BEP to Rs. 68,799,976.11. Second one, decreased in variable cost by 10% helps to increase profit to Rs. 2,876,148.10 and reduce BEP to Rs. 12,117,894.44. The table also clears that when variable cost is increased, P/V ratio is decreased and vice versa.

4.8 Analysis of Primary Data

Questionnaires and discussion were made to the general manager of the KD under the study to take his opinions to identify the KD's performance and difficulties in applying CVP analysis. Some key opinions, which were considered to be worthy, are cited here:

Management accounting tools like CVP analysis, Pricing, Budgeting and Target costing were not in the cognizance of the manager. Lack of information of such tools caused difficulties in the application of these tools.

In case of cost segregation into fixed and variable, application of regression method was not found in the KD. The major difficulties in the application of it were that it was purely a statistical tool, which required manpower, expertise in statistic. KD was not in a position to hire expert from outside due to cost burden factor.

Regarding estimation or forecasting of cost and revenue company found difficulties in applying market survey because it was quite vague, time consuming and expensive too.

In case of decision-making due to external forces, decision could not be made based on management accounting principle.

Due to limited market, company was bound to make expenditure in a limit. Most of the product was not new and innovative. Company could not make

expenditure for innovation. There was no research and development program in the company. Due to these reasons, company was not in the situation to hire outside expert to apply new management accounting technique in the company. Neither could they send its employee for training on its own cost.

4.9 Major Findings of the Study

The major findings of this study have been presented correspondence to the objectives of the study.

- a. KD has not practiced cost volume profit analysis tools for profit planning and decision-making the company has not any policy for using CVP tools in coming fiscal years.
- b. The company has not practiced to apply appropriate and effective sales forecasting techniques like, survey method and statistical method. It uses market studies and experimentation method for sales forecasting.
- c. Budgeted sales have not been achieved during the study period as the highest achievement of actual sales on budget sales is only 95.40 percent in FY 2065/66 whereas the lowest one is 87.15 percent in FY 2066/67.
- d. The company has not applied any special technique for segregation of costs into fixed and variable costs.
- e. There is no separate costing system for allocation of expenses to each product.
- f. Variable costs have more portions as compared to fixed costs due to the high portions in variable costs like: cost of raw milk, water and electricity etc.
- g. KD has a high level of risk as operating ratio is very high i.e. 0.99 and degree of operating leverage is also vary high i.e. 3.85, indicating very high expenses incurred for producing low level of profit.

- h. The highest BEP of KD has been found Rs. 20606346.71 in FY 2066/67 and lowest BEP is Rs.12747389.84 in FY 2062/63. There is increasing trend in BEP, which increases the more challenges to increase the sales in the company.
- i. The company is not considering about margin of safety. KD has low margin of safety, which is not in satisfactory level because actual sales is slightly greater than BEP sales.
- j. The company does not apply any appropriate and effective action for decision-making.
- k. Scientific milk pricing policy is lacking.
- l. Target costing were not in the cognizance of the manager.
- m. The major difficulties in the application of it were that it was purely a statistical tool, which required manpower, expertise in statistic. KD was not in a position to hire expert from outside due to cost burden factor.
- n. Due to limited market, company was bound to make expenditure in a limit. Most of the product was not new and innovative. Company could not make expenditure for innovation.

CHAPTER – V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter highlights some selected actional conclusion and recommendations on the basis of the major findings of the study derived from the analysis of Kathmandu Dairy. The analysis of data is carried out with the help of various financial and statistical tools. The findings of the study are summarized and conclusion and recommendations are given below:

5.1 Summary

The main objective of the present study is to examine cost-volume-profit analysis as a tool to measure effectiveness of profit planning of Kathmandu Dairy. So, this study was undertaken to evaluate CVP analysis of the company. It has observed that Kathmandu Dairy has succeeded in living up to the expectation of VIP tourist and main hospitality service provided by the company. As per the nature of the study, the secondary data with descriptive and analytical approach for sales analysis, cost analysis, profitability analysis, contribution margin analysis, P/V ratio analysis, BEP analysis and CVP analysis under uncertainty, etc. are used. And to support the study, primary data were also collected informally from the staff of the company.

The study is completely related with the CVP analysis of the KD as a tool of PPC. Kathmandu Dairy aims to be the leading Dairy and food processing industry in country. It has been successfully introducing varieties of dairy products harmonizing with the changing taste of upcoming generation. It is firmly committed to high quality production of world- class standard at most reasonable price and giving consumer's services of high satisfaction, although, the company has failed to achieve budgeted sales during the study period. The company's financial (profitability) position is not satisfactory. The company's BEP position is also not satisfactory. So, the company couldn't run in a remarkable sales and profit.

5.2 Conclusions

Except the break-even calculation, the CVP analysis helps for answered some additional questions. What sales volume is necessary to earn a desired net income? What net income will be earned if unit-selling price are reduced in order to increase sales volume? What net income will be earned through reducing the unit labor cost and the installation cost of a new machine? What net income will be earned if the sales mix will be changed? So the CVP analysis keeps a big value in the land of decision-making.

For the achievement of the above advantages, the corporation has not applied CVP tools on profit planning and decision-making. Profit planning has been found unsystematic and traditional way. There is no plan and policies like production plan, sales plan and other operating plan. The company has not utilized its full capacity because of the lack of raw material, inefficiency of management and lack of skilled production specialist.

KD has not used BEP tools for planning. So the company is not able to earn a large. There is not perfect sales policy or sales planner; as a result the company is not able to meet the largest sales. The top-level management makes the decisions and policies. Target sales are always greater than actual sales. The major problem faced by the company is increase in the variable operating cost because it has adopted neither the cost control system nor the systematic and scientific plan for classification of cost.

5.3 Recommendations

To solve the problem regarding the CVP analysis the following points are recommended. KD must improve its profitability through the improvement of its short-term performance for which some suggestions have been stated as follows:

- a. It is suggested to the KD for practicing the CVP analysis as a tool of decision-making and profit planning for improving business performance through acquiring the valuable information about cost, revenue and profit.
- b. Cost plan in KD has not been maintained systematically. KD must establish a cost control program for maintaining a remarkable discipline on cost control by controlling wastages of raw materials, milk powder expenses, ice cream, chemicals, printing and stationary, director remunerations etc.
- c. The variable cost has been found very large in KD, which increases in BEP amount. So, the company should reduce the variable cost by searching the economic resources of material and using the advance technology in production.
- d. The profit margin of the KD is very low, whether the operating ratio is too high. The management should follow regular supervision, inspection, evaluation and monitoring.
- e. KD should follow the new business strategies for exploring the economic, effective and efficient resources and improving the quality of working life of its employees.
- f. KD should develop a culture for reviewing its activities to control worthless task and developing the valuable strategies.
- g. The company has not depended proper segregation method of cost into variables and fixed cost. It is very important for applying analysis. So, it is recommended to follow the segregation method either high low point or least square method for finding correct variable cost and fixed cost.
- h. Out of the total profit made each year, some portion of it should be allocated for research and development program so that new tools and techniques can be developed and adopted in the companies.

- i. For decision-making, managerial analysis can be used. While implementing any tools of management accounting, it is recommended to analyze cost and benefit of the tools.
- j. To implement the tools congenial environment is a must. For this sake, a separate management accounting department should be established within an organization. Management accounting experts should be hired. The company cannot manage to establish separate department can manage it under its existing accounting, financing or planning department. If the company cannot hire outside experts, it can send its existing employee for short term training. If this also is not feasible for them, they can manage it by taking service of fee based consultant.

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APPENDIX – I

Kathmandu Dairy Pvt. Ltd. Babarmahal, Kathmandu Balance - Sheet

Equities and Liabilities	2063	2064	2065	2066	2067
	(Nrs.)	(Nrs.)	(Nrs.)	(Nrs.)	(Nrs.)
Shareholders Fund					
Share Capital	8,000,000.20	8,000,000.20	8,000,000.20	8,000,000.20	8,000,000.20
Profit and Loss	1,064,365.20	1,372,493.04	1,765,758.04	2,165,544.39	2,643,157.16
	9,064,365.20	9372,493.07	9,765,758.04	10,165,544.39	10,643,157.16
Loan fund; Secured					
Loan from NIDC against Collator of Loan		3,000,000.00	1,896,167.00	1,372,536.00	1077,676.00
Unsecured Loan from Director					
Sub Total		3,000,000.00	1,896,167.00	1,372,536.00	1,077,676.00
Total Source of Funds	9,064,365.20	12,372,493.07	11,661,925.04	11,538,080.39	11,720,833.16

Assets					
Concurrent Assets					
Fixed Assets-Grass	8,044,886.51	9,817,787.37	11,065,284.14	12,174,104.08	14,372,753.71
Depreciation	1,661,628.66	2,653,016.88	3,748,919.34	4,866,275.83	6,139,268.38
	6,383,257.85	7,164,770.49	7,316,664.80	7,307,828.25	8,233,485.33
Current Assts					
Raw Material & other Stocks	1,746,839.62	1,249,520.07	1,551,515.82	3,850,528.52	
Finished Stock	1,370,532.89	1,791,233.08	2,252,693.24	2,734,427.15	
Inventories in Hands					6,060,239.05
Trade Debtors	1,577,592.44	1,678,962.23	84,436.34	661,181.52	943,095.64
Loans Advance & Debtors	140,734.00	145,734.00	1,084,450.66	754,723.13	595,500.02
Corporate Tax Receivable					7,905.80
Vat Receivable	36,279.08	31,893.39			
Cash & Banking Balance	148,376.27	884,077.05	138,942.56	416,196.14	465,030.42
Sub-total	5,020,354.30	5,781,419.82	5,122,038.62	8,417,056.46	8,071,770.93
Less; Current Liabilities					
Sundry Creditors	2,339,246.95	505,762.45	735,251.40	4,108,326.87	4,419,191.10
Income Tax Provision		67,934.79			
Vat Payable			26,287.00	8,160.00	51,836.00
Accrued Interest but Not due			15,240.00		
TDS Payable				3,000.00	300.00
Provision for expenses				67,317.44	
Bonus Provision					63,096.00
Advance from Customers					50,000.00
Sub Total	2,339,246.95	573,697.24	776,778.35	4,186,804.31	4,584,423.10
Net Working capital	2,681,107.35	5,207,722.58	4,345,260.25	4,230,252.15	3,487,347.83
Total Application of funds	9,064,365.20	12,732,493.07	11,661,925.05	11,538,080.39	11,720,833.16



 Pradeep Maharjan
 Director

APPENDIX – II

Kathmandu Dairy Pvt. Ltd Babarmahal , Kathmandu Income statement

Details	2062/63	2063/64	2064/65	2065/66	2066/67
Sales	16,328,411.01	16,475,121.45	18,547,112.77	19,682,040.94	25,657,088.04
Less; Cost of raw material consumed	12,406,092.65	13,394,785.80	14,340,125.70	15,214,844.10	19,872,457.79
Production overhead	1,097,186.57	1,140,218.17	1,331,548.27	1,305,283.52	1,502,324.15
Finished Goods Decrease/(Increase)	263,439.82	(420,700.19)	(461,460.16)	(481,733.91)	(112,123.35)
	13,766,719.04	14,114,303.78	15,210,213.81	16,038,393.71	21,262,658.58
Gross Profit	2,561,691.97	2,360,817.67	3,336,898.96	3,643,647.23	4,394,429.46
	15.7%	14.30%			
Less;					
General Administrative Expenses	1,158,191.99	963,966.82	1,396,865.90	1,757,875.93	2,282,783.25
Finance Cost	36,570.00	37,301.00	359,007.00	222,633.00	213,217.45
Depreciation	970,881.98	991,388.22	1,095,602.45	1,117,656.49	1,272,992.55
Staff Bonus					63,096.00
Sub-total	2,165,643.97	1,992,656.04	2,851,475.35	3,098,165.42	3,832,089.25
Net Operating Profit/(loss) before Tax	396,048.00	398,161.63	485,423.61	545,481.81	630,956.97
Non-operating income	14,123.28	7,901.03	15,550.88		68,616.76
Profit Before Tax	410,171.28	376,062.66	500,974.49	545,481.81	630,956.97
Tax provision		55,848.91	100,194.90	135,530.66	153,344.20
Special Tax Provision	12,305.00	12,085.88	7,514.62	10,164.80	
Net Profit after Tax	397,866.28	308,127.87	393,264.97	399,786.35	477,612.77
Profit From Previous Year	666,498.92	1,064,365.20	1,372,493.07	1,765,758.04	2,165,544.39
Net Profit carried to Balance Sheet	1,064,365.20	1,372,493.07	1,765,758.04	2,165,544.39	2,643,157.16



 Pradeep Maharjan
 Director

APPENDIX - III

Calculation of Mean, Standard Deviations and Co-efficient of Variance

(Amount in Rs. '00000)

	Budgeted Sales (X)	Actual Sales (Y)	$x=X-\bar{X}$	$y=Y-\bar{Y}$	x^2	y^2	XY
2062/63	182.19	163.28	(29.43)	(30.10)	866.12	905.89	885.78
2063/64	178.19	164.75	(33.01)	(28.63)	1,089.66	819.66	945.01
2064/65	196.53	185.47	(15.09)	(7.91)	227.71	62.54	119.33
2065/66	206.31	196.82	(5.31)	3.44	28.20	11.85	(18.28)
2066/67	294.46	256.57	82.84	63.19	6,862.42	3,993.88	5,234.83
N = 5	X = 1058.10	Y = 966.89	x = 0.00	y = 0.00	$x^2 =$ 9074.15	$y^2 =$ 5793.06	xy = 7166.67

Calculation of mean, standard deviation and coefficient of variation;

4. For the Budgeted Sales

$$\text{Mean } (\bar{X}) = \frac{\sum X}{N} = \frac{1058.10}{5} = 211.62$$

$$\text{Standard Deviation } (\dagger x) = \sqrt{\frac{x^2}{N}} = \sqrt{\frac{9074.15}{5}} = 42.60$$

$$\text{Coefficient of Variation } (CV_x) = \frac{\dagger x}{\bar{X}} = \frac{42.60}{211.62} \times 100 = 20.13\%$$

5. For the Actual Sales

$$\text{Mean } (\bar{Y}) = \frac{\sum Y}{N} = \frac{966.89}{5} = 193.378$$

$$\text{Standard Deviation } (\dagger y) = \sqrt{\frac{y^2}{N}} = \sqrt{\frac{5793.06}{5}} = 34.038$$

$$\text{Coefficient of Variation } (CV_y) = \frac{\dagger y}{\bar{Y}} = \frac{34.038}{193.378} \times 100 = 17.60\%$$

Calculation of Correlation of Coefficient:

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \cdot \sum y^2}} = \frac{7166.67}{\sqrt{9074.15 \times 5793.06}} = 0.988$$

Calculation of Probable Error:

$$\text{P.E. } (r) = 0.6745 \times \frac{1-r^2}{\sqrt{n}} = 0.6745 \times \frac{1-(0.988)^2}{\sqrt{5}} = 0.007196$$

Appendix- IV
Questionnaires

Dear sir,

I, Mr. Pramod Paudel, student of central department of management, TU, would like to request the necessary questionnaire from your organization. I'm doing research about your organization entitled "Cost-Volume-Profit Analysis of Kathmandu Dairy." It is the matter of happiness that the study of your organization would help you and me both because it would explore a objective realistic finding on the above topic if you provide me true answers of the question attached here under.

Yours faithfully

Pramod Paudel

Has the organization studied CVP analysis and its impact on decision making?

a. Yes b. No

1. To segregate fixed and variable cost has any method been used

a. Yes b. No

2. Is KD practicing Cost volume –profit analysis?

a. Yes b. No

4. If yes, which tool of CVP analysis?

a. CM b. BEP c. Margin of safety

5. If not, what is the major difficulties in application of CVP analysis?

a. Lack of expertise

b. High cost/quite expensive

c. Have no information about the tools

d. other please specify.....

6. Is CVP analysis is important for decision making?

a. Yes b. No

7. Is the organization planning to practice CVP analysis?

a. Yes b. No

8. What technique does the company practice for pricing product?

a. cost base pricing

b. going rate pricing

c. target return on investment pricing

d. Activities based costing pricing

9. What technique does the company practice to segregate the mixed cost into variable and fixed?

a. High-low point method

b. Least square method

c. Accounting estimate method

d. Analytical method

10. What technique does the company practice for cost and revenue estimation /forecast?

- a. Past trend analysis
- b. Zero base budgeting
- c. Market survey
- d. Judgmental analysis

11. How many units of a product should we produce in one year?

.....

12. Should we spend more on advertising?

.....

13. Which product of the most profitable and which one is the least profitable?

.....

14. What minimum level of sales need be achieved to avoid losses?

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