CHAPTER-I

INTRODUCTION

1.1 Background of the study

Telecommunication is a system, which facilitates by conveying information quickly over long distance with a cheap cost. It is the most scientific means of transmitting information in modern world. Without telecommunication facility, no organization can achieve its objective. In a developing country like Nepal, the role, importance and contribution of telecommunication for the economic development of country is unavoidable. It has been helping to keep close link with the international environment.

Telecommunication is a basic infrastructure of national development in various ways. Communication plays an important role in the development of industry, trade and commerce, and to achieve national goal and targets. Communication helps to make people sensitive, active, enthusiastic and skillful. It includes all form of electronic transmission of intelligence as telegraphy, telephone, radio, telegraph and television, listed in their chronological order of development, Data transmission between a computing system and remotely located device via an unit that performs the necessary format conversion and control the rate of transmission (Pandey, 1989:25)

All the developed and underdeveloped countries have accepted public enterprises for their socio-economic development. According to World Development Report 1988 "all those state owned enterprises which financially autonomous and legally distinct entities, wholly and partly owned by central or sub-national government are the public enterprises". Nepal has been trying to develop public sector institutions after the advent of democracy in the year 1951. The first enterprise to be turned to public sector was Nepal Bank Limited, established in 1994 B.S. In Nepal the public enterprises are dominant in the production of sugar, cement, cigarettes, agriculture tools etc. Since the

establishment of Nepal Telecommunication Corporation as public enterprises, its responsibility has been to provide reliable and affordable telecommunication service throughout the country. Through its continuous effort to fulfill this responsibility, Nepal Telecom contribution towards the overall socio-economic development of the nation is satisfactory.

For the productive and proper utilization of resources, there must be proper plan and control system. Profit planning and control is used an important tool for same purpose which helps to achieve desire goals and objective according to its plan and control standard. Profit planning and control tool is widely practiced in manufacturing industries but it is relatively new in non-manufacturing/service industries. However this concept is equally applicable to any kind of business concern for the best utilization of the scarce resources and effectively and efficiently achieving organizational goal.

The management is efficient if it is able to accomplish the objectives of the enterprise. It is effective, when it accomplishes the objectives with minimum effort and cost. In order to attain long-range efficiency and effectiveness, management must chart out its course of action in advance. A systematic approach that facilitates effective management performance is a profit planning and control, or budgeting. Hence, profit planning and control represents an overall plan of operations, providing guidelines to management and acting as signal light for the management. It enables the management to correct its policy. Profit planning and control covers a definite periods of time and formulates the planning decision of management.

Cost-volume-profit analysis is one of the most important and powerful tool that a manager has at their command in short term planning. It helps managers for analyzing the relationship among cost, price, profit, sales and production volume. All these terms are interconnected and dependent on one another. It is highly essential for the management to have the complete knowledge about the interrelationship among the cost, volume and profit. A study concerning this inter-connection is studied in the present research in context to Nepal Telecom.

1.2 Introduction of Nepal Telecom

Nepal Doorsanchar Company Limited, popularly known to the general public with its registered trademark name as Nepal Telecom was registered on 2060-10-22 under Company Act 2053. The then Nepal Telecommunication corporation (NTC) was dissolved and all assets liabilities were transferred to Nepal Telecom with effect from 2061-01-01. Nepal Telecom is one of the leading company of Nepal. Authorized capital of Nepal Telecom is Rs.25,000,000,000 divided into 250,000,000 shares of Rs100 each. Issued, subscribed and paid up capital is Rs.15,000,000,000 divided into 150,000,000 shares of Rs100 each. The company, in its top most level, has six members in Board of Directors (BOD) appointed by Ministry of Information and Communication Secretary. Senior management committee is the second in hierarchy which is constituted by Deputy General Manager. The GM works as chief executive of the company who is also a member of BOD. Nepal Telecom is providing nationwide, low cost, reliable and readily available telecommunication services to the general public like PSTN service, Basic telephone service, GSM mobile service, ADSL and internet service, CDMA service, Data service etc. Nepal Telecom's service has reached 3500 VDCs of the country out of which 199 VDCs have not been served by any other telecom operator of the country. It is also the highest tax paying organization since 7 years. Besides this all Nepal Telecom is also fulfilling its corporate social responsibility i.e. it is organizing blood donation program every year, providing 3 digit helpline service number for police, fire brigade, traffic information, ambulance, child rescue etc free of charge, installed free phone inside the airport, provides free telephone enquiry and fault registration facilities through its IVR services, assist the Government in helping the flood hit victim by collecting fund through its SMS service, donating cash etc. Nepal Telecom has received the most coveted Telecom Awards of SAARC in 2065/66 for Nepal for driving the growth in internet and wireless. The company with its long history is on the way of customer service and nation building. (NT, Annual Report, 2066/67)

1.2.1 Historical Background of NT in Nepal

The history of telecommunication development in Nepal is not so long. The first telecom service was established in Nepal during the regime of Chandra Samsher in the year 1972 B.S. It was the first time and good opportunities for Nepalese people to transmit their message from Kathmandu to Birgunj. This telephone line attributed as magneto connected Birgunj with Kathmandu under the name of "Shree Chandra Telephone". However, no remarkable development has been found until another 8 years. After 8 years, new telephone line connecting Kathmandu to Gaur was installed in the year 1980 B.S.

In 1992 B.S. 25 automatic Telephones lines was distributed among the high ranking personalities of Nepal (including Royal Palace) for their own individual uses. The first Telecommunication office was established near Ranipokhari Kathmandu. Further telecommunication lines were made available during the rule of Prime Minister Juddha Shamsher by connecting the Telephones line to the different districts to the extent of 300 miles long. The telephone lines were being extended from Kathmandu to Siraha and Saptari in 1994 B.S. In the year 1998 B.S. additional installation of telephone lines linking Dhankuta, Dharan and Biratnagar were distributed. A noticeable change happened toward telecommunication during the period of Juddha Shamsher. About, 200 miles long telephone lines were also brought in use in the western part of Nepal, and to Pokhara, palpa and Bhairahawa. The government of Nepal felt the need of telecommunication for effective administration and active participation of people to achieve national goal. So 200 local C.B. telephone lines were set up and distributed in Nepal Government offices having the exchange office at Singha Durbar. In the year 2002 B.S before implementation of First Five year plan, Nepal had 200 local C.B lines, 1000 magnet lines, 15 automatic lines, 10 military exchange lines and 600 miles of trunk lines connecting kathmandu with other districts. NT has services, mobile phone services (GSM), Sky phone mobile services, C- phone services, prepaid calling card, internet and intelligent network and so on.

1.2.2 Objectives of Nepal Telecom

"Objective of Nepal Telecom is to provide cost effective telecommunication services to every nook and corner of the country". Besides this the other objectives adopted by Nepal Telecom are as follows.

- To provide nationwide, low cost, quality, reliable and readily available telecommunication services.
- To exchange information for the preparation of fundamentals for development of the nation.
- To establish telecommunication links among the countries in the world.
- To make public participation in telecommunication so as to uplift their living standard.
- To provide prompt services to the places of demand.
- To introduce new technologies and cope up with time and tradition.

1.2.3 Mission Vision and Goal of Nepal Telecom

The Mission of the company is "Nepal Telecom, as a progressive, customer spirited and consumer responsive entity, is committed to provide nation-wide reliable telecommunication services to serve as an impetus to the social, political and economic development of the country."

The Vision of Nepal Telecom is "to remain a market leader in information and communication technology sector in the country while also extending reliable and cost effective services to all."

The Goal of Nepal telecom is "to provide cost effective telecommunication services to every nook and corner of the country" (NT, Annual Report, 2066/67)

1.3 Statement of the Problem

Most of the public enterprises of Nepal are in huge crises. Some of them are liquidated, some are privatized, and some are in the process of privatization. At

present, among public enterprises of Nepal, NT is regarded as one of the few successful corporations. Even so, how long can this prosperity continue? This question is haunting and daunting to every conscious person. The monopoly of NT in telecom sector seems to end continuously. In this competition and complex situation, NT and all its effort and stables should focus more toward customers. Different political movement has victimized NT. Many valuable infrastructures of NT were destroyed during 8-10 years of Maoist in insurgency. In this context, it is necessary to evaluate the CVP analysis of Nepal Telecom. Therefore, the following problems will be addressed by this research:

⟩ What is the relationship between Cost, Volume and Profit of Nepal Telecom?

⟩ Does Nepal Telecom properly adopt the CVP analysis as a tool of profit planning and control?

⟩ Is there a positive correlation between sales and Net Profit?

⟩ Does Nepal Telecom have practiced cost segregation methods?

⟩ What is the impact of Cost, Volume and Profit on performance of Nepal Telecom?

1.4 Objectives of the Study

The main Objective of this study is to analysis and examines the "Cost-Volume-Profit Analysis of Telecommunication Service Provider i.e. Nepal Telecom". The following are the main objectives of the study:

⟩ To analyze the sales plan and practice of Nepal Telecom.

⟩ To presents the cost classification practice of Nepal Telecom.

⟩ To assess the relationship of CVP analysis and its applicability.

⟩ To analyze the profitability of Nepal Telecom.

⟩ To provide the relevant suggestions, recommendations and practical ideas for better performing to the Nepal Telecom.

1.5 Significance of the Study

The present research work is the study of the practice of cost-volume-profit analysis in Nepal Telecom. This study will be significant in the following ways

- It analyzes the nature of cost incurred by Nepal Telecom.

- It examines the application of cost-volume-profit analysis in the company.

- This study is also directed towards providing necessary recommendation to the related department of the company.

- This study will be useful for potential managers, decision makers, entrepreneur, planners etc. as it deals with the application of CVP analysis as a tool of profit planning and control in service organization.

- It provides literature review to the researcher who wants to carry further research on similar topic.

1.6 Limitation of the Study

This study covers the CVP analysis as a tool of PPC of Nepal Telecom. The limitations of this dissertation study are:

- The study covers the data of last five years from FY 2062/63 to FY 2066/67

- Analysis is concentrated in some managerial, financial and accounting aspects and it does not cover the other areas of enterprise.

- The comprehensibility and the accuracy of the study are based on the true response and the data available from the management of Nepal Telecom.

- The study is mostly based on the secondary data and as per need discussion and interviews with the staffs of Nepal Telecom.

1.7 Organization of the Study

This research work has been divided into five chapters as shown below:

Chapter I: Introduction

The first chapter introduction deals with the subject matter of the study. This chapter consists of background of the study, introduction of organization, statement of the problem, objective of the study, significance of the study limitation of the study and organization of the study itself.

Chapter II: Review of Literature

The second chapter incorporates review of theoretical and related literature regarding the subject matter. Many writers and researchers have given their ideas about the related topic.

Chapter III: Research Methodology

This chapter explains about the research methodology used for evaluating and analysis of data. This includes research design, nature and sources of data, population and sample, research variables, different statistical and financial tools used in the study.

Chapter IV: Presentation and Analysis of Data

This chapter deals with the major part of the study in which all collected relevant data are analyzed and interpreted by the help of different financial and statistical tool. This chapter also explains the major findings of the study.

Chapter V: Summary, Conclusion and Recommendation

This chapter is suggestive to all concern in accordance of analysis and interpretation of data. It deals with Summary and Conclusions of the study and recommendations regarding to the subject matter.

CHAPTER-II
CONCEPTUAL FRAMEWORK AND REVIEW OF LITERATURE

2.1 Conceptual Framework

2.1.1 Concept of Profit Planning and Control

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

The management is efficient if it is able to accomplish the objectives of the enterprise. It is effective, when it accomplishes the objectives with minimum effort and cost. In order to attain long-range efficiency and effectiveness, management must chart out its course of action in advance. A systematic approach that facilitates effective management performance is a profit planning and control, or budgeting. Budgeting is therefore an integral part of management. In a way, a budgetary control system has been describe as historical combination of a goal-setting machine for increasing an enterprises profit, and goal-achieving machine for facilitating organization co-ordination and planning while achieving and budget targets.

Profit is an ultimate goal of every business house. They involve in a business for making profit. Profit cannot be achieved easily. It should be manage well with managerial skills. So profit is the planned and control output of management. By element, profit is the difference of revenue, and cost. Profit plan, thus, refers to the planning of revenue (i.e. increase the revenues), and planning of cost (i.e. increase the efficiency of cost.)

Comprehensive profit planning and control is a new term in the literature of business. Though it is a new term, it is not a new concept in management. The

other terms, which can be used in same context, are comprehensive budgeting, managerial budgeting, and simply budgeting. The profit planning and control can be defined as a process of a management that enhances the efficiency of management.

Some definition given by various scholars are: (Ojha.et.al.2008:2)

⟩ According to Glenn A. Welsch "Comprehensive profit planning and control is a systematic and formalized approach for accomplishing the planning, co-ordination and control responsibilities of management."

⟩ According to R.M.Lync and R.W.Williamson "The concept of a comprehensive budget covers its use in planning, organizing and controlling all the financial and operating activities of the firm in the forth coming period."

⟩ According to I.M.Pandey "A profit plan or budget is the formal expression of the enterprises plans and objectives stated in financial terms for a specified future period of time."

Profit planning and control involves:

1. Development and application of broad and long range objective for enterprises.
2. Specification of goals.
3. Development of strategic long range profit plans.
4. Specification of a tactical short range profit plans detail by assigned responsibilities.
5. Development a system of periodic performance reports details by assigned responsibilities.
6. Control system.
7. Follow up procedure.

Hence, profit planning and control represents an overall plan of operations, providing guidelines to management and acting as signal light for the

management. It enables the management to correct its policy. Profit planning and control coves a definite periods of time and formulates the planning decision of management. It consists of three main budget (Ojha.et.al.2008:1-2)

） Operational Budget: Budget related with revenue and expenses, such as sales budget, production budget, purchase budget etc.

） Financial Budget: Budget related with financial statements, such as: Balance sheet, Income statement, etc.

） Appropriation Budget: Budget related with advertising and publicity expenditure, research. etc

2.1.2 Role of Profit Planning and Control

An effective budgeting system is vital to the success and survival of a business firm. Without a fully coordinated budgeting system, management cannot know the direction the business is taking out. Organizations that do not plan are likely to wonder aimlessly and ultimately succumb to the swirl of current events. Other benefits of budgeting or profit planning and control are (Ojha,et.al. 2008:2-3).

） Basic policies developed as the pre-requisite of profit planning and control show direction to the business.

） It provides definite goals and objectives that serve as a benchmark for evaluating subsequent performance.

） It compels and motivates management to make an early and timely study of its problems. It generates a sense of caution and case, and adequate study among managers before they make decisions.

） Profit planning and control co-ordinates the activities of the entire organization by integrating the plans and objective of the various parts. By doing so, it ensures that the plans and objectives of those parts are consistent with the broad goals of the entire organization.

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- It compels management to plan for the most economical use of labour, material and capital.
- It pinpoints efficiency and inefficiency.
- It uncovers subsequent bottlenecks before they occur.
- It reduces costs by increasing the span of control because fewer supervisors are needed.
- It provides a valuable means of controlling income and expenditure of a business, as it is a 'plan for spending'.
- It reveals weakness, inefficiencies and deviations in the organization very promptly which can be checked immediately to achieve a desired goal.
- It develops the attitude of cost consciousness, stimulates the effective use of resources, and creates an environment of profit conscious throughout the organization. It emphasizes how much should be spent to achieve a goal.
- As decentralization of responsibility is a feature of profit planning, each manager works critically in his own areas of responsibility. Profit planning thus fixes the responsibility center for manger.
- Well organized profit planning and control programmes enable the management to maintain a levels of profits, which will ensure the existence of the business and the fulfillment of management responsibilities.

2.1.3 Cost Volume Profit Analysis

The relationship between cost volume and profit is shown by Cost-volume-profit-analysis. It is an analytical tool for analyzing the relationship among cost, price, profit, sales and production volume. Mainly there are three elements in cost-volume-profit analysis. They are cost, sales or production volume and profit. ALL these terms are interconnected and dependent on one another. For instance profit per unit of a product depends on its selling price

and cost of sales. The selling price to a greater extent will depend upon the cost depends upon the volume of production.

It is highly essential for the management to have the complete knowledge about the interrelationship among the, volume and profit. A study concerning this inter-connection is undertaken through cost-volume-profit analysis. Cost-volume-profit analysis is extremely helpful in profit planning and control, management decision, cost control, budgeting etc.

Cost-volume-profit analysis can be regarded as a sophisticated method or analytical tool used in management. The uses of this method help in determining the different levels of products or sales to avoid losses, to earn a desired net profit and so on. The cost-volume-profit relationship also helps management to find out right solution for following question:

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

In this way, CVP analysis is a tool of management accounting to show the relationship between components of profit planning. Here, cost refers to variable and fixed cost. The volume refers to sales or production unit and profit refers to the difference between sales volume and cost (Dangol, et.al.2065:160)

2.1.4 Purpose of CVP Analysis

Cost volume profit analysis helps management in a number of ways. The following purposes are served by it (Dangol, et.al.2008:160)

- Calculation of profit resulting from a budgeted sales volume.
- Calculation of sales volume to break-even.
- Calculation of sales volume to produce desired profit.
- Effect of changes on price, costs and profits.
- Determination of new break-even point for changes in cost and selling price.
- Measurement of effect of changes in profit factors.
- Choosing the most profitable alternatives.
- Determining the optimum sales mix.
- Determination of capacity and equipment selection.
- Long term Decision on continuance or discontinuance of products.
- Make or buy decisions on sub-assemble or part.
- To contemplate the increase or decrease in profits due to the change in method of production, etc.

2.1.5 Assumptions of Cost-Volume-Profit Analysis

The analysis of cost volume and profit is based on the following assumptions:

- All cost can be classified into fixed and variable component.
- The selling price remains unchanged irrespective of the volume of sales.
- The per unit variable cost and the fixed costs always remain the same.
- There is no change in production capacity and skill or capacity of the workers.
- In case of multi-product companies the sales mix remains the same.
- There is no difference between the production and sales volume. It means there is no existence of opening and closing stock.

2.1.6 Application of CVP Analysis in Profit Planning and Control

Cost-volume-profit analysis is an important tool for profit planning. It has been defined as a managerial tool showing the relationship among cost selling price,

profit and volume of capacity. CVP analysis can be applied in the following respects (Dangol, et.al.2008:160)

- ∫ It helps in fixation of selling price.
- ∫ It is helpful in cost control.
- ∫ It helps to maintain the desire profit.
- ∫ It also assists the management in understanding the behaviors of cost and helps in budgetary control.
- ∫ It helps in determining the level of output where all the costs can be met.
- ∫ It assists the management in profit planning.
- ∫ It also assists the management in performance evaluation for the purpose of management control.
- ∫ It helps to measure the effect on profit due to the change in selling price.
- ∫ It helps very much in making managerial decisions such as make or buy a part, drop or continue a department or product line, accept or reject a special order, selection of a profitable product mix etc.

2.1.7 Special Problems in Cost-Volume-Profit Analysis

Cost-volume-profit analysis is applied to individual products or parts of a business and all the products or activities combined. In the latter case, three special problems can be encountered which are as follows (Welsch, et.al. 1999: 513-518)

2.1.7.1 The Activity Base

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

2.1.7.2 Inventory change

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

a) Disregard the inventory changes.
b) Include the inventory changes.

2.1.7.3 The Non-operating Incomes and Expenses

Non-operating income and expenses and extra ordinary gains and losses, if material in amount, cause another problem in CVP analysis. The basic issue is whether they should be included or excluded in CVP analysis. Extra-ordinary gains and losses are non-recurring and unusual; therefore, they should be excluded. Non-operating incomes and expenses are recurring but they are not related to ongoing operations. Management policy may be:

a) Include the non-operating incomes and expenses.
b) Exclude the non-operating incomes and expenses.

2.1.8 Approaches to Cost-Volume-Profit Analysis

The CVP relationships can be analyzed through different approaches, which are:

1. Contribution margin approach.
2. Formula (Equation) approach.
3. The graphic (Break-even chart) approach.

2.1.8.1 Contribution Margin Approach

Contribution margin is the difference between sales revenue and variable cost. In other words, it is the balance available to realize profit after recovering fixed expenses. The higher contribution margin is the indicator of sound profitability position.

The contribution margin income approach to cost volume profit analysis allows the preparation of pro-forma (projected) statements from the available information. BEP and other required CVP relationship can be explained through a contribution margin statement. A contribution margin statement is the variable costing income statement whose philosophy is all fixed cost are period cost that should be deducted from the contribution margin of the same period. Only the variable costs vary proportionally to the level of output or sales. The contribution margin is calculated in the following way (Bajracharya, et.al.2008: 203-204)

Total contribution margin (TCM) = Total Sales revenue – Total Variable Cost

TCM= Fixed cost ⎰ Profit/Loss

CMPU = SPPU - VCPU

The ratio between the contribution margin and sales is called contribution margin ratio. Higher contribution margin results in higher profit and vice versa. It can be increased by increasing the selling price per unit, decreasing the variable cost per unit, switching the production to more profitable products etc. It is calculate as follows:

$$\text{CM ratio on the basis of total} = \frac{\text{Total Contribution Margin}}{\text{Total Sales}}$$

$$\text{CM ratio on the basis of per unit} = \frac{\text{Contribution Margin Per Unit}}{\text{Selling Price Per Unit}}$$

If sales, cost, and profit at 2 different periods is given with constant Fixed Cost

$$\text{CM ratio} = \frac{\text{Difference in Profit}}{\text{Difference in Sales}}$$

2.1.8.2 Formula Approach

The most popularly used approach to the break-even point and cost volume profit analysis is the formula, also known as the equation. It is particularly because the equation provides the most general and the easiest to remember-approach to any cost-volume-profit situation. The formula approach uses an algebraic equation to calculate the break-even point. The answers provided by solving the equation may sometimes, need to be rounded to whole numbers of units or lot sizes. The rounding of break even points is always done upward because this will provide a small profit rather than the small loss that would be shown from rounding downward (Bajracharya, et.al.2008: 204-205)

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, see the following justification;

Contribution Margin Approach	Symbol or Equation
Sales Volume (Units)	Q
Selling Price Per Units	P
Sales Revenue (Rs.)	Q | P
Less, Variable Costs	Q | VCPU
Contribution Margin	Q | P – Q | VCPU
Less, Fixed Costs	FC
Net Profit	Q | P – Q | VCPU - FC

Sales = FC + VC $_+$ Profit

The equation can be simplified by using symbols as;

Q x P = Q x VCPU + FC + Profit

Solving the equation, we get,

$$\text{Sales unit (Q)} = \frac{FC + Profit}{CMPU} \qquad \text{Sales revenue (Rs)} = \frac{FC + Profit}{CM\,ratio}$$

2.1.8.3 The Graphic Approach to CVP Analysis

A break-even chart is used to graphically depict the relationship among revenues, variable cost, fixed costs and profit (or losses). The no profit/no loss point (the break-even point) is located at the point where the total cost and total revenue lines cross. Below this point, the firm losses, and above this point, the firm earns profit (Bajracharya, P. et.al. 2008: 202-203)

Figure 2.1

Graphical Approach to CVP Analysis

In the given figure, the fixed costs remain constant in any level of output, so it is parallel to X-axis. Variable cost slope upward from the origin to right but the slope depends on variable cost ratio. The total costs increases with the increase in volume. It includes fixed cost as well as variable cost. Hence, it is started from the point of intersection of fixed cost curve and X-axis and slopping upward to right side. The sales curve is originated from the origin 'o'. It is because the revenue will be zero, if sale is zero. An equilibrium point between revenue curve and total cost curve is known as Break-even-point. OS is the break-even sales volume and Q is the break-even point. If the actual sales volume is more than break-even sales, the business will earn profit and if it is less than break-even sales, the business will earn losses. To sum up, break-even-point is that point where, Total sales revenue = Total costs.

2.1.9 Break-Even Analysis

Break-even point is the volume of sales where there is no profit or no loss. In other words, the volume of sales in which the total cost equals the total revenue is called the break-even point. It is the bridge between the loss area and profit area. Profit begins from the break-even point. It is the survival point where all the firms must at least remain to sustain or continue the business. It is computed as follows:

$$\text{BEP in unit} = \frac{\text{FC}}{\text{CMPU}} \qquad\qquad \text{BEP in Rs} = \frac{\text{FC}}{\text{CM Ratio}}$$

$$\text{BE Ratio} = \frac{\text{Break-even sales}}{\text{Total sales}}$$

2.1.9.1 Application of Break-Even Analysis

The break-even analysis is very useful in the area of managerial decision making. It is extremely a valuable technique with management. Some of the important uses of break-even analysis are summarized below (Dangol, et.al.2008:170-171)

- Determination of 'no-profit no loss' sales volume.
- Calculation of sales volume to earn desire profit.
- Determination of selling price per unit for earning a desired profit.
- Calculation of sales volume to meet proposed expenditure.
- Impact of change in costs on profit.
- Determination of margin of safety.
- Calculation of sales volume required to offset price reduction.
- Determination of the optimum sales mix
- To help the management in decision making e.g. make or buy a part, accept or reject a special order, pricing of the product, drop or continue a product line etc.

2.1.9.2 Assumptions of Break-Even Analysis

Contribution analysis and break-even analysis are based on a specific set of assumptions that should be clearly understood. These underlying assumptions are (Dangol, et.al.2008:172-173)

- All cost can be classified into two parts, fixed cost and variable cost. There is no cost other than fixed and variable.
- There is a relevant range of validity (activity) for using the results of the analysis and sales price does not change as units of sales change.
- There is only one product or in case of multiple products, the sales mix among the products remain constant.
- Basic management policy about operation will not change materially in short run.
- The general price level (inflation/deflation) will remain essentially constant or zero.
- Efficiency and productivity per person will remains essentially unchanged in the short run.

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

2.1.9.3 Limitations of Break-Even Analysis

Break-even analysis in many business situations can be used for effective decision-making, but there are many shortcomings or limitations in its analysis and interpretations. Some of these can be listed as (Dangol, et.al.2008:172-173)

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

2.1.9.4 Cash Break Even Point

Break-even-point which is determined excluding non-cash expenses such as deprecation and amortized expenses from the fixed cost is considered as cash break-even-point. So,

$$\text{Cash BEP (unit)} = \frac{\text{FC - Non cash expenses included in fixed cost}}{\text{CMPU}}$$

$$\text{Cash BEP (Rs)} = \frac{\text{FC - Non cash expenses included in fixed cost}}{\text{CM ratio}}$$

2.1.10 Managerial uses of CVP Analysis

Planning, controlling and decision making are the essential managerial function. CVP analysis helps the manager to plan for profit, to control cost and make decision. It is necessary to describe in greater details about its usefulness to management.

2.1.10.1 Management plan further operations with CVP Analysis

Profit does not just happen they must be managed and planned. By estimating the selling price, variable cost, fixed cost and sales volume management can estimate profit. The estimated profit can be examined by estimating selling price, variable cost, fixed cost and sales volume. If management believe if profit is too low or too high, then CVP analysis can be used to determine the likely effect of changes it may wish to make in any of the variables. CVP analysis can be used as a starting point and as a quick and easy way to determine the likely effects of management policy changes.

2.1.10.2 Management uses CVP Analysis to analyze performance

Management should determine the reason for difference between budgeted and actual result. CVP analysis can make an important contribution in planning, organizing and controlling. It provides a framework for planning future operation and means for determining the likely effect of various ways of organizing those operations.CVP can be used to control current operation by comparing actual result with planned result.

2.1.10.3 Determination of Selling Price

Selling price has most sensitive effects in demand, profit and break even. A selling price of a product covers all costs plus a required margin. Normally business firm have a goal of charging certain percent of profit margin of selling price. The profit margin and selling price depend on many factors including the nature of item, competition and the required return on investment.

2.1.10.4 Management uses CVP Analysis to know the safety of business

The higher the margin of safety the safety is the business and lowers the margin of safety the risky is the business. So margin of safety analysis is possible through cost volume profit analysis.

2.1.10.5 Profit pick up in incremental sales

Up to break-even-point, the company earns nothing i.e. profit begins only after the break-even-point. Each unit sold beyond the break-even-point contributes towards profit. Therefore, each unit sold beyond break-even-point gives profit equal to contribution margin per unit.

2.1.11 Cost-Volume-Profit Analysis for a Multi-Product Firm

Sales mix can be defined as the relative combination of two or more products represented in total. It is not only the sales revenue that makes profit. The proportion of the sales contributed by different products generally changes the amount of profit. Managers try to achieve that combination or mix that will yield the greatest amount of profit. If a company sell more than one product, these may not be equally profitable. So the company's profit will depend upon the ratio of each product's sales to total sales revenue. Profit will be greater if high margin item make up a relatively large proportion of total sales than if sales consist mostly of low margin items. Changes in sales can cause great variations in a company's profit. A shift to low margin items can cause the total profit to decrease even though total sales increase. In the contrary, a shift in the sales mix from low margin item to high margin items can cause the reverse effect i.e. total profit may increase even though total sales decrease (Bajracharya, et. al.2008: 226-227).

2.1.12 Break-Even Point for Multi-Product or Sales mix

In multi-product firm, BEP is calculated in aggregate. The sales mix is used to compute a weighted average unit contribution. This is the average of the

several product unit contribution margin weighted by the relative sales proportion of each product. The following procedures are followed to calculate BEP for sales mix of multi-product (Dangol, et.al. 2008: 189)

For determination of break-even units:

Step 1:	To find out sales mix ratio in units.
Step 2:	To find out unit contribution margin for each product.
Step 3:	To multiply the sales mix ratio and unit contribution margin of each product separately.
Step 4:	To find out weighted average contribution margin by adding products of step 3
Step 5:	To find out overall break-even units by using following formula: $$\text{Overall Break-even point} = \frac{\text{Fixed Cost}}{\text{Weighted Average Contribution Margin}}$$

For determination of break-even in terms of Rs:

Step 1:	To find out sales mix ratio in sales amount.
Step 2:	To find out contribution margin ratio of each product.
Step 3:	To multiply the sales mix ratio and contribution margin ratio of each product separately.
Step 4:	To find out Overall contribution margin ratio by adding the products of step 3
Step 5:	To find out overall break-even point in Rs by using following formula. $$\text{Overall Break-even point} = \frac{\text{Fixed Cost}}{\text{Overall Contribution Margin Ratio}}$$

$$\text{Sales Mix} = \frac{\text{Individual Products' Sales Units or Value}}{\text{Total of all Product's Sales Units or Value}}$$

2.1.13 Method of Segregating Mixed or Semi variable Cost

CVP analysis requires the segregation of all semi-variable costs into variable and fixed cost. To segregate semi variable cost into fixed cost and variable cost is necessary because with this, we can add fixed cost proportion in total fixed cost and variable cost proportion in total variable cost. So, with following method, we can carry out this.

2.1.13.1 High Points and Low Points Method

Under this method, we calculate total sale and total cost at highest level of production. Then we calculate total sale and total cost at lowest level of production. Because, semi variable cost have both variable and fixed cost. We first calculate variable rate with following formula:

$$\text{Variable cost per unit (b)} = = \frac{\text{High Cost - Low Cost}}{\text{High Output - Low Output}}$$

This rate shows variable cost of sale value. By using this rate, we also calculate variable cost of sale at highest level. Now, same variable cost will be deducted from total cost at the highest level of production. Reminder will be fixed cost.

Fixed cost (a) = Total Mixed cost - variable cost per unit x Output in units

2.1.13.2 Graphical Method

Under this method, we draw the graphic line of semi variable cost by taking output on 'x' axis and total semi variable cost at 'y' axis. After this, we do judgment and select a point where will be our fixed cost in semi variable cost. After this, we draw the line of best fit. This line shows the fixed cost which will not be changed after changing output.

2.1.13.3 Analytical Method

Under this method, cost accountant does some analysis for dividing semi variable cost into fixed cost and variable cost. After this, he calculates fixed cost on that rate which analyzed. Suppose, a cost accountant says that in the total semi variable cost, there may be 30% fixed cost and 70% variable cost. Now, total semi variable cost will be divided on this basis. If production level will increase, variable cost's proportion will increase with same rate. But fixed cost will not change.

2.1.13.4 Level of Activity Method

According to this method, the output at two different level is compared with corresponding level of expenses. Since fixed cost remain constant, the variable overheads are arrived at by the ratio of change in expenses to change in output Variable cost will be calculated as below

$$\text{Variable cost} = \frac{\text{Change in cost}}{\text{Change in production volume}}$$

2.1.13.5 Least Square Method (Regression Analysis)

Regression Analysis determines the nature and strength of relationship between two variables. It is a statistical tool for estimating mathematical relationship between dependent variable(y) and independent variable(x). With the help of it, unknown value of one variable can be estimated on the basis of known value of other variable.

This is a statistical technique used to segregation of semi variable cost. It can be used for medium term forecasting by applying regression equation which seek to establish the line of "best fit" to the observed data. Regression model is shown below:

$Y = a + bx$

Where, Y = Dependent variable (Total cost)

a = Intercept coefficient, estimated fixed cost

b = Slope coefficient, estimated Variable cost per unit

x = Independent variable, level of activity (output)

Least square estimate of regression coefficient "b" and intercept coefficient "a" can be obtained by using the following formulas:

Variable Cost per unit, $b = = \dfrac{n\ xy - x\ y}{n\ x2 - (\ x)2}$

Fixed cost $= \dfrac{Y}{n} Zb \dfrac{X}{n}$

2.1.14 Economic Characteristics of Cost-Volume-Profit Analysis

Where cost-volume-profit analyses are reasonably accurate, they can help management decision-making. Essentially, CVP analysis offers greater insight into the economic characteristics of a company and may be used to determine the approximate effect of various alternatives. CVP analysis is based on estimates, however, the arithmetical manipulations generally involve average, and hence the results should never be interpreted as precise. Rather, the analysis many be characterized approximately as a 'slide-rule' approach that may used to develop and test, with a minimum of effort, the approximate effect on costs and profits of several types of management decisions (Welsch, et.al.1999: 467-468)

Figure 2.2

Economic Characteristics of Cost-Volume-Profit Analysis

Above break-even chart with economic characteristic indicates few of the economic characteristics of a business, which are (Welsch, et.al.1999: 468)

⟩ Fixed costs, variable costs and total costs at varying volumes.

⟩ The profit and loss potential, before and after income taxes, at varying volumes.

⟩ The margin of safety-the relationship of budget-volume to break-even volume.

⟩ The break-even point.

⟩ The preferred dividend or danger point-the point below, which preferred dividends are not, earned.

⟩ The dead point-the point where management earns only the 'going' rate on the investment.

⟩ The common dividend or unhealthy point-the point below which earnings are insufficient to pay the preferred dividends and the expected dividend on the common stock.

All these points, and as others, can be computed if data are developed for cost-volume-profit purposes.

2.1.15 Cost-Volume-Profit Analysis with Limiting Factors

CVP analysis is helpful in profit planning and a company will be able to produce any number of outputs, number of outputs of its choice (desires). But in real word it is not possible, because of some critical factors like finishing machine or raw material or labour. These critical factors in the CVP analysis are known as constraint.

2.1.15.1 CVP Analysis with Single Constraint

Scarce resource should be efficiently allocated in order to maximize the contribution margin particular simple and instructive situation arises when there is only one constraining resource. This can occur if the firm's products are all produced on a single machine and output is limited by hours available on this machine. In the same way single resource constraint arise, if the firm's products are all produced with only one material and output is limited by quantity available for that material. When there is a constraint for a scarce resource to have alternative uses, the contribution per unit should be calculated for each of these uses. Then, the available capacity for such resource should be

allocated to the alternative uses on the basis of contribution per scarce resource (Munakarmi, S.P.2003: 146)

2.1.15.2 CVP Analysis with Multiple Constraints

Where more than one scarce resource exists, the optimum production program cannot be established by simple process supplied in single resource constraint. Under the circumstances simple allocation of resource or the basis of contribution margin per units is neither feasible nor desirable. Contribution margin per unit of scarce resources may be different scarce resources may be the ranking of product; because production processes are affected by many constraints factors rather than single constraint. In such situation, Linear Programming technique may be used to optimize product mix. The linear programming formulation is required to determine a production plan that maximizes contribution for the product mix. Linear Programming is a mathematical technique, which shows how to arrive at the optimum results, allocation of available resources in a meaningful manner. It is basically concerned with the problem of allocating limit resources among competitive activities in an optimal manner. It is a technique to optimize the allocation of scarce resources in product mix problems which provides a valuable extension to cost-volume-profit analysis (Munankarmi, S.P.2003:148)

2.1.16 Risk Measurement: Operating Leverage

Operating leverage is a measure of the extent to which fixed costs are being used in organization. The relationship if company's variable and fixed cost is reflected in its operating leverage. Generally highly labour intensive organizations have high variable costs and low fixed costs and this has low operating leverage and relatively low break-even point. Conversely, organizations that are highly capital intensive have a cost structure that includes low variable and high fixed costs, which reflects high operating leverage with high break-even point. It shows that fixed costs and operating leverage has direct relationship. Higher the amount of fixed costs higher the

operating leverage and break-even point and vice versa. In other words, the firm with relatively high operating leverage has proportionally high fixed expenses and the firm's break-even point will be relatively high. The operating leverage factor is determined as under (Munankarmi, S.P.2003:145)

$$\text{Degree of Operating Leverage} = \frac{\text{Contribution Margin}}{\text{Net Income}}$$

2.1.17 Sensitivity Analysis

Sensitivity Analysis is the measurement of elasticity of the change in cost, volume and profit factors or 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 cost–volume profit 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 variable. We know that the goal of a business enterprise is to maximize profit. Profit is the excess of revenues over the total costs.

Net Profit= Total sales revenues =Total costs

= Sales Unit | SPPU – Sales Units | VCPU – Fixed Cost - Taxes

So that, Profit= F (Sales Volume, Selling Price, VC, FC, Taxes etc)

Means, Profit are the function, Price, VC, FC, taxes and so on.

But none of the factors remain unchanged; sometimes the manager can intentionally change the price and cost as a part of strategic decisions. But the strategy should focus more on the factor, which is more sensitive or responsive for profit. Therefore, to measure the sensitivity of cost-volume-profit factors, we can see the impact of certain percentage or amount change in volume, price or cost factors on net profit (Bajracharya, et.al.2008)

2.2 Review of the Related studies

2.2.1 Review of Books

In this section the review of books published by different management expert relating to Cost-Volume-Profit analysis were made.

Drury, C (1989) Cost volume profit analysis is concerned with examining the relationship between changes in volume and changes in total revenue and costs in short term. Drury has compared the economist and accountant models of Cost volume profit behavior. The major differences are that the total cost and total revenue functions are curvilinear in the economist model whereas the accountant's model assumes linear relationship. However we have noted that the accountant's model was intended to predict Cost volume profit behavior only within the relevant range, where a firm is likely to be operating on constant returns to sale. A comparison of the two models suggested that, within the relevant production range the total cost and total revenue functions are fairly similar.

Welsch, et.al. (1999) Cost volume profit analysis includes the elated concepts of (a) contribution margin and (b) 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 rest upon the concept of cost variability (i.e. flexible or variable expenses budgets). Contribution analysis involves a series of analytical technique to determine and evaluate the effects on profit of changes in sales volume, sales price, fixed expenses and variable expenses. Basically, it applies the concept of contribution margin, income statement: Revenue minus variable expenses equals contribution margin and contribution margin minus fixed expenses equals profit. Break-even-analysis focuses on the break-even-point i.e. the point at which profit is zero because sales revenue is equal to total cost. The result of break-even-analysis is usually graphed to show

the relationship between sales revenue, fixed expenses and variable expenses within a relevant range of sales volume.

Koirala, et.al. (2067) The study of the interrelationship of cost, sales and net income is usually called cost volume profit analysis. Cost volume profit analysis examines the response of profit to changes in volume. It relies on linear cost analysis and on linear revenue assumptions. To gain understanding of cost volume profit analysis the common example of a firm which produces only single product will be used. The analysis will be expanded to cover firms with several products by multiple divisions.

Munakarmi, Shiva P. (2003) Cost volume profit analysis is the process of examining the relationship among revenue, cost and profit for a relevant range of activity and for a particular period. It is one of the most important and powerful tool that a manager have at their command in short term planning. It helps managers to understand the interrelationship between cost, volume and profit in an organization by focusing interaction between the following five elements (a) price of product (b) volume of activity (c) variable cost (d) fixed cost and (e) sales mix. Cost volume profit analysis seeks to estimate the profit or loss at different activity level. The aim of CVP analysis is to have a fair estimate of (a) Total cost (b) Total revenue and (c) Profit at various sales volumes. Cost volume profit analysis provides management with a comprehensive overview of the effect on revenue and cost of all kind of short run financial charges. It is related to profit, sales volume and costs.

Dangol, et.al. (2008) Cost volume profit analysis consists essentially in examining the relationship between changes in volume (output) and changes in profit. The scope of cost volume profit analysis ranges from the determination of the optimal output level of a single product department to the determination of the optimal mix of large multi product firm. All these decision rely on the simple relationship between changes in revenue and costs and changes in output level (mixes). Output should be expanded or the output mix should be altered if the incremental revenue resulting from the change exceeds the

incremental costs of making the change. Thus, all cost, volume and profit amount is characterized by their emphasis on cost and revenue behavior over various ranges of output level and mixes.

2.2. 2 Review of Thesis

A number of studies have been done by students of MBS, relating to Cost volume profit analysis in Nepal. This section is focused to review some of those dissertations.

Adhikari, Bijaya (2004) has done the research on *"Profit Planning in Manufacturing enterprises, a case study of DDC".* The following are the objectives of the study:

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

The following are the major findings:

- DDC has practice short term planning rather than long term planning; the time is covered by interim period any by product.
- Production and sales of DDC is increasing annually although the growth rate is fluctuated, the correlation between actual and targeted sales is positive.
- The corporation has no proper practice in segregating cost into fixed and variables.
- DDC has applied stable inventory policy with opening stock of inventory but this policy is not applied in practices. It has 1% store losses and 0.5% distribution losses of milk.

- There is positive correlation between target actual productions of milk
- DDC has prepared direct labour budget only based on technical and administration; it is not prepared according to the time and rate.
- Capacity utilization is very high but production ratio is very low.
- The CVP analysis shows that DDC is operating below the break-even point and flexible budget of DDC shows 90% variable cost of sales revenue.
- DDC has lack of budgeting experts, skilled planners and entrepreneurship. Planning department has no adequate authority to decide and create new ideas to formulate various plans.
- Most of the budget figures are higher than actual sales.
- DDC utilized corporate fund as long-term loan and from international agencies like US aid.
- DDC has not clear attainable objectives, policies and strategies, timely accounting and auditing work are not maintained, financial statements accounting are out of the financial rules.
- The present management doesn't have any program of perfect profit planning.

Bhandhari, Sujan (2006) has presented a dissertation on the topic *"Cost Volume Profit Analysis of Nepal Telecom"*. The main objective of this thesis is to determine the relationship between cost volume and profit of Nepal Telecom. The following are the objectives of the study:

- To analyze the sales and profit and loss of Nepal telecom.
- To study the relationship between cost volume and profit of Nepal telecom.
- To analyze the impact of Cost volume profit on performance of Nepal telecom.
- To provide suggestion for the betterment of the organization.

The following are the major findings:

- Sales plan of Nepal Telecom is not properly maintained. The industry uses the various methods for sales planning like market survey, distribution network etc but up to date proper record are not maintained. So they have poor budgeting system.

- Out of the total cost of Nepal telecom, variable cost is around 17.25% in every year, which causes high contribution margin.

- The profitability of the company is satisfactory. Every year the company success to generating the profit and up to the fiscal year 2062/63 the company is able to maintain the reserve and surplus of Rs. 5825855017.

- Nepal telecom is utilizing only 50% of its capacity. Therefore there is high possibility to increase their profit in near future.

- Since the service produced by Nepal telecom has poor quality but due to lack of substitute quality service provider, the company is able to generate profit.

- As the DOL is low which indicate the company is at low risk. If the sales revenue decreases it will affect on its profit by minimum amount and vice-versa.

- The financial position of the company is satisfactory.

Karn, Sujit K. (2008) has presented a dissertation on the topic of *"Profit Planning Mechanism of Nepal Telecom"*. The main objective of the study is to examine the present comprehensive profit planning mechanism applied by NT. The following are the objectives of the study:

- To analyze the financial position of Nepal Telecom.
- To analyze the target and actual budget of Nepal Telecom.
- To assess the strength and weakness of Nepal Telecom.
- To provide necessary suggestion and recommendation wherever necessary based on finding.

The following are the major findings:

Budgets are prepared on the basis of historical data. But Nepal Telecom actual sales are less than budgeted sale during the study period. It shows inefficiency of management in planning.

) The Karl Pearson's co-efficient of correlation between GDP and sales volume (r) is found to be 0.99 which implies that there exist a high degree of positive correlation between GDP and sales volume. This means the two variable moves in the same direction i.e. if GDP increases than sales volume also increases and vice-versa.

) The interest coverage ratio is 1764.53 times which implies that the firm is able to pay interest on borrowed capital.

) The calculation show that the average Return on equity ratio of NT for past 5 year period is around 13.7 percent which indicate that the equity holders of NT earned Rs13.7 on return of their investment of Rs100 over the last 5 year period.

) The average debtor turnover ratio of NT for past 5 years is 2.82 times which indicates the shorter time lag between credit sales and cash collection.

) The average Net profit margin of NT for past 5 years is 38.36 percent which is higher than the general standard average of at least 25 percent for this line of business. The ratio seems to be stable during study period. The overall ratio trend shows a small swing in either direction of ratio within the range of 37.6% to 40.20% over the five year period.

Shrestha, Achyut (2009) has conducted a research on the topic *"CVP Analysis of a Nepal Aushadhi Limited"*. The main objective of the study was to examine the use of CVP Analysis to plan the profit in NAL. The following are the objectives of the study:

) To analyze the different components of cost as per cost behavior.

- ⟩ To study the application of CVP Analysis in NAL
- ⟩ To evaluate the sensitivity of profitability.
- ⟩ To analyze the CVP and impact in profitability of NAL.
- ⟩ To study the profitability and financial position of NAL
- ⟩ To provide suggestion and recommendation on the basis of major finding.

The following are the major findings:

- ⟩ Sales trend of NAL shows the negative trend which can further increase the net loss.
- ⟩ Break-even sales were more than actual sales. The industry was suffering from huge loss every year.
- ⟩ MOS of NAL is negative in every year. The industry might be bearing high risk.
- ⟩ Out of total cost of NAL variable cost is 97.30%, 98.58%, 85.29%, 99.49% and 99.16% for the fiscal year 2059/60 to 2063/64 respectively.
- ⟩ The company has low contribution margin i.e. it is difficult to recover fixed cost.
- ⟩ The profitability of the industry is very poor. Every year the industry is suffering from loss and which is accumulated to Rs.230, 376, 418 unto fiscal year2063/64.

Panday, Khagandra (2010) has carried out a research work on topic *"Effectiveness of sales planning in Nepal Telecom"*. The basic objective of this study is to analyze the present sales budgeting and planning system of NT, review the relationship of sales plan with other and evaluate the effectiveness of such plan followed by NT. The following are the objectives of the study:

- ⟩ To analyze the existing sales planning system of Nepal Telecom with seasonal demand.
- ⟩ To study the relationship between sales plan with other expenses.

- To analyze the relationship between sales and profit.
- To analyze break-even-point of NT.
- To provide suitable suggestion and recommendation on the basis of study.

The following are the major findings:

- NT has the practice of preparing short-range sales budget but long-range sales budget is not prepared in details. Also there is a system of keeping Management Information System Report in this company.
- The total actual sales units of NT are in increasing trend. Actual sales revenue is always higher than target except FY 2062/63.
- The actual sales units of PSTN telephone service of NT is fluctuating every year.
- There is a high degree of positive correlation of total sales units, but low degree of positive correlation of PSTN telephone service.
- The regression equation and straight line of trend shows increasing trend of overall sales.
- Profitability ratios i.e. Net profit ratio, operating profit ratio shows better performance of Nepal Telecom in generating profits from sales.
- Debtor turnover ratio and average collection period of NT are not good which indicates the inefficiency in collection of credit sales on time.
- As the degree of operating leverage is low, which indicates the company is at low risk. If the sales revenue decreases it will effect on profit by minimum amount and vice-versa.
- The CVP analysis of NT shows the break-even-point is satisfactory.
- The installed capacity has not been fully utilized in NT. If the installed capacity is utilized fully, the operating expenses will go down.
- Current asset turnover ratio, Fixed asset turnover ratio and Total asset turnover ratio of NT are also low, which indicates the inefficiency of management in utilization of current asset, fixed asset and total asset.

Mainali, G.P (2010) has submitted the thesis on the topic *'CVP Analysis as a tool of a profit planning and control'*, a case study of salt trading co-operation ltd. The following are the objectives of the study:

-) To analyze the impact of cost volume profit and performance of STLC.
-) To provide the suggestion for the betterment of the selected organization.
-) To study the relationship of cost volume and profit
-) To analysis the cost and profit and loss of STCL

The following are the major findings:

-) The company sold different products among them agricultural material and machine equipment on total sales found nominal. But other products made highest contribution total sales.
-) Expenses on salt Trading Corporation Limited are fluctuated variable cost as well as fixed cost increased or decreased during the period. It has no details of systematic expanses plan.
-) From the correlation analysis, it is found that there is a high degree of positive correlation between sales and net profit changes in sales made changes in profit but change is not in same ratio.
-) This corporation has no lower BEP ratio. Lower BEP indicates strength position of the corporation, therefore the condition of the corporation is not so good taking the reference of the BEP ratio.
-) The higher percentage of ratio indicates that the company is in strong profitability position.
-) Contribution Margin of the corporation is not stable and satisfactory.
-) The profit trend of the company is not satisfactory as compare to profit; proportion is very low with fluctuating trend.
-) Financial position of the company is not so good.Net profit Margin, profitability ratio and other things are not satisfactory.

2.3 Research Gap

There is a significant gap between present research work and the previous research works. There are hundreds of researches which are conducted mainly on profit planning and control of public enterprise of Nepal focusing on the overall aspect of the profit planning but could not deal on specific tools like cost-volume-profit analysis. This is the age of specialization and not that of generalization. It is realized that specific tools become more effective than overall tools as a whole. These were the main weaknesses of earlier studies. To overcome these weaknesses the researcher is intended whole-heartedly to conduct this research. For this purpose, the researcher will examine the current practice of cost volume profit analysis in the Nepal Telecom. There are few thesis on the topic but they do not seem to consider all the relevant data of the organizations as they are difficult to understand and deal with. A similar thesis on the topic was conducted by a TU student Sujan Bhandhari taking into account the data until the fiscal year 2062/63. There has been a long time gap between the study and the present situation which has been addressed by this research. This research would definitely pave the way for further research on CVP Analysis of service sector.

CHAPTER-III
RESEARCH METHODOLOGY

3.1 Concept of Research Methodology

Research methodology is a way to systematically solve the research problem. In another words research methodology refers to the various sequential steps to be adopted by a researcher in studying a problem with certain objective in view. 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. A research methodology helps us to find out accuracy, validity and suitability. Research is a systematic inquiry of any particular topic and methodology is the method of doing research in a well manner. 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 Telecom. The research methodology includes research design, nature and sources of data, research variable and tools used.

3.2 Research Design

Research design is highlighted for ascertaining the basic objectives of the study. Research design includes definite procedures and techniques which guide in sufficient way for analyzing and evaluating the study. Research design is a plan structure and strategy of investigation conceived so as to obtain answer to research questions and to control variances (Kothari, 1984:43). This study is carried out by using both quantitative and qualitative analysis methods. Mostly the secondary data has been used for analysis, but the discussion and personal interview with the concerned employees of Nepal Telecom are also used for qualitative analysis. Hence in the present study, descriptive as well as analytical research design has been followed. Attempts have been made to explore CVP analysis of Nepal Telecom.

3.3 Nature and sources of Data

The data used in this study are secondary as they are collected from concerned authorities. For any research work, information is considered as the lifeblood. Thus it is the major task to gather the information and data. To fulfill the objectives of the study secondary data have been used.

Secondary data have been taken mainly from the following sources.

-) Published and unpublished documents and annual reports of Nepal Telecom.
-) Journals, government and non-government publication.
-) Other supportive book from central library of Tribhuvan University, NTC library and websites (www.ntc.net.np).
-) Textbooks on the relevant issues.

Besides this, observation, discussion and personal interview of the staffs of Nepal Telecom were also taken as per the need of the study.

3.4 Population and Sample

The total present number of public enterprises in Nepal was the population of this study. However, due to various constraints of mine like time, resources, etc., only one representative public enterprise is selected for my research works i.e. Nepal Telecom. This study covered last five years period of NT from the fiscal year 2062/63 to 2066/67.

3.5 Data Analysis Tool

The data collected from different sources are to be recorded systematically and identified. The available information is grouped as per the need of research work in order to meet research objective. The collected data are presented in appropriate forms of table and charts. For analysis purpose different kinds of financial as well as statistical tools have been applied which are time series,

mean, correlation, regression, graphs, BEP chart, bar diagram etc. Similarly the accounting tools have been used as per the necessity of the analysis such as contribution margin, breakeven point, margin of safety, sensitivity analysis etc.

3.6 Period Covered

For making the research work reliable and fruitful the research mark has been covered the five years data from trend analysis and one year for the analysis of cost, volume variables and related aspects. The collected data have been covered the period of FY 2062/63 to 2066/67.

3.7 Research Variables

In this research work, focus has been given to cost-volume-profit matter of Nepal telecom. Mainly the overall cost structure, sales volumes and profit of the organization focused variables in this study.

3.8 Research Procedure

The research procedure includes the following steps for the study.

) Collection of various books and other publication relevant for the study.

) Assimilation of useful secondary data.

) Description and analysis of collect data in lights of theoretical basis.

) Tabulation and presentation of data through tables, charts, graphs etc.

) Analysis of data by using approved financial and statistical tools.

) Extraction of valuable conclusion and recommendation.

CHAPTER – IV

PRESENTATION AND ANALYSIS OF DATA

4.1 Sales Plan of Nepal Telecom

The sales planning process is an essential part of profit plan and control because it provides for the basic management decisions about marketing and based on those decisions it is an organized approach for developing comprehensive profit plan. If sales plan is not realistic and relevant, most if not all of the other parts of overall profit plan are also not realistic. Therefore, a sales plan should be realistic. Nepal Telecom does not have detail sales plan to promote its product and services as well as long range and short run. It has not properly maintained the annual sales budget. Since the company does not plan sales therefore actual sales value has been analyzed. Actual sales value means the total monetary value realized by rendering the service in the given financial year of the company. Here actual sales are that part of revenue which is realized by the operating activities of the company. The following table shows the actual sales revenue collected by Nepal Telecom for the period of five year.

Table 4.1

Nepal Telecom Sales Revenue

Fiscal Year	Sales Revenue in Rs. '000'	Percentage change
2061/62	8,584,144.00	-
2062/63	10,413,655.00	21.31
2063/64	13,524,368.00	29.87
2064/65	16,624,213.00	22.92
2065/66	20,646,629.00	24.20
2066/67	25,058,304.00	21.37

Source: NT, Annual Report, 2066/67

From the above table, it provides the clear information that sales revenue of Nepal Telecom is fluctuating. There are various reasons, which cause the variation on sales revenue. The significance factors responsible for the variation in sales revenue are demand conditions of product, emerging technology, political conflict, entrance of new competitors etc. Apart from the above mentioned causes there are other national and international reasons such as economic activities, security problem directly or indirectly cause the fluctuation in sales revenue. In recent years sales revenue collected by rendering the telecommunication services to his customer is satisfactory because of the peace problems of the country.

In the fiscal year 2063/64 the total sales revenue collected by the company by launching services is Rs 13,524,368,000, which is 29.87 percentage greater than the sales revenue realized in fiscal year 2062/63. Similarly in the fiscal year 2064/65, the total revenue collected by the company is Rs. 16,624,213,000, which is 22.92 percentage greater than the sales revenue realized in the fiscal year 2063/64. The sales revenue collected in fiscal year 2064/65 is Rs.16,624,213 which is Rs. 3,099,845 more than the fiscal year 2063/64 however, the sales increases than the previous year in decreasing rate which is not satisfactory for the company. As mentioned in the above table, the sales revenue collected in fiscal year 2065/66 increases than the fiscal year 2064/65 by 24.20 percentage i.e. Rs.4,022,416 more than the fiscal year 2064/65 . In the fiscal year 2066/67 sales revenue collected by the company is Rs. 25,058,304,000 which is 21.37 percentages greater than the fiscal year 2065/66. The increase in revenue is possible in the FY 2066/67 because of the expansion of company's product, expansion of market, better and quality product, adoption of new technology, peaceful environment, few competitors and good management team.

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

Figure 4.1

Graphical Presentation of Sales Revenue

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

y = a + bx

Where, x = (X - $\overline{X}$)

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

dy = na + bdx .... (i)

dxy = adx + bdx^2 .... (ii)

Table 4.2

Time Series Analysis Fitting Straight Line Trend by Least Square Method

Fiscal Year	Actual Sales (y) in Rs'000'	$x=X-a$	xy	x^2
2062/63	10,413,655	-2	-20,827,310	4
2063/64	13,524,368	-1	-13,524,368	1
2064/65	16,624,213	0	0	0
2065/66	20,646,629	1	20,646,629	1
2066/67	25,058,304	2	50,116,608	4
Total	dy=86,267,169	dx=0	dxy= 36,411,559	dx^2=10

Source: NT, Annual Report, 2066/67

a = Assumed Mean = 3

Putting the values in the equations i, we get,

86,267,169 = 5a + b*0

a = 17,253,433.8

Putting the values in the equation ii, we get,

36,411,559 = a*0 + 10*b

b = 3,641,155.9

Therefore, a = 17,253,433.8 and b = 3,641,155.9

Thus, y = 17,253,433.8 + (3,641,155.9) x, is the trend line of sales figure which shows the positive sales revenue in the future.

By using this trend equation we can estimate the actual sales, for the year 2067/68. For the estimation of the sales of the year 2067/68 (using FY 2064/65 as base year).

y = 17,253,433.8 + (3,641,155.9) x 3

 = 28,176,901.5

Therefore, if the trend does not change, the possible sales for the year 2067/68 will be Rs 28,176,901,500

The presentation of the above sales figure with the trend will be more effective by the following graph.

Figure 4.2

Graphical Presentation of

Sales Trend by Time Series Analysis of Sales Revenue

4.2 Cost plan of Nepal Telecom

4.2.1 Cost of Sales

The costs which are related with production include employees cost, operation and maintenance cost, depreciation of machinery etc.

4.2.2 Administrative Cost

These costs is related to management and include TADA, printing and stationary, bank charges, telephone expenses, legal and other professional fees, training expenses, statutory audit and tax audit fee, insurance, advertisement, membership fee, office furnishing, hospitality expenses, postage, security expenses, donation etc.

4.2.3 Other Cost

These costs include interest on loan, license fee, deferred expenses written off, royalty, interest on subscriber deposit, bonus, staff incentive provision, profit/loss on foreign currency etc.

Each of the above mentioned costs includes variable and fixed costs. As per the nature and information provided by senior staffs and as per my knowledge the costs are classified into two categories: variable and fixed costs. The company does not have any particular method or technique to classify the costs into variable and fixed. Therefore, the costs that are classified for our purpose are purely based on judgmental approach.

4.3 Variable Cost Analysis of Nepal Telecom

Variable costs are those cost which varies in direct proportion to change in output or activities level, but per unit cost is constant for a certain period, generally for a financial year. An increase in volume means a proportionate increase in the total variable costs and vice versa. There is a linear relationship between volume and variable costs. The company's

variable cost per unit is varying in different year according to Nepal Telecom cost detail sheet. The detail schedule of variable costs is presented as below:

Table 4.3

Variable Cost Analysis of Nepal Telecom (in Rs '000')

Particular	2062/63	2063/64	2064/65	2065/66	2066/67
1. Cost of Sales					
i. Operation and Maintenance					
Power heating and lightning	196091	237506	311753	451338	524294
Fuel for vehicles	39156	50242	52195	63610	66670
Maintenance of vehicle	20702	24934	29528	34343	44393
Freight and carriages	5176	13446	6600	10811	11516
Cash card cost	0	0	44030	85989	198754
Total	261125	326128	444106	646091	845627
ii. Employee Cost					
Uniform allowance	257016	321162	42861	44573	47174
Overtime allowance	12994	12385	17889	22855	24996
Other allowance	0	0	371317	387623	586901
Leave encashment	65980	71726	87041	243405	48673
Total	335990	405273	519108	698456	707744
Total (i + ii)	597115	731401	963214	1344547	1553371
Percentage change	-	22.49%	31.69%	39.59%	15.53%
2. Administrative Cost					

Travelling expenses	36442	60907	71521	92627	91581
Meeting fee	8460	21232	26741	18832	25886
Printing and stationery	73197	79631	61386	36480	56347
Bank charge	3658	3597	6104	7672	4786
Training expenses	10198	23729	74739	104115	144230
Trade Commission	22690	11615	7364	7940	1956
Postage	1704	1850	1728	1764	1529
Book and periodicals	1961	2575	3474	3715	3237
Expenses on loss of goods	14671	75211	0	0	0
Cost of auctioned goods	0	0	5999	0	26568
Devaluation of equipment under installation	0	0	10360	0	0
Provision for doubtful debts	0	200365	148618	821	0
Provision for doubtful advances	0	0	324	43661	0
Telephone expenses	56409	60721	84516	134707	133097
Provision against suppliers claim	0	0	0	6070	0
Miscellaneous expenses	13105	24090	19076	33404	25463
Total	242495	565523	521950	491808	514680
Percentage change	-	133.21%	-7.70%	-5.77%	4.65%
3.Other cost					

Interest on subscriber's deposit	63937	67142	83003	48065	48665
Exchange loss/(gain)	-280005	526031	2675	-496235	195195
staff bonus provision	195349	240543	256559	301192	347605
Staff bonus incentive	126691	243866	349391	458967	484751
Total	105972	1077582	691628	311989	1076216
Percentage change	-	916.85%	-35.82%	-54.89%	244.95%
Total Variable Cost	945582	2374506	2176792	2148344	3144267
Percentage change in variable cost	-	151.12%	-8.33%	-1.31%	46.36%

Source: NT, Annual Report, 2066/67

As per the table above the variable cost of sales includes operation and maintenance cost and employee cost. In the fiscal year 2063/64 the variable cost of sales increases by 22.49 percent than the financial year2062/63. It also increases by 31.69 percent and 39.59 percent in the year 2064/65 and 2065/66 respectively. similarly in the fiscal year 2066/67 variable cost of sales increases by 15.53 percent as compared to FY 2065/66 and reached Rs.1553371

Administrative cost has been increased at fluctuating rate in different years. In the FY 2063/64 it is increased by 133.21 percent than the FY 2062/63. Than in the FY 2064/65 and 2065/66 it has been declined by 7.70 and 5.77 percent as compared to previous fiscal years costs respectively. But in the FY 2066/67 administrative cost increases by 4.65 percent as compared to the FY 2065/66.

Other costs are also in fluctuating condition. In the FY 2063/64 it is increased by 916.85 percent than the FY 2062/63, it is because in this year company suffers huge loss on foreign exchange. Than in the FY 2064/65 and 2065/66 other costs declined by 35.82 and 54.89 percentage as compared to previous fiscal years costs respectively. Again in the FY 2066/67 the other costs were Rs.1076216 which increases by 244.95 percent as compared to the FY 2065/66.

In totality, total variable cost includes cost of sales, administrative cost and other cost. In the FY 2063/64 the total variable costs was Rs.2374506 which increases by 151.12 percent as compared to the FY 2062/63. But in the financial year 2064/65 and 2065/66 increasing trend has stopped and it has declined by 8.33 and 1.31 percent respectively as compared to previous year costs. However in the FY 2066/67 it is increased by 46.36 percent and the total variable cost has reached Rs.3144267.

4.4: Fixed Cost Analysis of Nepal Telecom

Fixed costs are the costs, which remain constant in total despite the changes in the level of activity within a fiscal year (within relevant range). As the level of production increase fixed cost per unit decreases, it is because same cost will be dispersed in more production units. But fixed costs in total vary from different fiscal year because of internal and external factors of the company. The fixed cost of Nepal Telecom is presented in the table below:

Table 4.4

Fixed Cost Analysis of Nepal Telecom (in Rs '000')

Particular	2062/63	2063/64	2064/65	2065/66	2066/67
1. Cost of Sales					
i. Operation and Maintenance					

Maintenance-Office equipment	13641	16263	18154	18834	29493
Maintenance-Building	24181	30062	36773	41986	45045
Maintenance-Plants/Machinery	184585	226179	467285	246726	389772
International channel rent	171592	198762	296710	591302	692651
Inquiry service expenses	0	0	8706	10688	12593
Value added service expenses	0	0	5963	22714	55682
Total	393999	471266	833591	932250	1225236
ii. Employee Cost					
Salaries and wages	485635	485871	608314	748645	878081
PF contribution	36594	37493	52653	66552	75579
Medical expenses	65199	65800	87019	109925	188718
Pension and Gratuity	241389	286083	331238	1196470	764666
Total	828817	875247	1079224	2121592	1907044
iii. Depreciation	1195081	1366504	1486129	1681293	4455464
Total (i+ii+iii)	2417897	2713017	3398944	4735135	7587744
Percentage change		12.21%	25.28%	39.31%	60.24%
2. Administrative Cost					
Rates and taxes	49850	74002	28078	36126	29689
Rent of land and buildings	0	0	75832	114516	140893
Advertisement	23583	29463	39429	41127	69916
Hospitality expenses	5363	4360	5412	7094	10179

Office furnishing	2820	4023	4269	5893	7908
Insurance	43382	39639	120327	68590	133316
Statutory audit and tax audit fees	1804	2529	534	626	750
Audit committee fee and expenses	0	0	899	1040	1299
Legal and professional fee	3155	3706	4329	1135	1379
Security expenses	60166	17977	27400	41686	57501
Membership fee	1038	2690	1948	1254	2712
Anniversary and shareholder's meeting	9154	17481	19862	27172	34106
Donation	0	0	2500	2500	105
Total	200315	195870	330819	348759	489753
Percentage change		-2.22%	68.90%	5.42%	40.43%
3. Other Cost					
Royalty	394538	540974	671534	819299	1002332
contribution to RTDF	197269	270487	335767	409649	501166
Interest on loan	1107	0	10303	0	0
License fee	40455	58374	37839	41079	54637
Deferred expenses written off	0	0	33322	0	0
Enlistment and annual fee	0	0	22500	11300	50
Total	633369	869835	1111265	1281327	1558185
Percentage change		37.33%	27.76%	15.30%	21.61%

Total Fixed Cost(1+2+3)	3251581	3778722	4841028	6365221	9635682
Percentage change in Fixed Cost		16.21%	28.11%	31.48%	51.38%

Source: Annual Report of NT, 2009

The Fixed cost of sales includes operation and maintenance cost, employee cost and depreciation. As per the table above, it becomes clear that the fixed cost of sales is continuously increasing in increasing trend. It is increase in the FY 2063/64 by 12.21 percent as compared to previous year. Similarly, in the FY 2064/65 it has been increased by 25.28 percent as compared to financial year 2063/64. Again in the financial year 2065/66 and 2066/67 it has been increased by 39.31 percent and 60.24 percent respectively as compared to previous year.

Administrative cost has been increased at fluctuating rate in different years. In the FY 2063/64, administrative cost decreases by 2.22 percent than the FY 2062/63. Than in the FY 2064/65 the administrative cost is Rs.330819 which is 68.90 percent more than previous fiscal year. But in the FY 2065/66 it increases at a diminishing rate i.e. by 5.42 percent as compared to previous year cost. Again in the FY 2066/67 it increases by 40.43 percent and reached Rs.489753 from Rs.348759.

The other cost relating to the company in the FY 2063/64, 2064/65, 2065/66 is increasing in diminishing rate i.e. by 37.33%, 27.76% and 15.30% respectively as compared to the previous year costs. But in the FY 2066/67 it increases at an increasing rate i.e. by 21.61 percent than the FY 2065/66.

The total fixed cost includes cost of sales, administrative cost and other costs. The total fixed cost is Rs.3251581 in the FY 2062/63. In the financial years 2063/64 it has increased by 16.21 percent and reached to Rs.3778722. Similarly the total fixed cost increases at an increasing rate in the next three year by 28.11%, 31.48% and 51.38% respectively as compared to the

previous year cost. Finally in the FY 2066/67 the total fixed cost amounts to Rs.9635682 which is 51.38 percent more than the previous FY 2065/66 cost.

Figure 4.3

Graphical Presentation of Fixed cost and variable cost

4.5 Semi-Variable Cost Analysis

The costs which are neither perfectly variable nor absolutely fixed in relation to changes in volume are called semi-variable cost. Neither total amount nor per unit cost of semi-variable cost remains constant. On going through the interview with company's senior officers, they have the practice of separating semi-variable costs into fixed and variable but no particular method of segregation has been used except the judgmental basis. Therefore, the above mentioned costs were classified into variable and fixed as per the suggestion and details given by the senior staffs of the Nepal Telecom.

4.6 Profitability Analysis of Nepal Telecom

Since the profit is the major element of each and every organization for survival, further development and to fulfill corporate social responsibility. In modern business efficiency and effectiveness of any business organization are measured on the basis of profit. Hence, profitability is an important yardstick of a company's success. The long term survival of a company depends on income earned by it. Moreover a firm should earn sufficient profit on each rupee of sales to meet the operating expenses and to avail returns to the owners. But profit is not a matter of chance it should be properly managed with better managerial skills. so profit is the planned and controlled output of management.

The company is able to generate the profit for last five years of operation. For the relevant analysis of the profitability of the company we have also analyzed gross profit as well as Net profit of the Nepal Telecom. Gross profit is the amount left after deducting cost of sales from total sales revenue. The Net profit of the company has been determined after deducting operating expenses, adding non-operating income and deducting tax.

Table 4.5

Showing Gross Profit and Net Profit After Tax in Rs'000'

Fiscal Year	Gross Profit	Net Profit After Tax
2062/63	7398643	4936647
2063/64	10079950	5652688
2064/65	12262055	7778755
2065/66	14566947	10178025
2066/67	15917189	10775154

Source: Appendix-2

The performance of Nepal telecom has remained satisfactory despite the economic difficulties, acute power shortage, intense competition and inflation prevailing in the country. It is because of good management team, expansion of company product and services, efficient utilization of resources, sufficient reserve for future investment. Profitability of a business concern can be measured in two ways:

  I.   Profitability in Relation to Sales

 II.   Profitability in Relation to Investment

4.6.1 Profitability in Relation to Sales

A firm should be able to earn the profit sufficiently from each unit sold. If sales do not generate sufficient profit it would be very difficult for the firm to cover operating expenses and interest charges and as a result, will fail to earn any profit for owners. Therefore the following ratios can be ascertained considering the sales as a basis:

4.6.1.1 Gross Profit Ratio

This ratio measures the relationship between gross profit and net sales and is usually expressed in percentage. The main objective of computing this ratio is to determine the efficiency with which production, purchase and selling operation are carried on. A high gross profit margin signifies a good management due to low cost of production. It also shows higher selling price without a corresponding increase in cost of goods sold. A low gross profit margin is dangerous and requires a careful analysis of the factors of production. It is calculated by dividing gross profit by net sales as follows:

Gross Profit Ratio $= \dfrac{\text{Gross Profit}}{\text{Sales}} \mid 100\%$

Table 4.6

Showing Gross Profit Ratio

	Fiscal Year				
Particulars	2062/63	2063/64	2064/65	2065/66	2066/67
Gross profit	7398643	10079950	12262055	14566947	15917189
Sales	10413655	13524368	16624213	20646629	25058304
GPR	71.05%	74.53%	73.76%	70.55%	63.52%

Source: Appendix-2

Gross Profit Margin Ratio (For the FY 2066/67) $= \dfrac{15917189}{25058304} \mid 100\%$

$$= 63.52\%$$

The above gross profit margin represents the satisfactory profit margin, which can be assumed as sound management of the organization.

4.6.1.2 Net Profit Ratio

This ratio shows the relationship between net profit and net sales. The main objective of computing this ratio is to determine the overall profitability of a firm. It reflects the cost price effectiveness of the operation. A higher ratio ensures adequate return to the owner and enables the firm to face adverse conditions arising from declining selling price, rising cost of production and decreasing demand. This ratio is computed by dividing net profit after tax by net sales and expressed as percentage of net sales.

Net Profit Margin Ratio $= \dfrac{\text{Net Profit After Tax}}{\text{Sales}} \mid 100\%$

Table 4.7

Showing Net Profit Ratio

62

Particulars	Fiscal Year				
	2062/63	2063/64	2064/65	2065/66	2066/67
Net Profit After Tax	4936647	5652688	7778755	10178025	10775154
Sales	10413655	13524368	16624213	20646629	25058304
NPR	47.41%	41.80%	46.79%	49.30%	43.00%

Source: Appendix-2

Net Profit Margin Ratio (For the FY 2066/67) = $\dfrac{10775154}{25058304} \mid 100\%$ **43.00%**

The above table shows high Net profit margin in different fiscal years. A higher NPR indicates higher overall efficiency of the business and better utilization of total resources. The highest Net profit margin ratio is 49.30% in FY 2065/66 and lowest ratio is 41.80% in FY 2063/64. In FY 2066/67 Net Profit Ratio indicates that one rupees increase in sales helps to further increase profit by Rs. 0.43.

4.6.1.3 Operating Ratio

This ratio shows the relation between operating expenses and sales value. The information about the cost structure can be obtained from this ratio. The ratio is computed as shown below;

Operating Ratio = $\dfrac{\text{Operating Expenses}}{\text{Sales}} \mid 100\%$

Operating expenses = Cost of goods sold + Administrative expenses + Selling

and distribution cost

Table 4.8

Showing Operating Ratio

Particulars	Fiscal Year				
	2062/63	2063/64	2064/65	2065/66	2066/67
Operating expenses	4197163	6153228	7017820	8513565	12779949
Sales	10413655	13524368	16624213	20646629	25058304
Operating Ratio	40.30%	45.50%	42.21%	41.23%	51.00%

Source: (Appendix-3 Table-1)

Table 4.8 shows operating expenses, net sales and operating ratio of Nepal Telecom. Operating expenses and net sales both of Nepal Telecom are increasing. Operating ratio of Nepal Telecom is in fluctuating trend. It is increasing in FY 2063/64 and FY 2066/67 and decreasing in FY 2064/65 and 2065/66. The highest operating ratio is 51% in FY 2066/67 and the lowest operating ratio is 40.48% in FY 2062/63 which indicates higher operating profit.

Figure 4.4

Graphical Presentation of GPM, NPM and OR

4.6.2 Profitability in relation to Investment

The profitability of the firm can also be measured with investment respectively. On the basis of investment, the different types of ratios are:

4.6.2.1 Return on Assets

It is also called return on investment. This ratio establishes relationship between net profit and total asset or investments. The objective of measuring this ratio is to find out profitability of the total assets.

Return on Asset $= \dfrac{\text{Net Profit After Tax}}{\text{Total Asset}} \mid 100\%$

NPAT = Gross profit – Operating expenses – Tax

Total asset = Current asset + Tangible fixed assets + Intangible fixed assets

Table 4.9

Showing Return on Asset

65

Particulars	Fiscal Year				
	2062/63	2063/64	2064/65	2065/66	2066/67
Net Profit After Tax	4936647	5652688	7778755	10178025	10775154
Total Asset	39351406	43661115	50194187	58686689	66165710
ROA	12.55%	12.95%	15.50%	17.34%	16.29%

Source: Appendix-2

Table 4.9 shows NPAT, total assets and return on total assets ratio. NPAT and total assets both are increasing during the study period. ROA ratio is increasing till FY 2065/66 but in FY 2066/67 the ratio slightly decreases. Highest return on total assets ratio is 17.34% in FY 2065/66 and lowest ratio is 12.55% in FY 2062/63. Higher ROA indicates efficiency of the management in utilization of total asset.

4.6.2.2 Return on Shareholder's Equity

This ratio shows the relationship between net profit after tax and shareholder's fund. The objective of computing this ratio is to find out how efficiently the funds supplied by the equity shareholder's have been used. The return on shareholder's equity is calculated as net profit after taxes by shareholder's equity multiply by hundred i.e.

Return on Shareholder's equity = $\dfrac{\text{Net Profit After Tax}}{\text{Shareholder's Equity}} \mid 100\%$

Shareholder's equity = Share capital + Reserve and surplus - Fictitious asset

Shareholder's equity = Net fixed asset + Investment + Current asset – current liability – Long-term debt

Table 4.10

66

Showing Return on Shareholder's Equity

Particulars	Fiscal Year				
	2062/63	2063/64	2064/65	2065/66	2066/67
Net Profit After Tax	4936647	5652688	7778755	10178025	10775154
Shareholder's Equity	23686027	26794281	35179747	41629022	47149599
ROSE	20.84%	21.10%	22.11%	24.45%	22.85%

Source: (Appendix-3 Table-2)

Table 4.10 shows NPAT, shareholder's equity and Return on shareholder's equity. NPAT and shareholder's equity both of Nepal Telecom is increasing during the study period. The ratio is inconsistent. The highest ratio is 24.45% in FY2065/66 and the lowest ratio is 20.84% in FY2062/63. Thus, higher the ratio, the more efficient the management and utilization of shareholder's funds.

4.6.2.3 Return on Capital Employed

A relation between net profit and capital employed is known as Return on Capital Employed. It is computed to find out how efficiently the capital has been employed. It is computed as shown below:

$$\text{Return on Capital Employed} = \frac{\text{Net Profit After Tax}}{\text{Capital Employed}} \mid 100\%$$

NPAT = Gross profit – Operating expenses – Tax

Capital Employed = Shareholder's fund + Long-term fund

Shareholder's fund = Share capital + Reserve and surplus - Fictitious asset

Table 4.11

Showing Return on Capital Employed

Particulars	Fiscal Year				
	2062/63	2063/64	2064/65	2065/66	2066/67
Net Profit After Tax	4936647	5652688	7778755	10178025	10775154
Capital Employed	23686027	27985961	38675473	46280627	52504646
ROCE	20.84%	20.20%	20.11%	21.99%	20.52%

Source: (Appendix-4)

Table 4.11 shows Net profit after tax, capital employed and Return on capital employed of Nepal Telecom. NPAT and capital employed both are increasing. The ratio calculated above fluctuates by a negligible figure. The highest ROCE ratio is 21.99% in FY 2065/66 and the lowest ROCE ratio is 20.11% in FY 2063/64.

Figure 4.5

Graphical Presentation of ROA, ROSE and ROCE Ratio

4.7 Cost-Volume-Profit Analysis of Nepal Telecom

Cost volume profit 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, variable cost and units sold. The entire scope of profit planning is associated with CVP interrelationship. CVP analysis is the technique that explores the relationship, which exists between costs, revenue, output level and relating profit. Cost-volume-profit analysis can be extended to cover the effects on profit due to changes in selling prices or service fees, cost, income tax rate and product mix. The aim of CVP analysis is to have a fair estimate of total cost, total revenue and profit at various sales volumes. CVP analysis is powerful and helpful tool for managerial decision making, cost control and profit planning in various situations. CVP analysis helps to determine the minimum sales volume to avoid losses and sales volume at which the profit goal of the company will be maximized. And this analysis is possible when the management has information about variable cost, fixed cost and selling price of the product or sales revenue.

Table 4.12

Showing Income Statement for Five Years in Rs '000'

Year / Particular	2062/63	2063/64	2064/65	2065/66	2066/67
Sales Revenue	10413655	13524368	16624213	20646629	25058304
Less: Variable cost	945582	2374506	2176792	2148344	3144267
Contribution Margin	9468073	11149862	14447421	18498285	21914037
Less: Fixed cost	3251581	3778722	4841028	6365221	9635682
Net Profit	6216492	7371140	9606393	12133064	12278355

Source: NT, Annual Report, 2066/67

The table 4.12 shows the summary sheet of NTC, which clearly shows the income generation by the company during above mentioned year and profit earning also. As the table shown above, the company is able to earn 6216492 million rupees in the FY 2062/63 and Rs. 7371140 million, Rs. 9606393 million, Rs. 12133064 million and Rs. 12278355 million in the FY 2063/64, 2064/65, 2065/66 and 2066/67 respectively.

4.8 Analysis of Contribution Margin, BEP and Margin of Safety

4.8.1 Contribution Margin

Contribution margin is the difference between sales revenue and variable cost. In other words, it is the balance available to realize profit after recovering fixed expenses. The higher contribution margin is the indicator of sound profitability position. A firm suffers from losses when the contribution margin is lesser than the fixed cost. Thus contribution margin analysis is useful to measure the profit earning capacity of an organization. The contribution margin is calculated in the following way:

TCM = Total sales revenue - Total Variable cost

TCM = Fixed cost 〈 Profit/Loss

CMPU = SPPU - VCPU

4.8.1.1 Contribution Margin (CM) Ratio or Profit Volume (PV) Ratio

The ratio between the contribution margin and sales is called contribution margin ratio. Higher contribution margin results in higher profit and vice versa. It can be increased by increasing the selling price per unit, decreasing the variable cost per unit, switching the production to more profitable products etc. It is calculate as follows:

$$\text{⟩ CM ratio on the basis of total} = \frac{\text{Total Contribution Margin}}{\text{Total Sales}}$$

$$\text{⟩ CM ratio on the basis of per unit} = \frac{\text{Contribution Margin Per Unit}}{\text{Selling Price Per Unit}}$$

Table 4.13

Contribution Margin Analysis

Particulars	Years				
	2062/63	2063/64	2064/65	2065/66	2066/67
Sales Revenue	10413655	13524368	16624213	20646629	25058304
Less: Variable cost	945582	2374506	2176792	2148344	3144267
Contribution Margin	9468073	11149862	14447421	18498285	21914037
$\text{CMR} = \dfrac{\text{TCM}}{\text{TS}}$	90.92%	82.44%	86.91%	89.59%	87.45%

Source: NT, Annual Report, 2066/67

The contribution margin ratio of Nepal Telecom is high which indicates sound profitability position of the company. The contribution margin ratio is 0.87 in the FY 2066/67.

4.8.2 Break-Even Analysis

Break-even point is the volume of sales where there is no profit or no loss. In other words, the volume of sales in which the total cost equals the total revenue is called the break-even point. It is the bridge between the loss area and profit area. Profit begins from the break-even point. It is the

survival point where all the firms must at least remain to sustain or continue the business. It is computed as follows:

BEP in unit = $\dfrac{FC}{CMPU}$ BEP in Rs = $\dfrac{FC}{CM\,Ratio}$

BE Ratio = $\dfrac{Breakeven\ sales}{Total\ sales}$

Table 4.14

Break-Even-Point Analysis in Rs '000'

Particulars	Years				
	2062/63	2063/64	2064/65	2065/66	2066/67
Fixed cost	3251581	3778722	4841028	6365221	9635682
CMR	90.92%	82.44%	86.91%	89.59%	87.45%
BEP(RS)	3576309	4583602	5570162	7104834	11018504
BE Ratio	34.34%	33.89%	33.51%	34.41%	43.97%

Source: NT, Annual Report, 2066/67

The ratio between the break even sales and actual sales is called the break even ratio. It provides information about how much percentage of total sales is utilized to meet the total cost. In the table above the BE Ratio of Nepal Telecom are 34.34 percent, 33.89 percent , 33.51 percent , 34.41 percent and 43.97 percent in the FY 2062/63, 2063/64, 2064/65, 2065/66 and2066/67 respectively. The higher break-even ratio indicates the weaker profitability position of an organization and vice versa. But the company has lower break-even ratio which indicates strong profitability position of

the company. Thus the company meets its cost through lower volume of sales and major parts of sales are utilized to generate profit.

4.8.3 Margin of Safety Analysis

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 in excess of break even sales. In this way, the amount of profit earned is determined by the volume of margin of safety. Since all the fixed costs are covered at break-even point, the subtraction of the subsequent variable cost from the margin of safety results in net profit.

The higher margin of safety indicates the strength of a business where profit shall be made with a substantial reduction in sales or production. On the other hand, a lower margin of safety might lead to loss with a small reduction in production or sales. The margin of safety at break-even point is nil as the actual sales at this point is equal to the break-even sales.

The efforts of management are always directed towards increasing the margin of safety so as to maximize profit. The following steps are taken to increase the margin of safety.

- Increasing the level of production
- Increasing the selling price.
- Reducing the cost.
- Substituting the existing products by more profitable products.

The margins of safety can be determined by the following ways:

Margins of safety (in Rs) = Actual sales (Rs) - BEP (Rs)

Margins of safety (in unit) = Actual sales (unit) - BEP (unit)

$$\text{MOS (in unit)} = \frac{\text{Profit}}{\text{CMPU}} \qquad\qquad \text{MOS (in Rs)} = \frac{\text{Profit}}{\text{CM ratio}}$$

The ratio between margin of safety and actual sales in known as margin of safety ratio, which is determined as follows (Koirala, et.al.2067:418)

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

Table 4.15

Margin of Safety Analysis

Fiscal Year	Actual sales in Rs. '000'	Break even sale in Rs.'000'	Margin of Safety in Rs. '000'	Margin of Safety Ratio
Reference	1	2	1-2=3	3/1=4
2062/63	10413655	3576309	6837346	0.6566
2063/64	13524368	4583602	8940766	0.6611
2064/65	16624213	5570162	11054051	0.6649
2065/66	20646629	7104834	13541795	0.6559
2066/67	25058304	11018504	14039800	0.5603

Source: NT, Annual Report, 2066/67

In the above table, Margin of safety Ratio is increasing in the first three years and then declining slightly in the next two years. But also the company MOS ratio is high which indicates the safer is the firm

Figure 4.6

Graphical Presentation of CMR, BER and MOS Ratio

4.9 Measuring Risk: Degree of Operating Leverage (DOL)

The earnings before interest and taxes (EBIT) depend on sales. When the sales level increases or decreases the EBIT also changes. The operating leverage measures the sensitivity of EBIT to change in sales. It reflects to the extent that fixed costs are utilized in the business firm. A firm is said to have a high degree of operating leverage, if it is using higher percentage of fixed cost. There will be no operating leverage if there is no fixed cost. In the absence of fixed cost, the profit increases or decreases proportionately to changes on sales.

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

Alternatively,

$$DOL = \frac{Contribution\ Margin}{Earning\ Before\ Interest\ and\ Tax} = \frac{CM}{EBIT}$$

Table 4.16

Degree of Operating Leverage Analysis

Particulars	2062/63	2063/64	2064/65	2065/66	2066/67
CM	9468073	11149862	14447421	18498285	21914037
EBIT	6843746	8075118	10707342	13634017	14441118
DOL	1.383463	1.380767	1.349301	1.356774	1.517475

Source: Appendix-2

As we know a high DOL firm goes into loss as sales decline and earns more as sales increase. A smaller DOL firm goes into loss only after a large decline in sales and earns less than high DOL firm as sales increase. The decision to select a DOL depends upon the future likelihood. If future is likely to be positive it is better to choose high fixed cost alternative (DOL). If it is pessimistic, it is safe to operate with smaller amount of fixed cost (Less DOL).

The DOL of Nepal Telecom is 1.517475101 times which means every one percentage change in sales causes 1.517475101 percentage change in net operating income. Suppose, 20 percent decline in sales revenues causes 30.35 percent (20 |1.517475101) decline in existing level of net operating income and vice-versa. Therefore, a leveraged firm is always riskier than an unleveraged in bad times. But in good times, a leveraged firm's net operating income increases in higher proportion than increase in sales. Therefore, it is riskier for Nepal Telecom when time is not satisfactory.

Figure 4.7

Graphical Presentation of Degree of Operating Leverage

4.10 Correlation Analysis

Correlation may be defined as the degree of linear relationship existing between two or more variable. Two variables are said to be correlated when the change in the value of one variable is accompanied by the change of another variable. It is useful tools in many ways such as,

    1. To determine whether the relationship exists or not.

    2. Whether the relationship is significant or not.

    3. Establish cause and effect relation if any.

To find out the relationship between current assets and total assets, sales and net profit, current assets and current liabilities, sales and debtors and sales and inventory following correlation are calculated.

4.10.1 Correlation Analysis between Sales and Net Profit

For the analysis, Net profit was assumed as dependent variable which was denoted by "Y" and the sales as independent variable which was denoted by "X".

Table 4.17

Relationship between Sales and Net Profit

Correlation of coefficient (r)	Relationship	r^2	P.E. Ratio	6 PE	Significant/ Insignificant
0.976	Highly Positive	0.95	0.016	0.096	significant

Source: Appendix-5

The correlation between sales and net profit is 0.976 i.e. positive relation because the value of r is greater than zero (i.e. 0.016> o). The table shows that the value of r is greater than 6PE (i.e. 0.976 > 0.096) that's why the relationship between Sales and Net Profit is significant.

4.10.2 Correlation Analysis between Sales and Total Cost

For the analysis Total Cost was assumed as dependent variable which was denoted by "Y" and the Sales as independent variable which was denoted by "X".

Table 4.18

Relationship between Sales and Total Cost

Correlation of coefficient (r)	Relationship	r^2	P.E. Ratio	6 PE	Significant/ Insignificant
0.974	Highly Positive	0.9487	0.0175	0.1053	significant

Source: Appendix-6

The table shows that there is highly positive correlation between Sales and Total Costs. It shows that Sales highly affect Total Costs of Nepal Telecom. The correlation between Sales and Total Cost is significant (i.e. 0.974 > 0.1053). So the company should give more attention in Sales management.

4.11 Sensitivity Analysis

Sensitivity analysis is the measurement of elasticity of change in cost-volume-profit factors on break-even point or given profit. To measures the sensitivity of cost-volume-profit 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 change in determinant variables. As we know the profit is the function of volume, price, fixed cost, variable cost etc. Here is systematically deal with the following sensitivity analysis.

4.11.1 Assessing the Impact When Selling Price is changed

Break-even point will also change if selling price is changed. It is because change in selling price brings the change in contribution margin ratio, breakeven point, and also brings the change in profit/loss. An analysis of increase and decrease in selling price by 10 percent for the FY2066/67 with other factors assume to remain constant is presented below:

Table 4.19

Income Statement showing 10% Change in sales for FY 2066/67 in Rs'000'

Particular	Original Sales Revenue	10% Increase in Sales Revenue	10% Decrease in Sales Revenue
Sales	25058304	27564134	22552474

Less, Variable cost	3144267	3144267	3144267
Contribution Margin	21914037	24419867	19408207
Less, Fixed cost	9635682	9635682	9635682
Net Profit	12278355	14784185	9772525
Change in Net Profit	_	2505830	(2505830)
P/V Ratio (CM/Sales)	0.8745	0.8859	0.8606
BEP in Rs(FC/PVR)	11018504	10876715	11196470
% Change in BEP	_	(1.29)	1.62

Source: NT, Annual Report, 2066/67

The above table shows that when the sales price is increased by 10 percent, net income is increased by Rs. 2505830. Similarly, profit volume ratio is increased to 0.8859 from 0.8745. The breakeven amount is decreased to Rs. 10876715 from Rs. 11018504 by 1.29 percent.

When the sales price is decreased by 10 percent, net income of the company is also decreased by Rs.2505830 from the original income of Rs.12278355. similarly P/V ratio is decreased to 0.8606 from 0.8745 but Break-even amount is increased to Rs.11196470 from Rs.11018504 i.e. increased by 1.62 percent. On the contrary, 10 percent increase in sales value increases the net profit and P/V ratio but break-even point decreases and Vice versa.

4.11.2 Assessing the Impact When Variable Cost is changed

Other thing remaining same, if the variable cost is changed it also bring changes in profit, contribution Margin ratio and break-even point which is analyzed below.

Table 4.20

Income Statement showing 10% Change in Variable Cost for FY 2066/67

(in Rs '000')

Particular	Original Variable Cost	10% Increase in Variable Cost	10% Decrease in Variable Cost
Sales	25058304	25058304	25058304
Less, Variable cost	3144267	3458694	2829840
Contribution Margin	21914037	21599610	22228464
Less, Fixed cost	9635682	9635682	9635682
Net Profit	12278355	11963928	12592782
Change in Net profit	_	(314427)	314427
P/V Ratio (CM/Sales)	0.8745	0.8620	0.8871
BEP in Rs (FC/PVR)	11018504	11178285	10862002
% Change in BEP	_	1.45	(1.42)

Source: NT, Annual Report, 2066/67

In the table 4.20, we know that when the variable cost is increased by 10 percent Net Profit decline by RS.314427, Profit volume ratio also decline to 0.8620 from 0.8745 and Break-even point has increased to Rs.11178285 by 1.45 percent from Rs.11018504. Thus this indicates that there is a negative relationship between variable cost and net profit and positive relationship between variable cost and break-even point.

4.11.3 Assessing the Impact When Fixed Cost is changed

In CVP Analysis other factor remaining constant, the change in fixed cost does not bring any changes in contribution margin ratio but net profit and break-even point is changed. Here 10 percent change in fixed cost is measured as follows:

Table 4.21

Income Statement showing 10% Change in FC for FY 2066/67 in Rs '000'

Particular	Original Fixed Cost	10% Increase in Fixed Cost	10% Decrease in Fixed Cost
Sales	25058304	25058304	25058304
Less, Variable cost	3144267	3144267	3144267
Contribution Margin	21914037	21914037	21914037
Less, Fixed cost	9635682	10599250	8672114
Net Profit	12278355	11314787	13241923
Change in Net Profit	_	(963568)	963568
P/V Ratio (CM/Sales)	0.8745	0.8745	0.8745
BEP in Rs(FC/PVR)	11018504	12120354	9916654
% Change in BEP	_	10	(10)

In the above table, when the fixed cost is increased by 10 percent, net profit decreased. It is because more amount of fixed cost is to be covered by the same amount of contribution margin. As a result of increase in fixed cost, BEP amount is also increased to Rs.12120354. It is observed from the above table when fixed cost is increased by 10 percent, BEP amount is also

increased by 10 percent. On the other hand when fixed cost is decreased by 10 percent the amount of BEP is also decreased by the same rate. Thus it can be concluded that fixed cost and break-even point has direct proportionate relationship.

4.12 Major Findings

From the analysis of various data collected by primary and secondary sources, the major findings of the study are as follows:

a. The Sales trend of Nepal Telecom shows positive trend, which can further increase the profit in future.

b. Nepal Telecom has not practice the scientific and appropriate cost classification technique. Costs are classified into fixed and variable cost as per the decision provided by the top level management.

c. Out of the total cost of Nepal Telecom, variable cost is 22.53%, 38.59%, 31.02%, 25.23% and 24.60% for the FY2062/63, 2063/64, 2064/65, 2065/66 and 2066/67 respectively, which causes high contribution margin.

d. The contribution margin ratio of Nepal Telecom is high which indicates sound profitability position of the company. The contribution margin ratio is 0.87 in the FY 2066/67.

e. The BE Ratio of Nepal Telecom are 34.34 percent, 33.89 percent, 33.51 percent , 34.41 percent and 43.97 percent from the FY 2062/63 to 2066/67 respectively i.e. the company has lower break-even ratio which indicates strong profitability position of the company. Thus the company meets its cost through lower volume of sales and major parts of sales are utilized to generate profit.

f. The MOS ratio of Nepal Telecom is high which indicates the safer is the firm.

g. The top level managers claim that they have participative management system of set goals but these goals and objectives are not clearly communicated to the lower level of management

h. Nepal Telecom is one of the dominant telecom service providers of Nepal and has covered about 55 percent of the total market, which can be considered as a good indication to generate the profitability.

i. The study shows that the average Return on asset of Nepal Telecom during the study period is 14.93 percent. The average ratio of 14.93 percent indicates that each 100 rupees of investment in assets is generating a profit of Rs14.93.

j. The computation shows that the average Return on capital employed of Nepal Telecom during the five years is 20.73 percent. The average ratio of 20.73 percent indicates that each 100 rupees of capital employed by the company is generating after tax profit of Rs. 20.73.

k. The calculation shows that the average Return on shareholder's equity of Nepal Telecom during the five year period is 22.27 percent. The average ratio of 22.27 percent indicates that each 100 rupees of shareholder's fund is generating after tax profit of Rs. 22.27.

l. NT is utilizing only about 70 percent capacity; therefore there is high possibility to increase the profit in near future.

m. In comparison to that of previous year, the year 2066/67 has recorded a growth in Profit after tax of the company by 6 percent and reached Rs 10.77 billion. Similarly, the earning-per-share of the company has grown in the year 2066/67 by Rs 4 and reached Rs. 71.83 and total asset of the company has grown to Rs 52.50 billion which is 13.43 percent more than that of the previous year.

n. As the degree of operating leverage is low, which indicates the company is at low risk. If the sales revenue decreases it will effect on profit by minimum amount and vice-versa.

o. The Karl Pearson's co-efficient of correlation between Sales and Net Profit (r) is found to be **0.976** which implies that there exist a high degree of positive correlation between Sales and Net Profit. This means the two variable moves in the same direction i.e. if Sales increases than Net Profit will also increase and vice-versa.

p. The Karl Pearson's co-efficient of correlation between Sales and Total Cost (r) is found to be **0.974** which implies that there exist a high degree of positive correlation between Sales and Total Cost. This means the two variable moves in the same direction i.e. if Sales increases than Total Cost will also increase and vice-versa.

q. The financial position of the company is satisfactory because gross profit margin ratio and net profit margin are also satisfactory.

CHAPTER – V
SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter deals with the findings and conclusion drawn from study of Cost-Volume-Profit Analysis of Nepal Telecom. This chapter consists of three sections: the first section provides the summary of the study, the second section drawn the conclusion of the study and final section gives recommendations to solve the problems observed on the basis of findings.

5.1 Summary

In the present era, service sector has become essential elements for the development of the country. Service promotes economic development by providing employment and by mobilizing the unutilized resources. Therefore, the strong need of public sector and private sector is felt for the growth and economic development of the country. By the realization of this fact, many public and private enterprises were established. In the Nepalese context, it is agro based developing economy. About 81.3 percent of the total population of the country is based on agriculture (Census 2058). Low productivity of this sector is one of the reasons for Nepal being least development countries in the world. Prospects for economic development will be brighter only if the present structure of the economy, with predominant dependence on traditional agricultural can be gradually transformed through the efficient utilization of service sector. Development of service sector can play meaningful role in replacing unemployment, substitution of imports through increasing production and bringing about a change in the balance of payment situation in favor of the country. The status of service in the Nepalese economy is not satisfactory. Nepal Telecom is one of the dominant firms in telecommunication industry of the country and its main objective is to provide cost effective telecommunication services to every nook and corner of the country.

The main objective of this study was to assess the Cost-Volume-Profit analysis as a tool to measure the effectiveness of profit, planning and control in Nepal Telecom. So, the study was fully devoted to examine the CVP analysis of the company.

To make this study more effective review of theoretical and related literature regarding the subject matter has been done. Many writers and researchers have given their ideas about the related topic. This review of literature provides the foundations of knowledge in order to undertake this research work more precisely.

Apart from the qualitative data related to CVP, various secondary data were collected from FY 2062/63 to FY 2066/67. The collected relevant data from secondary sources were analyzed with descriptive and analytical approach. Sales trend analysis, cost analysis, profitability analysis, contribution margin analysis, breakeven point analysis, margin of safety analysis and sensitivity analysis were done, with the help of both statistical and financial tools. Primary data were collected through informal communication with the related staffs of Nepal Telecom whereas secondary data were drawn from the various documents like annual reports of Nepal Telecom, Newsletters etc. published by industry and concerned authority. From the various analysis of Cost-Volume-Profit variable, the company shows the positive results for different years. The company has high contribution margin, low fixed costs and high margin of safety. The degree of operating leverage shows the industry has strong position and it forecasts no loss however the situation is pessimistic for some extent.

The financial position is sound, as gross profit margin and net profit margin are satisfactory. The company is continuously enjoying increasing profit every year because of its low fixed cost. The company claims that it has followed scientific cost classification techniques but the proof of cost/expense plan could not be found. According to the high level

employees of company, financial division has the responsibility of the budgeting: profit planning and control but due to the lack of sufficient information Nepal Telecom has not practiced CVP analysis technique as tool to measure the effectiveness of profit planning control.

5.2 Conclusion

The analysis shows there is vast gap between theory and practice in the context of Nepalese organization. Different types of profit planning tools are taught in colleges but the applications of these tools were found in minimum scale in Nepalese organization. Cost volume profit analysis is not practiced in Nepal Telecom and the company has not practiced the scientific method to classify cost into variable and fixed rather they are done in hunches and as per decision made by top level management. The administrative cost is in rising trend and no specific technique was used till now to control cost.

From CVP analysis it is found that the company has high contribution margin and low fixed cost. Minimum expenses incurred on employee have played the key role to decrease the fixed cost. Due to minimum fixed cost, BEP sales are also minimum. The company has always been running above BEP and the profit of business is being accumulated every year. The sensitivity analysis in response to change in variable cost and revenue is comparatively high. Similarly, degree of operating leverage of the company is low i.e. 1.38, it shows that the company is not in risky position. The average return on asset, return on capital employed and return on shareholder's equity is 14.93, 20.73 and 22.27 percent respectively. The Earning per share of the company has grown by Rs.4 and reached Rs.71.83 in the FY 2066/67.Similarly Profit after tax has reached Rs.10.77 billion which is 6 percent more than the previous year. The correlation coefficient between sales and net profit and in between sales and total cost is 0.976 and 0.974 respectively which implies high degree of positive

correlation between the two variables. Proper utilization of capacity has become key to success for organization. As decision-making power is concentrated in top-level management, participative management approach to set the goals is rarely found in the organization.

If the management utilizes its full capacity right now and initiate the effective cost control technique, Nepal Telecom may enjoying further profit in future fiscal years and this will be in favor of organization.

5.3 Recommendations

As Nepal has already got the membership of WTO, BIMSTEC, SAFTA and other international organization, Nepalese industries should adjust with this environment. The future of the Nepalese organization largely depends on their strategic analysis and for this, management should be aware of the current business issues and their impact on business. To have strategic advantage over the competitors, Nepalese industries required identifying the various tools of accounting and the relevant aspect should be analyzed and applied. Nepal Telecom has a lot of potential however it has not used it sufficiently. There are various factors to be recognized by the management of the company and on the basis of findings of the research study the following recommendations are given to make the operation more effective.

a. Nepal Telecom should clearly define its goals and objectives and management should make sure that each and every employee is aware of the organizational objectives which are the basic foundations of planning because conflicting goals always create confusions in their application phase.

b. The company does not have any proper practice of budgeting. Therefore, it is recommended that the company should develop the budgeting practice, which is one of the tools of profit planning. To

improve the financial condition of the industry, it should develop annual (tactical) and long-term profit plan.

c. Nepal Telecom does not have separate costing department. Costing is done by traditional methods combining with judgment basis and no precise distinction has been made regarding the nature of the cost as fixed or variable, controllable and non-controllable, direct or indirect etc. So, the company should establish a separate costing department, if possible and cost classification must be made within a specific framework of responsibility and time.

d. Participative management should be introduced in formulation of plans and policies of the organization. Profit planning manual should also be communicated to lower level of management. Effective budget education should be provided to improve profit-planning system in Nepal Telecom.

e. The company should consider the Cost-Volume-Profit relationship while fixing the price of its products.

f. To improve profit-planning system in Nepal Telecom, trained and qualified professional should be hired and developed.

g. Nepal Telecom is bearing comparatively huge amount of fixed costs for administrative expenses, which is not a good for the organization. Therefore, the company should initiate the cost control program.

h. The services of NT are of very low in quality but still the demand is high therefore the company should maintain its quality and supply should be increased whose impact will be positive in case of profitability.

i. As the organization is facing the problem of poor communication among production, administration, technical, engineering,

procurement and marketing department, the strong need of co-ordination among various departments is recommended.

j. The industry should consider about the product line to increase its profitability. As shown by the analysis, basic telephone services are generating more sales volume than others i.e. mobile and internet and CDMA services. Therefore, the industry should allocate more resources to produce basic telephone services to increase the profitability of the company.

k. The system of periodical performance reports should strictly be analyzed and followed, to be conscious about poor performance and take corrective actions immediately.

l. Finally, to strengthen the competitiveness, to substitute the rival services and to carryout PPC activities in the organization, the use of profit planning and controlling tools are recommended. For planning activities tools like, budgeting, CVP analysis etc. can be used.

Appendix -1

Consolidated Balance Sheet of Nepal Telecom
In Thousands of Nepalese Rupees

Assets	FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10
Fixed Assets	**10,088,427**	**11,361,043**	**12,897,703**	**15,365,515**	**14,143,908**
Capital W-I-P	**2,443,061**	**3,764,647**	**3,922,699**	**3,316,505**	**3,972,222**
Investments	**4,156,948**	**4,883,856**	**8,373,331**	**11,167,374**	**13,034,216**
Current Assets, Loans & Advances	**22,526,522**	**23,519,754**	**25,000,474**	**28,837,295**	**35,015,364**
Deferred Expenses	**136,448**	**131,816**		**-**	**-**
Total	39,351,406	43,661,115	50,194,187	58,686,689	66165710
Capital & Liabilities					
Equity Capital	**15,000,000**	**15,000,000**	**15,000,000**	**15,000,000**	**15,000,000**
Reserve & Surplus	**8,686,027**	**11,794,281**	**20,179,747**	**26,629,022**	**32,149,599**
Loans	**-**	**1,191,680**	**3,495,726**	**4,651,605**	**53,55,047**
Current Liabilities	**4,475,753**	**5,712,296**	**6,478,046**	**6,718,055**	**6,929,336**
Provisions	**11,189,626**	**9,962,858**	**5,040,668**	**5,688,007**	**6,731,728**
Total	39,351,406	43,661,115	50,194,187	58,686,689	66,165,710

Appendix-2

Profit and Loss Account of Nepal Telecom

In Thousands of Nepalese Rupees

Particular	2062/63	2063/64	2064/65	2065/66	2066/67
Sales revenue	**10413655**	**13524368**	**16624213**	**20646629**	**25058304**
Less Cost of Sales	**3015012**	**3444418**	**4362158**	**6079682**	**9141115**
Gross Profit	**7398643**	**10079950**	**12262055**	**14566947**	**15917189**
Less Operating expenses					
Administrative cost	**442810**	**761393**	**852769**	**840567**	**1004433**
Other cost	**739341**	**1947417**	**1802893**	**1593316**	**2634401**
Total operating expenses	**1182151**	**2708810**	**2655662**	**2433883**	**3638834**
	6216492	7371140	9606393	12133064	12278355
Add Non operating income	**627254**	**703978**	**1100949**	**1500953**	**2162763**
Net Profit Before Tax	**6843746**	**8075118**	**10707342**	**13634017**	**14441118**
Less Tax	**1907099**	**2422430**	**2928587**	**3455992**	**3665964**
Net Profit After Tax	**4936647**	**5652688**	**7778755**	**10178025**	**10775154**

Non Operating Income

Particulars	2062/63	2063/64	2064/65	2065/66	2066/67
Interest income	**645259**	**784305**	**903773**	**1375736**	**2014558**
Gross profit/(loss)on sale of goods	**-18005**	**-80327**	**70046**	**-17679**	**0**
Miscellaneous Income	**0**	**0**	**127130**	**142896**	**148205**
Total Non Operating Income	**627254**	**703978**	**1100949**	**1500953**	**2162763**

NOTE:

In 2066/67 Gross profit/(loss) on sale of good is removed and sale of Telephone set and other good is included in Miscellaneous income and cost of Telephone set and other good is included in Cash card cost i.e. automatically adjusted in P/L a/c.

Appendix-3

Table-1

Operating Expenses

In Thousands of Nepalese Rupees

Fiscal Year	Cost of sale	Administrative cost	Other cost	Operating Expenses
Reference	1	2	3	4=1+2+3
2062/63	**3015012**	**442810**	**739341**	**4197163**
2063/64	**3444418**	**761393**	**1947417**	**6153228**
2064/65	**4362158**	**852769**	**1802893**	**7017820**
2065/66	**6079682**	**840567**	**1593316**	**8513565**
2066/67	**9141115**	**1004433**	**2634401**	**12779949**

Table-2

Shareholder's Equity

In Thousands of Nepalese Rupees

Fiscal Year	Share capital	Reserve and Surplus	Fictitious Asset	Shareholder's Equity
Reference	1	2	3	4=1+2-3
2062/63	**15000000**	**8686027**	**0**	**23686027**
2063/64	**15000000**	**11794281**	**0**	**26794281**
2064/65	**15000000**	**20179747**	**0**	**35179747**
2065/66	**15000000**	**26629022**	**0**	**41629022**
2066/67	**15000000**	**32149599**	**0**	**47149599**

Appendix-4

Capital Employed

In Thousand of Nepalese Rupees

Fiscal Year	Shareholder's Equity	Long-Term Fund	Capital Employed
Reference	1= Table 2	2	3=1+2
2062/63	**23686027**	**-**	**23686027**
2063/64	**26794281**	**1191680**	**27985961**
2064/65	**35179747**	**3495726**	**38675473**
2065/66	**41629022**	**4651605**	**46280627**
2066/67	**47149599**	**5355047**	**52504646**

Appendix-5

Co-relation between Sales and Net Profit

In Billion of Nepalese Rupees

Fiscal Year	Sales (X)	Net Profit (Y)	X= (X-$\overline{X}$)	Y= (Y-$\overline{Y}$)	X² = (X-$\overline{X}$)²	Y²= (Y-$\overline{Y}$)²	XY
2062/63	10.41	4.94	-6.84	-2.93	46.79	8.58	20.04
2063/64	13.52	5.65	-3.73	-2.22	13.91	4.93	8.28
2064/65	16.62	7.78	-0.63	-0.09	0.4	0.01	0.06
2065/66	20.65	10.18	3.4	2.31	11.56	5.34	7.85
2066/67	25.06	10.78	7.81	2.91	61	8.47	22.73
Total	X =86.26	$Y =$ 39.33			$X^2 =$ 133.66	$Y^2 = 27.32$	(XY) =58.96

$$\overline{X} = \frac{86.26}{5} \text{ X17.25}$$

$$\overline{Y} = \frac{39.33}{5} \text{ X7.87}$$

Correlation Coefficient (r) $= \dfrac{XY}{\sqrt{X^2}\sqrt{Y^2}} = \dfrac{58.96}{\sqrt{133.66 \mid 27.32}} = 0.976$

$$\text{P.E.} \quad = \quad 0.7645\frac{1\,Zr^2}{\sqrt{n}} \qquad =0.7645\frac{1\,Z0.976^2}{\sqrt{5}}$$

$$= 0.016$$

6 P.E. = 6*0.016 = 0.096

Appendix-6

Co-relation between Sales and Total Cost

In Billion of Nepalese Rupees

Fiscal Year	Sales (X)	Total Cost (Y)	X= (X-$\overline{X}$)	Y= (Y-$\overline{Y}$)	X² = (X- $\overline{X}$)²	Y²= (Y-$\overline{Y}$)²	XY
2062/63	10.41	4.2	-6.84	-3.532	46.79	12.47502	24.15888
2063/64	13.52	6.15	-3.73	-1.582	13.91	2.502724	5.90086
2064/65	16.62	7.02	-0.63	-0.712	0.4	0.506944	0.44856
2065/66	20.65	8.51	3.4	0.778	11.56	0.605284	2.6452
2066/67	25.06	12.78	7.81	5.048	61	25.4823	39.42488
Total	X =86.26	Y =38.66			$X^2 =$ 133.66	$Y^2 = 41.57$	$(XY)=$ 72.58

$$\overline{X} = \frac{86.26}{5} \text{ X17.25}$$

$$\overline{Y} = \frac{38.66}{5} \text{ X7.73}$$

$$\text{Correlation Coefficient(r)} \quad = \quad \frac{XY}{\sqrt{X^2}\sqrt{Y^2}} = \frac{72.58}{\sqrt{133.66\mid 41.57}} = 0.974$$

$$\text{P.E.} = 0.7645\frac{1\,Zr^2}{\sqrt{n}} = 0.7645\frac{1\,Z0.974^2}{\sqrt{5}}$$

$$= 0.0175$$

6 P.E. = **6*0.0175 = 0.1053**

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