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MARKETING EFFICIENCY ANALYSIS OF PALM OIL SYRUP BROWN SUGAR IN LAU TADOR VILLAGE

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Abstract

This study aimed to identify the marketing channel patterns and analyze the marketing efficiency of palm sap brown sugar in Laut Tador Village, Batu Bara Regency, North Sumatra Province. The research was conducted from February to April 2026 using a mixed-methods approach that combined quantitative and qualitative methods. Respondents were selected using the snowball sampling technique, involving producers and marketing institutions. Data were collected through observations, interviews, documentation, and literature reviews. The data were analyzed descriptively by calculating marketing costs, marketing margins, *farmer's share*, benefit-cost ratios, and marketing efficiency. The results revealed two marketing channel patterns: Channel I (producer–consumer) and Channel II (producer–retailer–consumer). Channel I incurred a marketing cost of IDR 195/kg, generated a marketing margin of IDR 7,689/kg, a profit of IDR 7,494/kg, a *farmer's share* of 100%, a profit-to-cost ratio of 38%, and a marketing efficiency value of 1.08%. Meanwhile, Channel II recorded a total marketing cost of IDR 371/kg, with marketing margins of IDR 5,181/kg at the producer level and IDR 2,362/kg at the retailer level. The total profit amounted to IDR 7,173/kg, consisting of IDR 5,136/kg for producers and IDR 2,037/kg for retailers. The *farmer's share* in Channel II was 87.12%, while the profit-to-cost ratios were 110.9% for producers and 6.24% for retailers. The marketing efficiency values were 0.28% at the producer level and 1.77% at the retailer level. Based on all evaluated indicators, both marketing channels were classified as efficient. However, Channel I was found to be more efficient because it had a shorter marketing chain, lower marketing costs, and provided a larger share of the final price and higher profits to producers.

Keywords: palm sap brown sugar, palm oil sap, marketing channel, marketing efficiency, *farmer's share*.

INTRODUCTION

Oil palm (*Elaeis guineensis* Jacq.) is a strategic plantation commodity that plays a vital role in the Indonesian economy. Together with Malaysia, Indonesia controls over 85% of the global palm oil market, making it a significant contributor to foreign exchange earnings and a source of income for plantation communities (Aisyah & Sinaga, 2024). North Sumatra Province is a major center for smallholder oil palm plantations, including Laut Tador Village, where some residents have developed businesses processing palm sap into brown sugar as a source of household income.

Brown sugar is a food product widely used as a sweetener and additive in various food preparations. With the increasingly limited availability of palm sap as the main raw material, palm sap has become a potential alternative to maintain the sustainability of the brown sugar industry. Utilizing palm sap not only overcomes raw material limitations but also opens up opportunities for product diversification, increases production efficiency, and provides added value for oil palm farmers (Aisyah & Sinaga, 2024). To optimally utilize this potential, support is needed for processing technology, increased artisan capacity, and policies that encourage the development of the palm sap-based brown sugar industry.

In addition to production aspects, the marketing system is a crucial factor in determining the profits received by artisans. Marketing efficiency is reflected in low marketing costs and a small margin between the price paid by consumers and the price received by producers. The more efficient a marketing channel, the greater the farmer's share received by producers, thereby improving artisan welfare (Jumiati, 2013). In the marketing of palm oil palm sugar, the institutions involved generally consist of artisans, collectors, retailers, and end consumers.

Based on these conditions, this study aims to analyze the marketing efficiency of palm oil-based brown sugar through the identification of marketing channels, analysis of marketing costs and margins at each marketing institution, and measurement of marketing efficiency levels and *farmer's share* . The research results are expected to serve as a basis for developing more efficient marketing strategies that can increase the added value and income of palm oil brown sugar producers.

THEORETICAL BASIS

Palm oil

Oil palm (*Elaeis guineensis* Jacq.) is a strategic plantation commodity that contributes significantly to the Indonesian economy through increased production, exports, and employment. The development of the palm oil industry is supported by the application of cultivation technology, expansion of plantation areas, and sound management from nursery to harvest, thus increasing crop productivity. In addition to producing palm oil, oil palm also has the potential to develop various derivative products that provide added value to the community (Haryanti & Marsono, 2021; Ningsih et al., 2023).

Palm Oil Sap

Palm sap is a liquid containing water, sucrose, reducing sugars, and other organic compounds, making it potentially useful as a raw material for various food products. Palm sap production is influenced by plant variety, plant age, environmental conditions, and tapping techniques. Therefore, utilizing palm sap is an alternative product diversification that can increase the economic value of palm oil (Alamsyah et al., 2021; Nurdjanah et al., 2024).

Palm Oil Brown Sugar

Brown sugar is a processed palm sap product widely used as a natural sweetener. Demand for brown sugar continues to rise as public awareness of healthier food consumption increases, as it has a relatively lower glycemic index than granulated sugar. Utilizing palm sap as a raw material for brown sugar offers an alternative with the potential to increase the added value of palm oil commodities and the income of artisans (Peraturan et al., 2019).
Note: The citation **(Economics, 2021)** is incorrect because it uses a word from the title instead of the author's name. It should be replaced with the author's name in the original source.

Marketing of Agricultural Products

Agricultural marketing is the process of distributing products from producers to consumers through various marketing institutions to create utility value across place, time, and ownership (Kotler & Keller, 2009). The effectiveness of marketing channels influences distribution costs, marketing margins, and the prices received by producers. In smallholder oil palm marketing, farmers still face limited price information and high transportation costs, resulting in a low bargaining position (*price takers*). This situation demonstrates the importance of an efficient marketing system to improve farmer welfare (Aznur et al., 2024).

Marketing Efficiency

Marketing efficiency is the ability of a marketing system to distribute products from producers to consumers at minimal cost without reducing the product's benefits. The level of efficiency is influenced by marketing costs, the length of the marketing channel, and the marketing functions performed by each marketing agency (Wijoyo, 2021).

Marketing Margin

The marketing margin is the difference between the price received by the producer and the price paid by the end consumer. The margin reflects the marketing costs and profits earned by each marketing agency during the distribution process. Therefore, marketing margin analysis is used to assess the efficiency of the marketing system and the added value generated by each marketing channel (Indrajaya et al., 2022).

Farmer's Share

Farmer's share is the percentage of the price received by producers compared to the price paid by end consumers. The higher *the farmer's share* , the greater the proportion of the price received by producers, indicating a more efficient marketing system. *The farmer's share* is influenced by the length of the marketing channel and the margins generated by each marketing agency (Riyadh, 2018)

Cost and Profit Ratio Analysis

Benefit-Cost Ratio (BCR) analysis is an economic analysis tool used to assess the feasibility of a business or marketing activity by comparing total revenue to total costs. The higher the ratio, the more feasible the business or marketing activity is for development (Ni Kadek Radha Sukertiyani & Mahdalena, 2024).

METHOD

This research was conducted in Laut Tador Village, Batu Bara Regency, North Sumatra Province, which was selected purposively because it is one of the centers of palm sap palm sugar production and has marketing channels that are in accordance with the research objectives. The research was conducted from February to April 2026. The research population included all palm sap palm sugar marketing actors, namely producers, collectors, wholesalers (if any), and retailers. The determination of respondents used the snowball sampling technique, namely sampling that starts from one key informant then develops based on the recommendations of previous respondents until adequate information is obtained (Nur et al., 2018). This research used a mixed methods method by combining quantitative and qualitative approaches. The quantitative approach was used to analyze marketing costs, marketing margins, marketing efficiency, *farmer's share* , and profit-to-cost ratios, while the qualitative approach was used to describe the condition of marketing channels, relationships between marketing actors, and obstacles faced in the distribution process (Setiawan & Jailani, 2025). The data used consisted of primary data and secondary data. Primary data were obtained through observation, structured interviews, and documentation of producers and marketing institutions, while secondary data were obtained from the Central Statistics Agency (BPS), scientific journals, books, and various relevant documents. Furthermore, the data were analyzed descriptively and quantitatively to identify marketing channels and calculate marketing costs, marketing margins, marketing efficiency, *farmer's share* , and profit-to-cost ratios to comprehensively describe the marketing efficiency of palm oil-based brown sugar (Soekartawi, 2002; Suminartika & Djuanalia, 2017).

RESEARCH RESULT

Marketing Channels for Palm Oil-Based Brown Sugar

Marketing Channel I *(Zero Level)*

Marketing channel I is a direct marketing channel, where producers distribute palm sap-based brown sugar directly to consumers without intermediaries. In this channel, consumers obtain the product by visiting the production site or purchasing directly from the producer. Producers are the direct actors who produce the product, while consumers are the ones who use the producer's output for consumption. Producers and consumers are the main components in the production chain. This process will proceed quickly if the production chain is shorter between producers and end consumers. The longer the supply chain, the more the cost burden is usually distributed among various parties. ak (Hamdani, 2025).

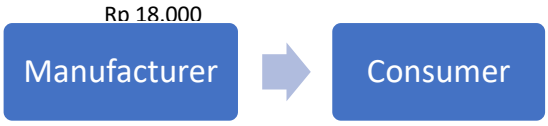

Figure 1. Channel I in Laut Tador Village

Based on research in Laut Tador Village, one MSME (Micro, Small, and Medium Enterprise) has implemented this approach: Toni Hermawan, a business owner who sells his brown sugar directly to consumers in their own homes. This channel I business owner charges Rp 18,000 per kg.

Table 1. Production Cost of Channel I Per Kg

Name	Production Cost (Rp)	Sales Volume (kg)	Production Cost per kg
Toni Hermawan	Rp. 195,900	19.00	Rp. 10,311

The total production cost is Rp 10,311 per kilogram. This is calculated by dividing the production cost of Rp 195,900 by the sales volume of 19 kg of brown sugar. Therefore, the channel 1 business owner earns a profit of Rp 7,689 per kilogram.

Table 2. Channel I Production Costs Per Day

Name	Channel Type	Fixed Cost (Rp)	Variable Costs (Rp)	Production Cost (Rp)
Toni Hermawan	I	Rp. 95,000	Rp. 100,900	Rp. 195,900

Production costs are obtained from fixed costs of Rp 95,000 and variable costs of Rp 100,900. Fixed costs are the labor costs that Mr. Toni must pay, namely wages per day from employees of Rp 95,000. Furthermore, wages of Rp 100,900 come from the components of the cost of lime for Rp 400, the cost of cooking oil for Rp 6,000, the cost of packaging for Rp 4,500, the cost of firewood for Rp 75,000 and the cost of transportation for Rp 15,000.

This type of channel I has a simple supply chain because it doesn't involve other parties such as middlemen or retailers. It is directly received by the end consumer, thus lowering marketing costs. According to Nur Cahayani (2024), this type of channel I has a short distribution chain, resulting in lower marketing costs, but purchases are quite minimal because consumers usually only buy in limited quantities. These consumers are generally local residents, with an average purchase of 2 to 5 kg. Occasionally, consumers buy in large quantities, such as 10 kg. Furthermore, there are also bread sellers who frequently buy every four days, with quantities of 5 to 10 kg per day. All consumers come directly to the producer's house.

In general, marketing channel I facilitates sales because it eliminates intermediaries, but it has limitations in expanding the market reach of palm sap-based brown sugar in Laut Tador Village. Regular consumers are also local residents who require brown sugar for their daily needs.

Marketing Channel II *(one level)*

Marketing channel II is an indirect marketing channel that distributes palm sap-based brown sugar from producers to consumers via retailers. In this channel, producers sell their products to retailers, who then resell them to end consumers.

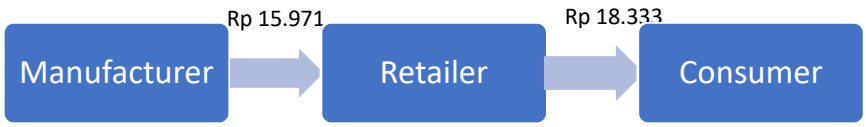

Figure 2. Channel II in Laut Tador Village

Based on interviews with MSMEs and retailers who typically purchase goods from MSMEs, three business owners act as brown sugar collectors: Doni Simanjuntak, Sendi Gunawan, and Wahyu Saputra. These three business owners have verbally agreed to have the brown sugar collected and prepared for the retailers to collect. Retailers purchase goods from producers in large quantities and resell them to end consumers. Retailers profit from the difference between the producer's purchase price and the consumer's selling price. These retailers typically sell their goods alongside other products in strategic or busy areas.

Table 3. Production Cost of Channel II Per Kg

Name	**Production Cost (Rp)**	**Production Cost per kg**
Aldanu Firmansyah	Rp. 569,870	Rp. 10,311
Tomi Enda Tarigan	Rp. 479,870	Rp. 11,397
Syah Putra	Rp. 613,700	Rp. 10,664
Nurdin	Rp. 517,033	Rp. 11,365
Jalen Iwan	Rp. 557,290	Rp. 9,575
Fandi Barus	Rp. 541,700	Rp. 11,732
Jenni Alda	Rp. 588,537	Rp. 11,771
Average		Rp. 10,973

The production cost per kg in channel II is Rp 10,973, which is comprised of seven business actors, including production costs and daily sales volume. Business actors collect sap to process into brown sugar. Once the brown sugar is finished, retailers pick up the goods and resell them to end consumers. Retailers pick up goods from producers every three days. The purchase price received by retailers from brown sugar producers is Rp

15,971 per kg. So the profit obtained by business actors in channel II is Rp 5,164. When compared with business actors in channel type I amounting to Rp 7,494, the profit obtained is less but this type II business actor has a larger and faster sales turnover when compared to business actors in channel I. The frequency of purchases from channel I is more fluctuating where because buyers are direct consumers so that buyers are much more diverse in purchasing frequency, but buyers in channel II are more stable where buyers who are also retailers usually come every 2 to 3 days depending on the number of sales of the retailer.

After receiving the brown sugar from the producer, the retailer then resells it to the end consumer at a selling price of Rp 18,333 per kilogram. Therefore, the middleman's profit per kilogram is Rp 2,277. This difference indicates a profit gap between the producer and the retailer. Furthermore, marketing costs are also higher, reaching Rp 102, which includes packaging and transportation costs. Price increases at the retail level are driven by marketing costs such as transportation and handling costs, as well as the profits retailers take from sales activities. Therefore, retailers play a crucial role in distributing products from producers to end consumers and determining selling prices at the consumer level. Marketing channel II plays a role in expanding marketing reach because retailers help distribute products to a wider market and consumers. However, the presence of intermediaries results in higher prices paid by consumers than those received by producers (Fatima, 2022).

Marketing Margin Analysis

The marketing margin is used to determine the difference between the price received by artisans and the price paid by end consumers. Furthermore, the marketing margin can also indicate the marketing costs and profits earned by marketing agencies involved in distributing palm oil palm sugar.

Table 4. Calculation of Brown Sugar Marketing Margin

Marketing Agency	Channel	
	I	II
Manufacturer		
Production Cost (Rp/kg)	Rp. 10,311	Rp. 10,934
Marketing Cost (Rp/kg)	Rp. 195	Rp. 45
Profit (Rp/kg)	Rp. 7,494	Rp. 5,136
Selling price (Rp/kg)	Rp. 18,000	Rp. 16,114
Marketing Margin (Rp/kg)	Rp. 7,689	Rp. 5,181
Retailer		
Purchase Price (Rp/kg)		Rp. 15,971
Marketing Cost (Rp/kg)		Rp. 326
Profit (Rp/kg)		Rp. 2,037
Selling price (Rp/kg)		Rp. 18,333
Marketing Margin (Rp/kg)		Rp. 2,362
End Consumer		
Purchase Price (Rp/kg)	Rp. 18,000	Rp. 18,333
Total Marketing Cost (Rp/kg)	Rp. 195	Rp. 371
Total Producer Profit (Rp/kg)	Rp. 7,494	Rp. 4,992
Total Retailer Profit (Rp.kg)	Rp -	Rp. 2,036

Based on Table 4, marketing channel I provides greater profits than channel II. Marketing margins at the producer level reached Rp7,689/kg in channel I and Rp5,181/kg in channel II, while at the retailer level channel II obtained a margin of Rp2,362/kg. The total profit in channel I of Rp7,494/kg was entirely received by the producer, while in channel II the total profit of Rp7,173/kg was shared between the producer at Rp5,136/kg and the retailer at Rp2,037/kg. This difference is followed by lower marketing costs in channel I (Rp195/kg) compared to channel II (Rp371/kg), which indicates that the shorter the marketing channel, the lower the costs incurred and the greater the profits received by the producer.

Table 5. Marketing Costs

Channel	Packaging Costs	Transportation costs	Palm Oil - Brown Sugar Production (l/day)	Marketing Costs
Producer Level				
I	Rp. 4,500	Rp. 15,000	100	Rp. 195
II	Rp. 12,214	Rp -	271	Rp. 45
Channel	**Packaging Costs**	**Transportation costs**	**Brown Sugar Sales (kg/day)**	**Marketing Costs**
Retailer Level				
I	Rp -	Rp -	0	Rp -
II	Rp. 6,465	Rp. 32,000	118.17	Rp. 326
Total Marketing Cost				
Channel I				Rp. 195
Channel II				Rp. 371

There are differences between these two channels, with Channel I having lower marketing costs. Marketing costs at the producer level are derived from the average packaging and production costs of the palm sap obtained, while marketing costs at the retailer level consist of packaging and transportation costs divided by total brown sugar production.

Channel I's margin is lower because channel II's margin costs reach Rp 326 per kilo, driven by transportation and packaging costs, which increase with the quantity of brown sugar produced. Meanwhile, channel I's marketing costs only cover the packaging costs of the sap produced and transportation. The packaging costs required in channel I are based on the amount of sap obtained, which is packaged in 100-liter containers.

Based on Table 5, it is known that the marketing costs incurred in channel II are much lower when compared to channel I. This is due to the quantity sold being greater, but the profit per kilo generated in channel I is greater than in channel II. This shows that the longer the supply chain, the higher the marketing costs and production costs will be, so that the profits generated are greater.

Farmer's Share Analysis

Farmer's share is the ratio between the price received by producers and the price paid by end consumers. *The farmer's share* and marketing margin depend on the efforts of each marketing department to add value to the commodity through marketing. A high *farmer's share percentage indicates that farmers receive a higher share of the price compared to other marketing institutions within a single marketing channel. The farmer's share* values in this study are as follows.

Table 6. *Farmer's Share* of Brown Sugar Marketing

Marketing Channels	Price of Brown Sugar at Producer Level (Rp/kg)	Consumer Price of Brown Sugar (Rp/kg)	*Farmer's Share (%)*
I	Rp. 18,000	Rp. 18,000	100.00%
II	Rp. 15,971	Rp. 18,333	87.12%

Table 6 shows that marketing channels I and II have *a farmer's share value* greater than 50%, which means that producers get a larger share of the price compared to other marketing institutions, so they are said to be efficient. *The farmer's share value* for channel I is 100.00%, and *the farmer's share value* for channel II is 87.12%. This occurs because production costs at the producer level in channel I are lower than those for channel II. Although consumer prices at the final level in channel II are higher than those for channel I, the price difference at the consumer level is lower than the difference at the producer level, so *the farmer's share value* for channel II is greater. Nur Cahaya (2024) states that low margins in marketing channels will affect the value of *farmer's share.*

Profit to Cost Ratio Analysis

Marketing efficiency can be seen from the profit ratio, which measures the ratio of profits earned to marketing costs incurred by each marketing agency. This allows us to assess the efficiency of a marketing system by comparing the ratio of profits, costs, and marketing margins to marketing costs. According to Jujur E (2021), a marketing system is considered efficient if the profit-to-cost ratio is greater than 1, indicating the business is

efficient, and if it is less than 1, the business is inefficient. Therefore, the profit-to-cost ratio for marketing brown sugar in Laut Tador Village can be seen in the following table.

Table 7. Profit to Marketing Ratio

Channel	Profit (Rp/kg)	Marketing Cost (Rp)	Profit Ratio
I	Rp. 7,494	Rp. 195	38%
II			
Manufacturer	Rp. 4,992	Rp. 45	110.9%
Retailer	Rp. 2,036	Rp. 326	6.24%

Table 7 shows that both MSME actors in channel I get a profit ratio of 38% to marketing while in channel II the profit ratio obtained by producers is 110.9%. This amount is because the costs incurred for marketing costs are quite small, producers in channel II already have regular customers so they do not need high marketing costs. Marketing costs in channel II for retailers are 6.24%, when compared to producers, this amount is much lower because retailers get a profit of IDR 2,036 per kilo with a marketing cost of IDR 326, marketing costs are higher than producers because buyers are end consumers used for direct consumption.

Marketing Efficiency

Efficient marketing can be achieved if the marketing system implemented is able to deliver products from farmer producers to consumers at the lowest possible cost and satisfy the marketing institutions involved in the process. The efficiency of a marketing system can be determined by several indicators such as marketing margin distribution, *farmer's share,* and profit-to-cost ratio (Jujur, 2021).

Based on the analysis of the distribution of brown sugar marketing in Laut Tador Village, the following analysis recapitulation results were obtained.

EP = $\frac{Biaya\ Pemasaran}{Harga\ Konsumen}$

Channel Pattern I $EP = \frac{Rp\ 195}{Rp\ 18.000} x\ 100\%$

$EP = 1.08\%$

Channel Pattern II (Producer) $EP = \frac{Rp\ 45}{Rp\ 15.971} x\ 100\%$

$EP = 0.28\%$

Channel Pattern II (Retailer) $EP = \frac{Rp\ 326}{Rp\ 18.333} x\ 100\%$

$EP = 1.77\%$

Table 8. Summary of Marketing Efficiency Indicator Values

Channel	Total Marketing Cost (Rp)	Consumer Price (Rp/kg)	EP (%)	Criteria
I	Rp. 195	Rp. 18,000	1.08	Efficient
II				
Manufacturer	Rp. 45	Rp. 15,971	0.28	Efficient
Retailer	Rp. 326	Rp. 18,333	1.77	Efficient

Table 7 shows the marketing efficiency value can be seen from the marketing margin, *farmer's share* and the ratio of profits to costs incurred in the marketing channel, which is said to be efficient according to Nur Cahaya (2024). Channel I has a total marketing cost of Rp 195 originating from packaging costs and transportation costs from the production of 100 liters of sap per day. With a selling price to the end consumer of Rp 18,000, the efficiency level of marketing channel 1 is 1.08%. In channel II, the producer level with a total marketing cost of Rp 45 and a price to consumers, namely the retailers themselves, is Rp 15,971, has a percentage efficiency value of 0.28%. Marketing costs of Rp 45 because the producer has regular customers who are retailers in the sales process to the end consumer, where the producer does not require large marketing costs. The marketing costs incurred by the only level 2 producer are Rp 45 originating from packaging costs for an average production of 271 liters of sap in one day. At the retailer level, channel 2 marketing costs reached IDR 326, where this amount was obtained from packaging costs and transportation costs from an average total production of 118 kg per day.

CONCLUSION

Based on the research results, it is known that there are two marketing channels for palm sap-based brown sugar in Laut Tador Village, namely channel I which distributes products directly from producers to end consumers, and channel II which involves retailers as intermediaries before the product reaches consumers. The analysis results show that both marketing channels are classified as efficient. However, channel I has a better level of efficiency because its marketing channel is shorter and marketing costs are lower than channel II. The marketing efficiency value in channel I is 1.08% , while in channel II it is 0.28% at the producer level and 1.77% at the retailer level. Thus, the marketing of palm sap-based brown sugar in Laut Tador Village has been running efficiently, although the direct marketing channel provides greater benefits for producers due to lower marketing costs and a shorter distribution chain.

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