

CHAPTER-I

INTRODUCTION

1.1 Background of the Study

Cost–Volume–Profit (CVP) analysis is a study of the relationship between sales, volume, expenses, revenue and profit (Hilton, 2002). It is the systematic exploration of the relationship between company cost, volume (Sales revenue), and profit. It explores the idea about how small changes in one variable impacts on rest of the variables.

Cost-volume-profit analysis is a simple but flexible tool for exploring potential profit based on cost strategies and pricing decisions. While it may not provide detailed analysis, it can prevent "do-nothing" management paralysis by providing insight on an overview basis.

“Cost Volume Profit analysis includes the related concepts of contribution analysis and break-even analysis. These concepts entered the mainstream of management accounting starting in the 1930’s with major emphasis in the 1950’s. Both concepts raise the concept of cost variability (i.e. flexible or variable expenses budgets). Contribution analysis involves a series of analytical techniques to determine and evaluate the effects on profit on changes in sales volume, sales prices, fixed expenses and variable expenses. Basically, it applies the concept of a contribution margin income statement. Revenue minus variable expenses equals contribution margin, and contribution margin minus fixed expenses equal profit. Break-even analysis focuses on the break-even sales volume. (At the point profit is zero because revenue equal total cost). The result of breakeven analysis is usually graphed to show the relations between revenue (i.e. sales), fixed expenses, and variable expenses, within a relevant range of sales volume.” (Welsh, Hilton & Gordon, 1992:531).

Irrespective to the nature of business, CVP is used as one of the essential tools for PPC. At the beginning of the CVP literature, CVP was regarded as PPC tool applicable for product companies. Project feasibility studies frequently use CVP as a preliminary analysis. Such major undertakings as real estate/construction ventures have used this technique to explore pricing, lender choice, and project scope options. CVP has been used in decision-making for nuclear versus gas- or coal-fired energy generation.

1.1.1 Profile of Nepal Doorsanchar Company Limited (Nepal Telecom)

In Nepal, operating any form of telecommunication service dates back to 94 years in B.S. 1970. But formally telecom service was provided mainly after the establishment of MOHAN AKASHWANI in B.S. 2005. Later as per the plan formulated in First National Five year plan (2012-2017); Telecommunication Department was established in B.S.2016. It has works for modernize the telecommunications services and expand the services, during third five-year plan (2023-2028).

Telecommunication Department was converted into Telecommunications Development Board in B.S.2026. After the enactment of Communications Corporation Act 2028, it was formally established as fully owned Government Corporation called Nepal Telecommunications Corporation in B.S. 2032 for the purpose of providing telecommunications services to Nepalese People. After serving the nation for 29 years with great pride and a sense of accomplishment, Nepal Telecommunication Corporation was transformed into Nepal Doorsanchar Company Limited from Baisakh 1, 2061. Nepal Doorsanchar Company Limited is a company registered under the companies Act 2053. However the company is known to the general public by the brand name Nepal Telecom as registered trademark.

Converting NT from government owned Monopoly Company to private owned, business oriented, customer focused company in a competitive environment, Nepal Telecom has following Mission, Vision and Goal.

"Nepal Telecom as a progressive, customer spirited and consumer responsive Entity is committed to provide nation-wide reliable telecommunication service to serve as an impetus to the social, political and economic development of the Country."

"Vision of Nepal Telecom is to remain a dominant player in telecommunication sector in the Country while also extending reliable and cost effective services to all."

"Goal of Nepal Telecom is to provide cost effective telecommunication services to every nook and corner of country."

1.2 Statement of the Problem

Nepal Telecom is one of the leading service undertakings in Nepali economy. It serves as one of the largest public sector tax payers to the Government. Further it offers huge number of employment that substantially helps government to downsize the unemployment rate. Therefore better profitability of this company is not the matter of company itself but it is associated with national economies and societies at large. Even then there is no practice of clear segregation of fixed, variable and unit variable cost for different products in the company. Also there is no practice of using Cost volume profit analysis tools for major decision making.

However, profitability is not the abstract thing lots of variables are associated with the profitability. Making other things constant, better profitability is the function of decrease in cost and increase in contribution margin. Here the contribution margin is the differences between sales revenue and variable costs. In this line of fact, this study will

determine the variable and fixed cost of Nepal Telecom, determine no profit no loss level of activities and discover product wise contribution to the company profitability.

As stated earlier, there is great of essence of Nepal Telecom in Nepalese economy. Being such essential organization very limited studies have been conducted about this organization. Specifically when we talk about CVP and PPC, no study to date has been conducted in telecommunications industry. Therefore this study was conducted to smack the gap. This study stated the following research questions.

1. How is the segregation of cost in total cost of PSTN and landline and GSM mobile services?
2. What is the profit volume ratio of NTC?
3. What is the break-even point for NTC?
4. Is NTC has to ascertain margin of safety?
5. What is the relationship among cost, volume and profit of the company?

1.3 Objective of the Study

The overall objectives of this study are to analyze the cost volume profit of Nepal Telecom. The specific objectives of this study are as follows:

1. To segregate the total cost into fixed cost and variable cost of PSTN landline and GSM mobile services.
2. To examine the profit volume ratio of NTC.
3. To ascertain the break-even point for NTC.
4. To find out the margin of safety of NTC.
5. To study the relationship among cost, volume and profit of the company.

1.4 Significance of the Study

Being an essential organization very limited studies have been conducted about this organization. Specifically when we talk about CVP and PPC, no study to date has been

conducted in telecommunications industry. Therefore this study will smack the gap in the telecommunications service sectors.

Further even in university education, scholars are quite confused while doing CVP analysis of service undertakings. Therefore this study will be one of the guiding tasks to fulfill such lacks.

1.5. Limitations of the Study

The limitation of the study is depicted as under.

1. This study is based on case based study; findings may not be applicable for other organizations.
2. Since the study is completely based on historical cost accounting, accuracy of the findings largely based on the accuracy of the accounting records. The accuracy of the results is dependent also on the data provided in the audited annual report.
3. The study is considered only quantitative factors in order to get the result of the study.
4. This study is based on past ten year's data ranging from fiscal year 2063/64 to 2073/74.
5. Only two services PSTN and GSM among various services are taken for the study which does not give the overall picture of the company.

1.6 Organization of the Study

This thesis is organized into five major chapters; the title of each of these chapters are as follows.

CHAPTER-I: Introduction

The first chapter is the introductory. This chapter includes background of the study, introduction of Nepal Doorsanchar company Limited (Nepal Telecom), statement of the problem, objective of the study, significant of the study and limitations of the study.

CHAPTER-II: Review of Literature

Second chapter depicts the review of literature. It includes the theoretical review, review of related journals and thesis. The review of literature conducted in this chapter provide frame with help of which this study has been accomplished.

CHAPTER-III: Research Methodology

In the third chapter research methodology is conducted. It includes the research design, sample study, tools and techniques of data analysis in order to analyze and interpreted data.

CHAPTER-IV: Presentation and Analysis of Data

The fourth chapter consists of data presentation and analysis which is the body of the study. It includes the analysis and interpretation from the secondary data an also highlight the major findings.

CHAPTER-V Summary, Conclusion and Recommendation

The last chapter consist the summary, conclusion and recommendations of the study. Finally, bibliography has been included at the end of the study.

CHAPTER-II

REVIEW OF LITERATURE

This chapter deals with theoretical review, review of related research articles and review of related studies and also draw the gap in the research. It is depicted as under.

2.1 Theoretical Review

2.1.1 Concept of Cost-Volume–Profit Analysis

Traditional cost-volume-profit (CVP) analysis focuses on the number of units sold as the sole cost and revenue driver. In other words, sales revenue is assumed to be linear in terms of quantity of the units sold. Also in traditional CVP analysis, costs are sharply categorized as fixed or variable with respect to the number of units sold. Therefore, under traditional CVP analysis, variable costs increase only as the number of units sold increases (Hilton, 2002:312). Nevertheless, traditional approach is consistent with the traditional product-costing systems, in which cost assignment is generally based on one or more volume-based cost drivers.

CVP analysis segregated the total cost into two parts: fixed and variables costs. Up to a limit of production, fixed cost remains unchanged but variable cost increase and decrease with respect to the increment and decrement of volume of production. Therefore, in order to make profit, it is necessary to examine whether the capacity is fully utilized or not or if there is any part to reduce cost. Because minor changes in cost may result the high differences in profit whereas, the efficient use of resources any reduces the cost and it may give the opportunity to make more profits. CVP analysis is effective in respect of short - term planning. It enables to study the effect of business activities on the expenses. Understanding of the aforementioned relationship plays a considerable role in correct

prospective business planning and budgeting. CVP analysis helps managers to see the effect of different strategies and decisions on business activities (Khan and Jain, 1993:123).

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

C-V-P analysis is a management accounting tool to show the relationship between profit planning and sales. In other words, profit planning is the function of selling, price of the product, the variable cost and volume to be sold. There is interrelationship between profit planning and cost-volume-profit. Similarly, the mostly used tool C-V-P relationship is break even analysis.

The dictionary concept found that cost is the price paid to acquire, produce, accomplish or maintain anything, volume refers to mass quantity of something or amount, profit is the reward of capital invested and analyzed or separation of breaking into parts. To sum up, C-V-P analysis is an analytical tool for studying the relationship between volume, cost, price and profit. Moreover, it can be extended to cover the effect 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. Hence, it is fruitful for the management to know the effect on revenue and costs of all kinds of short-run financial changes (Munakarmi, 2003:41).

It also assesses the likely effect of management decisions such as an increase or decrease in selling price adoption of new method of production to reduce prime cost and increase output. C-V-P 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. By this

model, CVP analysis simplifies the real-world conditions that a firm will face. However, it has number of underlying assumptions and limitations though it is a powerful tool for decision making in certain situations (Dury, 2000:235).

C-V-P analysis is not important for profit organization/business concern rather it is also important for non-profit organization in order to examine the effects of activity and other short-run changes on revenue and costs. The objective of C-V-P analysis is to know the effect of financial result when the specified level of activity volume or sales fluctuates. By using this C-V-P tool, once could be able to compute a break-even point using the computation of margin approach, and equation approach in order to find out the contribution margin ratio, effect on profit due to changes in fixed cost, variable cost, selling price and sales volume etc.

Amount of profit on the sales of product depends upon volume of production and it's cost. It was not always thought that maximum profit depends on maximum sales or fewer sales reduce the amount of profit. However, cost mostly depends on production volume which is governed by the demand in the market. A cost is affected by the change in volume of production, profit would be affected. To sum up, there is close relationship between volume, cost and profit. Moreover, this process is known as cost-volume- profit analysis (Gupta, 1998:518).

2.1.2 Relationship between Cost, Volume and Profit

Cost-Volume-Profit analysis is an integral part of management's administrative function. It further depicted that C-V-P can make an important contribution for planning, organizing and controlling in the business. Moreover, cost-volume-profit analysis is a right way to plan and control in the business but it is crucial in the form of cyclical and continuous process. The cyclical process includes plan and organize future operations,

control operations using the plan and evaluate past performance using the plan (Lynch & Williamson, 2000:121).

The analysis of relationship between cost-volume and profit is known as cost-volume profit analysis. It is an analytical tool for studying the relationship between cost, volume, profit and price. C-V-P analysis is a great helpful in managerial decision making especially cost control and profit planning is possible with the help of C-V-P analysis.

Profit is the reward for successful innovation. Profit planning is the function of selling price of product, the variable cost and volume to be sold. The entire scope of profit planning associated with C-V-P interrelationships. A wisely used technique to study C-V-P relationship is break-even analysis.

The cost -Volume-Profit analysis is the process of studying relationship between cost, volume and profit. Thus, C-V-P technique analyzes the behavior of three key parameters of costs, volume and profit. The objective of CVP analysis is to establish what will happen to the financial result if a specified level of activity or volume fluctuates. It helps to determine the minimum sales to avoid losses and sales volume at which the profit goal of the firm will be achieved.

Likewise, it helps the management to find out the most profitable combination of cost and volume. The management of an organization therefore uses Cost-Volume-Profit analysis to product and calculates the implication of its short-run decision about fixed cost, variable cost, volume and selling price for its profit plan on a continuous basis.

There are three factors of cost-volume-profit analysis which are interrelationship and dependent each other i.e. profit depends upon sales, selling price to a greater extent will depend on the costs and cost depends upon the volume of production. It assumes that under constant underlying condition, CVP analysis deals with how profit and cost

changes with the changes in volume. Last but not the least Cost-Volume-Profit analysis is a great helpful in marginal decision making specially cost control, cost reduction and profit planning.

In break-even-point calculation, the break-even point is gain equal losses. The point is where sales or revenues equal expenses or also the point where total sales or revenues equal total revenues. There is no profit made or loss incurred at the break-even-point. It is crucial for managing a business since the BEP is the lower limit of profit when setting prices and determine margins.

In value based management terms, break-even point should be defined as the operating profit margin level at which the business/investment is earning exactly the minimum acceptable rate or return that is its total cost of capital.

Break even analysis is concerned with the study of revenues and cost in relation to sales at which the firm revenues and total cost will be exactly equal or net income is zero. Thus, the BEP (Break-Even-Point) may be defined a point at which the firm's total revenue 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 (Khan & Jain, 2008).

Cost –Volume-Profit analysis help management in a number of ways. The objective of C-V-P analysis served in calculation of profit resulting from a budgeted sales volume, to calculate sales volume to break even, sales volume to produce desired profit, effects of changes on price, cost and profit measurement of effect of changes in profit factors and determination of new-break-even point for change in cost and selling price (Dangol, 2004:416)

In a single product organization, when cost behavior is accurately explained by fixed variable framework, CVP analysis is undoubtedly a precise, valuable tool for decision making. Unfortunately, this scenario rarely reflects reality. Most organizations are multi

product and ABC would indicate that cost behavior is generally more complex than a simple fixed- variable framework would suggest (Pandey, 1990:135).

The constant sales mix concept underlying most textbook treatments of multi-product CVP assumes that fixed costs should be apportioned between products based on their shares of total weighted contribution margin. This implicitly supposes that each fixed cost is incurred for the benefit of all products. The ABC methodology suggests that this assumption is unlikely to be appropriate when products consume differing levels of overhead resources. Using more detailed analysis of fixed costs between product lines, 'direct' break – even points for individual products can be calculated.

Thus, Cost-volume-Profit analysis is applied specially for Break even analysis and profit planning. Business organization is run to earn profit. Profit planning is the fundamental part of the overall management function. It can be done only when the management has the information about the cost of the product both fixed and variable cost and the selling price of the product. The cost-volume-profit relationship will be established by break even analysis. Therefore, cost-volume-profit analysis is uses for contribution margin, break even analysis and profit-volume analysis.

It is an important tool of profit planning because it provides the information about the behavior of cost in relation to volume, volume of sales where the business will break even, sensitivity of profit due to variation of output, amount of profit for a projected sales volume and quantity of production and sales for target profit level. It is helpful in managerial decision making mainly cost control and profit planning. To sum up, CVP analysis examines the interaction of a firm's sales volume, selling price, cost structure, and profitability. It is a powerful tool in making managerial decisions including marketing, production, investment, and financing decisions.

2.1.3 Assumption of Cost Volume Profit Analysis

CVP analysis is based on several assumptions. These assumptions can be listed as follows (Horngren et.al, 2002:62):

1. Number of units of products produced is the only revenue and cost driver. In other words, only an increase in the number of units of products produced and sold causes increase in level of revenues and costs.
2. Total costs are divided into a fixed component and variable component that is variable with respect to volume of output.
3. Selling prices are constant within the relevant range, productivity is constant within the relevant range, and variable cost per unit is constant within the relevant range.
4. Traditional cost-volume-profit analysis covers a single product. When traditional CVP analysis covers multiple products, it assumes that sales mix will remain constant as the total number of units sold changes.
5. Fixed costs are fixed within the relevant range. Relevant range is the limit of cost-driver activity level within which a specific relationship between cost and cost driver is valid. Although fixed costs are unchanging with respect to cost driver (only volume-based cost driver), this rule is true only within reasonable limits. For example, rent costs, which are generally fixed, will rise if increased production requires additional building.
6. All units produced are sold. All of the assumptions listed above establish the fundamentals of CVP analysis.

However, traditional and activity-based CVP analysis is compared, some of the above assumptions will be abandoned and some new assumptions will be established. The following paragraphs demonstrate the differences between variable and fixed costs. Since the effect of a change in output volume on cost and profit is based on the cost behavior, difference between variable costs and fixed costs should therefore be identified.

2.1.4 Cost and Its Classification

In economics, business, and accounting, cost is the value of money that has been used up to produce something, and hence is not available for use anymore. In business, the cost may be one of acquisition, in which case the amount of money expended to acquire it is counted as cost. In this case, money is the input that is gone in order to acquire the thing. This acquisition cost may be the sum of the cost of production as incurred by the original producer, and further costs of transaction as incurred by the acquirer over and above the price paid to the producer. Usually, the price also includes a mark-up for profit over the cost of production classification means to put a item or thing under a certain category (Chaudhari, 2002).

In accounting, costs are the monetary value of expenditures for supplies, services, labor, products, equipment and other items purchased for use by a business or other accounting entity. It is the amount denoted on invoices as the price and recorded in book keeping records as an expense or asset cost basis.

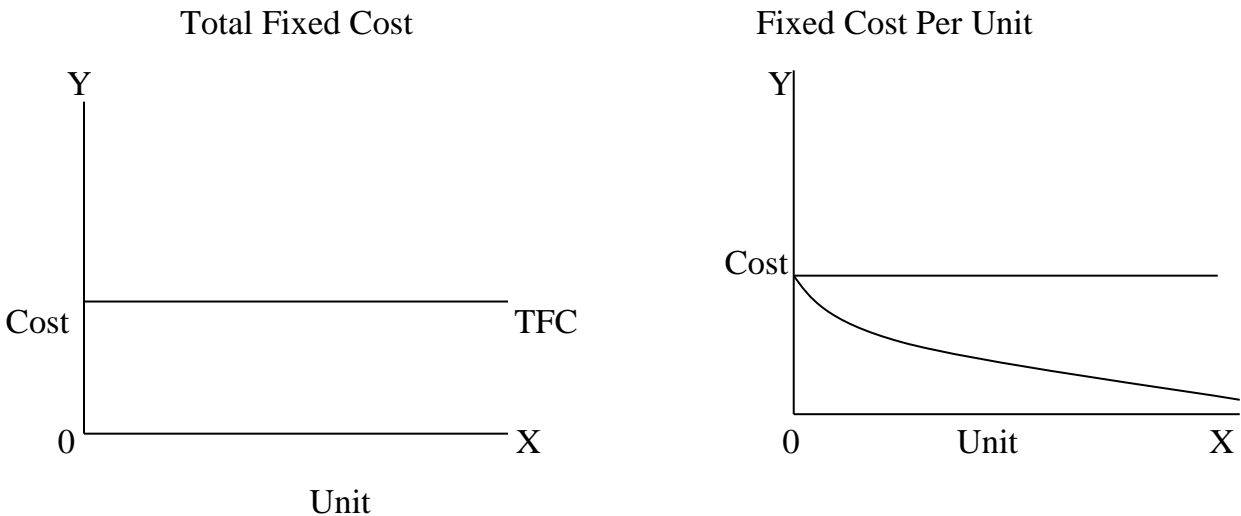
Costs are classified as either arising directly or indirectly. Indirect costs are ones that can be specifically related to the production of a particular good. Indirect costs are those that are not so specifically related. Classification of depends upon the purpose, methods, nature and so on. But this study needs classification of cost on the basis of cost behavior to meet the depth. So, it is described in this way:

Cost Behavior

The way a specific cost reacts to changes in activity levels is called **cost behavior**. Costs may stay the same or may change proportionately in response to a change in activity. Knowing how a cost reacts to a change in the level of activity makes it easier to create a budget, prepare a forecast, determine how much profit a new product will generate, and determine which of two alternatives should be selected. There exists a relationship between costs and the volume of activity relation between cost

and activity is called cost behavior. In most of the organization, costs can be classified as fixed, variable and mixed (Brown & Howard, 1969).

i) **Fixed Costs:** Fixed costs are constant in total over the relevant range. Fixed costs per unit often cause difficulties because of the inverse relationship between fixed costs and increases in production. As production increases, total fixed costs stay the same within the relevant range, but since we are dividing a constant numerator [total fixed costs] by a progressively larger denominator [total production or sales], the resulting costs per unit become smaller and smaller. Fixed costs include things like rent, insurance premiums, salaries, depreciation and property taxes.

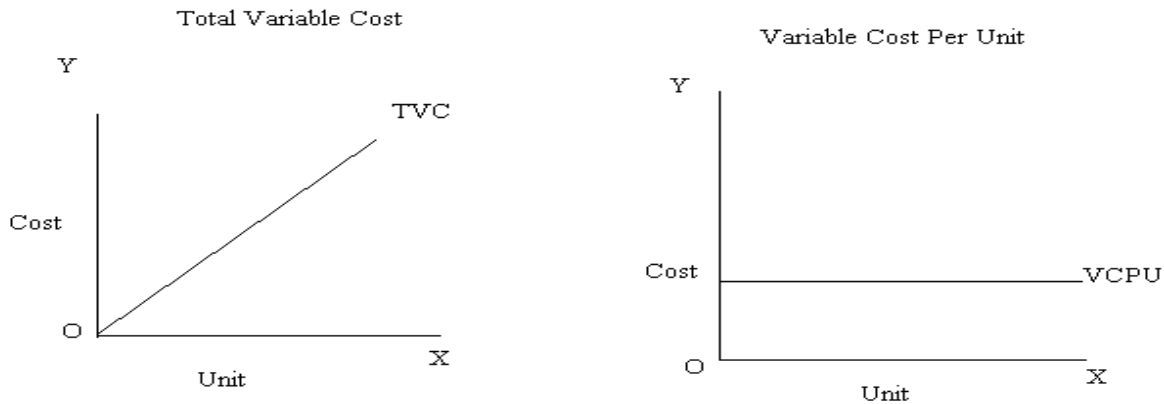


Some key features of fixed costs are as follows:

1. Fixed costs remain constant in total
2. Per unit fixed cost is variable
3. Fixed costs are capacity costs, time costs or committed costs.
4. Fixed costs are regulated and controllable under top management.
5. Fixed costs cannot be controlled in short run.

ii) **Variable Costs:** Variable costs vary in total with volume, but are constant per unit within the relevant range. Total variable costs for a given situation are equal to the

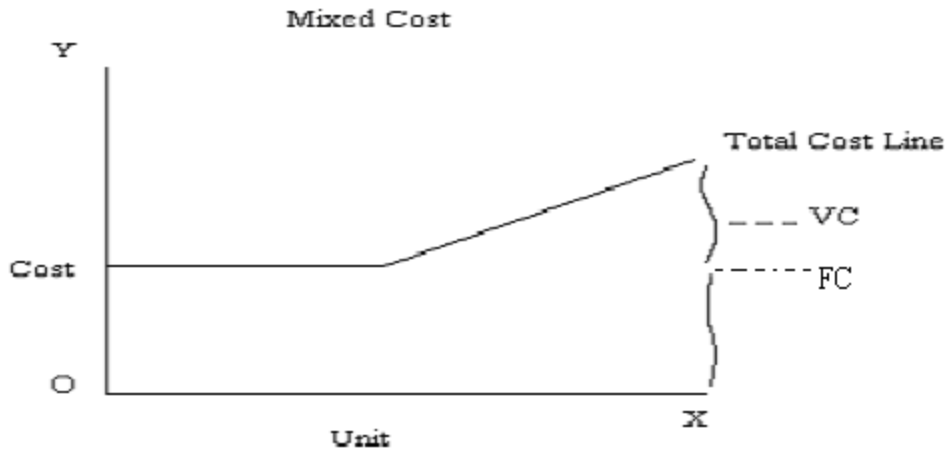
number of units multiplied by the variable cost per unit. Variable costs include things like labor and materials. Some overhead [indirect costs] such as indirect labor, supplies and some utilities are also variable.



Variable costs show following characteristics;

1. Proportionately related to activity
2. Per unit variable is fixed
3. Variable costs can be regulated and controlled in the same responsibility center and in the short-run as well.

iii) Mixed Costs: A mixed costs contains both fixed and variable elements. There are a variety of procedures that can be employed to separate the fixed and variable components. Those expenses which increase or decrease as output or activity increases or decrease, but not in exact proportion to change in the activity both fixed and variable costs. It is neither fixed in total amount nor fixed per unit. Semi variable costs remain fixed to certain extent and there after these vary with the increase in output or activity levels.



For CVP Analysis, such mixed cost should segregate into variable and fixed b using following methods.

High-Low Method: The high-low method divides the change in costs for the highest and lowest levels of activity by the change in units for the highest and lowest levels of activity to estimate variable costs.

Least-Squares Regression Analysis: The least-squares regression analysis is a statistical method used to calculate variable costs. It requires a computer spreadsheet program (for example, Excel) or calculator and uses all points of data instead of just two points like the high-low method.

By depicted in stated figure out that there is relationship between revenues, costs, and production or sales volumes can be an important element in understanding the economics of a business. These relationships are typically referred to as cost volume profit [CVP] relationships. Analysis of these relationships is usually called CVP analysis.

Difference between Variable and Fixed Costs

A variable cost is a cost that changes in direct proportion with changes in the cost driver activity. In this case, cost driver represents any output measure that causes costs

(Horngren et al., 2002:43). For example, as one more unit of product is produced we need to use one more unit of direct material. Therefore, cost of direct material is a variable cost and number of units produced is the cost driver. However, as the number of cost-driver activity changes, there will be no change in the unit variable cost although total variable cost will change in direct proportion with the cost driver activity.

Under traditional approach, only total revenues and total variable costs change as a result of a change in the number of units purchased and sold. By contrast, fixed costs such as factory rent or depreciation costs remain the same regardless of the number of units purchased and sold. Therefore, as one more unit is purchased and sold, contribution to profit is the difference between unit selling price and unit variable cost. This difference between selling price and variable cost per unit is called unit contribution margin.

Contribution Margin is the key concept in cost-volume-profit analysis. As one more unit is sold, fixed costs are covered by the amount of contribution margin. Once fixed costs are fully covered, contribution margin contributes to profit. In this case, management accountants can determine how many units of product must be sold to fully cover the fixed costs. In addition, managers can determine how many units to sell to reach the budgeted profit after covering the fixed costs. Furthermore, managers can examine how a change in price level, variable unit costs, and fixed costs will influence number of units that must be produced and sold to breakeven and to reach target profit.

2.1.5 Application of Cost Volume Profit Analysis

Cost-volume-profit analysis is applied specially for break-even analysis and profit planning. Business organization is run to earn profit providing the service to its customers. Profit is the fundamental part of the overall management function. Profit planning can be done only when the management has the information about the cost of

the product. Before we can see how CVP analysis works, we need to define an important concept:

- i) Contribution Margin Analysis
- ii) Break Even Analysis
- iii) Profit Volume (Ratio) Analysis
- iv) Margin of Safety

2.1.5.1 Contribution Margin Analysis

An alternative approach to C-V-P analysis is based on the contribution margin is the excess of sales price of unit of output over its variable cost, i.e. (S-V). It is the difference between the portions of rupees that is left after variable expenses are deducted. The contribution margin represents the amount of income or profit the company made before deducting its fixed costs. In other words, it is the amount of sales rupees available to cover (or contribute to) fixed costs. When calculated as a ratio, it is the percent of sales rupees available to cover fixed costs. Once fixed costs are covered, the next rupee of sales results in the company having income. Contribution margin is the excess of sales revenue over variable costs. So, contribution margin is the balance of sales revenue left after covering variable expenses, available to recover fixed expenses and then contribution to realize profit for the period. So, contribution margin is used first to cover the fixed expenses, and then whatever remains after the fixed expenses goes towards profit. If the contribution margin is not sufficient to cover the fixed expenses, and then a loss occurs for the period. Key calculations when using CVP analysis are the contribution margin and the contribution margin ratio (Bajracharya et. al., 2008:56).

Then,

$$\text{Contribution margin} = \text{Sales} - \text{Variable cost}$$

OR

$$\text{Contribution margin} = \text{Fixed cost} + \text{Profit}$$

Contribution margin usually expressed as a percentage of sales. It is also called contribution margin ratio or profit volume ratio.

$$\text{Contribution margin ratio} = \frac{\text{Contribution margin}}{\text{Sales}}$$

2.1.5.2 Break Even Analysis

Break-even point is the level of sales at which revenue equals expenses and net income is zero. Because company has no profit or loss at break-even point, it breaks even. Therefore, the study of cost-volume-profit relationships is often called break-even analysis (Horngren et.al., 2002:48). Break-even analysis is usually used for planning decisions. That is, with the help of break-even analysis, managers can determine how many units of product to produce and sell to break even at estimated fixed costs, variable costs, and the price level. Besides, they can identify how many units to sell to achieve planned level of profit. In this case, managers can plan all of the activities according to the results of break-even analysis because they know how decisions will influence revenue, costs and net income. Furthermore, managers are interested in break-even point mainly because they want to avoid operating losses because breakeven point tells them the level of sales they must generate to avoid a loss (Horngren et.al, 2002: 64).

Break Even Analysis is a logical extension of marginal costing. It is based on the same principle of classifying the operating expenses into fixed and variable. Now a same day, it has become a powerful instrument in the hands of policy makers to maximize profit. The B/E analysis is a specific way of presenting and studying the inter-relationship between the cost volume and profit. It provides information to management in the most precise manner. The B/E analysis established a relation between the revenues and cost with respect to the volume. It indicates the level of sales at which cost and revenue are in equilibrium. The equilibrium point is normally called BEP.

One point of interest in C-V-P analysis is the break-even point. It is incidental to the broader scope of C-V-P study. It is defined as the output level which evenly break-even

the costs and revenues. Break-even sales volume is that level of sales volume in which company neither makes a profit nor suffers losses. At this level of activity, the sales just cover the total cost and profit is zero. In other words, this is a point at which a company breaks the state of loss and enters into profit zone. Break even analysis help the management to know that which sales volume will only recover its costs and after which volume it starts to make profit. At last BEP point at which the firm's total revenue are exactly equal to total cost, yielding zero income or the point at which losses cease and profit begins. Break-even- point can be calculated by two methods.

- i. Formula Method
- ii. Graphical method

Break- Even Point: Break-Even Point is the level of activity where total cost is equal to total sales. It is a specific volume of sales, which breaks the revenues and cost evenly. It is a point of "no profit no loss". If the sale is higher than break-even volume, there will be profit. In the same way if the sales is less than break even volume, there will be a loss. It can be summarized in following way:

Table: 2.1
Break Even Point

Conditions	Results
Actual sales equal to break even sales	No profit, No loss
Actual sales exceeds to break even sales	Profit
Actual sales is less than break even sales	Loss

(Source: Dangol, R.M. 2004:466)

Computation of Break-Even Point: There are two types of methods which helps computing the Break Even Point. They are as follows:

i) Formula Method: Break-even point can be determined by the use of formula. It is also termed as algebraic method. According to the definition of break-even point it is such a level of sale or activity, where there is neither profit nor loss. It is that level of

sales, where total cost is equal to total sales revenue. It can be presented in equation form in the following way:

$$\text{Sales} = \text{FC} + \text{VC}$$

$$\text{or, } \text{SPPU} \times \text{Q} = \text{FC} + \text{VCPU} \times \text{Q}$$

$$\text{or, } \text{SPPU} \times \text{Q} - \text{VCPU} \times \text{Q} = \text{FC}$$

$$\text{or } \text{Q} (\text{SPPU} - \text{VCPU}) = \text{FC}$$

$$\text{or, } \text{Q} = \frac{\text{FC}}{\text{SPPU} - \text{VCPU}}$$

Hence,

$$\text{Break-even Sales (in Units)} = \frac{\text{FC}}{\text{CMPU}}$$

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

ii) Graphic Method: Break-Even Point can also be determined by using graph. The relation shown among cost, volume and profit with the help of diagram is described as break-even chart. There can be neither profit nor loss and the break-even sales. However, if the sales exceed the break-even point, the result will be profit. The loss will be reported if the sales are less than the break-even sales. Below is a simple illustration to a break even chart:

Hence, C-V-P graph is very useful because it highlights C-V-P relationship over wide range of activity and gives managers perspective regarding the cost-volume- profit and margin of safety. In other words, it helps to depict the relationship between profit and volume of activity, a cost volume profit graph is used. Graphical presentation of CVP is preferred. Where a simple overview is efficient and where there is need to avoid a detailed of numerical approach such graphic is sometimes referred to as preparing a break-even chart.

Break-Even Capacity: It provides information about at what percentage of normal capacity will result the break-even point. In other words, Break-Even capacity provides information about the normal capacity for break-even point. It is calculated using following formula:

$$\text{Break Even Capacity} = \frac{\text{BEP Sales} \times 100}{\text{Actual Sales}}$$

2.1.5.3 Profit Volume (P/V) Ratio Analysis

The analysis of relationship between profit and volume is known as profit-volume analysis. The two factors profit and volume are interring connected and dependent with each other. Profit depends on sales; selling price to a greater extent will depend upon the volume of production. Hence, there is inter-relation between cost, volume and profit. Profit is the function of a variety of factors; it is affected by change in sales volume, cost and prices. Profit may be affected by the changes (increases or decreases) in the price, volume, variable cost, fixed cost and other combination factors.

Under effect of changes in prices will increase the P/V ratio which leads to lower the break-even point. On the other hand, decrease in selling price will reduce the p/v ratio which is the result in a higher break-even point. Likewise, the changes in volume not accompanied with changes in the selling price or cost will not affect P/V ratio. As a result, the break-even point remains unchanged. Profit will increase with an increase in volume and vice-versa. Under combination of both volume and price, price reduction may increase the demand of the product and consequently, may result in increased volume. On the other hand, increase in price may adversely affect the demand and thus reduce volume. The impact on profit under these circumstances is not obvious. Profit may increase with a reduction in price when volume increases substantially (Fago, Subedi & Gyawali, 2003).

The impact of changes in variable cost on profit is straight forwarded if it does not course any changes in selling price or volume. An increase in variable cost will lower P/V ratio, push up the BEP and reduce profit. On the other hand, if the variable cost declines, P/V ratio will increase, BEP will be lowered and profit would rise.

A change is in fixed cost does not influence P/V ratio. Other factors remaining unchanged, a fall in fixed cost will however, lower the BEP and raise profits. An increase in fixed cost caused either due to some external factors or some changes in management policy leads to raise the BEP.

Thus, the management evaluating the profit plans or budgets must realize that a changes in one factor leads to a change in other factors. Therefore, all such changes should be carefully visualized and their net impact on profit must be seen.

Contribution margin is the different between the sales and the variable cost of production.. Contribution margin consists the fixed cost and profit i.e. contribution margin is the amount that contribute to recover of all fixed cost and to generate the profit.

Contribution margin ratio is also known as Profit Volume (P/V) ratio. It is important for studying the profitability of the business operation. P/V ratio establishes the relationship between contribution and sales value. It is expressed in the following formula.

$$\begin{aligned}
 \text{Profit Volume Ratio (Contribution Margin Ratio)} &= \frac{\text{Contribution Margin}}{\text{Sales}} \\
 &= \frac{\text{Sales} - \text{Variable Cost}}{\text{Sales}} \\
 &= \frac{\text{Contribution Margin Per Unit (CMPU)}}{\text{Selling Price Per Unit (SPPU)}} \\
 &= 1 - \frac{\text{Variabel Cost Per Unit (VCPU)}}{\text{Selling Price Per Unit (SPPU)}}
 \end{aligned}$$

This ratio further knows by comparing the changes in contribution to changes in sales or changes in profit to changes in sales. Likewise, any increase in contribution margin would mean increase in profit only because fixed cost is assumed to be constant at all level of production. It is depicted in the following formula.

$$\begin{aligned} \text{Profit Volume Ratio (Contribution Margin Ratio)} &= \frac{\text{Change in Contribution Margin}}{\text{Change in Sales}} \\ &= \frac{\text{Change in Profit}}{\text{Change in Sales}} \end{aligned}$$

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

$$\text{VC} = \text{Sales} (1 - \text{P/V ratio}).$$

The comparison of different P/V ratio is usually made by the management to find out which product is more profitable. The management tried to increase the value of the ratio by reducing the variable cost or by increasing the selling prices.

2.1.5.4 Margin of Safety (MOS)

The excess of the actual sales revenue over the break-even sales is known as margin of safety. Profit can be earned from the portion of sales that is excess of break-even analysis. In this way, the amount of profit earned is determined by the volume of margin of safety. Since all fixed cost is covered at break-even –point, the subtraction of the subsequent variable cost from the margin of safety result in net profit.

The higher margin of safety indicates the strength of business where profit shall be made with a substantial reduction in production sales. The margin of safety at break-even point is zero as the actual sale at this point is equal to break-even sales. The effort of management is always directed towards increasing the margin of safety so as to maximize the profit. For this, the increasing the level of production, increasing the selling price, reducing the cost and substituting the existing products by more profitable

products is the way to increase margin of safety. Hence it is calculated by following formula.

Margin of Safety (MOS) = Actual Sales (Rs) – BEP Sales (Rs)

Margin of Safety (Units) = Actual Sales (units) - BEP sales (Units)

$$\text{MOS in unit} = \frac{\text{Profit}}{\text{CMPU}}$$

$$\text{MOS in (Rs)} = \frac{\text{Profit}}{\text{CMRatio}}$$

The ratio between margin of safety and actual sales is known as margin of safety ratio which is determined as follows.

$$\text{Margin of Safety ratio} = \frac{\text{ActualSales} - \text{BreakEvenSales}}{\text{ActualSales}}$$

2.1.6 Limitations of CVP or B/E Analysis

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

Therefore, the analysis should recognize these limitations and adjust data, wherever possible, to get meaningful results. The CVP analysis suffers from the following limitations: (*Dangol; 1997:545-546*).

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

2.2 Review of Previous Studies

2.2.1 Review of Research Articles

Budugn (2008) has revealed that the progress of the production, sales and administration costs and future income of the various business units of a company as well as the use of decision making techniques based on relevant costs are possible only by a variable cost system approach. C-V-P is useful since it offer an overall image of the company management. Hence, cost-volume-profit analysis is increasingly used in the budgeting process.

Tulvinschi & Khirita (2009) have found that cost-volume-profit analysis is necessary tool for cost forecasting as well as for management cost control. The best cost for firm is not necessarily the lowest, but that cost that comes at the right time. Further, cost-volume-profit analysis is for the calculation of profit corresponding to a certain volume of sales.

Parajuli (2010) has revealed that the major sources of income included the domestic trunk and telephone, international telegraph, domestic telegraph, international telex, lease circuit and tele-fax. Likewise, the regression analysis depicted that there is high degree of significant effect of major sources of income whereas the minor sources of income mainly operating income is insignificant effect on the revenue of Nepal Telecom.

Machuga & Smith (2013) have revealed that flexible budgeting is a key starting point for developing a full cost-accounting system and subsequent analyses of variances between budgeted and actual results in an effort to improve cost control and operational performance.

Salehi, Ansari & Rezaire (2014) have depicted that the operating profit after tax of the company after deducting the cost of capital used to produce profit, measures economic profit. Under CVP analysis, like other management accounting techniques does not

consider the cost of capital and know it to be zero, while the opportunity cost of funds invested in assets that are used in the manufacture of a product, such as direct material costs, direct wage and factory overhead are considered a cost. Similarly, the entrance of the cost of capital into CVP analysis which is an implicit cost causes economic profit rather than accounting profit enters into CVP analysis. Moreover, discounted economic profit of a product makes internal relations of product revenue, expenses, and cost of funds used in the production. CVP model, based on discounted economic benefit of the product, enables managers to determine the amount of sales of a product at the entire point to measure the product profitability in its selling domains. The noticeable point of the study is that traditional analysis of CVP still remains powerful tools because of its simplicity.

Dalici & Tanis (2014) have found that the use of traditional C-V-P analysis would be misleading for managerial decision making process because it would not provide managers with the correct prediction of costs. By contrast, the activity-based CVP analysis would better prediction of costs and much more complete picture of breakeven analysis. Hence, just as activity costing was shown to improve the cost management and decision making. It also produced the organizational benefits when couple with CVP model.

Georgiev (2015) has depicted that organizations operating high-ranking hotels, have significantly developed their management accounting practices in the context. Likewise, the large organization used C-V-P in order to aid the decision making process with special offers mainly for the variable cost decision making. Similarly, CVP analysis is used by a small number of enterprises for the possible occurrence in volume of activity upon the business income. Thus, it is one of the most common tools used by hotel organizations to submit high utility data, as part of a number of effective management accounting methods.

Depson (2015) has revealed that the spreadsheet contains a CVP analysis calculating sales to achieve break-even and desired profit. Further, the data is summarized in a contribution margin, fixed cost and profit. The researcher found that C-V-P analysis and the CM income statement was linked the CV analysis to set target for food, cost percentage, number of covers, selling price (check average) and variable cost percentage.

Akmese, Buyuksalvarci, & Akmese(2016) have revealed that the most of managers were using CVP analysis. On the other hand, a small majority seems to be uninterested about the use of CVP analysis for various purposes. Similarly, CVP analysis is mostly used by the businesses surveyed. As a result, it is seen that the analysis method is used generally by the businesses, as it has much contribution to the profitability and sustainability of the business. It is noticeable that cost-volume-profit analysis was the major tools in order to enhance their decision efficiency.

Arbor (2016) has revealed that the components category was increased by five percent in sales volume over the two quarter. The study also breakdowns the updated global camera data by customer type, region, sensor type, interface color and lighting among others.

2.2.2 Review of Theses

Gurung (2010) has found that there was not cost-classification of both NTC and NEA in scientific and systematic way. Likewise, the expenditure ratio of NEA is the higher than NTC which leads to lower profit ratio of NEA. Similarly, profit line of NTC was in increasing trend whereas this was decreasing of NEA. The fixed cost ratio of NTC was higher than NEA whereas variable ratio of NTC was lower than NEA. Further, the ratio of profit to sales of NTC was increasing trend whereas NEA's in decreasing trend. Further, break-even point of NTC is in parallel whereas NEA was in fluctuating trend. Likewise, contribution margin ratio of NTC was higher than NEA. Finally, margin of safety of NTC was in good position whereas NEA's is in negative.

Giri (2011) has revealed that NTC had not practice the scientific and appropriate cost classification technique. However, costs were classified into fixed and variable cost as per the decision provided by the top level management. The sales trend of NTC was positive trend which can further increase in the profit in the future. The contribution margin ratio of NTC was higher which indicated sound profitability position of the company. Further, company had lower (BEP) Break Even Point ratio which depicted strong profitability position of the company. Likewise, the Margin of Safety (MOS) of Nepal Telecom was higher which pointed the safer is the form. Similarly, there exist a high degree of positive correlation between sales and net profit, sales and total cost.

Pote (2011) have found that the company had not practice the classification of costs into fixed costs and variable cost. The total fixed cost of the company was increasing annually. The variable costs were also at increasing trends. The actual sales of the company had not reached at BEP as a whole. Similarly, the contribution margin ratio was about 20% which was very low to cover of its fixed cost. The actual sales of selected products like Royal stage, Ruslan, Vodka and Blue Diamond were more than BEP at all present fiscal years. Likewise, the selected products lines were utilizing their specific fixed costs. Since lower fixed costs and mass production and sales of selected products line cause. The total BEP of selected products were utilized 6% to 9% of total capacity. There were negative correlation between actual sales and budgeted sales. The actual sales of selected product lines were increasing rapidly.

Thapa (2012) has depicted that NTC had not practices of cost control policy in order to maximize the profit. Similarly, NTC was lacking the proper System of Performance report. Further, the sales plan and achievement was satisfactory to some extent. Further, financial Performance of NTC was not so good and NTC does not consider the use of flexible subjective.

Pradhan (2013) have revealed that segregation of fixed and variable cost is ignored by NTC and NEA. Similarly, 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. Likewise, variable cost of NTC is very less compare to its fixed cost and contribution margin ratio of NTC is very high. On the other hand, NEA had more variable cost and its contribution margin ratio is less. Further, the study prevailed that NTC is running in profit but NEA is suffering from less. Likewise, no any systematic plans had been implemented for preventing the loss and improve profit of these enterprises. Moreover, 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 were high. Long term loan in NEA was the main cause to increase interest. To sum up, NTC was earning profit but NEA was suffering loss.

Wagle (2013) has revealed that there was no practice of identifying semi-variable cost and their segregation into fixed and variable cost. NTC's total revenue was in increasing trend and trend analysis also pointed that sales revenue of company would be increasing in the future. The fixed cost of NTC was very high because of high amount of operational maintenance cost and depreciation. Similarly, high fixed cost increase the break-even level a variable cost of NTC is lower than fixed cost. Moreover, NTC had high P/V ratio and efficient BEP, as a result NTC was running in profit situation. Likewise, margin of safety of NTC was positive because break even sales was lower than actual sales revenue. The result concluded that there was positive relationship between total revenue and profit/loss.

Chapagain (2014) has revealed that Salt Trading Limited Corporation (STLC) had not details of systematic expenses and thus planning was essential for profit planning and control. Similarly, a sale of the corporation was volatile and it was slightly decreased in fiscal year 2065/66 and then it was increasing in following years. Likewise, total expenses of STLC seemed fluctuating. Similarly, the cost of sales was variable cost.

Further, there was positive correlation between sales and net profit. Moreover, change in sales made change in profit but changes was not the same ratio.

Dhakal (2014) has found that Sales plan were not properly maintained by GRIL and appropriate cost classification technique were not practices in GRIL. There was very low contribution margin and GIRL had not a detailed and systematic practice of planning. Similarly, GRIL produced very high quality and exportable product but the production cost was high. Similarly, the profitability of the industry was very poor and suffering a high degree of losses. Moreover, GRIL was utilizing only 35% capacity and industry was in risk since operating leverage was also high.

Diktta (2015) has found that net profit of Nepal Food Corporation (NFC) was more fluctuation than actual sales. There was large fluctuation in the fiscal year 2069/70 that may be the increment in sales due to unfavorable situation in the business environment and rainfall (monsoon). There was the correlation coefficient between actual sales and actual net profit after tax however, the correlation coefficient was insignificant since r is less than 6PE. Similarly, the variable cost was very high comparing than that of fixed cost in each year. Likewise, P/V ratio trends of each year's show the fluctuating type. Moreover, it was found that the most recent accounting system, profitability tools like CVP analysis was not in practice. The study pointed that there was necessary to classifying cost behavior according to nature i.e. fixed, variable, & semi variable.

2.3 Research Gap

There is a gap between this research and previous research. As reviewing the previous research, most of the enterprises were not operating effectively. Similarly, most of the researcher conducted a study on other enterprises. However, few researchers had conducted research on Nepal telecommunication. But they had concerned mostly on profit planning and control system of Nepal telecommunication. Similarly, they found

that there was not proper planning and control system of Nepal Telecommunication. Likewise, other researcher had applied the cost-volume – profit tools on surface or aggregate. This study Cost- Volume-Profit analysis of Nepal Telecommunication prevail the relationship revenue including both PSTN landline and GSM mobile and the effect of variable cost and fixed cost towards profit by multiple regression model. For this, researcher considered profit as dependent variable other three independent variable sales, variable cost and fixed cost. Similarly, hypothesis is tested among the relationship on whether their relationship is significant or not among profit, sales revenue and cost. Likewise, BEP in sales, Margin of safety, profit –volume ratio is also calculated in order to sketch the C-V-P analysis.

CHAPTER-III

RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problem. Methodology is the research method used to test the hypothesis in which different process are used to collect, analyze and interpret the facts and figures. Hence, research methodology is the systematic study of research problem that solve them with some logical evidence. This chapter consists of the methodology of studying cost-volume-profit analysis of Nepal telecommunication. It includes research design, nature and sources of data, research variables and tools used.

3.1 Research Design

This study uses descriptive research design.

3.2 Nature and Sources of Data

The secondary data have been used for this study. The secondary data is gathered from published and unpublished documents and annual reports of Nepal telecommunication, scholars' research articles and journals, books, unpublished theses from different campus libraries.

3.3 Population and Sample

The competitive total populations of telecommunication in Nepal are Nepal Telecom and Ncell. The non-random convenience sampling methods have been used and Nepal telecommunication is taken for the case study in order to get the research objective. Likewise, this study covered the last ten years data consisting 2063/64 to 2073/74.

3.4 Data Analysis Tools

The collected data is be arranged systematically and identified. The available information is grouped as per the need of research work in order to meet the research objective. The collected data are presented in appropriate form of tables and charts. For analysis purpose, different kinds of financial as well as statistical tools have been applied in order to obtain the result. For this, correlation, hypothesis test and regression model is used to analyze the secondary data. Further, in order to make the effective analysis, SPSS version 18.0 is used for this analysis. Beyond this, micro-soft office excel sheet, bar diagram and figure have been used.

Accounting / Financial Tools

(i) Contribution-Margin Approach

$$\text{Break-even Sales (in Units)} = \frac{\text{Fixed Expenses}}{\text{Contribution margin per Unit}}$$

$$\text{Break-even Sales (in RS)} = \frac{\text{Fixed Cost}}{\text{Contribution Margin Ratio}}$$

or

$$\text{Break-even Sales (in RS)} = \frac{\text{Fixed Cost}}{\frac{\text{Profit}}{\text{Volume}} \text{ Ratio}}$$

$$\text{Contribution Margin} = \text{Sales Revenue} - \text{Variable cost}$$

(ii) Profit-Volume Ratio (P/V Ratio):

$$\text{P/V Ratio} = 1 - \frac{\text{Variable Cost}}{\text{Sales}}$$

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

or

$$\text{P/V Ratio} = \frac{\text{Fixed Cost} + \text{Profit}}{\text{Sales}}$$

$$\text{Profit} = (\text{Sales} \times \text{P/V Ratio}) - \text{Fixed Cost}$$

$$\text{Profit} = (\text{Actual Sales} - \text{Break-even Sales}) \times \text{P/V Ratio}$$

$$\text{Profit} = (\text{Actual Sales} - \text{Break-even Sales Unit}) \times \text{Unit Contribution Margin}$$

(iii) Margin of Safety = (Actual Sales- Break-even Sales)

$$\text{Margin of Safety in Units} = \frac{\text{Profit}}{\text{Contribution Margin Per Unit}}$$

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

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

(iv) Profitability Ratio

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

Variables

In this research one dependent and three independent variables has been shown in the following manner.

Net Profit: Profit is the excess amount on total cost over total revenue. Hence it is the function of several of factors such as change in sales volume, cost and prices. Further, it may be affected by the increases or decreases in the price, volume, both variable cost and fixed cost and other combination factors. In this study, dependent variables profit shown by considering the three independent variables sales revenue, variable cost and fixed cost.

Sales Revenue: Sales revenue is the main income of the company. Company generated profit and run the organization by selling its goods or services. The effort of management is always directed towards increasing the sales so as to maximize the profit. For this, the increasing the level of production, increasing the selling price, reducing the cost and substituting the existing products by more profitable products is the way to generate the sales revenue.

Variable Cost: A variable cost is a cost that changes in direct proportion with changes in the cost driver activity. Thus the variable cost, which varies according to the level of production or output, is called variable cost. It fluctuates in total amount but total to remain unchanged per unit as production activity changes. There is a linear relationship between the volume and variable cost i.e., the cost increases or decreases as the volume increases or decreases.

Fixed Cost: The cost, which remains unchanged to an entire range of production or output, is called fixed cost. In other words, as production increases, total fixed costs stay the same within the relevant range. Such types of fixed cost include like rent, insurance premiums, salaries, depreciation and property taxes.

CHAPTER-IV

PRESENTATION AND ANALYSIS OF DATA

4.1 Introduction

This chapter stands for presenting and analyzing data to achieve the formulated objectives. This is the main body of the chapter for the study. This chapter is subdivided in to different heading such as cost classification, Break-Even- Point (BEP) analysis, Margin of Safety (MOS), Profit Volume (P/V) ratio and other indicators. It is depicted in the following way.

4.1.1 Classification of Cost of Nepal Telecommunication

Nepal Telecommunication as the government ownership enterprises operating successfully in the country in the field of service industry. Nepal telecommunications have not specified the portion of fixed and variable cost. However, the major fixed cost in Nepal telecommunication is personnel cost, operating and maintenance, depreciation, licence fee, frequency fee, staff bonus, telecom allowances. Likewise, the major variable cost is operation and maintenance, administrative costs, royalty, contribution to rural telecom development and interest on subscriber deposit. By gathering it's annual reports, the past ten years both PSTN landline and GSM mobile variable cost and fixed cost is depicted as under.

Table 4.1
Cost Classification of NTC (In Rs. Million)

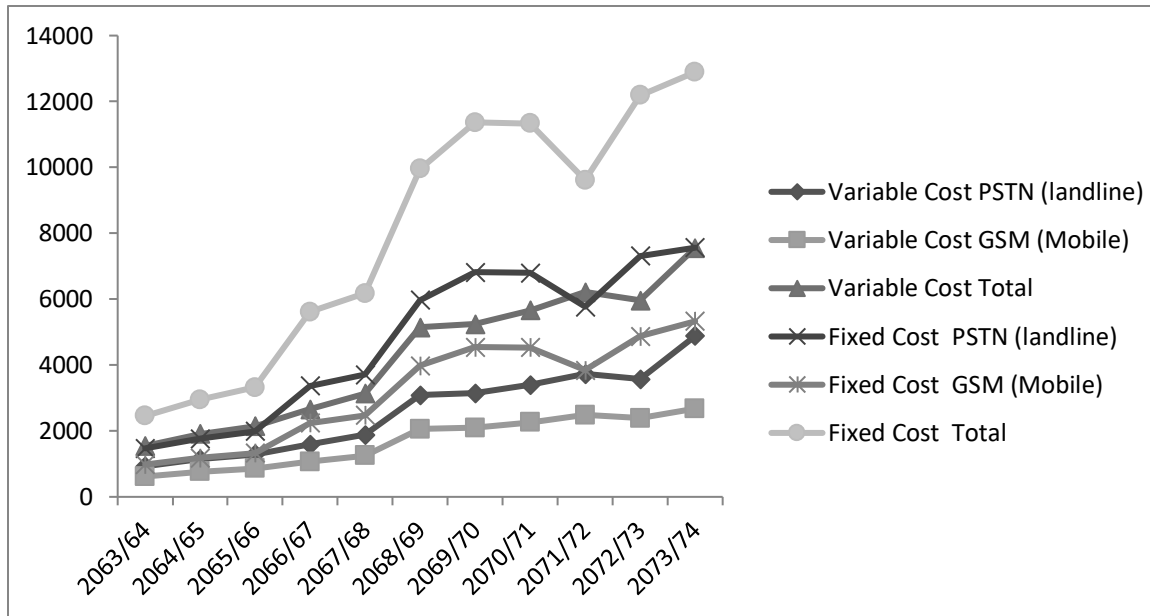
FY	Variable Cost			Fixed Cost		
	PSTN (landline)	GSM (Mobile)	Total	PSTN (landline)	GSM (Mobile)	Total
2063/64	928	618	1546	1473	982	2455
2064/65	1147	765	1912	1770	1180	2950
2065/66	1287	858	2145	1989	1326	3315
2066/67	1595	1063	2658	3368	2245	5613
2067/68	1880	1253	3133	3708	2472	6180
2068/69	3085	2057	5142	5970	3980	9950
2069/70	3146	2097	5243	6818	4545	11363
2070/71	3395	2263	5658	6798	4532	11330
2071/72	3729	2486	6215	5771	3847	9618
2072/73	3576	2384	5960	7314	4876	12190
2073/74	4880	2677	7557	7562	5328	12890
Total	28648	18521	47169	52541	35313	87854
Percentage (%)	60%	40%	100%	60%	40%	100%
Total (%)	34.93%			65.07%		

Source: Appendix I

The table 4.1 depicts the classification of cost of NTC for the last eleven years ranging from 2063/64 to 2073/74. Both PSTN landline and GSM mobile variable cost is in increasing trend during the study period. Likewise, both PSTN landline and GSM mobile fixed cost is rising consequently during the study period. As classifying the variable cost and fixed cost of PSTN (landline) and GSM (mobile), it reveals that the portion of PSTN (landline) and GSM mobile is 60% and 40% respectively in both fixed and

variable cost. However, in total cost, the portion of fixed cost is higher than variable cost which is 65.07% and 34.93% respectively. It is also shown in the following figure.

Figure 4.1
Cost Classification of NTC (In Rs. Million)



The figure 4.1 depicts the cost classification of Nepal Telecommunication for the last eleven years. As seen in the figure 4.1, both fixed and variable cost of PSTN landline and GSM mobile is in increasing trend. However, the portion of fixed cost is higher than variable cost in a total as seen in the figure 4.1.

4.1.2 Sales revenue of Nepal Telecom

Sales Revenue is the fundamental part in the profit planning and control. It provides the basic management decision and strategic planning to the management in order to meet the targeted profit. Under it, different important decision such as production, purchase, expenses etc. is considered. The sales revenue of Nepal telecom for the last eleven years is shown as under.

Table 4.2**Sales /Revenue of Nepal Telecommunication (In Rs. Million)**

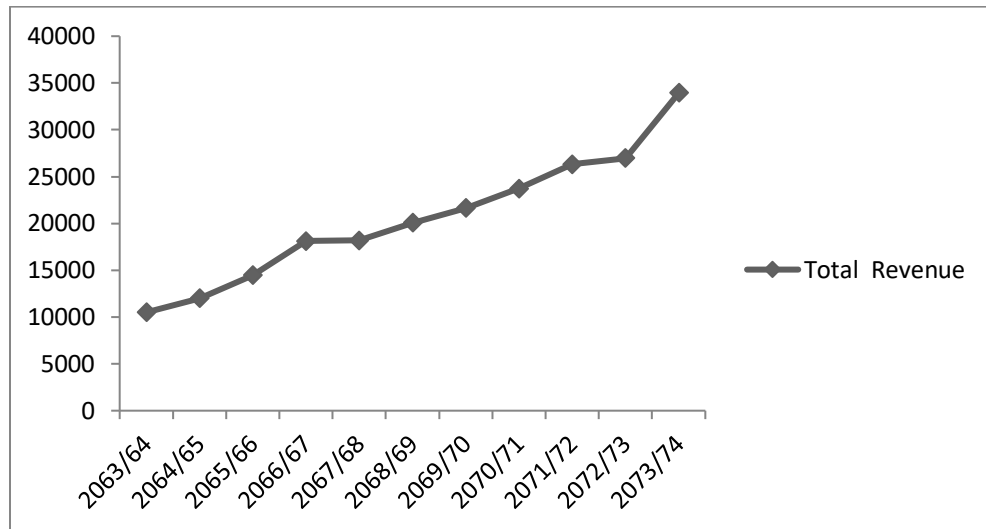
FY	PSTN (landline)	GSM (Mobile)	Total Revenue	% Change
2063/64	6662	3843	10505	-
2064/65	6099	5890	11989	14.13
2065/66	5516	8938	14454	20.56
2066/67	5114	12998	18112	25.31
2067/68	4871	13300	18171	0.33
2068/69	4921	15127	20048	10.34
2069/70	5153	16472	21625	7.87
2070/71	5261	18468	23729	9.73
2071/72	5209	21106	26315	10.89
2072/73	5063	21906	26969	2.48
2073/74	9031	24898	33929	25.81

Source: Appendix I

The table 4.2 depicts the sales revenue of Nepal Telecommunication during the last eleven years. The sales revenue of PSTN landline is higher than GSM mobile in the first three year i.e. 2063/64 to 2065/66. After the year 2065/66, the revenue of GSM mobile is dramatically increasing till the last fiscal year 2073/74 than PSTN landline revenue. However, total revenue of Nepal telecommunication is increasing trend during the study period. The highest increased in revenue is 25.81% and least increased by 0.33% with the corresponding fiscal year 2073/74 and 2067/68 respectively. In the last fiscal year, total revenue is increased by 2.48%. It is also shown in the following figure.

Figure 4.2

Sales /Revenue of Nepal Telecommunication (In Rs. Million)



The figure 4.2 depicts the sales/revenue of Nepal Telecommunication for the last eleven years. The sales revenue of GSM mobile is higher than PSTN landline revenue from during the study period. The total revenue of the Nepal Telecommunication is increasing during the study period as shown in the figure 4.2.

4.1.3 Profit Volume Ratio Analysis

Contribution margin is the different between the sales and the variable cost of production. Contribution margin consists the fixed cost and profit i.e. contribution margin is the amount that contribute to recover of all fixed cost and to generate the profit. Contribution margin ratio is also known as Profit Volume (P/V) ratio. It is important for studying the profitability of the business operation. P/V ratio establishes the relationship between contribution and sales value.

The impact of changes in variable cost on profit is straight forwarded if it does not change in selling price or volume. An increase in variable cost will lower P/V ratio, push up the BEP and reduce profit. On the other hand, if the variable cost declines, P/V ratio

will increase, BEP will be lowered and profit would rise. A changes in fixed cost does not influence P/V ratio.

Likewise, other factors remaining unchanged, a fall in fixed cost will however, lower the BEP and raise profits. An increase in fixed cost caused either due to some external factors or some changes in management policy leads to raise the BEP. It is expressed in the following formula.

$$\text{Profit Volume Ratio (Contribution Margin Ratio)} = \frac{\text{Contribution Margin}}{\text{Sales}}$$

Table 4.3
Profit Volume Ratio Analysis of NTC

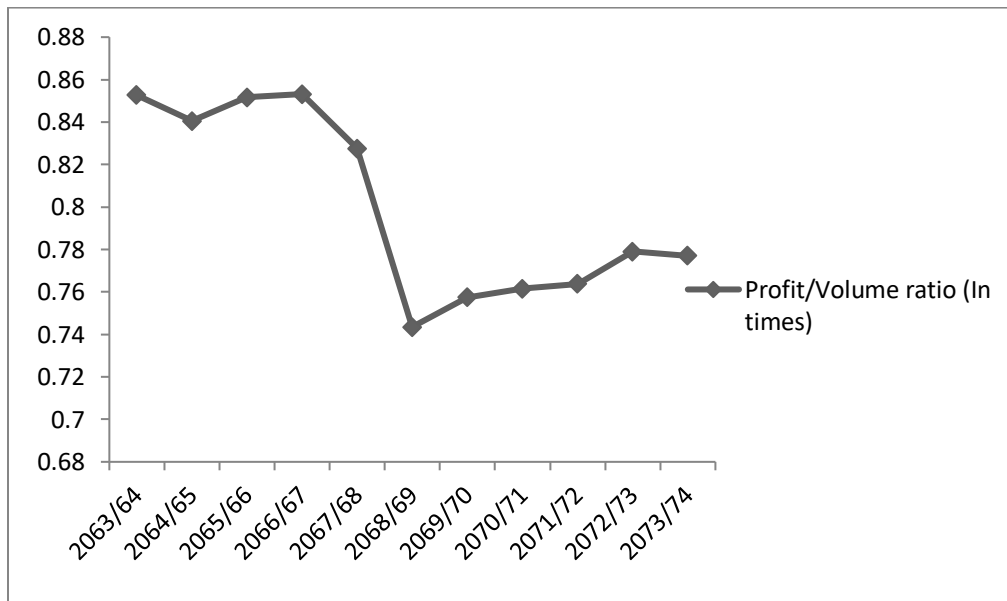
FY	Total Revenue/Sales	Contribution Margin (Rs Million)	Profit/Volume ratio (In times)
2063/64	10505	8959	0.8528
2064/65	11989	10077	0.8405
2065/66	14454	12309	0.8516
2066/67	18112	15454	0.8532
2067/68	18171	15038	0.8276
2068/69	20048	14906	0.7435
2069/70	21625	16382	0.7575
2070/71	23729	18071	0.7616
2071/72	26315	20100	0.7638
2072/73	26969	21009	0.779
2073/74	33929	26372	0.777

Source: Appendix I

The table 4.3 depicts the profit volume ratio of NTC for the last eleven years. The profit volume ratio is slightly fluctuating from year 2063/64 to 2067/68. In the year 2068/69 this ratio is dramatically decreased to 0.7435 times then after slightly increasing trend till the year 2072/73. The P/V ratio of the last year 2073/74 is 0.777 times.

To sum up, this ratio is the highest 0.8532 times and the least 0.7435 times with the corresponding year 2066/67 and 2068/69 respectively. It is also shown in the following figure.

Figure 4.3
Profit Volume Ratio Analysis of NTC



The figure 4.3 depicts the profit volume ratio of NTC for the last eleven years period. This ratio is in fluctuating trend during the study period. However, this ratio is the highest in 2066/67 and the least in 2068/69 as seen in the figure 4.3.

4.1.4 Break Even Analysis of Nepal Telecom

Break-even point is the level of sales at which revenue equals expenses and net income is zero. Because company has no profit or loss at break-even point, it breaks even. Break Even Analysis is a logical extension of marginal costing. It is based on the same principle of classifying the operating expenses into fixed and variable. Now a same day, it has become a powerful instrument in the hands of policy makers to maximize profit. Break-

even sales volume is that level of sales volume in which a company neither makes a profit nor suffer losses. At this level of activity, the sales just cover the total cost and profit is zero. It is a point of "no profit no loss". If the sales is higher than break-even volume, there will be profit. In the same way if the sales is less than break even volume, there will be a loss. It can be presented in the following formula.

$$\text{Break-even Sales/Revenue (in Rs)} = \frac{\text{Fixed cost}}{\text{P/V ratio}}$$

Table 4.4**Break Even Sales/Revenue of Nepal Telecommunication (In Rs Million)**

FY	Total Revenue/Sales	Variable Cost	Contribution Margin	Profit/Volume ratio	Fixed cost	BEP (in Rs)
2063/64	10505	1546	8959	0.8528	2455	2878.64
2064/65	11989	1912	10077	0.8405	2950	3509.73
2065/66	14454	2145	12309	0.8516	3315	3892.68
2066/67	18112	2658	15454	0.8532	5613	6578.40
2067/68	18171	3133	15038	0.8276	6180	7467.53
2068/69	20048	5142	14906	0.7435	9950	13382.37
2069/70	21625	5243	16382	0.7575	11363	14999.69
2070/71	23729	5658	18071	0.7616	11330	14877.40
2071/72	26315	6215	20100	0.7638	9618	12591.92
2072/73	26969	5960	21009	0.7790	12190	15648.16
2073/74	33929	7557	26372	0.777	12890	16589.45

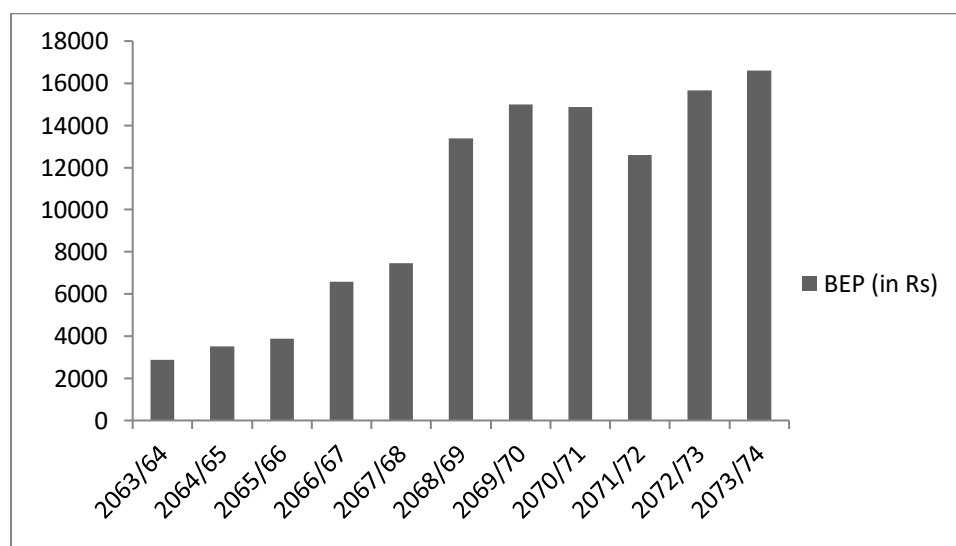
Source: Appendix I

The table 4.4 shows the break even analysis of Nepal telecommunication for the last eleven years ranging from the fiscal year 2063/64 to 2073/74. The contribution margin of Nepal Telecommunication is in increasing from the year 2063/64 to 2066/67 then after decreasing till the year 2068/69. In the year 2069/70 contribution margin is Rs. 16382 million and increased to Rs. 26372 million in the year 2073/74. Likewise, the fixed cost

is in increasing slightly from initially to 2065/66. Likewise, after 2065/66 fixed cost of Nepal telecommunication is sharply increasing till the year 2072/73. Similarly, break even analysis of Nepal telecommunication is Rs. 2878.64 million then after moderately increased to Rs 3892.68 million in the year 2065/66. Likewise, from the year 2066/67, break-even sales/revenue is sharply increasing till the year 2073/74. The break even analysis is the least Rs.2878.64 million and the highest of Rs.16589.45 million with the corresponding fiscal year 2063/64 and 2073/74 respectively. As seen in the table, actual sales revenue is higher than BEP sales revenue in all the fiscal years. Hence, the Nepal telecom is succeeding to earn the profit during the study period. It is also shown in the following figure.

Figure 4.4

Break Even Sales /Revenue of Nepal Telecommunication (In Rs Million)



The figure 4.4 depicts the break even sales/revenue of Nepal telecommunication (NTC) for the last ten years. As seen in the figure 4.4, there is slightly increasing till the year 2065/66 then after sharply increased to till the year 2070/71. Likewise, there is slightly fluctuating in last three years.

4.1.5 Margin of Safety Analysis of Nepal Telecommunication (NTC)

The excess of the actual sales revenue over the break-even sales is known as margin of safety. Profit can be earned from the portion of sales that is excess of break-even analysis. In this way, the amount of profit earned is determined by the volume of margin of safety. Since all fixed cost is covered at break-even –point, the subtraction of the subsequent variable cost from the margin of safety result in net profit. The higher margin of safety indicates the strength of business where profit shall be made with a substantial reduction in production sales. The effort of management is always directed towards increasing the margin of safety so as to maximize the profit. Hence it is calculated by the following formula.

Margin of Safety (MOS) in Rs. = Actual Sales (Rs) – BEP Sales (Rs)

The ratio between margin of safety and actual sales is known as margin of safety ratio which is determined as follows.

Margin of Safety ratio = $\frac{\text{Actual Sales} - \text{Break Even Sales}}{\text{Actual Sales}}$

Table 4.5
Margin of Safety Analysis of NTC (Rs. in Millions)

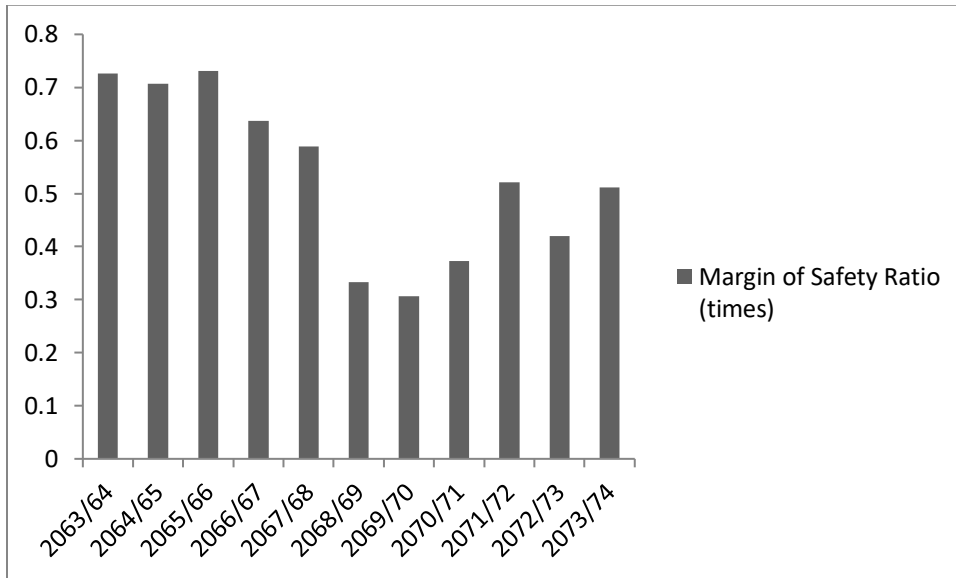
FY	Total Revenue/Sales (Rs.) (A)	BEP (in Rs) (B)	Margin of Safety (Rs) (A) – (B)	Margin of Safety Ratio (times)
2063/64	10505	2878.64	7626.36	0.7259
2064/65	11989	3509.73	8479.27	0.7073
2065/66	14454	3892.68	10561.32	0.7307
2066/67	18112	6578.4	11533.6	0.6368
2067/68	18171	7467.53	10703.47	0.5890
2068/69	20048	13382.4	6665.63	0.3325
2069/70	21625	14999.7	6625.31	0.3064
2070/71	23729	14877.4	8851.6	0.3730
2071/72	26315	12591.9	13723.08	0.5215
2072/73	26969	15648.2	11320.84	0.4198
2073/74	33929	16589.45	17339.55	0.5111

Source: Appendix I

The table 4.5 depicts the margin of safety analysis of NTC for last eleven years ranging from fiscal year 2063/64 to 2073/74 respectively. The total sales revenue of NTC is an increasing trend during the study period. BEP in revenue is also increasing during the study period. However, total revenue of Nepal telecom is always greater than BEP in revenue in all the fiscal years. It indicates the positive consequences of margin of safety. The margin of safety in revenue is also increasing till the fiscal year 2066/67 with Rs.11533.6 million from the fiscal year 2063/64 with Rs.7626.36 million. There is sharp decreased in margin of safety from the year 2067/68 with Rs.10703.47 million to Rs 6625.31 million in 2069/70 then after increased to Rs.13723.08 million in 2071/72. The last year MOS is reached to Rs. 17339.55 million. Likewise, by analyzing the margin of safety ratio is 0.7259 times in year 2063/64. This ratio is decreasing till the year 2069/70

and reached to 0.3064 times then after increased to 0.5215 times in year 2071/72. The MOS ratio is reduced to 0.4198 times in the last year 2072/73 and it is slightly increased to 0.5111 times in 2073/74. The higher margin safety ratio increases the profitability of Nepal telecommunication. It is also shown in the following figure.

Figure 4.5
Margin of Safety Ratio of NTC



The figure 4.5 depicts the margin of safety ratio of NTC for the last eleven years. The margin of safety ratio is in fluctuating trend during the study period. This ratio is the least in the year 2069/70 as seen in the figure 4.5.

2.1.6 Profitability Ratio

The profitability ratio depicts the net profit position of the Nepal telecommunication. The profit is occurred only when revenue exceeds the total cost. The major motive of the company is to make the profit so as to survival for the long term and growth opportunities. The profitability ratio is stated in the following formula.

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

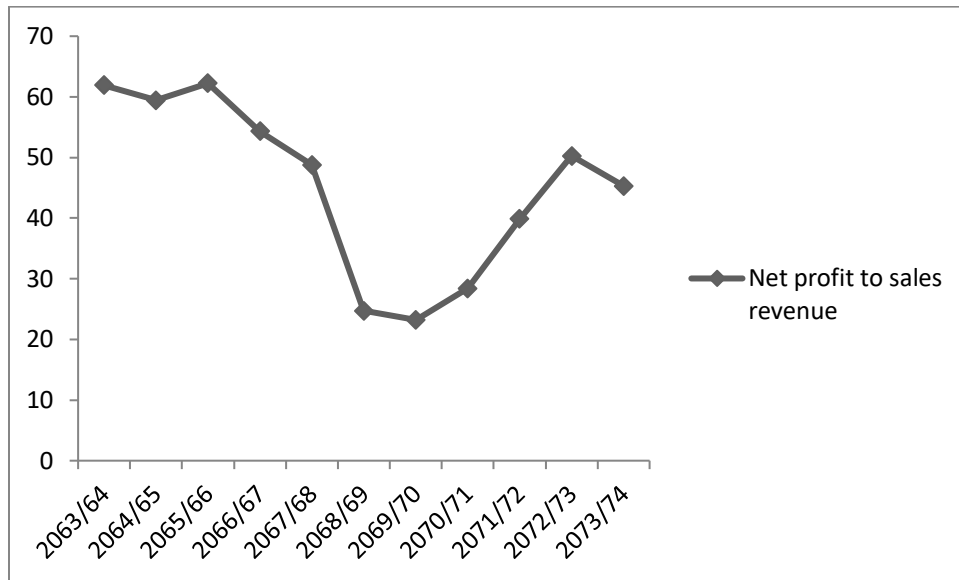
Table 4.6
Net Profit Margin Ratio (%)

FY	Profit (Rs Million)	Total Revenue/Sales (Rs. Millions)	Net profit to sales revenue
2063/64	6504	10505	61.91
2064/65	7127	11989	59.45
2065/66	8994	14454	62.22
2066/67	9841	18112	54.33
2067/68	8858	18171	48.75
2068/69	4956	20048	24.72
2069/70	5019	21625	23.21
2070/71	6741	23729	28.41
2071/72	10482	26315	39.83
2072/73	13550	26969	50.24
2073/74	15370	33929	45.30

Source: Appendix I

The table 4.6 depicts the net profit margin ratio of NTC for the last eleven years. The net profit is increasing till the year 2067/68 with Rs. 8858 million from the year 2063/64 with Rs.6504 million then after fluctuating and reached to Rs. 15370 million in the last year 2073/74. On the other hand, total revenue is in increasing trend during the study period. The net profit margin ratio is decreasing trend till the year 2069/70 to 23.21% from the initial year 2062/63 of 61.91%. In the last year this ratio is 45.30%. It is also shown in the following figure.

Figure 4.6
Net Profit Margin Ratio



4.2 Major Findings of the Study

The major findings of the study are presented in the following manner.

1. There is not proper cost classification of segregation of fixed cost and variable cost of Nepal Telecommunication.
2. Both PSTN landline and GSM mobile variable cost is in increasing trend during the study period. Likewise, both PSTN landline and GSM mobile fixed cost is rising consequently during the study period.
3. The portion of PSTN (landline) and GSM mobile is 60% and 40% respectively in both fixed and variable cost. However, in total cost, the portion of fixed cost is higher than variable cost which is 65.07% and 34.93% respectively.
4. The sales revenue of PSTN landline is higher than GSM mobile in the first three year i.e. 2063/64 to 2065/66. However, total revenue of Nepal telecommunication is increasing trend during the study period.

5. The contribution margin of Nepal Telecommunication is in increasing from the year 2063/64 to 2066/67 then after decreasing till the year 2068/69 whereas rises to Rs. 26372 millions in 2073/74.
6. The break even revenue is the least Rs.2878.64 million and the highest of Rs.16589.45 million with the corresponding fiscal year 2063/64 and 2073/74 respectively.
7. The profit volume ratio is the highest 0.8532 times and the least 0.7435 times with the corresponding year 2066/67 and 2068/69 respectively. In the last year 2073/74 this ratio is 0.777 times.
8. The total sales revenue of NTC is an increasing trend during the study period. However, total revenue of Nepal telecom is always greater than BEP in revenue in all the fiscal years. The margin of safety in revenue is also increasing till the fiscal year 2066/67 then after fluctuating.
9. The margin of safety ratio is 0.7259 times in year 2063/64 and reduced to 0.5111 times in the last year 2073/74.
10. The net profit margin ratio is decreasing trend till the year 2069/70 to 23.21% from the initial year 2062/63 of 61.91% which indicates the fluctuating during the study period. In the last year 2073/74 this ratio is 45.30%.

CHAPTER-V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

In the present scenario, service sector has become essential elements for the development of the country. Service sector promotes the economic development by providing employment and by mobilizing the unutilized resources. By the realization of this fact, many public and private enterprises are established. Development of service sector can play the meaningful role in replacing employment, substitution of imports through increasing production. Among service industry, Nepal Telecommunication is one of the dominant industries in telecommunication of the country and its main objective is to provide cost effective telecommunication services in the corner of the country.

This study "Financial Performance analysis as using Tool of Cost-Volume-Profit analysis of Nepal Telecommunication is to analyze the sales trend analysis, break-even analysis, margin of safety analysis, profit-volume ratio analysis and net profit margin ratio. For this study, descriptive and analytical research design is used. Likewise, this study is based on secondary data which is covered of last eleven years ranging from fiscal year 2063/64 to 2073/74 of Nepal telecommunication.

The result revealed that both PSTN landline and GSM mobile variable cost is in increasing trend during the study period. Likewise, both PSTN landline and GSM mobile fixed cost is rising consequently during the study period. Likewise, both fixed and variable cost of PSTN landline and GSM mobile is in increasing trend. However, there is the higher portion of fixed cost than variable cost. Likewise, the sales revenue of GSM mobile is higher than PSTN landline revenue from 2065/66 to till the year 2073/74. The

total revenue of the Nepal Telecommunication is increasing during the study period. Moreover, the contribution margin of Nepal Telecommunication is in increasing during the study period. Likewise, the break-even revenue of NTC is in increasing during the study period. Likewise, the profit/volume ratio of NTC is in fluctuating trend during the study period. However, this ratio is the highest initially and the least in 2068/69. There is high margin of safety. However, this ratio of NTC is in fluctuating trend during the study period. This ratio is the least in the year 2069/70. Likewise, the company has strong net profit margin and also increasing trend of total revenue during the study period. However, there is lack of scientific cost classification techniques of fixed and variable cost, profit planning and control system.

5.2 Conclusions

The total sales revenue of NTC is an increasing trend during the study period. BEP revenue is also increasing during the study period. However, total revenue of Nepal telecom is always greater than BEP in revenue in all the fiscal years. To sum up, Cost-Volume-Profit Analysis is not practiced in Nepal-Telecom and the company has not practiced the scientific method to classify the cost into variable and fixed rather they are done in hunches and as per the decision made by top-level management. From C-V-P analysis, it is found that the company has high contribution margin. Likewise, there is the higher portion of fixed cost than variable cost in both PSTN (landline) and GSM mobile and also in the aggregate level as compared to corresponding variable cost. Likewise, Nepal Telecom has always been running BEP and the profit of the business is being accumulated every year. Likewise, if the management utilizes it's full potential and initiate the effective cost control technique, Nepal Telecom may enjoying further profit in future fiscal years and this would be in favor of an organization.

5.3 Recommendations

The following recommendation has been forwarded on the basis of findings and conclusion.

1. The company does not have any practice of budgeting. To improve the financial condition of NTC, it should develop tactical (short) term and long-term profit planning.
2. Nepal Telecom does not have separate costing department. Hence, the company should establish the separate costing department for the effective costing method.
3. The traditional costing method is done by NTC and the company has no precise distinction and made regarding the nature of cost as fixed and variable cost. Hence, NTC should segregate the total cost into fixed and variable cost in a systematic and scientific manner.
4. NTC is bearing comparatively higher fixed cost basically administrative and operating expenses which is not good for the organization. Therefore, the company should initiate the cost control mechanism in order to reduce it.

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APPENDIX A

Financial Indicator of NTC from FY 2063/64-2073-74 (Rs. in Millions)

Details/ FY	206 3/ 64	206 4/ 65	2065/ 66	2066/ 67	2067/ 68	2068/ 69	2069/ 70	2070/ 71	2071/ 72	2072/ 73	2073/ 74
Sales Revenue :											
PSTN (landline)	666 2	609 9	5516	5114	4871	4921	5153	5261	5209	5063	9031
GSM (Mobile)	384 3	589 0	8938	12998	13300	15127	16472	18468	21106	21906	24898
Total sales revenue	10505	11989	14454	18112	18171	20048	21625	23729	26315	26969	33929
Variable Cost :											
PSTN (landline)	928	114 7	1287	1595	1880	3085	3146	3395	3729	3576	4880
GSM (Mobile)	618	765	858	1063	1253	2057	2097	2263	2486	2384	2677
Total variable cost	1546	1912	2145	2658	3133	5142	5243	5658	6215	5960	7557
Contribution Margin	895 9	100 77	12309	15454	15038	14906	16382	18071	20100	21009	26372
Fixed Cost :											
PSTN (landline)	147 3	177 0	1989	3368	3708	5970	6818	6798	5771	7314	7562
GSM (Mobile)	982	118 0	1326	2245	2472	3980	4545	4532	3847	4876	5328
Total fixed cost	2455	2950	3315	5613	6180	9950	11363	11330	9618	12190	12890
Net Profit	650 4	712 7	8994	9841	8858	4956	5019	6741	10482	13550	15370

Source: Annual Report of NTC 2063/64 -2073/74

<https://www.ntc.net.np/publication/annualreport.php>