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Financial Analysis of Purple Sweet Potato Flour Production Business

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I N D E X I N G

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A B S T R AC T

Purple sweet potato flour can be used as a substitute for wheat flour in donuts, bread, brownies, noodles, cookies, muffins, and other products. Processing purple sweet potato into flour can not only extend its shelf life but also make it easier to process into a variety of food products. With its nutritional content, such as minerals, vitamins, crude fiber, anthocyanin compounds, and antioxidants, sweet potato is very suitable for staple food development. Although purple sweet potato has a lot of potential, commercially it has not been widely used as a raw material for salak seed kolak. One of the problems encountered is the lack of in-depth economic analyses on the manufacture of purple sweet potato flour and its use as a raw material for salak seed kolak. The purpose of this study was to determine the business feasibility of making purple sweet potato flour, variations in drying temperature, and the best drying method, as well as the level of panelist acceptance (sensory test) of sweet potato flour and its application to the resulting salak seed kolak. The research used an experimental design with variations in drying methods and temperatures, namely cabinet dryer with a temperature of 70 OC) and direct sun drying. The results of this study indicate that the business of making sweet potato flour can be declared feasible, seen from the R / C ratio value greater than 1, namely 1.1, and the payback period of 3.6, which is a long time to be able to return investment capital.

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INTRODUCTION

Purple sweet potato (*Ipomoea batatas var Ayumurasaki*) is a sweet potato that has purple-black skin and flesh. Anthocyanins in purple sweet potatoes are more than in other sweet potatoes (Puspawati, *et al*, 2016 Yahya J, A, 2010). Anthocyanins, a natural dye, give sweet potatoes their purple color. Anthocyanins are a group of pigments present in cell fluids that are water soluble and cause a red color. The anthocyanin content of purple sweet potato comes from glucosyl peonidin and cyanidin derivatives. By acting as a free radical scavenger and antioxidant. Anthocyanins can help prevent cancer, degenerative diseases, and aging. Anthocyanins can also function as anticarcinogenic and antimutagenic and can be antihypertensive stop liver function disorders and lower blood sugar (Husna *et al*., 2013). The many benefits of purple sweet potato are very good prospects to be developed into a small or large-scale household industry that can support and support the economy of the community, especially the people in the West Kalimantan region. According to Ekoningtyas

E. A., (2016) and Hambali M., (2014), purple sweet potatoes contain betacarotin as much as 2900 mg/100 grams of tubers while white sweet potatoes only contain betacarotin as much as 260 mg/100 grams of tubers. Purple sweet potato flour was also researched by (Rijal *et al*., 2019) showing that purple sweet potato flour which is dried under and dried in direct sunlight has a moisture content of 11.17%, protein of 8.99%, ash of 1.49%, carbohydrates 77.89%, and fat 0.45%. While oven-dried purple sweet potato flour has a moisture content of 9.59%, protein of 9.03%, ash of 1.60%, carbohydrates of 79.38%, and fat of 0.39%. Based on the 2017 Indonesian Food Composition Table (Ministry of Health, 2018) the composition of the nutritional content of purple sweet potato flour per 100 grams consists of 9.4 g water, 84.4 g carbohydrates, 354 cal energy, 2.8 g protein, 0.6 g fat, 12.9 g fiber, 2.8 g ash, 89 mg calcium, 125 mg phosphorus, 3.9 mg iron, 42 mg sodium, 940.0 mg potassium, 0.80 mg copper, 0.6 mg zinc, 0.40 mg thiamin.

Indonesia is the largest sweet potato producer in the world with high production potential. One of the most popular processed sweet potato products is purple sweet potato flour, which has a high antioxidant content of 92.09% (Maharani *et al*., 2023). Sweet potato has a good chance of being used and developed as a staple food. This is supported by complete nutritional content, such as water, minerals, vitamins, fiber, fat, protein, carbohydrates, anthocyanin compounds, and antioxidants (Rodrigues, et al. 2016 and Akoetey, et al. 2017). Purple sweet potato flour can also be used as a substitute for wheat flour in making bread, brownies, noodles, donuts, cookies, and more (Putri 2019). According to Oke and Workneh (2013), purple sweet potatoes also contain natural colors and antioxidants that can be used as functional foods. The many benefits of purple sweet potato can be an excellent prospect to be developed into a household industry or small, medium, or large scale industry that can be used as a support for the economy of the community in particular (Maharani *et al*., 2023).

Making and processing purple sweet potato into flour can make the product easy to process into a variety of food products and can increase the shelf life of sweet potato (Adu-Kwarteng, *et al*. 2014 and Akoetey, *et al*. 2017). According to Olatunde, *et al*. (2016), Rodrigues, et al. (2016), Aristizábal, *et al*. (2017), and Toan & Anh (2018), purple sweet potato flour can be used as an additional processed product or as a substitute for wheat flour (Olatunde, *et al*. 2016 and Rodrigues, *et al*. 2016 and Aristizábal, *et al*. 2017 and also Toan and Anh 2018). Purple sweet potato in flour form is easily processed into various processed products and food diversification (Akoetey *et al*. 2017). In general, financial aspects are studied in business feasibility studies such as finance, technical production, and marketing (Zakaria 2019). Financial feasibility analysis is used to determine whether a business is feasible and profitable by comparing the amount of costs incurred with the revenue earned, as well as described by Aisyah and Fachrizal (2020).

There are many reasons why this financial analysis is important. Firstly, from a health perspective, the use of high-quality local ingredients such as purple sweet potato can increase the nutritional value of food products. This is in line with the trend of consumers becoming increasingly aware of the importance of a healthy and quality diet. Secondly, from an economic perspective, the growth of the purple sweet potato flour industry can offer new business opportunities for businesses in food, agriculture, and agro-industry, as well as investment opportunities and business sustainability. Thirdly, the environmental aspect is that the use of local raw materials such as purple sweet potato can support sustainable and environmentally friendly local economic growth. In addition, using local raw materials can

reduce dependence on imported raw materials for flour from abroad and support the food sovereignty of the Indonesian State.

LITERATURE REVIEW

The theory study describes the theories used to support the research and to formulate hypotheses and research models.

RESEARCH METHOD

This research was conducted in Sanggau Regency in the Engineering and Process Laboratory of the Plantation Product Management Study Programme of Pontianak State Polytechnic. The financial analysis research method used was the field observation method with a descriptive qualitative approach. Furthermore, the data collection method in this study is to use an experimental design with variations in drying methods and temperatures, namely cabinet dryer with a temperature of 70 C and sun drying the method of making sweet potato flour is as follows:

a. The oven drying method (Anggarawati *et al*., 2019) which has been modified by using a cabinet dryer, namely purple sweet potatoes are sorted first, then selected which are not damaged or rotten, then cleaned and peeled off the skin, washed in running water. Purple sweet potatoes that have been cleaned then sliced thinly, then put in a baking sheet/container that has been covered with aluminum foil and then flattened so that it spreads evenly into the baking sheet/container. Furthermore, the baking tray/container that is contained is inserted into the oven/cabinet dryer to dry and set the temperature at 70 ºC for 4 hours. Every 1 hour is reversed, then the dried purple sweet potato is cooled in a storage container (room temperature), immediately after the cold is ground / mashed using a grain grinder or blender, and then sieved using a 60 and 80 mesh sieve.
b. The solar method (Rijal *et al*., 2019) has been modified, namely purple sweet potatoes that have been sorted, washed, and peeled, then sliced thinly (sliced), then spread or spread thinly on a tray or clean cloth. Then dry by using sunlight or drying in a place exposed to direct sunlight, then let it dry naturally for 2 x 24 hours. Make sure to turn the sweet potato periodically to dry evenly and avoid moisture. After drying, grind the sweet potato using a blender or grain grinder, then sift it using a 60 and 80-mesh sieve.
c. The financial analysis method includes Break Even Point (BEP), Incremental Rate of Return (IRR), R/C Ratio, Return On Investment (ROI) and Payback Period (PP) analysis.

RESULT AND DISCUSSION

The financial analysis of purple sweet potato flour products aims to determine the feasibility of a business that can result in a decision on whether or not to run. To analyze the financial feasibility of a business, it is necessary to first determine the cost of equipment investment, fixed costs, and non-fixed costs. Therefore, financial aspects must be analyzed in depth to determine whether a business or investment is feasible, so that company or business owners and investors know in depth about the prospects of the business or investment in the future, and can prepare properly (Aliefah & Nandasari, 2022).

The cost components of the purple sweet potato flour-making business can be seen in the table below.

Table 1. The Cost Component of Making Purple Sweet Potato Flour

Cost Component	Amount (Rp)
Fixed Costs	480.000
Variable Costs	460.000
Equipment Investment Cost	4.360.000

Source: Data processed, (2024)

Financial analysis of the purple sweet potato flour business begins with determining business costs consisting of fixed costs and variable costs. According to Sari, *et al*. (2011), fixed costs are costs that are not affected by the amount of production, such as depreciation of production equipment, and so on. Meanwhile, variable costs are costs that change, adjusted to the amount of production. Meanwhile, according to Ardana *et al*. (2008), fixed costs are expenses whose amount does not depend on production capacity, while variable costs will change along with changes in the amount of production. The financial analysis of the purple sweet potato flour-making business can be seen in the following table:

Table 2. Calculation of Financial Analysis

Financial Feasibility Analysis	Results (Rp)	Information
Total Cost	940.000	
Total Revenue	1.040.000	
Income	100.000	
BEP (Break Even Point) Price	36.154	
BEP Revenue	860.690	
BEP Unit	22	
R/C ratio	1,1	Worthy
IRR (Internal Rate of Return)	1,89	
ROI (Return On Investment)	2,29	
PP (Payback Period)	3,6	

Source: Data processed, (2024)

The results of the financial feasibility analysis in Table 1 above show a total cost of Rp 940,000. Total costs are expenses incurred in full to run the business. Total costs are obtained from the sum of fixed costs (total fixed cost) and variable costs (total variable cost). Revenue (total revenue) of this purple sweet potato flour-making business is IDR 1,040,000 per production.

Total revenue is obtained from the amount of production multiplied by the selling price of the product. Total revenue will increase if:

1. The number of goods sold also rises or increases, with the price unchanged
2. The number of goods sold remains the same, but the selling price increases
3. The number of goods sold and the selling price both increase.

The results of the income analysis amounted to Rp. 100,000 per one-time production. Income analysis is the amount of income received from product sales. The value of income analysis is obtained by total revenue minus total production costs. Flour production is carried out for 3 (three) times a month. BEP (Break Even Point) analysis is an analysis of the break-

even point of production against the selling price. According to Kusuma and Nur, (2014), BEP is a point where the number of products sold can cover the total production costs. BEP analysis consists of three, namely BEP Price found a value of Rp 36,154. BEP Revenue of Rp 860,690, and BEP Unit value of 22 units. This means that by selling 22 units for Rp. 36,154 per product, it is found that the return on production costs is break-even with a total revenue of Rp. 860,690. According to Adalina, (2016), Break Even Point (BEP) is used to determine the sales volume and production volume so that the company does not suffer losses and does not make a profit.

The R/C Ratio analysis shows whether a business is feasible or not to be a business from a financial point of view. The value of the R / C ratio analysis was obtained at 1.1. Where the provisions of the R / C ratio are:

1. If R/C ratio = 1 means break-even, no profit and no loss.
2. If R / C => 1 means the business is declared feasible or profitable
3. If R/C = < 1 means the business is declared a loss or not feasible 3.

In this case, it means that the business of making purple sweet potato flour is feasible to run or has a profit if run. Meanwhile, the IRR (Internal Rate of Return) analysis according to Kusuma and Nur, (2014), is the prevailing interest rate that shows the present value is equal to the entire investment. The IRR analysis results obtained were 1.89%. This means that the business of making purple sweet potato flour can return capital up to an interest rate of 1.89% per year. ROI analysis (Return On Investment) is an analysis used to measure the rate of return on investment made. The results of the ROI calculation obtained were 2.29%. This ROI value is obtained from the value of net profit income divided by total investment multiplied by 1100%. The last is the PP (Pay Back Period) analysis, According to Adalina, (2016), PP is how long it takes to return the investment funds as a whole. The faster the return of capital, the better the business to run. Based on the results of the PP calculation for this purple sweet potato flour-making business is 3 years and 6 months. Therefore, this business can be run, but the payback period of the investment capital is very long.

CONCLUSION

Based on the results of the R/C ratio analysis, show that the business of making sweet potato flour can be declared feasible, but based on the value of the payback period, this business takes a long time to be able to return the investment capital. For a more effective drying method, namely using an oven or cabinet dryer, but requires high costs.

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