Marketing strategy of brown sugar from palm oil in Serdang Bedagai District

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Abstract. Palm sugar has the potential to become a substitute commodity for domestic sugar, besides being able to play a role in reducing dependence on imported sugar. Brown sugar from palm sap has considerable potential economic. This study aims to determine a) the farm analysis of palm brown sugar agribusiness, b) how the marketing system is c) identify the internal and external factors, and d) formulate and determine the priority of palm brown sugar agribusiness strategies in Serdang Bedagai district. The analysis applied here are, financial analysis, marketing analysis, IFAS/EFAS, SWOT and QSPM. From the results of data processing, it shows that the R / C Ratio value obtained by the craftsmen is 1.044 means that the business is feasible to work on. Aspect analysis marketing farmer's share and marketing efficiency values in all sugar marketing channels palm brown sugar in is running efficiently. Based on a SWOT analysis, business position palm sugar processing is in quadrant I, S-O strategy that is supporting aggressive growth.

1. Introduction

Sugar is a strategic commodity in the Indonesian economy because it is classified as a staple food group for daily consumption. In 2019, the total national sugar consumption for both industrial and household consumption was 5.6 million tons, while sugar production was only 2.45 million tons, resulting in a shortage of sugar supply. The shortage of sugar supply is met by importing sugar. Palm sugar has the potential to become a substitute commodity for domestic sugar, besides being able to play a role in reducing dependence on imported sugar.

Oil palm has a productive period in general of approximately 20-25 years, then after that the oil palm plants must be replanted. Palm trees that have been felled can become waste if not utilized. This palm oil waste can be useful because it contains sap which is used in making brown sugar [1].

The area of land for oil palm plantations that are no longer productive continues to increase along with the increase in the area of oil palm plantations in the province of North Sumatra. The huge potential provides opportunities for farmers and local communities to develop the brown sugar agro-industry from palm oil sap. Brown sugar from palm sap has considerable potential economic value in addition to helping farmers' living costs or income as long as the palm oil is still immature [2]. This innovation in the processing of brown sugar from palm oil stem sap has only recently been started in Serdang Bedagai district on a small household scale. The challenges faced by the palm sugar agroindustry in Serdang Bedagai district are a product marketing strategy that is limited to only a few traditional markets and adjacent areas, making products based on orders, producers acting as price taker.

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Based on the above background, research is needed on business feasibility and marketing systems as well as alternative strategies for marketing palm sugar agro-industry in Serdang Bedagai Regency according to the characteristics and problems of the agro-industry concerned in order to maintain competitiveness and business existence, increase farmer craftsman income, and support the regional economic development.

2. Materials and methods

2.1. Location and time of research
This research was conducted purposively in Pegajahan District, Sei Rampah District and Perbaungan District, which are the production centers for brown sugar from palm oil sap in Serdang Bedagai Regency. Research time is from May 2020 to July 2020.

2.2. Sample determination method
The population of palm sugar craftsmen in Sei Rampah, Perbaungan and Pegajahan Districts is 96 people, determining the number of samples for descriptive research is at least 30 samples from the population. The samples were determined purposively by taking into account their experiences and capacities in this business. Sampling of traders collecting for the marketing aspect using the snowball sampling technique.

2.3. Data analysis method
Financial analysis includes costs production, revenue and income. Marketing analysis includes patterns marketing, marketing margin, farmer's share and the value of marketing efficiency. Revenue from palm sugar farming is calculated using the formula [3]:

$$TR = P \times Q \qquad (1)$$

In which:
TR   = Total Revenue (IDR)
P   = Price of palm sap (IDR/Kg)
Q   = Amount of production / Quantity (Kg)

Income is obtained from the proceeds minus total costs, with the following formula:

$$I = TR - TC \qquad (2)$$

In which:
I   = Income (IDR)
TR   = Total Revenue (IDR)
TC   = Total Cost (IDR)

The feasibility of farming in this case is shown by the following formula:

$$R/C = Revenue/Cost \qquad (3)$$

Assessment criteria:
If R / C > 1, then the brown sugar processing business is feasible.
If R / C <1, then the brown sugar processing business is not feasible.
If R/ C = 1, then the brown sugar processing business is in a break-even condition.

Marketing margin can be calculated using the following formulation:

$$MP = Pr - Pf \qquad (4)$$

In which:
MP   = Marketing margin (IDR)
Pr   = Trader's level price (IDR)
Pf   = farm-level price (IDR)

Farmer's share is the share of the price received by farmers in a marketing system. The percentage of Farmer's share is inversely proportional to the marketing margin. The higher the marketing margin, the lower the Farmer's share percentage. In general, Farmer's share analysis is formulated as follows [4]:

$$Fs = \frac{Pf}{Pr} \times 100\% \qquad (5)$$

In which:
Fs   = Share of the price received by the farmer (Farmer's share) (%)
Pf   = Price at farmer (producer) level (IDR)
Pr   = Price at the level of traders outside the city or end consumers (IDR)
 Marketing efficiency can be calculated by using the following formula:

$$EP = {TB}/{TNP} \times 100\% \qquad (6)$$

In which:
EP   = Marketing efficiency (%)
TB   = Total marketing costs (IDR)
TNP   = Total product value (IDR)
Decision rule:
1. 0 - 33%   = efficient
2. 34 - 67%   = less efficient
3. 68 - 100%   = in efficient

Strategy formulation in the palm sugar marketing strategy in Serdang Bedagai district uses a SWOT analysis [5]. Internal factors that describe strengths and weaknesses are summarized in the IFAS (Internal Factor Analysis System) matrix, while environmental factors that reflect opportunities and threats are written into the EFAS (External Factor Analysis System). Then evaluate various alternative strategies objectively based on the key success factors of internal and external factors previously identified using the Quantitative Strategic Planning Matrix (QSPM) matrix [6].

3. Results and discussion

3.1. Feasibility analysis of brown sugar from palm oil nira
Production costs can be divided into two, namely fixed costs and variable costs. Fixed costs are the costs whose amounts are fixed and are not affected by the amount of production produced. Variable costs are the costs whose amount depends on the amount of production produced. The variable costs processing palm sugar are palm sap, fuel wood, labor and other additional input materials. The total production cost for one month of processing is IDR. 113,062,595.00 with an average monthly production of 9,840 kg and a selling price of palm sugar IDR. 12,000.00/Kg. Palm sugar craftsmen's income is the revenue that comes from the sale of the product (IDR) after deducting the total costs incurred by the craftsmen. The amount of income that a craftsman gets in one month is IDR 5,017,405.00.

The ratio obtained by craftsmen is 1.044 where the R / C ratio is greater than 1 (1.044> 1) means that the business is economically feasible to run, because every investment expenditure is IDR 1, the result obtained is IDR 1.044.

Table 1. Average revenue of brown sugar farmers from palm oil nira in Serdang Bedagai District.

No	Information	Total (IDR)
1.	Revenue	
	Production (Kg)	9,840
	Selling price (IDR)	12,000
	Total Revenue (IDR)	118,080,000
2.	Production Costs	
	A. Fixed Costs (TFC)	
	Depreciation of Equipment	54,995
	B. Variable / Variable Costs	
	- Raw Materials	4,905,000
	- Labour	4,480,000
	- Additional input material	103,622,600
	Total Variable Costs (IDR)	113,007,600
	Total Costs (IDR)	113,062,595
3.	Income (IDR)	5,017,405

3.2. Palm brown sugar marketing pattern

The marketing margin varies for each channel, depending on the length of the marketing channel. The selling price of the craftsmen in this marketing margin analysis is obtained from the purchase price of palm sugar from the craftsmen by the traders according to their marketing channels. The consumer's purchase price is obtained from the retailer's selling price.

Table 2. Results of analysis of marketing margin, farmer's share & marketing efficiency of palm oil in Serdang Bedagai Regency.

Informatian	Channel I (IDR/kg)	Channel II (IDR/kg)	Channel III (IDR/kg)
Total Cost	610	110	90
Farmer's share (%)	57.5	60	80
Marketing margin	8,500	8,000	4,000
Efficiency (%)	3.05	0.55	0.45

Based on the analysis of marketing margin, it can be seen that the largest marketing margin is channel I. The highest farmer's share value was channel III. Comparison between farmer's share and marketing margin, the most profitable channel for palm sugar producers occurs in channel III. The most efficient marketing channel efficiency is that which shows the smallest marketing efficiency value, namely at channel III.

3.3. Analysis SWOT

SWOT analysis was employed to select the marketing strategies of palm sugar so that the internal factors and external factors could be formulated, and the assessing and weighting could be done furthermore to those factors. From the weighting of IFAS – EFAS as SWOT elements, the results of the value assessment on IFAS-EFAS SWOT can be seen in Table 3.

Several alternative programs for developing this strategy are as follows:

S-O Strategy (Strength-Opportunities), is a strategy that uses strengths to seize opportunities, that is optimazing production, and expanding market. Strategy S-T (Strength-Threats), is a strategy that uses the strengths of the home industry to avoid threats, that is expanding natural resources, agressive promotion brown sugar, collaboration with government for expanding business. W-O Strategy (Weakness-Opportunity) is a strategy implemented by minimizing weaknesses by taking advantage of existing opportunities, that is forming farmer group and banking partnership, aplication of technology in production and market. The W-T strategy (Weakness-Threats) is a strategy carried out by minimizing weaknesses and avoiding existing threats, that is increase quality man force, establish a good management system.

Table 3. SWOT matrix of agroindustry of brown sugar from palm oil.

IFAS / EFAS	Strengths	Weakness
	1. Availabilty of Raw Material 2. Availability of Labor 3. Easy Processing Production 4. Continuous Production 5. Competitive Price 6. Strategic Business Location 7. Profitable Business	1. Limited Capital 2. No Inovation Product 3. No Quality Standard 4. Technologi Traditional Processing 5. Minimum accounting Management 6. Minimum Market Information 7. No Business Group
Opportunities 1. High Market Opportunity 2. Substitusi Product Granulated Sugar 3. Marketing Network 4. Vast Area Potential 5. SNI Palm Sugar 6. Competitive Price	**SO Strategy** 1. Optimazing Production 2. Expanding Market	**WO Strategy** 1. Forming Farmer Group and Banking Partnership 2. Aplication of technology in production and market
Threats 1. Climate Condition 2. New Product 3. Raw Material Scarce 4. Repacing Business 5. Minimum Government Support	**ST Strategy** 1. Expanding Natural Resources 2. Agressive promotion brown sugar 3. Collaboration with government for expanding business	**WT Strategy** 1. Increase Quality Man Force 2. Establish a good management system

Based on the SWOT analysis, this business is in quadrant I, the aggressive S-O strategy uses all its strengths to take advantage of existing opportunities, namely expanding the marketing area, optimizing production.

3.4. Analysis QSPM (Quantitative Strategic Planing Matrix)

QSPM analysis is a tool to evaluate the strategy to be implemented so that the results obtained can be more optimal. QSPM analysis is used to select alternative strategies which are the top priority for implementation. The analysis results in Table 4 shows the priority of the marketing strategy that must be carried out. All of the strategies generated from the SWOT analysis in principle play an important role in increasing the production of palm sugar in the palm oil palm sugar home industry in Serdang Bedagai regency, but due to limited resources to be able to carry out all alternatives strategies at the

same time, it is necessary to have a strategic priority sequence in carry it out. The following is a QSPM matrix table.

Table 4. Result analysis QSPM.

No	Strategy Alternative	Total TAS	Rating
1	Optimazing Production	5.51	II
2	Expanding Market	5.55	I
3	Expanding Natural Resources	5.06	VI
4	Agressive promotion brown sugar	5.42	IV
5	Collaboration with government for expanding business	5.03	VII
6	Forming Farmer Group and Banking Partnership	5.39	V
7	Aplication of technology in production and marketing	5.46	III
8	Increase Quality Man Force	4.62	IX
9	Establish a good management system	4.90	VIII

The calculation of the QSPM analysis will produce the total attractiveness score (TAS) of each strategy. The result of the QSPM calculation show the TAS valaue from the highest to the lowest, therefore a marketing strategy for brown sugar from palm sap is recommended to be implemented in the home industry.

4. Conclusions

From the results of data processing on the palm sugar business from palm sap in a month of production, it shows that the R / C Ratio value obtained by the craftsmen is 1.044 where the R / C ratio is greater than 1 (1.044> 1) means that the business is economically feasible to work on. Based on the marketing margin analysis, it can be seen that the largest marketing margin is in channel I, and the highest farmer's share value is in channel III. Best marketing efficiency channel III. Based on the SWOT analysis, this business is in quadrant I, the aggressive SO strategy uses all its strengths to take advantage of existing opportunities, namely expanding the marketing area, optimizing production. Based on the results of the QSPM analysis, the strategic priority is to expanding market with the highest total TAS of 5.55.

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