

BREAK-EVEN POINT ANALYSIS FOR PROFIT PLANNING AT A LAYER CHICKEN FARM IN KAJUARA VILLAGE, AWANGPONE DISTRICT, BONE REGENCY

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Submitted: 02 August 2026	Revised: 30 August 2026	Accepted: 06 September 2026
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Abstract

Profit planning is essential for ensuring the sustainability and growth of small-scale agricultural enterprises, particularly layer chicken farms that experience fluctuating production costs and market prices. This study aims to analyze the calculation of the Break-Even Point (BEP) as a tool for profit planning at a layer chicken farm located in Kajuara Village, Awangpone District, Bone Regency. A descriptive quantitative research design was employed using primary data collected through interviews and observations and secondary data obtained from production and financial records for the 2024 operating period. The analytical techniques included cost classification, contribution margin analysis, contribution margin ratio, Break-Even Point analysis in units and monetary value, Margin of Safety analysis, and profit planning analysis. The findings indicate that the business generated annual sales revenue of IDR 526,250,000, with total fixed costs of IDR 92,800,000 and total variable costs of IDR 169,213,000. The BEP analysis shows that the enterprise has operated above its break-even point, indicating profitable operations throughout the study period. Furthermore, the Margin of Safety demonstrates that the business has a relatively safe level of sales, enabling it to withstand potential decreases in sales without incurring losses. Therefore, Break-Even Point analysis can serve as an effective managerial tool for supporting profit planning and operational decision-making in small-scale layer chicken farming enterprises.

Keywords: Break-Even Point; Layer Chicken Farm; Margin of Safety; Profit Planning; Small Enterprise

1. INTRODUCTION

The livestock sector is one of the strategic subsectors of agriculture that plays an important role in supporting food security and improving community welfare. One of the commodities that has experienced continuous growth is the layer chicken farming business, as eggs are one of the primary sources of animal protein widely consumed by the population. According to Statistics Indonesia Badan Pusat Statistik (2025), South Sulawesi is among the major producers of layer chicken eggs in Indonesia, with a production volume of 275.941,29 tons in 2024. This achievement indicates that layer chicken farming has promising business prospects and contributes significantly to meeting the increasing demand for animal-based food products. Nevertheless, the sustainability of such businesses depends not only on

production capacity but also on the ability of business owners to efficiently manage production costs and implement effective profit planning strategies.

Despite its promising prospects, the layer chicken farming business continues to face various challenges in maintaining business sustainability. Fluctuations in egg selling prices, rising production costs, and market uncertainty may significantly affect farmers' profitability. These conditions require business owners to conduct effective profit planning in order to maintain operational efficiency and minimize the risk of financial losses. Therefore, an analytical tool is needed to assist business owners in determining the minimum sales level required to cover all operating costs and achieve the expected profit (Khairunnisa & Andani, 2026).

One of the analytical tools widely used in profit planning is break-even point (BEP) analysis. Break-even point analysis is a managerial accounting technique used to determine the break-even point, where total revenue equals total costs, indicating that the business neither earns a profit nor incurs a loss. Through BEP analysis, business owners can identify the minimum sales volume required, evaluate the cost structure, and establish appropriate sales targets to support managerial decision-making. Furthermore, BEP analysis can be integrated with Contribution Margin and Margin of Safety analyses to provide more comprehensive information for profit planning and business performance evaluation (Romadlon & Sujud, 2024).

Previous studies have demonstrated that break-even point (BEP) analysis is an effective tool for supporting profit planning across various business sectors. A study conducted in a telecommunication retail company showed that BEP analysis helped determine the break-even point, evaluate the margin of safety, and estimate the sales volume required to achieve the expected profit (Pelu et al., 2021). Similarly, research conducted in a food processing business found that sales consistently exceeded the break-even point, indicating that the business generated profits with a relatively high safety margin (Rusmayanti, 2021). Another study in the palm oil industry revealed that the company had successfully surpassed the break-even point and required an increase in sales volume to achieve future profit targets (Aminus & Sarina, 2022). Likewise, research conducted in a manufacturing company concluded that break-even point and margin of safety analyses provided valuable information for determining sales targets and supporting profit planning (Aji Bimayu, 2023).

However, these studies were conducted in manufacturing companies, retail businesses, food processing industries, and palm oil enterprises. Research examining the application of Break-Even Point analysis in small-scale layer chicken farming businesses remains limited. Furthermore, previous studies have generally focused on determining the break-even point and profit targets, while the integration of break-even point, Contribution Margin, and Margin of Safety as a comprehensive basis for profit planning has received relatively little

attention. Therefore, this study aims to fill this gap by applying these analytical tools to a layer chicken farming business in Kajuara Village, Awangpone District, Bone Regency.

2. RESEARCH METHOD

This study employed a quantitative descriptive approach using a case study design. The research was conducted at a layer chicken farming business located in Kajuara Village, Awangpone District, Bone Regency, South Sulawesi, Indonesia. The study focused on analyzing the application of break-even point (BEP) as a tool for profit planning. The data used in this study consisted of primary and secondary data. Primary data were collected directly from the business owner through interviews, observations, and documentation. Secondary data were obtained from business financial records, production reports, and relevant literature related to managerial accounting and break-even point analysis.

Data were collected through three techniques: observation, interviews, and documentation. Observation was conducted to obtain information regarding the operational activities of the business. Interviews were carried out with the business owner to obtain information on production costs, selling prices, sales volume, and expected profit. Documentation was used to collect supporting data, including production records, sales reports, and cost data.

The data were analyzed using break-even point (BEP), contribution margin, and margin of safety analyses. The analytical procedures included identifying fixed costs and variable costs, calculating the contribution margin, determining the Break-Even Point in units and sales value, calculating the margin of safety, and evaluating the results as the basis for profit planning. The formulas used in this study are presented as follows.

3. RESULTS AND DISCUSSION

3.1 Overview of the Research Object

The research was conducted at a layer chicken farming business located in Kajuara Village, Awangpone District, Bone Regency, South Sulawesi, Indonesia. The business has been operating for several years and focuses on the production and sale of layer chicken eggs. As a small-scale poultry enterprise, its primary source of income comes from egg sales, while production costs mainly consist of feed, labor, vitamins, utilities, and equipment depreciation. The business records production and sales activities regularly, providing sufficient financial information for conducting break-even point analysis.

During the study period, the business produced eggs continuously to meet market demand. However, fluctuations in production costs and egg selling prices affected the stability of profit, highlighting the importance of effective profit planning through managerial accounting tools.

3.2 Cost Classification

Table 1 Fixed Costs

No.	Fixed Cost Components	Monthly Cost (IDR)
1.	Electricity Expense	4,000,000
2.	Employee Salaries	1,200,000
3.	Chicken House Depreciation	1,333,000
4.	Layer Chickens Depreciation	367,000
5.	Water Tank Depreciation	25,000
6.	Scale Depreciation	8,333
7.	Storage Warehouse Rental	500,000
	Total Monthly Fixed Costs	7,733,333
	Total Annual Fixed Costs	92,800,000

Source: Processed data from the Layer Chicken Farm (2024).

Table 2 Variable Costs

No.	Variable Cost Component	Requirement	Unit Price (IDR)
1.	Egg Trays	871–884 pcs	500/pc
2.	Electricity and Water	Per month	200,000/month
3.	Chicken Feed	725–775 kg	8,400/kg
4.	Corn	725–775 kg	6,500/kg
5.	Rice Bran	580–620 kg	3,200/kg
6.	Vitamins and Medicines	As needed	250,000–500,000
7.	Raffia Rope	3 rolls	15,000/roll
	Total Variable Costs in 2024		169,213,000

Source: Processed data from the Layer Chicken Farm (2024).

Table 3 Total Production Costs

No.	Description	Amount (IDR)
1.	Total Fixed Costs	92,800,000
2.	Total Variable Costs	169,213,000
	Total Production Costs	262,013,000

Source: Processed data from the Layer Chicken Farm (2024).

3.3 Contribution Margin Analysis

Contribution margin analysis was conducted to determine the amount of sales revenue available to cover fixed costs and generate profit. Contribution margin is obtained by subtracting total variable costs from total sales revenue. A higher contribution margin indicates a greater ability of a business to cover fixed costs and earn profit (Mowen et al., 2019).

Based on the research findings, the laying hen farm generated total sales revenue of IDR 526,250,000 during 2024, while the total variable costs amounted to IDR 169,213,000. Therefore, the contribution margin was calculated as follows:

$$\begin{aligned}
 \text{Contribution Margin} &= \text{Sales Revenue} - \text{Variable Costs} \\
 &= \text{IDR } 526,250,000 - \text{IDR } 169,213,000 \\
 &= \text{IDR } 357,037,000
 \end{aligned}$$

The contribution margin of IDR 357,037,000 indicates that after covering all variable costs, the business still retained sufficient revenue to cover fixed costs amounting to IDR 92,800,000 and generate operating profit. This finding demonstrates that the laying hen farm operated efficiently during the study period because the contribution margin substantially exceeded total fixed costs. As stated by Mowen et al. (2019), contribution margin represents the amount available to absorb fixed costs before generating profit. Therefore, the higher the contribution margin, the greater the opportunity for a business to achieve profitability.

3.4 Contribution Margin Ratio

The contribution margin ratio was calculated to determine the percentage of sales revenue available to cover fixed costs and generate profit. The contribution margin ratio is obtained by dividing the contribution margin by total sales revenue. This ratio indicates the proportion of each sales rupiah that contributes to covering fixed costs and generating operating profit (Mowen et al., 2019).

Based on the research findings, the contribution margin ratio of the laying hen farm is calculated as follows:

$$\begin{aligned}\text{Contribution Margin Ratio} &= (\text{Contribution Margin} / \text{Sales Revenue}) \times 100\% \\ &= (\text{IDR } 357,037,000 / \text{IDR } 526,250,000) \times 100\% \\ &= 67.84\%\end{aligned}$$

The contribution margin ratio of 67.84% indicates that every IDR 1.00 of sales generated IDR 0.6784 to cover fixed costs and generate profit, while the remaining IDR 0.3216 was used to cover variable costs. This result shows that the laying hen farm has a relatively high contribution margin ratio, indicating efficient control of variable costs in relation to sales revenue. Consequently, the business has a strong capacity to absorb fixed costs and improve profitability as sales increase. According to Mowen et al. (2019), a higher contribution margin ratio reflects a greater proportion of sales revenue available for covering fixed costs and generating profit.

3.5 Break-even point (BEP) Analysis

Break-even point (BEP) analysis was conducted to determine the minimum sales level required for the laying hen farm to cover all operating costs without generating either profit or loss. At the break-even point, total revenue equals total costs; therefore, operating profit is zero. This analysis serves as an important tool for profit planning because it enables management to determine the minimum production and sales levels required to maintain business sustainability (Mowen et al., 2019).

Break-Even Point in Sales Value

The break-even point in sales value was calculated using the ratio of fixed costs to the contribution margin ratio as follows:

$$\begin{aligned}\text{BEP (IDR)} &= \text{Fixed Costs} / \text{Contribution Margin Ratio} \\ &= \text{IDR } 92,800,000 / 67.84\% \\ &= \text{IDR } 136,793,000\end{aligned}$$

This result indicates that the laying hen farm must achieve minimum annual sales of IDR 136,793,000 to reach the break-even point. Sales below this amount would result in operating losses because total revenue would be insufficient to cover both fixed and variable costs. Conversely, sales exceeding the break-even point would enable the business to generate operating profit.

Break-Even Point in Units

$$\begin{aligned}\text{BEP (Units)} &= \text{Fixed Costs} / \text{Contribution Margin per Unit} \\ &= \text{IDR } 92,800,000 / \text{IDR } 33,923 \\ &= 2,736 \text{ trays}\end{aligned}$$

The calculation shows that the laying hen farm must sell at least 2,736 trays of eggs per year to cover all production costs. During 2024, the business sold substantially more than this minimum requirement, indicating that actual sales had exceeded the break-even point. According to Mowen et al. (2019), when actual sales exceed the break-even point, the excess sales contribute directly to operating profit after all fixed costs have been recovered. Overall, the break-even point analysis demonstrates that the laying hen farm operated above its minimum sales threshold throughout the study period. This finding confirms that the business maintained a profitable operating position and that its sales performance was sufficient to recover total production costs while generating profit.

3.6 Margin of Safety Analysis

Margin of Safety (MOS) analysis was conducted to determine the extent to which sales can decline before the laying hen farm reaches the break-even point and begins to incur losses. According to Mowen et al. (2019), the margin of safety measures the difference between actual sales and break-even sales, thereby indicating the level of business risk. A higher margin of safety reflects a lower risk of loss because actual sales are substantially above the break-even point.

The Margin of Safety in sales value was calculated using the following formula:

$$\begin{aligned}\text{Margin of Safety} &= \text{Actual Sales} - \text{Break-Even Sales} \\ &= \text{IDR } 526,250,000 - \text{IDR } 136,793,000 \\ &= \text{IDR } 389,457,000\end{aligned}$$

Furthermore, the Margin of Safety ratio was calculated using the following formula:

$$\begin{aligned}\text{MOS (\%)} &= \text{Margin of Safety} / \text{Actual Sales} \times 100\% \\ &= \text{IDR } 389,457,000 / \text{IDR } 526,250,000 \times 100\% \\ &= 74.00\%\end{aligned}$$

The calculation results indicate that the laying hen farm has a margin of safety of IDR 389,457,000, equivalent to 74.00% of actual sales. This means that sales could decline

by up to 74.00% before the business reaches the break-even point and begins to incur losses. The relatively high margin of safety indicates that the laying hen farm maintained a strong financial position throughout 2024 and possessed sufficient capacity to withstand fluctuations in sales while remaining profitable. In accordance with Mowen et al. (2019), a higher margin of safety reflects lower business risk because actual sales remain well above the break-even point. Overall, the margin of safety analysis demonstrates that the laying hen farm operated with a considerable safety margin during the study period. The difference between actual sales and break-even sales indicates that the business was financially capable of absorbing a substantial decline in sales without immediately experiencing operating losses.

3.7 Profit Planning Analysis

Profit planning analysis was conducted to determine the level of sales required by the laying hen farm to achieve the desired profit target. According to Mowen et al. (2019), profit planning is performed by adding the target profit to fixed costs and dividing the result by the contribution margin ratio. This analysis assists management in establishing sales targets and evaluating the feasibility of achieving the expected level of profitability.

The required sales revenue was calculated using the following formula:

$$\begin{aligned}\text{Required Sales} &= (\text{Fixed Costs} + \text{Target Profit}) / \text{Contribution Margin Ratio} \\ &= (\text{IDR } 92,800,000 + \text{IDR } 500,000,000) / 67.84\% \\ &= \text{IDR } 873,900,000\end{aligned}$$

The required sales volume was also determined using the following formula:

$$\begin{aligned}\text{Required Sales (Units)} &= (\text{Fixed Costs} + \text{Target Profit}) / (\text{Selling Price per Unit} - \text{Variable Cost per Unit}) \\ &= (\text{IDR } 92,800,000 + \text{IDR } 500,000,000) / (\text{IDR } 50,000 - \text{IDR } 16,077) \\ &= 17,474 \text{ trays.}\end{aligned}$$

The calculation indicates that the laying hen farm must generate annual sales of IDR 873,900,000, or sell approximately 17,474 trays of eggs, to achieve the targeted profit of IDR 500,000,000. However, the actual sales revenue during 2024 amounted to IDR 526,250,000, which was lower than the required sales target. This finding suggests that the business has not yet achieved the sales level necessary to obtain the desired profit target. Therefore, increasing sales volume, improving production efficiency, and maintaining effective cost control are necessary to support future profit growth. According to Mowen et al. (2019), profit planning based on cost-volume-profit analysis enables management to establish realistic sales targets and formulate appropriate operational strategies. Overall, the profit planning analysis demonstrates that although the laying hen farm operated profitably during 2024, additional sales growth is still required to achieve the targeted annual profit. Therefore, break-even point analysis serves as an effective managerial tool for supporting profit planning and improving the financial performance of the business.

3.8 Discussion

The findings of this study indicate that the laying hen farm operated profitably during 2024, as reflected by its contribution margin, break-even point, margin of safety, and profit planning analyses. The contribution margin obtained demonstrates that the business was able to cover all variable costs and provide sufficient funds to absorb fixed costs while generating operating profit. This finding is consistent with Mowen et al. (2019), who stated that the contribution margin represents the amount of sales revenue available to cover fixed costs and generate profit.

The break-even point analysis revealed that the farm reached a break-even sales value of IDR 136,793,000, while actual sales amounted to IDR 526,250,000, indicating that the business operated well above the break-even point. This result is consistent with the findings of Aji Bimayu (2023), who reported that a company operating above its break-even point is able to cover all production costs and should increase sales to achieve higher profit targets. Although the two studies examined different business sectors, both demonstrate that break-even point analysis is an effective managerial tool for evaluating business performance and supporting profit planning.

Similarly, the results of this study are in line with those reported by Pelu et al. (2021), who found that increasing sales above the break-even point improved the margin of safety and supported the achievement of future profit targets. In the present study, the laying hen farm recorded a margin of safety of 74.00%, indicating that the business could tolerate a substantial decline in sales before incurring losses. This finding suggests that the business maintained a relatively low level of operational risk during the study period.

The findings are also consistent with the study conducted by Aminus & Sarina (2022), who concluded that businesses operating above the break-even point require higher sales volumes to achieve their desired profit targets. In the present study, although the laying hen farm generated operating profit during 2024, the actual sales had not yet reached the level required to achieve the targeted annual profit. Therefore, increasing sales volume while maintaining efficient cost control remains essential for improving profitability.

Furthermore, the results support the findings of Rusmayanti (2021), who reported that businesses operating above the break-even point generally achieve a high margin of safety, reflecting a strong capacity to withstand fluctuations in sales without immediately experiencing losses. Likewise, the laying hen farm in this study maintained actual sales well above the break-even point, indicating sound financial performance and a relatively secure operating position.

Overall, the comparison with previous studies demonstrates that break-even point analysis, contribution margin analysis, and margin of safety analysis are effective tools for evaluating business performance and supporting profit planning across different business sectors. Although this study focuses on a small-to-medium-scale laying hen farm, the findings confirm that cost-volume-profit analysis can provide valuable information for

determining minimum sales targets, evaluating business risk, and supporting managerial decision-making aimed at improving profitability.

4. CONCLUSION

This study concludes that the laying hen farm in Kajuara Village operated profitably during 2024. The contribution margin and contribution margin ratio indicate that the business was able to cover its production costs and generate profit. The break-even point analysis shows that actual sales exceeded the break-even sales level, while the margin of safety indicates that the business has a relatively low risk of loss. However, the profit planning analysis suggests that higher sales are still required to achieve the targeted profit. Therefore, break-even point analysis can be used as an effective managerial tool to support profit planning, evaluate business performance, and improve decision-making in laying hen farming enterprises.

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