

Break Even Point Analysis as a Basis for Production and Sales Planning at Rumah Kali Laya MSME, Bogor Regency

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ABSTRAK

Penelitian ini bertujuan untuk menganalisis penerapan Break-Even Point (BEP) sebagai dasar perencanaan produksi dan penjualan di UMKM Rumah Kali Laya di Kabupaten Bogor. Dengan menggunakan pendekatan kualitatif deskriptif dengan metode studi kasus tunggal, data dikumpulkan melalui observasi, wawancara mendalam, dan dokumentasi laporan keuangan untuk periode November 2025. Hasil penelitian menunjukkan bahwa dua lini produk, Emping Beras Kencur dan Keripik Kimpul, memiliki harga jual yang sama yaitu Rp10.000 per unit tetapi struktur biaya variabel dan margin kontribusi yang berbeda. Emping Beras Kencur menghasilkan margin kontribusi sebesar Rp5.315 per unit dengan BEP 0,88 unit (praktis 1 unit), sedangkan Keripik Kimpul menghasilkan margin kontribusi sebesar Rp1.200 per unit dengan BEP 3,88 unit (praktis 4 unit). Volume penjualan aktual kedua produk jauh di atas titik impasnya, menunjukkan margin keamanan yang tinggi. Meskipun demikian, pencatatan biaya tetap masih sangat terbatas; Oleh karena itu, pemisahan biaya secara sistematis dan pemasaran digital yang lebih kuat melalui media sosial masih diperlukan untuk mendukung keberlanjutan dan efisiensi bisnis.

ABSTRACT

This study aims to analyze the application of Break-Even Point (BEP) as a basis for production and sales planning at Rumah Kali Laya MSME in Bogor Regency. Using a descriptive qualitative approach with a single-case study method, data were collected through observation, in-depth interviews, and documentation of financial reports for the November 2025 period. The results show that the two product lines, Emping Beras Kencur and Keripik Kimpul, have the same selling price of Rp10.000 per unit but different variable cost structures and contribution margins. Emping Beras Kencur generates a contribution margin of Rp5.315 per unit with a BEP of 0,88 units (practically 1 unit), while Keripik Kimpul generates a contribution margin of Rp1.200 per unit with a BEP of 3,88 units (practically 4 units). The actual sales volumes of both products are far above their break-even points, indicating a high margin of safety. Nevertheless, the recording of fixed costs remains very limited; therefore, systematic cost separation and stronger digital marketing through social media are still required to support business sustainability and efficiency.

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1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play an important role in the Indonesian economy. Based on data from Statistics Indonesia reported by the Ministry of MSMEs in July 2025, there were approximately 65.5 million MSMEs contributing 61.9% of gross domestic product (GDP) and absorbing around 97% of the national workforce (Aprionis, 2025). According to Government Regulation (PP) Number 7 of 2021, a microenterprise is a business with capital of no more than Rp1 billion (excluding land and buildings used for business premises) or annual sales of no more than Rp2 billion (Pemerintah Pusat Republik Indonesia, 2021).

Despite their major role, many MSMEs still manage their finances in a simple manner. Business owners often determine sales and profit targets based on estimates without separating fixed costs from variable costs (Silitonga et al., 2026). As a result, owners find it difficult to answer the most basic question: how many products must be sold for the business to avoid a loss? This question can be answered using break-even point (BEP) analysis, which identifies the condition in which total revenue equals total costs so that the business neither earns a profit nor incurs a loss (Garrison et al., 2021). BEP analysis has been applied to various food MSMEs, for example, a cracker MSME in Karawang (Widyasari et al., 2024) and a shrimp-paste cracker business in Lamongan (Arrizqi et al., 2020).

Rumah Kali Laya MSME is located at Jalan Raya Susukan, Gang Swadaya No. 57, Susukan Village, Bojonggede District, Bogor Regency. The business produces two traditional snacks, namely Keripik Kimpul and Emping Beras Kencur. Its products are halal-certified, have a shelf life of approximately three months, and are sold through consignment points at local shops, direct sales at Car Free Day events, and orders via WhatsApp.

Initial data from Project Based Learning (PBL) activities in November 2025 showed that Rumah Kali Laya produced 540 units of Emping Beras Kencur and 276 units of Keripik Kimpul at a selling price of Rp10.000 per unit. The cost of production (HPP) was Rp4.694 and Rp8.814 per unit, respectively, resulting in a much thinner profit margin for Keripik Kimpul (11,86%) than for Emping Beras Kencur (53,06%). The initial calculation produced BEP values of 0,88 units and 3,88 units per month. These figures are very low and need to be reassessed because the only recorded fixed cost was equipment depreciation of Rp9.333 per month. Other costs that may be fixed, such as electricity, gas, premises rent, or owner wages, had not been separated. If fixed costs are incomplete, the BEP will appear too low and the owner may consider the business "very safe" when this may not actually be the case.

Based on the description above, the research questions are as follows:

- a. What is the structure of fixed costs and variable costs for each Rumah Kali Laya product?
- b. What is the BEP in units and rupiah for each product?
- c. What are the contribution margin and margin of safety at the current sales level?
- d. How does the BEP change when the selling price, raw material costs, or sales volume changes?

This study aims to classify business costs into fixed and variable costs, calculate the BEP in units and rupiah, calculate the contribution margin and margin of safety, and test changes in BEP under several simple scenarios. The results are expected to help the owner determine the minimum sales target, evaluate selling prices, and control costs.

In practical terms, this study provides an example of a simple BEP procedure that can be replicated by other MSME operators with limited financial records.

2. LITERATURE REVIEW

2.1 MSMEs and Financial Record-Keeping

Government Regulation Number 7 of 2021 classifies MSMEs based on business capital or annual sales revenue. For microenterprises, business capital may not exceed Rp1 billion (excluding land and buildings used for business premises) or annual sales may not

exceed Rp2 billion. This regulation updates the criteria previously stipulated in Law Number 20 of 2008 concerning MSMEs (Pemerintah Pusat Republik Indonesia, 2008, 2021).

To assist MSMEs in preparing financial statements, the Indonesian Institute of Accountants issued the Financial Accounting Standards for Micro, Small, and Medium Entities (SAK EMKM), which are simpler than the standards for larger entities (Ikatan Akuntan Indonesia, 2016). These standards regulate the presentation of statements of financial position, income statements, and notes to the financial statements. Their focus is reporting rather than analyzing the relationship among costs, volume, and profit. Therefore, MSMEs need additional analytical tools, one of which is BEP.

2.2 Fixed Costs, Variable Costs, and Semi-Variable Costs

Based on their behavior in relation to production volume, costs are divided into three types (Garrison et al., 2021). Variable costs change in proportion to volume, while the amount per unit remains constant. Examples include raw materials, cooking oil, and packaging. Fixed costs do not change within a certain volume range (relevant range), such as equipment depreciation, premises rent, and fixed salaries. Semi-variable costs contain both fixed and variable components, such as electricity and gas.

In home-based businesses, cost separation is more difficult because equipment, electricity, and premises are often shared with household needs. However, profit planning that does not distinguish between fixed and variable costs tends to produce less accurate targets (Silitonga et al., 2026).

2.3 Cost of Production (HPP)

HPP comprises all costs incurred to produce a product, namely raw material costs, direct labor, and factory overhead (Garrison et al., 2021). HPP per unit is obtained by dividing total production costs by the number of units produced. Full HPP (full costing) already includes fixed costs, whereas variable cost per unit includes only costs that change with volume. Therefore, full HPP should not be used directly as the variable cost per unit in the BEP formula unless fixed costs are very small.

2.4 Break-Even Point (BEP)

BEP is the sales level at which total revenue equals total costs (Garrison et al., 2021; Horngren et al., 2015). Below the BEP, the business incurs a loss, while above the BEP, the business begins to earn a profit. BEP can be expressed in units and in rupiah:

$$BEP (unit) = FC \div (P - V) \quad (1)$$

$$BEP (Rp) = FC \div CMR \quad (2)$$

$$CMR = (P - V) \div P \quad (3)$$

where FC is the total fixed cost per period, P is the selling price per unit, V is the variable cost per unit, and CMR is the contribution margin ratio. Because products are sold in whole units, BEP results in units are rounded up.

BEP calculations are based on several assumptions: (1) the selling price per unit remains constant; (2) the variable cost per unit remains constant; (3) fixed costs do not change within the analyzed volume range; (4) all products produced are sold; and (5) the sales mix does not change when more than one product is involved (Garrison et al., 2021). Because these assumptions are rigid, BEP is only an estimate and should be evaluated periodically when prices or costs change (Silitonga et al., 2026).

2.5 Contribution Margin, Margin of Safety, and Target Profit

The contribution margin per unit is the difference between the selling price and variable cost per unit ($P - V$). This margin is first used to cover fixed costs; the remainder becomes profit. The margin of safety (MoS) indicates how far sales may decline before the business incurs a loss:

$$\text{MoS} = [(\text{Actual sales} - \text{BEP sales}) \div \text{Actual sales}] \times 100\% \quad (4)$$

The higher the MoS, the safer the business. However, the MoS figure is meaningful only when fixed costs have been fully identified. To plan profit, the number of units that must be sold is calculated as follows:

$$Q \text{ target} = (\text{FC} + \text{Target profit}) \div (P - V) \quad (5)$$

According to Rukman et al. (2025), selling price, fixed costs, and sales volume determine the BEP; a change in any one of these factors will shift the BEP. Therefore, sensitivity analysis is conducted by changing one factor and then recalculating the BEP and MoS so that the owner can identify which factor has the greatest influence.

2.6 BEP in a Multi-Product Business

Rumah Kali Laya sells two products. Under this condition, there are two ways to calculate BEP. The first method calculates the BEP of each product after fixed costs are allocated to the products using a clear basis. The second method calculates a combined BEP using the weighted-average contribution margin ratio based on the sales mix. The first method is easier for the owner to understand and shows which product is weaker, so it is used as the main analysis. The second method is used for comparison.

3. RESEARCH METHODS

This study uses a descriptive qualitative approach with a single-case study method at Rumah Kali Laya MSME. This approach was selected because the study aims to understand the phenomenon in depth, supported by quantitative data analysis (mathematical calculations of costs, sales volume, and the break-even point/BEP) (Sugiyono, 2019). The case study method was selected because the research seeks to understand one business in depth under real-world conditions (Yin, 2018). Interviews and observations were used to support the numerical data, for example, to determine whether a cost is fixed or variable. The results of a single-case study are not intended to be generalized to all MSMEs. The study was conducted at Rumah Kali Laya MSME, located at Jl. Raya Susukan, Gg. Swadaya No. 57 RT 002/001, Susukan Village, Bojonggede District, Bogor Regency, during October–November 2025.

Data were collected using three complementary techniques. First, field observations were conducted at the production site to examine the production process, record-keeping practices, and daily operational activities. Second, in-depth interviews were conducted with Mrs. Selviana, the owner, and MSME members to obtain data on raw material costs, revenue, business challenges, and marketing channels. Third, documentation was collected from the company's informal financial records to reconstruct structured financial statements. This triangulation approach ensured the validity and completeness of the data (Sugiyono, 2022).

This study uses two types of data. Primary data consist of direct observations and interview findings, including details of raw material costs, production volume, and sales records for November 2025. Secondary data consist of informal financial records maintained by the company, which serve as the basis for structured financial reconstruction.

Data analysis was conducted in four sequential stages: (1) reconstruction of the financial statements, including calculation of Cost of Goods Sold (COGS), preparation of income statements using variable costing and full costing methods, a statement of changes

in equity, a balance sheet, and a cash flow statement; (2) comparative cost analysis between variable costing and full costing to measure the impact of fixed-overhead cost treatment on net profit; (3) calculation of the Break-Even Point (BEP) for each product line to determine the minimum feasible sales volume; and (4) SWOT analysis based on field data to systematically map internal and external strategic factors. All findings were interpreted descriptively to generate actionable strategic recommendations.

3.1 Sales and Cost Data

Table 1. Comprehensive Summary of Financial Performance (Nov 2025)

Financial Parameters	Emping Beras Kencur	Keripik Kimpul
Total Production Cost (Rp)	2.534.667	2.432.667
Output Quantity (Unit)	540	276
Cost of Production (HPP) per Unit (Rp)	4.694	8.814
Selling Price per Unit (Rp)	10.000	10.000
Profit Margin per Unit (%)	53,06 %	11,86 %
Segment Net Profit (Rp)	2.865.333	327.333
Break-Even Point (BEP)	0,88	3,88

Source: Primary Data Processed from the Project Base Learning Report of the Rumah Kali Laya MSME Team (2025).

Table 2. Sales and Cost Data

Description	Emping Beras Kencur	Keripik Kimpul
Number of Units	540	276
Selling Price per Unit (Rp)	10.000	10.000
Sales (Rp)	5.400.000	2.760.000
Variable Costs (Rp)	2.530.000	2.428.000
Fixed Costs (Rp)	4.667	4.667

Source: Primary Data Processed from the Project Base Learning Report of the Rumah Kali Laya MSME Team (2025).

The report data also show that variable costs consist of main raw materials and packaging costs. For Emping Beras Kencur, the main raw materials amounted to Rp1.690.000 and packaging to Rp840.000. For Keripik Kimpul, the main raw materials amounted to Rp1.348.000 and packaging to Rp1.080.000.

3.2 Break-Even Point Calculation

Table 3. BEP Calculation for Both Products

Description	Emping Beras Kencur	Keripik Kimpul
Variable Cost per Unit (Rp)	4.685	8.800
Selling Price per Unit (Rp)	10.000	10.000
Contribution Margin per Unit (Rp)	5.315	1.200
Break-Even Point (BEP)	0,88	3,88
BEP in Rupiah	8.781	38.800

Source: Primary Data Processed from the Project Base Learning Report of the Rumah Kali Laya MSME Team (2025).

3.3 Comparison of BEP for Both Products

Table 4. Comparison of BEP for Both Products

Description	Emping Beras Kencur	Keripik Kimpul
Variable Cost per Unit (Rp)	4.685	8.800
Selling Price per Unit (Rp)	10.000	10.000
Contribution Margin per Unit (Rp)	5.315	1.200

Description	Emping Beras Kencur	Keripik Kimpul
Fixed Costs (Rp)	4.667	4.667
BEP Units	0,88	3,88
Practical BEP	1 unit	4 unit
BEP in Rupiah (Rp)	±8.781	±38.800
Actual Sales	540 unit	276 unit

Source: Primary Data Processed from the Project Base Learning Report of the Rumah Kali Laya MSME Team (2025).

The table shows that both products have the same selling price, namely Rp10.000 per unit. However, their variable costs per unit differ considerably. Emping Beras Kencur has a variable cost of Rp4.685,19 per unit, whereas Keripik Kimpul reaches Rp8.797,10 per unit.

The difference in variable costs also causes the contribution margins of the two products to differ. Emping Beras Kencur generates a contribution margin of Rp5.314,81 per unit, whereas Keripik Kimpul generates only Rp1.202,90 per unit.

Because the fixed cost used in the calculation for both products is the same at Rp4.667, the difference in BEP mainly results from the difference in contribution margin. A product with a higher contribution margin per unit requires fewer units to cover fixed costs.

3.4 Comparison of Actual Sales with BEP

Table 5. Comparison of BEP for Both Products

Product	BEP	Actual Sales	Difference (Units)
Emping Beras Kencur	0,88	540 unit	539 unit
Keripik Kimpul	3,88	276 unit	272 unit

Source: Primary Data Processed from the Project Base Learning Report of the Rumah Kali Laya MSME Team (2025).

The results show that, based on the cost structure used in the report, the actual sales volume of both products has exceeded the break-even point. In the income statement, Emping Beras Kencur generated a contribution margin of Rp2.870.000 and net profit of Rp2.865.333, whereas Keripik Kimpul generated a contribution margin of Rp332.000 and net profit of Rp327.333.

This difference shows that although both products have the same selling price, their cost structures generate different contributions to covering fixed costs and generating profit.

4. RESULTS AND DISCUSSION

Rumah Kali Laya MSME in Susukan Village has an advantage in that its products are halal-certified and have a shelf life of up to three months. However, from a managerial perspective, several areas still require improvement, particularly the separation of personal assets from business assets. The cost analysis shows a difference in efficiency between the two products. Emping Beras Kencur has a variable cost per unit of approximately Rp4.685,19 with a contribution margin of Rp5.314,81, whereas Keripik Kimpul has a variable cost per unit of approximately Rp8.797,10 with a contribution margin of only Rp1.202,90. This difference results in a lower BEP for Emping Beras Kencur than for Keripik Kimpul, although both have the same selling price of Rp10.000 per unit.

The BEP analysis shows that the break-even points of both products are below four units, meaning that actual sales for both products are far above their break-even points. This indicates that, based on the data and cost classifications used, the MSME has a relatively high margin of safety. However, differences remain in the cost classifications used in the report, so cost recording should be carried out more consistently to ensure that subsequent BEP analyses provide a more accurate picture of the business condition. In addition to cost considerations, market development is also

being pursued through digital marketing using Instagram @kalilaya_indonesia and TikTok to expand market reach and support the sustainability of MSME sales.

5. CONCLUSION

Based on the Break-Even Point (BEP) analysis for November 2025, Emping Beras Kencur reached a break-even point of 0,88 units, or practically 1 unit, with a sales value of approximately Rp8.781. Meanwhile, Keripik Kimpul reached a break-even point of 3,88 units, or 4 units, with a sales value of approximately Rp38.798. This difference is influenced by the variable cost per unit, with Emping Beras Kencur having a lower variable cost and a higher contribution margin than Keripik Kimpul.

Compared with actual sales of 540 units of Emping Beras Kencur and 276 units of Keripik Kimpul, both products are far above their break-even points. This shows that, based on the cost structure used, actual sales have been sufficient to cover the costs incurred. The low BEP values also indicate that the minimum sales required to reach the break-even condition are relatively small. However, these results should be interpreted with caution because differences remain in the cost classifications in the MSME report. Therefore, fixed and variable costs should be recorded and separated more consistently so that BEP analysis can produce more accurate results.

From a business-development perspective, the sustainability of Rumah Kali Laya needs to be supported by more orderly financial record-keeping and stronger digital marketing. The use of social media and plans to expand the market through campus or university cooperative networks can help broaden consumer reach and support sales stability.

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