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Optimization of Business Sustainability: Break-Even Point and Margin of Safety Analysis in the "Aneka Rasa Puspita" Cracker Business Sector

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ABSTRACT

Business sustainability is a fundamental prerequisite for ensuring long-term financial viability and mitigating the negative externalities of commercial operations. Consequently, this study was undertaken to analyze the optimization of business sustainability utilizing the Break-Even Point (BEP) and Margin of Safety (MOS) metrics within the Puspita assorted-flavor cracker enterprise, situated in Wonotirto District, Blitar Regency. The derived information serves as a crucial foundation for managerial decision-making, specifically in the domains of profit planning and sales control.

The methodological approach employed was a qualitative descriptive design. Data collection involved direct observation, interviews, and documentation. The analytical focus centered on calculating the break-even point in both unit and monetary (rupiah) terms, alongside the computation of the Margin of Safety to establish the secure threshold for sales reduction before incurring financial losses.

The research findings demonstrate that the "Aneka Rasa Puspita" cracker business is currently operating above its break-even point. This signifies that the enterprise successfully covers all fixed and variable costs and is generating a profit. Furthermore, the calculated Margin of Safety exhibits a relatively high value, which indicates that the business possesses a robust level of operational security against potential decreases in sales volume. These findings offer a significant contribution to operational and strategic decision-making for Micro, Small, and Medium Enterprise (MSME) stakeholders, particularly in formulating policies regarding selling prices, sales targets, and cost control.
Keywords: *Business Sustainability, Break-Even Point, Margin of Safety*

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) hold a vital role in driving economic growth and job creation in Indonesia. The flexible and adaptable nature of MSMEs allows them to become the backbone of the local economy, particularly in rural areas. However, despite this vast potential, MSMEs frequently face challenges in financial management,

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including effective profit planning and cost control. A limited, in-depth understanding of cost structures and the break-even point can hinder the MSMEs' ability to make appropriate strategic decisions necessary for achieving long-term profitability and sustainability.

One of the crucial analytical tools in management accounting for profit planning and control is the Break-Even Point (BEP) and the Margin of Safety (MOS). According to Purba and Sianturi (2021: 24), Break-Even Analysis is defined as an analysis performed on a company's condition where it neither earns a profit nor incurs a loss, meaning the profit equals zero (0). Conversely, the MOS is one of the benefits derived from the calculation of the break-even point, utilized to determine the tolerance limit for a sales decrease so that it does not fall below the BEP value, thereby ensuring the company remains in a safe operating condition and avoids losses[1].

Prior research by Widyasari et al. (2024) revealed that the Kerupuk Asoy MSME successfully exceeded the Break-Even Point for three consecutive years, both in terms of sales units and monetary value (rupiah). Furthermore, a relatively high Margin of Safety (MOS) value each year reflected a good level of operational safety and a relatively low risk of loss. Meanwhile, based on the BEP and MOS analysis for determining the selling price of MSMEs by Risdayani and Susilawati (2024), the MSME managed to surpass the break-even point with revenue and an MOS of 3.76%, indicating that the business was in a safe position.

Based on these findings from previous studies, it is evident that BEP analysis allows business actors to identify the minimum sales volume required to avoid losses, while the MOS provides an indication of how much sales can decline before the business reaches the break-even point, reflecting the level of operational security. Therefore, a deep understanding of both concepts is fundamental for management in planning profit and

[1] Dahotman Purba dan Novdin M. Sianturi. 2021. Akuntansi Manajemen untu Ekonomi dan Teknik. Pekalongan Jawa Tenggah : PT. Nasya Expanding Management 25

controlling operational risk. Nevertheless, the application and specific case studies across certain business types, particularly in the MSME sector, still require further exploration.

Although the urgency of financial analysis for MSMEs has been widely discussed, the implementation and specific case studies in particular business sectors, such as MSME production of snacks at the village level, still need to be intensified. The Puspita Assorted Cracker MSME in Ngeni Village is an example of an actor in the snack sector that holds potential but has not systematically analyzed its financial condition from the perspective of BEP and MOS. Therefore, this study aims to analyze the Break-Even Point and Margin of Safety for the sales of Puspita Assorted Crackers in Ngeni Village.

This research is expected to provide a dual contribution, both theoretically and practically. The theoretical benefit is to enrich the scientific literature of management accounting through an empirical case study on an MSME. The practical benefit is to provide comprehensive and applicable financial information for the owner of the Puspita Assorted Cracker MSME in planning profit, identifying the level of risk, and making more informed business decisions for the sustainability and development of their enterprise.

LITERATURE REVIEW

This research utilizes the theoretical framework within management accounting, specifically the Cost-Volume-Profit (CVP) Analysis, which is a fundamental tool for business planning and decision-making. CVP Analysis assists management in understanding the relationship between costs, sales volume, and profitability, with a focus on identifying the break-even point and the margin of operational safety.

2.1 Classification of Costs

In CVP analysis, costs are classified based on their behavior in relation to changes in production or sales volume. Fixed Costs are expenses that do not change with fluctuations in production or sales volume; they remain even if the company is not operating[2]. Examples of fixed costs include rent for the business premises,

[2] Baru Harahap dan Tukino. 2020. *Akuntansi Biaya*. Batam Kepualauan Riau : Batam Publisher

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depreciation of fixed assets, and administrative employee salaries. On the other hand, Variable Costs are expenses whose total amount increases or decreases proportionally with changes in production or sales volume[3]. The more units produced, the greater the total variable costs, and vice versa. Examples of variable costs include direct raw materials, fuel, auxiliary materials, and production overtime wages.

2.2 Contribution Margin

Contribution Margin is the percentage difference between sales revenue and variable costs. The contribution margin is the difference between net revenue and variable costs, used to determine the amount of revenue available to cover fixed costs and generate profit. The higher the contribution margin, the greater the company's ability to cover its fixed costs and earn a profit. The benefit of this calculation is its use as a basis for decision-making, especially in determining the selling price, production strategy, and profit planning.

2.3 *Break Even Point* (BEP)

The Break-Even Point (BEP) is the level of sales volume where total expenses equal total revenue, resulting in the company earning neither a profit nor incurring a loss[4]. The Break-Even Point (BEP) is a crucial analytical calculation tool in the business world because it is used to determine the break-even threshold or the minimum sales volume that a company needs to achieve to avoid losses or profits. Management can utilize BEP as a metric for decision-making, such as determining pricing, production volume, and strategy.

To conduct BEP analysis, several key elements must be considered, including fixed costs, variable costs, selling price, and sales volume. According to Harahap and Tukino (2020: 9-10), there are two types of calculation: BEP in Units and BEP in Rupiah

[3] Ibid, 6
[4] Yessy Shafira Danti Widyasari, Sihabudin dan Robby Fauji. 2024. Analisis Break Even Point (BEP) sebagai Perencanaan Laba pada Umkm Kerupuk Asoy Rengasdengklok Karawang . Journal of Economic, Business and Accounting, No 4 Vol 7 : 7456-7464

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(Monetary Value).

$$\text{BEP unit} = \frac{\text{FC}}{\text{NS per unit} - \text{VC per unit}}$$

$$\text{BEP rupiah} = \frac{\text{FC}}{1 - (\text{VC}:\text{NS})}$$

In addition to the formulas mentioned above, the calculation for BEP in Units and BEP in Rupiah (Monetary Value) can also be determined using the Contribution Margin (CM), specifically through the CM Ratio and the CM per Unit, as detailed in relevant accounting literature[5].

$$\text{BEP unit} = \frac{\text{Fixed Cost (FC)}}{\textit{Contribution margin} \text{ (CM) unit}}$$

$$\text{BEP rupiah} = \frac{\text{Fixed Cost (FC)}}{\text{Rasio } \textit{Contribution margin} \text{ (CM)}}$$

2.4. Margin Of Safety (MOS)

The Margin of Safety (MOS) is a type of financial ratio that indicates the difference between actual revenue and break-even revenue, providing management with information on the maximum tolerable decline in sales before incurring a loss. MOS offers a measure of a company's operational security against decreases in sales volume. The higher the value or percentage of the Margin of Safety, the safer the company's financial position is against the risk of loss[6]. MOS is calculated as the difference between actual or budgeted sales and sales at the break-even point. This essentially means the company still has room for a sales decline without having to incur a loss. The formula for the Margin of Safety is as

[5] Suzan, Leny et.al. 2023. Akuntansi Biaya Cara Cerdas Mengelola Keuangan Organisasi . Daerah Istimewa Yogyaarta : PT. Green Pustaka Indonesia
[6] Risdayani, Ai Anisa dan Susilawati. 2024. Analisis Perhitungan BEP (Break Even Point) dan Margin Of Safety Dalam Penentuan Harga Jual pada UMKM Salaut . Jurnal Bina Manajemen, No 1 Vol 13 75-93

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follows[7]:

$$\text{MOS } \% = \frac{\text{Sales (Rp)} - \text{BEP (Rp)}}{\text{Sales (Rp)}} \times 100\%$$

2.5. Relevance of BEP and MOS Analysis for MSMEs

Various previous studies have consistently shown that the application of BEP and MOS analysis greatly assists business actors, particularly MSMEs, in business planning and decision-making. Kusumawardani and Alamsyah (2020) found that BEP and MOS are effective tools that support decisions regarding the determination of selling prices and future business planning. Similarly, Erfi and Kusumastuti (2024) affirm that BEP and MOS analysis is highly beneficial for business actors in setting sales targets and making appropriate business decisions. The consistency of these findings confirms that these management accounting tools are not only relevant for large corporations but also highly pertinent and provide significant benefits for MSMEs in identifying the break-even point and managing the risk of sales decline.

RESEARCH METHODOLOGY

This research employs a descriptive method with a qualitative approach. The descriptive method was chosen to provide a systematic and factual representation of the financial condition of the Puspita Assorted Cracker MSME, particularly concerning the analysis of the Break-Even Point (BEP) and Margin of Safety (MOS). A case study design allows the researcher to explore information deeply and comprehensively on this specific research object. The object of this study is the Puspita Assorted Cracker MSME, located in Ngeni Village. The selection of this object is based on the relevance of MSMEs as a vital economic sector and the need for more in-depth financial analysis in micro-scale businesses. The research was conducted over a period of three months, spanning from

[7] Ibid, 26

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March to May.

The data utilized in this research includes primary data and secondary data. Primary data were obtained through direct interviews with the owner and employees of the MSME to gather information regarding selling prices, sales volume, and detailed fixed and variable costs. Furthermore, observation was carried out to understand the production process and business operations. Secondary data were acquired through documentation in the form of material purchase receipts of the MSME during the research period. To ensure the credibility and validity of the research data, several data credibility testing techniques were applied, such as triangulation (by using more than one data source) and member checking (by re-confirming the results of interviews and observations with the informant/business owner to ensure they align with the facts and the informant's experience).

The data analysis technique applied is Cost-Volume-Profit (CVP) Analysis, focusing on the calculation of:

1. The data analysis technique applied is Cost-Volume-Profit (CVP) Analysis, focusing on the calculation of:

$$Contribution\ Margin = Net\ Sales - Variable\ cost$$

$$Contribution\ Margin\ \% = \frac{Contribution\ Margin}{Net\ Sales} \times 100\%$$

2. The data analysis technique applied is Cost-Volume-Profit (CVP) Analysis, focusing on the calculation of:

$$\text{Penyusutan} = \frac{\text{Cost of Asset} - \text{Salvage Value (0)}}{\text{Useful Life}}$$

3. The data analysis technique applied is Cost-Volume-Profit (CVP) Analysis, focusing on the calculation of:

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$$\text{MOS } \% = \frac{\text{Sales (Rp)} - \text{BEP (Rp)}}{\text{Sales (Rp)}} \times 100\%$$

RESULTS AND DISCUSSION

Puspita Assorted Cracker is a home-based MSME that was established in 2019. This micro-enterprise is founded and managed by a married couple and is located in Ngeni Village, Wonotirto District, Blitar Regency. It operates in the snack production sector, transforming raw crackers into ready-to-eat finished crackers, which are then packaged in specialized plastic. The processed cracker products originate from various types, such as uyel crackers (with diverse variants), plompong, and soybean crackers, all processed using traditional frying techniques. Since this research employs the Cost-Volume-Profit (CVP) Analysis technique, it requires the process of classifying costs into fixed costs and variable costs.

1. Cost Classification

The costs utilized in this calculation are classified based on their behavior towards changes in activity, namely fixed costs and variable costs.

Variable costs in this study include the cost of raw materials, packaging costs, distribution costs, and employee wages. Meanwhile, fixed costs in this research comprise depreciation costs and production overhead costs. The data used in this study are derived from the third through the fifth week of April, reflecting the production activity within that specific time frame.

Table 1: Variable Costs

Cost Description	Week 3	Week 4	Week 5
Raw Materials Cost	IDR 4,187,500.00	IDR 2,512,500.00	IDR 3,343,000.00
Packaging Cost	IDR 331,300.47	IDR 199,113.55	IDR 281,136.97

Total Variable Costs	**IDR 4,518,800.47**	**IDR 2,711,613.55**	**IDR 3,624,136.97**

Source : Krupuk Aneka Rasa Puspita, Mei 2025

Tabel 2 Biaya Tetap

Cost Description	***Amount (IDR)***
Depreciation Cost	*IDR 21,018.42*
Fixed Production Cost *(or Production Overhead)*	*IDR 62,500.00*
TOTAL	***IDR 83,518.42***

Source : Krupuk Aneka Rasa Puspita, Mei 2025

The magnitude of variable costs fluctuates proportionally with the volume of production. In contrast, the utilization of fixed costs remains constant on a weekly basis, irrespective of any changes in production activity.

2. Sales Data

Sales data were obtained from the Puspita Assorted Cracker MSME, spanning the third through the fifth week of April 2025. The selling price per unit of cracker is IDR 3,500.00. The actual sales volume is calculated as the total quantity of products successfully sold to consumers, after accounting for reductions due to crackers that are damaged or unfit for sale, as well as crackers provided as compensation to employees.

Table 3: Puspita Assorted Cracker Sales Results

Period	Units Sold	Selling Price	Total Sales Revenue (IDR)
April - Week 3	2,230	IDR 3,500.00	IDR 7,805,000.00
April - Week 4	1,348	IDR 3,500.00	IDR 4,718,000.00
April - Week 5	1,909	IDR 3,500.00	IDR 6,681,500.00

TOTAL	5,487		IDR 19,204,500.00

Source : Krupuk Aneka Rasa Puspita, April s/d Mei 2025

3. Contibution Margin

Based on the collected sales data and cost data, the Contribution Margin (CM) can now be calculated to determine the sales performance after deducting variable costs. This resultant data will subsequently be used to compute the Contribution Margin Ratio (CM Ratio).

Table 4: Conribution Margin Rasio

Description	Week 3	Week 4	Week 5
Fixed Costs (FC)	IDR 83,518.42	IDR 83,518.42	IDR 83,518.42
Variable Costs (VC)	IDR 5,297,800.47	IDR 3,176,613.55	IDR 4,229,136.97
Production (Units)	2,499	1,503	2,123
Variable Cost per Unit	IDR 2,119.97	IDR 2,113.52	IDR 1,992.06
Selling Price per Unit	IDR 3,500.00	IDR 3,500.00	IDR 3,500.00
Description	**Week 3**	**Week 4**	**Week 5**
Sales Volume (Units)	2,230	1,348	1,909
Total Sales Revenue	IDR 7,805,000.00	IDR 4,718,000.00	IDR 6,681,500.00
Contribution	IDR 2,507,199.53	IDR	IDR 2,452,363.03

Margin (CM)		1,541,386.45	
CM Ratio	**32%**	**33%**	**37%**

Source : Krupuk Aneka Rasa Puspita, April s/d Mei 2025

4. Break Even Point

Based on the cost classification data and the Contribution Margin (CM) ratio calculations previously presented, the Break-Even Point (BEP) can now be determined, both in units and in monetary value (Rupiah). The calculations are as follows:

Table 5 BEP Unit

Description	Week 3	Week 4	Week 5
Fixed Costs (FC)	IDR 83,518.42	IDR 83,518.42	IDR 83,518.42
Selling Price	IDR 3,500.00	IDR 3,500.00	IDR 3,500.00
Variable Cost per Unit	IDR 2,119.97	IDR 2,113.52	IDR 1,992.06
BEP in Units (Calculated)	60.52	60.24	55.39
Rounded BEP in Units	61	60	55

Source : Krupuk Aneka Rasa Puspita, April s/d Mei 2025

Table 6 BEP Rupiah

Description	Week 3	Week 4	Week 5
Fixed Costs (FC)	IDR 83,518.42	IDR 83,518.42	IDR 83,518.42
CM Ratio	32%	33%	37%
BEP in Rupiah (Calculated)	**IDR 260,995.06**	**IDR 253,086.12**	**IDR 225,725.46**

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5. Margin Of Safety

The Margin of Safety (MOS) calculation is utilized to determine the extent to which sales can experience a decline from the actual volume without causing the MSME to incur a loss, meaning the business will still remain at the break-even condition. The analysis of MOS (in percentage) and MOS (in units) is as follows:

Table 7 MOS (%)

Description	Week 3	Week 4	Week 5
Actual Sales Revenue	IDR 7,805,000.00	IDR 4,718,000.00	IDR 6,681,500.00
Description	**Week 3**	**Week 4**	**Week 5**
Less: BEP in Rupiah (Break-Even Sales)	IDR 260,995.06	IDR 253,086.12	IDR 225,725.46
MOS (in Rupiah)	IDR 7,544,004.94	IDR 4,464,913.88	IDR 6,455,774.54
MOS Percentage	97%	95%	97%

Source : Krupuk Aneka Rasa Puspita, April s/d Mei 2025

Table 8 MOS Unit

Description	Week 3	Week 4	Week 5
Actual Sales Volume (Units)	2,230	1,348	2,123
Less: BEP in Units	61	60	55
MOS in Units	2,169	1,288	2,068

Source : Krupuk Aneka Rasa Puspita, April s/d Mei 2025

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6. Recapitulation of Results

Based on the sales data from the third through the fifth week of April at the Puspita Assorted Cracker MSME in Ngeni Village, the recapitulation of the analysis results is as follows:

Tabel 9 Recapitulation of Results

Analysis	Week 3	Week 4	Week 5
BEP in Rupiah (Monetary Value)	IDR 260,995.06	IDR 253,086.12	IDR 225,725.46
BEP in Units	61	60	55
Contribution Margin Ratio	32%	33%	37%
Margin of Safety (MOS) Percentage	97%	95%	97%
Margin of Safety (MOS) in Units	2,169	1,288	2,068

Source : Krupuk Aneka Rasa Puspita, April s/d Mei 2025

CONCLUSION

The calculation results for the BEP in units are significantly surpassed by the actual sales volume each week, with the values for Week 3, Week 4, and Week 5 being 61, 60, and 55 units, respectively. This signifies that the Puspita Assorted Cracker MSME has successfully achieved the break-even point and is currently operating in a profitable condition.

The Margin of Safety (MOS) calculation for Week 3, Week 4, and Week 5 shows consistently high figures, ranging between 95% and 97%. This high percentage indicates

that the MSME still has a substantial safety buffer in sales before incurring a loss. This reflects that the current business condition is relatively safe and financially stable.

The findings of this study are expected to provide a fundamental understanding of financial management for the Puspita Assorted Cracker MSME. Therefore, it is recommended that the MSME begin implementing simple and routine financial recording, including documentation of raw material purchases, production quantities, and sales results. This documentation will facilitate easier business evaluation and future planning. It is also advisable that the MSME conducts periodic BEP and MOS analysis, particularly during periods of high or low demand, to effectively adjust production and expenditure strategies accordingly.

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