Rice Marketing Systems Model to Strengthen Institutional of Rice Marketing in Lampung Province Indonesia

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ARTICLE INFORMATION

ABSTRACT

A marketing system is efficient if it is able to deliver production results to consumers at the lowest possible cost and relatively even margins to the actors involved. But in reality, when production is in surplus while demand is not, it causes the market mechanism to produce price distortions. This study aims to analyze the rice marketing system with an organizational approach and market demand (market trends, market demand functions, and price elasticity). The data is obtained from the relevant authorities as well as from observations and internet searches. The results showed that the marketing actors for unhusked rice/rice consisted of collectors, rice millers, inter-district traders, and retailers where almost half of the profits were enjoyed by rice mills. The results of the market demand function analysis show that rice consumption will tend to decrease if there is an increase in rice prices. Consumers will divert some of their consumption expenditure on rice substitute products. The results of market trend analysis show that rice consumption has a positive trend over time.

Keywords: Market Demand, Market Trends, Organizational Approach, Price Elasticity, Rice Marketing System.

INTRODUCTION

Farmers in general are still oriented to the quantity of production so that in the production center areas when production runs a surplus, the demand that occurs is often not proportional to the supply of the resulting production. This condition will cause the market mechanism to produce price distortions. This is a reflection of an indication of the inefficiency of the marketing system faced by producer farmers. An efficient marketing system will at least provide a fair share of the price for the producers and the marketing institutions involved.

The supply of rice for people's food needs is very dependent on the level of rice production produced. Lampung Province, as one of the rice-producing regions, also experienced a similar phenomenon where there was a tendency to decrease rice production and productivity, the average decline in production reached 2.09 percent, while fluctuations and changes in rice prices occurred based on quality groups. Rice price movements in mills fluctuate according to quality groups. The highest price increase for premium and medium-quality rice occurred in January, and the highest increase in low-quality rice occurred in July (BPS Lampung Province, 2021). The development of the average price of rice at the mill level by the quality group during 2020 can be seen in Table 1.

Table 1. Average rice prices in mills by quality group (IDR/Kg), January–December 2020

Month	Premium		Medium		Low quality	
	Average price (IDR)	Change	Average price IDR)	Change	Average price (IDR)	Change
January	9.971,43	10,55	9.364,29	11,75	0	0
February	10.063,64	0,92	9.415,00	0,54	9.000,00	0,18
March	9.944,44	-1,18	9.557,14	1,51	0,00	100,00
April	10.228,57	2,86	9.305,56	-2,63	9.350,00	0,00
Mei	9.3100,00	-8,98	8.931,25	-4,02	8.500,00	-9,09
June	9.275,00	-0,38	8.850,00	-0,91	8.200,00	-3,53
July	9.322,22	0,51	9.050,00	2,26	8.500,00	3,66
August	9.711,54	4,18	8.950,00	-1,10	0,00	-100,00
September	9.475,00	-1,22	8.905,00	-0,95	0,00	0,00
October	9.475,00	-1,22	8.905,00	-0,95	0,00	0,00
November	9,699,23	2,05	8.795,00	-1,24	0,00	0,00
December	9.620,00	-0,51	8.958,33	1,86	0,00	0,00
Average	9.681,89	0,63	9.689,30	0,63	3.629,17	-17,40

Note: Rice Producer Price Statistics in Mills in 2020
Source: BPS Lampung Province, 2021

Based on Table 1, it can be seen that the price of rice at the grinder level is highly dependent on the quality of the rice produced. Besides being determined by the costs incurred from the process of changing the shape of the harvested dry grain purchased from farmers. This is because the price structure both at the mill level and at the consumer level (at the market level) is a function of prices at the farm level plus the cost of commodity transfers (Andayani, 2007).

Since 2017 the government has issued a rice policy, namely the Determination of the Highest Retail Price of Rice as stipulated in the Minister of Trade Regulation Number 57 of 2017. This policy divides medium and premium rice by dividing the Highest Retail Price of Rice into several regional (archipelagic) areas (Ministry of Trade, 2017). The government's policy of dividing medium and premium rice at retail prices into several regional areas (islands) is important because there is a diversity of social classes on various islands.

The grain/rice marketing system is said to be efficient if the system is able to convey the results of production from producers (grain from farmers) to consumers (rice) at the lowest possible cost and is able to hold a fair distribution of the total price paid by final consumers to all participating parties in rice production and marketing activities. The phenomenon that occurs in the market structure of agricultural commodities is that at one-time production runs a surplus and at other times demand is often not proportional to the products produced. This condition causes the market mechanism to produce price distortions. This is an indication of the inefficient marketing system faced by producer farmers. Therefore, this research aims to:
1. Analyzing the rice marketing system through a market organization approach, market demand analysis approach, covering market trends, demand functions, and price elasticity.
2. Formulate an efficient marketing system model from various approaches.

LITERATURE REVIEW

Grain/Rice marketing pattern
The results of previous research on the marketing pattern of unhulled rice and rice in Indonesia show that trading system actors in most of the main national rice-producing provinces are able to increase profit margins when prices increase at the consumer market level. This is done by delaying the price increase received at the price that should be paid to farmers (Mardianto, Supriatna, & Agustin, 2005). On the other hand, business actors are also able to maintain the same profit margin even when prices at the consumer level are decreasing by accelerating the decline in purchasing prices for farmers so that market risk is entirely borne by farmers. The behavior of these traders shows a monopsonistic power because they have quick accessibility and information to the consumer market.

Market control by market participants then causes the risk of market fluctuations to be continued at a level below it and eventually reaches farmers as residual recipients of the risk without having the ability to reject or avoid it. This situation shows the separation of farmers from the market because the real market players are traders as actors in the trading system who deal directly with consumers. In this condition, market incentives and efforts to improve the welfare of farmers through market policies will not be effective because they are mostly enjoyed by business actors. With the separation of unhusked rice/rice farmers from the market, all market incentives and efforts to improve farmers' welfare through price policies will not be effective for farmers because they will be enjoyed more by business actors. Therefore, improving the welfare of farmers should be done through policy mechanisms that can be directly felt by farmers and their families without intervening in the market.

Therefore, the grain/rice marketing system has a very important function in connecting producers with consumers and providing great added value to the economy. As the results of research by Taufik (2009) show that increasing the efficiency of grain/rice marketing is based on farmer group associations (not individual farmers), repositioning of farmers from just producers to suppliers, and the development of the farm-gate market system will strengthen the bargaining position of farmers in the rice marketing system. Suryana and Mardianto (2001) stated that there are at least four main characteristics of Indonesian rice farmers. First, the average scale of farmland tenure is narrow, around 0.3 ha/farmer. Second, around 70 percent of farmers (especially farm laborers and small-scale farmers) belong to the poor or low-income groups. Third, approximately 60 percent of farmers are net consumers of rice. Fourth, the average farm income contributes about 30 percent of total household income.

Supriatna (2002) conducted a study that aims to identify the characteristics and problems in the rice marketing pattern in North Sumatra, finding that grain producers have a lack capital so they are entangled in money lenders so the majority of farmers (95%) sell their unhulled rice immediately after harvest. Therefore, the selling price of grain falls. Meanwhile, Mardianto et al. (2005) stated that one of the sources of the low selling price of grain received by farmers is the length of the grain marketing chain. The levels of grain trade consist of village-level traders, subdistrict-level traders, district-level traders, and wholesalers who will process unhulled rice into the rice and sell it to consumers. Natawidjaja (2001), states that there are two things that cause differences in rice prices, thus encouraging rice to be transported from one area to another. The first one is the differences in the amount of rice availability so that rice is sent from surplus areas to deficit areas. The second one is the differences in people's preferences and purchasing power, so that good quality rice is sent to consumer areas with high purchasing power and taste, to be exchanged for lower quality and cheaper prices. Purchasing power and people's appetite for rice quality (original, medium, and premium) are highly dependent on the social class indicated by the level of income. As stated by Singh et al. (2021), people of different social classes have different privileges when shopping, and this affects their shopping behavior.

The price of rice does not only depend on the marketing pattern but also on the availability of the staple food and its availability is influenced by the amount of rice or rice production in an area. Rice cultivation is a determinant of the success of the level of grain/rice production. Success in rice cultivation, apart from depending on production inputs and land, is also supported by the ability of human resources (in this case farmers). This is in line with the opinion of Ibrahim et al. (2019), which states that labor is part of the main factors that can affect the movement of productivity. Thus, there is always a gap between actual rice production and potential rice yields related to labor problems, cultivation technology and socio-economic problems (Hilal & Mubarak, 2013). In 2017 the government issued a rice policy, namely the Determination of the Highest Retail Price of Rice (HRPR) as stipulated in the Minister of Trade Regulation No. 57 of 2017. This policy divides medium and premium rice by dividing (HRPR) into several regional (archipelagic) areas (Ministry of Trade, 2017). Basically, there are 2 major forces that influence price formation, namely market forces (marketing forces) and government policies. The policy for the procurement of grain/rice and the distribution of rice by the government (including the price policy), is contained in Presidential Instruction No.

3 of 2012. This policy is intended to stabilize the national economy, protect farmers' income levels, stabilize rice prices, secure the Government's Rice Reserves, and distribute rice for the purposes set by the Government and as a continuation of the Rice Policy.

The government manages rice price policy intensively through Bulog, this is because it is deemed necessary to stabilize rice prices for consumers (Kusumaningrum, 2008). The policy on the price of grain and rice is one of the important instruments in creating national food security. The grain price policy is not effective if it is not followed by other rice policies. The rice price stability policy in the domestic market, which is oriented towards increasing farmers' income, is a policy package that is very much needed by rice farmers (Malian, Mardianto, & Ariani, 2004). The stability and level of rice prices will affect people's accessibility to rice food. Four obstacles are faced in implementing the price stabilization policy, namely the timeliness of implementation, the accuracy of the volume, the quality of rice, and the existence of anti-competitive behavior from rice traders (Aryani, Natawijaya, Noor, & Maulana, 2017). Rice is one of the main commodities contributing to inflation. The government always tries to maintain rice price stability so that it is to a certain extent that benefits farmers and consumers (Aryani, 2021).

Rice Market Integration

Market integration is a measure that shows how much price changes that occur in the reference market (markets at a higher level such as retail traders) will cause changes in the follower markets (such as markets at the farmer level). This shows that market integration analysis is closely related to market structure analysis (Asmarantaka, 2009). Conceptually, market integration can be divided into two types, namely spatial market integration and vertical market integration. Spatial market integration is the degree of linkage between regional markets and other regional markets, while vertical market integration is the relationship between a marketing agency and other marketing institutions in a marketing chain. Vertical market integration is used to see the level of closeness of the relationship between a marketing agency and other marketing institutions in a marketing chain. Vertical market integration is influenced by the equitable distribution of price information to all marketing institutions (producers–wholesale–retail–consumers). If the information is not perfectly disseminated to consumers, the prices formed in the market do not indicate a good vertical market integration (Asmarantaka, 2014).

According to Irawan and Rosmayanti (2007), one way to understand the structure, behavior and effectiveness of the market is to understand the relative strength of a market and the mechanism of price propagation from one market to another through market integration studies, this will help the government to determine policies right price. The results of Noer's (2014) research on rice market integration show that in the long run, market integration at the retailer level and the farmer level is determined by the magnitude of the effect of the difference in prices at the farmer level. Thus, the rate of change in prices at the farm level is greater than the rate of change in prices at the retail level. Meanwhile, Sugiyanto and Hadiwigeno (2012) found that the rice market is integrated, both domestically and with foreign countries, so any fluctuations in the two markets will affect each other.

Irawan and Rosmayanti (2007) conducted research on spatial integration and vertical integration between rice markets at the district/city level in Bengkulu

Province and analyzed the policy implications. The results show that the Bengkulu rice market is an imperfectly spatially integrated market where if a shock occurs in the Bengkulu city market, it will only be transmitted to the South Bengkulu and North Bengkulu markets but not to the Rejang Lebong market. The policy implication of this finding is that in order to stabilize the local rice market in Bengkulu Province, the priority of intervention from the local government should be aimed at market stabilization in Bengkulu City. Moreover, vertical market integration in Bengkulu City and South Bengkulu Regency is imperfect.

Rice is the main and strategic food commodity in Indonesia, so the government needs to maintain rice price stability. Rice price stabilization will be more effective in an integrated market. Hidayanto, Anggraeni, and Hakim (2014) conducted a study on the integration of the rice market in Indonesia, the results of the study show that the road factor as transportation infrastructure, per capita income, and purchasing activities (procurement) of farmers' rice by BULOG has been proven to significantly positive affect the integration of the rice market. Another factor that also significantly negative influences is the distribution of rice to poor households.

RESEARCH METHOD

This research was conducted in Central Lampung Regency and Bandar Lampung City. The location was determined purposively with the consideration that the first location is a rice production center area while the second location is a rice trading center in Lampung Province. The research was conducted from January to July 2021.

This study took a sample of respondents from various parties, namely producer farmers, marketing actors at the village, sub-district, and district/city market levels. Sampling was carried out purposively and proportionally based on the number of actors in the production and marketing of grain/rice from the village level to wholesalers. Respondents from farmers, village traders, and sub-district traders were taken proportionally as much as 5% of the population in Seputih Raman District as the center of grain/rice production in Central Lampung Regency. The determination of 5% is based on the consideration that the sampling area is a production center area (large population) which is expected to be represented. Meanwhile, the sample of respondents from market participants at the district and market levels of Bandar Lampung City was also determined purposively according to the existing population of wholesalers.

The data needed for this research include primary data and secondary data. Efforts were made to obtain primary data through interviews with respondents who were guided by the questionnaire. The primary data required include production data, production quantities and selling prices, input requirements and production costs, as well as other general descriptions. Meanwhile, the required marketing data includes market participants and the market price of rice. Secondary data required includes data on consumer-level prices, rice consumption, and per capita income for a period of 44 (forty-four) months from January 2017 to August 2020. The data is obtained from the relevant authorities as well as from observations and internet searches.

The method of formulating the rice trading system model is carried out through two approaches, namely:
1. Market Organizational Approach. The parameters used to determine the analysis of market organization are the number of actors/marketing institutions involved in a market, the pattern of grain/rice marketing faced by market participants in various sizes and concentrations, and the freedom of market participants to enter. in the marketing system.
2. Market demand analysis approach. This approach is done by analyzing:
   a)   Market trend Q = a + b T,
   b)   Market demand function Q = a + bP
   c)   Price elasticity

$$Ep = \frac{\Delta Q}{\Delta I} * \frac{P}{}$$

Description:
Q = rice consumption per capita
a, b= expected parameters
T = time
P = market price
Q= Change in the amount of consumption
I = change in consumer's total income

RESULTS

The data used in this study are monthly time series data obtained from the Central Statistics Agency, the Department of Food Crops Agriculture, Food Security and Horticulture at the district and provincial levels. The data used in the form of data on rice prices, rice consumption per capita, and income per capita for the period from 2017 to 2020. The starting point of the study was in Seputih Raman District as the center of rice production in Lampung Province, and the endpoint of the study was the market center in Lampung Province. Bandar Lampung City as a marketing center in Lampung Province, namely Tugu Market and Tamin Market.

Market Organization Approach
Based on the observations of the rice market organization from Central Lampung Regency to Bandar Lampung City, it is known that the marketing mechanism consists of 2 (two) channels. First, from farmers, traders, collectors, wholesalers/Huller, inter-district traders, and Consumer Retailers. The second channel is from farmers, collectors, wholesalers/Huller, and consumer retailers. Thus, it can be concluded that the trading institutions involved in the rice trading system are collectors, wholesalers, rice millers/hullers, inter-district traders, and retailers. Based on the results of previous studies, it is known that almost half of the profits in the first grain/rice marketing channel are enjoyed by Huller owners (rice millers) who are also inter-district traders (Noer, 2010). The current rice marketing pattern has also been segmented, between rice for middle-upper income consumers and low-income consumers.

Middle to upper-income consumers will generally buy rice at places that specifically market rice with certain attributes, such as rice color, taste, fluffiness, and others. Meanwhile, people with lower-middle-income will generally go to traditional

markets which generally sell lower-middle quality rice (Mardianto et al., 2005). This is in line with the research of Natawidjaja (2001), two things cause differences in rice prices, thus encouraging rice to be transported from one area to another, namely differences in preferences and differences in the amount of rice availability so that rice is sent from surplus to deficit areas. Differences in preferences are one of the factors of social diversity that play a role in making decisions about rice consumption (original, medium, or premium). This is in line with the research results of Lim et al. (2020), that in business development, social factors must be taken into account to analyze customer satisfaction and loyalty to the product. Such as demographic factors and the skill level of the population, class structure, hierarchy, power structure in society, education level, culture, entrepreneurial spirit, as well as the changing attitudes, interests, and tastes of society need to be considered.

Market Demand Function Approach
Based on the results of statistical analysis to observe the market demand function, the coefficient value of b0 is -64,395 and b1 is 0.024. Based on the results of the processed regression data, shows that all parameters qualify as estimators, there is no suspected bias caused by interference with the violation of classical assumptions. A negative b0 coefficient value indicates that rice consumption will tend to decrease if there is an increase in rice prices. Consumers will divert part of their food consumption spending to other substitute products.

Market Trend Approach
Based on the results of statistical analysis to observe market trends, the coefficient value of b0 is 84,868 and b1 is 1,453. Based on the results of the processed regression data, shows that all parameters qualify as estimators, there is no suspected bias caused by interference with the violation of classical assumptions. The positive values of the coefficients b0 and b1 indicate that rice consumption has a positive trend over time. The increase in rice consumption over time is very relevant considering that rice is the staple food of the family.

Price Elasticity Approach
Based on the calculation results, the value of price elasticity is 0.423 (calculations are listed in the appendix), indicating that the rate of change in rice prices is smaller than the rate of change in the level of consumer income. The elasticity value is smaller than one, this means that the rate of change in the price of rice at the consumer level is smaller than the rate of change in the level of consumer income. A one percent change in income will be followed by a 0.423 percent change in rice prices.

DISCUSSION

Rice marketing system models
The formulation of an efficient rice marketing system model is carried out from various approaches. The first is the market organization approach and the marketing institutions involved are collectors, wholesalers, rice millers/hullers, inter-district traders, and retailers. Almost half of the profits in the grain/rice trade system are enjoyed by Huller owners (rice millers) who are also inter-district traders (Noer, 2010). The structure of the rice flow that involves rice mill entrepreneurs in the rice marketing system causes inefficiencies in the rice marketing system. If this power can be taken by farmers through farmer groups or Gapoktan, the profit share

in the grain/rice trade system that is part of the rice mill entrepreneur can be returned to the producer farmers.

The second is the trade channel approach. The results of previous studies showed that the marketing system in which the structure of the flow of grain/rice flowing from the production center area to the final consumer is relatively more efficient when farmers sell grain to collectors who are accomplices of the village huller owner, then the processed unhulled rice is sold to retailers and to consumers. The market conditions faced by rice farmers where farmers directly sell grain without being involved in the structure of the grain processing institution into rice cause the balance of profits received by farmers to be relatively small and the marketing margins and profit margins of each level of the institution involved are relatively uneven (Noer, 2010).

The third is through the rice demand function approach, which shows that rice consumption will tend to decrease if there is an increase in rice prices. Mechanisms that ensure the stabilization of staple food prices will determine the distribution of household consumption expenditures on rice. Besides changes in consumer preferences, especially the upper-middle class who tend to choose rice with certain attributes. Meanwhile, the tendency of people with a lower middle income to go to traditional markets. It is very important for farmers and farmer groups to determine market segmentation. Fourth, the price elasticity approach shows that the rate of change in rice prices tends to be inelastic to the rate of change in the level of consumer income.

Thus, it can be concluded that the model of the marketing system involving farmers/farmer groups/Gapoktan as actors in the institutional structure of the rice trade system can overcome inefficiencies in the rice marketing system. This is in line with the results of previous studies that increase the efficiency of unhulled/rice marketing, which is based on a combination of farmer groups (Gapoktan) and not on individual farmers, repositioning of farmers from just producers to suppliers (suppliers), and the development of the farm-gate market system will strengthen the bargaining position of farmers in the rice marketing system (Taufik, 2009).

CONCLUSION

Based on the results of the research conducted, the researchers found that the structure of the rice flow that involves rice mill entrepreneurs in the rice trading system causes inefficiencies in the rice marketing system. Moreover, rice consumption has a positive trend with increasing time. The increase in rice consumption over time is very relevant considering that rice is a staple food. Not only that, but the rice demand function shows that rice consumption will tend to decrease if there is an increase in rice prices. Mechanisms that ensure the stabilization of staple food prices will determine the distribution of household consumption expenditures on rice. Furthermore, the rate of change in the price of rice tends to be inelastic to the rate of change in the level of consumer income. An increase in consumer income by one percent (ceteris paribus) will push the rice price rating to less than one percent. Additionally, model of the marketing system that involves farmers/farmer groups/Gapoktan as actors in the institutional structure of the rice trade system can overcome inefficiencies in the rice marketing system.

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DECLARATION OF CONFLICTING INTERESTS

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