COST VOLUME PROFIT ANALYSIS OF NEPALESE MANUFACTURING INDUSTRY

A Dissertation submitted to the Office of the Dean, Faculty of Management in partial fulfilment of the requirements for the Master's Degree

by

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Certification of Authorship

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled **"Cost Volume Profit Analysis of Nepalese Manufacturing Industry"**. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor has it been proposed and presented as part of requirements for any other academic purposes.

The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation

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Report of Research Committee

Mr. Sailesh Khatri has defended research proposal entitled **"Cost Volume Profit Analysis of Nepalese Manufacturing Industry"** successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestion and guidelines of supervisor Bhoj Raj Ojha Submit the thesis for evaluation and viva-voce examination.

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Approval Sheet

We, the undersigned, have examined the thesis entitled **"Cost Volume Profit Analysis of Nepalese Manufacturing Industry"** Presented by Sailesh Khatri Candidate for the degree of Master of Business Studies (MBS Semester) and conducted the Viva voce examination of the candidate. We hereby certify that the thesis is worthy of acceptance.

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Abbreviations

CS	: Company Size
CV	: Coefficient of Variance
CVP	: Cost-Volume Profit
FCR	: Fixed Cost Ratio
MBS	: Master in Business Studies
MOS	: Margin of Safety
NPM	: Net Profit Margin
OPR	: Operating Profit Ratio
OPRR	: Operation Ratio
SD	: Standard Deviation
SPSS	: Statistical Package for Social Science
TU	: Tribhuvan University

Abstract

This study examines the CVP relationship and compare performance of four major companies namely Surya Nepal, Unilever, Bottlers Tarai and Bottlers Nepal. The main purpose is to login and compare some of the different financial ratios such as fixed cost ratio, sales ratio, margin of safety, net profit margin and operating profit. Using both financial ratio analysis and regression modeling, the research seeks to uncover unique patterns that correspond with one another and lead to financial outcomes. Based on the findings, there are vast differences on cost structures of these companies. While Unilever shows the lowest (suggesting more flexibility as a variable, cost-oriented business) Surya Nepal is only presenting highest fixed cost component ratio – which could portray some inflexibility to change in terms of costs. In terms of sales ratio, Surya Nepal also ranked first and a fairly high degree of revenue is consumed by particular expenses thus resulting its well earning capability denoted in the form of highest net profit margin among other competitors. Based on margin of safety analysis, Surya Nepal and Unilever are in essentially better positions while Bottlers Tarai and Bottlers Nepal show worse financial security. Bottlers Tarai and Bottlers Nepal have shown efficient expense management as their operating ratios are low which on the other hand, Unilever has high operating ratio simply couldn't help ease in profit. The regression analysis accounts for considerable amount of variance in net profit margin, and is positively influenced by sales ratio, margin of safety and operating ratio. The study emphasizes that cost management, revenue allocation, and operational efficiency are constituents in the configuration of financial statements. The results provide useful leverage in planning, budgeting and profitability optimization in organizations. More sector or industry-specific studies and longitudinal research can be undertaken as future work to better understand how cost management helps in sustaining the business.

Keywords: Cost-volume-profit, profitability, fixed cost ratio, sales ratio, margin of safety, operating ratio.

CHAPTER I
INTRODUCTION

1.1 Background of the Study

All business organizations have rare resources the crux of the problem is optimal utilization of these available resources so that competitive advantages can be gained. Management accounting tools are proved to be a boon through various aspects of management activities from planning to decision making among many such managerial techniques. The most used management accounting tool, as a means of profit planning by decision making, predicting the impact of changes in the business's cost and sales level on income; In its simplest form, it is the calculation of the sales level at which the company neither makes a profit nor does it lose money, or in the other words, it is the point at which the company breaks even. In fact, break-even point is just a specific example of CVP analysis. But, CVP analysis was used to determine sales volume to earned zero profit or expect income, to impact income by change in selling price, to verify income in case any new machine is installed, to analysis operating profit in condition of fixed cost as well as unit variable cost will be be changed etc.

CVP analysis is a tool of analysis to examine the relation between volume, cost and profit. There are three components of CVP analysis and they are interrelated and one depends on the other. CVP analysis studies how changes in output level, selling prices, variable cost per unit and fixed cost of a firm affects a firm's profit. CVP also assist in make or buy decision on sub-assemble or part.

There are many approaches which have been developed to ensure effective conduct of the management process, one of the important approaches is CVP (Cost Volume Profit). PPC is a pre-determined measure of expected success based on the most effective operational standard extant or prospective at the time of its establishment and against which actual performance is periodically evaluated. Profit planning is forecasting and pre-determining revenues and expressing that prediction how much income will be generated and how much capital would be needed to obtain, Investment and profit requirement.

Cost volume profit (CVP) analysis is a more formal approach in which the relationship between the levels of activity (i.e. output) and changes in total sales revenue, total costs, and net income are examined. CVP analysis is an approximation of these relationships; by nature, it reduces the complexity of the real-world environment that a firm will encounter. As with most models, which derive from reality, there are assumptions and limitations underlying CVP analysis. However, it is a very useful decision-making tool, in the right circumstances (Drury, 2000).

Decision making is one of the most important functions of management. Manger is repeatedly filled with the functions of selecting. It involves making choices such how much services and goods to sell, which methods of way to produce, whether to buy components, parts, what to charge prices, what stations of distribution, whether to take particular orders at special, low or prices etc. Cost is always a major consideration in decision making. As one step in the decision-making process, the cost of one alternative must be compared against the cost of other alternatives. In order to successful decision making, manager need have available some tool that helps (Bajracharya, et all, 2005).

Cost Volume Profit analysis consists of both contribution and break-even analysis. It has focused on the volume of output or level of production activity where sales revenue is equal to the total costs, i.e. there is neither profit nor loss. Simply put, break-even point is no profit no loss points in which losses stop and profit starts." (Khan and Jain, 1993)

The development of industry in Nepal started with the establishment of "Udhyog Parisad" in 1936 A.D. They were not for the development of the country in the Rana regime. Although it was during this government that several industries were established such as Biratnagar jute mill (1936), Nepal Bank Ltd (1937), Juddha match factory, Morang cotton mill, Mahendra Sugar Mill and Butwal Plywood and Bobiu Factory. They are the father industries of Nepal. Following the advent of Democracy in 2007 B.S, the Government envisaged the need of the industrialization and initiated some public enterprises, thus the government formed a new unit as "Industry Department". Recently renamed as "Cottage and Small Industry Department", the department has received awards for its efforts after democracy was restored.

It was felt that all basic and feasible industries that are capable of making special contribution to the Industrial development of the country could not be set up in the private sector. Hence within this period the government of Nepal also introduced a new industrial policy 1974 as well. On 24 June 1981 new industrial policy is announced and all industries have been kept open to private sector except for the defiance industry. Its industrial policy has shifted with the changing political climate. The new industrial policy was announced in 1992 and this policy is very liberal in term of registration and other formalities. They both encourage private investment and welcome foreign investment. Like in first phase: Basbari lather and shoes factory, Bhrikuti Paper Mill and Harisiddhi brick factory are significant in this process. The process will continue. Similarly, the ministry of industry, UNDP have jointly organized a foreign investment conference on the first week of the December 1992, more than a hundred countries investors attended a conference and showed their keen interest in the process of industrialization of Nepal. They also agreed to the proposal of numerous industries being established in Nepal. It is also believed that through the conference, the future of Nepal's industrial situation will enter a golden era.

Manufacturing is an economic engine of innovation and prosperity, creating jobs and making life better through the production of everything from food to pharmaceuticals to technology. In 2016, there were 251,774 manufacturing firms in the USA, $2,175bn contributed in total manufacturing output, and approximately 12.3m manufacturing workers employed in the USA (National Association of Manufacturers, 2016). Although in 2016 scientists and engineers represented only 3.4 percent of all private sector jobs, they are key participants in high-technology organizations, research-oriented companies, and advanced manufacturing, with US manufacturers employing 64 percent of scientists and engineers and responsible for 70 percent of US patents to US entities (Bureau of Labor Statistics Occupational Employment Statistics, 2016) In the US in 2016, manufacturing had the highest economic impact in that for every $1 added to manufacturing value, $1.40 of additional value is added in other sectors (US Department of Commerce Bureau of Economic Analysis, 2016).

Manufacturing means to produce goods in large quantities after processing from raw material to more useful products. Are you aware that paper comes from wood, sugar from sugar cane, iron and steel from iron ore and aluminum from bauxite? You may

even know that certain types of clothes are made from yarn which is again an industrial product. The secondary activities include those who convert the raw materials into finished products. So do the workers working in steel factories, car, breweries, textile industries, bakeries, etc. Some of us, work in services. This chapter mainly focuses on industries belonging to the secondary sector, which are the manufacturing industries.

1.2 Problem Statement

Nepal is in the infancy period of industrialization. The manufacturing sector is quite small. The growth rate is more or less satisfactory these years. Manufacturing sector has to confront with many challenges which have worked as binders for manufacturing industries growth. Such problems are mainly due to the land locked situation of the Country, undeveloped situation of the Country, undeveloped situation of physical, human, financial and administrative infrastructure and energy at high rates and non-availability of trained and skilled manpower and shortage of capital, small size of market, unawareness about the industrial potential, higher cost of production, low productivity of inputs, manpower and technology, instabilities in government policy etc.

The study adds to the analysis of the cost-volume-profit by including all the components of benefits and cost (inclusively) in the management competency of KD. The essential technique giving additional information for profit planning is cost-volume-profit analysis. Every business begins its life in the break-even stage and then after that stage comes life with the aim of profit. The business firm can go through a lot of highs and lows. The above CVP analysis is only used for planning for every set of goals in the short-run. The reason of the modern business organization is to make more profit or at least the condition of break-even though there may have the situation of the fluctuation because of the different factor which affecting things. Any CVP analysis helps and provide prescribe techniques and guide through that can let you make plan and make decision for goal setting in sort as well as long-run time frame.

Every commercial business organization or firm is aiming at profit. Now, other than be like the goals one achieves maximum profit. In Super market the volume of production is higher that is why the product cost per unit is low which tends to the lower selling cost. Which is not in accordance with the satisfaction of the public those

eager to find out the technology? In this field, the use of fixed assets to the maximum degree is very rarely found, and this is one of the issues that this type of production houses is suffering from and because of the under-utilization of the capacity, the cost rises to a great extent. The performance of BPPNL is not satisfactory according to published annual reports. Ill performance as a result of inadequate planning, Decision Making and controlling. The study question is whether manufacturing companies' managers make use of CVP analysis tools and techniques to perform the planning decision-making and controlling function. Questions pass that mainly in this research are the following:

i. What is the status of cost, volume and profit of manufacturing firms in Nepal?
ii. Is there any relationship between cost, volume and profit of manufacturing firms in Nepal?
iii. What is the impact of cost, volume and profit of manufacturing firms in Nepal?

1.3 Objective of the Study

The general objective of this study is to evaluate the CV-P analysis of multi products of manufacturing company. The specific objectives of this study are as follows:

i. To assess the status of cost, volume and profit of manufacturing firms in Nepal.
ii. To examine the relationship between cost, volume and profit of manufacturing firms in Nepal.
iii. To analyze the impact of cost, volume and profit of manufacturing firms in Nepal.

1.4 Rational of the Study

Market has become highly competitive due to the globalization. There are not so many studies in the prospect of profit planning of multinational companies in countries like Nepal. Anyhow multinational companies in Nepal deserve an important role in internation socio-economic development of our nation. Multinational companies have a very prominent role and impact on the country's economy probably more than any other institution with their key role being the working to speed up the rate of economic growth, developing infrastructure, providing a large capital to

countries national fund, providing essential goods and services to the public and thus promoting the country and consequently paying a hefty amount of tax to the government of Nepal.

Profit planning and control includes many tools, one of which is CVP analysis. A CVP analysis determines the minimum sales volume at which an organization has covered its losses and the sales volume at which the organization achieves its profit goal. It assists management in finding 10 the optimal mix of cost and volume. It also assists the short run decision on fixed costs, variable costs, volume, and selling price for its profit plan on a running basis.

This study follows the format of explaining the cost volume profit analysis as an essential profit planning model including detailed description of how this tool can be utilized in decision making process under certain circumstances. The profit analysis is one tool of profit planning & controller so this study will be significant is as follow; -

- This study is capable of planning profit that explains the relationship between cost-volume & profit.
- The practice of cost -volume-analysis of carpet industry as an important tool of profit planning & controlling it would be very useful for managers accountants' policy maker and researcher.
- This study benefits the related department of carpet industry by a potential recommendation.
- It is also useful for the persons interested for such as, an investor, shareholder and another stake holder.

The study aims to identify the strengths and weaknesses of sales plan and production plan. It also handles probability to make the sales, production and profit targets. So, it is very much useful for the company to identify which areas need to be studied further in depth and researched. The utility of the report can also extend to company management for decision making purpose.

- The study will help the stakeholders like the entrepreneurs, decision makers, researchers and the managers as it encapsulated the practices of CVP analysis in multinational firm as quantitative respondent base of PPC.

- The study is an important tool for library purpose as well it can also help future students and researchers who would like to conduct same types of researches.
- The study also provides the big chance to test the theoretical concept in the practical life.
- The study enhances the research skills and also the communication skills with interpersonal skills by interacting with many people from different community and organization.

1.5 Limitation of the Study

Every research endeavor has its limitations. In this study, the primary limitation was the unavailability of the required data and information. Additionally, several other factors contributed to restricting the scope of the research. These include specific constraints related to the study's area, such as geographic, demographic, or temporal boundaries, and challenges in accessing comprehensive and up-to-date datasets. Despite these limitations, the study aims to provide valuable insights within the given parameters.

- This study examines only in the area of cost-volume-profit analysis of UNL, SNL, BNL and BNTL.
- The researcher felt inadequacy of time and also lack of required conceptual and practical knowledge to be involved in a detailed investigation
- Companies in Nepal are always reluctant to reveal in depth information of their production and other process. Due to their reluctance, it is very difficult to achieve clear information for study.
- Analysis is concentrated in some managerial, financial and accounting aspect and it does not cover all areas of enterprise.
- It is very difficult to separate cost as fixed, variable and semi variable, and also difficult to allocate cost to different products.
- Major portion of analysis and interpretation was done on the basis of available secondary data and information, which are provided by UNL, SNL, BNL and BNTL.

- The accuracy of the study depends on the reliability of information provided by-personnel of the company.
- The time period of the study is limited only to last ten years.
- Due to the short span of time, the researcher is unable to sketch much more information related to the study. Hence, the time duration for this work may not be sufficient to make the study more realistic and wide coverage.
- This study is carried out for academic reason. So, the outcomes may differ if carried out reasons by other scholars or experts.
    - ¬ Financial constraint and time are also the major limitation of the study.
    - ¬ The focuses limit over the availability of data and sufficient literature.
    - ¬ Findings and suggestion may not be applicable to other unrelated sectors.
    - ¬ This study is based on the secondary data. Reliability of the finding depends up on these data.
    - ¬ Periodical data of the fiscal year 2013/14 to 2022/23 were used.

CHAPTER II
REVIEW OF LITERATURE

A literature review is a crucial component of any research study, serving as a means to uncover findings from prior investigations related to the research problem at hand. By conducting a thorough and critical examination of existing literature, researchers can gain a deep understanding of earlier works pertinent to their current study. This process not only helps in identifying previously resolved issues but also aids in discovering relevant and factual information necessary for reporting within the discipline. The term "literature" encompasses various forms of printed materials related to the research topic, including books, booklets, theses, and newspapers. Engaging in this review during the research process also minimizes the risk of duplicating efforts already made in previous studies.

2.1 Theoretical Review

Cost-volume-profit (CVP) analysis is a fundamental tool in managerial accounting that helps businesses understand the relationships between costs, sales volume, and profit. It is used to assess how changes in various factors, such as production volume, costs, and pricing, can impact a company's profitability. By analyzing these relationships, managers can make informed decisions about pricing strategies, product mix, and cost management to optimize financial performance. CVP analysis is particularly useful for short-term financial planning and decision-making, as it provides a clear picture of the break-even point, where total revenues equal total costs, resulting in neither profit nor loss. Additionally, CVP analysis helps in identifying the margin of safety, which indicates how much sales can drop before the business reaches the break-even point. This analysis is crucial for businesses to ensure they remain profitable and can withstand market fluctuations and uncertainties.

2.1.1 The Innovations Theory

The theory of profit from innovation suggests that profits in business ventures can derive from the successful innovations introduced by entrepreneurs. Joseph Alois Schumpeter articulated this theory in 1934, highlighting that the primary role of entrepreneurs and management is to advocate for innovations within the economy,

with profits serving as their reward. Schumpeter characterized innovation as a broad concept that includes any new strategy employed by an entrepreneur to either reduce production costs or enhance product demand (Schumpeter, 1934).

Innovations can be divided into two categories: the first and the second. The first category focuses on reducing production costs through new techniques, the acquisition of advanced machinery, or the implementation of improved production processes. It may also involve discovering alternative sources of raw materials or developing new and enhanced methods for planning and organizing business operations. The second category of innovation, on the other hand, aims to boost product demand. This includes introducing new products, modifying product designs or packaging, adopting better planning methods, enhancing advertising strategies, or exploring new markets for existing products.

In 1959, Penrose further supported Schumpeter's theory of profits, though he concentrated primarily on the second category, emphasizing the importance of productive research and original creativity, rather than aspects related to coordination, exchange, or market power (Penrose, 1959). This theory is pertinent to the current research as the implementation of management accounting models has the potential to enhance production, increase sales, and subsequently lead to higher profits (Schumpeter, 1934).

2.1.2 Theory of Constraint

The theory of constraint is one of the ways of identifying and removing obstacles in the company's production process, which means that this theory is focused on specific area of the unique approach related to the basic goal of continuous improvement (Trojanowska & Dostatni, 2017). One of the high-level tenets of TOC is that every organization must have at least one constraint (Clegg, 2018). Designed to provide a combination of constraints, such as limited availability (raw materials, machine hours, etc.), that inhibit the organization from producing as per market demand with its current productions (Garrison et al., 2013). As pointed out by Garrison et al. (2013), the Theory of Constraints requires that companies' restrictions be managed in view of the restrictions of an organization; therefore, when a process of improvement deals with the challenges of all disciplines involved in a united front, it will be effective.

The theory of constraint is concentrated on three measures of company performance. Throughput the money a company earns from selling; Inventory all the money a company spends to put raw materials into the throughput and operational costs all the money a company spends to turn inventory into throughput (Hansen & Misen,2013). The previous studies (Inayati & Wahyuningsih, 2018; Pelangi & Muhammad, 2021; Syuraika & Ratih, 2018) used theory of constraints to get the result is the use of theory of constraints can assist the managers in achieving high-quality products or services and profits and that requests are fulfilled so that the company has good and efficient operations.

Management accounting, with the help of tools like cost-volume-profit analysis allows the management to plan and control the economy of scale. Organizations cannot be inundated with information on learning if it does not meet the organizational needs of the company (Nworie et al. 2023). That entails, at least in some part, the capacity to make financial projections using cost-volume-profit (CVP) analysis, which has as its very purpose to aid management in price setting by projecting how various structures of price will materially impact costs, and consequently profits (Nworie et al., 2023). This is why the theory of constraints actually comes in quite useful in identifying constraints that are keeping a company from reaching profit goals.

2.1.3 Contribution Margin Theory

Contribution margin theory is a basic theorem of cost-volume-profit (CVP) analysis as it divides variable and fixed costs to compute profit for different levels of output. They call the difference between sales revenues and variable costs the contribution margin, which is defined as "the amount of sales revenue remaining after all variable expenses (costs that increase or decrease with sales volume) are paid" (Horngren et al., 2014). Especially in the manufacturing sector, cost structures play a major role in pricing and production decisions making this theory highly relevant.

To avoid malinvestments, the theory emphasizes correct costing. While variable costs such as raw materials and direct labor per unit change with output levels, fixed costs associated with a factory rent and equipment depreciation remain constant in relevant range of activity. This differentiation allows companies to calculate the contribution

margin ratio, which is utilized for decision-making related to profitability under different operational activities (Drury, 2013).

Contribution margin theory has a very important application — breakeven analysis. Manufacturers can determine the breakeven point, or the level of production that results in neither a profit nor a loss when (total revenue = total cost) by dividing fixed costs into the contribution margin per unit (Kaplan & Atkinson 1998). Once above breakeven, you know that each additional unit sold adds to profit, which not only helps in scaling production but also for pricing it.

It also backs up sensitivity analysis through the contribution margin theory. That is, modeling the effects of changes in costs, sales volume or price on profitability to permit managers to forecast financial forecast and plan decisions. For example, referring to changes in material costs, a manufacturer should change prices or investigate opportunities for cost reductions (Shim & Siegel, 2008).

While it is important to consider all of these factors, contribution margin theory offers a valuable and powerful way for manufacturers to analyze their cost structures and decision-making processes. The applications of breakeven and sensitivity analysis make operational and financial planning more effective by aligning production with profitability.

2.1.4 Economies of Scale Theory

The theory states higher production means lower per-unit costs for goods, mainly due to the spreading of fixed costs over ever larger output and due to operational efficiencies (Samuelson & Nordhaus, 2010) These savings are vital to determining production costs and prices competitive in manufacturing. Different ways of deriving economies of scale for manufacturers. Common labour and equipment for production also makes the process efficient while bulk purchasing of raw materials results in cheaper input. Combined these factors lower variable costs and create higher contribution margin, which reflects the CVP tradition on controlling cost and profit (Besanko et al.2016)

On the other hand, the theory of economies of scale also cautions about diseconomies of scale when production is pushed too far and leads to inefficiency — higher coordination costs or overused resources. Using this theory, a firm can determine the

scale of operation that minimizes costs while still recognizing that there is not an infinite size (Coase, 1937) of operations possible. It also accounts for investment in technology. For automated processes and high-tech manufacturing, initial capital outlays can be very high, but the variable cost per unit produced tends to decrease dramatically as scale of production increases. These kinds of investments are consistent with a long-run strategy of cost minimization and contribute to sustainable competitive advantage in price sensitive markets (p. 48; Chandler, 1990).

Lastly, due to lower unit costs in mass production, economies of scale lead to possibility of price flexibility where manufacturers are able to charge comparatively low profit margins and still maintain profitability. Pricing strategies and the resulting effects on market share in conjunction with firm results are well captured by CVP analysis, which incorporates this idea (Stigler 1958). When aligned together, contribution margin theory and economies of scale theory lay a comprehensive foundation for both the theoretical underpinnings and business application of cost-volume-profit analysis among manufacturing firms that seek efficiency in all production, costs incurred through manufacturing processes, and ultimately their bottom lines.

2.1.5 Cost Volume Profit analysis

Cost volume profit (CVP) analysis often referred to as break-even analysis, is a financial tool utilized by business leaders to develop short-term strategic plans. This analysis helps decision-makers understand how variations in selling prices, costs, and sales volume impact profits in the short run. One of the primary uses of CVP by financial planning and analysis (FP&A) professionals is to conduct break-even analysis, which essentially determines the number of sales needed to cover all business costs, indicating the point at which there is neither profit nor loss.

CVP analysis is vital financial data for organizations, enabling them to assess economic and business conditions and assist departments in addressing challenges (Palupi & Wulan, 2021). It is fundamental for comprehending cost behavior (Rahmayuni & Masmuddin, 2019). Cost behavior describes how costs react to changes in a company’s activities; as activities fluctuate, certain costs may increase or decrease, or remain stable (Garrison et al., 2014). The advantages of conducting Cost Volume Profit analysis include precise profit planning and sales budget calculations

for businesses. Sumarni (2020) explains that profit planning or profitability optimization involves creating an operational plan for the company that is quantified. This planning is critical for guiding management in both short- and long-term budgeting, decision-making, and achieving organizational objectives.

For effective decision-making, management requires analytical skills that facilitate accurate profit forecasting associated with changes in various factors. A solid grasp of the relationship between revenue, costs, and volume is essential for understanding profit generation, which can be achieved through Cost-Volume-Profit analysis (Ahsan, 2018). This analysis evaluates how changes in costs, sales volume, and fixed or variable costs affect profits (Punniyamoorthy, 2017). Management can leverage this information for forecasting, decision-making, and cost control (Guo, 2022). Failing to incorporate Cost-Volume-Profit analysis in decision-making could result in decreased performance and profitability (Lulaj & Iseni, 2018). By applying this analysis, companies can discontinue unprofitable product lines, allowing managers to concentrate on offerings that enhance company value. Additionally, this analysis highlights activities or product lines that may require discontinuation or improvement (Kallio, 2018).

Within CVP analysis, there are several analytical techniques for profit planning, including contribution margin, break-even point analysis, margin of safety, and degree of operating leverage (Pratama et al., 2022). The contribution margin is calculated by subtracting total variable costs from sales revenue. At the break-even point, the contribution margin equals total fixed costs (Winarko & Astuti, 2018). The break-even point represents the level of sales where total revenue matches total costs, resulting in zero operational profit, and signifies the point at which an organization must incur all fixed costs without generating profit (Fadzil et al., 2023). The margin of safety measures the extent to which sales exceed the break-even volume; if sales decrease beyond the margin of safety percentage, the company incurs a loss (Andi & Syamsuri, 2020). Degree of operating leverage refers to the extent of fixed cost utilization to amplify profit changes in response to fluctuations in sales activity (Mowen et al., 2017).

The cost-volume-profit analysis, also commonly known as breakeven analysis, looks to determine the breakeven point for different sales volumes and cost structures plotted on a profit-volume chart, which can be useful for managers making short-term business decisions. CVP analysis makes several assumptions, including that the sales price, fixed and variable costs per unit are constant. Running a CVP analysis involves using several equations for price, cost, and other variables, which it then plots out on an economic graph (Horngren et al., 2022).

The contribution margin represents the difference between total sales and total variable costs, showing how much revenue remains to cover fixed costs and generate profit. It is calculated as total sales minus total variable costs. For a per-unit basis, the unit contribution margin is determined by subtracting the variable cost per unit from the selling price per unit. Additionally, the contribution margin ratio expresses the contribution margin as a percentage of total sales, calculated by dividing the contribution margin by total sales. This ratio reveals the portion of each sales dollar available to cover fixed costs and contribute to profit. A higher contribution margin and ratio indicate better cost control and a stronger potential for profitability (Agrawal, 2000).

Key calculations when using CVP analysis are the contribution margin and the contribution margin ratio. The contribution margin represents the amount of income or profit the company made before deducting its fixed costs. Said another way, it is the amount of sales dollars available to cover (or contribute to) fixed costs. When calculated as a ratio, it is the percent of sales dollars available to cover fixed costs (Dewi et al., 2018). Once fixed costs are covered, the next dollar of sales results in the company having income.

2.1.6 Assumption of CVP Analysis

The utility of CVP analysis stems from its simplicity, yet this simplicity is also its primary limitation. In real-world scenarios, costs are not always easily classified as fixed or variable. Certain expenses, such as depreciation, vary depending on the accounting method used. Similarly, semi-variable costs, which contain both fixed and variable elements, complicate the straightforward dichotomy assumed in CVP (Horngren et al., 2022). The assumption that fixed costs remain constant within the

relevant range may not hold true in dynamic environments where operational changes can alter cost structures. Likewise, CVP assumes a stable sales mix, which can be unrealistic for businesses with diverse product lines or fluctuating demand patterns. These limitations suggest that while CVP analysis is invaluable for strategic insights, it is best applied in conjunction with other tools to account for the complexities of business operations (Dewi et al., 2018).

2.1.7 Application of CVP Analysis

Despite its assumptions and limitations, CVP analysis is a powerful tool for guiding managerial decision-making. One of its primary uses is in determining the break-even point, which allows businesses to identify the minimum sales volume required to avoid losses. This knowledge is crucial for setting realistic sales targets and pricing strategies. Furthermore, CVP analysis provides insights into how changes in costs, prices, or sales volume impact profitability, helping managers evaluate the financial implications of different scenarios (Abdullahi et al., 2017). Beyond break-even analysis, CVP is instrumental in decisions related to cost control, resource allocation, and profit forecasting. Managers also use CVP analysis to evaluate whether to produce goods in-house or outsource, and to assess the profitability of new projects or product lines. In highly competitive markets, its utility in monitoring and maintaining target returns becomes particularly significant (Ahsan, 2018).

2.1.8 Terms Regrading in CVP Analysis

To effectively use CVP analysis, managers must understand its core components and concepts. Fixed costs, such as rent and salaries, remain unchanged regardless of production levels within the relevant range, forming a baseline for financial planning. Variable costs, including raw materials and sales commissions, directly correlate with changes in activity levels, impacting the contribution margin—the amount available to cover fixed costs and generate profit. Semi-variable costs, which combine elements of both fixed and variable costs, add complexity but are vital for a nuanced understanding of cost behavior. Another important concept is step-fixed costs, which remain constant over a range of activity levels but increase in steps when activity exceeds specific thresholds (Horngren et al., 2022). These distinctions enable managers to analyze how changes in operational dynamics influence overall profitability.

2.1.9 Contribution Margin and Its Importance in CVP Analysis

The contribution margin is a central concept in CVP analysis, representing the portion of revenue that exceeds variable costs. It plays a pivotal role in determining the break-even point and evaluating product profitability. A high contribution margin indicates that a product contributes significantly to covering fixed costs and generating profits, making it a valuable metric for prioritizing production and sales efforts. The contribution margin is also essential for calculating the margin of safety, which measures the extent to which sales can decline before a business reaches its break-even point. This buffer is critical for risk assessment and decision-making in volatile markets (Garrison et al., 2021). Additionally, the variable cost ratio, which expresses variable costs as a percentage of net sales, complements the contribution margin by offering insights into cost efficiency and pricing strategies (Agrawal, 2000).

Break-even analysis, a key application of CVP, allows managers to determine the sales volume required to cover all costs and achieve profitability. By analyzing the interplay between fixed costs, variable costs, and sales, managers can identify the point at which a business transitions from a loss-making to a profit-generating operation. This analysis is particularly valuable for new ventures seeking to establish viability or for existing businesses exploring expansion opportunities. Furthermore, break-even analysis helps in evaluating the impact of cost-saving measures or price adjustments on profitability. It also aids in setting sales targets and aligning marketing strategies with financial goals, underscoring its importance in comprehensive business planning (Dewi et al., 2018).

Empirical studies have consistently highlighted the practical value of CVP analysis across industries. Dewi et al. (2018) explored its application in the tourism sector, demonstrating its utility in profit planning and cost control. Similarly, Abdullahi et al. (2017) examined its relevance for small enterprises, emphasizing its role in guiding resource allocation and operational decisions. Ahsan (2018) focused on its application in the fast-food industry, showcasing how CVP analysis aids in maintaining competitive pricing strategies and profitability. In the Nepalese context, Agrawal (2000) underscored its significance in strategic planning, particularly for manufacturing firms. These studies collectively affirm that while CVP analysis may

simplify complex cost structures, it remains a foundational tool for aligning financial and operational strategies with business objectives.

2.2 Empirical Review

Briciu and Capusneanu (2010) examined the role of the cost-volume-profit (CVP) model as a key indicator for decision-making within the hospitality industry. The research aimed to provide a comprehensive understanding of CVP analysis tailored to the specific needs of the hospitality sector. Utilizing a detailed analysis, the study found that each CVP indicator, including cost, volume, and profit, was significant for short-term management decision-making. The major findings emphasized that these indicators play a crucial role in optimizing operational efficiency and guiding strategic decisions. The conclusion drawn from the study underscored the importance of incorporating CVP analysis in the management practices of hospitality businesses to enhance financial performance and decision-making accuracy. The implications of this research suggest that managers in the hospitality industry should prioritize CVP analysis to better navigate financial planning and improve overall profitability.

Ihemeje et al. (2015) investigated the effect of cost-volume-profit (CVP) analysis on decision-making in manufacturing industries. The objective of the study was to assess how CVP analysis influences managerial decisions, particularly regarding production and profitability. The researchers employed both survey and longitudinal research methodologies, utilizing regression and correlation techniques to analyze data collected from primary and secondary sources. The major findings revealed that both the sales value and quantity manufactured had a positive impact on profit. Additionally, there was a significant relationship between the cost of production and profit, indicating that efficient cost management could enhance profitability. The study concluded that CVP analysis is a critical tool for informed decision-making in manufacturing industries, providing valuable insights into cost control and profit optimization. The implications of this research suggest that manufacturing companies should integrate CVP analysis into their strategic planning processes to improve financial performance and competitive advantage.

Kim (2015) examined the cost-volume-profit (CVP) analysis for multi-product companies, focusing on developing a more precise approach to determine break-even

and target profit points. The objective was to improve the accuracy of these calculations compared to existing methodologies. The study introduced a micro approach to handling decimals in business mix ratios among products, which aims to provide closer approximations for break-even and target profit points. The methodologies included a detailed analysis of product mix and cost structures within multi-product organizations. Major findings indicated that the proposed micro approach yielded more accurate and practical results for determining financial thresholds. The study concluded that this refined method offers significant benefits for financial planning and decision-making in multi-product companies. Implications of this research suggest that adopting this micro approach can enhance the accuracy of financial analyses, thereby aiding companies in better managing their costs and maximizing profits.

Ali and Huq (2016) focused on understanding the impact of key indicators of cost-volume-profit (CVP) analysis on the performance evaluation of the textile industry. The objective was to delve into CVP practices, exploring the measurement of cost, output, and margin to ascertain their influence on company performance. The methodology involved selecting a random sample of 14 manufacturing companies for a comparative analysis, allowing for a comprehensive examination of how these indicators function in real-world settings. The major findings indicated that CVP techniques had experienced both positive and negative changes in the companies studied. Specifically, the indicators of cost, volume, and profit showed significant fluctuations, suggesting that while CVP analysis could lead to improved performance, it also required careful implementation and continuous monitoring. The study concluded that CVP analysis is a crucial tool for the textile industry, providing valuable insights that aid in strategic decision-making and performance optimization.

Navaneetha et al. (2017) examined the behavior of changes in output level, selling price, variable cost per unit, and fixed cost of a product or service. The objective was to determine the contribution margin, profit volume ratio, breakeven point in rupees, and breakeven ratio. The study utilized four years of secondary data from the financial reports of Nestle Company Ltd. The findings revealed that the cost-volume-profit analysis was highly effective, indicating that the company’s sales were strong and well-maintained. The study concluded that CVP analysis is a valuable tool for

performance evaluation, providing insights into the efficiency of sales and cost management. The implications suggest that companies can significantly benefit from implementing CVP analysis for better financial planning and decision-making, ensuring sustained profitability and growth.

Punniyamoorthy (2017) examined the use of cost-volume-profit (CVP) and decision tree analysis to determine the level of sales required to achieve a desired profit, aiming to highlight the organization's growth potential and opportunities. The study employed an analytical and descriptive research design, relying on secondary data. Key financial tools utilized in the research included break-even point, profit-volume (PV) ratio, margin of safety, and contribution margin. The major findings indicated that CVP analysis is a vital tool in the planning process, enabling organizations to predict future growth, associated costs, and potential profits. The study concluded that integrating CVP analysis with decision tree techniques provides a comprehensive framework for strategic decision-making, helping organizations enhance their financial performance and stability. The implications suggest that businesses should adopt these analytical tools to improve their planning processes, ensuring better resource allocation and informed decision-making for sustained growth.

Ekergil (2017) studied to understand cost behavior using the cost-volume-profit (CVP) analysis technique. The objective was to explore how managers use CVP analysis to inform their decisions and assess the financial impact of non-profitable clients on organizational efficiency. The study utilized an incitement model to differentiate between business productivity and cost behavior. The methodology involved examining both multi-product based CVP analysis and client-based CVP analysis. The major findings highlighted that speculations about non-profitable clients could decrease profits and increase costs, emphasizing the importance of measuring client productivity. The study concluded that CVP analysis is crucial for business decision-making, providing insights into cost management and profitability. The implications suggest that organizations should integrate multi-product and client-based CVP analyses to enhance financial performance and strategic planning.

Lulaj and Iseni (2018) aimed to understand the application of cost-volume-profit (CVP) analysis in business planning and decision-making across manufacturing and

service enterprises, as well as its interaction with customers. The study employed statistical tools such as the Mann-Whitney U test, Brunner-Munzel test, degree of freedom, and bootstrap, analyzing both dependent and independent variables. The major findings indicated that CVP analysis is crucial for effective planning and decision-making within organizations. It highlighted that CVP analysis significantly impacts production decisions, cost management, and sales strategies, suggesting its essential role in enhancing business efficiency. The researchers concluded that CVP analysis should be more widely adopted across all organizations to improve financial performance and strategic planning. The implications of this study emphasize the need for organizations to integrate CVP analysis into their management practices to better navigate the complexities of the business environment and achieve sustained growth.

Stoenoiu (2018) explored the sensitivity of indicators used in Cost-Volume-Profit (CVP) analysis, motivated by the need to optimize and manage costs amidst unforeseen economic events. The objective was to understand the dependency relationships among the three key CVP indices (cost, volume, and profit) to emphasize the necessity of continuous monitoring and optimization for informed management decisions. Methodologically, the study analyzed the interactions and dependencies between these variables to highlight their direct relationships and inversions. Major findings indicated significant changes in one or more variables could substantially impact the others, underscoring the importance of closely monitoring these indices. The study concluded that effective CVP analysis requires vigilant tracking of these variables to maintain a reliable foundation for decision-making. The implications suggest that organizations must prioritize the ongoing optimization of CVP indicators to navigate economic uncertainties and enhance financial performance.

Nguyen et al. (2020) examined the application of cost-volume-profit (CVP) analysis by public universities in Vietnam, particularly in the context of increasing financial autonomy. The objective was to evaluate how CVP analysis can aid in decision-making processes within these institutions. The study collected data from Vietnamese public universities through surveys conducted in 2018 and 2019. The data was then synthesized and analyzed using Excel, conformity checks, data cleansing, and SPSS

software, employing tools like frequency statistics, price statistics, and means. Major findings indicated that while universities utilized CVP analysis in decision-making, the information remained simplistic and lacked detailed cost-control measures. Additionally, the application of CVP analysis by administrators was neither comprehensive nor coordinated. The study concluded that there is an urgent need to enhance governance in public universities to reduce costs, increase income, and improve the quality of education provided to students. The implications suggest that a more flexible and thorough application of CVP analysis is crucial for effective management and decision-making in Vietnamese public universities.

Okpala and Osanebi (2020) analyzed the impact of cost-volume-profit (CVP) analysis on profit planning in manufacturing SMEs. The objective was to evaluate how CVP methods can enhance benefit planning and address financial challenges within these enterprises. Data were collected through surveys, and the analysis employed descriptive statistics, Pearson correlation, and regression analysis. The major findings indicated that CVP analysis significantly influences profit planning, demonstrating its critical role in managing costs and optimizing profits. The study concluded that manufacturing SMEs should prioritize the use of CVP analysis and consider restructuring their management teams, including the retention of skilled accountants, to improve efficiency and decision-making processes. The implications of this research underscore the importance of integrating CVP analysis into the strategic planning of SMEs to enhance financial performance and sustainability.

Malarkodi and Ranjitha (2021) examined the effectiveness of cost-volume-profit (CVP) analysis as a powerful tool to maximize profits in today's competitive market. The objective was to measure the profitability position of a factory by analyzing the relationships between variable cost, sales volume, sales mix, and product cost. The study used five years of secondary financial data (2016-2020) and applied CVP analysis to understand these dynamics. Major findings indicated that CVP analysis is crucial for making vital decisions to boost sales and earn profit, demonstrating its utility in short-term decision-making, marginal pricing, target costing, and value exchange. The study concluded that CVP analysis helps management in product planning, cost control, and achieving desired profitability under various cost and volume relationships. The implications suggest that CVP analysis should be widely

applied in organizations to raise production capacity, utilize advanced technology to reduce manufacturing costs, and make informed decisions to enhance profitability.

Thapa (2022) assessed the application of cost-volume-profit (CVP) analysis in understanding how changes in sales revenue affect total costs and net income, particularly focusing on short-term relationships. The major objective was to analyze the CVP of Dabur Nepal Private Limited, a significant manufacturing industry in Nepal. Utilizing a cross-sectional research design, the study employed quantitative data from Dabur Nepal's financial reports spanning from 2010 to 2021. Multiple correlation analysis revealed a very high positive correlation between sales and total cost, and a positive correlation between sales and profit. Linear regression analysis further indicated a significant impact of total cost on sales revenue. The findings emphasize the high degree of positive impact that cost management has on sales revenue. The study concludes that CVP analysis is an effective tool for short-term business planning, offering valuable insights into the financial performance and profitability of Dabur Nepal at various levels of sales, costs, and prices. The implications suggest that managers should leverage CVP analysis for better financial forecasting and performance evaluation, enhancing their decision-making capabilities in a competitive market.

Hermawan and Sudarmiatin (2023) examined the financial management related to Cost-Volume-Profit (CVP) analysis in Lay Cang MSMEs, with the objective of understanding how CVP analysis can help these enterprises achieve optimal profits. The study utilized a descriptive qualitative method with a literature review approach, supplemented by direct interviews with MSME managers. The research revealed that Lay Cang MSMEs often lack understanding of the necessary sales levels to avoid losses, considering the costs of production. The findings showed that the revenue generated by these MSMEs was sufficient to cover both variable and fixed costs. The application of CVP analysis provided critical insights, enabling Lay Cang MSMEs to estimate maximum profit and determine the necessary sales volume and revenue to reach the break-even point. The study concluded that CVP analysis is an essential tool for financial management, aiding MSMEs in effective profit planning and decision-making. The implications suggest that MSMEs should integrate CVP analysis into their financial strategies to enhance business sustainability and profitability.

Animah (2024) explored the determine the effect of Cost-Volume-Profit (CVP) analysis on profit planning in private high schools in Mataram City. The research targeted private secondary schools, using a sample size of 38 schools based on data from the Mataram city deposit and employing saturated sampling techniques. The study utilized quantitative data collected through Likert scale questionnaires, which were analyzed using SPSS software and multiple linear regression analysis. The major findings revealed that CVP analysis positively affects profit planning, with decision-making also having a significant partial effect on profits. The study concluded that both CVP analysis and decision-making are crucial for effective profit planning in educational institutions. The implications suggest that school principals should integrate CVP analysis into their decision-making processes to better manage financial challenges, such as fluctuations in student enrollment, thereby improving profitability and resource allocation. This research underscores the importance of strategic financial management in enhancing the economic sustainability of private high schools.

Table 1

Summary of Empirical Review

SN.	Authors	Title	Methodologies	Major Findings
1	Briciu and Capusneanu (2010)	The Role of the CVP Model in Hospitality Decision-Making	Detailed analysis of CVP indicators tailored for the hospitality industry.	CVP indicators (cost, volume, and profit) are crucial for optimizing operational efficiency and enhancing decision-making accuracy. Hospitality managers should prioritize CVP for better financial performance.
2	Ihemeje et al. (2015)	Effect of CVP Analysis on Decision-	Survey and longitudinal research;	Sales value and quantity manufactured positively impact profit. Significant

		Making in Manufacturing Industries	regression and correlation analysis on primary and secondary data.	relationship between production costs and profit suggests efficient cost management enhances profitability.
3	Kim (2015)	CVP Analysis for Multi-Product Companies	Micro approach to business mix ratios for precise break-even and target profit calculations.	Refined methods yield more accurate financial thresholds. The micro approach improves planning and decision-making accuracy in multi-product companies.
4	Ali and Huq (2016)	Impact of CVP Indicators on Textile Industry Performance	Comparative analysis of 14 manufacturing companies using random sampling.	CVP analysis influences performance evaluation but requires careful implementation and monitoring due to significant cost, volume, and profit fluctuations.
5	Navaneetha et al. (2017)	Behavior of Output Changes, Costs, and Profit in CVP Analysis	Analysis of four years of financial data from Nestle Company Ltd.	CVP analysis effectively evaluates sales and cost efficiency, proving its value for financial planning and sustained profitability.
6	Punniyamoorthy (2017)	CVP and Decision Tree Analysis for Organizational Growth	Analytical and descriptive research design using secondary data.	Integrating CVP with decision trees enhances strategic planning and financial stability. Organizations gain better growth predictions and resource allocation.

7	Ekergil (2017)	Understanding Cost Behavior Using CVP Analysis	Incitement model applied to multi-product and client-based CVP analysis.	Identifying non-profitable clients is vital for cost management and profit optimization. Multi-product CVP analysis aids strategic decision-making.
8	Lulaj and Iseni (2018)	Application of CVP Analysis in Business Planning	Statistical methods like Mann-Whitney U test, Brunner-Munzel test, and bootstrap analysis.	CVP significantly impacts production, cost management, and sales strategies, emphasizing its role in enhancing organizational efficiency and planning.
9	Stoenoiu (2018)	Sensitivity of Indicators in CVP Analysis	Analysis of dependency relationships among CVP indices (cost, volume, profit).	Monitoring CVP indicators is essential for navigating economic uncertainties and maintaining decision-making accuracy.
10	Nguyen et al. (2020)	Application of CVP Analysis in Vietnamese Public Universities	Survey data from universities analyzed using Excel and SPSS tools.	While CVP is used in decision-making, the application lacks detailed cost-control measures, highlighting a need for more flexible and comprehensive approaches.
11	Okpala and Osanebi (2020)	Impact of CVP Analysis on Profit Planning in Manufacturing	Descriptive statistics, Pearson correlation, and regression analysis using survey data.	CVP significantly influences profit planning, suggesting SMEs should integrate CVP and retain skilled accountants for

		SMEs		improved efficiency and planning.
12	Malarkodi and Ranjitha (2021)	CVP Analysis for Profit Maximization in Competitive Markets	Five years of secondary financial data analyzed for sales, cost, and profitability trends.	CVP aids short-term decision-making, target costing, and profitability improvement by enhancing product planning and cost control.
13	Thapa (2022)	CVP Analysis of Dabur Nepal Pvt. Ltd.	Cross-sectional design with correlation and regression analysis of financial data (2010–2021).	High positive correlation between sales and total cost, emphasizing CVP's role in cost management and sales revenue improvement.
14	Hermawan and Sudarmiatin (2023)	Financial Management Using CVP in MSMEs	Descriptive qualitative method supplemented by interviews with MSME managers.	CVP analysis helps MSMEs identify break-even points and maximize profits, emphasizing its role in profit planning and financial decision-making.
15	Animah (2024)	Effect of CVP on Profit Planning in Private High Schools	Quantitative data analyzed using SPSS and regression analysis.	CVP and decision-making significantly influence profit planning, highlighting the need for its integration into school financial management.

2.3 Research Gap

Research gap is the difference between the existing investigation and the past researches. Previous researches were mostly limited to profit planning, control, and dimensional zing the budget practices in the manufacturing companies, particularly in the public enterprise. The most researcher did not mention either of the profit

planning and control tools in use or not in use and the causes thereof. However, very few of the studies were conducted regarding a simple cost volume profit analysis of public and private limited companies. However, to bridge gap, it analyzes the multi product cost volume profit analysis as a tool of profit planning and control in the various manufacturing organizations. Research is an endless process, there is no end point of research. Each researcher tries to contribute a bit more to complex. Most of those researches have been the case studies and the impacts are rarely uncovered. Finally, there are no much research has been done by taking the comparison of the four multinational companies. There have been studies related to CVP in respect of overall profit planning and control for the manufacturing enterprises however a voluntary attempt has been made through this study to ascertain the actual practice of CVP as a tool of PPC in UNL, SNL, BNL and BNTL. Risk measurement and CVP analysis under certain uncertainties is not covered in previous studies researcher are trying to fulfill that gap in this research. This study provides an important value in a systematic process and data in CVP Analysis. The study focused on the operational position of the organization through the curtain of CVP analysis and its effect on the profitability. Thus, this study still helpful to concerned person, scholars, students, teachers, government, business man, civil society and other stakeholders for academic and policy perspective.

CHAPTER III
RESEARCH METHODOLOGY

Research involves systematically investigating facts and figures to find solutions to specific problems. Research methodology refers to the structured approach used to address these research issues. It aids in the analysis, examination, and interpretation of various elements related to research activities, including sales, production, and profit planning. Therefore, this section focuses on the research methodology employed in this study. Consequently, this chapter is essential for achieving a realistic understanding through robust empirical analysis.

3.1 Research Design

Research design relates to the outline of the information gathering action carried out that would assist in answering the research question while helping in managing its variance. In particular, research design is the basis for analyzing data related to research topic. Data is the controlling media for the gathering of data, and it assists to gather precise information concerning the research topic. Research design is the plan for conducting research. It describes the broad framework for collecting, analyzing and evaluating data. The researcher has employed both analytical and descriptive research design for CVP analysis in the current study. The descriptive design has been adopted for the conceptual development and scientific and systematic framework of the research and the analytical design has been used for the systematic interpretation of the numerical data utilized in this study

3.2 Population and Sample and Sampling Design

The population of the study is all the Nepalese business enterprises functioning with the ideas of earning profit. The manufacturing company selection has no restrictions. As it is impractical to try the entire number of research populace in this exploration due to different conditions, private assembling organization Majority in Nepal has been set up in different area of item collect exchanging and administrations division for the all-encompassing improvement and development of the nation economy. From the total 19 manufacturing and processing company, Unilever Nepal, Bottlers Tarai, bottlers Nepal and Surya Nepal Ltd are taken a sample and population. UNL, BTL, BNL and SN are leading company so I choose them as sample because they represent

whole manufacturing company with considerable market share and profit analysis of UNL, BTL, BNL and SN. It is not centered with any branch or product. So, there is not any different in sample and papulation the data are taken from current last ten year from the fiscal year 2012/13 to 2022/23. By focusing on UNL, BTL, BNL, and SN, the study can effectively analyze the critical factors influencing the manufacturing sector, despite the practical limitations of including all 19 manufacturing and processing companies in the research. The selection of Unilever Nepal (UNL), Bottlers Tarai (BTL), Bottlers Nepal (BNL), and Surya Nepal Ltd (SN) as samples is justified due to their market leadership, comprehensive representation of various manufacturing sectors, significant market share, and impact on the national economy.

3.3 Nature and Sources of Data

Data plays a crucial role in research, essential for clarifying and fulfilling research objectives. Research methodology cannot be utilized to bring the conclusion. For the purpose of CVP analysis of the enterprise, data has been collected from secondary sources. This data has already been used by others. Only primary data are not sufficient to fulfill the requirement of the research work. Sometimes it is very difficult to collect the primary data. It is better to use secondary data to accomplish the objectives of study.

3.4 Data Collection Procedures

The data analysis is a universal deepest part of the research work. The results of the study are dependent on the collected data. Data collection was the toughest part for the researcher.

3.5 Method of Analysis

Every research work revolves around analysis and presentation of data. Different types of tools are used to analyze data in order to get the tangible results from this research. SPSS software is utilized to analyze the data in systematic manner. Mainly the following tools are utilized to analyze the data:

3.5.1 Accounting Tools

Excellent study data interpretation requires more than descriptive techniques. To cover the gap or to make the research report appealing and for better understanding the following profit planning and statistical tools have been used:

Contribution Margin (CM)

Contribution margin is a fundamental concept in cost accounting and financial analysis that helps businesses understand the profitability of individual products or services. It represents the amount of money available to cover a company's fixed costs and generate profit after deducting variable costs associated with producing or selling a product.

Contribution Margin=Revenue−Variable Costs

Contribution Margin Ratio

The contribution margin ratio is a key financial metric used in cost accounting and financial analysis to assess the profitability of a product or service. It is expressed as a percentage and represents the proportion of sales revenue that contributes to covering a company's fixed costs and generating profit.

Contribution Margin Ratio = $1-\frac{\text{Varible Cost}}{\text{Sals}}$

Break Even Point (BEP) in Unit

This is a critical concept in cost accounting and financial analysis that helps businesses determine the level of sales needed to cover all fixed and variable costs, resulting in neither profit nor loss. To calculate the Break-Even Point in Units, you can use the following formula:

Break-Even Point in Units = Fixed Costs / Contribution Margin per Unit

Break Even Point In RS

The Break-Even Point (BEP) in rupees (Rs) refers to the level of sales revenue needed to cover all fixed and variable costs, resulting in zero profit or loss. It's an important financial metric that helps businesses understand the minimum revenue required to cover their expenses. To calculate the Break-Even Point in rupees, you can use the following formula:

Break-Even Point (in Rs) =Fixed Costs / Contribution Margin

Required Sales for Desire profit

To determine the required sales for a desired profit, you need to calculate the amount of sales revenue needed to cover all fixed and variable costs, plus the desired profit. This is done using the formula:

Required Sales (in Rs) = Fixed Costs+ Desired Profit/ contribution margin ratio

Margin of safety ratio

The margin of safety ratio is a financial metric used to assess the level of cushion or safety that a business has in relation to its break-even point. It measures the extent to which actual sales exceed the break-even sales, providing insight into the risk of operating at current sales levels. The Margin of Safety Ratio is calculated using the following formula:

Margin of Safety Ratio (%) = (Actual Sales−Break-Even Sales / Actual Sales) ×100%

3.5.2 Statistical tools

The data has been presented and analyzed using a number of significant statistical methods, including trend analysis and the coefficient of correlation between various variables, which are described below, in order to meet the goals.

Descriptive Techniques

Descriptive technique is a fact-findings operation searching for adequate information. It is a type of study, which is generally conducted to assess the opinions, behaviors or characteristics of a given population and to describe the situation and events occurring at present. The following descriptive tools are utilized in this study.

Arithmetic mean

Arithmetic Mean is the ratio of the sum of all the observations to the number of the observations. The arithmetic mean is calculated using following formula:

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

Where,

Σ X = Sum of all values of the observations

n = Number of observations

X = Values of variables

Standard deviation (S.D)

The standard deviation measures the absolute dispersion. The greater the amount of dispersion greater the standard deviation. In this study standard deviation can be computed in following way:

$$\text{S.D } (\sigma) = \sqrt{\frac{1}{N}\sum\left(X - \overline{X}\right)^2}$$

Where,

N = Number of observations

X = Expected return of the historical data

Correlation Analysis

Correlation Analysis is necessary in order to find out whether the selected variables in time series have any relation or not. If there is no correlation there would be no causality so this test is necessary. Correlation is a measure of the relation between two or more variables. The measurement scales range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation, while a value of +1.00 represents a perfect positive correlation. A value of 0.00 or close to zero represents a lack of correlation.

$$\text{Correlation(r)} = \frac{\sum\left(X - \overline{X}\right)\left(Y - \overline{Y}\right)}{\sqrt{\sum\left(X - \overline{X}\right)^2 \sum\left(Y - \overline{Y}\right)^2}}$$

The value of r lies between + 1, when r =+ 1, it means there is perfect positive correlation between the variables where r = -1 it means there is perfect negative correlation between variables. However, in practice such value of r, as + 1, -1 and 0 are rare.

Regression Analysis

In a simple regression analysis, one dependent variable is examined in relation to only one independent variable. The analysis is designed to derive an equation for the line that best model the relationship between the dependent and independent variables. This equation has the mathematical form:

Regression Equation(y) = a+ bx

$$\text{Slope (b)} = \frac{\left(N\sum XY - \left(\sum X\right)\left(\sum Y\right)\right)}{\left(N\sum X^2 - \left(\sum X\right)^2\right)}$$

$$\text{Intercept(a)} = \frac{\left(\sum Y - b\left(\sum X\right)\right)}{N}$$

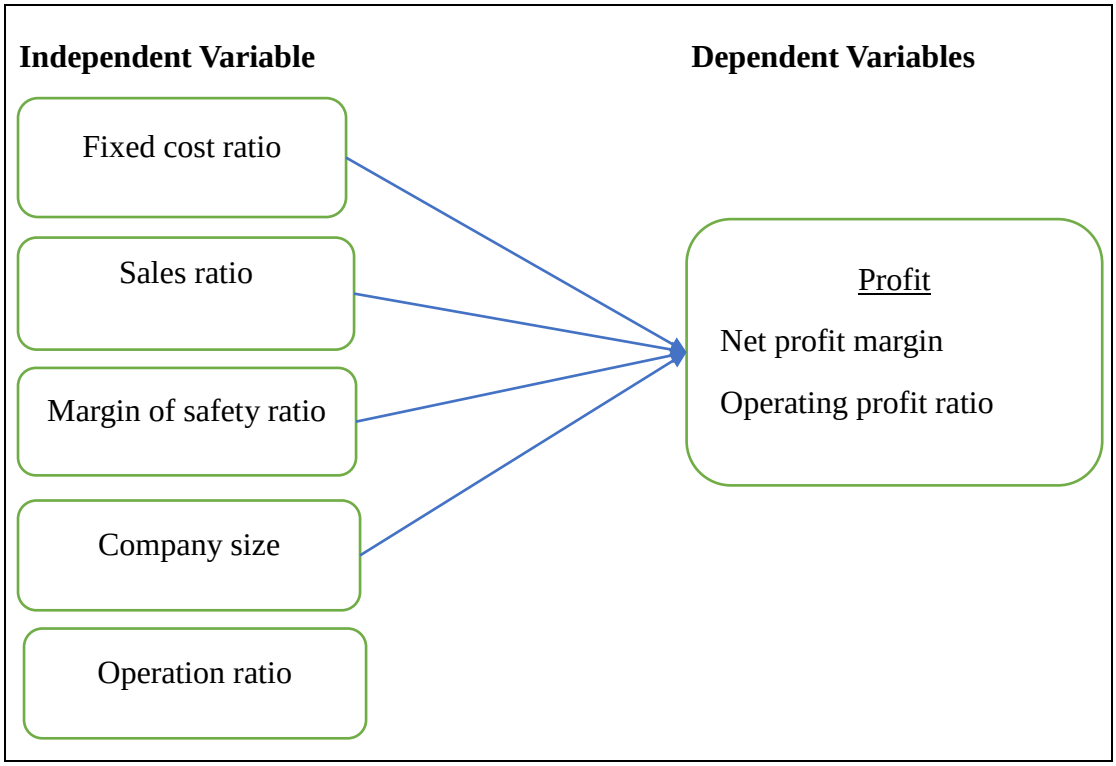
Where

x and y are the variables. b = The slope of the regression line a = The intercept point of the regression line and the y axis. N = Number of values or elements X = First Score Y = Second Score ΣXY = Sum of the product of first and Second Scores ΣX = Sum of First Scores ΣY = Sum of Second Scores ΣX2 = Sum of square First Scores

3.6 Research Framework and Definition of Variables

For this study, the independent variables include the fixed cost ratio, sales ratio, margin of safety ratio, and operation ratio. These variables represent key financial metrics that influence business performance. The dependent variables are the net profit margin and operating profit ratio, which are critical indicators of a company's profitability and operational efficiency. This structured approach, grounded in the theoretical work of Georgiev (2021), facilitates a detailed analysis of the financial dynamics within the business environment, guiding strategic decision-making to enhance profitability and operational performance.

Figure 1 Research Framework



Sources: Georgiev (2021)

3.6.1 Net Profit Margin

The net profit margin is a profitability ratio that measures the percentage of net income derived from total revenue. It reflects the company's ability to convert sales into actual profit after accounting for all expenses, including taxes and interest (Gitman & Zutter, 2021). A higher net profit margin indicates effective cost management and strong pricing strategies, signaling financial health and operational efficiency. This ratio is crucial for stakeholders to assess the company's overall profitability.

3.6.2 Operating Profit Ratio

The operating profit ratio measures the proportion of operating profit (earnings before interest and taxes) to net sales. It indicates the efficiency with which a company manages its core business operations, excluding the impact of non-operating income and expenses (Ross et al., 2022). A higher operating profit ratio reflects better cost control and profitability from primary business activities. This ratio is essential for understanding a firm's operational performance and its ability to generate profits from its main line of business.

3.6.3 Fixed Cost Ratio

The fixed cost ratio measures the proportion of fixed costs to total revenue, reflecting the extent to which an organization relies on fixed expenses in its cost structure. A higher fixed cost ratio indicates greater operational leverage, meaning that the firm must generate sufficient revenue to cover its fixed obligations before achieving profitability (Brigham & Houston, 2019). Fixed costs remain constant irrespective of production levels, making this ratio crucial for understanding the risk associated with revenue fluctuations. It provides insight into the company's ability to manage its fixed expenses efficiently, particularly in industries with high capital requirements.

3.6.4 Sales Ratio

The sales ratio represents the proportion of sales revenue relative to a specific variable, such as production costs, profit, or sales growth. This ratio helps in evaluating the efficiency of sales strategies and operational performance (Drury, 2021). By analyzing the sales ratio, businesses can assess their ability to convert operational inputs into revenue, identify trends in sales growth, and make informed decisions regarding pricing and marketing strategies.

3.6.5 Margin of Safety Ratio

The margin of safety ratio quantifies the extent by which sales exceed the break-even point, expressed as a percentage of total sales. This ratio indicates the cushion available to a business before it starts incurring losses, offering a measure of risk associated with current sales levels (Horngren et al., 2020). A higher margin of safety signifies greater financial stability and resilience to sales declines. It aids management in understanding the level of operational risk and planning for contingencies.

3.6.6 Company Size

Company Size refers to the scale of a company's operations and can be measured in various ways, including total assets, annual revenue, and the number of employees. Total assets represent the cumulative value of everything the company owns, while annual revenue measures the total income generated from sales or services over a year. The number of employees indicates the workforce size, which reflects the company's operational capacity. Company size is an important variable in CVP (Cost-Volume-Profit) analysis as it affects the company's ability to leverage economies of scale, manage costs, and achieve profitability. Larger companies may benefit from more resources and market influence, whereas smaller companies might be more agile and adaptable to market changes (Horngren et al., 2015).

3.6.7 Operation Ratio

The operating ratio measures the proportion of operating expenses, including cost of goods sold (COGS) and other administrative costs, to net sales. This ratio reflects the efficiency of a company’s core business operations and its ability to generate revenue relative to its expenses (Pandey, 2020). A lower operating ratio indicates higher operational efficiency, as it shows that a smaller percentage of sales revenue is consumed by operating costs. This metric is widely used to evaluate the operational performance and cost management strategies of businesses across various industries.

CHAPTER IV
RESULTS AND DISCUSSION

Results and discussion is the main body part of this study. This is the main part of the study which include the findings of the study. The data are collected in raw form and present in this chapter in systematic manner by following the tools mention in earlier chapter. Hence, to accomplish the stated research objectives, the present chapter presents such unprocessed data in organized formats and examines it with multiple financial and statistical techniques. The secondary data taken from different sources are presented and analyzed separately through quantitative measure. Throughout this stream of analysis, data collected from multiple sources have been populated in the tabulated format.

4.1 Results

The results of this study present the relationships between key financial performance metrics fixed cost ratio, sales ratio, margin of safety ratio, operation ratio, net profit margin, and operating profit ratio. These findings indicate how these variables interact and impact overall financial stability and profitability in the context of the analyzed firms. By utilizing statistical tools, the study identifies patterns and significant effects, helping to determine which factors contribute most prominently to operational efficiency and financial outcomes. The results provide valuable insights into the effectiveness of cost management, operational efficiency, and profitability strategies, aligning with the study's objectives to analyze financial performance holistically.

4.1.1 Descriptive Analysis

The descriptive analysis in this study shows the variables by summarizing their central tendencies, dispersion, and distribution patterns. This step highlights the current state of CVP analysis among the sampled firms offering insights into the averages and variations of key ratios such as the fixed cost ratio, sales ratio, and margin of safety ratio. Additionally, descriptive statistics reveal trends in profitability and operational efficiency metrics, including net profit margin and operating profit ratio. These insights establish a foundation for further inferential analysis, ensuring that the data aligns with the study’s objectives and offering a contextual understanding of financial performance within the studied firms.

4.1.1.1 Net Profit Margin

The net profit margin is a financial metric used to measure the profitability of a company. It represents the percentage of revenue that translates into profit after all expenses, including operating expenses, interest, taxes, and other non-operating costs, have been deducted. The net profit margin, also known as the profit margin or net margin, is a profitability ratio that indicates how much profit a company earns for each dollar of revenue generated. The net profit margin is a critical financial metric that measures a company's profitability by showing how much profit it generates from each dollar of revenue. It is an essential indicator of financial performance and is used for evaluating the overall efficiency and profitability of a business.

Table 2

Descriptive Analysis of Net Profit Margin

Companies	N	Min	Max	Mean	Std. Deviation
UNL	10	8.63	38.25	21.75	2.432
SNL	10	11.25	49.78	35.12	6.126
BNL	10	4.25	17.28	7.61	4.962
BNTL	10	5.48	18.25	7.33	3.545

Source: Annual Reports of Respective Companies

Table 2 shows the value of mean and standard deviation of the corresponding variables associated with four manufacturing companies from 2013/14 to 2022/23. The mean value of net profit margin bottlers terai and bottlers company both are mean 7.61 and 7.33. Unilever company mean is 21.75 and Surya Nepal company mean is 35.12. Surya Nepal company is high mean high net profit is a positive financial outcome for a company, indicating strong profitability and effective management of expenses relative to revenue. Net profit, also referred to as net income or bottom-line profit, represents the amount of money a company retains after deducting all expenses from its total revenue. Bottlers Nepal is low mean it means a low net profit, also known as low net income or bottom-line profit, can indicate various challenges or issues within a company's financial performance. It signifies that the company is generating less profit after deducting all expenses from its total revenue

4.1.1.2 Operating Profit Ratio

The operating profit ratio is a metric that examine the relationship between operating profit and net sales. Operating profit, commonly referred to as earnings before interest and taxes (EBIT), represents the profit generated from core business operations, while net sales denote the revenue obtained from these operations. As a type of profitability ratio, the Operating Profit Ratio is expressed as a percentage. Net sales include both cash and credit sales, making this ratio useful for assessing how well a business is generating operating profit relative to its total revenue. The operating margin measures how much profit a company makes on a dollar of sales after paying for variable costs of production, such as wages and raw materials, but before paying interest or tax. It is calculated by dividing a company's operating income by its net sales. Higher ratios are generally better, illustrating the company is efficient in its operations and is good at turning sales into profits.

Table 3

Descriptive Analysis of Operating Profit Ratio

Companies	N	Minimum	Maximum	Mean	Std. Deviation
UNL	10	10.25	38.48	21.05	5.843
SNL	10	18.59	57.28	36.18	14.074
BNL	10	8.18	18.32	12.70	3.005
BNTL	10	2.89	18.76	11.64	4.528

Source: Annual Reports of Respective Companies

Table 3 depicts the value of mean and standard deviation of the corresponding variables associated with four manufacturing companies from 2013/14 to 2022/23. The mean value of the operating profit ratio for Bottlers Nepal Terai Limited and Bottlers Nepal Limited is 12.70 and 11.64, respectively. Unilever Nepal Limited's mean is 21.05, while Surya Nepal's mean is 36.18. Among the companies, Surya Nepal has the highest mean, indicating a strong operational performance and profitability from core business activities before considering interest and taxes. A high operating profit is a positive financial indicator for a company, reflecting robust earnings generated solely from primary operations. Conversely, Bottlers Nepal Limited has the lowest mean, highlighting potential challenges or inefficiencies in core operations that may impact its ability to generate earnings before factoring in

interest and taxes. Operating profit, also known as operating income or earnings before interest and taxes (EBIT), measures profitability exclusively from a company's primary operations, excluding non-operating expenses and income. A low operating profit signals issues in operational efficiency or challenges in achieving cost-effectiveness, which can adversely affect day-to-day earnings. Operating profit remains a critical metric for assessing the financial health and operational strength of a company.

4.1.1.3 Fixed Cost Analysis

Fixed cost is a business expense that remains unchanged no matter how you increase or decrease the number of goods and services produced or sold. Fixed costs refer to period costs not directly tied to production costs (like rent, interest expense, insurance, depreciation and property tax). As fixed costs are independent of a company's production of goods or services, they are typically indirect. Shutdown points are applied in order to decrease fixed costs These costs comprise two categories of business expenses that, when combined, account for their overall expenses. The other type is known as a variable cost.

Table 4

Descriptive analysis of Fixed Cost Analysis

Companies	N	Minimum	Maximum	Mean	Std. Deviation
UNL	10	8	11	9.58	.949
SNL	10	6	12	9.60	1.943
BNL	10	6	19	11.55	4.332
BNTL	10	6	30	12.09	7.112

Source: Annual Reports of Respective Companies

Table 4 present the value of mean and standard deviation of the corresponding variables associated with four manufacturing companies from 2013/14 to 2022/23. The table provides descriptive statistics for the fixed cost ratio of four companies: Unilever, Surya Nepal, Bottlers Tarai, and Bottlers Nepal, each with 10 observations. For Unilever, the fixed cost ratio ranges from 8 to 11, with an average of 9.58 and a standard deviation of 0.949, indicating relatively low variability and consistent cost management. Surya Nepal has a fixed cost ratio between 6 and 12, averaging 9.60

with a standard deviation of 1.943, showing moderate variability. Bottlers Tarai exhibits a wider range, from 6 to 19, with a mean of 11.55 and a standard deviation of 4.332, reflecting higher variability. Bottlers Nepal has the broadest range, from 6 to 30, with an average fixed cost ratio of 12.09 and a standard deviation of 7.112, indicating significant variability and suggesting periods of unusually high fixed costs. Overall, Unilever and Surya Nepal display more stable fixed cost ratios compared to the higher and more variable ratios seen in Bottlers Tarai and Bottlers Nepal.

4.1.1.4 Sales Ratio

The price to sales ratio also referred to as the P/S ratio is an equation that helps indicate the total value that investors are willing to attach to your business relative to the total revenue delivered by the business. It is computed by dividing the share price by the sales per share. Stock market guru Kenneth L. Fisher created the P/S ratio. Fisher observed that a company will sometimes go through a stage of early growth, and investors will assign the company an unrealistic valuation. If suddenly, the value of the company gets less than what they expect, so the investors panic and pull out his stock. Fisher thought a well-managed company would be able to spot the issues, fix the problems and then move forward. If they're able to address it, the company's share price and earnings will increase. Fisher devised the P/S ratio to help solve that over-valuation dilemma.

Table 5

Descriptive Analysis of Sales Ratio

Companies	N	Minimum	Maximum	Mean	Std. Deviation
UNL	10	119	152	131.57	13.310
SNL	10	57	149	97.72	28.373
BNL	10	72	149	105.42	25.858
BNTL	10	69	138	98.52	23.152

Source: Annual Reports of Respective Companies

Table 5 indicates the value of mean and standard deviation of the corresponding variables associated with four manufacturing companies from 2013/14 to 2022/23. The table provides descriptive statistics for the sales ratio of four companies (Unilever Nepal, Surya Nepal, Bottlers Tarai, and Bottlers Nepal), each with 10 observations.

For Unilever Nepal, the sales ratio ranges from 119 to 152, with an average of 131.57 and a standard deviation of 13.310, indicating moderate variability and relatively stable sales performance. Bottlers Tarai has a sales ratio ranging from 69 to 138, with an average of 98.52 and a standard deviation of 23.152, reflecting higher variability in sales performance. Bottlers Nepal also shows a sales ratio ranging from 72 to 149, with an average of 105.42 and a standard deviation of 25.858, indicating similarly high variability in sales performance as Bottlers Terai. There is a second entry for Surya Nepal, showing a sales ratio ranging from 57 to 149, with an average of 97.72 and a standard deviation of 28.373, indicating very high variability and less stable sales performance compared to the first entry. The sales ratios for Bottlers Tarai and Bottlers Nepal exhibit greater variability compared to the first entry for Surya Nepal, which demonstrates more consistent sales performance. The second entry for Surya Nepal shows the highest variability, suggesting significant fluctuations in sales.

4.1.1.5 Margin of Safety Ratio

In accounting, the margin of safety (or safety margin) can be determined as the distance between actual sales and breakeven sales. It shows how far sales can drop before the company or how much project sales might decrease. This number is important for product pricing, production optimization and sales forecasting. The margin of safety is a financial measure that indicates whether sales have exceeded breakeven. At this stage, the business will already start making a loss if actions are not taken immediately. A margin of safety is just a buffer for a company if it stumbles and it can just have little or no pullback. But if a company's MOS is declining, then it has to reassess its pricing, stop production of unprofitable products and cut down variable costs, fixed costs etc. to increase it.

Table 6

Descriptive Analysis of Margin of Safety Ratio

Companies	N	Minimum	Maximum	Mean	Std. Deviation
UNL	10	87	123	106.25	14.215
SNL	10	31	88	61.90	20.705
BNL	10	31	45	40.13	4.992
BNTL	10	-8	35	21.59	12.125

Source: Annual Reports of Respective Companies

Table 6 shows the value of mean and standard deviation of the corresponding variables associated with four manufacturing companies from 2013/14 to 2022/23. The table provides descriptive statistics for the margin of safety of four companies: Unilever, Surya Nepal, Bottlers Tarai, and Bottlers Nepal, each with 10 observations. The margin of safety is a measure of the difference between actual sales and break-even sales, providing insight into how much sales can drop before the company incurs a loss. For Unilever, the margin of safety ranges from 87 to 123, with an average of 106.25 and a standard deviation of 14.215. This indicates that Unilever maintains a relatively high and stable margin of safety, suggesting strong financial health and a significant buffer before reaching its break-even point. Surya Nepal has a margin of safety ranging from 31 to 88, with an average of 61.90 and a standard deviation of 20.705. This indicates moderate variability in their margin of safety, suggesting that while Surya Nepal maintains a reasonable buffer above its break-even point, there is more fluctuation compared to Unilever. Bottlers Tarai exhibits a margin of safety ranging from 31 to 45, with an average of 40.13 and a standard deviation of 4.992. This suggests a relatively low and stable margin of safety, indicating that Bottlers Tarai operates closer to its break-even point with less room for sales to decline before incurring losses. Bottlers Nepal shows the most variability with a margin of safety ranging from -8 to 35, an average of 21.59, and a standard deviation of 12.125. The negative minimum value indicates that there were periods where Bottlers Nepal's sales were below its break-even point, leading to losses. This high variability and lower average margin of safety suggest a more precarious financial situation. Unilever maintains the highest and most stable margin of safety, indicating strong financial health. Surya Nepal shows moderate variability but maintains a reasonable buffer. Bottlers Tarai operates with a smaller and stable margin of safety, while Bottlers Nepal faces significant variability and potential financial instability.

4.1.1.6 Company Size

Company Size" typically refers to the scale or magnitude of a company, often measured by factors such as the number of employees, total revenue, or overall assets. In the context of your descriptive statistics, it might be measured in terms of numerical indices or specific metrics that reflect the scale of the company. Company

Size can influence various aspects of a business, including its market presence, financial performance, and operational capacity.

Table 7

Descriptive Statistics Company size

Companies	N	Minimum	Maximum	Mean	Std. Deviation
UNL	10	20	24	22.47	1.169
SNL	10	21	23	21.87	.657
BNL	10	21	23	22.33	.595
BNTL	10	21	23	22.07	.390

Source: Annual Reports of Respective Companies

Table 7 depicts the descriptive statistics for company size across the different organizations show the following results. For Unilever, with 10 observations, the Company Size ranges from 20 to 24, with a mean of 22.47 and a standard deviation of 1.169, indicating moderate variability. Surya Nepal also has 10 observations, with Company Sizes ranging from 21 to 23, a mean of 21.87, and a lower standard deviation of .657, suggesting less variability. Bottlers Tarai's 10 observations have Company Sizes between 21 and 23, with a mean of 22.33 and a standard deviation of .595, reflecting similar variability to Surya Nepal. Bottlers Nepal shows Company Sizes ranging from 21 to 23, a mean of 22.07, and the lowest standard deviation of .390, indicating the least variability among the groups.

4.1.1.7 Operation Ratio

The operating ratio is a financial metric used to assess a company's operational efficiency by comparing operating expenses to net sales. It is calculated as the ratio of total operating expenses (which includes cost of goods sold, administrative expenses, and selling expenses) to net sales revenue. A lower operating ratio indicates higher efficiency, as it means a smaller proportion of sales revenue is consumed by operating expenses, leaving a greater portion available for profit. Conversely, a higher operating ratio suggests inefficiency, as a larger share of revenue is being used to cover operating costs. This ratio is particularly valuable for businesses to monitor and manage their cost structures, aiming to minimize operating expenses relative to sales to enhance profitability. The operating ratio provides a clear insight into the

company's ability to control costs and optimize its operations, making it a crucial tool for financial analysis and decision-making. Table 8 shows the descriptive analysis on operation ratio of sample manufacturing companies.

Table 8

Operation Ratio

Companies	N	Minimum	Maximum	Mean	Std. Deviation
UNL	10	83.20	98.00	88.03	4.148
SNL	10	81.70	91.80	87.57	3.541
BNL	10	54.20	90.30	77.66	9.825
BNTL	10	42.58	77.80	65.17	13.367

Source: Annual Reports of Respective Companies

Table 8 shows the descriptive statistics for the operation ratio across different companies. For Unilever Nepal (UNL), the operation ratio ranges from 83.20 to 98.00, with a mean of 88.03 and a standard deviation of 4.148, indicating moderate variability. Surya Nepal Limited (SNL) has operation ratios ranging from 81.70 to 91.80, with a mean of 87.57 and a standard deviation of 3.541, suggesting less variability. Bottlers Nepal Limited (BNL) shows operation ratios between 54.20 and 90.30, with a mean of 77.66 and a higher standard deviation of 9.825, reflecting greater variability. Bottlers Nepal Tarai Limited (BNTL) has operation ratios ranging from 42.58 to 77.80, with a mean of 65.17 and the highest standard deviation of 13.367, indicating significant variability.

4.1.2 Correlation Analysis

Correlation analysis is a statistical technique used to measure and quantify the relationship between two or more variables. It assesses the strength, direction, and significance of the association between variables, providing insights into how changes in one variable are related to changes in another. Correlation analysis can be performed using various correlation coefficients, with the most common being Pearson's correlation coefficient. Pearson's correlation coefficient is used to measure the strength and direction of the linear relationship between two continuous variables. The result of a correlation analysis is often represented by a correlation coefficient,

which indicates the degree of linear relationship between variables. The correlation coefficient can range from -1 to +1.

Table 9

Correlation Matrix

		NPM	OPR	FCR	SR	MOS	CS	OPRR
NPM	Pearson Correlation	1	.839**	-.253	.125	.679**	-.112	-.839**
	Sig. (2-tailed)		.000	.115	.442	.000	.493	.000
OPR	Pearson Correlation		1	-.213	.082	.575**	.003	-1.000**
	Sig. (2-tailed)			.186	.614	.000	.984	.000
FCR	Pearson Correlation			1	-.388*	-.285	.191	.213
	Sig. (2-tailed)				.013	.074	.239	.186
SR	Pearson Correlation				1	-.045	.184	-.082
	Sig. (2-tailed)					.783	.255	.614
MOS	Pearson Correlation					1	-.070	-.575**
	Sig. (2-tailed)						.666	.000
CS	Pearson Correlation						1	-.003
	Sig. (2-tailed)							.984
OPRR	Pearson Correlation							1
	Sig. (2-tailed)							

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

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

Where

FCR: Fixed Cost Ratio

SR: Sales Ratio

MOS: Margin of Safety

CS: Company Size

OPR: Operating Profit Ratio

NPM: Net Profit Margin

OPPR: Operation Ratio

The correlation analysis in Table 9 reveals several noteworthy relationships between the key financial ratios and their implications for the operating profit ratio (OPR) and net profit margin (NPM). The fixed cost ratio (FCR) shows a negative correlation

with OPR (-0.213) and a p-value of 0.186, indicating that higher fixed costs are associated with lower operating profit ratios, although this relationship is not statistically significant. Similarly, the sales ratio (SR) exhibits a very weak positive correlation with OPR (0.082) and a p-value of 0.614, suggesting that higher sales ratios are not significantly related to changes in the operating profit ratio.

A significant positive relationship is observed between the margin of safety (MOS) and OPR, with a correlation of 0.575 and a p-value of less than 0.001. This indicates that a higher margin of safety is strongly associated with higher operating profit ratios, underscoring the importance of maintaining a buffer against financial fluctuations. Company size (CS), however, shows a negligible correlation with OPR (0.003) and a p-value of 0.984, suggesting no significant impact of company size on operating profitability. The relationship between NPM and OPR is very strong and positive, with a correlation of 0.839 and a p-value of less than 0.001, highlighting that companies with higher net profit margins tend to have higher operating profit ratios. Conversely, the operation ratio (OPRR) has a perfect negative correlation with OPR (-1.000) and a p-value of less than 0.001, confirming that as the operation ratio increases, the operating profit ratio decreases significantly.

In terms of the net profit margin (NPM), the analysis shows a negative correlation with the fixed cost ratio (FCR) (-0.253) and a p-value of 0.115, indicating that higher fixed costs are associated with lower net profit margins, although this relationship is not statistically significant. The Sales Ratio (SR) also shows a weak positive correlation with NPM (0.125) and a p-value of 0.442, suggesting that sales ratios do not significantly affect net profit margins. The Margin of Safety (MOS) exhibits a strong positive correlation with NPM (0.679) and a p-value of less than 0.001, indicating that higher margins of safety are closely linked to higher net profit margins. The correlation between company size (CS) and NPM is very weak and negative (-0.112) with a p-value of 0.493, suggesting that company size does not significantly impact net profitability. Finally, the operation ratio (OPRR) has a strong negative correlation with NPM (-0.839) and a p-value of less than 0.001, indicating that higher operation ratios are associated with lower net profit margins.

The findings highlight the significant positive relationships of the operating profit ratio and net profit margin with the margin of safety, while correlations with the fixed

cost ratio, sales ratio, and company size are weak and not statistically significant. The operation ratio shows strong inverse relationships with both the operating profit ratio and net profit margin indicating the critical balance required between operational efficiency and profitability to achieve financial success.

4.1.3 Regression Analysis

Regression analysis is a statistical technique used to model the relationship between a dependent variable and one or more independent variables. It is commonly used for predicting or estimating the value of the dependent variable based on the values of the independent variables. The dependent variable is also known as the response variable or the outcome variable, while the independent variables are referred to as predictor variables or explanatory variables. The goal of regression analysis is to identify and quantify the relationship between these variables. The regression analysis was done to get the CVP analysis of Nepalese manufacturing companies The independent variables are Fixed cost ratio, sales ratio, margin of safety and operation ratio and the dependent variable is profit. To investigate the effects of independent variables on the dependent variable, multiple regression analysis was utilized.

Table 10

Model Summary where OPR is Dependent Variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.586[a]	.343	.268	10.79343

Predictors: (Constant), OPRR, CS, MOS, SR, FCR

Table 10 shows the model summary results. The regression model uses operation ratio, company size, margin of safety, sales ratio, and fixed cost ratio to predict the dependent variable. The moderate R value (0.586) suggests a reasonable fit, while the R square value (0.343) indicates that 34.3% of the variability in the dependent variable is explained by the model. The adjusted R square (0.268) accounts for the number of predictors and suggests a slightly lower explanatory power. The standard error of the estimate (10.79343) indicates the typical deviation of the predicted values from the actual values.

Table 11

Analysis of Variance (ANOVA) where OPR is Dependent Variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2132.525	4	533.131	4.576	.004[b]
	Residual	4077.431	35	116.498		
	Total	6209.957	39			

Dependent Variable: OPR

Predictors: (Constant), OPRR, CS, MOS, SR, FCR

Table 11 the ANOVA table reveals that the regression model, which includes operation ratio, company size, margin of safety, sales ratio, and fixed cost ratio as predictors, significantly accounts for the variance in the operating profit ratio. With a regression sum of squares of 2132.525 and a mean square of 533.131, the F-statistic is 4.576, and the p-value is .004. This indicates that the model is statistically significant, meaning the predictors collectively provide a meaningful explanation of variations in the operating profit ratio compared to a model with no predictors. The residual sum of squares is 4077.431, reflecting the variance in the dependent variable not explained by the model, while the total sum of squares is 6209.957, representing the overall variance in the operating profit ratio.

Table 12

Regression Coefficients where OPR is Dependent Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-9.275	50.804		-.183	.856
	FCR	-.051	.483	-.017	-.106	.916
	SR	.046	.076	.096	.609	.547
	MOS	.364	.092	.577	3.970	.000
	CS	.487	2.399	.030	.203	.840
	OPRR	-.522	.078	-.662	-6.705	.000

a. Dependent Variable: OPR

The regression analysis provided in Table 11 highlights the influence of various predictors on the Operating Profit Ratio (OPR). The constant term in the regression equation is -9.275 with a standard error of 50.804, which is not statistically significant ($p = .856$). This implies that the baseline level of OPR, when all other predictors are held constant, is not meaningful in this context.

The coefficient for FCR is -.051 with a standard error of .483. The t-value is -.106 and the p-value is .916, indicating that FCR has a negative but insignificant relationship with OPR. This means that variations in fixed costs do not significantly impact the operating profit ratio.

The coefficient for SR is .046 with a standard error of .076, resulting in a t-value of .609 and a p-value of .547. This positive but insignificant relationship suggests that changes in the sales ratio do not have a meaningful effect on the operating profit ratio.

The coefficient for MOS is .364 with a standard error of .092. The t-value is 3.970 and the p-value is less than .001, indicating that MOS has a significant positive impact on OPR. A higher margin of safety leads to a higher operating profit ratio, reflecting the importance of maintaining a buffer against financial risks.

The coefficient for CS is .487 with a standard error of 2.399, resulting in a t-value of .203 and a p-value of .840. This suggests that company size has a positive but insignificant impact on the operating profit ratio, indicating that the scale of the company's operations does not significantly influence its operating profitability.

The coefficient for OPRR is -.522 with a standard error of .078. The t-value is -6.705 and the p-value is less than .001, indicating a significant negative impact of the operation ratio on the operating profit ratio. This strong inverse relationship suggests that as the operation ratio increases, indicating higher operating expenses relative to sales, the operating profit ratio decreases.

The regression analysis shows that among the predictors, the margin of safety (MOS) and the operation ratio (OPRR) have significant effects on the operating profit ratio (OPR). MOS positively influences OPR, highlighting the importance of maintaining a financial buffer, while OPRR negatively impacts OPR, indicating that higher operational expenses relative to sales reduce operating profitability. Other predictors

fixed cost ratio (FCR), sales ratio (SR), and company size (CS) do not have significant impacts on OPR. These insights underscore the critical factors that drive operational profitability in the context of the study.

Table 13

Model Summary where NPM is Dependent Variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.703[a]	.495	.437	7.46225

Predictors: (Constant), OPRR, CS, MOS, SR, FCR

Table 12 model summary table provides an overview of the regression model's performance. The R-value of .703 indicates a strong positive correlation between the predictors and the NPM. The R-squared value of .495 means that approximately 49.5% of the variance in the net profit margin is explained by the model, suggesting a moderate fit. The Adjusted R-squared of .437 accounts for the number of predictors in the model and is slightly lower, indicating that after adjusting for the number of predictors, about 43.7% of the variance is explained. The standard error of the estimate is 7.46225, reflecting the average distance that the observed values fall from the regression line. Overall, the model shows a reasonably good fit but also suggests that other factors may influence the NPM.

Table 14

Analysis of Variance (ANOVA) where NPM is Dependent Variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1908.242	4	477.061	8.567	.000[b]
	Residual	1948.982	35	55.685		
	Total	3857.224	39			

Dependent Variable: OPR

Predictors: (Constant), OPRR, CS, MOS, SR, FCR

Table 14 the ANOVA table shows that the regression model, which includes operation ratio, company size, margin of safety, sales ratio, and fixed cost ratio as predictors, significantly explains the variance in the net profit margin. The regression sum of squares is 1908.242, with a mean square of 477.061, leading to an F-statistic

of 8.567 and a p-value of .000. This p-value indicates that the model is statistically significant, meaning that the predictors collectively provide a meaningful explanation of variations in the net profit margin compared to a model without predictors. The residual sum of squares is 1948.982, representing the variance not explained by the model, while the total sum of squares is 3857.224, capturing the overall variance in the net profit margin.

Table 15

Regression Coefficients where NPM is Dependent Variable

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	23.488	35.124		.669	.508
	FCR	.087	.334	.037	.260	.796
	SR	.072	.053	.190	1.375	.178
	MOS	.344	.063	.691	5.419	.000
	CS	-1.364	1.658	-.105	-.823	.416
	OPRR	-.520	.140	-.450	-3.714	.001

a. Dependent Variable: NPM

Table 15 show the effect of various predictors and the net profit margin (NPM). The constant term is 23.488 with a standard error of 35.124, which is not statistically significant (p = .508). This indicates that the baseline level of NPM, when all other predictors are held constant, does not provide meaningful information.

The fixed cost ratio (FCR) has a coefficient of .087 with a standard error of .334. The t-value is .260 and the p-value is .796, suggesting a positive but insignificant relationship with NPM. This means changes in fixed costs do not significantly impact the net profit margin.

The sales ratio (SR) shows a coefficient of .072 with a standard error of .053. The t-value is 1.375 and the p-value is .178, indicating a positive but statistically insignificant effect on NPM. Thus, variations in the sales ratio do not meaningfully affect the net profit margin.

The margin of safety (MOS) exhibits a coefficient of .344 with a standard error of .063. The t-value is 5.419 and the p-value is less than .001, indicating a significant positive impact on NPM. This demonstrates that a higher margin of safety strongly correlates with a higher net profit margin, reflecting the importance of maintaining a financial buffer to enhance profitability.

The company size (CS) has a negative coefficient of -1.364 with a standard error of 1.658. The t-value is -.823 and the p-value is .416, indicating an insignificant negative relationship with NPM. This suggests that company size does not have a substantial impact on net profitability.

The operation ratio (OPRR) has a coefficient of -.520 with a standard error of .140. The t-value is -3.714 and the p-value is .001, indicating a significant negative impact on NPM. This strong inverse relationship suggests that as the operation ratio increases (indicating higher operating expenses relative to sales), the net profit margin decreases significantly.

The regression analysis shows that the margin of safety (MOS) has a significant positive effect on the net profit margin (NPM), while the operation ratio (OPRR) has a significant negative effect. Other predictors, such as fixed cost ratio (FCR), sales ratio (SR), and company size (CS), do not significantly influence NPM. These findings highlight the critical role of maintaining a high margin of safety and managing operational expenses to enhance profitability.

4.2 Discussions

The results support the first principles of Cost-Volume-Profit (CVP), highlighting the complementary nature of sales, costs and profits. Results reveal that certain financial ratio: sales ratio, margin of safety, operating ratio are all strongly positively correlated with profitability indicators like net profit margin and operating profit ratio implying their utmost significance in leading towards better performance metrics. The findings are in agreement with the studies of Punniyamoorthy (2017) and Malarkodi & Ranjitha (2021) where they advocated for CVP analysis as an important financial tool used for making decisions since it deals with crucial areas such as cost structure and its effect on profit.

The variation in fixed cost ratios across firms can indicate a difference between the cost structures of these firms, with Surya Nepal having a higher ratio indicating a greater dependence on fixed costs. Such high fixed-cost business model may hinder operational adaptability, as pointed out by Hermawan & Sudarmiatin (2023). By contrast, the low ratio of fixed cost as a percentage of total sales at Unilever implies that it has a more rigid structure based on variable costs mechanism making its cost controllable to an extent and making adaptive toward changes in market. The contrast highlights the case for bespoke approaches to tackling cost structure issues.

Again, the margin of safety ratios highlights that financial resilience on part of the companies. Higher margins indicate better market volatility absorption ability and sustainable profitability potential, resulting in strong financial health for Unilever and Surya Nepal. While the margin of safety for Bottlers Nepal is highly erratic, at times even going below the breakeven point (BPT), These results align with finds from Nguyen et al. Although (2020) mention that firms with higher margins of safety are more capable to survive the unpredictable economic conditions.

Through the quantitative capital asset pricing model decomposition and operating ratio analysis have spotlighted Unilever low-operating ratio, showing Uniliever as the most efficient among the studied firms. This is consistent with Animah (2024) who pointed out that keeping the costs low ensures higher profitability. In contrast, Surya Nepal despite higher profitability than its peers show greater variance in value-based operating ratios indicating an opportunity for improvement in operational efficiency. This finding aligns with previous studies emphasizing that profitability-enhancing strategies need to be efficiency-based in order to succeed in the long run.

The study finds that differences in profitability among companies are almost entirely explained by the variability of their sales ratios. Latter two i.e. Bottlers Nepal and Bottlers Nepal Tarai are found out extremely volatile with respect to sales ratio compared to Surya Nepal and Unilever which relatively stable throughout the years. These results support Hermawan & Sudarmiatin (2023) that regularity of sales activity is necessary to make a profit in the regular time. The differences in sales ratio trends seen across the companies suggest shifting business models and operational strategies to generate a profit.

The absence of a pronounced linear relationship between fixed cost ratio and profitability metrics is notable because traditional CVP analyses emphasizes the role of fixed costs in impacting profits (Punniyamoorthy, 2017). The extent of this difference might indicate sector-specific behavior or firm-specific effects. It highlights the necessity of keeping a delicate balance regarding cost control, according to Nguyen et al (2004). (2020) highlight that CVP may apply differently between organizations and therefore the application of CVP should remain somewhat flexible among differing organizational contexts.

This study found that the operation ratio (OPRR) has a significant negative impact on both the Operating Profit Ratio (OPR) and Net Profit Margin (NPM). This finding is consistent with Hermawan & Sudarmiatin (2023), who emphasized that higher operational expenses relative to sales diminish profitability. Similarly, Nguyen et al. (2020) also highlighted that firms with lower operational costs and higher efficiency are better positioned to maintain strong profit margins and operational profitability. However, this finding contradicts the results of Doron Nissim (2022), which suggested that in certain sectors, higher operational costs could be offset by increased revenue generation, thereby not negatively impacting overall profitability. The discrepancies underline the importance of sector-specific analyses when evaluating the impacts of operational efficiency on financial performance.

Answering the last question, the findings of this study are practically gettable in financial management and decision-making. The correlations between financial ratios and profitability support the contention that managing costs, boosting revenues, and efficiency improvements are key strategic factors. Our results are consistent with the studies of Animah (2024) and Hermawan & Sudarmiatin (2023) that argue an integrated understanding of market landscape and organization goals is vital to ensure financial decisions will be optimal. With this study and some past studies also in mind, managers can take steps to leverage the opportunities for improved financial performance potential and thus achieve sustainable growth.

CHAPTER V
SUMMARY AND CONCLUSION

This chapter outlines the procedures and findings of the research. Three sections summarize the whole chapter. The first part summarizes the study and introduces research. Section part provides conclusions based on the study findings and discussion and section three presents' implications.

5.1 Summary

The main objective of the study is analyzed the cost volume profit analysis of Bottlers Tarai, Bottlers Nepal, Unilever and Surya Nepal ltd. And other specific objectives of the study are to analyze the fixed cost ratio, sales ratio, margin of safety, operation ratio, net profit margin and operating profit to examine the relationship between profit of sample corporation in Nepal. Relevant thesis book, unpublished articles, journal, published article, related website etc. have been reviewed for the research purpose.

Surya Nepal company exhibits the highest fixed cost ratio (56.56), indicating a significant portion of fixed costs relative to total costs. This suggests potential inflexibility in cost management. Unilever Company has the lowest fixed cost ratio (21.41), indicating a more variable-cost-oriented structure, providing flexibility and cost control benefits. Bottlers Tarai and Bottlers Company demonstrate a moderate dependency on fixed costs with a fixed cost ratio of 44.22 Surya Nepal Company has the highest sales ratio (37.75), allocating a substantial portion of sales revenue towards specific expenses or investments. Unilever Company maintains a relatively lower sales ratio (25.89), indicating efficient allocation of revenue towards expenses. Bottlers Tarai and Bottlers Company show moderate sales ratios (27.33 and 30.76), reflecting moderate allocation towards specific expenses.

The research findings present a detailed analysis of key financial metrics and their impact on profitability across different companies. Surya Nepal Company demonstrates a high fixed cost ratio, indicating potential inflexibility in cost management, while Unilever Company's lower fixed cost ratio suggests a more adaptable cost structure. Sales ratios vary among companies, with Surya Nepal allocating a significant portion of revenue towards expenses compared to Unilever

and Bottlers Tarai and Bottlers Company. Margin of safety ratios reveal strong financial positions for Surya Nepal and Unilever, whereas Bottlers Tarai and Bottlers Company exhibit lower financial security. Operating ratios highlight efficient expense management by Bottlers Tarai and Bottlers Company, contrasting with Unilever's high operating ratio impacting profitability. Unilever and Surya Nepal show stronger profitability metrics compared to Bottlers Tarai and Bottlers Company. The study also underscores strong positive correlations between key financial ratios and profitability metrics, emphasizing the importance of efficient cost management and revenue allocation in achieving sustainable financial performance. The regression model explains a significant portion of variance in net profit margin, attributing positive effects to sales ratio, margin of safety, and operating ratio. Overall, the research provides valuable insights into financial performance and operational efficiencies critical for effective decision-making and sustainable business growth.

5.2 Conclusion

The study findings provide valuable insights into the financial performance and operational dynamics of Surya Nepal Company, Unilever Company, and Bottlers Tarai and Bottlers Company. The study reveals varying cost structures across companies, with Surya Nepal having the highest fixed cost ratio and Unilever the lowest. This suggests that Unilever adopts a more variable-cost-oriented approach, providing greater flexibility in cost management Surya Nepal's higher sales ratio indicates a significant allocation of revenue towards specific expenses or investments, contributing to its strong profitability as evidenced by the highest net profit margin.

Margin of safety ratios highlight the financial strength of these companies, with Surya Nepal and Unilever demonstrating robust positions. Bottlers Tarai and Bottlers Company exhibit lower margin of safety ratios, indicating potentially closer proximity to breakeven points and higher financial risk. Efficient management of operating expenses is reflected in lower operating ratios for Bottlers Tarai and Bottlers Company, correlating with moderate profitability. Unilever's significantly higher operating profit ratio underscores its strong operational performance.

The study identifies strong positive correlations between sales ratio, margin of safety, operating ratio, and profitability metrics, highlighting the importance of these factors

in driving financial performance. The regression model explains over half of the variance in net profit margin, emphasizing the significant influence of sales ratio, margin of safety, and operating ratio on profitability.

The regression analysis reveals that both the margin of safety (MOS) and operation ratio (OPRR) are significant predictors for both the operating profit ratio (OPR) and net profit margin (NPM). Specifically, MOS has a significant positive effect, indicating that maintaining a higher margin of safety enhances both operational profitability and overall profit margins. Conversely, the operation ratio (OPRR) shows a significant negative impact on both OPR and NPM, underscoring that higher operational expenses relative to sales adversely affect profitability. These findings emphasize the critical need for companies to focus on improving their margin of safety while efficiently managing their operational expenses to achieve sustainable profitability and financial health.

In conclusion, the research underscores the critical role of cost structure, revenue allocation, financial health indicators, and operational efficiency in determining the financial performance and profitability of companies. These insights can guide strategic decision-making and financial management practices aimed at enhancing organizational resilience and profitability. Further research can explore industry-specific implications and longitudinal trends to enrich our understanding of financial dynamics in diverse business environments.

5.3 Implication

The implications drawn from these research findings provide valuable insights into financial management and operational efficiency within various companies.

- Companies with lower fixed cost ratios, like Unilever, benefit from a more variable-cost-oriented structure, enhancing flexibility and cost control. In contrast, higher fixed cost ratios, as seen in Surya Nepal, may signify potential inflexibility in cost management.
- Higher sales ratios, such as those observed in Surya Nepal, indicate a substantial allocation of sales revenue towards specific expenses or investments. This suggests different strategic approaches to revenue allocation among companies.

- Companies with higher margin of safety ratios, like Surya Nepal and Unilever, demonstrate stronger financial positions and the ability to navigate market volatility effectively. Conversely, lower ratios may indicate a need for increased financial security
- Efficient management of operating expenses relative to revenue, as seen in Bottlers Tarai and Bottlers Company, can lead to higher operational efficiency and profitability. In contrast, a high operating ratio, such as that of Unilever, may impact profitability negatively.
- Strong positive correlations observed between key financial ratios (e.g., Margin of Safety, Operating Ratio) and profitability metrics underscore the importance of efficient cost management and revenue allocation in achieving sustainable financial performance.
- The regression analysis, explaining a significant portion of variance in net profit margin, highlights the impact of sales ratio, margin of safety, and operating ratio on profitability. This suggests that strategic improvements in these areas can positively influence financial performance.
- These implications emphasize the critical role of financial management practices, cost structures, and strategic decision-making in driving profitability and operational success across different companies. Understanding these relationships can inform strategic planning and resource allocation to enhance overall financial health and sustainability.
- Further research can delve deeper into the impact of varying cost structures (fixed vs. variable) on organizational flexibility, cost control, and overall financial performance. Comparative studies across industries and regions can provide nuanced understanding of optimal cost management strategies.

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Appendices

Company	Year	FCR	SR	MOS	CS	OPR	NPM	OPRR
Unilever	2013/14	9.7	123.3	33.2	20.1	15.2	18.9	84.8
Unilever	2014/15	8.9	121.2	21.2	22.2	16.3	17.2	83.7
Unilever	2015/16	8.83	118.8	34.2	23.2	28.4	24.4	71.6
Unilever	2016/17	10.2	152	36.2	23.2	27.3	20.5	72.7
Unilever	2017/18	9.8	149.4	30.5	23.9	23.8	18.5	76.2
Unilever	2018/19	8.4	149	10.3	22.4	10.3	6.6	89.7
Unilever	2019/20	8.4	121	21.6	21.1	18.3	18.3	81.7
Unilever	2020/21	10.5	126	54.3	23.2	25.7	21	74.3
Unilever	2021/22	11.3	123	43.2	22	22.2	22	77.8
Unilever	2022/23	9.8	132	44.3	23.4	23	21	77
Surya Nepal	2013/14	6.26	71.98	87.81	21.11	47.25	30.49	52.75
Surya Nepal	2014/15	7.2	121.2	77.2	21.12	29.2	29.2	70.8
Surya Nepal	2015/16	8.83	118.8	45.3	22.22	28.4	24.4	71.6
Surya Nepal	2016/17	12.19	73.06	80.79	23.11	55.32	36.02	44.68
Surya Nepal	2017/18	11.69	99.89	30.5	21.32	57.42	37.88	42.58
Surya Nepal	2018/19	9.5	149	41.1	22.12	45.8	19.2	54.2
Surya Nepal	2019/20	8.4	132	38.9	22.03	18.3	18.3	81.7
Surya Nepal	2020/21	10.5	102.1	76.4	22.14	25.7	28.3	74.3
Surya Nepal	2021/22	11.3	115.7	67.8	22.3	32.2	33.1	67.8
Surya Nepal	2022/23	10.1	128.9	73.2	21.21	22.2	32.2	77.8
Bottlers Terai	2013/14	6.26	71.98	42.1	21.22	8.2	8.2	91.8
Bottlers Terai	2014/15	7.2	121.2	33.2	21.56	9.7	10.1	90.3
Bottlers Terai	2015/16	8.83	118.8	45.3	22.13	12.5	9.2	87.5
Bottlers Terai	2016/17	12.19	73.06	45.1	22.13	11.9	7.9	88.1
Bottlers Terai	2017/18	11.69	99.89	30.5	22.16	16.8	5.3	83.2
Bottlers Terai	2018/19	9.5	149	41.1	22.84	13.2	6.8	86.8
Bottlers Terai	2019/20	8.4	132	38.9	22.7	18.3	8.3	81.7
Bottlers Terai	2020/21	19.2	78	39.9	22.8	12.6	6.8	87.4
Bottlers Terai	2021/22	15.9	109.4	45.2	22.84	12.8	6.9	87.2
Bottlers Terai	2022/23	16.3	100.9	40	22.94	11	6.9	89
Bottlers Nepal	2013/14	6.26	71.98	18	22.8	8.2	8.2	91.8
Bottlers Nepal	2014/15	7.2	102.4	24.5	22.38	9.7	10.1	90.3
Bottlers Nepal	2015/16	8.83	112.8	34.5	21.48	12.5	9.2	87.5
Bottlers Nepal	2016/17	11	72.3	32.2	21.73	11.9	7.9	88.1
Bottlers Nepal	2017/18	7.7	89.4	30.5	21.74	16.8	5.3	83.2
Bottlers Nepal	2018/19	9.5	149	22.8	21.95	13.2	6.8	86.8
Bottlers Nepal	2019/20	8.4	132	15.9	22.01	18.3	8.3	81.7
Bottlers Nepal	2020/21	29.8	56.8	-8.2	22.05	2	2.9	98
Bottlers Nepal	2021/22	15.9	87.3	19.8	22.11	12.8	6.9	87.2
Bottlers Nepal	2022/23	16.3	103.2	25.9	22.45	11	6.9	89

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Abstract This study examines the CVP relationship and compare performance of four major companies namely Surya Nepal, Unilever, Bottlers Tarai and Bottlers Nepal. The main purpose is to login and compare some of the different financial ratios such as fixed cost ratio, sales ratio, margin of safety, net profit margin and operating profit. Using both financial ratio analysis and regression modeling, the research seeks to uncover unique patterns that correspond with one another and lead to