Financial Feasibility Analysis of Product Modification Katuk and Spinach Brownies Tartlet as an Alternative Breastfeeding Mother's Snack

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Abstract. Katuk and spinach brownies tartlet products from katuk leaves as a source of galactagogue and spinach, rich in iron, can help breastfeeding mothers in exclusive breastfeeding for six months. This study aims to modify the katuk and spinach brownies tartlet products and analyze these products' financial feasibility. This research makes brownies tartlet. This tartlet uses katuk leaves and spinach. This study indicates that the energy content in one product is 288 cal, carbohydrate 30.2 g, Protein 5.2 g, fat 17.9 g, and iron 0.8 mg. Financial feasibility analysis results showed that BEP of production of 37.820 pieces, BEP of sales of IDR 189.102.195; Return on Sales of 23.4%; Return on Investment (ROI) of 189.5%; NPV of IDR 91.831.077 and PBP during 0.55 year, Discounted Payback Period (DPBP) of 0.60 years, Profitability Index of 2.38 and Accounting Rates of Returns (ARR) of 52.6%. Based on scenario analysis, katuk and spinach brownies tartlet is feasible for business if minimum sales of 72% of products. Based on the financial feasibility analysis comparison data above, katuk and spinach brownies tartlets are more profitable than pineapple carrot juice business; chocolate spread with coconut ingredients business, and banana chips

1 Background

A breastfeeding mother is one of the groups in the life cycle that need attention. Breastfeeding is a process of giving breast milk which is the best source of nutrients with a bioactive composition that can improve the health status of mother and child. According to [1], 80% of a child's brain development starts in the womb until age 3, known as the golden period. Therefore, at this time, it is necessary to give exclusive breast milk for six months that can protect the infant against invasive infections [2]. One of the global nutrition targets of Sustainable Development Goals is to promote the rate of mothers performing exclusive breastfeeding within six months up to at least 50% in 2025 [3]. WHO and UNICEF emphasize keeping exclusive breast milk feeding in the first six months of life [4].

Based on the research results conducted in the United States, babies who get exclusive breast milk six months lower have ISPA (respiratory tract infection) by 72% and have diabetes by 30%. In addition, breast milk can reduce the risk of SIDS (sudden infant death syndrome) by 36% [5]. According to data monitoring nutritional status in Indonesia in 2017,
the scope of exclusive breastfeeding for the first six months by a mother to her baby is still low. 65% of babies are not exclusively breastfed for six months at birth. This figure is quite far from the target of exclusive breast milk coverage in 2019 set by WHO or the Ministry of Health, 80% [6]. One of the most common factors associated with the failure of exclusive breastfeeding practices is that the breast milk factor has not come out in the first week after birth [7].

The use of galactagogue is one way to increase the secretion and production of breast milk. Developing local food crops that function as galactagogue can be one strategy to overcome the failure of exclusive breastfeeding due to the low secretion and production of breast milk.

Katuk and spinach brownies tartlet is a modified product development of brownies tartlet. In general serves as a sweet snack (dessert) that is currently popular as an alternative snack for breastfeeding mothers—fortifying local foodstuffs in this product by adding katuk leaves and spinach. Katuk leaves (Sauropus androgynus) have been known in traditional medicine in South and Southeast Asia as a breast milk-enhancing drug because it contains galactagogue compounds to help stimulate, maintain or increase breast milk production. In addition, Spinach (Amaranthus Viridis) is a superfood that contains many nutrients, so it to refer to as the king of vegetables.

This research aims to modify katuk and spinach brownies tartlet products as an alternative snack for breastfeeding mothers. While the main objective is to calculate the energy and nutritional content of the product and analyze the business and production cost of katuk and spinach tartlet brownies.

2 Literature Review

2.1 Tartlet

Tart derived from French can be translated as pie or tart or any baked dish filled with something sweet or savory such as custard or pastry cream and then decorated on the top (topping). A tart is a form of rigid pastry, thick filling that does not overflow [8]. The main ingredients of tart from wheat flour and eggs. Tartlet refers to a mini tart that has a thickness of less than 1 inch (2.5 cm) made according to individual portions. In general, this food is a dessert. There are many types of tarts, with popular varieties including Tart Treacle, Tart Meringue, Tart Tatin, and Tart Bakewell.

2.2 Brownies

Brownies are one of the most popular cake-based wheat flour, a chocolate cake with attractive colors, a delicious aroma, and a less-fluffy texture [9]. The recipes of brownies first appeared in the book Home Cookery called Service Club Book in 1904. Brownies are initially chocolate cakes that fail because the texture does not expand and is slightly wet on the inside, unlike cakes in general that are soft and porous. But in reality, brownies turned out to be well received by consumers.

2.3 Katuk leaf (Sauropus androgynus)

One of the traditional medicinal plants in Indonesia that facilitates breastfeeding is katuk. Sauropus androgynus is known as cekur manis (Malaysia), Pak-Wanban (Thailand), ronggot (Vietnam), or a multivitamin plant (India). Katuk leaf contains galactagogue that can stimulate the mother's breast milk gland by increasing the mammary's secretion cells [10]. A
mother commonly consumes galactagogue after birth. A regular or delayed production occurs in this stage since progesterone decreases sharply after placenta removal as prolactin, cortisol, and insulin levels increase [11]. Breast milk production increases because katuk leaves contain alkaloids and sterol [12]. Based on the table of List Food Composition, every 100 g of katuk leaves have of 59 cal energy, protein 4.8 g, fat 1 g, carbohydrate 11 g, calcium 204 mg, phosphor 83 mg, iron 2.7 mg, vitamin A 103,705 SI, vitamin D 0.1 mg, vitamin C 239 mg, and water 81 g. Recent studies indicated that katuk, a traditional medicinal plant to facilitate breastfeeding, proved beneficial as an antioxidant. The leaves are an antioxidant because they contain vitamin C. Vitamin C in katuk leaves is relatively high, approximately 85.65% 92.43 to 92.18 mg / 100g [13]. They were consuming katuk leaf extract equivalent to 2 g of simplistic in capsule form based on research. A dose of 2x1 for 15 days can increase breast milk production in breastfeeding mothers [14].

2.4 Spinach (Amaranthus Viridis)

Spinach belongs to the Chenopodiaceae family (also known as goosefoot), a family of nutritional powerhouses including beets, chard, and quinoa. People have used spinach in various cultures throughout history, notably in the Mediterranean, Middle-Eastern, and South-East-Asian cuisines. It is cheap and easy to prepare [15]. Spinach is a type of leaf vegetable that is much in demand by the community. According to data obtained at ADS (Agribusiness Development Station), there is a trend of spinach demand that has increased every year since 2013. Based on World Healthiest's Food Ratting results, spinach is a green vegetable rich in various nutrients, especially iron (Fe), which is good to consume for breastfeeding mothers. The recommended iron adequacy rate for breastfeeding mothers per day is 18 mg [16]. Based on the table of List Food Composition that in every 100 g, raw spinach contains 36 cal energy, protein 3.5 g, fat 0.5 g, carbohydrate 6.5 g, calcium 267 mg, phosphor 67 mg, iron 3.9 mg, vitamin A 6090 SI, vitamin B1 0.08 mg, vitamin C 80 mg, and water 80.9 g.

2.5 Breastfeeding Mother

During breastfeeding, a mother needs additional energy to improve the quality and quantity of breast milk. The calculation of energy need of breastfeeding mother using the Harrist Benedict method results was obtained plus 500 kcal for the first six months and 550 kcal for the second 6 months. Based on [16], the average energy need of adult women is 2000 cal, so the energy need of a breastfeeding mother is about 2500-2550 cal per day. The macronutrients of breastfeeding mothers are carbohydrates 60-70% of the energy, protein 12-15%, fat 15-25%, and enough vitamins and minerals, especially Fe. The secretion of breast milk averages 800-850 ml per day and contains 60-65 kcal, protein 1-1.2 g, and fat 2.5-3.5 g every 100 ml. These substances are from the mother's body, and a daily food supply can replace them [17]. According to WHO and FAO, the recommended iron for breastfeeding mothers is 10-30 mg/day [18]. Exclusive breastfeeding for up to 6 months without iron supplementation may compromise the hematologic status of children [19]. Snacking for breastfeeding mothers can improve the quality and quantity of breast milk [20]. The snack needed by breastfeeding mothers takes 15%-20% of the energy required a day or about 375 cal-500 cal. If the mother lacks the mother's energy and nutritional need, apart from the quality of breast milk and maternal health is disturbed, it will affect the period for the mother to produce breast milk.
2.6 Financial Feasibility

According to Investopedia [21], financial analysis is a process to evaluate businesses, projects, budgets, and other finance-related transactions to determine their performance and suitability. Financial feasibility assessment using capital budgeting analyses changes with long-term effects that vary over time [22]. There are several techniques available to analyze to evaluate the feasibility of a business by considering the time value of money, risk, and rate of return on investment. Return on Investment (ROI) is one of the most popular performance measurement and evaluation metrics used in business analysis. The project's feasibility depends on analyzing the cash flows generated by the project and its costs. The analyst can use capital budgeting methods such as Payback Period, Net Present Values, Internal Rates of Returns, Accounting Rates of Returns, and Profitability Index to evaluate the financial feasibility [23]. The analytical techniques to determine and predict risk and influence are sensitivity analysis and scenario analysis [24]. Scenario analysis is a behavioral technique that uses multiple potential alternate results to assess the variability of the measured return by NPV when asking what-if questions [25], [26]. The commonly used scenario approach to estimate NPV is along with pessimistic (worst), most likely (base), and optimistic (best) cash inflow estimates [25], [26], [27].

3 Research Method

3.1 Time and Place Observation

The research was conducted on June 8, 2021, aiming to work from home during the pandemic in Subang West Java.

3.2 Type and How to Retrieval Data

Type and how to retrieve data in table 1 as below:

| No. | Data                          | Type of Data | Method of Retrieval Data                        |
|-----|-------------------------------|--------------|-----------------------------------------------|
| 1.  | Literature                    | Secondary    | Via the internet                              |
| 2.  | Production process            | Primary      | Active participation by preparing the need for tools and ingredients |
| 3.  | Energy content and nutrients  | Secondary    | Via table of list food composition            |
| 4.  | Production cost               | Primary      | Analysis directly                             |

3.3 Need of Tools

The need for tools for users to make katuk and spinach brownies tartlet is in table 2 as below:

| Table 2 Need of tools Source of primary data 2021 |
|-----------------------------------------------|
3.4 Need of Ingredients

Need of Ingredients for used to make katuk and spinach brownies tartlet is in table 3 as below:

| Name of Tool          | Specification | Amount |
|-----------------------|---------------|--------|
| **Preparation Tool**  |               |        |
| Big bowl              | Porcelain     | 2      |
| Spatula               | Plastic       | 1      |
| Small sieve           | Stainless     | 1      |
| Side plate            | Porcelain     | 3      |
| Tartlet mold          | Stainless     | 15     |
| Paintbrush            | Wood          | 1      |
| Scale                 | Plastic       | 1      |
| Fork                  | Stainless     | 1      |
| Knife                 | Stainless     | 1      |
| **Processing Tool**   |               |        |
| Mixer                 | Stainless     | 1      |
| Oven                  | Stainless     | 1      |
| Flat baking sheet     | Stainless     | 1      |
| Balon whisk           | Stainless     | 1      |
| **Presentation Tool** |               |        |
| Cake cup              | Paper         | 15     |
| Small mica            | Plastic       | 15     |

Table 3 Need of ingredients Source of primary data 2021

| Ingredients                | Unit Price (Rp) | Size  | Total Price (Rp) |
|----------------------------|----------------|-------|------------------|
| Spinach                    | 3,000/tie      | 35 g  | 1,500            |
| Katuk leaves               | 2,500/tie      | 25 g  | 625              |
| Low protein wheat flour    | 8,000/kg       | 200 g | 1,600            |
| Medium protein wheat flour | 10,000/kg      | 100 g | 1,000            |
| Yolk                       | 2,000/ egg     | 2 eggs| 4,000            |
3.5 The Flow of Production Process Plan

Based on figure 1, the flow of production process plan katuk and spinach brownies tartlet starting from the procurement of foodstuffs to serving. The total time needed in the production process flow is 2 hours over 25 minutes.

| Item         | Unit       | Quantity | Price  |
|--------------|------------|----------|--------|
| Egg          | egg        | 1        | 2,000  |
| Sugar        | kg         | 130 g    | 1,690  |
| Margarine    | sachet 250 g | 150 g    | 3,300  |
| Milk powder  | sachet 27 g | 27 g     | 2,500  |
| White chocolate | stem 250 g | 150 g    | 7,500  |
| Cooking oil  | kg         | 40 g     | 520    |
| Almond       | 1/4 ons    | 15 g     | 3,750  |
| Total Price  |            |          | 29,985 |

Fig. 1. The flow of the production process plan

3.6 Financial Analysis

This research was quantitative descriptive. The data was collected in the form of primary data and secondary data. Primary data was obtained by observation and interviews. At the same time, secondary data was obtained from various kinds of literature. The data analysis method used was an analysis of financial feasibility. Financial feasibility is an analytical tool to evaluate an investment's economic viability. Financial feasibility is a tool for examining the financial decision has expected return and risk [28]. This study will assess the financial feasibility of the Katuk and spinach brownies tartlet business based on the investment criteria...
of Break-Even Point (BEP), Return on Investment (ROI), Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PBP), Discounted Payback Period (DPBP), Profitability Index and Accounting Rates of Returns (ARR). The results of the financial feasibility analysis will provide information on whether this business is feasible or not to be undertaken. The data analysis divide into four steps.

The first step is to construct pro forma financial statements, consisting of each account assumption determined and transformed into pro forma financial statements. To calculate depreciation by using the straight-line method. The second step is to calculate Break-Even Point (BEP). The third step is to conduct the feasibility analysis using Return on Investment (ROI), NPV, IRR, Payback period, Discounted Payback Period (DPBP), Profitability Index, and Accounting Rates of Returns (ARR). The fourth step is to perform the risk assessment. Although the project can evaluate in step 3 based on its feasibility, we need to consider the risk to deal with the assumptions' uncertainty. The sensitivity analysis calculates risk assessment by changing the variable input by creating five scenarios.

4 Result and Discussion

4.1 Description of Katuk and Spinach Brownies Tartlet Product

*Katuk and spinach brownies tartlet* is a form of modified product development by changing the appearance, color, taste, texture, and aroma and adding energy and nutrients to brownies tartlet. This product is as a dessert. The processing technique is baking. The way of serving is before processing in the form of one piece with a natural weight of 30 g while the ripe weight is 27 g. This product is an alternative snack for breastfeeding mothers because it uses an additional 25 g of katuk leaves and 35 g of spinach. Based on the research [29], this is reinforced by 50 panelists of breastfeeding mothers who were given katuk biscuits as much as 4 g/day for 42 days showed that giving katuk biscuits helped increase breast milk production and supported the achievement of exclusive breastfeeding weight loss < 8%. The characteristic of katuk and spinach brownies tartlet is in table 4 as below:

| Characteristic          | Katuk and Spinach Brownies Tartlet |
|-------------------------|------------------------------------|
| Appearance              |                                    |
| Colour                  | Yellow has a green spot            |
| Taste                   | Sweet, savory                      |
| Aroma                   | The smell of cake and vegetable    |
| Texture                 | Crunchy (tartlet), less-fluffy (brownies) |

Table 4 Characteristic of product Source of primary data 2021
4.2 The Superior Value of Katuk and Spinach Brownies Tartlet

The Superior value of katuk and spinach brownies tartlet products are:

a. Developing snacks for breastfeeding mothers that are rare in society
b. The popular dessert that can improve mood and provide satiety when consuming
c. As an idea of utilizing local ingredients at economical prices that can create more interesting products
d. Using the katuk leaves serves as a galactagogue, and spinach is rich in iron good for breastfeeding mothers.
e. One of the products contains energy that can fulfill the needs of a daily snack for breastfeeding mothers.
f. It has a long shelf life, can last for two weeks if stored in the refrigerator at 5 °C - 10 °C and one week in an airtight jar at 25 °C

4.3 Production Process

Standard operating procedures for katuk and spinach brownies tartlet production start from the procurement of foodstuffs to the presentation of dishes. The production process of katuk and spinach brownies tartlet is as follows:

a. Based on figure 2, Procuring of foodstuff takes about 5 minutes. This process includes the entire preparation and selection of ingredients needed and selected strictly in quality, size, freshness, and legal completeness, so the products produced to follow the quality standards determined. The purchase of ingredients once when going through the production process (conventional production system). Foodstuff consists of dry ingredients and wet ingredients.

b. Based on figure 3, Preparing tools and ingredients takes about 10 minutes. This process consists of washing the ingredients and weighing the ingredients according to the structured recipe and the amount produced.

c. After the preparation process, the next is chopping katuk leaves and spinach. It takes about 5 minutes, so the following results are:
Fig. 4. The result of chopped leaves katuk and spinach

d. Based on figure 5, making tartlet takes about 45 minutes, including dough, printing dough, and baking dough.

Fig. 5. Tartlet

e. Based on figure 6, making brownies takes about 35 minutes. First, beat the sugar and eggs until dissolved and cool. After that, mix the melted chocolate, oil, margarine, and additional wheat flour and milk powder.

Fig. 6. Brownies

f. Based on figure 7, the following process is filling brownies dough into a tartlet and giving a topping of chopped spinach and almonds that takes 5 minutes.

Fig. 7. Filling of brownies dough to tartlet and giving a topping

g. Based on figure 8, the process of baking katuk and spinach brownies tartlet in the oven with a temperature of 150ºC for 30 minutes until ripe.
Fig. 8. Process of baking

h. Based on figure 9, the process of packaging takes 5 minutes. Packaging of katuk and spinach tartlet brownies product use plastic mica size 6x and paper cake cup with a diameter of 4 cm with the following result.

Fig. 9. Serving (output)

4.4 The Energy and Nutrient Content

Based on the table, the method of calculating the nutritional value of the product can be seen from the table of the Food Ingredients List or now known as the Indonesian Food Ingredients Table. The energy and nutrient content of katuk and spinach tartlet brownies in 1 recipe (15 pieces) contains the energy of 4,324 cal, 77.9 g of protein, 268 g of fat, and 453.4 g of carbohydrate. In comparison, one part of the product contains the energy of 288 cal, 5.2 g of protein, 17.9 g of fat, 30.2 g of carbohydrate, and 0.8 mg of iron.

Table 5 The energy and nutrient content

| No | Name of ingredient | Weight (g) | Energy (Cal) | P (g) | L (g) | KH (g) | Fe (mg) |
|----|--------------------|------------|--------------|-------|-------|--------|---------|
| 1. | Spinach            | 35         | 13           | 1.2   | 0.2   | 2.3    | 1.4     |
| 2. | Katuk leaves       | 25         | 15           | 1.2   | 0.3   | 2.8    | 0.7     |
| 3. | Wheat flour        | 300        | 1,095        | 26.7  | 3.9   | 231.9  | 3.6     |
| 4. | Yolk               | 110        | 397          | 17.9  | 35.0  | 0.8    | 0.9     |
| 5. | Egg                | 55         | 89           | 7.0   | 6.3   | 0.4    | 1.5     |
| 6. | Sugar              | 130        | 473          | -     | -     | 122    | 0.1     |
| 7. | Margarine          | 150        | 1,080        | 0.9   | 121.5 | 0.6    | -       |
| 8. | Powder milk        | 27         | 137          | 6.6   | 0.1   | 9.8    | 0.2     |
| 9. | White chocolate    | 150        | 572          | 13.5  | 52.5  | 80.4   | 3.0     |
| 10.| Cooking oil        | 40         | 361          | -     | 40.0  | -      | -       |
| 11.| Almond             | 15         | 92           | 2.9   | 8.2   | 2.4    | 0.5     |
|    | Total one recipe (15 pieces) | 4,324 | 77.9 | 268 | 453.4 | 11.9 |
|    | Total one piece    | 288        | 5.2          | 17.9  | 30.2  | 0.8    |
4.5 Energy Contribution

Based on table 6, katuk and spinach brownies tartlet in one serving contribute energy by 11.5% to the needs of nursing mothers < six months and by 11.3% contribute energy to the needs of nursing mothers ≥ six months. Consumption a day is enough. One product already fulfills the energy need of a breastfeeding mother's snack (15%)

| Category of Breastfeeding Mother | AKE (Cal) | Energy Contribution (%) |
|----------------------------------|-----------|-------------------------|
| Breastfeeding mother < six months | 2500      | 11.5                    |
| Breastfeeding mother ≥ six months | 2550      | 11.3                    |

4.6 The Result of Financial Analysis

The initial investment is the funds needed to start a business. The initial investment is IDR 66,520,750, clustered into machinery & equipment, legal cost, and Halal Certificate and Pre Operating Expense. These assumptions for financial feasibility analysis on interviews and relevant secondary data.

- The project lifetime is four years.
- The capacity of production per day is 360 pieces (= 3 x 7 pans x @ 20 tartlets = 28 recipes). Assumptions: there are 5% defective goods.
- Twenty-five workdays in a month.
- The price of tartlet is assumed to be fixed based on the market price at IDR 6,00 per piece for four years.
- Revenue growth/year is 5%.
- Inflation is assumed to be 4%
- Salvage Value is 10%
- The cost of capital is assumed to be 10%
- This business is subject to a final tax of 0.5% of turnover.
- The owner deposited 30% initial capital and 70% from a loan with an interest rate of 10%.
- Owner rents space for business

4.6.1 Project Proforma Financial Statements

Using the assumptions described previously, 75% of products sold and the projected proforma financial statements are:
Income statement data show this business has always generated a profit since the first year. Return on Sales is 23.4%. The following projected statement of financial position is:

Table 7 Income statement
Sources: author analysis

| Income Statement | Year 1 | Year 2 | Year 3 | Year 4 |
|------------------|--------|--------|--------|--------|
| Projected Sales  | 538,650,000 | 565,582,500 | 593,861,625 | 623,554,706 |
| Less: Cost of Goods Sold | 299,736,750 | 430,821,622 | 446,624,243 | 449,872,325 |
| Gross Profit     | 238,913,250 | 134,760,878 | 147,237,382 | 173,682,381 |

Operating Expenses

|                      | Year 1   | Year 2   | Year 3   | Year 4   |
|----------------------|----------|----------|----------|----------|
| Salaries (Indirect Labour) | 30,000,000 | 31,050,000 | 32,136,750 | 33,261,536 |
| Rent                 | 30,000,000 | 31,050,000 | 32,136,750 | 33,261,536 |
| Utilities            | 600,000   | 621,000   | 642,735   | 665,231   |
| Telephone            | 1,320,000 | 1,366,200 | 1,414,017 | 1,463,508 |
| Marketing & Promotion| 24,000,000 | 24,840,000 | 25,709,400 | 26,609,229 |
| Depreciation         | 1,305,000 | 1,305,000 | 1,305,000 | 18,000,000 |
| Distribution         | 18,000,000 | 18,630,000 | 19,282,050 | 19,956,922 |
| Office Supplies      | 300,000   | 310,500   | 321,368   | 332,615   |
| Interest Rate        | 4,656,453 | 3,653,123 | 2,549,460 | 1,335,432 |
| Total Operating Expenses | 110,181,453 | 112,825,823 | 115,497,530 | 134,886,009 |

Earnings Before Interest and Taxes (EBIT) | 128,731,798 | 21,935,055 | 31,739,852 | 38,796,572 |

Tax (0.5%) | 2,693,250 | 2,827,913 | 2,969,308 | 3,117,774 |

Net Profit | 126,038,548 | 19,107,143 | 28,770,544 | 35,678,599 |

Table 8 Balance sheet
Sources: author analysis

| Balance Sheet | Year 1 | Year 2 | Year 3 | Year 4 |
|---------------|--------|--------|--------|--------|
| Assets        |        |        |        |        |
| Cash          | 126,038,548 | 19,107,143 | 28,770,544 | 35,678,599 |
| Inventory     | 99,912,250 | 82,727,343 | 64,217,100 | 44,309,799 |
| Total Current Assets | 225,950,798 | 101,834,486 | 92,987,644 | 79,988,398 |
| Equipment     | 15,800,000 | 12,470,000 | 9,140,000 | 5,810,000 |
| Less: Accumulated Depreciation | 3,330,000 | 3,330,000 | 3,330,000 | 3,330,000 |
| Intangible Goods | 10,000,000 | 7,500,000 | 5,625,000 | 3,750,000 |
| Less: Accumulated Amortization | 2,500,000 | 1,875,000 | 1,875,000 | 1,875,000 |
| Total Fixed assets | 19,970,000 | 14,765,000 | 9,560,000 | 4,355,000 |
| Total Assets   | 245,920,798 | 116,599,486 | 102,547,644 | 84,343,398 |

Liabilities and Stockholder's Equity

| Liabilities     | 36,531,229 | 25,494,604 | 13,354,316 | 0 |
| Stockholder's Equity | 209,389,568 | 91,104,881 | 89,193,327 | 84,343,398 |
| Total Liabilities and Stockholder's Equity | 245,920,798 | 116,599,486 | 102,547,644 | 84,343,398 |
Cash at the end of the year is always positive. It means cash flow from income is more than cash out, and the amount continues to increase. Average Cash Flow is (IDR) 46,587,577. The projected cash flows are as follows:

**Table 9 Cash flow**

| Cash Flow | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 |
|-----------|--------|--------|--------|--------|--------|
| Cash Flow from Operating Activities |        |        |        |        |        |
| Cash In Flow | 46,564,525 |        |        |        |        |
| Loan | 19,956,225 |        |        |        |        |
| Net Profit + Depreciation | 131,868,548 | 24,937,143 | 34,600,544 | 41,508,599 |        |
| Cash OutFlow | 66,520,750 | 121,835,252 | 13,900,517 | 22,460,256 | 28,154,282 |
| Machinery & Equipment | 14,800,000 |        |        |        |        |
| Legal cost and Halal Sertificate | 10,000,000 |        |        |        |        |
| Pre Operating Expense | 41,720,750 | 10,033,296 | 11,036,625 | 12,140,288 | 13,354,316 |
| Total Cash Outflow | 10,033,296 | 11,036,625 | 12,140,288 | 13,354,316 |        |
| Net Cash In Flow - Cash Out Flow | - | 121,835,252 | 13,900,517 | 22,460,256 | 28,154,282 |
| Cash Flow Beginning | - | 121,835,252 | 135,735,769 | 158,196,025 |        |
| Cash Balance End | - | 121,835,252 | 135,735,769 | 158,196,025 | 186,350,308 |
| Annual Cash Flow | - | 121,835,252 | 13,900,517 | 22,460,256 | 28,154,282 |
| Average Cash Flow | 46,587,577 |        |        |        |        |

4.6.2 **Break-Even Point (BEP)**

The Break-even point is the point with sales revenue is equal to total cost and zero profit [30]. Table 10 shows the point of sale when it reaches the break-even point and the number of units produced each year. Break-even analysis determines the sales needed to break even [31]. This business will get a break-even point when sales go IDR 189,102,195 and 37,820 units in the first year. The profit margin in sales per unit was 58.27% in the first year.

**Table 10 Break-even point (BEP)**

| Break - Even Point | Year 1 | Year 2 | Year 3 | Year 4 |
|-------------------|--------|--------|--------|--------|
| Sales (IDR) | 718,200,000 | 754,110,000 | 791,815,500 | 831,406,275 |
| Fixed Cost (IDR) | 110,181,453 | 112,825,823 | 115,497,530 | 134,886,009 |
| Variable Cost (IDR) | 299,736,750 | 430,821,622 | 446,624,243 | 449,872,325 |
| Contribution Margin Ratio | 58.27% | 42.87% | 43.59% | 45.89% |
| BEP - Sales (IDR) | 189,102,195 | 263,180,142 | 264,933,519 | 293,932,097 |
| BEP - Unit (units) | 37,820 | 52,636 | 52,987 | 58,786 |

Financial analysts frequently divide costs into two types: variable costs and fixed costs. Variable costs change as the output changes, and they are zero when production is zero. Cost of direct labor and raw materials are examples of variable costs [31]. The cost must be issued in fixed amounts during a specific period. The size is not dependent on the size of operating volume or production volume during the period is the fixed cost [32].
4.6.3 The Feasibility Analysis

A feasibility study is an analysis that considers all of a project's relevant factors—including economic, technical, legal, and scheduling considerations—to ascertain the likelihood of completing the project successfully. Whether a project is feasible can depend on several factors, including the project's cost and return on investment, meaning whether the project generated enough revenue or sales from consumers.[33]

According to Investopedia [34], ROI is a performance measure used to evaluate the efficiency of an investment or to compare the efficiency of some different investments. Return on Investment (ROI) calculates the benefit (return) divided by the investment's cost. The capital budgeting method analyses and evaluates the feasibility of long-term investments to maximize the owner's wealth over a certain period [25], [35]. ROI analysis (when applied correctly) is a powerful tool for evaluating existing information systems and making informed decisions on software acquisitions and other projects [36].

According to Investopedia [37], the gross profit margin is metric analysts use to assess a company's financial health by calculating the amount of money leftover from product sales after subtracting the cost of goods sold (COGS).

Net Present Value (NPV) measures profitability on investment by calculating the present value of future cash flows minus the present value of the cost of the investment. The project is profitable if the net cash flow value is greater than zero [31].

The Internal Rate of Return (IRR) is the discount rate that makes a zero NPV of the investment. In other words, IRR is the expected compound annual rate of return that will earn on a project or investment [25], [26], [38].

The Payback period offers a rough measure of the investment's liquidity [28]. The company subjectively determines the maximum length of acceptable payback time based on project type, product circumstances, and project perceived risk [25].

According to Investopedia [39], the discounted payback period is a capital budgeting procedure used to determine the profitability of a project. A discounted payback period gives the number of years it takes to break even from undertaking the initial expenditure by discounting future cash flows and recognizing the time value of money. The metric is used to evaluate the feasibility and profitability of a given project.

According to Investopedia [40], the profitability index (PI) measures a project's or investment's attractiveness. The PI calculates by dividing the present value of future expected cash flows by the initial investment amount in the project. A PI greater than 1.0 is deemed a good investment, with higher values corresponding to more attractive projects. Under capital constraints and mutually exclusive projects should be selected, only those with the highest PIs.

According to Corporate Finance Institute [41], the accounting Rate of Return (ARR) is the average net income an asset is expected to generate divided by its average capital cost, expressed as an annual percentage. The ARR is a formula used to make capital budgeting decisions. It is used in situations where companies decide whether or not to invest in an asset (a project and an acquisition.) based on the future net earnings expected compared to the capital cost.

According to the feasibility analysis results from table 11, all the results met the criteria. The business of katuk and spinach brownies tartlet is feasible.

Table 11 Feasibility analysis

| Technique          | Value | Acceptance Criteria | Result |
|--------------------|-------|---------------------|--------|

Sources: author analysis
Based on the financial feasibility analysis comparison data above, katuk and spinach brownies tartlets are more profitable than pineapple carrot juice business [42]; chocolate spread [43] with coconut ingredients business and banana chips [44].

### 4.6.4 The Scenario Analysis

Risk in capital budgeting is defined as uncertainty regarding the cash flows generated by the project or the degree of cash flow variability [25]. The feasibility analysis was carried out on the assumption of current conditions, which may change in the future. Thus, risk assessment
is necessary. We use sensitivity analysis in financial modeling to analyze how the different values of independent variables affect a specific dependent variable under certain conditions [45]. Sensitivity analysis is uncertainty analysis by altering variables assumed from a base case to evaluate how they affect the measured results of the project [38]. If the NPV show to be highly sensitive to relatively small changes in the projected value, the forecast risk involved with the variable is significant [26]. Sensitivity analysis is carried out based on assumptions that have been described previously by making five scenarios. From scenario analysis that calculates the risk assessment, this business is feasible if it can sell at least 72% of its products. By conducting a risk assessment of several scenarios, if it can sell products at least 72%, all the results meet the criteria, and the business is feasible.

Table 133 Scenario analysis
Sources: author analysis

| % of Products Sold | Sensitivity on Revenue |
|--------------------|-----------------------|
|                    | 71%  | 72%  | 75%  | 80%  | 85%  |
| Return on Sales    | 19.1%| 20.2%| 23.4%| 28.2%| 32.4%|
| Return on Investment ROI | 146.5%| 157.2%| 189.5%| 243.2%| 296.9%|
| Gross Profit Margin | 41.2%| 42.0%| 44.4%| 47.8%| 50.9%|
| Average Cash Flow (IDR) | 15,787,036| 23,487,171| 46,587,577| 85,088,253| 123,588,930|
| IRR                 | not applicable | 42.7%| 106.1%| 180.9%| 246.0%|
| NPV (IDR)           | (5,237,337) | 19,029,767| 91,831,077| 213,166,595| 334,502,112|
| Payback Period      | 0.71 years | 0.66 years| 0.55 years| 0.42 years| 0.34 years|
| Discounted Payback Period (DBP) | 0.78 years | 0.73 years| 0.60 years| 0.46 years| 0.38 years|
| Profitability Index | 0.92   | 1.29   | 2.38  | 4.20  | 6.03  |
| Accounting rate of return (ARR) | 40.7% | 43.7%| 52.6%| 67.6%| 82.5%|

5 Conclusions and Suggestions

5.1 Conclusions

1. Based on the energy and nutrient content in 1 piece of katuk and spinach brownies, tartlet product contains the energy of 288 cal, 5.2 g protein, 17.9 g of fat, 30.2 g of carbohydrate, 0.8 mg of iron.
2. The analysis of business and cost of production of katuk and spinach brownies tartlet is feasible with a minimum of 72% of products sold.

5.2 Suggestions

1. Based on the energy and nutrient content result, katuk and spinach brownies tartlet has fulfilled the mother's daily snack to be an alternative snack for breastfeeding mothers.
2. Katuk and spinach brownies tartlet can be an alternative healthy food business.

3. Financial feasibility analysis results showed that BEP of production of 37,820 pieces, BEP of sales of IDR 189,102,195; Return on Sales of 23.4%; Return on Investment (ROI) of 189.5%; NPV of IDR 91,831,077 and PBP during 0.55 year, Discounted Payback Period (DPBP) of 0.60 years, Profitability Index of 2.38 and Accounting Rates of Returns (ARR) of 52.6%. Based on scenario analysis, katuk and spinach brownies tartlet is feasible for business if minimum sales of 72% of products.

4. Based on the financial feasibility analysis comparison data above, katuk and spinach brownies tartlets are more profitable than pineapple carrot juice business; chocolate spread with coconut ingredients business and banana chips.

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