**Value-added analysis and development strategy of lemongrass bath salt effervescent in Sampang Regency**

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**Abstract.** This study aims to determine the added value and cost-efficiency of the effervescent lemongrass bath salt and formulate a strategic design for developing the effervescent lemongrass bath salt. The research was conducted in Sampang District, East Java, Indonesia, using the purposive sampling method. The value-added of the effervescent was calculated, the cost-efficiency was considered using the R / C ratio analysis, while the development strategy used the SWOT method. The calculated added value obtained shows a positive result. The value of the R / C ratio was 1.836. Based on the results of the analysis of the internal strategy factors, the IFAS value was 3.425, and the results of the study of the external strategic factors obtained an EFAS value of 2.658. This value places the effervescent lemongrass bath salt in the growth-oriented strategy.

1. **Introduction**  
Salt is a white solid in crystals consisting of more than 80% sodium chloride and magnesium chloride, magnesium sulphate, and calcium chloride [1]. Salt is not only used for consumption but also in industry, depending on NaCl content. Consumption salt serves as a raw material for producing the iodized salt industry, fish processing, and various foods with a minimum NaCl content of 94.7%. Industrial salt is salt for industries with a minimum NaCl of 97%, used for raw materials for medicines and cosmetics.

One of the raw materials for industrial salt is Epsom salt. Epsom salt has very different components from table salt. Table salt contains sodium and chlorine, while Epsom salt contains magnesium, sulphur, and oxygen. The magnesium content in salt helps remove dead skin cells, and the presence of oxygen-binding substances and haemoglobin in the blood causes a sensation of relaxation in the body and reduces stress [2]. Salt with a high magnesium content is found in the residual salt production that has not entirely crystallised during the salt production process in ponds called bittern. Bittern is known as magnesium sulphate due to the highest composition is magnesium sulphate (MgSO₄) or Epsom salt. Salt products that contain magnesium are Epsom salts which can use as bath salts. Bath salts can be categorized as spa products. The raw materials for making bath salts are Epsom salt, sodium bicarbonate, and citric acid. Other additives are essential oil, coconut oil, and cosmetic grade/food-grade dyes. Bath salt production on a household scale can create business economic opportunities for the community [2].

Sampang Regency has a significant salt potential of 5,545 ha, consisting of 4,300 ha of communities’ land with a capacity of 300,000 tons/year and 1,245 ha of land owned by PT. Garam with a salt production capacity of about 60,000 tons/year [3]. The salt produced is crude solar salt (krosok salt) and iodized salt, fortified salt, and bath salt. The production of bath salts requires raw salt materials that are...
rich in magnesium content. The amount of salt raw material needed is a maximum of 2% of the total material used [2]. Additives that can be added into bath salts are lemongrass.

Lemongrass (Cymbopogon nardus L. Rendle) has a distinctive and robust aroma. This aroma comes from the citronella compound contained in lemongrass’ essential oil. The content of citronella can inhibit the growth of bacteria [4]. Lemongrass bath salt effervescent is a type of cosmetic preparation in bath salts in the form of effervescent powder with the aroma of lemongrass. Soap with the addition of lemongrass [5], which can cause a distinctive aroma, and an antibacterial is preferable. In the manufacture of the bath salts, lemongrass extract is added as an additive. The bath salt is a new product with a simple production technology that is easy to apply to home industries. This new product can be an opportunity to increase coastal communities' revenue [6].

In the development of new industries, many obstacles can hinder the growth of small enterprises. Therefore, this industry development strategy needs to know the internal (strengths and weaknesses) and external (opportunities and threats) factors following the industry's characteristics and problems. In addition, this industry has various competitive advantages, including employment opportunities in the Sampang Regency and increasing income of salt farmers. However, the increase in added value, price fluctuations, production costs, and similar competitors' existence will affect the sustainability of the lemongrass bath salt effervescent industry. The strategy for developing bath salts in Sampang Regency is needed to compete with existing industries. Therefore, it is essential to analyse the lemongrass bath salt effervescent industry's added value and development strategy in the Sampang Regency.

2. Methods

2.1. Location and respondent selection

Sampang and Pangarengan Subdistricts, Sampang Regency are the locations of this research, considering that they are salt-producing areas. This research was carried out in May - June 2021. There are two types of data collected: primary data and secondary data. Primary data are questionnaires and interviews with respondents. Secondary data is supporting data from literature and other sources related to the research topic. The determination of respondents was done by purposive sampling. Respondents for strategy development of lemongrass bath salt effervescent are farmers, local community leaders, owners of beauty shops, and the processed salt industry as consumers.

2.2. Data analysis

2.2.1. Value-added analysis. The activity of processing salt ingredients to make lemongrass-scented bath salts increases the value of these commodities. Value-added and remuneration received by lemongrass bath salt effervescent industry business actors can use the Hayami analysis method. This method uses to analyse the added value of the processing subsystem or secondary production.

Value-added describes the rewards for labour, capital, and management [7], which can formulate as follows:

\[
value\ added = f (K, B, T, U, H, h, L)
\]

Where: K: production capacity (units); T: the labour involved (people); B: number of raw materials used (units); U: labour wages (IDR/unit); H: the price of output (units); h: price of raw materials (IDR/unit); L: price of other inputs (units)

2.2.2. Cost efficiency analysis. Cost efficiency analysis using R/C ratio. R/C Ratio analysis is a comparison between total revenue and costs. The greater the R/C value, the greater the profit from the business [8].

\[
R/C = \frac{P \times Q}{TVC + TFC}
\]

Where: product price, Q: number of products produced, TVC: Total Cost Variable; TFC: Total Fix Cost
The criteria used to assess the R/C Ratio are as follows:
R/C Ratio > 1 means that the product processing business is profitable.
R/C Ratio < 1, then the business suffers a loss or is not feasible to develop.
R/C Ratio = 1, then the business is at the breakeven point.

Table 1. Value-added calculation.

| No | Variable                                      | Value-added calculation |
|----|-----------------------------------------------|-------------------------|
| 1  | Output (A)                                    |                         |
| 2  | Input (B)                                      |                         |
| 3  | Labour (people) (C)                           |                         |
| 4  | Conversion Factor (D)                         | D = A/B                  |
| 5  | Labour Coefficient (people) (E)               | E = C/B                  |
| 6  | Output Price (IDR) (F)                        |                         |
| 7  | Wages for direct labour (IDR/ people) (G)     |                         |
| 8  | Raw Material Price (IDR/Kg) (H)               |                         |
| 9  | Contribution of Other Inputs (IDR/kg) (I)     |                         |
| 10 | Output Value (IDR/kg) (J)                     | J = D*F                  |
| 11 | a. Added Value (IDR/kg)                       | K = J - I - H            |
|    | b. Value Added Ratio (%)                      | L = (K/J) * 100%        |
| 12 | a. Direct Labour Income (IDR/Kg) (M)          | M = E*G                  |
|    | b. Labour Share (%)                           | N = (M/K) * 100%        |
| 13 | a. Profit (IDR/kg)                            | O = K - M                |
|    | b. Profit rate                                | P = (O/J) * 100%        |

Sources: [7]

2.2.3. Business development strategy analysis. One strategy used in research is SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) [9]. SWOT analysis systematically identifies various factors to formulate a development strategy based on the logic to maximize strengths and opportunities and minimize weaknesses and threats. Based on this analysis, the relationship between internal and external factors can produce possible strategic alternatives.

Analysis of the lemongrass bath salt effervescent industry development strategy carried out using three stages of strategy formulation [10], namely:

a. Input Stage
   The input stage carries out to identify the internal factors and external factors in the development of the lemongrass bath salt effervescent industry. The input stage consists of an Internal Factor Evaluation (IFE) matrix for strengths and weaknesses and an External Factor Evaluation (EFE) matrix for opportunities and threats.

b. Matching Stage
   The matching stage uses the IFE matrix and the EFE matrix to generate several alternative strategies. This Stage consists of the IE matrix, which has nine quadrants by looking at the weighted score results (IFE and EFE), and the SWOT matrix has four main strategies: SO, ST, WO, and WT.

c. Decision Stage
   The decision stage does carry out using the QSPM (Quantitative Strategy Planning Matrix) matrix, which uses critical internal and external factors to obtain strategic priorities. The QSPM matrix evaluates alternative strategies objectively, based on the previously identified external and internal key success factors.
3. Results and discussion

3.1. Lemongrass bath salt effervescent value-added analysis

Lemongrass bath salt vivacious has a refreshing lemongrass scent, dissolves in water quickly, is alkaline, and gentle on the skin. The added value of Lemongrass bath salt effervescent was calculated using the Hayami method. The primary raw material for bath salt is Epsom salt. Additional ingredients used in was lemongrass extract, sodium bicarbonate (5%), tartaric acid (20%), sodium sesquicarbonate (70%), sodium lauryl sulphate powder (5%). The calculation of the added value of the Hayami method can be seen in Table 2.

| No | Variable                           | Formula  | Value  |
|----|------------------------------------|----------|--------|
| 1  | Output (kg/ day)                   | A        | 2      |
| 2  | Input (kg / day)                   | B        | 2.5    |
| 3  | Labour (people)                    | C        | 4      |
| 4  | Conversion Factor                  | D = A/B  | 0.8    |
| 5  | Labour Coefficient (people)        | E = C/B  | 1.6    |
| 6  | Output Price (IDR)                 | F        | 560,000|
| 7  | Wages for direct labour (IDR/ people) | G     | 70,000 |
| 8  | Raw Material Price (IDR/Kg)        | H        | 50,000 |
| 9  | Contribution of Other Inputs (IDR /kg) | I      | 185,000|
| 10 | Output Value (IDR /kg)             | J = D*F  | 448,000|
| 11 | a. Added Value (IDR /kg)           | K = J - I - H | 213,000 |
| 12 | b. Value Added Ratio (%)           | L = (K/J) * 100% | 48% |
| 13 | a. Direct Labour Income (IDR /Kg)  | M = E*G  | 112,000|
| 14 | b. Labour Share (%)                | N = (M/K) * 100% | 53% |
| 15 | a. Profit (IDR /kg)                | O = K - M | 101,000|
| 16 | b. Profit rate                     | P = (O/J) * 100% | 47% |

Based on Table 2, the salt input used is 2.5 kg, yielding 2 kg of bath salt. The price of Epsom salt is IDR 25,000 per kilogram, while the selling price per 100 gram is IDR 28,000. Based on the main raw materials and added inputs, lemongrass bath salt effervescent added value is IDR 213,000 per kilogram. The added value ratio is 48%, with a profit rate of IDR 101,000.

3.2. Cost efficiency analysis

Cost efficiency analysis used R/C ratio analysis (Table 3). The calculation of the R/C ratio uses the average total revenue and the average total cost of production for one year. Production is the result obtained using several production inputs: raw materials, additional materials, labor, machinery, equipment, and energy use. The lemongrass bath salt production is 26 kilograms from Epsom salt of 32.50 kilograms as raw material for a month.

| Description                        | Value   |
|------------------------------------|---------|
| Average Total Revenue (IDR)        | 100,800,000 |
| Average Total Production Cost (IDR)| 54,900,000  |
| Net Income / Profit (IDR)          | 45,900,000  |
| R/C Ratio                          | 1.836   |
The revenue is obtained from production multiplied by the price. The amount of revenue also depends on the amount of production and the cost of the product. Revenue from the production of lemongrass bath salt effervescent is IDR 10,100.

Production costs are one of the factors that affect the amount of income to be obtained. Production costs are all types of costs incurred to produce a product. Production costs generally consist of fixed costs and variable costs. Working days in a month is 24 days. The average total cost of production for one year is IDR 54,900,000.

Based on the total revenue and production costs, this industry earns a profit of IDR 45,900,000/year. The R/C ratio value of 1.836 indicates that the salt processing industry is feasible. The R/C ratio shows that one production process is 1.836, meaning that for every IDR 1 of the costs incurred by the lemongrass bath salt effervescent entrepreneur, IDR 1.836 are obtained.

3.3. Lemongrass bath salt effervescent development strategy

The development of lemongrass bath salt effervescent products cannot be separated from the influence of internal and external factors, which can inhibit or support the development of lemongrass bath salt effervescent industry in Sampang Regency. Therefore, it is necessary to identify the strengths, weaknesses, opportunities and threats factors faced in the industrial development.

The IFE matrix is used to determine the influence the internal factors of the lemongrass bath salt effervescent industry. The total value weighted in this matrix is result of the multiplication of the weight and rating of each internal strategic factor of the lemongrass bath salt effervescent business. More detailed calculations can be seen in Table 4.

Based on Table 4, the results of the calculations in the IFE matrix table show that the total weighted score is 3.425. The total score indicates that this business has a strong internal position because it is above 2.5. This score shows that the industry can take advantage of its strengths and overcome existing weaknesses. The main strength of dragon fruit farming is abundant raw materials, with a score of 0.52. However, the main weakness is the ability of the workforce to process salt raw materials into lemongrass bath salt effervescent.

| Internal Factor | Weight | Rating | Score |
|-----------------|--------|--------|-------|
| Availability of raw materials | 0.130 | 4 | 0.52 |
| business location | 0.096 | 3 | 0.288 |
| availability of labour | 0.118 | 4 | 0.472 |
| simple production process | 0.120 | 3 | 0.36 |
| Start-up Capital | 0.112 | 4 | 0.448 |
| simple equipment | 0.110 | 3 | 0.33 |
| **Subtotal** | **0.686** | **21,000** | **2.418** |

| External Factor | Weight | Rating | Score |
|-----------------|--------|--------|-------|
| Labour skills | 0.063 | 1 | 0.0632 |
| Lack of promotion | 0.081 | 4 | 0.324 |
| Market access | 0.110 | 4 | 0.44 |
| Lack of assistance | 0.060 | 3 | 0.18 |
| **Subtotal** | **0.314** | **12,000** | **1.007** |
| **Total** | **1.000** | **33,000** | **3.425** |

The EFE matrix is used to determine the influence the external factors of the lemongrass bath salt effervescent industry. The total value weighted in this matrix results from the total sum of the weights and ratings of each external strategic factor. More detailed calculations can be seen in Table 5. Based
on the measures in the EFE matrix table, the total weighted score was 2.65. The score shows that the lemongrass bath salt effervescent industry is already relatively strong in taking advantage of opportunities to overcome threats. The main options for developing this industry are the high purchasing power of the people and the market opportunities that are still open. In comparison, the main threat is market competitors of 0.456.

Table 5. Internal factor evaluation analysis summary.

| Opportunities (O)                      | Weight | Rating | Score  |
|---------------------------------------|--------|--------|--------|
| Supply and demands are increasing     | 0.200  | 2      | 0.4    |
| People's purchasing power increases  | 0.161  | 4      | 0.644  |
| High market opportunity               | 0.182  | 2      | 0.364  |
| **Subtotal**                          | **0.543** | **8.000** | **1.408** |
| Threats (T)                           |        |        |        |
| Market competition                    | 0.152  | 3      | 0.456  |
| Product position is not a primary need| 0.131  | 2      | 0.262  |
| Potential entry of new competitors   | 0.092  | 4      | 0.368  |
| Threat of substitute products         | 0.082  | 2      | 0.164  |
| **Subtotal**                          | **0.457** | **11.000** | **1.250** |
| **Total**                             | **1.000** | **19.000** | **2.658** |

Based on Table 4 and Table 5, calculations are carried out to determine the business development strategy that will be carried out (Table 6).

Table 6. Matrix SWOT.

| Opportunities                      | Strength | Weakness                                      |
|------------------------------------|----------|-----------------------------------------------|
| SO strategy (Growth Oriented Strategy) | 1.408 + 2.418 = 3.826 | WO Strategy (Turn- Around) |
| ST Strategy (Diversification)      | 1.250 + 2.418 = 3.668 | WT Strategy (defensive) |

From Table 6 it can be concluded that strength + opportunity (SO) = 3.826; opportunity + weakness (WO) = 2.415; strength + threat (ST) = 3.668; and weakness + threat (WT) = 1.257. To develop lemongrass bath salt effervescent, use the strategy (SO), which has a value of 3.826, higher than WO, ST, and WT. Efforts to be made are to expand, enlarge and accelerate business growth [11].

The difference between the strengths and weaknesses scores (1.411) is the x-axis, and the opportunities and threats scores (0.158) are entered on the y-axis. The value of the difference between strengths and weaknesses that is positive strength and the difference between opportunities and threats that are positive shows that the development of the lemongrass bath salt effervescent industry is in quadrant I, namely Growth-Oriented Strategy (Figure 1). The Sampang Regency has opportunities and strengths so that it can take advantage of these opportunities. The strategy that needs to be done is to support policies that grow aggressively. The effect of this industry is in strong condition and has great opportunities, so it is possible to continue to expand, enlarge, grow and achieve maximum progress.

Based on the four strategy categories, namely SO (3.826), WO (2.415), ST (3.668), WT (1.257). An alternative strategy used for the development of micro business for lemongrass bath salt effervescent is SO. This strategy is because the SO value is higher than the other values. The SO approach that will be carried out is to produce more products to meet demand, produce products with good quality, use simple technology, enlarge market share, and make product innovation.
The market opportunity for bath salts is high. The biggest consumer of bath salts is the tourism sector, namely hotels and restaurants. In addition, the market share of bath salts is for women, teenagers to adults, and beauty salons. The large market opportunity for these products causes the number of product requests to be very high, so it is very profitable to develop.

![Figure 1. Lemongrass bath salt effervescent industrial development position.](image)

The quality requirements of bath salts are following the pH of human skin, which is 4.00-7.00, the water content of the effervescent powder is 5% [12]. In addition, the resulting bath salt must be free of irritation, gentle on the hands, and have a fragrant aroma. The lemongrass bath salt effervescent product must meet the specified quality requirements to meet consumer desires, and the product is safe for consumers. The quality of bath salts that are by the requirements makes bath salts have the advantage of improving blood circulation, softening and moisturizing the skin, relaxing tense muscles, and refreshing the skin [13].

Making bath salt begins with the first mixing process: mix corn-starch, salt, baking soda, and citric acid in a bowl. After everything is well mixed, the second mixing is done, adding olive oil, essential oil, and food colouring. The ingredients are stirred and mixed until evenly distributed. After the mixing process, a printing process is required, followed by cooling to become bath salt [14]. The technology for making bath salt is very simple so that people in the sampan Regency will not have difficulty producing it.

Many diversifications of salt products make. The most widely circulated salt product in the market is iodized salt. In addition, fortified salt is also widely produced by the community. Fortified salt is intended for food salt, which is added with other ingredients to add salt. Examples of fortified salt products mostly produced are moringa salt fortification and dragon fruit peel fortification [15][16]. Another product made is bath salt. Based on some literature, Kebumen Regency and Kendal Regency have made household-scale bath salts [14][17]. Based on the condition, the development industry has good prospects for development. Considering the market segment for this product is young women to adults.

4. Conclusions
The processing of lemongrass bath salt products produces an added value of IDR 213.00- per kilogram of raw materials. The R/C ratio of lemongrass bath salt products is 1.836 so that this industry is feasible to be developed. The business strategy development that must be carried out is an aggressive strategy that focuses on using the SO (Strength-Opportunities) strategy: using strengths to take advantage of current opportunities. The design aims to produce more products to meet demand, produce good quality products, use simple technology, enlarge market share, and make product innovation.

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