

Analysis of the Calculation of Profit Volume Costs, Break Even Points, Margin of Safety, and Contribution Margin on Profit Planning

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Abstract: The rapid growth of the coffee shop industry in Indonesia has transformed coffee shops into a "third place" for people's lifestyles. However, external pressures during the pandemic caused Coffee Shop X to fail in achieving its 2025 profit target due to operational restrictions. This study aims to evaluate the effectiveness of Cost-Volume-Profit (CVP) analysis as a strategic instrument in profit planning for 2026 to recover financial performance post-contracture. The research method employed is quantitative, utilizing the Least Square method to separate semi-variable costs. The results indicate that the company has a weighted-average contribution margin of IDR 11,256, with a Break-Even Point (BEP) of 19,413 units. To offset the losses incurred in 2025, the company has set a sales target of 29,094 units for 2026. Risk analysis reveals a Margin of Safety of 49.86% and a Degree of Operating Leverage of 4.5, indicating high profit sensitivity to changes in sales volume. In conclusion, CVP analysis provides an accurate foundation for MSME management in formulating profit planning strategies and mitigating operational risks more scientifically in the future.

Keywords: Break-Even Point; Contribution Margin; Cost-Volume-Profit; Margin of Safety; Profit Planning.

1. INTRODUCTION

In the contemporary economic landscape characterized by high volatility, the ability of a business entity to generate profits remains a fundamental determinant in assessing the success of management performance and ensuring the survival of the company (*going concern*). Profit does not simply serve as the end result of the operational cycle, but rather acts as a crucial indicator that reflects the extent of management's efficiency in allocating limited resources to achieve broader organizational goals. However, the reality on the ground shows that the achievement of optimal profits is not the result of a factor of chance, but rather relies heavily on the accuracy of a planning strategy based on rigid cost data analysis and accurate sales volume projections. In Indonesia, this dynamic is very felt in the creative industry sector, especially through the phenomenon of the rapid growth of *coffee shops* or coffee shops that have transformed from just a commodity business sector to an inseparable urban lifestyle. The coffee shop now serves as a "third place" that unites social and professional functions, a place for people from students to business practitioners to interact. Although the market growth looks very promising, the *Food and Beverage* (F&B) sector actually has very high risk characteristics, especially related to the relatively short shelf life of raw materials and extreme sensitivity to external economic fluctuations and government policies.

Ideal conditions in financial management demand that every company have a measurable profit target supported by a strict cost control system. However, the empirical reality that occurred at Kedai Kopi X actually shows that there is a significant discrepancy or

gap between expectations and operational reality. Throughout the 2025 period, the company experienced severe challenges where the realization of profit was far below the budgeted target. External pressures triggered by the remnants of the impact of the pandemic as well as the uncertainty of people's purchasing power forced management to make service adjustments, including operational restrictions that had a direct impact on the decline in sales volume. The crucial problem that has surfaced is not just a decline in revenue, but the inefficiency of raw material costs that are often wasted due to expiration a clear indication of poor sales volume planning that is not aligned with inventory management. Without careful calculation of the *break-even point* and the *margin of safety*, the management of Kedai Kopi X is vulnerable to being trapped in cumulative and undetectable operational losses, which if left unchecked will threaten the company's financial stability in the long run.

As a strategic instrument to mitigate such risks, the Profit Volume Cost Analysis (CVP) offers a systematic framework that allows management to examine the complex interactions between selling prices, activity volumes, variable costs, fixed costs, and their impact on net profit (Drury, 2018). The urgency of applying this analysis in the F&B sector is palpable, given that the cost structure in this industry often consists of large fixed cost components and variable costs that fluctuate according to market commodity prices. Previous research conducted by Harris (2021) on the banana-based food industry in Makassar strengthens the argument that the use of CVP analysis is very effective in determining the minimum selling point that must be achieved so that the company does not suffer losses. Furthermore, Blocher et al. (2019) explain that CVP analysis is not just a calculation tool, but an evaluation method of how operational and marketing decisions will affect short-term profits. This is supported by the perspective of Matsumura (2018) who states that CVP is an essential planning instrument that helps managers predict profitability dynamics in the midst of uncertain changes in business activities. By understanding the relationship between cost and volume, companies can formulate more competitive pricing policies as well as optimize the product mix that contributes the highest margins.

This study tries to fill the managerial gap that exists in Kedai Kopi X by integrating four main components in one comprehensive analysis framework: *Contribution Margin*, *Break-Even Point*, *Margin of Safety*, and *Degree of Operating Leverage*. The novelty of this study lies in its approach that not only fixates on historical financial statements, but also performs more precise semivariable cost separation using the *Least Square* method. This method is considered to be much more accurate than the conventional *High-Low* method because it involves all observation data points to determine the actual cost behavior pattern, resulting in more reliable

fixed cost and variable cost estimates in the midst of volatile market conditions. This is in line with the view of Braun and Tietz (2018) who emphasize that a deep understanding of cost behavior is the foundation of effective CVP analysis. In addition, the use of weighted-average *Contribution Margin* is crucial in this study considering that Kedai Kopi X sells various product variants with different price structures and margins, thus providing a more realistic picture of the overall performance of the store.

The fundamental purpose of this study is to evaluate the effectiveness of CVP analysis as the main basis in the preparation of profit planning for 2026. The main focus is to formulate a strategy to recover the company's financial performance after experiencing a contraction in the previous year, as well as determine the sales target that must be achieved to cover the losses that have occurred. Through the calculation of *the Margin of Safety*, management will have a "cushion" of information regarding how much of a decline in sales can be tolerated before the company starts to suffer losses again (Chiappetta et al., 2018). In addition, the *Degree of Operating Leverage* analysis will provide insight into the sensitivity of profits to changes in sales volume, which is very useful for management in measuring their business risk profile. Theoretically, this research is expected to enrich the literature on management accounting in the Micro, Small, and Medium Enterprises (MSMEs) sector in Indonesia. Practically, the results of this study are expected to be a concrete guide for Kedai Kopi X owners and similar business actors in formulating survival strategies and more scientific growth strategies in the challenging post-pandemic period. With careful planning, it is expected that each product unit sold will not only provide revenue, but systematically contribute to the achievement of the profit target that has been planned in a precise manner.

2. LITERATURE REVIEW

Cost-Volume-Profit Analysis

Profit Volume Cost Analysis (CVP) is a strategic managerial instrument used to evaluate the functional interrelationships between selling prices, activity volumes, and a company's cost structure. Braun and Tietz (2018:382) emphasized that this analysis specifically explains the relationship between costs, volumes, and profits, where the goal is to determine the sales volume required to break even or cover all operational costs that have been incurred. More broadly, CVP acts as a method to analyze how operational decisions and marketing policies can affect short-term profitability based on an in-depth understanding of fixed cost variables, variable costs, selling prices per unit, and output levels (Blocher et.al., 2019:315).

In a planning perspective, Matsumura (2018:1097) views CVP analysis as a crucial tool because it focuses on how changes in the cost-volume relationship can directly affect a company's profit or loss position. Through the synthesis of these various expert thoughts, it can be concluded that CVP analysis is an evaluative technique for profit determinants such as variable costs per unit, sales quantity, and selling price which are fundamental bases for management in conducting short-term profit planning and precise strategic decision-making.

Contribution Margin

Contribution margin plays a vital role as an indicator of the product's ability to cover fixed costs and generate profits for the company. Noreen et.al. (2019:219) defines contribution margin as the remaining amount of income after deducting all variable costs, where the remainder is allocated in advance to cover fixed costs before being recognized as the company's profit in the current period. In line with this, Libby et.al. (2025:224) states that the contribution margin represents the residual value that will be deducted by the fixed costs to generate net operating income. Mathematically, Kieso et.al. (2018) formulated contribution margins and their relationship with profitability through the following formulations:

- Contribution Margin Per Unit = $P - VC$ (Selling price per unit - Variable cost per unit)
- Profit = $(P - VC) \times Q - FC$ (Fixed Cost)

Through this formula, management can map the extent to which each unit of product sold makes an economic contribution to the company's financial stability.

Titik Impas (*Break-Even Point*)

Break-Even Point (BEP) is a critical threshold where a business entity is in a condition of not earning a profit but also not suffering losses. Cooper et.al. (2019:136) explains that this condition is achieved when the company's total sales revenue or production level is equivalent to the accumulation of variable costs and fixed costs. The importance of determining outputs that offset these total costs is also underlined by Kieso et.al. (2018:514), which states that at break-even, the company realizes a neutral position in its financial performance. Furthermore, BEP analysis is not just a static number, but a strategic consideration in making major decisions, such as the launch of new products, modification of selling prices on superior products, and expansion into new markets (Kieso et.al., 2018). The calculation of break-even points in units can be done with the formula:

$$BEP \text{ (Unit)} = \frac{\text{Total Biaya Tetap}}{\text{Margin Kontribusi Per Unit}}$$

Batas Keamanan (*Margin of Safety*)

Margin of Safety (MoS) is a risk indicator that provides an idea of the extent to which sales can decline before a company starts to suffer losses. According to Chiappetta et.al. (2018:818), MoS is the difference between expected (or actual) sales and break-even points. Aly et.al. (2018:527) expands this definition by referring to the MoS as a "cushion" for management; if the sales target fails to be achieved, the MoS shows how much of the decline tolerance the company has before it reaches the BEP tipping point. The financial health condition of a company can be reflected in the amount of its MoS. Garrison et.al. (2019:235) emphasizes that the higher the level of *the Margin of Safety*, the less likely the company is to suffer losses in volatile market conditions. There are three ways to express the value of the MoS, namely in currency units (Rupiah/Dollar), the amount of the MoS/unit, maupun rasio persentase (Aly et.al., 2018:527), with the following formula:

$$\text{Margin of Safety} = \text{Penjualan Aktual}/\text{Direncanakan} - \text{Penjualan Titik Impas}$$

$$\text{Rasio Margin of Safety} = \frac{\text{Margin of Safety}}{\text{Total Penjualan Aktual}/\text{Direncanakan}} \times 100\%$$

Leverage Operasi (*Degree of Operating Leverage*)

In addition to the CVP framework, *the Degree of Operating Leverage* (DOL) is used to measure the sensitivity of operating net income to percentage changes in sales. This analysis is crucial for managers in understanding a company's risk profile, especially in conditions of economic uncertainty or pandemic. The higher the level of operating leverage, the smaller the change in sales volume will result in a much larger percentage change in the company's operating profit.

3. RESEARCH METHODS

This study applies a systematic quantitative research design to test the relationship between cost, volume, and profit variables through mathematical approaches and statistical analysis. This method was chosen because of its ability to provide an objective picture of the phenomenon being studied through measurable numerical data processing. The object of the research is focused in depth on the operational data of Kedai Kopi X, which includes records of the sales volume of each product variant, selling price per unit, variable cost structure, and the accumulation of fixed costs of the company during the observation period. The focus of this analysis aims to answer managerial problems related to cost efficiency and the effectiveness of profit planning in the future.

The data used in this study is sourced from primary and secondary data to ensure the validity and depth of the analysis. Primary data was obtained directly through in-depth interview techniques with leaders and operational managers to understand the context of the company's business background and organizational structure. In addition, a documentation study technique was carried out by examining income statements, monthly sales reports, and internal accounting documents relevant to the research object. As a theoretical supporter, the researcher also conducts a literature study by referring to various scientific literature, management accounting textbooks, and credible previous research journals. All of these data are then classified as quantitative data that are ready to be further processed through predetermined data analysis stages.

The data analysis technique in this study is carried out through a series of structured steps that begin with the identification and classification of costs based on their behavior, namely fixed costs, variable costs, and semivariable costs. The next crucial stage is the separation of semivariable costs into fixed cost components and pure variable costs using the *least square method*. The use of this method is based on its high level of statistical accuracy in determining the most representative cost function. Once the cost behavior is precisely identified, the researcher determines the variable cost for each product variant to calculate the margin contribution per unit. Given that this entity sells various product variants, the calculation of the contribution margin is carried out by the *weighted-average contribution margin* method to obtain an accurate collective contribution value.

The analysis is then continued at the break-even *point* (BEP) stage to find out the minimum sales volume threshold where the company does not make a profit but also does not suffer losses. To measure business risk and sensitivity, researchers calculated the *Margin of Safety* (MoS) which shows how much of a decline in sales can be tolerated before the company falls into the loss zone. In addition, the *Degree of Operating Leverage* (DOL) is also calculated as an indicator to analyze the effect of the percentage change in sales volume on fluctuations in the company's operating profit. As a final stage that is applicable, the researcher formulates a projection of future sales based on the profit target that has been set by the management. This series of analysis processes is expected to be able to produce comprehensive strategic recommendations for the company's profit planning in the next period.

4. RESULTS AND DISCUSSION

Cost Behavior Analysis and Semivariable Cost Separation

A fundamental step in *Cost-Volume-Profit* (CVP) analysis is the identification of cost behavior in order to accurately separate fixed and variable components. In this study, the separation of semivariable costs in Coffee Shop X was carried out using the least square regression method (*Least Square Method*). Based on the results of data processing, a variable cost value of IDR 690 per unit was obtained. However, this value is a conversion fee that does not include the cost of direct raw materials of IDR 12,831. Thus, the total real variable cost charged on each product sold is IDR 13,521.

On the other hand, regression analysis determined the basic fixed cost component of IDR 6,710,026 per month. However, to get a comprehensive overview of fixed costs on an annual basis, the researcher integrated the cost of employee salaries (IDR 108,000,000) and license amortization costs (IDR 30,000,000). This accumulation results in a total annual fixed cost of IDR 218,520,312. This figure represents the burden of financial commitments that must be closed by Kedai Kopi X before it starts generating operational profits.

$$\text{Biaya tetap} = \frac{(\sum Y) - b(\sum X)}{n}$$

$$\text{Biaya tetap} = \frac{(97697867) - 690(24895)}{12}$$

$$\text{Biaya tetap} = \frac{97697867 - 17177550}{12}$$

$$\text{Biaya tetap} = \frac{80520317}{12}$$

$$\text{Fixed fee} = \text{Rp.} 6,710,026$$

Weighted Average Contribution Margin Analysis

Considering that Kedai Kopi X has a varied product portfolio with different pricing structures, the use of *Weighted-Average Contribution Margin* is crucial. Based on the results of the calculation of 36 product variants, significant variations in contribution margins were found, ranging from IDR 23 in the "Es Yakult Berry" variant to the highest value of IDR 1,412 in the "Avocatto Vanilla" variant. Collectively, a weighted average contribution margin value of IDR 11,256 per unit was obtained. These findings indicate that each glass sold contributes an average of IDR 11,256 to cover the company's fixed costs. The dominance of products with mid-to-lower margins requires management to engineer the sales *mix* to encourage volume on high-margin products to accelerate profit achievement.

Break-Even Point Determination and Performance Evaluation 2025

The break-even point analysis shows that to achieve *zero profit-loss* conditions, Kedai Kopi X must be able to sell as many as 19,413 cups per year or generate income equivalent to the value of its annual fixed costs. However, the reality in 2025 shows an alarming performance. The company recorded a net loss of IDR 108,971,469 due to an extreme contraction in sales volume and high expired raw material costs of IDR 13,536,900. The failure to achieve BEP in that period was caused by a discrepancy between rigid fixed costs and revenue that declined sharply during the pandemic. The high number of wasted raw materials indicates inefficiencies in supply chain management and the company's inability to adjust the procurement of goods to fluctuations in real demand in the market.

2026 Profit Planning and Sales Projections

As an effort to recover post-contraction in 2025, this study formulates profit planning for 2026. The main target is to cover all the losses of the previous year as well as reach a new point of financial stability. In order to achieve the planned net revenue target of IDR 327,479,409, Kedai Kopi X is projected to reach a sales volume of 29,094 cups by 2026. This projection requires an increase in sales volume by approximately 50% from the standard break-even point. Management needs to implement an aggressive marketing strategy and *optimization of delivery services* to achieve this figure, given the limitations of *dine-in* services that may still overshadow operations in the future.

Analisis Risiko: Margin of Safety (MoS) dan Degree of Operating Leverage (DOL)

To measure the resilience of the business to the risk of declining sales, *the Margin of Safety* calculation is carried out. The results of the analysis showed that the MoS value was 49.86%. This figure indicates that the company has a fairly moderate risk "cushion", where sales can decline to almost half of the target before the company starts to suffer losses again. However, this figure is much lower than the stable period of 2019, which shows that the company's risk profile has increased significantly post-pandemic.

Furthermore, the calculation of *the Degree of Operating Leverage* (DOL) yields a value of 4.5. This fairly high operating leverage value means twofold: on the one hand, any increase in the percentage of sales will result in a 4.5-fold increase in profit; But on the other hand, a decrease in sales by the same percentage will suppress profits exponentially. This confirms that Kedai Kopi X has a relatively high fixed cost structure, so even the slightest fluctuation in sales volume will have a very sensitive impact on the company's profitability.

Discussion

Implications of Cost Behavior on Operational Efficiency

The findings of the study on the separation of costs using *the Least Square Method* provide a more accurate foundation than traditional accounting methods. The variable cost of Rp13,521 per glass shows that the cost component of raw materials is a very dominant variable. This is in line with Drury's (2018) theory that in the foodservice industry, controlling variable costs is key in maintaining margins. The phenomenon of wasting raw materials of IDR 13.5 million in 2025 indicates mismanagement in the supply chain. This inefficiency directly raises the company's break-even point, so that the burden to achieve profitability becomes heavier.

On the other hand, the total fixed cost of Rp218,520,312 reflects a fairly rigid cost structure, mainly due to the salary and license amortization components. A cost structure like this demands high sales volumes to achieve economies of scale. If sales volume is low, the fixed cost per unit becomes very high, which explains why Kedai Kopi X suffers deep losses in 2025 when operational restrictions occur.

Optimization of Product Mix (Sales Mix) and Profitability

Analysis of 36 product variants revealed a very wide margin discrepancy, ranging from Rp23 to Rp1,412 per unit. The weighted average margin of IDR 11,256 shows that Kedai Kopi X's financial performance is highly dependent on the mix of products sold. Strategically, management cannot only rely on sales volume in quantity, but must focus on the quality of the sales *mix*.

Based on the data, variants such as "Avocatto Vanilla" contribute a much larger margin than the "Es Yakult Berry" variant. This gives the managerial implication that marketing strategies should be geared towards promoting high-margin products. If management is able to shift consumer preferences to these superior products, then the 2026 profit target of 29,094 cups can be achieved faster, or even with a lower volume than the projection.

Business Resilience: An Analysis of BEP and Margin of Safety (MoS)

The break-even point of 19,413 cups is a minimal "defensive line" that fails to be maintained by 2025. The loss of IDR 108,971,469 proves that the company operates far below its economic capacity. However, the projection for 2026 with a target of 29,094 glasses offers optimistic recovery prospects. With a *Margin of Safety* (MoS) value of 49.86%, Kedai Kopi X has a wide enough room to deal with future market fluctuations.

The MoS value approaching the 50% mark gives a positive signal to stakeholders that although economic conditions are not yet fully stable, the company has sufficient resilience to the decline in sales to almost half of the target before touching the loss zone. This MoS figure

is a vital indicator for the financial health of the company post-pandemic, which shows that the profit planning plan prepared has considered the risk aspects in a conservative but realistic manner.

Profit Sensitivity and Operating Leverage Risk

The result of the calculation of the *Degree of Operating Leverage* (DOL) of 4.5 provides an overview of the sensitivity of profit to changes in sales volume. The number 4.5 is a relatively high value for MSME scale, which means that every 10% increase in sales will result in a 45% increase in operating profit. Conversely, a 10% drop in sales will cut profits by 45%.

This high DOL is due to the significant proportion of fixed costs in the cost structure of Coffee Shop X. Strategically, a high DOL is a "double-edged sword". In times of economic growth, companies will enjoy a very fast acceleration in profits. However, in volatile market conditions or the occurrence of external shocks (such as the pandemic again), a company's risk profile becomes highly vulnerable. Therefore, management is advised to consider fixed cost flexibility, for example through restructuring of salary schemes or optimization of amortization costs, in order to lower the DOL rate and strengthen the fundamentals of business resilience.

5. CONCLUSIONS AND SUGGESTIONS

Conclusion

The Citraland Gama City branch needs to achieve a net revenue target of Rp.327,479,409, with the average margin contribution received by each product sold of Rp.11,256. To cover losses throughout 2025, the sales target must be 29,043 glasses, resulting in a Break-Even Point level of Rp.218,520,312 and a Margin of Safety of 49.86%. However, the profit and loss for December 2025 have not been calculated in this study. In contrast, sales in 2019 by Kedai Kopi X exceeded the Break-Even Point sales of 24,895 cups, where the sale of the Break-Even point only required the sale of 19,413 cups, with operating profit in 2019 reaching Rp.61,692,940. Unfortunately, Kedai Kopi X was only able to produce a margin of safety of 28.24% or Rp.174,192,792 for 2025, a significantly low figure compared to the decline in sales, which fell by Rp.461,493,000, or 74.88%, from sales in 2019. To cover all losses experienced from March 2025 to November 2025, the projected sales for Kedai Kopi X in 2026 are 29,094 cups, though the profit and loss for December 2025 remain uncalculated in this study.

Suggestions

Based on the research that has been conducted, the researcher can provide suggestions in the form of: 1) Kedai Kopi X can apply Profit Volume Cost Analysis as a tool in terms of profit planning and sales targets for each period, so that companies can make the right decisions and see existing weaknesses for better in the future. 2) With products with varying prices, Kedai Kopi X must try to sell variants that contribute high margins, so that they can generate higher profits so that the planned profit target is easier to achieve. 3) With conditions that will not necessarily improve in 2026, Kedai Kopi X must be observant in purchasing raw materials so that nothing is wasted due to unfit for consumption as happened in 2025, which ultimately brings losses to Kedai Kopi X.

With the government's appeal to eliminate *dine-in* or on-site drinking services, Kedai Kopi X can propose to lay off waitress employees, as well as if possible, the responsibility of *the stock keeper* that can be delegated to the barista so that it can reduce the salary burden borne by Kedai Kopi X

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