INTERNATIONAL JOURNAL OF SOCIAL SCIENCE, EDUCATIONAL, ECONOMICS, AGRICULTURE RESEARCH AND TECHNOLOGY (IJSET) | ISSN (E): 2827-766X
Website: https://ijset.org/ | Volumes 5 No. 8 (2026)

BUSINESS FEASIBILITY ANALYSIS OF USING PALM OIL FLOUR AS A SUBSTITUTE INGREDIENT IN MAKING COOKIES

Silviani [1] *, Febriani Roosmawati [2] , Tifany Zia Aznur [3] , Adi Widjajanto [4]
Agribusiness Study Program , Faculty of Science and Technology, Indonesian Palm Oil Institute Field [1,2,3,4]
E-mail: silviani310720@gmail.com [1] , febrianawiwidjajanto@yahoo.co.id [3] , tifanyzia@itsi.ac.id [3] , adifefa3@gmail.com [4]

Received: 02/06/2026 | **Revised** : 11/06/2026 | **Accepted:** 23/06/2026 | **Published** :08/07/2026

Abstract

This study aims to analyze the feasibility of palm oil flour Cookies business as a local food product based on plantation resources. The study uses a quantitative descriptive method with a business feasibility analysis approach. Primary data were obtained through production trials, recording production costs, selling prices, and production capacity, while secondary data were obtained from various relevant literature. The analysis was carried out on market aspects using the Segmenting, Targeting, Positioning (STP) and market size (TAM, SAM, SOM) approaches, and financial aspects through investment calculations, production costs, cost of goods manufactured (COGS), revenue, profit, R/C Ratio, Break Even Point (BEP), Payback Period, Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (B/C Ratio), and sensitivity analysis. The results of the study indicate that the palm oil flour Cookies business is feasible to be developed. At a production capacity of 350 packages per month with a selling price of Rp17,000 per package, the business earns revenue of Rp5,950,000, production costs of Rp3,701,375, and a net profit of Rp2,248,625 per month. The R/C Ratio value is 1.61, BEP 217.73 packages, Payback Period 0.47 months, NPV Rp101,241,695, IRR 2,577.23%, and B/C Ratio 1.60. Sensitivity analysis shows that the business remains feasible in scenarios of changes in selling prices, production costs, and sales, so it has the potential to be developed as a local food business on a household or MSME scale.

Keywords: business feasibility, palm oil flour, financial analysis, MSMEs.

INTRODUCTION

Oil palm (*Elaeis guineensis*) is a strategic commodity that supports Indonesia's downstreaming policy by utilizing biomass to create value-added products. The government is encouraging the optimization of oil palm biomass as part of strengthening the national industry, while also supporting economic, energy, and food security (Alatas, 2025). One biomass that has not been optimally utilized is oil palm fronds. These fronds are generally discarded during plantation rejuvenation, yet they contain carbohydrates, protein, fat, and fiber that have the potential to be developed as an alternative food ingredient (Yunita et al., 2022). Research shows that oil palm frond flour has functional characteristics and nutritional content that support its use as a raw material or as a substitute for conventional flour in food products (Yusra & Rosalina, 2018; Suranto et al., 2023).

Cookies are a bakery product that generally uses wheat flour as the main ingredient. Dependence on wheat flour drives the need for diversification through the use of more nutritious local flours. Various studies have shown that the use of plant waste as a substitute can increase the fiber content and added value of bakery products (Mubarok & Winata, 2020; Mardiyanto et al., 2024; Diasultra et al., 2025). However, studies on the use of palm oil flour as a raw material for cookies are still very limited, opening up opportunities for the development of innovative food products based on local resources (Alifianita & Sofyan, 2022; Suranto et al., 2023).

In addition to technical aspects, new product development requires a business feasibility analysis to assess market prospects and financial viability. This analysis includes investment requirements, production costs, cost of goods manufactured, profits, break-even points, return on investment, and business resilience to changing economic conditions. Therefore, this study aims to analyze the business feasibility of palm oil flour-based cookies as an alternative local food business with the potential to be developed at the household and MSME scale (Gittinger, 1972; Kasmir & Jakfar, 2016; Septadianto, 2024; Nurdiyah et al., 2025).

LITERATURE REVIEW

Palm Oil as a Source of Biomass

Oil palm (*Elaeis guineensis* Jacq.) is a strategic plantation commodity that makes a significant contribution to the Indonesian economy. In addition to producing crude palm oil *and* palm kernel oil *,* oil palm plants also produce large amounts of biomass, such as fronds, stems, empty fruit bunches, shells, fiber, and shoots. This biomass has the potential to be developed into various value-added products through the downstream palm oil industry concept. Biomass utilization not only increases resource efficiency but also supports the reduction of plantation waste and the development of a circular economy. Therefore, optimizing oil palm biomass is an important strategy in supporting product diversification based on local resources (Rahmawati, 2023; Muhammad Alhaji et al., 2024; Alatas, 2025).

Palm Oil Roots as a Functional Food Ingredient

Oil palm kernels are the tops of the stems obtained when oil palm trees are felled during plantation rejuvenation. Oil palm kernels are often considered waste, yet they contain carbohydrates, protein, dietary fiber, vitamins, minerals, and bioactive compounds that have the potential to be used as functional food ingredients. Various studies have shown that oil palm kernels are safe to consume after proper processing and possess characteristics that support the development of value-added food products. Their fiber and antioxidant content also offer the potential for producing healthier food products than conventional products (Yunita et al., 2022; Yusra & Rosalina, 2018; Suranto et al., 2023; Sulistiarini et al., 2022).

Palm Oil Flour as a Substitute for Wheat Flour

Processing oil palm kernels into flour is a form of diversification of palm biomass products. Oil palm flour is produced through a process of washing, cutting, drying, milling, and sieving to obtain a non-wheat flour with specific physical and chemical characteristics. Its relatively high fiber content, along with the presence of protein and carbohydrates, makes oil palm flour a potential substitute for wheat flour in various food products. The use of this alternative flour also supports efforts to reduce dependence on imported wheat flour while increasing the use of local raw materials. However, proper formulation is still necessary to maintain the product's sensory quality (Suranto et al., 2023; Yusra & Rosalina, 2018; Adi et al., 2022; Mardiyanto et al., 2024).

Cookies as a Food Diversification Product

Cookies are a popular bakery product due to their appealing flavor, crunchy texture, and relatively long shelf life. As the concept of functional foods evolves, cookie formulations no longer rely solely on wheat flour as the primary ingredient, but also utilize various types of local flour as substitutes. The use of alternative flours can increase fiber content, improve nutritional value, and add value to the product. In the context of this research, palm oil flour has the potential to be a substitute that supports the development of locally sourced cookies without compromising product quality when formulated appropriately (Harahap et al., 2020; Mubarok & Winata, 2020; Diasultra et al., 2025; Aulia et al., 2025).

In general, the cookie-making process involves several stages: ingredient preparation, dough mixing, molding, baking, cooling, and packaging (Harahap et al., 2020; Dhal et al., 2023). The preparation stage begins with weighing all ingredients according to the formulation. Next, the dough is mixed using the creaming method, which involves mixing margarine and sugar until homogeneous, then adding eggs and other ingredients to form a uniform dough. The finished dough is then molded into the desired shape and baked at a temperature of around 120–180 °C until the Maillard reaction occurs, producing a golden brown color, a crunchy texture, and a distinctive cookie aroma (Dhal et al., 2023). Once cooked, the cookies are cooled before being packaged to maintain their crispiness and maintain a good shelf life (Harahap et al., 2020; Pramanik et al., 2025).

Development of Food Products Based on Local Resources

Developing food products based on local resources is one strategy to support food diversification and increase the added value of agricultural and plantation products. The use of oil palm biomass as a raw material for innovative food products aligns with the concepts of industrial downstreaming and a circular economy. In addition to reducing waste, developing products based on local ingredients can also increase business competitiveness, expand market opportunities, and provide economic benefits for MSMEs. Therefore, innovative cookies made from oil palm flour have the potential to be developed as a sustainable local food product (Alatas, 2025; Diasultra et al., 2025; Septadianto, 2024).

Business Feasibility Analysis

Business feasibility analysis is an evaluation process aimed at assessing the feasibility of a business based on various aspects that influence its success. In food product development, a feasibility analysis not only considers technical capabilities in producing the product but also assesses market opportunities and the business's ability to generate profits. Feasibility studies serve as the basis for investment decisions because they provide an overview of risks, business prospects, and long-term business sustainability (Gittinger, 1972; Kasmir & Jakfar, 2016; Septadianto, 2024).

Marketing Aspects

The marketing aspect aims to identify market opportunities and determine marketing strategies that are appropriate to consumer characteristics. The analysis is conducted using the Segmenting, Targeting, and Positioning (STP) approach to determine potential market segments and the product's position in the market. Furthermore, market size analysis using Total Available Market (TAM), Serviceable Available Market (SAM), and Serviceable Obtainable Market (SOM) is used to estimate the market opportunity that the product can achieve. This approach provides the basis for developing an effective marketing strategy for the development of cookies made from palm oil flour (Septadianto, 2024; López, 2024).

Financial Aspects

Financial aspects are used to assess a business's ability to generate profits and return on investment. The analysis is conducted through calculations of production costs, Cost of Goods Sold (COGS), revenue, profit, R/C Ratio, Break Even Point (BEP), Payback Period (PP), Net Present Value (NPV), Internal Rate of Return (IRR), and Net Benefit Cost Ratio (Net B/C). These indicators provide an overview of business efficiency, profitability, investment feasibility, and resilience to changing market conditions, thus providing a basis for business decision-making (Gittinger, 1972; Kasmir & Jakfar, 2016; Lestari & Zulkarnain, 2024; Septadianto, 2024). Saragih et al. (2024) analyzed harvesting costs against the cost of fresh fruit bunches (FFB) and showed that harvesting costs are a critical component in determining the cost price. This finding reinforces the need for measurable cost calculations in palm oil-based businesses to enable business owners to understand the cost structure, cost price, and basis for determining selling prices.

METHOD

This research was conducted in Talang Mandi Village, Bengkalis Regency, Riau Province, in February–April 2026. The research used a quantitative descriptive method with a business feasibility analysis approach to evaluate the potential for developing palm oil flour-based cookies as a local food product. Primary data were obtained through production trials, including the palm oil flour manufacturing process, cookie formulation, recording of raw material requirements, production capacity, production costs, selling prices, and production volume. Meanwhile, secondary data were obtained from various literature, such as books, scientific articles, research reports, and documents related to the utilization of palm oil biomass, bakery products, and business feasibility studies (Kasmir & Jakfar, 2016; Septadianto, 2024).

Feasibility analysis is conducted through two aspects, namely market and financial aspects. The market aspect is analyzed using the Segmenting, Targeting, Positioning (STP) approach and market size analysis which includes *Total Available Market* (TAM), *Serviceable Available Market* (SAM), and *Serviceable Obtainable Market* (SOM) to identify product market opportunities (López, 2024; Septadianto, 2024). The financial aspect is analyzed through calculations of initial investment, production costs, Cost of Goods Sold (COGS), revenue, profit, R/C Ratio, Break Even Point (BEP), Payback Period (PP), Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (B/C Ratio), and simple sensitivity analysis to assess business feasibility in various cost and sales change scenarios (Gittinger, 1972; Kasmir & Jakfar, 2016; Lestari & Zulkarnain, 2024).

RESEARCH AND DISCUSSION

Cookies Business Feasibility Analysis

Segmenting, Targeting, and Positioning (STP)

Segmenting, Targeting, and Positioning (STP) analysis was used to identify potential markets for palm oil flour-based cookies. Market segmentation was conducted based on geographic, demographic, psychographic, and consumer behavior characteristics. The product is aimed at the people of Medan City aged 15–55 years, both men and women, consisting of students, college students, and the general public from various income levels. The main

target is consumers who like snacks, innovative products, and regularly consume cookies. Medan City was selected based on its large population and high economic, educational, and trade activities, thus having broad market potential. The target market is focused on students, pupils, people of productive age, snack lovers, consumers who support local products, tourists, and MSMEs. Meanwhile, the product positioning is designed as an innovative cookie made from palm oil flour that offers a distinctive taste, added value, and supports the use of local resources and food diversification. This positioning is expected to differentiate the product from conventional cookies while increasing competitiveness in the market (Kotler & Keller, 2016).

Market Size Analysis

Market size analysis is used to estimate the market potential for palm oil flour cookies using the Total Available Market (TAM), Serviceable Available Market (SAM), and Serviceable Obtainable Market (SOM) approaches. Calculations are based on secondary data and research assumptions.

Total Available Market (TAM)

Table 1. ***Total Available Market*** **(TAM)**

Description	Amount
Total target consumer population	508,000 people
Percentage	100%
Category	Potential Market

The TAM value of 508,000 people indicates that palm oil flour *cookies* have a significant market potential. This large number indicates the product has the potential to be developed not only locally but also regionally if production capacity continues to increase.

Serviceable Available Market (SAM)

Table 2. Serviceable Available Market (SAM)

Description	Amount
Total Available Market (TAM)	508,000 people
Percentage of market reachable	30%
Serviceable Available Market (SAM)	152,400 people

The SAM population of 152,400 indicates that businesses still have a very large market space to enter. This figure is significantly larger than the planned production capacity of the business, so the risk of market shortage is relatively low.

Serviceable Obtainable Market (SOM)

Table 3. Serviceable Obtainable Market (SOM)

Description	Amount
Serviceable Available Market (SAM)	152,400 people
Percentage of market that can be controlled	5%
Serviceable Obtainable Market (SOM)	7,620 people

The SOM value of 7,620 people represents the realistic number of consumers who can become product customers in the early stages of the business.

Sales Potential Analysis Based on SOM

Table 4. Sales Potential Analysis Based on SOM

Component	Mark
Number of SOM consumers	7,620 people
Purchase frequency	1 pack/month
Potential sales per month	7,620 packages
Selling price per pack	Rp. 17,000
Potential turnover per month	Rp129,540,000

Based on the SOM simulation, if 7,620 consumers purchase one pack *of Cookies* per month at a selling price of Rp17,000 per pack, the potential market turnover that can be achieved is Rp129,540,000 per month. This value represents the market potential, not the actual turnover of the business at the initial production capacity. Actual turnover in the financial analysis is still calculated based on the initial production capacity, which is 350 packs per month with revenue of Rp5,950,000 per month.

Comparison of SOM with Production Capacity

Table 5. Comparison of SOM with Production Capacity

Description	Amount
SOM	7,620 packages/month
Initial production capacity	350 packs/month
Market fulfillment level	4.59%

The results of the market size analysis indicate that cookies made from palm oil flour have a broad market opportunity. The TAM value of 508,000 people, SAM of 152,400 people, and SOM of 7,620 people indicate a much larger market potential compared to the initial production capacity of only 350 packages per month. With a selling price of Rp17,000 per package, the actual turnover of the business reaches Rp5,950,000 per month, while the market potential based on SOM is still much higher. This condition indicates that the current business limitations lie in production and distribution capacity, not in market demand. Therefore, increasing production capacity, expanding the marketing network, and consistent product quality are the main strategies to optimize market opportunities and support the development of the palm oil flour cookies business.

Basic Assumptions of Production and Marketing

The financial analysis uses several basic assumptions, namely a production capacity of 350 packages per month, a selling price of Rp17,000 per package, a total production cost of Rp3,701,375 per month, and a net profit of Rp2,248,625 per month. The NPV, IRR, and B/C Ratio calculations use a five-year project life with a 10% discount rate.

Table 6. Basic Assumptions of Financial Analysis

No	Assumptions	Value/Description
1	Production capacity	350 packages per month
2	Selling price	Rp. 17,000 per pack
3	Monthly income	Rp. 5,950,000
4	Total monthly production costs	Rp3,701,375
5	Monthly net profit	Rp2,248,625
6	Project life for NPV, IRR, and B/C *Ratio*	5 years
7	Reference discount rate	10%

This assumption is used to ensure systematic calculations. If the selling price, production costs, or sales volume change, the feasibility results may also change.

Financial Aspect Analysis

Initial Investment Analysis

The initial investment in the palm oil palm flour *cookies business was IDR 1,047,000.* This investment is used to purchase main equipment such as a gas oven, blender, mixer, scales, basins, sieves, spatulas and storage containers.

Table 7. Initial Investment in Palm Oil Flour *Cookies Business*

No	Equipment Name	Amount (Unit)	Unit Price (Rp)	Total Price (Rp)	Economic Life (Years)
1	Gas Oven	1	Rp. 350,000	Rp. 350,000	5
2	*Blender*	1	Rp. 260,000	Rp. 260,000	5
3	*Mixer*	1	Rp. 250,000	Rp. 250,000	5
4	Digital scales	1	Rp. 30,000	Rp. 30,000	3
5	Stainless Steel Basin	1	Rp. 50,000	Rp. 50,000	3
6	Sieve	1	Rp. 45,000	Rp. 45,000	5
7	Spatula	2	Rp. 15,000	Rp. 30,000	2
8	Jars/Storage Containers	4	Rp. 8,000	Rp. 32,000	3
Total				Rp1,047,000	

Table 7 shows the total initial investment required is Rp1,047,000. The largest investment components are a gas oven (Rp350,000), *a blender* (Rp260,000), and *a mixer* (Rp250,000). These three tools are the main components because they are directly used in the production process. The initial investment is relatively low because the business is designed for a household scale. This makes the business easier to start for MSMEs with limited capital.

Depreciation and Fixed Cost Analysis

Depreciation is calculated to determine the allocation of equipment usage costs over its useful life. Depreciation is a fixed cost because its value remains constant with production volume in the short term. Although depreciation isn't always paid out in cash each month, it still needs to be calculated to more accurately calculate the cost of goods manufactured.

Table 8. Depreciation of Production Equipment

No	Equipment Name	Depreciation/Year (Rp)	Depreciation/Month (Rp)
1	Gas Oven	Rp. 63,000	Rp. 5,250
2	*Blender*	Rp. 46,800	Rp. 3,900
3	*Mixer*	Rp. 45,000	Rp. 3,750
4	Digital scales	Rp9,000	Rp. 750
5	Stainless Steel Basin	Rp. 15,000	Rp1,250
6	Sieve	Rp8,100	Rp. 675
7	Spatula	Rp9,000	Rp. 750
8	Jars/Storage Containers	Rp9,600	Rp. 800
Total		Rp205,500	Rp. 17,125

Total equipment depreciation is Rp205,500 per year, or Rp17,125 per month. This value represents the monthly fixed cost in the production analysis. Fixed costs account for only 0.46% of total production costs. This means that the business's cost structure is more influenced by variable costs than equipment costs.

Variable Cost Analysis

Variable costs are costs that change depending on production volume. In this business, variable costs include raw materials, additives, packaging materials, energy, and direct labor. Variable costs are the largest component because all materials used are consumed in the production process.

Table 9. Variable Costs of Palm Oil Flour *Cookie Production per Month*

No	Component	@	Unit	Unit price	Total Cost (Rp)
1	Palm kernel meal	7	Kg	Rp. 10,000	Rp. 70,000
2	Flour	28	Kg	Rp. 14,000	Rp. 392,000
3	Fine granulated sugar	17.5	Kg	Rp. 19,000	Rp. 332,500
4	Margarine	21	Kg	Rp. 28,000	Rp. 588,000
5	Chicken eggs	17.5	Kg	Rp. 32,000	Rp. 560,000
6	Baking powder	0.35	Kg	Rp. 60,000	Rp. 21,000
7	Vanilla	0.35	Kg	Rp. 160,000	Rp. 56,000
8	Plastic Triangle Mold	350	Pcs	Rp. 500	Rp. 175,000
9	Baking Paper	87.5	Pcs	Rp. 2,500	Rp218,750
10	Standing pouch packaging	350	Pcs	Rp1,200	Rp. 420,000
11	Product label	350	Pcs	Rp. 300	Rp. 105,000
12	LPG gas	2	Tube	Rp. 23,000	Rp. 46,000
13	Electricity and water	1	Package	Rp. 100,000	Rp. 100,000
14	Direct labor	1	Person/Month	Rp. 600,000	Rp. 600,000
Total Variable Costs					**Rp3,684,250**

Variable production costs are Rp3,684,250 per month for a production capacity of 350 packages. The largest cost components are direct labor, margarine, eggs, standing pouch packaging, wheat flour, and sugar. The high variable costs indicate that business efficiency is highly dependent on the control of raw materials, packaging, and labor. If variable costs increase, COGS will rise and profit margins may decrease.

Total Production Cost Analysis

Total production costs are the sum of fixed and variable costs. This calculation is used to determine the total costs incurred during a month of production. The total production cost is the basis for calculating COGS, profit, R/C *ratio* , BEP, and other feasibility indicators.

$$TC = FC + VC$$

Where:

a) TC = *Total cost* (Total production costs)
b) FC = *Fixed Cost* (Fixed costs)
c) VC = *Variable Cost* (Variable costs)

Table 9. Total Production Cost of Palm Oil Flour *Cookies per Month*

No	Cost Components	Value (Rp/Month)	Percentage (%)
1	Fixed *Costs Cost*)	Rp. 17,125	0.46%
2	Variable Costs (*Variable Costs) Cost*)	Rp3,684,250	99.54%
Total Production Cost (TC)		Rp3,701,375	100.00%

Total production costs are obtained by adding fixed costs and variable costs. Based on Table 4.19, the total production cost of palm oil flour *cookies is Rp3,701,375 per month.*

Variable costs accounted for 99.54% of total costs, while fixed costs only accounted for 0.46%. This indicates that production cost control is focused more on raw materials, packaging, energy, and labor.

Cost of Goods Sold (COGS) Analysis

Cost of Goods Sold (COGS) is the average production cost to produce one package of a product. COGS is calculated by dividing the total production costs by the number of units produced. Calculating COGS is crucial because it forms the basis for determining selling prices and assessing profit margins.

Table 10. Basic Data for Calculating Cost of Goods Sold

Description	Mark
Total Production Cost (TC)	Rp3,701,375
Production Quantity (Q)	350 packs
Cost of Goods Sold per Package	Rp10,575

The cost price for palm oil flour *cookies is Rp10,575 per package. This value is obtained by dividing the total production cost of Rp3,701,375 by the production capacity of 350 packages.*
The HPP is still below the selling price of IDR 17,000 per package, so the product has a profit margin of IDR 6,425 per package.

Selling Price and Profit Margin Analysis

The selling price is set at Rp17,000 per package. With a cost of goods sold of Rp10,575, the resulting margin is Rp6,425 per package, or 60.75% of the cost of goods sold.

Table 11. Analysis of Selling Price and Margin

Description	Mark
Cost of Goods Sold (COGS)	Rp10,575
Selling Price per Package	Rp. 17,000
Margin per Pack	Rp6,425
Percentage of Margin to COGS	60.75%

The margin per package is Rp6,425. This margin is obtained from the difference between the selling price of Rp17,000 and the COGS of Rp10,575. The margin to COGS percentage is 60.75%. This value indicates that the selling price provides a significant profit margin for the business. A positive margin indicates that the selling price is sufficient to cover production costs and generate a profit. However, this margin must be maintained because raw material and packaging prices are subject to change.

***Total* Revenue Analysis**

Revenue is the *total* gross income earned from product sales during a single production period. Revenue is calculated by multiplying the number of products sold by the selling price per package. This study assumes that all 350 packages of products are sold in one month.

Table 12. Total Revenue Calculation

Description	Mark
Selling Price per Package	Rp. 17,000
Number of Products Sold	350 packs
Total Revenue per Month	Rp. 5,950,000
Total Revenue per Year	Rp71,400,000

Total business revenue is calculated by multiplying the selling price by the number of products sold. With a selling price of Rp17,000 and a monthly production of 350 packages, total business revenue is Rp5,950,000 per month, or Rp71,400,000 per year. This revenue could increase further if production capacity and marketing reach are expanded.

***Profit* Analysis**

Profit is the difference between total revenue and total production costs. Profit analysis is used to determine a business's ability to generate profit after accounting for all production costs. The greater the profit, the better the business's prospects for growth.

Table 13. Business Profit Analysis

Description	Mark
Total Revenue (TR)	Rp. 5,950,000
Total Production Cost (TC)	Rp3,701,375
Net Profit per Month	Rp2,248,625
Profit per Pack	Rp6,425
Profit Margin	37.79%

The business's net profit is calculated by the difference between total revenue and total production costs. Based on Table 4.23, the business's net profit is Rp2,248,625 per month, or Rp6,425 per package. *A profit* margin of 37.79% indicates that the business is able to generate a profit after all production costs are accounted for. Therefore, from a profit perspective, this business is feasible.

Sales and Profit Projections

Sales and profit projections are used to estimate revenue for the palm oil flour *cookies business based on production capacity and selling price. This calculation uses an initial capacity of 350 packages per month with a selling price of Rp17,000 per package. If all products are sold, the initial business revenue* will be Rp5,950,000 per month or Rp71,400,000 per year. In this study, users are defined as equivalent buyers, not the number of consumers surveyed. One package sold is counted as one purchase. The projection is prepared with the assumption of 10% sales growth per year.

Table 14. Sales and Profit Projections

Description	2026	2027	2028	2029
Equivalent users/buyers per year	4,200	4,620	5,082	5,590
Selling price per pack	Rp. 17,000	Rp. 17,000	Rp. 17,000	Rp. 17,000
Revenue per month	Rp. 5,950,000	Rp6,545,000	Rp7,199,500	Rp7,919,450
Revenue per year	Rp71,400,000	Rp78,540,000	Rp86,394,000	Rp95,033,400
Sales growth	-	10%	10%	10%

Based on the table, *Revenue* is projected to increase from Rp71,400,000 in 2026 to Rp95,033,400 in 2029. This increase occurs due to the assumption of 10% sales growth per year, so that equivalent buyers increase from 4,200 to 5,590 purchases per year. This projection is still an estimate because it depends on production capacity, promotion, distribution, and market absorption. The *revenue* also does not show net profit because it has not been deducted from production costs and operational costs.

R/C *Ratio Analysis*

Revenue Cost The R/C *ratio* (R/C *Ratio*) is used to compare total revenue to total production costs. This indicator shows a business's efficiency in generating revenue. The feasibility criteria state that a business is feasible if the R/C *ratio* is greater than 1.

Table 15. Calculation of R/C Ratio

Description	Mark
Total Revenue (TR)	Rp. 5,950,000
Total cost (TC)	Rp3,701,375
R/C *Ratio*	1.61
Decision	Worthy

The R/C ratio is 1.61. This means that every Rp1.00 spent generates Rp1.61 in revenue. Because the R/C ratio is greater than 1, the palm oil flour *cookie business* is declared operationally feasible.

Break Even Point (BEP) Analysis

Break Even Point (BEP) is the point at which a business experiences neither profit nor loss. In this study, BEP is calculated in two ways: production BEP and price BEP. Production BEP indicates the minimum quantity of

product that must be sold to cover production costs. Price BEP indicates the minimum price per package to cover total production costs.

Table 16. Break Event Point Analysis

Description	Mark	Information
BEP Production	217.73 packages	Minimum number of products that must be sold
Production Capacity	350 packs	Actual production per month
Difference above BEP	132.27 packages	Safe production space
Break Even Price	Rp10,575	Minimum price per pack
Selling price	Rp. 17,000	Actual selling price

The production break-even point (BEP) is 217.73 packages, rounded up to 218 packages per month. Since production capacity reaches 350 packages per month, the business is above the break-even point by 132.27 packages. The BEP price is Rp10,575 per package, while the actual selling price is Rp17,000 per package. This indicates that the selling price is above the minimum limit to cover production costs.

Payback Period Analysis

The payback period is used to determine the time required to recoup the initial investment. The shorter the payback period, the lower the investment risk borne by the business owner. In this study, the payback period is calculated by comparing the initial investment to the monthly net profit.

Table 16. Payback Period Calculation

Description	Mark
Initial Investment	Rp1,047,000
Net Profit per Month	Rp2,248,625
Payback Period	0.47 months
Payback Period	13.97 days

The business's payback period is 0.47 months, or approximately 13.97 days. This result indicates that the initial investment of Rp1,047,000 can be recovered in less than a month. This rapid return on investment is due to the relatively small initial investment and relatively high monthly net profit. Therefore, in terms of return on investment, this business is feasible to develop.

***Net Present Value* (NPV) Analysis**

Net Present Value (NPV) is used to assess the feasibility of an investment by considering the time value of money. Annual net cash flows are discounted at a 10% discount rate over five years. A business is considered feasible if the NPV is greater than zero.

***Net Present Value* (NPV) Calculation**

Year	Net Cash Flow (Rp)	10% Discount Factor	Present Value (Rp)
1	26,983,500	0.9091	24,530,455
2	26,983,500	0.8264	22,300,413
3	26,983,500	0.7513	20,273,103
4	26,983,500	0.6830	18,430,094
5	26,983,500	0.6209	16,754,631
Total PV Benefit			102,288,695

Table 18. Summary of Calculations (NPV)

Description	Mark
Total PV Net Cash Flow	Rp102,288,695
Initial Investment	Rp1,047,000
Net Present Value (NPV)	Rp101,241,695
Criteria	NPV > 0
Decision	Worthy

The NPV calculation uses an annual net cash flow of Rp26,983,500, a project life of five years, and a discount rate of 10%. Based on the calculation results, the total present value of the net cash flow is Rp102,288,695. After deducting the initial investment of Rp1,047,000, the NPV is Rp101,241,695. Because the NPV is positive, the palm oil flour *Cookies business* is declared financially feasible.

***Internal Rate of Return* (IRR) Analysis**

The Internal Rate of Return (IRR) is the rate of return on investment that makes the NPV equal to zero. In this study, the IRR is calculated using the interpolation method. The interpolation method is carried out by finding two discount rates that flank the IRR value, namely the discount rate that produces a positive NPV and the discount rate that produces a negative NPV. Based on Excel calculations, the discount rate i1 of 2,570% produces a positive NPV of Rp2,942, while the discount rate i2 of 2,580% produces a negative NPV of -Rp1,128. Because the change in NPV occurs from positive to negative, the IRR value is between 2,570% and 2,580%.

Table 19. IRR Calculation Using Interpolation Method

Year	Net Cash Flow (Rp)	DF i1	PV i1 (Rp)	DF i2	PV i2 (Rp)
1	26,983,500	0.03745318	1,010,618	0.03731343	1,006,847
2	26,983,500	0.00140274	37,851	0.00139229	37,569
3	26,983,500	0.00005254	1,418	0.00005195	1,402
4	26,983,500	0.00000197	53	0.00000194	52
5	26,983,500	0.00000007	2	0.00000007	2
Total PV Benefit			1,049,942		1,045,872
NPV			2,942		-1.128

Table 20. Summary of IRR Results

Description	Mark
i1	2570%
i2	2580%
NPV1	Rp2,942
NPV2	-Rp1,128
IRR Interpolation	2,577.23%
IRR Excel Comparison	2,577.22%
Reference Discount Rate	10%
Decision	Worthy

The interpolated IRR is 2,577.23%. This is significantly higher than the benchmark discount rate of 10%. The very high IRR occurs because the initial investment is relatively small, while the resulting annual net cash flow is quite large. In the context of a home business, this result indicates that equipment investment can provide a very rapid return if all products are sold as assumed. Therefore, from an IRR perspective, the business is considered highly feasible.

***Cost* Analysis *Ratio* (B/C *Ratio*)**

Benefit *Cost The* B/C *ratio* is used to compare total economic benefits with total costs. In this study, benefits are calculated based on annual revenues, while costs are calculated based on annual operating costs and initial investment. The calculation is performed over five years at a 10% discount rate.

Table 21. Calculation of Benefit Cost Ratio

Year	Benefit/Year (Rp)	*Cost* / Year (Rp)	Discount Factor	PV Benefit (Rp)	PV *Cost* (Rp)
1	71,400,000	44,416,500	0.9091	64,909,091	40,378,636
2	71,400,000	44,416,500	0.8264	59,008,264	36,707,851
3	71,400,000	44,416,500	0.7513	53,643,877	33,370,774
4	71,400,000	44,416,500	0.6830	48,767,161	30,337,067
5	71,400,000	44,416,500	0.6209	44,333,782	27,579,152
Total PV				270,662,175	168,373,481

Table 22. Summary of Benefit Cost Ratio

Description	Mark
Total PV Benefit	Rp270,662,175
Total PV Operational *Cost*	Rp168,373,481
Initial Investment	Rp1,047,000
Total PV *Cost* + Investment	Rp169,420,481
B/C *Ratio*	1.60
Criteria	B/C *Ratio* > 1
Decision	Worthy

The total present value of benefits over five years is Rp270,662,175, while the total present value of *costs* after adding the initial investment is Rp169,420,481. This comparison yields a B/C ratio of 1.60. A B/C ratio greater than 1 indicates that the business is feasible. This means that every Rp1.00 spent generates a benefit of Rp1.60.

Simple Sensitivity Analysis

A sensitivity analysis was conducted to assess the business's resilience to changes in selling price, production costs, and sales. Based on Table 4.33, all scenarios still yielded positive profits and a R/C ratio greater than 1.

Table 23. Simple Sensitivity Analysis

Scenario	Revenue (Rp)	Production Cost (Rp)	Profit (Rp)	R/C *Ratio*	Decision
Basic Conditions	Rp. 5,950,000	Rp3,701,375	Rp2,248,625	1.61	Worthy
Selling price down 10%	Rp. 5,355,000	Rp3,701,375	Rp1,653,625	1.45	Worthy
Production costs increased by 10%	Rp. 5,950,000	Rp4,071,513	Rp1,878,487	1.46	Worthy
Sales down 10%	Rp. 5,355,000	Rp3,701,375	Rp1,653,625	1.45	Worthy
Sales down 20%	Rp4,760,000	Rp3,701,375	Rp1,058,625	1.29	Worthy

The results of the sensitivity analysis show that the business remains viable despite a 10% decrease in selling prices, a 10% increase in production costs, or a 20% decrease in sales, as indicated by the R/C Ratio value remaining above 1 and the business still generating profits. Overall, based on market and financial aspects, the Cookies business made from palm oil flour is considered feasible to be developed. With a production capacity of 350 packages per month, this business generates revenue of Rp5,950,000 per month and a net profit of

Rp2,248,625 per month. The R/C Ratio value is 1.61, BEP 217.73 packages, Payback Period 0.47 months, positive NPV of Rp101,241,695, IRR of 2,577.23%, and B/C Ratio of 1.60 further strengthens that the business has good prospects and remains resilient to moderate changes in business conditions.

CONCLUSION

Cookies made from palm oil flour have the potential to be developed as a local food product with added value through the utilization of palm oil biomass which has not been widely utilized. From the market aspect, the product has good opportunities because it targets consumers who like snacks, local products, and food innovation, with a Segmenting, Targeting, and Positioning (STP) strategy that positions the product as a unique and sustainable Cookies made from palm oil flour. From the financial aspect, the business is declared feasible to be developed with revenue of IDR 5,950,000 per month, net profit of IDR 2,248,625 per month, R/C Ratio of 1.61, BEP 217.73 packages, Payback Period of 0.47 months, NPV of IDR 101,241,695, IRR of 2,577.23%, and B/C Ratio of 1.60. Sensitivity analysis also shows that the business remains feasible despite moderate changes in selling price, production costs, and sales levels.

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