COST VOLUME PROFIT ANALYSIS OF NEPAL TELECOM LIMITED, NEPAL ELECTRICITY AUTHORITY AND NEPAL OIL CORPORATION

A THESIS

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RECOMMENDATION

This is to certify that the thesis

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has been prepared and approved by this department in the prescribed format of Faculty of Management. This thesis is forwarded for examination.

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and found the thesis to be original work of the student and written in accordance to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirements for

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Member (Thesis Supervisor) : ……

Member (External Expert) :……

DECLARATION

I hereby declare that the work reported in this thesis entitled *Cost Volume Profit Analysis of Nepal Telecom Limited, Nepal Electricity Authority and Nepal Oil Corporation* submitted to Shanker Dev Campus, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of requirement for the Master's Degree in Business Studies (M.B.S) under the supervision of Indra Bahadur Bohora of Shanker Dev Campus.

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ABBREVIATIONS

ACP	Average Collection Period
ASV	Actual Sales Volume
CSP	Constant Selling Price
CVPA	Cost-Volume-Profit Analysis
DOL	Degree Of Operating Leverage
MOS	Margin of Safety
NEA	Nepal Electricity Authority
NOC	Nepal Oil Corporation
NOIAE	Non-Operating Incomes and Expenses
NTC	Nepal Telecom Company
OCF	Operating Cash Flow
SPPU	Selling Price per Unit
SR	Sales Revenue
SVC	Semi Variable Cost
TC	Total Cost
UTL	Operator United Telecom Limited
VCPU	Variable Cost per Unit

CHAPTER-I

INTRODUCTION

1.1 Background of the Study

Cost- volume profit analysis is a process of evaluating the economics of an undertaking. It serves as an important tool for efficient decision-making and control. The term cost-volume-profit analysis came into existence due to the need and urgency of the business managers to investigate into the inherent causes of frequent variations in cost, volume and profit. The actual earnings of a concern may differ from the expected or budgeted earnings on account of variations in demand, selling price, production, cost, productivity, severity of competition and Government legislations etc. Especially this technique is used to determine whether a particular project is worthwhile, to choose between alternative projects, or as a guide to the timings of individual projects. Thus, it is a process of determining a choice which requires studied judgment while talent decisions. The cost-volume-profit analysis makes several assumptions, including that the sales price, fixed costs, and variable cost per unit are constant. Running this analysis involves using several equations for price, cost and other variables, then plotting them out on an economic graph. Cost-volume-price analysis is a way to find out how changes in variable and fixed costs affect a firm's profit (Bhattarai, 2014).

The contribution margin is used in the determination of the break-even point of sales. By dividing the total fixed costs by the contribution margin ratio, the break-even point of sales in terms of total dollars may be calculated. CVP analysis is only reliable if costs are fixed within a specified production level. All units produced are assumed to be sold, and all fixed costs must be stable in a CVP analysis. Another assumption is all changes in expenses occur because of changes in activity level. Semi-variable expenses must be split between expense classifications using the high-low method, scatter plot or statistical regression (Horngren, 2008).

Organization Managements require to approximate future incomes, expenses, and revenues to help them style and monitor operations. Usually, businesses employ CVP

(Cost-Volume-Profit) analysis to distinguish between various levels of operational activity, ensuring they avoid losses, achieve desired profits, plan future operations, and demonstrate organizational efficiency. Service management also assesses operational risk while determining an appropriate pricing strategy. CVP analysis is a method used to examine how changes in sales volumes, costs, and expenses affect revenue. Organization Managements specifically accounting professionals Cost volume profit analysis has the primary factor to consider which entirely handles the item for the contribution margin. If an organization desires to be effective, the overall contribution margin need to respectfully be successful the overall set expenses which are sustained by the service. In other context, the contribution margin system is merely the system of variable cost which is subtracted or deducted from the overall system sales rate (Horngren, et al., 2008).

Cost-volume-profit (CVP) analysis is highly beneficial for managerial decision-making, particularly in cost control and profit planning. It enables businesses to understand the relationship between costs, sales volume, and profits, making it instrumental in profit planning. By analyzing cost behavior in relation to sales volume, CVP analysis helps identify the point at which a business breaks even and the level of sales required to achieve a desired profit. This information is crucial for managers to plan and make informed decisions about pricing strategies, production levels, and sales targets. For instance, in a study examining the application of CVP analysis, entities like Nepal Telecom (NTC), Nepal Oil Corporation (NOC), and Nepal Electricity Authority (NEA) were analyzed to understand how CVP analysis serves as a tool for profit analysis.

1.1.1 Introduction of Sample Organization

Nepal Telecom (NTC)

Nepal Doorsanchar Company Ltd., commonly known as Nepal Telecom (NTC), is a government-owned telecommunications service provider in Nepal, holding a 91.49% share of the government. Until 2003, it held a monopoly in the telecommunications sector until the entry of the first private operator, United Telecom Limited (UTL). The company's headquarters are situated at Bhadrakali Plaza in Kathmandu, with branches, exchanges, and offices spread across 184 locations nationwide. Nepal Telecom offers

fixed-line, ISDN, and leased-line services, and although it was once the sole provider of GSM mobile services, competition has increased since the entry of NEA (formerly Mero Mobile) in 2005. With a workforce of over 5,400 employees, Nepal Telecom is one of Nepal's largest corporations, boasting 262 telephone exchanges serving over 603,291 PSTN lines, more than 5 million GSM cellular phones, and over a million CDMA phone lines as of July 2011. Recent data indicates approximately 20 million users of Nepal Telecom's services, including fixed landline, GSM mobile, CDMA, and internet services. The company launched 4G LTE service on January 1, 2017, making it the first operator to offer 4G LTE in Nepal, covering all seven provinces. In July 2019, Nepal Telecom conducted the first successful test of Voice over LTE (VoLTE) service in Nepal, which became available to users from May 17, 2021. According to the Nepal Telecommunication Authority report in April 2019, Nepal Telecom led in cable internet subscriptions, with over 211,513 subscribers, covering 84% of the cable internet market. Additionally, as the sole provider of WiMAX, Nepal Telecom had 87,977 subscribers by April 2019. On October 2, 2019, Nepal Telecom extended its 4G service to 60 cities in 37 districts, with the inauguration conducted by Prime Minister KP Sharma Oli.

Nepal Electricity Authority (NEA)

Established on August 16, 1985 (Bhadra 1, 2042) under the Nepal Electricity Authority Act of 1984, the Nepal Electricity Authority (NEA) emerged from the amalgamation of the Department of Electricity of the Ministry of Water Resources, Nepal Electricity Corporation, and associated Development Boards. This consolidation aimed to address the inherent weaknesses of fragmented electricity organizations marked by overlapping functions and duplicative efforts. By merging these entities, the goal was to enhance efficiency and ensure reliable service delivery. NEA's primary objective is to plan, construct, operate, and maintain all generation, transmission, and distribution facilities within Nepal's power system, encompassing both interconnected and isolated systems. It advises the Government of Nepal on long and short-term plans and policies in the power sector and collaborates with the government to determine and implement tariff structures for electricity consumption. NEA also facilitates training and educational

programs to cultivate skilled manpower in generation, transmission, distribution, and related sectors.

Nepal Oil Corporation (NOC)

Nepal Oil Corporation Limited (NOC) is the sole state-owned trading enterprise in Nepal entrusted with the importation, storage, and distribution of various petroleum products throughout the country. It holds a monopoly over the importation of petrol and diesel, with no private entities permitted to engage in this activity. Established in 1970 under the "Company Act, 2021 (1964)" by the Government of Nepal, NOC is predominantly government-owned, with the government holding a 99.46% share. The remaining shares are contributed by four other state-owned enterprises: Rastriya Beema Sansthan, National Trading Ltd., Nepal Bank Ltd., and Rastriya Banijya Bank.

1.2 Statement of the Problems

Cost-volume-profit (CVP) analysis is a crucial tool that offers valuable insights for profit planning, especially in industries vital to Nepal's economy such as agriculture and banking. However, the banking sector in Nepal is still in its nascent stage, indicating the need for further development and application of break-even analysis. To effectively utilize CVP analysis, it is essential to categorize costs into fixed and variable components. Without this classification, applying CVP analysis becomes challenging. This study aims to analyze and evaluate the profitability, break-even point, liquidity, and debt management of a specific bank. Profit maximization is the primary objective of any business, and without proper cost-volume analysis, achieving this goal becomes difficult. Due to low production volume, production costs per unit tend to be high, resulting in higher selling prices that may not align with public expectations. Furthermore, inefficient utilization of assets contributes to increased costs. Therefore, addressing these issues through comprehensive research is crucial.

- What is the current status of cost volume and profit of NTC, NOC and NEA?
- Is there any relationship between cost, revenue, volume and profit of NTC, NOC and NEA?
- What is the impact of cost and volume on profit of NTC, NOC and NEA?

1.3 Objectives of the study

The general objectives of present study are to highlight the cost volume profit analysis and its effectiveness in NTC, NOC and NEA. The current study aims to accomplish the following objectives:

- To analyze the current status of cost volume and profit of NTC, NOC and NEA.
- To measure the relationship between cost, revenue, volume and profit of NTC, NOC and NEA.
- To analyze the impact of cost and volume on profit of NTC, NOC and NEA?

1.4 Significance of the Study

Cost-volume-profit analysis is often considered the lifeblood of any enterprise, crucial for sustaining day-to-day operations. Without it, businesses risk insolvency and potential bankruptcy. The primary goal of cost-volume-profit analysis is to effectively manage costs and profits within a business. Research indicates that a significant portion of accounting managers' time is dedicated to internal operations falling under the umbrella of cost-volume-profit analysis. Despite the importance of this analysis, there has been a lack of comprehensive studies focusing on the accounting performance of major public enterprises like Nepal Telecom (NTC), Nepal Oil Corporation (NOC), and Nepal Electricity Authority (NEA). While some researchers have explored cost-volume-profit analysis in accounting sectors, few have delved into its application in service sector public enterprises, leaving a gap in academic research. Therefore, this study aims to bridge this gap by examining cost-volume-profit analysis in NTC, NOC, and NEA. The findings of this research may offer valuable insights for these companies, informing shareholders about working capital management, liquidity, and profitability. Policymakers can also utilize these findings to formulate effective policies. Additionally, stakeholders such as customers, financing agencies, exchanges, traders, and experts may benefit from the study's results. Moreover, this research may serve as a foundation for future studies, providing essential findings and valuable information on

working capital management in trading companies. Overall, this study represents just the beginning, with the potential for further development and continued research in this field.

1.5 Limitations of the Study

The study is limited to analyzing NTC, NOC, and NEA, neglecting other similar companies in Nepal.

- Data analysis is restricted to a 10-year period from FY 2012/013 to FY 2021/022.
- The focus is solely on cost-volume-profit analysis and its accounting performance, limiting the applicability of findings to other companies.
- Secondary data sources are utilized, raising concerns about the accuracy and reliability of the results provided by NTC, NOC, and NEA.
- The study employs a limited range of tools such as correlation coefficient, break-even point, profit planning, and multiple regression analysis.
- Only a few financial and statistical tools are utilized for analysis, potentially limiting the depth and breadth of the study's findings.

1.6 Organization of the Study

The study is structured into five chapters, with each chapter addressing the following topics:

Chapter –I: Introduction

In this chapter, the introductory section of the study is presented. As previously indicated, this chapter outlines the key topics to be examined, including the overall context, concise profiles of the selected companies, statement of the problem, objectives, significance, limitations, and organization of the study.

Chapter –II: Conceptual Framework and Literature Review

This chapter is dedicated to theoretical analysis and a concise review of relevant literature. It encompasses an examination of the conceptual framework and an overview of the significant studies in the field.

Chapter –III: Research Methodology

This chapter outlines the research methodology utilized in the study. It discusses the research design, data sources, methods of analysis, and defines accounting and statistical tools employed.

Chapter- IV: Presentation and Analysis of Data

This chapter focuses on presenting the data collected from various sources and analyzing the data, along with discussing the major findings of the study.

Chapter- V: Summary, Conclusions and Recommendations

This chapter provides a summary of the study's findings, conclusions drawn from the analysis, and recommendations based on those conclusions. It also compares the findings with existing empirical evidence where applicable and offers suggestions for further research. Additionally, it includes a bibliography and appendix containing relevant supplementary material.

CHAPTER-II

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

This chapter focuses on reviewing existing literature related to the topic of Cost-Volume-Profit (CVP) Analysis. The aim of this literature review is to gain a deeper understanding of the subject area, identify any new insights or contributions, and gather ideas for shaping the research design. Previous studies are essential as they form the basis for the current study. This chapter presents a synthesis of available literature, drawing from research papers, articles, and theses relevant to the topic, as well as personal knowledge and experiences in the field.

2.1 Conceptual Review

2.1.1 Concept of CVP Analysis

Every business establishment is established with the aim of offering services to customers and generating profits. However, achieving these objectives in today's competitive business environment is no easy feat. With the advent of globalization, the market has become increasingly challenging to navigate. As a result, businesses must not only rely on trial and error but also exert considerable effort and provide various amenities to safeguard against losses. Consequently, they must strategize for the future in a manner that ensures the realization of their business goals. To attain profitability, it is imperative to assess the organization's capabilities, operations, and resource utilization. Moreover, identifying areas for cost reduction is crucial, as even minor expense reductions can lead to increased profitability.

2.1.2 Objectives of Cost-Volume-Profit Analysis

The purpose of cost-volume-profit analysis is to aid in profit planning, cost management, and decision-making. It facilitates the establishment of flexible budgets, which outline costs and profits across different levels of activity. This analysis assists in identifying the minimum sales volume necessary to avoid losses and determines the sales volume required to meet the firm's profit objectives. Additionally, it assists management in identifying the most profitable combination of costs and volume. By evaluating the impact of changes in selling price on profitability, it enables management

to make informed pricing decisions. Furthermore, it offers a method for evaluating the profitability of individual products, allowing for the determination of the optimal product mix.

2.1.3 Assumptions of CVP Analysis

Constant sales price Constant variable cost per unit Constant total fixed cost. Constant sales mix Units sold equal units produced.

2.1.4 Problems of CVP Analysis

Three challenges arise when implementing CVP analysis. They include:

1. The Activity Based

Product units are preferable if the analysis is applied to one product. For multiple products the activity base must be in additive units using a common denominator of volume or output. The net sales amounts are usually the only satisfactory common denominator.

2. Inventory Changes

If the budgeted changes in inventories are immaterial, they may be disregarded in CVP Analysis. In case the changes are significant, they must be included in the analysis. Hence the two approaches often used are:

- disregarded the inventory change
- include the inventory change

3. Non-operating Incomes and Expenses

Non-operating or extra ordinary expenses and incomes, if amounts are significance can cause another problem in CVP Analysis. The basic issue is whether to include or exclude from the analysis. However, if they are included, it is preferable to include the net of other income and other expense. If the excess is expenses, it would be added to fixed expenses whereas if the excess is income it should be deducted from the fixed expenses.

2.1.5 Limitation of CVP Analysis

CVP Analysis aids in profit planning, although firms may not be able to produce outputs as desired due to certain constraints inherent in the analysis. These constraints include the following:

- CVP analysis relies on simplistic assumptions regarding cost behavior, which can limit the model's effectiveness.

2.1.6 Terms use in CVP Analysis

1. Fixed Cost

Fixed costs remain unchanged in total regardless of fluctuations in output levels within the capacity limit.

2. Variable Cost

Variable cost is also considered as Prime cost that means direct cost. They include cost of raw materials used in making a commodity, wages of labor, wear and tear etc. these cost values with the quantity produced. If production is stopped the prime cost disappears. It is the cost which changes in direct proportion to and in same direction as the changes activity levels or output. When the output double the variable cost will be also double but the cost per unit remains same in each activity.

3. Semi Variable Cost

The costs which have characteristics of fixed cost and variable cost is called semi variable cost. It is a cost which changes as output or activity but not in proportion to change in the activity base, for example lighting indirect material, indirect labor, repair and maintenance etc.

4. Step-Fixed Cost

Step fixed cost are those which remain constant over a wide range of activity but jump to a different amount for activity level outside the range. All fixed cost is step fixed cost because none of them remain same for an infinite level of output.

5. Contribution Margin

Contribution margin is defined as the surplus of the selling price per unit of output over its variable cost. It allows covering the fixed costs and contributes to the profit.

6. Margin of Safety

The margin of safety serves as a safeguard for a business against potential future uncertainties. A larger margin of safety indicates a higher likelihood for the firm to generate profits, whereas a smaller margin suggests a greater risk of incurring losses. It is calculated as the surplus of actual or projected sales over the break-even point (BEP) sales. In essence, it represents the variance between actual or projected sales and the break-even point, (Bajracharya, et al, 2008).

Symbolically,

MOS = Actual Sales Volume – BE Sales Volume

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

MOS (%) = {(Actual Sales- BE Sales) × 100} / Actual Sales

2.1.7 Definition of BEP

BE analysis is widely used technique for the study of CVP relationship. It is the plot used under BE analysis. BEP is the volume of activity where the origin's revenue and express are equal. At this point the amount of sale and the organizations has no profit or loss. BEA is a method of determining the point at which the firm will break even but it also shows the management tune of the firm's profit or loss, if sales exceed or fall below that point BEA is important, (Bajracharya, et al., 2008).

2.1.8 Assumptions of BEP

BEP analysis and contribution of analysis is based on a specific set of assumption that should be clearly understood. These underlying assumptions are as follows.

2.1.9 Limitations of BEP

BE Analysis in many business situations can be used for effective decision-making but there are many short coming limitations in its analysis and interpretation. Some of these

can be listed the assumption of producer's market phenomenon may not hold good for all types of commodities.

2.1.10 Applications of BEP

The break-even concept holds various applications within a business enterprise. These include determining profits at different sales levels and assessing the margin of safety. It aids in identifying the necessary output level to achieve desired profit targets, as well as understanding the impact of price adjustments on sales volume and alterations in sales mix. Additionally, it facilitates analyzing the effects of changes in both fixed and variable costs on sales volume. The break-even analysis assists in decision-making processes such as choosing the most profitable alternatives, make or buy decisions, and determining whether to drop or add certain products or services (Pandey, 1999).

2.1.11 Methods of Computation BEP

1. Algebraic Method

BEP can be found by the use of formula which is termed as algebraic method. It also can be mention as formula method. According to definition of BEP, it is such a level of sale of activity, where there is neither profit nor loss. It is the level where total cost is equal to total revenue. It can be presented equation form as follow:

Sales Revenue = Total Cost, Or,

For Total Cost = FC + (VCPU × Q) ---------- equation (i)

We have,

SR = TC

Or, Q = FC/ (SPPU – VCPU) ---------- equation (ii)

Where,

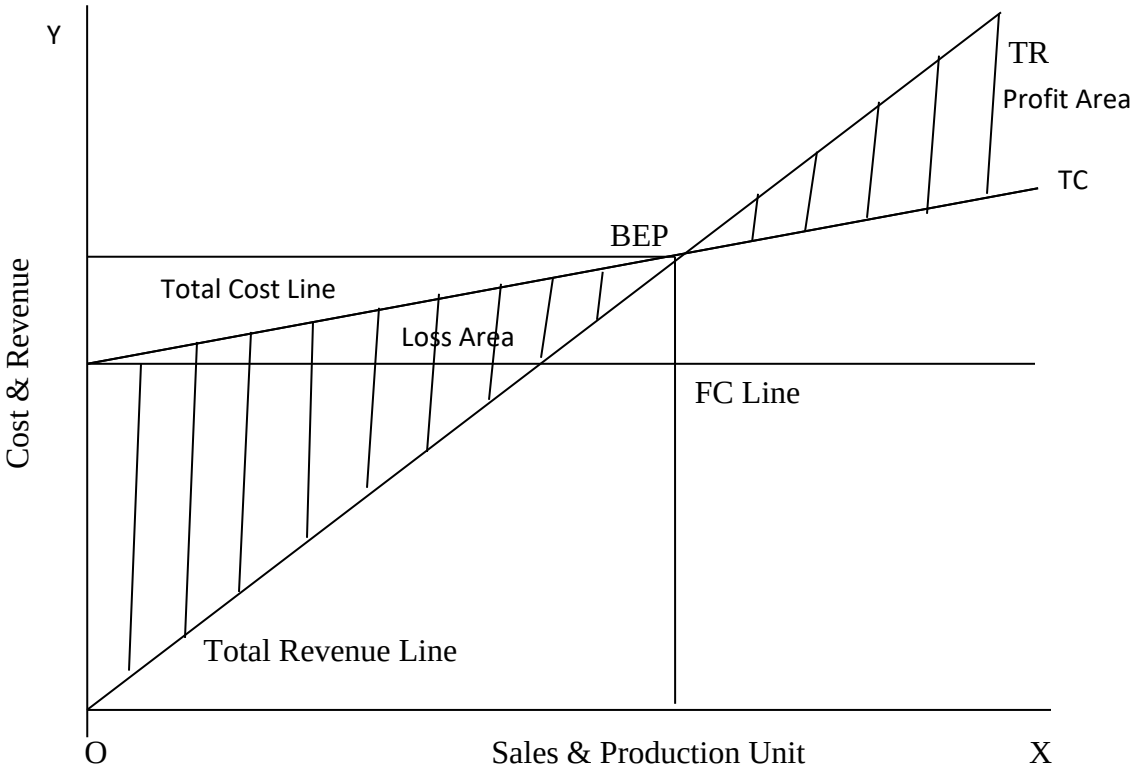
Q = BEP in Units FC = Fixed Cost SPPU = Selling Price per Unit VCPU = Variable Cost per Unit

TC = Total Cost (Bhattarai, 2014)

2. Graphic Method

BEP can be obtained by using graph too. A break-even chart visually represents the interplay between revenues, variable costs, fixed costs, and the resulting profits or

losses. The break-even point (BEP), where the total cost and total revenue lines intersect, signifies the point where neither profit nor loss is incurred. Below this threshold, the firm experiences losses, while above it, the firm generates profits.



Source: (Bajracharya, et al, 2008)

Figure: 2.1: The Approach to Break-Even Point (BEP) Analysis

Figure 2.1 illustrates the relationship between sales and production units on the horizontal (x-axis), while costs and revenues are represented on the vertical (y-axis). In the graph, fixed costs are depicted as a horizontal line parallel to the x-axis, indicating their constant nature within the relevant range. Variable costs rise from the origin towards the right, influenced by the variable cost ratio. The total cost curve follows a similar path to the variable cost curve. The Break-Even Point (BEP) is identified at the intersection of the total cost and sales revenue lines. This signifies the point at which total revenues match total costs. This graphical representation highlights that achieving the BEP enables the company to generate adequate revenues to cover its operating expenses.

3. Contribution Margin Method

BEP also can be determined by using Contribution margin method. It can be defined as the excess of sales of amount over its VC. It is the difference between the portions or rupees that left after variable expenses are deducted FC. It is particularly useful in determining BEP and target profit. It can be expressed as:

CM = Total Sales – TVC

CMPU = SPPU – VCPU

Where,

Q = BEP in Units

FC = Fixed Cost

SPPU = Selling Price per Unit

VCPU = Variable Cost per Unit

2.1.12 PV Ratio

PV Ratio establishes a relationship between the CM and the sales volume. The two factors profit and volume are interconnected as well as dependent with each other. Profit depends upon sales, sales price to a great extend depends upon the volume of production.

2.1.13 Steps (Jumping) Fixed Cost and Multiple BEP

The Break-Even Point (BEP) is calculated by dividing the fixed costs by the contribution margin per unit, when fixed costs exhibit a step change (i.e., step fixed costs), a distinct fixed cost amount must be accounted for at each step. Consequently, BEP needs to be computed for each level of fixed cost. However, some of these calculated BEPs may not be viable as they could exceed the limits set by the relevant range corresponding to the level of fixed cost under consideration. Therefore, the actual BEP is determined through a trial and error method (Munakarmi, 2003).

2.1.14 Assumptions Underlying CVP Analysis

Break-even analysis stands as a highly beneficial method for profit planning and management. It serves as a tool to elucidate the interplay between costs, volume, and

profitability. The discourse on the Cost-Volume-Profit (CVP) analysis, or break-even analysis, thus far has relied on the following assumptions (Pandey, 1994).

a. Cost Segregation

The total costs can be divided into fixed and variable elements. Constant fixed costs represent the total fixed expenses that remain consistent regardless of fluctuations in sales volume. Constant unit variable costs pertain to variable costs per unit that remain unchanged, while the total variable costs vary directly in accordance with changes in sales volume.

b. Constant Selling Price

The selling price per unit remains constant, meaning it does not fluctuate with changes in volume or due to other factors.

c. Constant Sales Mix

The company produces either a single product or, if there are multiple products, the sales mix remains constant and does not change.

d. Coordinated Production and Sales

Production and sales are synchronized, ensuring that inventory levels remain constant.

2.1.15 Limitations of CVP Analysis

The usefulness and broad applicability of CVP analysis are constrained by certain assumptions. Thus, it is crucial for the analysis to acknowledge these limitations and make necessary adjustments to the data to ensure the attainment of meaningful results. Some of the limitations associated with CVP analysis include (Pandey, 1999).

- Separating costs into fixed and variable components can be challenging.
- Total fixed costs may not remain constant across all volume ranges.
- The assumption of a constant selling price and unit variable cost may not hold true.
- Applying break-even analysis to multi-product firms can be complex.

Break-even analysis is primarily applicable in the short term and has restricted utility in long-term planning. It's considered a static tool for analysis.

2.1.16 Special Problems in CVP Analysis

Three unique challenges arise within CVP analysis, namely non-linear cost behavior, step-fixed costs, and the presence of multiple product lines or services, necessitating careful consideration and adaptation of traditional analysis techniques, (Fago, 2003).

a. The Activity Base

When conducting break-even analysis for multiple production activities, the unit of measurement typically shifts to an amount rather than a product unit, with the activity base being expressed in terms of volume or output. In cases involving multiple products, the activity base must be additive, utilizing a common denominator such as net sale amount to encompass manufacturing, selling, and administrative activities in combination.

b. The Change in Inventory

Typically, minor fluctuations in budgeted inventories, including finished goods and work in process, are considered negligible in CVP analysis and can be overlooked. However, if the anticipated change in inventory is substantial, it should be factored into the analysis. Management's approach to inventory adjustments may vary, with some opting to disregard these changes, while others choose to incorporate them.

d. The Non-Operating Incomes and Expenses

Non-operating income and expenses, such as extraordinary gains and losses, present another challenge in CVP analysis. The primary issue lies in deciding whether to incorporate or disregard them in the analysis. Management may adopt varying policies regarding this matter, including either including or excluding non-operating income and expenses from the analysis.

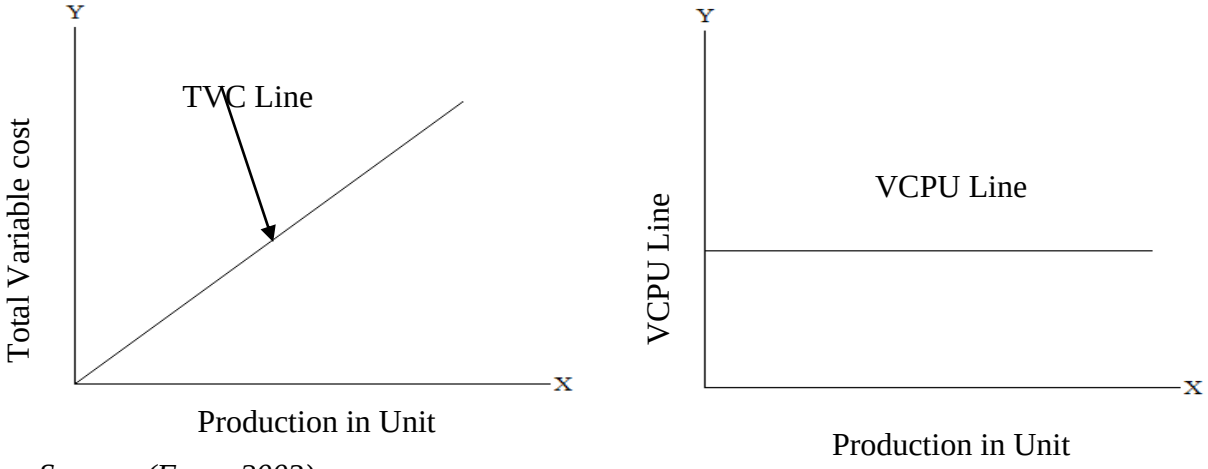
2.1.17 Cost Structure

There are three categories of costs based on their variability. They are as follows:

a. Variable Costs

Variable costs change in direct proportion to changes in the level of activity. For instance, if the activity level increases by 50%, the variable costs also increase by 50%.

While the total variable costs fluctuate with changes in activity levels, they remain constant on a per unit basis. Any alteration in variable costs impacts the profit-volume ratio (P/V ratio), break-even point (BEP), and net income. An increase in variable costs leads to a decrease in net income, P/V ratio, and margin of safety, but it aids in increasing the break-even point. This concept of variable costs can be better understood through the diagram provided below:

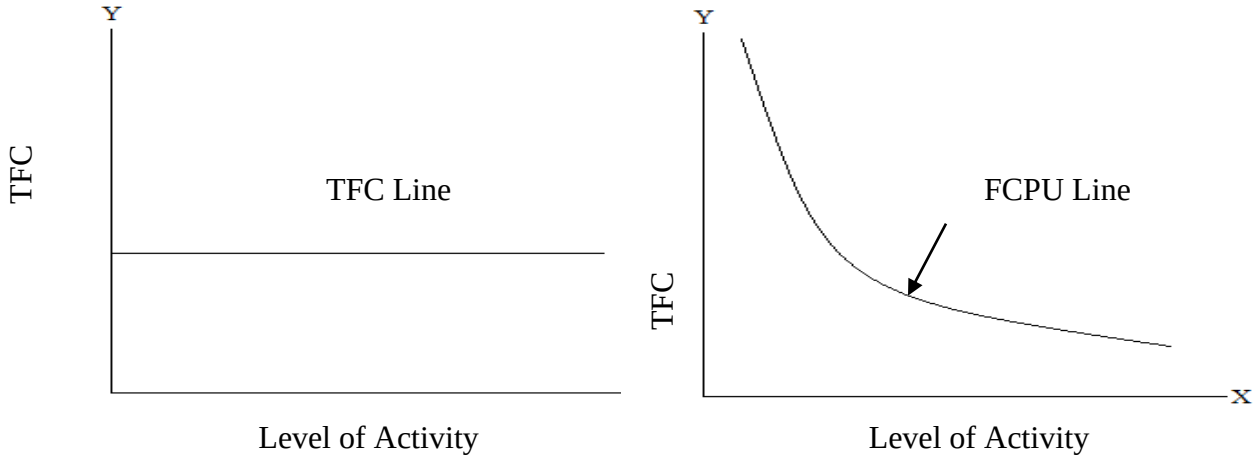


Source: (Fago, 2003)

Figure: 2.2: Variable Cost

b. Fixed Cost

Fixed costs remain constant in total amount regardless of changes in the level of activity. This means that the total fixed cost remains the same even as activity levels fluctuate. However, the fixed cost per unit changes with variations in activity levels. As activity increases, the fixed cost per unit decreases, and vice versa. When other factors remain constant, changes in fixed costs affect the break-even point (BEP) and net income. An increase in fixed costs leads to an increase in the volume of the break-even point but a decrease in net income, and vice versa. Fixed costs are also known as capacity costs. The concept of fixed costs can be better understood through the following diagram.

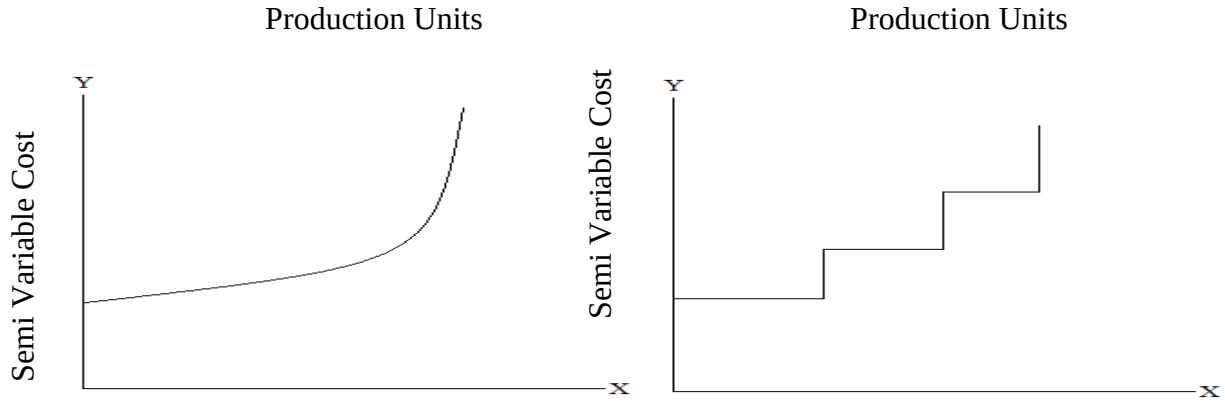


Source: (Fago, 2003)

Figure: 2.3: Fixed cost

c. Semi Variable Cost

Expenses that cannot be distinctly classified as purely fixed or variable are referred to as mixed costs or semi-variable costs. Mixed costs consist of both variable and fixed cost components. Examples of mixed costs include repair and maintenance, supervision, telephone expenses, and electricity charges. For effective profit planning, cost control, and decision-making, it is essential to separate mixed costs into their variable and fixed elements. In mixed costs, the variable cost component is added to the fixed cost component, resulting in an upward-sloping mixed cost line on graphs.



Source: (Fago, 2003)

Figure: 2.4: Semi Variable Cost

2.1.18 Risk Measurement: Operating Leverage and Break Even Point

Operating leverage is a measure of the degree to which fixed costs are utilized in an organization. It reflects the relationship between a company's variable and fixed costs. Typically, organizations with high labor-intensive operations have high variable costs and low fixed costs, resulting in low operating leverage and a relatively low break-even point. Conversely, companies that are highly capital-intensive have cost structures characterized by low variable costs and high fixed costs, leading to high operating leverage and a high break-even point. This indicates a direct relationship between fixed costs and operating leverage. The higher the fixed costs, the higher the operating leverage and break-even point, and vice versa. In simpler terms, firms with relatively high operating leverage have proportionally higher fixed expenses, resulting in a relatively high break-even point (Munakarmi, 2003).

Operating leverage indicates how profit changes in response to changes in sales. Profit tends to change more rapidly than sales due to certain costs that remain constant. When sales decline, variable costs also decrease proportionately, leading to a decline in contribution margin. However, fixed costs remain unchanged, causing net operating income to decline more rapidly. This phenomenon applies similarly when sales increase. As sales revenues fluctuate, fixed costs remain constant, resulting in more significant changes in net income. This phenomenon is known as operating leverage.

Operating leverage can be quantified using the "Degree of Operating Leverage" (DOL), which represents the ratio of the percentage change in net operating income to the percentage change in sales. DOL measures how sensitive net operating income is to changes in sales volume. It indicates the percentage change in net operating income or EBIT associated with a given percentage change in sales (Pandey, 2004).

$$\text{DOL} = \frac{PercentageChangeinNetOperatingincome}{Percentagechangeinsales}$$

Alternatively,

$$\text{DOL} = \frac{ContributionMargin}{NetOperatingincome}$$

$$\text{DOL} = \frac{Q(SPPU-VCPU)}{Q(SPPU-VCPU)-Fixedcost}$$

Where,

Q = Total Sales in unit

SPPU = Selling Price in unit

VCPU = Variable Cost in Unit

As We Know,

BEP (in Units) $= \frac{fixedcost}{SPPU - VCPU}$

Leverage decisions involve shifting from variable costs to fixed costs. Increasing the degree of operating leverage (DOL) entails utilizing a greater amount of fixed costs, which consequently raises the break-even point. When the DOL reaches "1," indicating no leverage, the break-even point is at "0."

Higher fixed costs lead to an increase in both the DOL and the break-even point, highlighting the close connection between the degree of operating leverage and the break-even point. Both a high DOL and a high break-even point serve as indicators of increased risk (Bajracharya, Ojha, Goet, and Poudel, 2008).

2.1.19 Segregation of Semi-Variable (Mixed) Costs

Cost-volume-profit analysis necessitates the classification of all costs into two categories: fixed and variable. Consequently, semi-variable costs must be divided into their fixed and variable components. This can be achieved through any of the following methods: (Maheshwori, 2000).

a. Levels of Output Compared to Levels of Expenses Method

In this approach, the expenses incurred at two different output levels are compared against the corresponding levels of output. Given that fixed expenses remain constant, the variable overhead costs are determined by calculating the ratio of the change in expenses to the change in output:

Variable Element $= \frac{Changeinamountofexpenses}{Changeinactivitylevel}$

b. Range Method

This method mirrors the comparison of output levels to expense levels, yet it specifically focuses on the highest and lowest points of output among various levels. Referred to as the "High and Low" method, it is outlined step by step as follows:

Step I – The highest pair and the lowest pair are selected.

Step II – The variable rate "b" computed by using the following formula

$$\text{Variable Rate} = \frac{Differenceincost}{Differenceinactivitylevel}$$

Step III – The fixed cost portion is computed as:

Fixed cost portion = total cost – variable cost

c. Degree of Variability Method

In this approach, the variability degree is observed for each semi-variable expense item. Certain semi-variable items might exhibit 30% variability, while others could show 70%. While the method is straightforward to implement, challenges arise in determining the precise degree of variability.

d. Scatter – Graph Method

In this technique, data points are plotted on a graph paper, with semi-variable expenses on the vertical axis (Y-axis) and the activity measure on the horizontal axis (X-axis). Each point represents a volume of production and its corresponding costs. By drawing a line of best fit through these points, the total cost line is created. The intersection of this line with the vertical axis represents the fixed cost component. Another line, parallel to the horizontal axis, is drawn from this intersection point, representing the fixed cost line. The variable cost at any level can then be calculated by finding the difference between the fixed cost and the total cost line. While the scatter graph method is relatively straightforward, caution is advised as it lacks an objective test to ensure that the regression line accurately fits the underlying observations.

e. Least square Method

The least square method, a statistical approach, is a reliable technique for separating fixed and variable costs from mixed costs. Initially, the variable cost per unit is computed, followed by the determination of fixed costs. This separation process involves plotting the volume of production against costs on a graph, resulting in multiple data points. A line of best fit is then drawn through these points to represent

the total cost line. The intersection of this line with the vertical axis signifies the fixed cost component. Subsequently, a line parallel to the horizontal axis is drawn from this intersection point, representing the fixed cost line. The variable cost at any production level can be calculated by subtracting the fixed cost from the total cost line. While the scatter graph method is straightforward, it lacks an objective test to ensure the accuracy of the regression line in fitting the data points. Therefore, caution is advised when using this method.

2.2 Review of Previous Research Work

2.2.1 Journals and articles on international context

Chrysafis and Papadopoulos (2014) explored the incorporation of uncertainty into cost-volume-profit analysis through a novel approach involving fuzzy estimators derived from confidence intervals. Their study introduced fuzzy estimators to model variable costs, enabling the representation of uncertainty in cost functions. By formulating fuzzy numbers to capture cost differentials between alternatives, they sought optimal solutions among various choices. The research focused on scenarios of 'complete' uncertainty, particularly in decision-making between two products, where profits and risks were quantified using fuzzy estimators. Additionally, the study addressed uncertainty in determining the breakeven point, where total income equaled total costs.

Ihemeje, Okereafor, and Ogungbangbe (2015) investigated the impact of cost-volume-profit analysis on decision-making within Nigeria's manufacturing sector. Employing a combined survey and longitudinal research approach, the study collected both primary and secondary data for analysis. Utilizing regression and correlation techniques, they assessed the influence of sales value and product quantity on profitability, as well as the relationship between production costs and profits. Their findings highlighted the significance of factors such as reorder and economic order quantity in decision-making processes. As a result, the researchers recommended the widespread adoption of cost-volume-profit analysis by manufacturing industries to enhance decision-making practices.

Kim (2015) conducted research focusing on Cost-Volume-Profit (CVP) Analysis tailored for a Multi-Product Company, adopting a micro approach. While CVP analysis

is fundamental in managerial accounting, its application becomes more complex in multi-product companies due to varying sales mixes. This study introduced a micro approach specifically designed to address decimals encountered when determining break-even and target profit points for companies with diverse product lines. By showcasing this novel approach, the study demonstrated its effectiveness in providing more accurate results compared to existing methods.

Calegari, Rhoden, and Cortimiglia (2016) conducted research focusing on the application of cost-volume-profit analysis to evaluate the feasibility of implementing a new distribution center. In the competitive landscape, firms strive to enhance their operations, especially in logistics and inventory management, to stay competitive in global markets. One critical decision involves establishing distribution centers near key markets, balancing inventory costs with service levels. However, such decisions require rigorous analysis. This paper presents a case study of a real company manufacturing radiopharmaceutical products, utilizing cost-volume-profit analysis to assess the potential viability of a new distribution center. Detailed financial data were collected and analyzed, comparing current operations with potential future scenarios, considering the presence or absence of the new distribution center, to determine its impact on the company's profitability.

LulajandIseni (2018) conducted research to explore the role of Cost-Volume-Profit (CVP) analysis as a crucial indicator for planning and decision-making in the business environment. The study aimed to assess the extent to which CVP analysis is utilized in business planning and decision-making processes, encompassing both manufacturing and service enterprises. Employing a combination of econometric models for accuracy, the research gathered data through structured questionnaires and employed statistical tests such as the Mann-Whitney U test, Brunner Munzel test, p-value, Boot Strap, DF-degree of freedom, and percent confidence interval. Hypotheses were formulated and verified based on the results obtained. The findings indicated a positive relationship between the quantity of products produced and sales value for service companies, as well as increased profitability and production for manufacturing enterprises. Additionally, a significant correlation between production and sales was observed, with CVP analysis contributing to enhanced profitability and break-even outcomes in the

business environment. As a conclusion drawn from the research results, the study advocates for the use of CVP analysis in decision-making processes, highlighting its role in reducing risk thresholds.

Enyi (2019) conducted research on Joint Products Cost-Volume-Profit (CVP) Analysis, aiming to compare the effectiveness of two methods: Weighted-Contribution-Margin (WCM) and Reversed-Contribution-Margin-Ratio (RCMR) in multiproduct CVP analysis applications. Through analysis of six joint-products over 42 weeks of operation using rehashed-activity data and Ordinary Least Squares (OLS) regression, it was observed that WCM lacks analytical efficiency and may lead to suboptimal product mix due to its oversight of the inverse relationship between a product's contribution-margin-ratio (CMR) and its breakeven point (BEP). These shortcomings could potentially result in resource allocation challenges during periods of low capacity utilization. The paper recommends the adoption of RCMR, which considers the tradeoff effects of CMR/BEP in its measurement, offering a more comprehensive approach to joint products CVP analysis.

Oanh, Phong, Thuan, and Cong (2020) conducted research on the application of cost-volume-profit (CVP) analysis in decision-making by public universities in Vietnam. Their study aimed to assess how public universities in Vietnam utilize CVP analysis, especially as the country transitions towards granting financial autonomy to these institutions. Data were collected from Vietnamese public universities through surveys conducted in 2018 and 2019. The collected data underwent synthesis in Excel, conformity checks, data cleansing, and analysis using SPSS software with tools such as Frequency statistics, price statistics, and means. The results revealed that while universities utilized CVP analysis in decision-making, the information derived from CVP analysis for decision-making by administrators was often simplistic and lacked detailed cost-control information. Furthermore, the application of CVP analysis by university administrators was found to be neither comprehensive nor coordinated. The findings underscored the importance of enhancing governance in public universities in Vietnam to reduce costs, increase income, enhance service provision to students, and improve training quality. The study advocates for a flexible application of CVP analysis

to furnish university managers with the necessary information for making optimal decisions.

Beykaei, Abekah, and Rahim (2020) conducted research on the integration of cost-volume-profit (CVP) analysis under uncertainty in profit planning. They highlighted that the practical use of CVP analysis for planning is often hindered by the challenge of properly incorporating uncertainty into the analysis, especially when assumptions about known prices and costs do not hold. To address this issue, the study utilized available analysis software (MAPLE) to demonstrate how uncertainty can be integrated into CVP analysis and planning. Through their examples, they revealed that changes in expected selling prices and variable costs exert a greater influence on expected breakeven sales levels compared to the impact of standard deviations in these factors. Specifically, the study found that decreases in expected selling prices result in sharp declines in the expected breakeven quantity. Moreover, the research showed that while increases in the standard deviations of selling prices or variable costs occur, only proportionate increases in the breakeven quantity are observed.

Malarkodi and Ranjitha (2021) conducted a study on the determinants of cost-volume-profit (CVP) analysis of E.I.D-Parry (India) Limited. In today's highly competitive market, CVP analysis has emerged as a powerful tool for maximizing profits. This analysis aids companies in making crucial decisions to increase sales and profitability by demonstrating the relationship among various factors such as variable costs, sales volume, sales mix, and product costs. CVP analysis plays a significant role in marginal pricing determination, short-term decision-making, target costing, and pricing strategies. The study aimed to assess the profitability position of the factory using five years of financial data from 2016 to 2020. After analyzing the data, the study provided recommendations. It was found that CVP analysis is instrumental in increasing production capacity, adopting cutting-edge technology to reduce manufacturing costs, making informed decisions, and ultimately, maximizing profits. The major findings underscored the importance of CVP analysis in evaluating changes in output level, selling price, variable costs, and fixed costs of a product, thereby providing insights into the financial strengths and weaknesses of the factory.

Guo (2022) delved into enterprise management decision-making and financial management using a dynamic cost-volume-profit (CVP) model. In today's complex and ever-changing business environment, it's crucial for enterprises to mitigate risks and enhance economic benefits through scientific decision-making methods. CVP analysis entails establishing a model by organizing variables pertinent to business decisions in enterprise production through mathematical modeling. This paper introduces a dynamic CVP model, which goes beyond the original assumptions of traditional CVP analysis by interpreting cost behavior through multiple cost drivers. By applying this model to business decision-making and financial management in a case enterprise, the study analyzes products with different characteristics, offering tailored improvement suggestions or strategies for product production decisions. The findings suggest that the dynamic CVP model aids in formulating financial management strategies to optimize enterprise profits, enabling stable growth and development amidst market competition.

Ikeda, Battuvshin, Shirasawa, Chultem, Ishiguri, and Aruga (2022) investigated the impact of site conditions on costs and profitability associated with the extraction and utilization of dead trees in Mongolia. The study focused on estimating the costs and profits involved in extracting dead trees from forests, with the intention of selling them as lumber at provincial centers through sub-provincial centers, or as firewood and unused materials for energy production at sub-provincial centers. Data obtained from the Mongolian government included forest registration data, polygonal data describing province/sub-province boundaries, point data of provincial/sub-provincial centers, and linear data about roads. Subgroups containing Siberian larch, Scotch pine, and Asian white birch trees were analyzed. The study revealed a positive correlation between off-road/primary transportation distance and harvesting/total cost, as well as the total cost and ratio of lumber yield in each subgroup, attributed to the additional cost of transporting lumber from sub-provincial centers to provincial centers. Additionally, a strong positive correlation was observed between profitability and the ratio of lumber yield to the total yield of each subgroup, indicating that profits increase with higher lumber harvests, despite lumber being more costly than firewood or other unused wood. Consequently, the potential for lumber harvest from each subgroup significantly influences profitability.

Isah and Udoekanem (2022) conducted a study on the cost-benefit analysis of commercial complexes in Minna, Nigeria. The aim was to provide investors with insights from Cost-Benefit Analysis (CBA) to inform their investment decisions, particularly concerning the environmental and social costs and benefits associated with proposed commercial property developments. Despite the recognized importance of CBA, there has been limited focus on its application to commercial property investments in Minna metropolis. The study involved conducting CBAs for commercial complexes in Minna, with a specific emphasis on recently developed properties in the city. Data were collected through structured questionnaires administered to commercial property developers, occupiers, and real estate professionals. The findings indicated that location, economic factors, and transportation/infrastructure significantly influence the demand for commercial complexes. Additionally, the study identified return on investment as the primary motivation for private estate developers to engage in commercial complex development, while high construction costs emerged as the most significant constraint in developing commercial complexes in Minna.

Blatter and Fuster (2022) conducted an evaluation of scale effects on efficiency and profitability in the Swiss banking sector. The study analyzed efficiency and profitability trends in the Swiss banking sector from 1997 to 2019. The findings revealed strong evidence supporting the existence of scale economies, indicating that efficiency and profitability tend to increase with bank size for most banks in the sample. Employing an instrumental variables strategy for a subset of geographically constrained banks, the study suggested that the relationship between size and efficiency/profitability is likely causal. Scale economies were observed to be more pronounced since 2010 compared to the years preceding the global financial crisis. However, there was limited evidence of scale economies for the largest (systemically important) banks, with their relatively lower efficiency and profitability attributed to certain aspects of their business model. Additionally, the results indicated that good capitalization, high efficiency, and profitability are compatible in the Swiss banking sector.

Gahn (2022) conducted a study on Interest and Profit: An Empirical Assessment of the Monetary Theory of Distribution for the Euro Area. The research examines the assertion, particularly from authors with a Classical-Keynesian perspective, that the

interest rate plays a significant role in determining the rate of profit in the long term. Analyzing data from the eleven founding economies of the euro area and adjusting for the rate of growth of gross national income, the study identifies a positive long-term relationship between the real interest rate and the net rate of profit. These findings hold even when considering a model that incorporates nominal interest rates, inflation, and a yield curve. The implications suggest that the European Central Bank (ECB), through its monetary policy decisions, influences income distribution rather than remaining neutral in this regard.

Sreenu and Pradhan (2022) examined the impact of COVID-19 on the Indian stock market and assessed the efficacy of economic packages in mitigating market uncertainty. Amid the COVID-19 pandemic, the Indian stock market experienced varying levels of volatility. This study aims to analyze the effect of COVID-19 on stock market volatility and evaluate whether economic interventions can mitigate this volatility. It employs correlation analysis, basic volatility modeling, and robustness tests to identify sector-level economic features and macroeconomic factors that can help reduce volatility stemming from the pandemic. The findings have significant implications for policymakers and financial analysts, enabling them to utilize these economic factors to formulate policy responses to manage unexpected market fluctuations and prevent potential future financial crises. The study's novelty lies in its assessment of variables influencing stock market volatility due to COVID-19 and its exploration of the impact of capital market macroeconomic variables and dummy variables to theoretically elucidate the COVID-19 effect on stock market volatility.

2.2.2 Review of Literature in Nepalese Context

Bhushal (2014) researched on the use of cost-volume-profit analysis to profit planning. The primary goals were to examine how CVP analysis is currently used at Bottlers Nepal Limited. It was researched on Bottlers Nepal Limited's financial situation and profitability. There is a t-test, regression analysis, correlation analysis, and informal research design employed. The corporation has not maintained the wide and long-range aims, and the objectives are restricted to high-ranking officials alone, according to the key findings of the periodic report. The lack of an efficient forecasting system is the

reason why sales and promotion targets are not being met. There isn't a single efficient strategy for controlling and reducing costs. And a deficiency in efficient cost control programming. The company's earnings trend is unsatisfactory.

Adhikari (2015) conducted a study on Nepal Telecom's Cost, Volume, and Profit Analysis. The primary goals were to examine the link between profit, volume, and cost as a managerial tool for profit planning. It is evaluate the company's costs, volumes, and profits and how these affect profit planning. In addition to the t-test, regression analysis, correlation analysis, and descriptive study design are employed. The primary conclusions were that Nepal Telecom Limited ignores the distinction between fixed and variable costs. Businesses only have a sales and production plan that outlines their necessary targets; they do not have a financial strategy. An efficient approach for controlling and reducing costs does not exist. There are no appropriate standards for assessing financial tool performance.

Dahal (2016) carried out research on the subject of cost volume analysis in Nepali manufacturing companies. The primary goals of the study were to examine how CVP analysis is being used in Nepalese manufacturing companies. The CVP and its effect on the profitability of Nepalese Manufacturing Company are analyzed, along with the company's financial status and profitability. It was the absence of entrepreneurship, experienced planners, and budgeting knowledge, significant gaps in coordination and communication between the various management and employee levels. There are no efficient programs in place to accomplish desired goals and objectives or to get over current issues and obstacles. No organized and successful financial plan. There is no appropriate procedure for dividing costs into fixed, variable, and semi-variable costs, nor are there appropriate records of the various costs.

Shrestha (2016) conducted research on Soaltee Hotel Limited's cost, volume, and profit analysis. The primary goals were to investigate the types of costs associated with hotels, both direct and indirect. It was assess the salty hotel's operations in terms of profitability, financial standing, and sensitivity. The primary conclusions were that hotels prioritize revenue maximization over expense planning and control. Although

Soaltee Hotel Limited is a service provider, it hasn't placed much focus on lowering its variable cost ratio. Demand and pricing in the market have not been studied.

Shrestha (2016) carried out a study on the Cost Volume and Profit Analysis of NEA and NTC. The primary goals were to investigate the characteristics of direct and indirect costs as well as the NEA and NTC cost components. The NEA and NTC's profitability, financial standing, and sensitivity are assessed. The t-test, regression analysis, coefficient of correlation, mean, and standard deviation are all used. The primary conclusions were that hotels prioritize revenue maximization over expense planning and control. Although NEA and NTC Limited are service providers, they haven't placed much focus on lowering the variable cost ratio. Demand and pricing in the market have not been studied.

Poudel (2017) studied Cost, Volume, and Profit Analysis as a Management Tool for Bottlers Nepal Limited's Profit Planning. The primary goals were to examine the link between profit, volume, and cost as a managerial tool for profit planning. To evaluate the company's costs, volumes, and profits and how these affect profit planning. It is assess the profitability's sensitivity and offer advice and recommendations about Bottlers Nepal Limited's operations. The main conclusions were that Bottlers Nepal Limited ignores the distinction between fixed and variable costs. Businesses only have a sales and production plan that outlines their necessary targets; they do not have a financial strategy. An efficient approach for controlling and reducing costs does not exist.

Yadav (2017) studied on Nepal Aushadhi Limited's cost, volume, and profit analysis. The primary goals were to assess the sensitivity of profit ability and examine the application of CVP analysis in NAL. In order to examine NAL's profitability and financial situation, the CVP is analyzed along with how it affects the company's profitability. There is a t-test, regression analysis, correlation analysis, and informal research design employed. The main conclusions were that NAL had not used an appropriate scientific method for cost classification.NAL was unable to emphasize the efficient use of fixed costs, which resulted in a larger proportion of adverse capacity

variance. When setting the pricing of its product, NAL did not take the cost-volume-profit relationship into account.

Bhusal (2018) carried out a research on Profit Planning at Dairy Development Corporation. The focus of this study is DDC's present profit planning procedures. This article covers the five-year period from FY 2012 to FY 2016. Secondary data sources provided the essential information and the data itself. The likelihood of the company turning a profit increases with MOS size, or vice versa. The excess of actual or budgeted sales over BEP sales is another definition of MOS. A statistical metric used to examine the degree of association between two or more variables is called correlation. The assessment of profitability's sensitivity was one of the primary goals. It was offer advice and recommendations regarding Bottlers Nepal Limited's operations. The main conclusions were that there isn't a workable strategy for controlling and reducing costs. There are no appropriate standards for assessing financial tool performance.

Poudel (2018) carried out a study at HBL and EBL bank Limited, studied cost, volume, and profit analysis. The primary goals were to examine the link between profit, volume, and cost as a managerial tool for profit planning. The company's cost, volume, and profit are analyzed, along with how they affect profit planning. In addition to using the t-test, regression analysis, correlation analysis, and casual and descriptive study methodologies are also employed. The primary conclusions were that Bottlers Nepal Limited ignores the distinction between fixed and variable costs. Businesses only have a sales and production plan that outlines their necessary targets; they do not have a financial strategy. An efficient approach for controlling and reducing costs does not exist.

Adhikari (2019) studied on the Cost-Volume-Profit Analysis of Nepal Lube Oil Limited. The primary goals were to identify the business operating areas, conduct a CVP study, and increase the company's competitiveness. The most common practice is to determine the CM, BEP, MOS, etc. of CVP analysis. Regression analysis, correlation analysis, and the casual research design are all employed. The main conclusions were that NLO did not use the many profit planning strategies that are employed in the academic setting.NLO does not use CVP analysis since it does not separate costs into

fixed and variable costs, which is the fundamental component of CVP analysis. The company lacks distinct lines dividing costs into fixed and variable expenses. Cost classification is not methodical or scientific.

Bhattarai (2019) conducted a study on CVP analysis as a complementary tool to profit planning. It says a lot about the relationships between business variables. Total variable costs are proportional to sales. Total fixed costs, on the other hand, do not change within the relevant production level. Therefore, net profit is not proportional to sales. Knowing this relationship allows you to profit based on predicted sales volume. It can also determine the sales required to make a minimum profit. This is an empirical statement that explains the relationship between variables using the sum of variable costs relative to sales. Furthermore, it is shown that total fixed costs remain constant within the relevant production levels. It was explained that CVP has not a compulsory measure, but a complementary measure. The study of the relationship between sales, costs, and net profit is commonly referred to as his CVP analysis. CVP analysis looks at changes in the amount of profit. It is based on linear cost analysis and linear revenue assumptions. To understand CVP analysis, the common example of a company that only produces a single product is used. The analysis is expanded to include companies with multiple products in multiple business units. CVP analysis essentially consists of examining the relationship between changes in quantity and changes in profit.

Gautam (2020) studied the Commercial Banks of EBL, SCBNL, and PBL's Cost, Volume, and Profit Analysis. The primary goals were to assess the profitability, financial standing, and sensitivity of the Commercial Bank of EBL, SCBNL, and PBL operations, as well as the nature of direct and indirect costs and component of costs of these banks. Regression analysis, correlation analysis, and a descriptive and informal study design are all used. The primary objective of hotels is to maximize revenue; cost volume analysis is not their primary focus. Although Commercial Bank of EBL, SCBNL, and PBL is a service provider, it hasn't placed much focus on lowering the variable cost ratio.

Shakya (2020) explained on the profit planning at Lumbini Sugar Mill Limited. The utilization of budgets as instruments for profit planning in sugar mills restricted is

centralized for examination. The research was conducted over a seven-year period, from FY 2007 to FY 2013. Primary and secondary data sources had yielded the required information along with other data. The primary goals of the study were to examine how CVP analysis is being used in Nepalese manufacturing companies. This research focuses on Nepalese Manufacturing Company's financial situation and profitability. It is also evaluate the CVP and how it affects Nepalese Manufacturing Company's profitability. The main conclusions were that there was a dearth of entrepreneurship, experienced planners, and budgeting knowledge. Significant gaps in coordination and communication between the various management and employee levels.

Gyawali (2021) carried out study on cost, volume, and profit analysis as a managerial tool of order to plan Bottlers Nepal Limited's profit. The primary goals were to examine the link between profit, volume, and cost as a managerial tool for profit planning. It is evaluate the company's expenses, output, and earnings and how these affect profit planning. Regression analysis, correlation analysis, and the casual research design are all employed. The primary conclusions were that Bottlers Nepal Limited ignores the distinction between fixed and variable costs. Businesses only have a sales and production plan that outlines their necessary targets; they do not have a financial strategy. An efficient approach for controlling and reducing costs does not exist.

Jha (2021) conducted a research topic on “Profit Planning of Nepal Manufacturing Company: A Case Study of Himal Cement Company”. This study deals with the application and effectiveness of profit planning system in manufacturing companies with particular reference to Himal Cement Company. The target period of this research was 10 years from 2011 to 2021, and necessary information such as data was collected using secondary data and primary data. The main objective was to investigate the intensive cost volume analysis in the current operations of Himal Cement Company. To find out, data and other necessary information were collected from secondary data sources. The main finding was that CVP analysis was not being applied because the division of costs into fixed and variable costs, which is the core of CVP analysis, was not done. The company does not have a clear line dividing costs into fixed and variable costs. The classification of costs is not scientific and systematic. Therefore, Himal

Cement Company could not utilize his CVP analysis to create a realistic and prudent budget.

2.3 Research Gap

Businesses not only put in effort and resources but also implement strategies to safeguard against losses. Therefore, it's crucial to strategize for future actions to achieve business goals and ensure profitability. Assessing business capacity, operations, resource utilization, and cost reduction opportunities are integral parts of effective planning and execution. Investments are made with the aim of earning profits, but the unpredictable nature of the future entails risks, necessitating prudent management to mitigate them. Various management tools, including Cost-Volume-Profit (CVP) analysis, are utilized for this purpose.

CVP analysis is instrumental in evaluating the interplay between activity levels, sales revenue, expenses, and net profit, aiding in cost management and profit planning. Profit serves as a fundamental measure of business success, and CVP analysis contributes to understanding and enhancing profitability. It provides quick insights into the profitability of manufacturing or service-oriented businesses.

The primary objective of this study is to assess the application and efficacy of CVP analysis in companies like NTC, NOC, and NEA, prominent players in the country's manufacturing sector. While secondary data predominantly inform this study, additional insights were gleaned through informal discussions. Financial data were organized into tabulated formats as needed.

Traditionally, research on profit planning and CVP analysis has focused on manufacturing companies or industries, with limited attention to the manufacturing sector itself. This study sheds light on the financial standing of NTC, NOC, and NEA, showcasing their position within the industry.

CHAPTER-III

RESEARCH METHODOLOGY

3.1 Research Design

Research design is the plan structure and strategy of invention conceived so as to obtain answer to research objectives. The plan is the overall scheme on program of research. It includes on the outline of what the investigators will do from writing the hypothesis and their operational implication to the final analysis of data. The structure of the research is more specific. It is the outline, the scheme and the paradigm of the operation of the variables. When it draw diagram that the variables and their relation and just a position it build structural schemes for accomplishing the operational research purpose strategy, as used here is also more specific than plan.

3.2 Population and Sample

The research methodology employed in this study combines analytical and descriptive approaches. It exclusively relies on secondary data sources. The focus is on examining and evaluating the revenue planning strategies of NTC, NOC, and NEA Ltd., which are closely linked with various functional budgets. The presentation of information and data follows an analytical framework, supplemented by explanatory insights where necessary. The study encompasses all personnel within these enterprises and is primarily concerned with revenue planning and budgeting. Specifically, it investigates the practices of Nepal Telecom Company Limited, Nepal Oil Corporation, and Nepal Electricity Authorities Company Limited as sample companies. The research spans a period of the past decade, from the fiscal years 2012/013 to 2021/022.

3.3 Sources of Data

In conducting effective research, data serve as a cornerstone. In this study, quantitative data were directly obtained from NTC, NOC, and NEA, while supplementary data were gathered from secondary sources. Qualitative insights were sourced from officials of these organizations, providing valuable contextual information. The descriptive data were acquired from staff members and annual reports of NTC, NOC, and NEA.

3.4 Data Collection Technique

Various data collection methods were employed in this research to gather essential and reliable information. Given the focus on budgeting practices, much of the data was sourced from published functional budgets and financial statements. These documents were obtained directly from the accounting, planning, and functional departments of NTC, NOC, and NEA.

3.5 Data Analysis Tools

Data gathered from diverse sources underwent meticulous management, analysis, and presentation in appropriate tables and formats, following the guidance of Joshi (2001). These tables and formats were then interpreted and elucidated wherever deemed necessary.

3.6 Statistical and Mathematical Tools

The collected data underwent analysis employing various financial and statistical tools, including percentile calculation, incremental analysis, arithmetic mean computation, standard deviation assessment, correlation coefficient determination, regression coefficient analysis, and graphical representation using graphs and diagrams.

3.6.1 Percentile Increment

This statistical method calculates the percentage change from the previous year to the current year. It assists in identifying the increase in the variables under study. Essentially, a percentage represents a proportion out of a hundred. Put differently, it's a fraction where 100 serves as the denominator, and the numerator denotes the rate of percent.

3.6.2 Arithmetic Mean Average

The central tendencies that encapsulate the features of an entire distribution or the values where all items of the distribution tend to cluster are termed averages. The arithmetic mean, or simply the mean, stands out as a crucial statistical measure of averages. It's computed by summing up all observations in a given set and dividing the total by the number of observations.

3.6.3 Coefficient of Correlation

One type of statistical technique is correlation analysis. It is applied in determining the correlation between variables. Two quantities are correlated if their variations are such that changes in one are accompanied by changes in the other. It displays how a change in one variable affects other variables. Through correlation analysis, the degree of association between the variables under examination is measured. Correlation is a statistical tool that facilitates the investigation of the co-variation between two or more variables. In practical applications, Karls Pearson's correlation coefficient is commonly utilized. In practical applications, Pearson's coefficient of correlation is commonly utilized. A "r" indicates the Person's Coefficient of Correlation. The following is the formula to find a person's "r":

$$r = \frac{\sum Xy}{\sqrt{\sum x^2}\ \sqrt{\sum y^2}}$$

Where,

r = the correlation coefficient

$x = X - \bar{X}$

$y = Y - \bar{Y}$

X = Independent variables

Y = Dependent variables

The coefficient of correlation can be interpreted using the broad guidelines listed below: a perfect positive association between the variables is shown when r = +1. There is a perfect negative link between the variables when r = - 1. When r = 0, it indicates that the variables are uncorrelated, or that there is no link between them.

3.6.4 Financial Tools

This study employed ratio analysis and CVP analysis as financial analytical methods. Ratio analysis is such powerful tool of financial analysis that thought the help of it economic and financial position of business unit can fully x-rayed (Kothari, 1990:187) is the main focus of ratio analysis as a financial tool throughout the research.

3.6.5 Regression Analysis

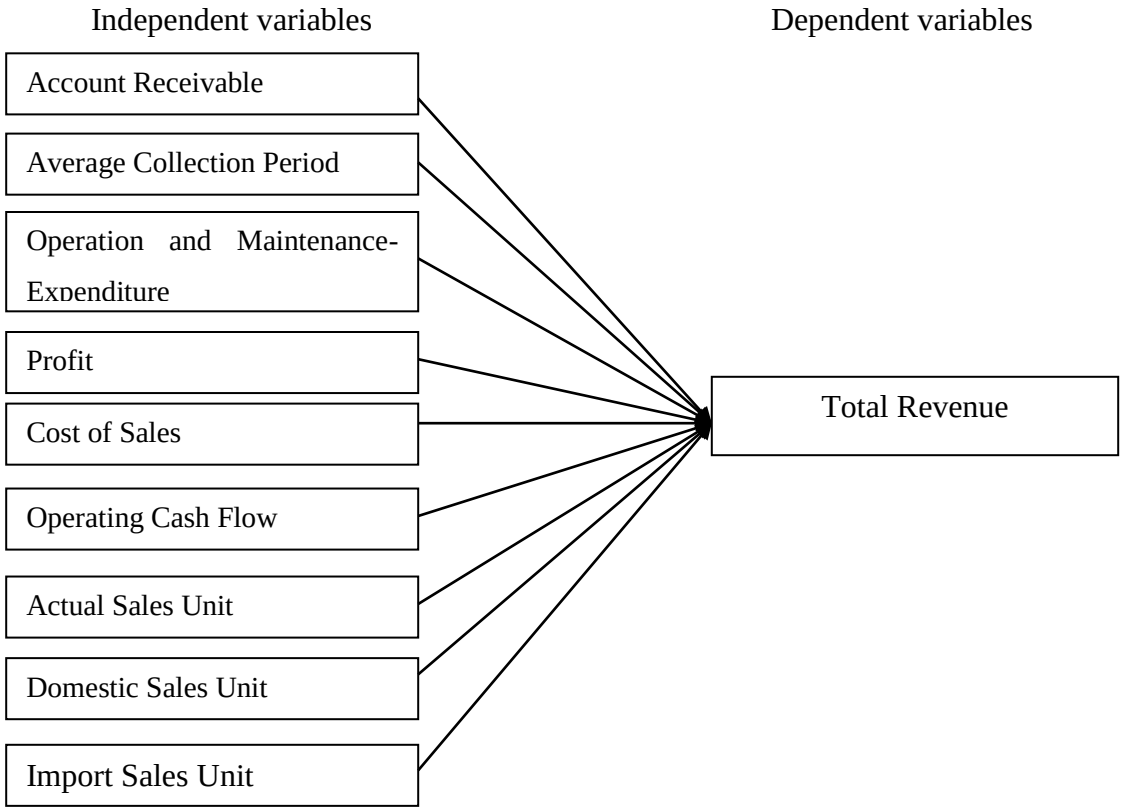
Regression analysis is a statistical tool that can be used to estimate one variable based on other variables and determine the statistical relationship between two or more variables. In other words, regression analysis is the statistical tool that allows one variable's unknown value to be estimated based on the known value of another variable.

Where,

Y= a+bx

3.7 Conceptual Framework

A textual or graphic depiction of an anticipated relationship between variables is called a conceptual framework. Simply said, variables are the traits or qualities you wish to research. Typically, a review of the body of research on the subject that includes studies and theories provides the foundation for developing the conceptual framework.



3.8 Definition of the Variables

Sales Revenue

Sales revenue is the income received by a company from its sales of goods or the provision of services. In accounting, the terms “sales” and “revenue” can be, and often are, used interchangeably to mean the same thing.

Account Receivable

Accounts receivable refers to the money a company's customers owe for goods or services they have received but not yet paid for. For example, when customers purchase products on credit, the amount owed gets added to the accounts receivable.

Average Collection Period

The average collection period is the average number of days it takes a business to collect and convert its accounts receivable into cash. It is one of six main calculations used to determine short-term liquidity, that is, the ability of a company to pay its bills (current liabilities) as they come due.

Operation and maintenance

Operations and Maintenance (O and M) means the functions, duties and labor associated with the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to preserve an asset so that it continues to provide acceptable services and achieves its expected life.

Expenditure

Expenditure is the spending of money on something or the money that is spent on something, the total amount of money that a government or person spends: it's part of a drive to cut government expenditure.

Profit

Profit describes the financial benefit realized when revenue generated from a business activity exceeds the expenses, costs, and taxes involved in sustaining the activity in question. Any profits earned funnel back to business owners, who choose to pocket the cash, distribute it to shareholders as dividends, or reinvest it back into the business.

Cost of sales

The cost of sales is the accumulated total of all costs used to create a product or service, which has been sold. The cost of sales is a key part of the performance metrics of a company, since it measures the ability of an entity to design, source, and manufacture goods at a reasonable cost.

Operating Cash flow

Operating cash flow (OCF) is a measure of the amount of cash generated by a company's normal business operations. Operating cash flow indicates whether a company can generate sufficient positive cash flow to maintain and grow its operations, otherwise, it may require external financing for capital expansion.

Actual sales unit

It is the difference between budgeted sales revenue and actual sales revenue. In other words, this variance represents the difference between expected sales revenue and actual sales revenue achieved. It is also called Total Sales Variance. It is the difference between actual and expected unit selling price multiplied by actual quantity.

Domestic Sales Unit

The unit sales number on a balance sheet represents the total sales of a product in a given period. This sales information is used to determine the price point that allows for the greatest profit per unit considering the actual cost of production. To stock analysts, unit sales are a valuable measure of a product's contribution to a company's balance sheet.

Import Sales Unit

It can export and import the entire data to a newly created company. It have to export the masters first and then the transactions. A parallel import is a non-counterfeit product imported from another country without the permission of the intellectual property owner. A sales tax is a tax paid to a governing body for the sales of certain goods and services.

CHAPTER-IV

DATA PRESENTATION AND ANALYSIS

This chapter includes data presentation and analysis. The data and information collected from the sample institutions of annual publications report. The collected data are analyzed using different tools and techniques. Results found from the analysis are systematically presented and carefully interpreted or explained in the following sections.

4.1 Data Analysis

4.1.1 Revenue Trend of Nepal Telecom

The revenue plan serves as a pivotal component in profit planning and control. Without a pragmatic and feasible revenue plan, the accuracy and practicality of other aspects of the profit plan remain uncertain.

Ensuring the realism of revenue plans is paramount, as unrealistic projections can render other elements of the profit plan incongruous with reality. Revenue plan formulation encompasses four interconnected steps: (I) sales forecast, (II) marketing plan, (III) promotional expenses budget, and (IV) selling expenses budget. While the primary responsibility for crafting the sales budget lies with the sales manager, the involvement of chief executives is also crucial in such endeavors.

Sales forecast serves as the foundation for revenue plan development, considering that sales constitute the primary revenue source directly influencing overall business operations. NTC, NOC, and NEA adhere to the practice of preparing long-term sales forecasts to gauge future demand accurately.

Sales budgets crafted by NTC, NOC, and NEA are tailored to the diverse nature of consumers, categorized into segments such as domestic, commercial, non-commercial, and communications centers. Furthermore, customers are segmented based on factors like locality, STD, ISD, telephone usage, and mobile usage.

Analyzing past sales performance and respective budgets sheds light on historical sales trends, aiding in forecasting future sales trajectories for NTC and NEA.

Table 4.1: Sales and Achievement

In Millions

Fiscal Year	Budgeted Sales (NRs.)	Actual Sales (NRs.)	Achievement (%)
2012/013	26,478.41	27,452.17	103.36
2013/014	24,875.69	28,452.30	114.37
2014/015	18,458.74	32,145.28	174.14
2015/016	17,456.45	40,254.23	230.59
2016/017	18,745.34	38,858.26	207.29
2017/018	22,711.36	39,671.12	174.67
2018/019	26,060.63	42,638.37	163.61
2019/020	28,089.67	44,227.35	157.45
2020/021	30,898.64	44,588.98	144.3
2021/022	326,74.32	46,386.62	141.97
Total	213,774.93	384,674.68	1611.75
Average	21,377.49	38,467.47	161.18

(Sources: Annual Report of NTC)

The above table depicts that, the budgeted sales and actual sales of NTC for the fiscal year 2011/12 to 2021/022 are presented here. The NTC actual sales are grow up on satisfactory Level. The average sales achievement is 161.18 %, which is at most satisfactory level. In the Fiscal year 2012/013 the projected and actual sales revenue ware Rs.26478.41 and Rs.27452.17 which is 103.36% of total achievement. Similarly, in the year 2014/015 and 2015/016 were gradually grow up and in the F/Y 2016/017, the sales revenue ware rapid increased up likely to 230.59%. On the other hand, the actual sales revenue is in increasing trend during the FY 2015/016 and then the sales became decline trends till to 2021/012 likely to in the year 2017/018 were 174.67% to in the FY 2021/022 were 141.97% respectively.

4.1.2 Analysis of Account Receivable

Managing receivables poses a significant challenge for Nepal Telecom currently. The average collection period serves as a gauge of receivables' liquidity, with shorter collection periods indicating a higher debtor turnover ratio. Conversely, extended

collection periods suggest an overly liberal and inefficient credit policy. Analyzing Nepal Telecom's accounts receivable primarily involves assessing debtor turnover and average collection periods to understand the correlation between receivables and net revenue from sales. Therefore, debtor turnover ratios from the fiscal years 2012/013 to 2021/022 are presented to analyze Nepal Telecom's accounts receivable.

Table 4.2: Analysis of Account Receivable

	Account Receivable (a)	**Sales Revenue (b)**	**Debtor Turnover ratio (DTR)(c = b/a)**	**Average Collection Period (ACP)(d= 365/c)**	
	3,652	27,452.17	7.51	48.60	
	2,142	28,452.30	13.28	27.48	
	3,478	32,145.28	9.24	39.50	
	4,125	40,254.23	9.75	37.43	
	3,188	38,858.26	12.19	30	
	2,923	39,671.12	13.57	27	
	2,621	42,638.37	16.27	22	
	2,930	44,227.35	15.09	24	
	2,673	44,588.98	16.68	22	
	2858	46,386.62	16.24	22.49	
	30,590	384,674.68	129.82	300.5	
Average	3059	38467.468	12.982	30.05	-1.197

(Source: A year in Review, NTC FY 2012/013 to 2021/022)

The above table shows the relationship between receivable and sales revenue from which the receivable turnover and average collection period can be analyzed. Debtor turnover ratio indicates the number of items the debtors are turned over a year. The higher the value of debtor turnover the more efficient is the management of debtors or more liquid the debtors are, due to more fast collect money. Similarly, low debtor turnover ratio implies inefficient management of debtor or less liquid debtor. It is

reliable measure of time of cash flow from sales. It can be conclude that the NTC have collected and rotated Debtors turnover in respectable time.

4.1.3 Analysis of Overhead Cost

NTC consolidates its overhead budget into a unified operating and maintenance expenditure budget, encompassing various cost components such as employment expenses, bonuses, incentives, depreciation, administrative costs, foreign currency gains or losses, royalties, losses on sales of telecommunications and other goods, license fees, and deferred expenses. Unlike other organizations, Nepal Telecom Company Limited does not segregate its budget into manufacturing, administrative, and selling distribution overheads. Instead, it opts for a holistic approach by presenting the "Operation and Maintenance Expenditure Budget." Consequently, analyzing NTC's overhead budget separately poses challenges due to this integrated approach. Reviewing the historical trend of NTC's Operation and Maintenance Expenditure reveals the following pattern:

Table 4.3: Analysis of Overhead Cost

(NRS. Millions)

F/Y	Actual Sales (NRs.) [a]	Operation and Maintenance Expenditure (NRs.) [b]	Cost of Sales (%)[b/a * 100]	Percentage Change
2012/013	27,452.17	21,475.50	78.22	-
2013/014	28,452.30	21,542.30	75.71	-2.51
2014/015	32,145.28	26,789.47	83.33	7.62
2015/016	40,254.23	25,874.20	64.27	19.06
2016/017	38,858.26	20,490.80	52.73	-11.54
2017/018	39,671.12	21,449.99	54.07	1.34%
2018/019	42,638.37	19,209.19	45.05	-9.02%
2019/020	44,227.35	15,950.65	36.07	-8.98%
2020/021	44,588.98	17,947.51	40.25	4.18%
2021/022	46,386.62	19,539.27	42.13	1.88%
Total	384,674.68	210,268.88	304.23%	12.52%
Average	38,467.47	21,026.89	30.42%	1.39%

(Source: Annual Report of NTC from (2012/013 to 2021/022)

The above table indicates that overhead expenditure trend from fiscal year 2012/013 to 2021/022 with respect to sales. The maximum operation and maintenance overhead is in 2014/015 NRS. 26789.47 million Which is 83.33% of total sales whereas the minimum

expenditure is Rs.15950.65 million, which is 36.07% of total sales in the FY 2019/020.It can be seen that the trends of total operation expenditure is fluctuating. It can be conclude that, the Average Overhead of NTC became Rs. 21026.89 and its cost of sales seen 30.42% in 10 years period.

4.1.4 Analysis Profit and Loss of NTC

The profit and loss statement of an organization serves as a vital indicator of its operational performance within a specific period, akin to a scoreboard. The primary purpose of preparing a profit and loss account is to assess the operating position of the organization. Typically, profit-making entities compile profit and loss accounts reflecting the profit or loss for the fiscal year. Conversely, non-profit organizations prepare income and expenditure accounts, which depict the net surplus or deficit over a specific period. Nepal Telecom Company Limited has consistently generated profits since its inception. Below is a table detailing the profit of Nepal Telecom Company Limited.

Table 4.4: Analysis Profit and Loss

(NRS in Millions)

Fiscal Year	Profit	Percentage Change
2012/013	20,452.74	-
2013/014	19,142.45	6.124
2014/015	16,245.30	4.263
2015/016	14,125.12	3.214
2016/017	11,299.17	2.475
2017/018	11,568.49	2.838
2018/019	14,556.33	25.82
2019/020	13,554.43	-6.88
2020/021	15,372.76	13.42
2021/022	18583.29	20.89
Total	154,900.08	-
Average	15,490.01	-

(Source: Annual Reports, NTC)

The above table depicts that the Profit and Loss scenarios of NTC is presents the 10 years period. In the Fiscal year 2012/013 the Profit of NTC became Rs. 20452.74 million this profit trend had become decline to 18583.29 in the Fiscal year 2021/022. It

can be conclude that, the average profit if NTC became Rs.15490.01 million and its average growth rate became 8.02% in 10 years period.

4.1.5 Relationship between Revenue and Profit

Profit stands as a cornerstone of every business venture, essential for its sustenance and future growth. Indeed, a business devoid of profit has no place in the market. However, the notion of profit has evolved over time, with a contemporary emphasis on achieving reasonable profitability. Profit serves as the lifeblood of any organizational entity, vital for meeting expenses, distributing dividends, seizing opportunities, and contributing to the national treasury. In today's business landscape, the effectiveness and efficiency of management are often gauged by the level of profit generated. The profitability of an organization is intricately tied to its sales revenue. NTC has consistently delivered positive returns, earning a reputation as a highly profitable entity in the public utility sector.

Table 4.5: Relationship of Sales on Profit

(NRS in millions)

Fiscal Year	Sales	Increase over previous year (%)	Profit	Increase over previous year (%)	% of profit on Sales
2012/013	27,452.17	-	20,452.74	-	29.47
2013/014	28,452.30	2.01	19,142.45	18.452	34.25
2014/015	32,145.28	2.14	16,245.30	14.412	25.30
2015/016	40,254.23	4.27	14,125.12	25.102	27.12
2016/017	38,858.26	3.26	11,299.17	2.14	29.08%
2017/018	39,671.12	2.09%	11,568.49	2.38%	29.16%
2018/019	42,638.37	7.48%	14,556.33	25.83%	34.14%
2019/020	44,227.35	3.73%	13,554.43	-6.88%	30.65%
2020/021	44,588.98	0.82%	15,372.76	13.42%	34.48%
2021/022	46,386.62	1.05%	18583.29	1.21%	40.07%
Total	384,674.68	11.832	154,900.08	60.45%	118.12%
Average	38467.47	1.18	15490.01	6.05%	11.81%

(Source: Annual Reports, NTC)

The above table indicates that, the revenue and profit and loss trend i.e. increase/ decrease over previous year assuming F/Y 2012/013 to 2021/022 respectively. The table presents that the total revenue and profit is in fluctuating trend. In the year 2012/013 the profit portion became 29.47% and the rate became gradually increasing trends till to

2021/022 to reach 40.07%. Similarly, the average sales and profit portion have shown 1.18% and 11.81% in ten years period. It clears that the comparatively profitable portion is better than sales scenarios in 10 years period.

4.1.6 Analysis Profit and Loss of NEA

Sales Budget of NEA by Territory

NEA's total sales can be segmented into two territories: domestic sales and export sales. The table below illustrates the current sales performance of NEA by territories.

Table 4.6: *Actual sales by territories*

Fiscal Year	Total Sales		Growth unit in %	Domestic Sales	
	Unit (Mt)	Amount (Rs)		Unit (Mt)	Amount (Rs)
2012/013	87,421	416618135	-	87,421	416618135
2013/014	15,632	239716450	26.59	15,632	239716450
2014/015	13,857	247440321	29.35	13,857	247440321
2015/016	12,475	600112621	35.47	12,475	600112621
2016/017	97,150	242874071	28.12	97,150	242874071
2017/018	127088	317718153	30.82	127088	317718153
2018/019	131167	327916497	3.21	131167	327916497
2019/020	147197	367990960	12.22	147197	367990960
2020/021	164667	411667400	11.86	164667	411667400
2021/022	173850	434627389	5.29	173850	434627389
Total	970,504	3,606,681,997	183	970,504	3,606,681,997
Average	97,050	360,668,200	20	97,050	360,668,200

Source: Annual report and sales Department of NEA

Table shows that in the fiscal years 2012/013 the amount of domestic sales of NEA was equal of the total sales. Clearly, seen that there was no any export sale, such a reason because of strong competition in international market as well as in domestic market. In spite of this unfavorable condition of export trade its domestic sales is in increasing trend. In the fiscal year 2013/014 it has 26.29 % and the fiscal year 2014/015 its unit has increases by only 2.76% because of Indian blockade for long time. Similarly, the

unit portion became increase till 2016/016 and the growth rate became decline to 2021/022 to 5.27% respectively. It can be conclude that, Average unit demand have been increasing per year by 20% and its amount shows Rs. 360,668,200/- respectively.

4.1.7 Comparison of Actual sales with operating profit/ Loss of the NEA

Profit represents the surplus revenue garnered beyond incurred costs. Maximizing profit while efficiently utilizing resources stands as a primary objective for any organization. Therefore, sales turnover significantly influences profit generation. The sales and operating profit/loss figures for NEA are tabulated as follows:

Table 4.7: Sales and operating profit/Loss

Fiscal Year	Actual Sales	% Change in sales	Operating Profit/ Loss	Operating Profit ratio	% change in operating profit
2012/013	2445.10	24.21	(86.29)	(6.39)	68.14
2013/014	2945.30	27.45	(88.29)	(5.28)	-36.28
2014/015	2754.21	26.30	(74.28)	(6.36)	-74.12
2015/016	2456.43	24.23	(85.36)	(4.25)	84.26
2016/017	2428.74	24.00	(92.35)	(3.65)	-83.74
2017/018	3177.18	26.04	(73.00)	(2.29)	-21.03
2018/019	3279.16	3.20	(51.31)	(1.56)	-29.72
2019/020	2226.55	(32.10)	(32.95)	(1.48)	-9.23
2020/021	4116.68	84.89	46.51	0.55	-1.38
2021/022	4864.82	15.38	56.23	0.28	-0.72
Total	30694.17	223.6	-481.09	-30.43	-103.82
Average	3069.417	22.36	-48.109	-3.043	-10.382

Source: Annual report of NEA

The above data show the details of actual sales as well as operating profit and Loss. Table clearly describes that form the overall period, the actual sales has unexpectedly more haphazard as well as the profit tendency also seen less variable in overall period. The result shows that, the average sales in past 10 years shows 3069.417 million and the percentage in sales shows 22.36 as well as the portion of profit and loss have shown

increased trends likely -481.09 to -48.109% in 10 years period. Finally, it can be concluding that, the NEA has been going to profitably trends from past 2 years periods.

4.1.8 Relation between Actual sales and Profit

Table 4.8: Relation between Actual Sales and Profit

(Rs. in 00000)

Fiscal Year	Actual Sales	% Deviation on average sales	Profit	% Deviation on Average Profit
2012/013	2445.10	(30.28)	(86.29)	2
2013/014	2945.30	8.14	(88.29)	14.01
2014/015	2754.21	6.25	(74.28)	11.08
2015/016	2456.43	(26.30)	(85.36)	6.99
2016/017	2428.74	(25.40)	(92.35)	(55.94)
2017/018	3177.18	4.14	(73.00)	(23.27)
2018/019	3279.16	7.12	(51.31)	13.35
2019/020	2226.55	(36.79)	(32.95)	44.36
2020/021	4116.68	26.02	46.51	27.33
2021/022	4864.82	18.17	56.23	20.89
Total	33336.41	-39.73	-540.45	87.8
Average	3030.583	-3.61182	-49.1318	7.981818

Source: Annual report of NEA

The above table shows that relation between Actual sales and net profit from the FY 2012/013 to FY 2021/022. From the above table, it is observed that the average sales and average net profit during the study period are Rs. 3030.583 and -49.138lakh respectively. Similarly, the highest positive deviation from the average sales is 26.02 percent in the F/Y 2020/021 and the highest positive deviation from an average profit is 56.23 percent in the F/Y 2021/022. The highest negative deviation from on average sales is (36.79) percent in the F/Y 2019/020 and the highest negative deviation from an average profit is (55.94) percent in the FY 2016/017. From the above analysis, it is observed that sales and net profit were fluctuating during the study period. Therefore,

there is no specific policy of management on sales and net profit. It can be conclude that the Sales and profit percentage of NEA have been increasing since 2 years period.

4.1.9 Comparison between Actual Sales and Actual Import

The primary objective behind production is eventual sale. While achieving the budgeted import target holds significance, ensuring that sales meet the import is paramount. Hence, analyzing past actual sales in comparison with actual imports is crucial.

Table 4.9: Comparison between Actual sales and Actual Import

(Unit in Mt.)

Fiscal Year	Actual Sales in unit	Actual Import in unit	Achievement in %
2012/013	2445.10	145236	1.68
2013/014	2945.30	127589	2.30
2014/015	2754.21	75426.30	3.65
2015/016	2456.43	75842.20	3.23
2016/017	97150	96522.60	100.65
2017/018	127088	127778	99.46
2018/019	131167	132238	99.12
2019/020	147197	149000	98.79
2020/021	164667	166263	99.04
2021/022	173850	153719	113.09
Total	851720	1249614	621.01
Average	85172	124961.4	62.101

Source: - Annual report of NEA

The above table depicts that the NEA actual sales unit and actual import unit have shown from the beginning 2012/013 to 2021/022 respectively. In the Year 2012/013 the Actual sales Unit of NEA was 2445.10 unit Mt. and actual import was 145236 units in Mt. its achievement was 1.68%. Similarly, the trends were increasing till to 2016/017 likely to 100.65%. More ever, the trends became nominally decline in the year 2017/018 to 2020/021 and then the portion became increased in the year 2021/022 likely to 113.09% were, in the year the Actual sales became increase and the imported unit became decreased. It can be conclude that, the achievement percentage was 62.101

% and the import units became decline and domestic production and sales unit became increasing tendency respectively.

4.1.10 Profit and Loss amount trends of NEA

Profit generation falls under the purview of management responsibility. Every strategy devised aims to understand the rationale behind the establishment of any firm. Here, the Profit and Loss Account of NEA is presented.

Table 4.10: Analysis of Profit / Loss *(Amount in Rs 00000)*

Fiscal Year	Profit	Change in Profit %
2012/013	(86.29)	-
2013/014	(88.29)	(2.00)
2014/015	(74.28)	(14.01)
2015/016	(85.36)	(11.08)
2016/017	(92.35)	(6.99)
2017/018	(73.00)	(19.35)
2018/019	(51.31)	(21.69)
2019/020	(32.95)	(18.36)
2020/021	(46.51)	(13.56)
2021/022	56.23	9.72

Source: Annual report of NEA

The above table shows that the net profit and loss pattern of NEA. The profit trend of NEA has fluctuation over the 10 Years period. It has loss yet 2020/021 likely to -46.51% and then the portion became profitable from the beginning 2021/022 likely to 56.23%. It can conclude that the trend of profit and loss became tracking to profitable from 2021/022 and earlier period the NEA‘s profit became negative trends respectively.

4.1.11 Comparison of Actual sales with operating cash flow

Cash flow from operating activities primarily stems from the core revenue-generating operations of the enterprise. Enhancing operating cash flow entails boosting revenue or trimming costs through efficiency improvements rather than simply cutting expenses. The primary objective for any organization is to maximize operating cash flow while optimizing resources. Operating cash flow is intricately linked to sales turnover. Below is a table presenting the sales and operating cash flow of NEA:

Table 4.11: Sales and Operating Cash Flow (In Millions)

Fiscal Year	Actual Sales	% Change in sales	Operating cash flow	Operating cash flow ratio (%)	% change in operating cash flow (%)
2012/013	2445.10	-	45.69	1.87	-
2013/014	2945.30	20.46	48.26	1.64	-12.29
2014/015	2754.21	-6.49	47.30	1.72	4.87
2015/016	2456.43	-10.82	45.26	1.84	6.98
2016/017	97150	94.95	43.96	0.05	-97.28
2017/018	127088	30.82	122.96	0.10	100
2018/019	131167	3.21	20.65	0.02	-80
2019/020	147197	12.23	32.73	0.02	0
2020/021	164667	11.87	57.22	0.03	50
2021/022	173850	5.58	63.38	0.04	33.33
Total	851720	161.81	527.41	7.33	5.61
Average	85172	17.98	52.74	0.73	0.62

Source: Annual report of NEA

The table shows that there is fluctuation in the actual sales as well as the operating cash flow. In the FY 2014/015 and 2015/016 were decline changes in actual sales where, the operating cash flow ratio became increasing trends yet2015/016 and then the ratio became lowest in the year 2016/017 and the further 4 years became more constant. The average sales growth rate became 17.98%, where the average operating cash flow seen 52.74% and the average operating cash flow ratio became 0.73% respectively.

4.1.12 Revenue of Nepal Oil Corporation Limited (NOC)

Nepal Oil Corporation Limited (NOC) is a state-owned trading entity in Nepal with a monopoly on importing, storing, and distributing various petroleum products within the country. Exclusive rights are granted to NOC for importing petrol and diesel, barring any involvement from private or other companies. Established in 1970 by the Government of Nepal under the "Company Act, 2021 (1964)," NOC operates under this legislative framework.

Table 4.12: Sales and Achievement

In Millions

Fiscal Year	Budgeted Sales (NRs.)	Actual Sales (NRs.)	Achievement (%)
2012/013	36,2142.39	23,542.16	88.36
2013/014	27,778.40	23,354.10	104.25
2014/015	17,316.45	35,260.26	145.10
2015/016	16,542.36	41,241.20	228.56
2016/017	19,457.25	37,589.22	202.45
2017/018	25,612.26	38,645.10	154.62
2018/019	27,050.26	92,234.26	152.50
2019/020	26,057.56	45,117.32	157.30
2020/021	28,592.23	42,577.77	144.2
2021/022	224,2.20	47,289.65	131.45
Total	113,554.66	357,623.77	1522.30
Average	66410.38	78447.48	303.109

(Sources: Annual Report of NOC)

The above table depicts that, the budgeted sales and actual sales of NOC for the fiscal year 2011/12 to 2021/022 are presented here. The NOC actual sales are grow up on satisfactory Level. The average sales achievement is 303.109 %, which is at most satisfactory level. In the Fiscal year 2012/013 the projected and actual sales revenue ware Rs. 36,2142.39 and Rs. 23,542.16 that is 88.36 % of total achievement. Similarly, in the year 2014/015 and 2015/016 were gradually grow up and in the F/Y 2016/017, the sales revenue ware rapid increased up likely to 202.45%. On the other hand, the actual sales revenue is in increasing trend during the FY 2015/016 and then the sales became decline trends till to 2021/012 likely to in the year 2017/018 were 152.50% to in the FY 2021/022 were 131.45% respectively.

4.1.13 Analysis of Account Receivable

Managing receivables poses a significant challenge for Nepal Oil Corporation Limited (NOC) currently. The average collection period serves as a gauge of receivables' liquidity, with shorter collection periods indicating a higher debtor turnover ratio. Conversely, extended collection periods suggest an overly liberal and inefficient credit policy. Analyzing NOC's accounts receivable primarily involves assessing debtor turnover and average collection periods to understand the correlation between receivables and net revenue from sales. Therefore, debtor turnover ratios from the fiscal years 2012/013 to 2021/022 are presented to analyze NOC's accounts receivable.

Table 4.13: Analysis of Account Receivable

	Account Receivable (a)	**Sales Revenue (b)**	**Debtor Turnover ratio (DTR)(c = b/a)**	**Average Collection Period (ACP)(d= 365/c)**	
	4,561	23,542.16	6.51	42.60	
	2,152	23,354.10	12.22	24.26	
	4,365	35,260.26	10.21	45.25	
	5,256	41,241.20	9.10	36.41	
	2,177	37,589.22	13.19	33	
	2,785	38,645.10	12.54	28	
	2,510	92,234.26	14.56	20	
	2,725	45,117.32	13.02	27	
	2,736	42,577.77	17.78	26	
	2626	47,289.65	16.20	25.47	
	31893	357,623.77	125.33	300.5	
Average	3189.3	78447.48	12.533	30.079	-1.1754

(Source: A year in Review, NOC FY 2012/013 to 2021/022)

The above table shows the relationship between receivable and sales revenue from which the receivable turnover and average collection period can be analyzed. Debtor turnover ratio indicates the number of items the debtors are turned over a year. The higher the value of debtor turnover the more efficient is the management of debtors or more liquid the debtors are, due to more fast collect money. Similarly, low debtor turnover ratio implies inefficient management of debtor or less liquid debtor. It is reliable measure of time of cash flow from sales. It can be conclude that the NOC have collected and rotated Debtors turnover in respectable time.

4.1.14 Analysis of Overhead Cost

NOC consolidates its overhead budget into a unified operating and maintenance expenditure budget, encompassing various cost components such as employment costs, bonuses, incentive packages, depreciation, administrative expenses, gains/losses on foreign currency, royalties, losses on the sale of telephone and other goods, license fees, and deferred expenses. Unlike other organizations, Nepal Oil Corporation Limited does not segregate its budget into manufacturing, administrative, and selling/distribution overheads. Instead, it opts for a holistic approach by presenting the "Operation and Maintenance Expenditure Budget." Consequently, analyzing NOC's overhead budget separately poses challenges due to this integrated approach. Reviewing the historical trend of NOC's Operation and Maintenance Expenditure reveals the following pattern:

Table 4.14: Analysis of Overhead Cost

(NRS. Millions)

F/Y	Actual Sales (NRs.) [a]	Operation and Maintenance Expenditure (NRs.) [b]	Cost of Sales (%)[b/a * 100]	Percentage Change
2012/013	24,351.23	24,321.50	72.23	-
2013/014	27,456.30	26,782.30	65.71	-2.51
2014/015	36,475.30	26,789.47	74.33	6.55
2015/016	42,1424.23	28,873.20	54.27	17.06
2016/017	39,712.30	22,390.70	62.73	-11.54
2017/018	32,450.20	25,554.23	54.07	1.30%
2018/019	45,780.23	17,109.15	42.03	-9.02%
2019/020	66,425.31	18,650.33	40.03	-7.65%
2020/021	44,588.98	19,458.20	47.25	3.15%
2021/022	47,277.32	19,632.27	41.13	1.77%
Total	785941.40	22956.13	553.78%	12.33%
Average	78594.14	2295.61	55.37%	1.14%

(Source: Annual Report of NOC from (2012/013 to 2021/022)

The above table indicates that overhead expenditure trend from fiscal year 2012/013 to 2021/022 with respect to sales. The maximum operation and maintenance overhead is in 2014/015 NRS. 26,782.30 million Which is 65.71% of total sales whereas the minimum expenditure is Rs. 17,109.15 million, which is 42.03 % of total sales in the FY 2018/019.It can be seen that the trends of total operation expenditure is fluctuating. It

can be conclude that, the Average Overhead of NOC became Rs. 78594.14 and its cost of sales seen 55.37% % in 10 years period.

4.1.15 Analysis Profit and Loss of NOC

The Profit and Loss statement of any organization serves as a snapshot of its operational performance over a specific period, akin to a "scoreboard" indicating its overall health. The primary objective behind preparing a profit and loss account is to assess the operational position of the organization. Typically, profit-making entities compile profit and loss accounts reflecting the profit or loss for the fiscal year. Conversely, non-profit organizations prepare income and expenditure accounts, which depict the net surplus or deficit for any specific time frame. Nepal Oil Corporation Limited has consistently reported profits since its inception.

Table 4.15: Analysis Profit and Loss

(NRS in Millions)

Fiscal Year	Profit	Percentage Change
2012/013	25,422.66	-
2013/014	22,154.45	5.234
2014/015	16,278.20	4.475
2015/016	16,147.10	2.320
2016/017	11,345.16	2.617
2017/018	13,468.50	2.532
2018/019	16,457.33	23.23
2019/020	14,657.43	-7.25
2020/021	19,457.76	12.45
2021/022	19475.29	190.89
Total	174863.88	-
Average	17486.38	-

(Source: Annual Reports, NOC)

The above table depicts that the Profit and Loss scenarios of NOC is presents the 10 years period. In the Fiscal year 2012/013 the Profit of NOC became Rs. 25,422.66 million this profit trend had become decline to 11,345.16 in the Fiscal year 20215/016. It can be conclude that, the average profit if NOC became Rs.15490.01 million and its average growth rate became 2.617 % in 10 years period.

4.1.16 Relationship between Revenue and Profit

Profit stands as a cornerstone of every business endeavor, crucial for its survival and future growth. Indeed, a business devoid of profit has no place in the market. However, the concept of profit is evolving over time, with a contemporary emphasis on a reasonable profit approach. Profit serves as the lifeblood of any business organization, essential for meeting expenses, distributing dividends, seizing opportunities, and contributing to the national treasury. In modern times, the effectiveness and efficiency of any business or management are often gauged by its profitability. The profit of any organization is highly contingent upon its sales revenue. NOC has consistently yielded positive returns, earning it a reputation as a highly profitable entity in the public utility sector.

Table 4.16: Relationship of Sales on Profit

(NRS in millions)

Fiscal Year	Sales	Increase over previous year (%)	Profit	Increase over previous year (%)	% of profit on Sales
2012/013	23,542.16	-	25,422.66	-	28.42
2013/014	23,354.10	3.01	22,154.45	16.241	32.30
2014/015	35,260.26	2.26	16,278.20	13.412	26.35
2015/016	41,241.20	3.21	16,147.10	23.102	27.12
2016/017	37,589.22	3.50	11,345.16	2.14	32.08%
2017/018	38,645.10	2.09%	13,468.50	2.38%	27.13%
2018/019	92,234.26	6.28%	16,457.33	26.83%	29.14%
2019/020	45,117.32	3.20%	14,657.43	-6.77%	28.26%
2020/021	42,577.77	0.42%	19,457.76	12.42%	39.42%
2021/022	47,289.65	1.02%	19475.29	1.36%	45.05%
Total	357,623.77	24.1221	174863.88	55.25%	116.20%
Average	78447.48	2.41	17486.38	5.22%	11.62%

(Source: Annual Reports, NOC)

The above table indicates that, the revenue and profit and loss trend i.e. increase/decrease over previous year assuming F/Y 2012/013 to 2021/022 respectively. The table presents that the total revenue and profit is in fluctuating trend. In the year 2012/013 the profit portion became 28.42% and the rate became gradually increasing trends till to 2021/022 to reach 40.07%. Similarly, the average sales and profit portion

have shown 1.02% and 1.36 % in ten years period. It clears that the comparatively profitable portion is better than sales scenarios in 10 years period.

4.2 Correlation analysis of NEA

Correlation refers to a statistical concept that measures the extent to which two variables move together. When two variables move in the same direction, they are said to have a positive correlation, while if they move in opposite directions, they exhibit a negative correlation. A correlation matrix is a tabular representation illustrating correlation coefficients between variables. Each cell in the matrix displays the correlation between two specific variables. Utilized to condense data, a correlation matrix serves as input for more sophisticated analyses and also functions as a diagnostic tool for such advanced analyses.

Table 4.17: Correlation of NEA

		SR	Profit	AIU	OCF	ASU	DSU
SR	Pearson Correlation	1					
	Sig. (2-tailed)						
Profit	Pearson Correlation	.246	1				
	Sig. (2-tailed)	.494					
AIU	Pearson Correlation	.064	.530	1			
	Sig. (2-tailed)	.861	.115				
OCF	Pearson Correlation	-.040	.039	.089	1		
	Sig. (2-tailed)	.914	.915	.806			
ASU	Pearson Correlation	.016	.682*	.641*	.189	1	
	Sig. (2-tailed)	.965	.030	.046	.601		
DSU	Pearson Correlation	.087	.669*	.790**	.171	.939**	1
	Sig. (2-tailed)	.810	.034	.007	.638	.000	

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

The above table depicts that, the correlation between Sales Revenue with profit is 0.246; it means statistically there is positive correlation between the Sales revenue with profit of NEA respectively. Similarly, the correlation between Sales Revenue with Actual import unit in Mt. is 0.064; it means statistically there is positive correlation between the Sales Revenue with Actual import unit in Mt. More ever, the Sales Revenue with operating cash flow is -.040, it means there is Negative correlation between the two variables likely to Sales Revenue with operating cash flow respectively. However, the Actual sales unit is 0.016; it means statistically, there is

positive correlation between the two variables. Finally, the sales revenue with the domestic sales unit is 0.087; it means there is positive correlation between the two variables respectively.

4.3 Correlation analysis of NTC

Correlation refers to a statistical concept that measures the extent to which two variables move together. When two variables move in the same direction, they are said to have a positive correlation, while if they move in opposite directions, they exhibit a negative correlation.

Table 4.18: Correlation of NTC

		SR	AR	ACP	OME	Profit	COS
SR	Pearson Correlation	1					
	Sig. (2-tailed)						
AR	Pearson Correlation	-.135	1				
	Sig. (2-tailed)	.710					
ACP	Pearson Correlation	.738*	.747*	1			
	Sig. (2-tailed)	.015	.013				
OME	Pearson Correlation	-.518	.599	.663*	1		
	Sig. (2-tailed)	.125	.067	.037			
Profit	Pearson Correlation	.503	-.092	.352	.105	1	
	Sig. (2-tailed)	.139	.801	.319	.774		
COS	Pearson Correlation	-.922**	.356	.811**	.800**	.458	1
	Sig. (2-tailed)	.000	.313	.004	.005	.184	

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

The above table depicts that, the correlation between Sales Revenue with Account receivable is-.135; it means statistically there is Negative correlation between the Sales revenue with Account receivable of NTC respectively. Similarly, the correlation between Sales Revenue with Average Collection periodic .738*; it means statistically there is positive correlation between the Sales Revenue with Average Collection period of elected institutions. More ever, the Sales Revenue with operation and maintenance expenditure is-.518, it means there is Negative correlation between the two variables

likely to Sales Revenue with operation and maintenance expenditure respectively. However, the sales revenue with profit is.503; it means statistically, there is positive correlation between the two variables. Finally, the sales revenue with the Cost of sales is-.922**; it means there is Negative correlation between the two variables respectively.

4.4 Correlation analysis of NOC

A correlation matrix is a tabular representation illustrating correlation coefficients between variables. Each cell in the matrix displays the correlation between two specific variables. Utilized to condense data, a correlation matrix serves as input for more sophisticated analyses and also functions as a diagnostic tool for such advanced analyses.

Table 4.19: Correlation of NOC

		SR	AR	ACP	OME	Profit	COS
SR	Pearson Correlation	1					
	Sig. (2-tailed)						
AR	Pearson Correlation	-.134	1				
	Sig. (2-tailed)	.610					
ACP	Pearson Correlation	.938*	.424*	1			
	Sig. (2-tailed)	.015	.018				
OME	Pearson Correlation	-.417	.488	.536*	1		
	Sig. (2-tailed)	.126	.063	.073			
Profit	Pearson Correlation	.703	-.074	.325	.106		
	Sig. (2-tailed)	.129	.503	.391	.552		
COS	Pearson Correlation	-.732**	.227	.872**	.700**	.410	
	Sig. (2-tailed)	.000	.413	.003	.006	.176	

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The above table depicts that, the correlation between Sales Revenue with Account receivable is-.134; it means statistically there is Negative correlation between the Sales revenue with Account receivable of NOC respectively. Similarly, the correlation between Sales Revenue with Average Collection periodic .938*; it means statistically there is positive correlation between the Sales Revenue with Average Collection period

of elected institutions. More ever, the Sales Revenue with operation and maintenance expenditure is-.417, it means there is Negative correlation between the two variables likely to Sales Revenue with operation and maintenance expenditure respectively. However, the sales revenue with profit is.503; it means statistically, there is positive correlation between the two variables. Finally, the sales revenue with the Cost of sales is-.732**; it means there is Negative correlation between the two variables respectively.

4.5 Regression Analysis of NTC

Regression is a statistical technique widely applied in finance, investing, and various other fields to assess the strength and nature of the relationship between a dependent variable (typically denoted as Y) and a set of independent variables. Regression analysis serves as a dependable approach to discerning the variables that exert influence on a subject of interest. By conducting regression analysis, one can confidently identify the most significant factors, disregard irrelevant factors, and ascertain how these factors interact with each other.

Table 4.20: Model Summary NTC

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.997[a]	.994	.986	802.62657

a. Predictors: (Constant), COS, AR, PT, OME, ACP

The model summary indicates a strong relationship between the predictors (COS, AR, PT, OME, ACP) and the dependent variable for NTC. The coefficient of determination (R Square) value of .994 suggests that approximately 99.4% of the variability in the dependent variable can be explained by the independent variables included in the model. The adjusted R Square value of .986 accounts for the number of predictors in the model, indicating a high level of reliability. The standard error of the estimate, 802.62657, represents the average deviation of the actual values from the predicted values by the model.

Table 4.21: ANOVA Table of NTC

Model		Sum of Squares	D.f.	Mean Square	F	Sig.
1	Regression	414586160.219	5	82917232.044	128.712	.020
	Residual	2576837.667	4	644209.417		
	Total	417162997.886	9			

a. Dependent Variable: SR

b. Predictors: (Constant), COS, AR, PT, OME, ACP

The ANOVA table indicates the results of the analysis of variance for the regression model in NTC. The regression model shows a statistically significant relationship between the predictors (COS, AR, PT, OME and ACP) and the dependent variable (SR). The F-statistic value of 128.712 is significant with a p-value of .020, suggesting that at least one of the predictors has a non-zero effect on the dependent variable. This implies that the regression model as a whole is significant in explaining the variability in the dependent variable.

Table 4.22: Coefficient Analysis of NTC

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	38266.806	2994.300		12.780	.001
	AR	1.392	3.678	.117	.378	.724
	ACP	-19.523	309.379	-.145	-.354	.741
	OME	1.252	.534	.608	2.345	.079
	PT	.290	.112	.133	2.592	.061
	COS	-5.303	168.027	-1.393	-3.287	.030

a. Dependent Variable: SR

On the basis of above findings following regression model has been developed.

The model is: Projected ($\ddot{Y}$) = β0 +β1*X1 + β2*X2 + β3*X3 + β4 * X4+β5 * X5+ Tn

Assume that,

$\hat{Y}$= Sales revenue (Constant)

AR(X1)= Account Receivable

ACP(X2)= Average Collection period

OME(X3)=Operation and Maintenance Expenditure

PT(X4)= Profit

COS(X5)= Cost of Sales

The regression results with VIF test and F test of the model's goodness. Findings from the Fishers ratio (i.e. the F-Statistics which is a proof of the validity of the estimated model) as reflected in above table, indicates that, the F is about 128.712 and a p-value is also 0.020 which is ≤0.05.Since the VIF statistic is less than 10 for each independent variable. Therefore, regression model with ordinary least square (OLS) can be used. Similarly, the R-Square which is often referred to as the coefficient of determination of the variables is 99.7%. The R-Square which is also a measure of the overall fitness of the model indicates that the model is capable of explaining about 99.7% of the cost volume profit analysis of NTC. This means that the model explains about 99.7% of the systematic variation in the dependent variable. That is, about 0.3% of the variations in CVP are not accounted and not captured by the model. Similarly, the regression coefficient of Account Receivables in the regression coefficient analysis is 1.392 million. It indicates that if we increased Account Receivables by1millionthe average sales revenue will increase by1.392million. More ever, regression coefficient of average collection period is -1.003 days, which indicates that if we increased ACP by 1days, the average influence on the sales revenue will decreased by 1.003 million. Similarly, regression coefficient of Operational Maintenance and Expenditure is1.252 million; it indicates that if we increased Operational Maintenance and Expenditure by 1 million, the average influence on the Sales revenue will increase by 1.252 million respectively. However, regression coefficient of profitability is0.290million, it indicates that if it increased profitability by1 million, the average influence on the sales revenue will increaseby0.290 million respectively. Finally, the regression coefficient of cost of sales is -5.303 million, it indicates that if we increased cost of sales by 1 million, the average influence on the sales revenue will decreased by 5.303 million respectively.

4.6 Regression Analysis of NEA

Regression analysis serves as a dependable approach to discerning the variables that exert influence on a subject of interest. By conducting regression analysis, one can

confidently identify the most significant factors, disregard irrelevant factors, and ascertain how these factors interact with each other.

Table 4.23: Model Summary of NEA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.963[a]	.157	-.897	154202850.95058

a. Predictors: (Constant), Profit, OCF, AIU, ASU, DSU

The above table depicts the model summary presents the relationship between the predictors (Profit, OCF, AIU, ASU, DSU) and the dependent variable for NEA. The coefficient of determination (R Square) value of .157 indicates that approximately 15.7% of the variability in the dependent variable can be explained by the independent variables included in the model. However, the adjusted R Square value of -.897 suggests that the model may not fit the data well, possibly due to over fitting. The standard error of the estimate, 154202850.95058, represents the average deviation of the actual values from the predicted values by the model.

Table 4.24: ANOVA Table of NEA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17717167686044894.000	5	3543433537208978.500	.149	.970[b]
	Residual	95114076965152096.000	4	23778519241288024.000		
	Total	112831244651196992.000	9			

a. Dependent Variable: SR

b. Predictors: (Constant), Profit, OCF, AIU, ASU, DSU

The ANOVA table displays the results of the analysis of variance for the regression model in NEA. The regression model does not show a statistically significant relationship between the predictors (Profit, OCF, AIU, ASU and DSU) and the dependent variable (SR). The F-statistic value of .149 has a corresponding p-value of .970, indicating that the regression model as a whole is not significant in explaining the variability in the dependent variable.

Table 4.25: Coefficient Analysis of NEA

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	512777854.537	323332906.496		1.586	.188
	AIU	1000.305	3007.200	-287	.333	.756
	OCF	-24810.794	1930406.460	-.006	-.013	.990
	ASU	1513.662	2383.399	1.000	-635	.560
	DSU	1708.131	3387.808	.963	.504	.641
	Profit	1091336.429	1605588.014	.436	.680	.534

a. Dependent Variable: SR

On the basis of above findings following regression model has been developed.

The model is: Projected ($\dot{Y}$) = β0 +β1*X1 + β2*X2 + β3*X3 + β4 * X4+β5 * X5+ tn

$\hat{Y}$ = Sales revenue (Constant)

AIU(X1)=Actual Import in unit(Mt.)

OCF(X2)= Operating Cash Flow

ASU(X3)= Actual Sales Unit(Mt.)

DSU(X4)= Domestic Sales Unit

Profit(X5)= Profitability

The regression results with VIF test and F test of the model's goodness. Findings from the Fishers ratio (i.e. the F-Statistics which is a proof of the validity of the estimated model) as reflected in above table, indicates that, the F is about 0.149 and a p-value is also 0.970 which is ≥0.05.Since the VIF statistic is less than 10 for each independent variable. Therefore, regression model with ordinary least square (OLS) can be used. Similarly, the R-Square which is often referred to as the coefficient of determination of the variables is 96.3%. The R-Square which is also a measure of the overall fitness of the model indicates that the model is capable of explaining about 96.3% of the Dependent variable of NEA. This means that the model explains about 96.3% of the systematic variation in the dependent variable. That is, about 4.7% of the variations in dependent variable are not accounted and not captured by the model. Similarly, the regression coefficient of Actual import unit in the regression coefficient analysis is 1513.662Mt. Units, it indicates that if we increased Actual import unit by 1Mt. units the

average sales revenue will increase by Rs.1513.662Million. More ever, regression coefficient of Operating Cash flows-24810.79 Million, which indicates that if we increased Operating Cash flow by 1million, the average influence on the sales revenue will decreased by Rs.24810.79 million. Similarly, regression coefficient of Actual import unit is 1513.662Mt. It indicates that if we increased Actual import by 1 Mt. units, the average influence on the Sales revenue will increase by Rs.1513.662million respectively.

Finally, regression coefficient of profitability is Rs. 1091336.429 million; it indicates that if we increased profitability by 1 million, the average influence on the sales revenue will increase by is Rs. 1091336.429million respectively.

4.7 Regression Analysis of NOC

Regression is a statistical technique widely applied in finance, investing, and various other fields to assess the strength and nature of the relationship between a dependent variable (typically denoted as Y) and a set of independent variables.

Table 4.26: Model Summary NOC

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.687[a]	.656	.564	802.62456

a. Predictors: (Constant), COS, AR, PT, OME, ACP

The above depicts the model summary provides insights into the relationship between the predictors (COS, AR, PT, OME, ACP) and the dependent variable for NOC. The coefficient of determination (R Square) value of .656 suggests that approximately 65.6% of the variability in the dependent variable can be explained by the independent variables included in the model. The adjusted R Square value of .564 accounts for the number of predictors in the model, indicating a moderate level of reliability. The standard error of the estimate, 802.62456, represents the average deviation of the actual values from the predicted values by the model.

Table 4.27: ANOVAS able of NOC

Model		Sum of Squares	D.f.	Mean Square	F	Sig.
1	Regression	624789150.229	6	72816462.055	130.652	.020
	Residual	2687532.558	5	865209.541		
	Total	516262886.556	10			

c. Dependent Variable: SR

d. Predictors: (Constant), COS, AR, PT, OME, ACP

The model degrees of freedom correspond to the number of predictors minus 1 (K-1). It may think this would be 10-1 (since there were 5 independent variables in the model, COS, AR, PT, OME, ACP). But, the intercept is automatically included in the model (unless you explicitly omit the intercept).

Mean Square -these are the Mean Squares, the Sum of Squares divided by their respective DF, for the Regression, 624789150.229= 72816462.055 For the Residual, 2687532.558=865209.541 these are computed so you can compute the F ratio, dividing the Mean Square Regression by the Mean Square Residual to test the significance of the predictors in the model. F and Sig.- The F-value is the Mean Square Regression 624789150.229 divided by the Mean Square Residual 865209.541, yielding F=130.652 P value is significance or insignificance parameter and its measuring and comparing value is 0.05 which the p-value is greater than 0.05, you would say that the group of independent variables does not show a statistically significant relationship with the dependent variable, or that the group of independent variables does not reliably predict the dependent variable.

Table 4.28: Coefficient Analysis of NOC

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	47277.906	2773.200		12.352	.001
	AR	1.245	4.654	.116	.449	.624
	ACP	-18.448	307.245	-.142	-.370	.542
	OME	1.342	.626	.502	2.652	.085
	PT	.270	.125	.128	2.780	.052
	COS	-6.420	180.027	-1.4251	-3.221	.045

a. Dependent Variable: SR

On the basis of above findings following regression model has been developed.

The model is: Projected ($\ddot{Y}$) = β0 +β1*X1 + β2*X2 + β3*X3 + β4 * X4+β5 * X5+ Tn

Assume that,

$\hat{Y}$= Sales revenue (Constant)

AR(X1)= Account Receivable

ACP(X2)= Average Collection period

OME(X3)=Operation and Maintenance Expenditure

PT(X4)= Profit

COS(X5)= Cost of Sales

The regression results with VIF test and F test of the model's goodness. Findings from the Fishers ratio (i.e. the F-Statistics which is a proof of the validity of the estimated model) as reflected in above table, indicates that, the F is about 130.652 and a p-value is also 0.020 which is ≤0.05.Since the VIF statistic is less than 10 for each independent variable. Therefore, regression model with ordinary least square (OLS) can be used. Similarly, the R-Square which is often referred to as the coefficient of determination of the variables is 99.7%. The R-Square which is also a measure of the overall fitness of the model indicates that the model is capable of explaining about 99.7% of the cost

volume profit analysis of NOC. This means that the model explains about 99.7% of the systematic variation in the dependent variable. That is, about 0.3% of the variations in CVP are not accounted and not captured by the model. Similarly, the regression coefficient of Account Receivables in the regression coefficient analysis is 1.392 million. It indicates that if we increased Account Receivables by1millionthe average sales revenue will increase by1.392million. More ever, regression coefficient of average collection period is -1.003 days, which indicates that if we increased ACP by 1days, the average influence on the sales revenue will decreased by 1.003 million. Similarly, regression coefficient of Operational Maintenance and Expenditure is1.1.342 million; it indicates that if we increased Operational Maintenance and Expenditure by 1 million, the average influence on the Sales revenue will increase by 1.342 million respectively. However, regression coefficient of profitability is 0.290 million, it indicates that if it increased profitability by1 million, the average influence on the sales revenue will increase by .270 million respectively. Finally, the regression coefficient of cost of sales is -5.303 million, it indicates that if we increased cost of sales by 1 million, the average influence on the sales revenue will decreased by 5.303 million respectively.

4.8 Major Findings

- The NTC actual sales are grow up on satisfactory Level. The average sales achievement is 161.18 %, which is at most satisfactory level. In the Fiscal year 2016/017, the sales revenue ware rapid increased up likely to 230.59%. On the other hand, in the FY 2021/022 were 141.97% respectively.
- It can be conclude that the NTC have collected and rotated Debtors turnover in respectable time. The maximum operation and maintenance overhead is in 2014/015 NRS. 26789.47 million Which is 83.33% of total sales whereas the minimum expenditure is Rs.15950.65 million, which is 36.07% of total sales in the FY 2019/020.It can be seen that the trends of total operation expenditure is fluctuating. It can be conclude that, the Average Overhead of NTC became Rs. 21026.89 and its cost of sales seen 30.42% in 10 years period.
- In the Fiscal year 2012/013 the Profit of NTC became Rs. 20452.74 Million this profit trend had become decline to 18583.29 in the Fiscal year 2021/022.It can be

conclude that, the average profit if NTC became Rs.15490.01 million and its average growth rate became 8.02% in 10 years period. It can be conclude that the average sales and profit portion have shown 1.18% and 11.81% in ten years period. It shows comparatively profitable portion is better than sales scenarios. It can be conclude that, Average unit demand have been increasing per year by 20% and its amount shows Rs. 360,668,200/- respectively.

- The actual sales have unexpectedly more haphazard as well as the profit tendency also seen less variable in overall period. Finally, it can be concluding that, the NEA has been going too profitably trends from past 2 years periods. It can be conclude that the Sales and profit percentage of NEA have been increasing since 2 years period. It can be conclude that, the achievement percentage was 62.101 % and the import units became decline and domestic production and sales unit became increasing tendency respectively. The trend of profit and loss became tracking to profitable from 2021/022 and earlier period the NEA‘s profit became negative trends respectively.
- The result indicates that, the average sales growth rate became 17.98%, where the average operating cash flow seen 52.74% and the average operating cash flow ratio became 0.73% respectively. The correlation between Sales Revenue with profit is 0.246; it means statistically there is positive correlation between the Sales revenue with profit of NEA respectively. Similarly, the correlation between Sales Revenue with Actual import unit in Mt. is 0.064; it means statistically there is positive correlation between the Sales Revenue with Actual import unit in Mt.
- Moreover, the Sales Revenue with operating cash flow is -.040, it means there is Negative correlation between the two variables likely to Sales Revenue with operating cash flow respectively. However, the Actual sales unit is 0.016; it means statistically, there is positive correlation between the two variables.
- The sales revenue with the domestic sales unit is 0.087; it means there is positive correlation between the two variables respectively. The correlation between Sales Revenue with Account receivable is-.135; it means statistically there is Negative correlation between the Sales revenue with Account receivable of NTC respectively.

- Similarly, the correlation between Sales Revenue with Average Collection period is .738*; it means statistically there is positive correlation between the Sales Revenue with Average Collection period of elected institutions.
- More ever, the Sales Revenue with operation and maintenance expenditure is -.518, it means there is Negative correlation between the two variables likely to Sales Revenue with operation and maintenance expenditure respectively. However, the sales revenue with profit is .503; it means statistically, there is positive correlation between the two variables.
- There is a negative correlation between sales revenue and cost of sales for NTC, indicating that as the cost of sales increases, sales revenue decreases.
- The coefficient of determination (R-Square) for NTC is 99.7%, indicating that the model can explain about 99.7% of the revenue analysis. This suggests a high level of accuracy in predicting revenue based on the variables considered.
- For NTC, an increase in Account Receivables by 1 million leads to an average increase in sales revenue of 1.392 million. Conversely, a 1-day increase in Average Collection Period results in a decrease in sales revenue by 1.003 million.
- Operational Maintenance and Expenditure show a positive influence on sales revenue, with a regression coefficient of 1.342 million. This indicates that an increase in this expenditure by 1 million leads to a corresponding increase in sales revenue.
- Profitability also positively affects sales revenue, with a regression coefficient of 0.290 million. However, an increase in the cost of sales by 1 million leads to a decrease in sales revenue by 5.303 million.
- The R-Square for NEA is 96.3%, suggesting that the model can explain about 96.3% of the variation in sales revenue. However, about 4.7% of the variations are not accounted for by the model.
- Regression coefficients provide insights into the impact of variables on sales revenue. For NEA, an increase in Actual Import Unit by 1 Mt. units results in an average increase in sales revenue by 1513.662 million.

- The analysis of revenue and profit trends over the years indicates fluctuations, with profits gradually increasing over time. However, the extent of profitability varies, with some years showing higher profits compared to others.
- The F-statistic and p-value suggest that the regression models for NTC are statistically significant in explaining the variability in sales revenue.
- The VIF statistic for each independent variable is less than 10, indicating that the regression models can be used effectively without multicollinearity issues.
- In summary, the analysis provides valuable insights into the factors influencing sales revenue for NTC, NEA, and NOC, allowing for informed decision-making and strategic planning in these organizations.

CHAPTER-V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Revenue planning involves estimating future income and cash inflow for a specific period, providing a basis for management decisions about marketing and other activities. It's essentially an organized approach for developing a comprehensive sales plan, though it's important to note that revenue planning estimates are not guarantees and can be influenced by various factors, such as economic performance.

This study examines and evaluates the revenue planning of NTC, NOC, and NEA, using an analytical and descriptive approach based on secondary data. Data collection utilized various tools and techniques including average, correlation, and regression analysis, mainly from published functional budgets and financial statements.

The relationship between budgeted and actual sales suggests a positive correlation, indicating potential future revenue increases. Factors considered in revenue planning include revenue trends, supply limitations, competition, and the overall economy. Positive returns have been observed in NTC, with consistency between planned and actual sales, and a positive correlation between actual sales revenue and planned sales. Overall, total revenue and profit trends are increasing across these institutions over the past two years. In essence, revenue planning is crucial for guiding management decisions and ensuring the financial health and growth of these organizations.

5.2 Conclusions

In conclusion, revenue planning plays a crucial role in the operations of NTC, NOC, and NEA, serving as the cornerstone for their future endeavors. While these organizations have demonstrated commendable efforts in revenue planning, there are notable areas for improvement.

Realistic forecasting, particularly through monthly sales revenue budgeting, is essential for ensuring accurate revenue projections. Despite achieving planned revenue targets

overall, there are still significant opportunities for enhancement, particularly in considering major demand determinants during demand forecasting.

Nevertheless, the recent performance of NTC, NOC and NEA has been promising, with actual sales growing satisfactorily. Notably, both institutions have managed to effectively collect and manage debtors, contributing to their financial stability. In the fiscal year 2021/022, NTC reported an average profit of Rs. 15,490.01 million, with an average growth rate of 8.02% over the past decade. Similarly, NEA has shown profitable trends over the last two years, with sales and profit percentages on the rise.

Analyzing the correlation between various factors and sales revenue reveals insightful trends. While some correlations, such as profitability and actual sales unit, show positive associations, others, like sales revenue with operating cash flow, demonstrate negative correlations. These findings underscore the complex interplay of factors influencing revenue generation and financial performance.

Overall, the regression analysis indicates that the models developed can effectively explain a significant portion of the systematic variation in revenue. However, there remain aspects not accounted for by the models, suggesting areas for further research and refinement.

In essence, while NTC, NOC, and NEA have made commendable strides in revenue planning and financial management, there is still room for improvement. By addressing the identified areas of concern and leveraging their strengths, these organizations can continue on their path of sustainable growth and profitability in the future.

5.3 Recommendations

Based on the findings, several recommendations can be made to further enhance revenue planning and financial management practices at NTC, NOC, and NEA:

- Enhance demand forecasting methodologies by considering major demand determinants such as market trends, customer preferences, and economic indicators. This can be achieved through regular monitoring of market dynamics and customer feedback.

- Implement a more detailed and comprehensive monthly sales revenue budgeting process to provide more accurate revenue projections. This should involve input from various departments and stakeholders to ensure alignment with organizational objectives.
- Continue to focus on effective debt collection and management practices to improve cash flow and financial stability. Implement strategies such as timely invoicing, proactive follow-up on overdue payments, and offering incentives for early payment.
- Evaluate and optimize cost management strategies to minimize expenses and improve profitability. This may involve identifying areas of inefficiency, renegotiating contracts with suppliers, and leveraging technology for cost-saving opportunities.
- Conduct regular performance analysis to identify trends, opportunities, and areas for improvement. Utilize tools such as correlation and regression analysis to understand the factors influencing revenue generation and financial performance.
- Invest in training and development programs for employees to enhance their skills and capabilities in revenue planning, financial analysis, and decision-making. This will empower employees to contribute more effectively to organizational objectives.
- Foster a culture of continuous improvement by encouraging innovation, collaboration, and knowledge sharing across departments. Create platforms for employees to provide feedback and suggestions for process improvement.
- By implementing these recommendations, NTC, NOC, and NEA can further strengthen their revenue planning and financial management practices, leading to sustained growth and profitability in the future.

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