

Research Article

Consumer Perception of Palm Sugar Products in Rokan Hulu District, Indonesia: A Prospective Analysis Approach

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Abstract.

The demand for palm sugar has been consistently increasing each year, particularly due to the growing public awareness of health benefits. Palm sugar is considered a safer sweetener option due to its low glycemic index and absence of side effects. The primary objective of this research is to analyze consumer perceptions regarding the attributes of palm sugar. This analysis is crucial in assessing consumer satisfaction and loyalty toward palm sugar consumption. Consequently, the findings will contribute to enhancing the marketing mix strategies for palm sugar. The survey method was employed to conduct this research, with a sample size of 30 consumer respondents selected through random sampling. Additionally, an opinion poll was conducted with key individuals to gather insights on the development of palm sugar products. The collected data were then analyzed using a prospective analysis approach. The research results indicate that specific attributes significantly influence consumer perceptions when purchasing palm sugar. Consumer perceptions in purchasing palm sugar are based on details of the marketing mix attributes which are the determining attributes, namely: taste, quality, palm sugar color, texture, popularity of craftsmen, and price. The marketing development implications of this research are improvements to three attribute components, namely raw material composition information, product standards, hygiene, partnerships, and technology. This serves as a consideration for craftsmen to improve consumer perceptions of palm sugar.

Keywords: marketing of palm sugar, perception, prospective

1. Introduction

If the community continues to cultivate and develop the sugar palm plant, it presents significant opportunities for substantial profits. This is because every part of the sugar palm plant can be utilized [1]. However, in the Rokan Hulu district, the utilization of sugar palm is not yet optimal due to a lack of knowledge in processing the plant's yield. The management of sugar palm plants still relies on traditional methods. The palm sugar agro-industry in Rokan Hulu Regency primarily operates at the household level, with an

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average daily production capacity ranging from 3 to 8 kilograms. Scaling up the palm sugar agro-industry activities can substantially increase the income of those involved. According to the findings of Bustam [2], the palm sugar processing business is viable as the conversion of sap into palm sugar adds significant economic value, resulting in relatively high prices.

There are limitations to the production capacity of palm sugar, which depend on the availability of palm sap. Typically, craftsmen are able to obtain around 20-22 liters of palm sap per day. To ensure sustainable palm sugar processing, it is crucial to have a consistent supply of raw materials. Research conducted by Marentek [3] indicates that palm sugar production is uncertain due to variations in the season and the Brix content of the sap water.

Additionally, Ramlan [4] highlights the strengths and weaknesses of the palm sugar business. The strengths include being a self-owned business, experienced producers, easy access to raw materials, increasing palm sugar prices, and a clear marketing strategy. However, there are weaknesses, such as a lack of labor, simple product packaging, absence of a business permit, insufficient promotion, and uncertain production quantities. Threat factors to consider include fluctuating prices and the potential decline in the number of sugar palm plants in the future.

The palm sugar agro-industry in Rokan Hulu Regency faces limitations in its production capacity, which is currently unable to meet consumer demand. Craftsmen obtain palm juice, some of which is sold in its fresh form at a price of Rp. 10,000 per liter, while the remainder is processed into palm sugar. Sales of both sap and palm sugar primarily occur directly at the craftsmen's homes. The quantity and quality of palm sugar produced vary among craftsmen due to differences in their skills. Additionally, factors such as the cleanliness of the sugar cooking area, water content in the palm sugar, and the size of the sugar crystals can vary. As a result, consumers tend to choose craftsmen whom they trust. Hasanah [5] findings indicate that positive consumer perceptions regarding product imagery significantly influence consumption. Understanding consumer behavior can help you create effective marketing campaigns. Each campaign can target a specific consumer group based on behavior.

Mulyani [6] suggests several necessary steps in the development of palm sugar, including maintaining the quality of palm sugar, ensuring consistency in raw materials, and establishing partnerships. The agro-industry faces various challenges, such as (1) a lack of sufficient and continuous raw materials, (2) market limitations, (3) weak

linkages between upstream and downstream industries, and (4) inadequate production and processing quality. Based on (2) the research result, the ideal conditions expected by the community are the existence of aren plant cultivation, optimally utilizing aren, increasing the community interest in aren, the system of selling aren products directly to buyers, and cooperation and assistance from the government and national park managers.

Considering these challenges, the aim of this research is to: (1) Analyze the determining attributes of consumer perceptions when consuming palm sugar. (2) Determine the implications for the development of palm sugar products in Rokan Hulu Regency.

2. Research methods

2.1. Place and time of research

This research was conducted in three sub-districts recognized as major palm sugar production centers: Rambah Samo Barat, Rambah, and Bangun Purba. The selection of these research locations was purposeful and based on their significance in the palm sugar industry. The research was carried out over a period from August 2023 to November 2023.

2.2. Sampling methods and data

This research adopts a survey methodology to gather data. The selection of research locations was purposive, considering their significance in the palm sugar industry. The research focuses on two primary subjects: palm sugar craftsmen and palm sugar marketing institutions involved in the marketing process. The selection of farmer samples was purposive, taking into account different marketing channels. A total of 30 consumers were chosen as samples, determined by a quota sampling approach. The sample of marketing institutions involved in marketing was determined by a census method, encompassing all marketing institutions in the research locations as respondents.

The data utilized in this research comprises both primary and secondary data sources. Primary data was collected through direct interviews conducted with selected craftsmen and marketing institutions serving as samples. A prepared list of questions guided the interviews to address the research objectives. On the other hand, secondary data refers

to information obtained from documents or written reports pertaining to the research objectives.

2.3. Data analysis

The analysis of determining attributes of consumer perceptions in consuming palm sugar in Rokan Hulu Regency was conducted using prospective analysis. Prospective analysis, as described by Bourgeois and Jesus [7], aims to determine the positioning of lever attributes to identify key attributes. This analysis helps in obtaining insights from four quadrants, representing the attribute positions. The influence between factors is scored by experts following the guidelines provided in Table 1.

TABLE 1: Attributes determining consumer perceptions based on marketing mix [8].

Marketing Mix	Attribute
Product	Taste
	Product quality
	Mold size
	Packaging
	Cleanliness
	Sugar color
	Brand popularity
	Sugar texture
	Variety of shapes
	Price
Place	Product continuity
Promotion	Promotion

The influence between factors filled in according to prospective analysis guidelines is as follows:

If the factor has no influence on other factors, if yes it is given a value of 0.

If not, then see whether the effect is very strong, if yes, give a score of 3.

If not, then see whether the influence is small = 1, or the influence is moderate = 2.

3. Results and Discussion

TABLE 2: Guidelines for assessing prospective analysis.

Score	Influence
0	No influence
1	Small influence
2	Moderate influence
3	High influence

3.1. Attributes determining consumer perceptions of palm sugar

Consumer perception plays a crucial role in assessing the attributes of palm sugar, including aspects related to the marketing mix. Understanding consumer perception is valuable for producers as it provides recommendations for improving the marketing of palm sugar products. The way consumers perceive the attributes of palm sugar also influences their attitude towards consuming it. A positive attitude towards palm sugar can significantly impact consumer behavior, influencing their purchasing decisions. On the contrary, negative perceptions may deter potential customers. According to Budi [9] research findings, consumers who are satisfied with the value offered by a product are more likely to become long-term customers. This highlights the importance of delivering a positive consumer experience and meeting their expectations in order to build customer loyalty.

To assess consumer perceptions in purchasing palm sugar, the attributes to be evaluated by both consumers and experts have been predetermined. These attributes are based on the marketing mix, specifically the product, price, promotion, and place attributes. Subsequently, an analysis of the level of influence between these attributes is conducted, considering both direct and indirect relationships. The findings of the prospective analysis on the marketing mix attributes of palm sugar indicate that certain attributes significantly impact consumer purchasing decisions. The determining attributes for consumers in purchasing palm sugar include taste, quality, color of palm sugar, texture, popularity of craftsmen, and price. These attributes play a crucial role in shaping consumer perceptions and influencing their preferences when it comes to purchasing palm sugar. By focusing on these key attributes, producers can better understand consumer preferences and tailor their marketing efforts accordingly. Phrabu [10] studying consumer behavior is necessary because these mean marketers can recognize what influences consumers

The results of the prospective analysis are depicted in Figure 1. Based on the analysis, it is evident that the distribution types tend to cluster in quadrant I and quadrant III. This clustering pattern indicates a stable system, wherein there is a strong relationship and driving variables exert significant control over the dependent variable [7]. Specifically, the upper left quadrant (quadrant I) represents the determining attribute quadrant, which comprises attributes that hold substantial influence and exhibit low dependence on other attributes. These attributes are considered determining attributes in the studied system, specifically in determining consumer attitudes towards purchasing palm sugar. They play a significant role in shaping consumer perceptions and are relatively unaffected by other attributes within the system (independent variables). This finding highlights the importance of the attributes located in quadrant I, as they strongly influence consumer perceptions and are crucial in understanding consumer behavior related to palm sugar purchases.

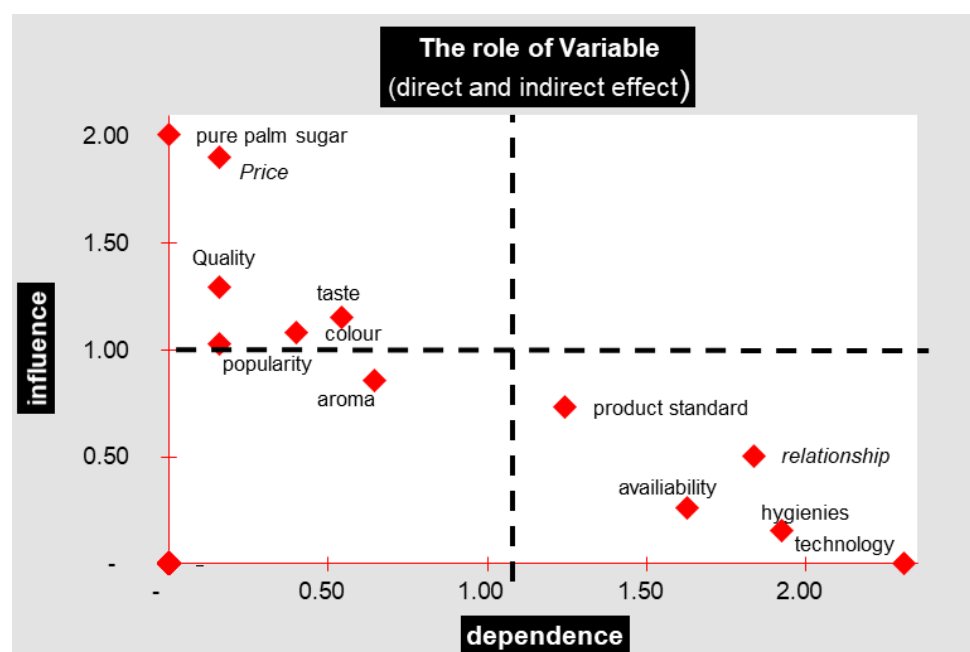


Figure 1: Output of prospective analysis.

The product marketing mix encompasses various attributes that contribute to its overall appeal. These attributes include the completeness of service offerings, product design, packaging, warranties or guarantees, seller's image or reputation, product quality, and physical characteristics. The importance of these attributes may vary across different market segments. In the case of palm sugar, variations in product attributes among craftsmen can significantly impact consumer trust. Consumers tend to seek out palm sugar craftsmen who meet their specific product criteria. It is worth noting that the

demand for palm sugar produced by craftsmen is generally high, with some craftsmen consistently selling out their stock directly from their homes, while others rely on retail intermediaries for distribution.

The distinct and preferred taste of pure palm sugar plays a significant role in maintaining consumer loyalty. Although taste is subjective, the delicious taste of palm sugar is an essential element in determining its quality. This finding aligns with Septiana [8] research, which highlights taste as a key attribute influencing product purchasing decisions. When palm sugar tastes good, with the right level of sweetness and a distinct palm sugar flavor, it enhances consumers' desire to repurchase from the same source. On the other hand, mixed palm sugar may be purchased by certain consumers due to its affordability, particularly for daily consumption and food preparation purposes. By understanding these product attributes and their influence on consumer preferences, producers can better cater to different consumer segments and effectively position their palm sugar products in the market.

Mixed palm sugar products indeed have distinct differences compared to pure palm sugar. These differences include a harder texture, darker color, and a less pronounced taste of palm sugar. Consumers who have a preference for pure palm sugar may be more discerning when seeking out sellers who can provide the specific product they desire. In the Rokan Hulu market, there are several retailers that have gained consumer trust for the quality of the palm sugar they sell. These retailers serve as direct extensions of craftsmen located in the Bangun Purba, Rambah Samo, and Rambah areas. The trust placed in these retailers stems from their association with skilled craftsmen in these regions, which gives consumers confidence in the quality and authenticity of the palm sugar they offer. This relationship between craftsmen and retailers highlights the importance of maintaining quality and consistency in palm sugar production. It also emphasizes the role of trust and reputation in influencing consumer purchasing decisions, particularly when it comes to specialized products like palm sugar.

Content size is indeed a determining attribute that influences consumers' perceptions of palm sugar. This attribute carries a strong influence, while the dependence between attributes is relatively low. Consumers consider the content size as a significant factor in their purchasing decisions because it directly affects the price of the palm sugar. Larger content sizes generally have higher prices, which can impact consumers' budgetary considerations. At the craftsman level, the price of palm sugar is determined based on the size per mold. Some molded palm sugar products weigh around 500 grams or 1 kg and come in sets of two per mold, typically priced at approximately IDR 15,000 per

mold. However, there are craftsmen who produce molded palm sugar with thinner or shorter sizes, weighing around 400 grams, which leads to a slightly lower price per mold, around IDR 14,000.

At the retailer level, the price of palm sugar per mold weighing 500 grams is approximately IDR 18,000, while for the 400-gram variant, it is around IDR 17,000. This pricing structure reflects the variations in content size and the corresponding market rates. Determining the price of a company's products is indeed a significant issue, as it can have implications for the company's viability and profitability. The relatively lower price of mixed palm sugar products compared to pure palm sugar affects consumer purchasing power. As consumer expectations for product quality increase, they become more selective in their purchasing decisions. However, many consumers still choose to purchase pure palm sugar directly from the craftsmen they trust. Alade [11] says that the consumers' behavior is influenced by certain socio-economic factors in taking any decision to purchase or demand products going by the theory of reasoned action.

According to Septiana [8], the selling price of a product must consider the quality aspects offered by the product. A product with good quality, supported by a competitive selling price, is crucial for remaining competitive in the market. Kurajdová, et al. [12] says that the credence quality attribute of healthiness and way of processing, and experience quality attribute of freshness and fat, and the intrinsic quality attribute of sensory appeals as the most important when purchasing product.

TABLE 3: Determination of agro industry prices for palm sugar [13].

No.	Palm Sugar Price Determination	Category
1.	Based on mold size	Varies greatly between craftsmen/retailers
2.	Sugar quality varies	The quality of sugar that varies between craftsmen has relatively no effect on the price of Palm Sugar
3.	Competitor orientation price	One of the craftsmen's strategies to increase sales volume and profits compared to other craftsmen

3.2. Implications for marketing development of palm sugar in Rokan Hulu

The development of palm sugar marketing carries significant implications, primarily rooted in the attributes situated in quadrant III. These aforementioned attributes correspond to the outcomes generated by the system. Notably, quadrant III attributes

exhibit minimal influence and are largely reliant on the system itself. It is important to acknowledge that these attributes are outcomes of the interplay between other attributes within both the independent and stakes sectors. In particular, the lower right quadrant (quadrant III) exerts a modest influence on consumer attitudes towards purchasing imported chocolate, while also displaying a substantial dependence on the interconnectedness of attributes, consequently manifesting as outputs within the system [13].

This factor warrants careful consideration by the producers themselves, as weaknesses within this quadrant come to light and serve as reference points for areas that require improvement or enhancement in accordance with consumer attitudes, following thorough research. One key attribute in this regard is the composition of palm sugar. Detailed information regarding the composition of raw materials provides insights into the blend of ingredients and additional components present in a product, thereby indicating the authenticity of palm sugar. The growing concern over palm sugar adulteration with granulated sugar has made consumers cautious when selecting the palm sugar they wish to consume. This aligns with the findings of Septiana [8], which emphasizes that information pertaining to the raw material composition of a product, particularly in the case of food products, holds significant importance for consumers when making purchasing decisions. Issues concerning preservatives, coloring agents, artificial sweeteners, and similar factors prompt consumers to exercise greater care in their product choices. Additionally, consumers with specific dietary restrictions or allergies need to be cautious when selecting products for consumption. It is crucial for consumers to have access to comprehensive information regarding the raw materials employed in the production of a product, ensuring their confidence and alleviating any hesitations when purchasing palm sugar products, thus ensuring their safety for consumption. Milind [14] says that consumer perception regarding online shopping is directly dependent on a number of factors, price of the products, and security of the products.

Currently, there is a notable absence of standardized quality regulations for palm sugar, including specifications regarding water content. This lack of standardization presents a significant challenge for the palm sugar industry. Furthermore, there exists a considerable disparity in processing technology capabilities among artisans. This variation directly affects the quality of taste, water content, mold size, packaging, and overall hygiene standards, with discrepancies observed across different craftsmen. In

order to address these issues, it becomes imperative for the government and relevant agencies to provide guidance and support in a phased development approach. Enhancing the skills of craftsmen can be achieved through comprehensive training and coaching programs implemented within farmer groups, community organizations, and cooperatives. By offering assistance and fostering skill development, the aim is to create a more consistent and improved palm sugar industry.

By adhering to principles of quality and quantity, craftsmen can greatly contribute to the advancement of the local economy and bolster tourism in Rokan Hulu Regency. Additionally, this commitment to quality can support the growth of cafes that serve sugar palm coffee. The expansion of sugar palm product offerings has the potential to enhance competitiveness and generate profits for both the local community and business owners. To achieve this, it is essential for craftsmen to establish partnerships that facilitate the implementation of quality standards and the formation of sugar palm product clusters. These collaborative efforts will not only ensure consistent quality but also promote collective growth and success within the industry.

To overcome the limitations faced by craftsmen in negotiations, technology transfer, and financial management, it is crucial to seek assistance from reliable work partners. The competence and alignment of these partners will significantly influence the quality and attainment of sugar palm product standards in a sustainable manner. By joining farmer groups or cooperatives that exhibit effective operational management, craftsmen can enhance their negotiating power and establish partnerships with more dependable companies. The nature of these partnerships relies on mutual agreements between craftsmen, farmer groups, or cooperatives, and the partnering companies regarding funding, implementation, and marketing strategies for sugar palm products. Through such collaborations, craftsmen can access the necessary resources, expertise, and support to facilitate the growth and success of their sugar palm businesses. The modern and professional marketing staffs try to know consumers and their responses, therefore, analyses the essential traits of their behavior.

4. Conclusion

Consumer perceptions in purchasing palm sugar are based on details of the marketing mix attributes which are the determining attributes, namely: taste, quality, palm sugar color, texture, popularity of craftsmen, and price. Consumers who have a preference for pure palm sugar may be more discerning when seeking out sellers who can provide

the specific product they desire. As consumer expectations for product quality increase, they become more selective in their purchasing decisions. However, many consumers still choose to purchase pure palm sugar directly from the craftsmen they trust. This serves as a consideration for craftsmen to improve consumer perceptions of palm sugar. The commitment to quality can support the growth of business palm sugar. The potential of sugar palm needs to receive attention from stakeholders for the sustainability of the sugar palm business in Rokan Hulu Regency. Providing technical assistance/mentoring has been widely carried out, but craftsmen's low interest can be motivated by involving them and joining groups to market sugar palm products.

References

- [1] Andaryogi D, Awami SN, Fachhriyan HA, Subekti E. Analisis Pendapatan dan Kelayakan Usaha Gula Aren di Kecamatan Sumowono Kabupaten Semarang. *Proceedings Series on Physical & Formal Sciences*. 2022 Nov;4:226–31.
- [2] Bustam B, Sabrab A M. Analisis nilai tambah produk gula aren di desa Ogowele Buga Kabupaten Tolitoli. *Insight Management Journal*. 2021 Sep;2(1):20–6.
- [3] Marentek M, Rasjid E, Papia J. Analisis Kelayakan Usaha Gula Aren Cetak di Kota Tomohon. *Sentrinov*. 2017;3:422–32.
- [4] Ramlan L, Susilo WP. Strategi Pengembangan Usaha Gula Aren (Arenga Pinnata Merr) di Desa Lengora Selatan Kecamatan Kabaena Tengah Kabupaten Bombana. *Jurnal Akademik Pendidikan Ekonomi*. 2020 May;7(1):49–62.
- [5] Hasanah N, Utomo B, Alam MC. Analisis Persepsi Konsumen Terhadap Keputusan Pembelian Teh Pucuk Harum Dalam Kemasan Botol (Studi Kasus: Mahasiswa Strata Satu Di Lingkungan Universitas Mayjen Sungkono Mojokerto). *Jurnal Ekonomi Pertanian dan Agribisnis*. 2023 Nov 9;7(4):1232-43.
- [6] Mulyani DD, Rasdiansyah R, Martunis M. Strategi Pengembangan Usaha Pengolahan Gula Aren Berdasarkan Metode Analisis SWOT (Studi Kasus Kecamatan Lawe Bulan, Kabupaten Aceh Tenggara). *Jurnal Ilmiah Mahasiswa Pertanian*. 2022 May;7(2):309–15.
- [7] Bourgeois R, Jesus F. Participatory prospective analysis: exploring and anticipating challenges with stakeholders. 2004.
- [8] Septiana I. Analisis Persepsi Konsumen Cokelat Stick Pada Perusahaan Alia Chocolate Kabupaten Bogor Jawa Barat. 2010

- [9] Budi FA, Dewi N, Kusumawaty Y. Analisis persepsi konsumen terhadap ikan salai di kabupaten kuantan singingi [Jurnal Agri Sains]. JAS. 2022 Dec;6(2):140–9.
- [10] Prabhu JJ. A Study and Analysis of Consumer Behavior and Factor Influencing in Marketing. International Research Journal Of Modernization In Engineering. 2020 Apr;2(04):68–76.
- [11] Alade O. The Influence of Socio-Economic Factors on Consumer Behavior: A Theoretical Explanation of Reasoned Action. Available at SSRN 4503703. 2023 Jul 7.
- [12] Kurajdová K, Tábořecká-Petrovičová J, Nedelová G. Quality attributes that matters when purchasing milk by Slovak consumers. Sci Agric Bohem. 2019;50(4):244–50.
- [13] Hardjomidjojo H. Metode analisis prospektif. Bogor: Institut Pertanian Bogor; 2002.
- [14] Marathe DA, Gawade G. Literature review on customer perception about online shopping with reference to Amazon in India. Juni Khyat Journal. 2020;10(7):372–84.