

# From Producers to Consumers: An Analysis of Distribution Channels and Added Value of Sago Products in East Java, Indonesia

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**Abstract:** The distribution channel is vital in the sago business because it connects producers and consumers. In this paper, we identify the distribution channels of sago products and their functional classification. We found that the distribution of sago products, such as dried sago and roasted sago (*sagu kotak*), in East Java is classified as indirect distribution, which relies on intermediaries. Intermediaries such as distributors, wholesale agents, and retailers are primarily actors that directly coordinate buying, selling, storing, and distributing sago products from Riau and Maluku to consumers in East Java. In addition, our calculation showed that sago pudding has a highly profitable value-added process as compared to that of roasted sago.

**Keywords:** distribution channels, dried sago, intermediaries, roasted sago, sago pudding

## Introduction

Sago palm (*Metroxylon sagu* Rottb.), a tropical crop containing a large amount of starch in its trunk, grows in latitudes 10 degrees north and south of the equator (Ehara et al., 2015). Recently, sago starch has become an important raw material for utilization in various food industries, and Indonesia is a leading supplier. The starch is mainly produced by smallholders. Therefore, sago is not only seen as a food but also a functional commodity with economic value that helps reduce poverty. However, sago-based industries have stagnated due to the lack of interrelation between upstream and downstream enterprises (Taridala et al., 2013).

It is well recognized that distribution channels contribute to the achievement of business goals. In sago-based industries, understanding the distribution channel helps improve the relationship between upstream and downstream and maximizes profit. Several studies have explained that the distribution

channel is the mechanism or pathway by which a product or service is made available for the use of or consumption by customers (Coughlan et al., 2006; Stone & Macarthur, 1984; Szopa & Pękała, 2012). Distribution channels represent networks between producers and consumers, including various intermediaries such as wholesalers and retailers (Anđelković et al., 2017). The role of distribution channels is to bridge the gap between producers and consumers by adding value to products or services (Kim & Frazier, 1996) and to overcome the gap between the places of production and consumption by creating time, place, and possession utilities (Anđelković et al., 2017).

As a distribution channel is a network of different entities with many partners, it must operate in an integrated way to maximize profit. However, to date, there is no empirical evidence of distribution channels and price transmission in sago-based industries. This situation indicates a need to investigate the

importance of distribution channels in the sago supply chain, especially in East Java, which is the main market destination. In the next section, we cover the data source and methodology of our study. The characteristics of the distribution channels for several sago products are later presented and discussed, followed by our conclusion and suggestions.

## Methodology

Our survey was conducted in January 2019 in Surabaya, the capital city of East Java, Indonesia (Figure 1). Three traditional markets (Pabean,

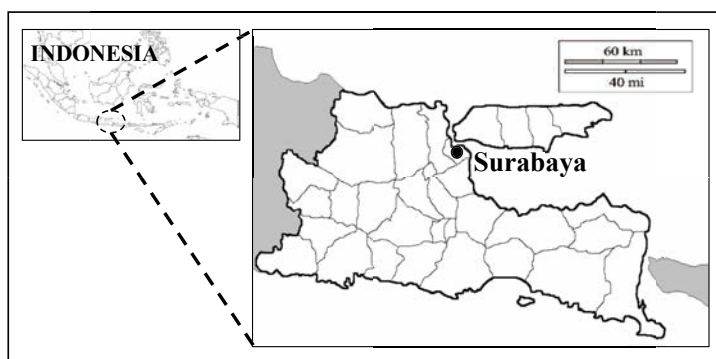


Fig 1. Map of the research location

Wonokromo, and Blauran) and a dessert shop were observed to identify sago starch utilization and distribution channels. Purposive sampling was used as a tool for informant selection in this case study. For example, the selected distribution agent (1 respondent), wholesalers (2 respondents), and retailers (4 respondents) are the biggest actors with extensive networks for sago distribution in East Java. In addition, 1 respondent for sago pudding is the proprietor of the company with the largest sago dessert shop chain in Surabaya. Data were then collected through questionnaire-based interviews and field observation.

Marketing margin analysis was used to identify the distribution channels by tracing the movement of the dried sago and roasted sago from producers to

consumers. The role of the various actors in the marketing system is examined, and finally, data on prices in the various distribution channels are analyzed to estimate marketing margins at each level. In addition, Hayami's method is used to calculate the added value received by the sago pudding seller (Hayami et al., 1987).

## Results and Discussion

### 1. Sago products in East Java

Java Island, especially East Java, is considered the main market for sago starch, where it is mainly used as a food ingredient. Dried sago and roasted sago are commonly found in the traditional markets of Surabaya. We also found sago pudding, a popular dessert made from roasted sago (Figure 2). Dried sago starch is produced by drying wet sago under the sun to reduce the water content to 12–15% (Yamamoto et al., 2015), while roasted sago is made by putting wet sago into a heated clay mold for 15–20 minutes (Metaragakusuma et al., 2016). This result

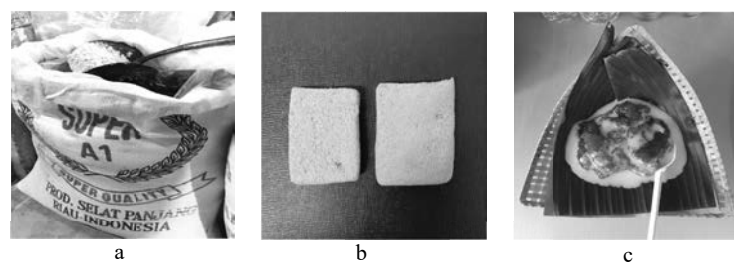


Fig 2. Sago products found in Surabaya, East Java: a. dried sago, b. *sagu kotak*/roasted sago, and c. sago pudding/*bubur sago* made with *sagu kotak* and coconut milk

in a reliable product with high durability during transportation and high resistance to spoilage caused by molds and insects during storage (Wijandi, 1980). In Indonesia, roasted sago is called by different names in different places, such as *sagu kotak*, *sagu lempeng*, or *sagu ambon*. In this paper, we use the term “*sagu kotak*,” as it is commonly called in East Java.

As seen in Figure 3, dried sago is produced in Selat Panjang, Riau, and then it is distributed to East Java

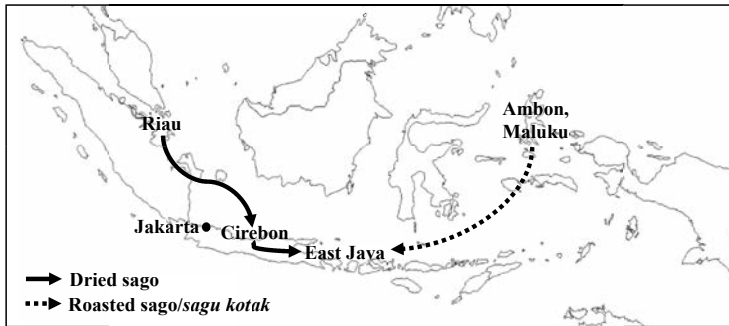


Fig 3. Geographical flow of sago products from Riau and Maluku to East Java

from Cirebon. Based on the data from Cirebon Port, the demand for dried sago from 2014 to 2018 in Java Island remained stable with an average of 80,041 tons/year. Meanwhile, roasted sago is distributed mainly from Maluku. However, since sago is not considered a main commodity in Maluku, data related to shipping from Maluku to Surabaya is not available, which makes it challenging to trace *sagu kotak* trading. Therefore, we only focus on the distribution channel of *sagu kotak* when it arrives in East Java.

Sago pudding, called *bubur sago* in East Java, is a famous dessert in East Java. Sago pudding is made by boiling *sagu kotak* with water and sugar; it is served with coconut milk. It is sometimes added to other ingredients such as black glutinous rice, sweet potato, and mung bean and called *bubur campur* (mixed pudding). Local people believe that sago pudding relieves fever and sore throat. Based on our interview, we learned that demand for sago pudding increases greatly for holy days such as Ramadhan and Eid al-Fitr, resulting in higher demand for *sagu kotak*.

**2. Dried sago distribution channel**

According to our investigation, the distribution of dried sago can be classified as indirect distribution with market linkages from producers in Riau to domestic traders in Cirebon and East Java. Since the

distribution system is indirect, the sago business relies on intermediaries to function effectively. Typically, intermediaries such as wholesalers and retailers are perceived to be key actors in the distribution channel (Coughlan et al., 2006). A number of intermediaries are important in the distribution channels because they determine the length of the chain from producers to final customers (Szopa & Pękała, 2012). The dried sago distribution channel from sago farmers in Riau to consumers in East Java can be seen in Figure 4.

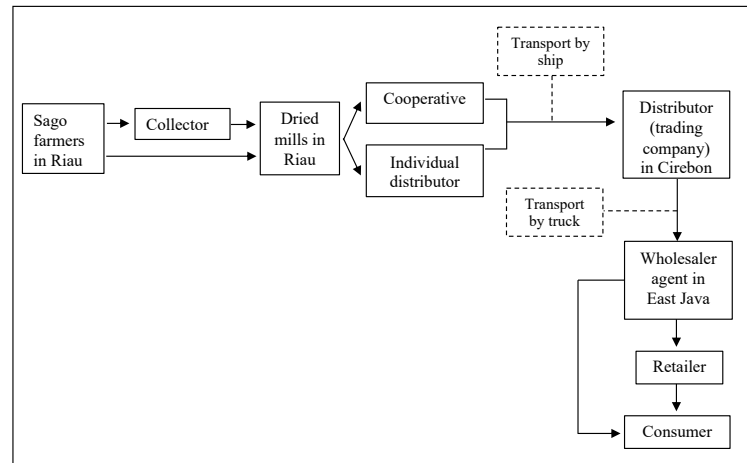


Fig 4. Distribution channel of dried sago from Riau to East Java

Dried sago from Riau is shipped to Java Island through Cirebon and redistributed to wholesaler agents and retailers in East Java. It may take 4–5 days from Riau to Cirebon by ship, and then it is kept temporarily in port storage. Meanwhile, it takes two days to redistribute dried sago from Cirebon to Surabaya by trucks, where it is sold by wholesaler agents and retailed at the local market (Figure 5).

According to the wholesaler agent at Pabean Market, their product-selling capacity is 12.5 tons/month. The relationship between distributors in Cirebon and Surabaya is based on mutual trust, and the order is completed by phone without any explicit



**Fig 5.** a. Dried sago is kept in Cirebon Port's storage facilities; b. dried sago is sold together with tapioca starch at the wholesaler agent in the local market of Surabaya

contract. They also had the opportunity to purchase dried sago from Lampung. However, they were not interested, because they believe the quality of dried sago from Riau is better, and they have worked out the logistics and established a relationship of trust. Meanwhile, retailers could sell between 50 and 200 kg of dried sago at the local markets. According to retailers, the distributor agent always checks the available stock of dried sago and delivers it as soon as the purchase order is made.

Dried sago starch is sold by a cooperative at a price of Rp 5,050/kg to the distributors in Cirebon (Pratama et al., 2018). The distributors in Cirebon then sell the dried sago at a price of Rp 6,000/kg. In East Java, the wholesale agent sells dried sago at Rp 7,600/kg. Meanwhile, at the retail level, dried sago is sold for Rp 10,000/kg to consumers. Due to the long chain between a producer and consumers, the price of dried sago is hiked more than 98% from the cooperative in Riau until it reaches consumers in East Java without any extra value addition. This happens due to a long distribution chain that covers transportation, storage, and profit for distributors and retailers. Furthermore,

payment flow is generally on a cash basis, and the information flow is related to production capacity, price, shipping status, and sales data. The movement of information is crucial because it helps to support supply chain activities. In addition, the transparency of the distributor's delivery system is also essential for the sago starch to reach consumers in East Java.

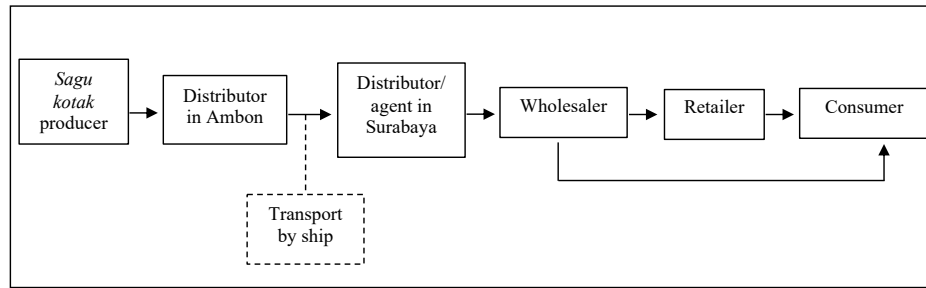
Based on marketing margin analysis (Table 1), retailers get the highest marketing

margins among all actors involved. The retailers' marketing margin is Rp 2,400/kg (24%), while the cooperative receives the lowest, just Rp 50/kg (1%). Our study also revealed that there is weight loss during the shipment due to the loss of moisture content. The dried sago in Surabaya weighs only 90–98% of its original weight. The wholesaler agent also said that the price of dried sago is higher than that of tapioca starch, which is Rp 6,000/kg. However, the price of dried sago is likely to remain stable as compared to the price of tapioca, which fluctuates greatly. They also consider that dried sago has better long-term durability than tapioca and wheat flour.

Although the price of dried sago does not fluctuate like that of tapioca starch, the long chain leads to higher prices for consumers in East Java. In fact, the sago supply chain is heavily influenced by the availability of infrastructure such as roads, ports, and transportation networks. Our interview with transportation agents in Cirebon indicated that bad weather and unreliable infrastructure can hinder the distribution of dried sago transported by sea. Those might impede delivery and create storage problems, which affects the quality of

**Table 1.** Marketing margin of dried sago intermediaries (Rp/kg, 1 US\$=Rp 14,447)

Intermediaries	Cost	Selling price	Margin	Margin (%)
Cooperative in Riau	5,000	5,050	50	1%
Distributor in Cirebon	5,050	6,000	950	16%
Wholesaler in East Java	6,300	7,600	1,300	17%
Retailer in East Java	7,600	10,000	2,400	24%



**Fig 6.** *Sagu kotak* distribution from Ambon to East Java

sago starch. Increased prices are also unavoidable because distributors must pay handling and transportation costs, bear the risk of physical deterioration of the product, and make a profit.

### 3. *Sagu kotak* distribution channel

As shown in Figure 6, the *sagu kotak* supply chain is also considered an indirect distribution from Ambon to East Java. Shipping from Maluku to the Port of Tanjung Perak, Surabaya, takes one week; it is then transported to distributors' warehouses by truck. The distributors then sell the product to wholesalers and retailers.

At the distributor level in Surabaya, *sagu kotak* is sold for Rp 1,395,000 (Rp 15,500/kg) per sack (90 kg), on average. The wholesalers then store *sagu kotak* in their warehouses and sell it for an average of Rp 17,250/kg. At the retailer level, the average selling price of *sagu kotak* is Rp 21,000/kg. Unlike distributors and wholesalers where *sagu kotak* is sold in bulk, *sagu kotak* is sold in small quantities at the retail level. The process of coordination between the distributor–wholesaler and the wholesaler–retailer is relatively good, making the supply and demand process smooth. According to wholesalers, distributor agents always check the available stock of *sagu kotak* and deliver it as soon as the purchase order is made.

Wholesalers also predict that the price of *sagu kotak* is likely to increase in the future due to strong demand.

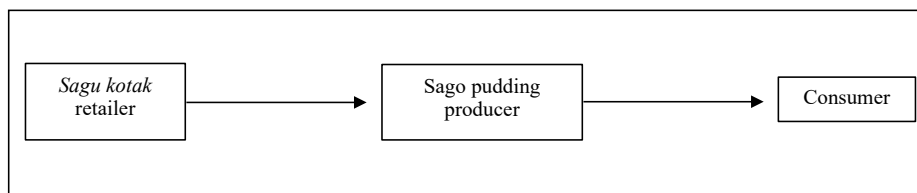
Since distributor information in Ambon was not available, we excluded the calculation for distributors in Surabaya and focused on wholesalers and retailers. Our result showed that the marketing margin of the retailer is Rp 3,750/kg (18%), while the wholesaler receives a margin of Rp 1,750/kg (10%) (Table 2). Cash payments are commonly used for transactions, and the information flow in the upstream sector is related to the price, delivery status, and order quantity. The information flow is important, especially in terms of delivery volume. Retailers provide feedback to wholesalers during seasons of anticipated high demand, such as during the holy days, so that a higher supply is available. According to wholesalers, the color and size of *sagu kotak* are not uniform, which sometimes makes it difficult to sell. We assume that this is because there is no control mechanism to ensure the quality of *sagu kotak* due to reliance on traditional production methods.

### 4. *Sago pudding (bubur sago)* distribution channel and added value analysis

Sago pudding distribution can be classified as direct selling. Through direct selling, producers can avoid intermediaries in the supply chain and sell

**Table 2.** Marketing margin of *sagu kotak* intermediaries in East Java (Rp/kg, 1 US\$=Rp 14,447)

Intermediaries	Cost	Selling price	Margin	M (%)
Wholesaler	15,500	17,250	1,750	10%
Retailer	17,250	21,000	3,750	18%



**Fig 7.** Distribution of sago pudding in Surabaya, East Java, Indonesia

products directly to consumers. As seen in Figure 7, the producer buys *sagu kotak* from the retailer in the local market and sells sago pudding directly to consumers. In addition, sago pudding is sold online through several e-commerce apps. E-commerce is very popular now because it satisfies the needs of busy individuals living in the city to order food and receive delivery within a few minutes (Zulkarnain et al., 2015). The tremendous pressure to shorten the distribution channel while increasing its effectiveness and efficiency incentivizes producers to utilize e-commerce because it eliminates boundaries and geographic restrictions and creates communication paths among supply chain actors (Hsu, 2017). It also changes traditional shopping patterns, especially for information gathering, transaction, buying processes, and consumer logistics, which strengthens the core business (Seitz, 2013). According to our interview, the sago pudding producer is more likely to use online order and payment systems with their customers because of the flexibility and responsiveness. In

addition, e-commerce also gives them more profit due to high exposure, easy access to consumers, and competitive price due to low distribution costs.

The added value of sago pudding was also calculated in this study. The processing of *sagu kotak* can increase its value by producing better taste and a more attractive appearance. It also helps the producer to get more income. The added value for sago pudding was calculated using Hayami's method (Table 3). The result showed that the value of outputs (sago pudding) produced monthly by the dessert shop is 455 kg/month (1,300 portions) with input raw material from *sagu kotak* of 78 kg and labor of 416 hour. Based on the comparison of the final product and labor with the raw material, we obtained conversion factors of 5.8 and 5.3, respectively. In addition, the added value for sago pudding is Rp 55,128,667 (90.9%) with net profit of Rp 47,640,667 (86.4%). This shows that sago pudding has a remarkably high added value, providing significant income and profit.

**Table 3.** Added value of sago pudding/month (1 US\$=Rp 14,447)

Variable	Computation	Values
<b>Outputs, inputs, and prices</b>		
Output (kg/month) *	A	455
Raw material (kg/month)	B	78
Labor (hour/month)	C	416
Conversion factor	$D = A/B$	5.8
Coefficient of direct labor	$E = C/B$	5.3
Output price (Rp/month)	F	10,400,000
Average labor wage (Rp/day of work)	G	1,404,000
<b>Income and profit</b>		
Raw material price (Rp/kg/month)	H	1,638,000
Other input price (Rp/kg/month) (coconut, shop rental fee, etc.)	I	3,900,000
Value of output (Rp/month)	$J = D \times F$	60,666,667
Added value (Rp/kg)	$K = J - I - H$	55,128,667
Ratio of added value to total value (%)	$L = (K/J) \times 100\%$	90.9
Compensation given for labor (Rp/month)	$M = E \times G$	7,488,000
Shares given for labor (%)	$N = (M/K) \times 100\%$	13.6
Profit (Rp/month)	$O = K - M$	47,640,667
Value of profit (%)	$P = (O/K) \times 100\%$	86.4

\* 1 portion of sago pudding = 350 gr

## Conclusion

This study revealed that the distribution channels of dried sago and *sagu kotak* are indirect, relying on intermediaries to perform most functions and fill the gap between producers and consumers. Meanwhile, sago pudding is distributed by direct selling, with additional sales through e-commerce. Sago pudding also has the highest significant value-adding process, as compared to *sagu kotak*. Based on these conclusions, we make several suggestions, as follows: i) a direct marketing strategy and short supply chain can be used to reduce cost and promote sago products while avoiding high marketing costs due to extended distribution channels, ii) since poor transport infrastructure is a significant barrier for distribution channels, options such as investing in road construction and logistic facilities should be explored by the government to improve the logistical performances, and iii) product development with higher added value can be a strategy for producers to obtain higher income, open up untapped markets, and acquire a more favorable market position.

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