

# ANALYSIS OF FACTORS INFLUENCING AUCTION MARKET CHANNEL CHOICE BY NATURAL RUBBER FARMERS IN MUSI BANYUASIN REGENCY OF SOUTH SUMATRA PROVINCE, INDONESIA

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**ANALYSIS OF FACTORS INFLUENCING AUCTION MARKET CHANNEL CHOICE  
BY NATURAL RUBBER FARMERS IN MUSI BANYUASIN REGENCY OF SOUTH  
SUMATRA PROVINCE, INDONESIA**

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**ABSTRACT**

The purpose of this study is to investigate several factors influencing the auction market to be chosen by the rubber farmers. In this study, the model of farmers' marketing channel selection was based on random utility theory using Binomial Logit Model. The results showed that the probability of sales in the auction market was influenced by several factors, namely: level of education, the area of land owned, the distance to the market, awareness of product quality and participation in farmer groups. The results emphasized the importance of participation in farmer groups because if seen from the value of Exp (B) or the odds ratio of 80.131, it can be concluded that the participation of farmers in farmer groups increased their chances of selling their product to the auction market at 80.131 times. The results also emphasized accessibility of modern marketing information in order to support farmers' bargaining power to increasing their income and prosperity. The results of this study suggested that having government support to improve the functions and roles of UPPB (Bokar Processing and Marketing Unit) as *bokar* (rubber processed materials) auction operators is necessary, especially on the functions of transportation, warehousing and finance. Many farmers need transportation facilities to facilitate their access to the auction market, and they also need warehousing facilities to reduce the risk of rubber storage that is kept for too long, in addition, the farmers also need the financial function so that the immediate need for farmer cash can be met without being dependent on middlemen.

**KEY WORDS**

Natural rubber, auction market, bargaining power, farmers groups.

The quality of "*bokar*" (rubber processed materials) has an impact on its prices. The low quality of *bokar* will result in low prices that will be received by farmers. Most forms of production produced by farmers are in the form of thick rubber slabs. This thick rubber slab is the lowest quality of the form of rubber production. Low *bokar* quality also causes the bargaining position of farmers to be weak. Rubber trading from farmers' gates to factories (in the form of crumb rubber) is currently filled with thick rubber slabs with dry rubber quality which is very worrying. This phenomenon can be seen clearly in Musi Banyuasin Regency, where rubber farmers in this area generally sell rubber in the form of pads with a thickness up to 50 cm, which is a lump of bowl containing sawdust and various other foreign objects.

As researchers have often revealed about natural rubber trading in Indonesia, there is now a tendency for farmers to voluntarily, or even prefer, to produce low quality rubber rather than good quality rubber. Two of the main reasons why farmers prefer to produce low quality rubber are: 1) a fallacy that the total revenue from the sale of low quality rubber is greater than the good quality rubber; 2) low quality rubber is easier to produce (farmers will spend lower production costs for low quality rubber). This condition is reflected in the price margin data at the farmer level (with daily rubber sap), and the factory as shown in Figure 1.

Based on the data presented in the Figure 1, the prices of thick rubber slabs at the farmer and trader levels in Musi Banyuasin Regency are quite varied. At the farmer level, the

lowest price occurs with a daily sales system that is usually sold to traders who are often called as "toke". At the daily farmer level, it is recorded that the lowest price is at Rp. 6,447 per kg in April 2018, while the highest price is Rp. 7,151 per kg in October 2018. Meanwhile, the average price of daily sales of bokar is Rp. 6,811 per kg. This is different from the results of sales made on a weekly basis, which is valued higher which can reach a price of Rp. 9,125 per kg in October 2018. Weekly rubber sales are usually carried out by the auction method by UPPB or what is commonly known as the rubber auction market.

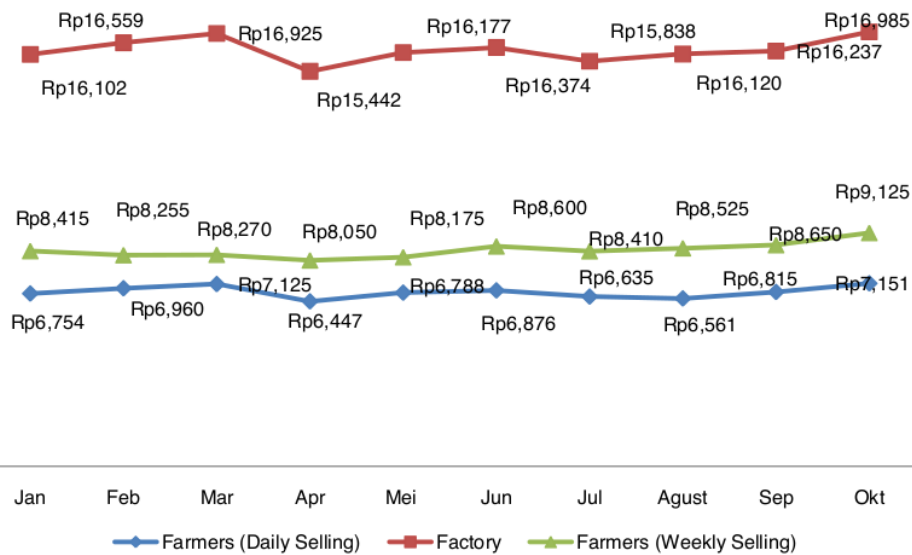


Figure 1 – Bokar (Rubber Processed Materials) Prices at the Farmer and Factory Level in Musi Banyuasin Regency in 2018 (Source: Plantation Office of Musi Banyuasin Regency, 2018)

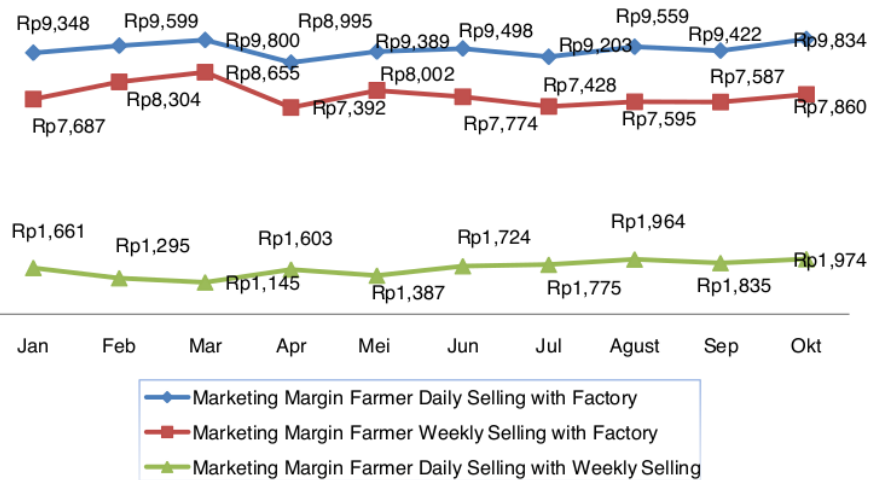


Figure 2 – Marketing Margin at Farmer and Factory Level in Musi Banyuasin District in 2018 (Source: Plantation Office of Musi Banyuasin Regency, 2018)

With the auction trade system, it turns out that the prices obtained by farmers will be much better, while the quality of *bokar* purchased by traders or processing plants is also much better. From the calculation of the marketing margin value of daily and weekly *bokar* sales, there is a considerable price of Rp. 1,974 per kg in October 2018. Whereas if seen from the price margin at daily farmer level compared with the price of daily factory level, then the price is very much different, reaching Rp. 9,464 per kg during the period of January to October 2018. Figure 2 illustrates the difference in price margins among several trading systems that apply in rubber marketing in Musi Banyuasin Regency.

The main problems faced by Indonesian rubber farmers are unstable sales prices; increasingly fierce world competition; and the increase in production and marketing costs in addition to the unavailability of hedging facilities to reduce the risk of price fluctuations (Nancy, 1988). Marketing carried out by large plantations is relatively integrated, on the other hand, the people's rubber trading system has not been well coordinated so that there are still technical and economic inefficiencies that need to be addressed. Most of the locations of smallholder plantations are located in rural areas, while factories are located in processing plants around the provincial capital or export ports. Moreover, the prevailing payment system is still based on wet weight, so that there is only about 50 percent dry rubber in the buying and selling process which is actually traded, the rest consists of dirt, water and non-rubber materials. Both of these factors inflict high transportation costs and low quality of rubber processed material (Algamar, 1979 in Nancy, 1988).

With regard to the rubber market system, the inefficiency of rubber trading systems is a major problem for smallholder plantations. Basically, the government has tried various ways to protect rubber farmers, especially for small farmers so that they will be in a more profitable position. Building an auction market in the center of a rubber production area is an example of government intervention to help farmers to receive better prices for natural rubber. Market auctions that follow the principle of competition among buyers are expected to provide reasonable prices according to the product. However, the auction market is actually not fully able to help farmers as a price taker in the rubber market system. Another phenomenon in the rubber market system is the strong bond between farmers and sellers. In general, rubber plantation owners have a large area and use several workers using a crop distribution system as village-level traders. On the other hand, they also have other businesses to provide for the needs of other workers and farmers. The existence of this seller for farmers is very helpful because they can get financial support or family needs in a short period of time. As a result, farmers tend to be morally bound with sellers. Which eventually, farmers do not have a bargaining position and always act as price takers in rubber transactions.

Although the government has implemented many programs to develop a community of rubber trading system, one of them is the UPBB (Bokar Processing and Marketing Unit) scheme, but in reality there are still very few rubber farmers who want to join the program even though farmers are able to sell at high prices through the auction system at UPBB. Based on data from the South Sumatra Province Plantation Office, there are 152 UPBBs operating in South Sumatra. These UPBBs are spread in the area of people's rubber centers, especially Musi Banyuasin Regency, and Ogan Komering Ilir Regency.

Rubber farmers who have not joined the UPBB are constrained because they are already bound by middlemen. Another factor is the lack of information received by UPBB-related farmers and their benefits. The existence of the UPBB which is regulated by the Minister of Agriculture Regulation is expected to be important for the bargaining position of rubber farmers. Because the auction method is done by farmers able to get the highest price offered by the buyer. However, the trading system offered by the UPBB still needs to be studied, especially on how its role has been in improving the welfare of smallholder rubber farmers so far. Therefore, the purpose of this study is to analyze the factors influencing farmers' decision to sell processed rubber products produced to the auction market.

## LITERATURE REVIEW

Farmers are usually geographically dispersed and have a small scope of operation, therefore small farmers deal with various traders with varying degrees of relationship and trust, with different enforcement mechanisms (Kherallah et al., 2000). Therefore, the choice of marketing channels among farmers can be defined in terms of transaction costs, contracts and contract enforcement (Chirwa, 2009). Liberalized agricultural markets in developing countries are characterized by asymmetrical information (at prices not announced to the public), very different goods without formal standardization systems, sometimes with informal contracts (Fafchamps et al., 2005). Channel choice is an important decision in the marketing channel (Kerin et al., 2013). Decisions in channel selection can influence the effectiveness and efficiency of channel structures (Coughlan et al., 2006). In addition, other marketing decisions are also influenced by channel choice decisions, such as pricing and communication decisions (Armstrong and Kotler, 2013, and Kotler and Keller, 2012).

Marketing agents need to consider marketing channel strategies that describe the type of marketing channels and the number of marketing agencies involved, marketing channel management, and distribution intensity carried out (Levens 2010). The type of marketing channel strategy is determined by considering the selection of marketing channels that can be either direct or indirect channels. The marketing channel strategy in the form of distribution intensity includes intensive, selective and exclusive distribution. Intensive distribution strategy is carried out by selling products in many locations to get products easily, while selective distribution strategy is carried out by selling products to certain retailers that are determined selectively, where consumers need a longer period of time to buy products (Levens 2010).

Many studies have been conducted to identify factors that influence the choice of marketing channels by producers for agricultural products. Fafchamps and Hill (2005), studied sales options at farm gates and traveled to markets for Ugandan coffee farmers. In their study, farmers had to walk to the coffee market when public transportation was not available and rich farmers wanted to sell the goods at farm gates. The results were reversed when cash and public transportation constraints were introduced in their models because they were able to pay for transportation. Richer farmers were more likely to sell on the market when they had large sales and they were more likely to travel to the market.

Nyaupane et al. (2010) studied manufacturers' marketing decisions at the Louisiana Crawfish Industry and found that most manufacturers chose wholesale markets compared to direct sales to consumers and retailers as these channels were the most convenient and also offered high returns. In their study, the choice of channels was influenced by family demographic characteristics and market characteristics. Jari (2009) stated that institutional factors such as transaction costs, access to market information and institutional environments that include formal and informal channel rules, use of grades and standards could reduce transaction costs in marketing. Technical factors including constraints to physical infrastructure, storage facilities, market infrastructure, transportation infrastructure, and added value which had contribution to the provision of good quality products to consumers (Mzyece, 2011).

Credit availability factors, cooperatives, interventions related to government policies, and membership of agricultural farmer groups were determinants of farmers' adoption of dairy farmers against various milk marketing channels in Kenya (Mburu et al., 2007). Gong (2007) stated that transaction cost was not the only factor that affected farmers in choosing marketing channels. There were other factors like the socio-economic characteristics of farmers. Availability of market information allowed farmers to make informed marketing decisions related to market supply and demand conditions, prospective buyers, bargaining and negotiations, and enforcing contracts and monitoring (Jari, 2009). Important market information includes information about consumer preferences, market demand, prices, quality, requirements and market opportunities.

Mzyece (2011) argued that farmer organizations or cooperatives were important for collective action of producers who could reduce transaction costs and increase bargaining

power. Individual marketing of a small number of products weakens the bargaining position of small farmers and often made them exploited by traders (buyers) According to Minot et al. (2003), the development of formal institutions of society had a large influence on transaction costs. Therefore, the right legal framework can encourage farmers to produce and sell their goods to markets by reducing the risk of losses.

As mentioned above, there are many studies related to the choice of marketing channels. However, there is no research on the determinants of the choice of marketing channels among rubber farmers in South Sumatra Province in oligopsonic conditions while buyers have market power. Most research is based on the characteristics of perishable products that are different from rubber which can be stored for a long time and can still be sold at a good price when prices are higher.

## METHODS OF RESEARCH

*Conceptual framework and econometric specification.* The marketing channels choice is fundamental and important decision for the farmers where many factors and conditions have to be considered as a basic for precise decision. In our study, the model of farmers' marketing channel selection is based on the random utility theory (Greene, 2002). If we assume that a farmer chooses the most attractive alternative from the two options, then the observations of the choices reveal the farmers' preferences. If we observe that a rubber farmer (designated  $i$ ) chooses selling his/her products to auction market, this implies that:  $U_{i1} > U_{i0}$ , where  $U_{i1}$  and  $U_{i0}$  are the utilities that  $i$  associates with selling to auction market and selling to non-auction market, respectively. The utility  $U_{ij}$  that the alternative  $j$  ( $j= 1$ : selling processed rubber products to auction market;  $j= 0$ : selling processed rubber products to non-auction market) gives individual  $i$ , is composed of two parts, namely: a systematic term, which depends on an attributes vector  $X$  (education, land ownership, distance to market, awareness of quality and participation in farmer groups), and another random one  $\varepsilon_{ij}$ :

$$U_{ij} = \beta'x_{ij} + \varepsilon_{ij} \quad (1)$$

Where:  $U_{ij}$  is the utility derived from choosing marketing channel  $i$ ,  $x_{ij}$  is the vector of attributes of the channel choice and farmers' demographic and marketing characteristics,  $\beta$  is the vector of parameter coefficients and  $\varepsilon_{ij}$  is the error term.

But utility  $U_{ij}$  is not observable. What we observe is decision  $Y_i$ , which is worth 1 if individual  $i$  chooses selling to auction market and 0 if selling to non-auction market. If a rational individual chooses the alternative that gives her/him the greatest utility, then we would have:

$$\begin{aligned} \text{Probability } [Y_i = 1] &= \text{Probability } [U_{i1} > U_{i0}] \\ \text{Probability } [Y_i = 1] &= \text{Probability } [U_{i0} > U_{i1}] \end{aligned} \quad (2)$$

McFadden (1974) proves that in this case the probability that farmer  $i$  chooses alternative 1 is:

$$\text{Prob } [Y_i = 1] = \frac{\exp(\beta x'_i)}{1 + \exp(\beta x'_i)} \quad (3)$$

This would be the reduced form for the binomial logit model, where the  $x'_i$  row vector of explanatory variables for the  $i$ -th individual contains the independent or explanatory variables considered in the previous section (and including a constant) and where we assume that the non-observed  $\varepsilon$  follow a distribution of logistic probability.

The primary data were collected through the use of face to face interview with farmers with the aid of structured questionnaire considering both open and close-ended questionnaire. The data for this study was collected in the 3 main natural rubber producing area in Musi Banyuasin Regency between December 2018 and January 2019.

The survey data including demographics, land use and ownership, access to auction market, production, marketing practices, participation in farmer group. The data of natural rubber producing household was collected by conducting face to face interview. A random sampling procedure was used to draw a sample of 400 farmers. The explanation of dependent variables and independent variables are described in detail in the following table. We expect the education, land area ownership, awareness of quality and participation in farmers group variables to positively influence the farmers to sale their processed rubber products to the auction market. On the other hand, the variable of distance to the market is expected to be negatively influence the probability of the farmers to sale their processed rubber products at auction market.

Table 1 – Variables of the determinants of natural rubber farmers' selling at auction market

Dependent Variable			
Variables	Description	Measurement	
Marketing channels through natural rubber are sold	Selling at the auction market or non auction market	1 = selling at the auction market; 0 = selling at non auction market	
Independent Variables			
Variables	Description	Measurement	Exp sign
Education	Category last attend	1-Not Complete in Primary 2-primary; 3-middle; 4-high school; 5- graduate	+
Land area ownership	Land area are use or owned by the farmers	hectare	+
Distance to the market	Distance to market in km	Kilometers	-
Awarness of quality	How the quality of your product is important for marketing	1=not at all, 2=little, 3=normal, 4=important, 5=very important	+
Participating in farmers group		Yes = 1, No = 0	+

## RESULTS AND DISCUSSION

*Analysis of Role and Function of Marketing Institutions.* Rubber farmers are early marketing players who have an important role in determining the quality, quantity and continuity of products. Farmers store rubber sap and add coagulants to condense rubber into lumps, which is often called as *bokar*. The quality of lumps is often bad because it uses a very traditional method and even farmers tend to mix it with dirt to increase the weight to get more profit. Most rubber farmers act as landowners and tapping farmers, while the rest are tapping farmers who are employed by landowners. They carry out all cultivation activities, starting from cleaning, planting, harvesting/tapping, and initial processing. About 45% of farmers harvested the rubber trees they planted before the 2000s. This means that at least they started planting rubber for more than 18 years.

Rubber farmers who are the sample of research in Musi Banyuasin Regency conduct "sales" to buyers as their exchange function (Table 2). Based on the data, 48.75% of all farmer respondents sell the processed rubber products to other than the existing auction market or UPPB. If traced again, there were 32% of farmers who sold their *bokar* to small/village traders or collectors, 14% sold it to large traders, and 2.75% sold it directly to rubber mills. Some farmers direct products to buyers, but most of them lack capital to be able to distribute rubber, therefore in some cases buyers will actively visit farmers to get products. It was mentioned earlier that most farmers are located less than 10 km from their buyers. Farmers sell their products to village traders/collectors, who often provide financial incentives in the form of loans to farmers to expand their production. Table 2 explains how the marketing agency functions from the smallest to the largest, namely the factory. There are three main functions of each marketing agency, namely the exchange function, physical function and facilitating function. The following is an explanation of the functions of each marketing agency involved in rubber trading in Musi Banyuasin Regency.

Table 2 – Marketing function of all rubber marketing institutions

Function	Activities	Farmers	Small Traders	Auction Market	Big Traders	Factories
Exchange	Buying		√		√	√
	Selling	√	√		√	√
	Storage	√	√		√	√
Physical	Processing	√				√
	Transportation	√	√		√	√
Facilitating	Sortation		√	√	√	√
	Grading			√		√
	Risk	√	√		√	√
	Finance		√		√	√
	Information	√	√	√	√	√

In Musi Banyuasin Regency, the majority of rubber traders are also involved in rubber cultivation or acting as rubber farmers. Based on the results of interviews, 90% of all village level traders are also rubber farmers. However, the share of income from agricultural activities is relatively lower compared to trading activities. In addition, most traders also buy rubber from other farmers to increase the number of sales. With a marketing margin that can reach 50% or more, the farmers decide that being a collecting trader is very profitable.

When collectors will buy *bokar*, they previously take samples to determine prices based on the quality of the *bokar*. Often, collectors prepare their own transportation during the purchase process. They have their own vehicle or rent the vehicle. After the collectors get the purchased *bokar*, they store the rubber until it reaches a certain amount and then send or sell it to the next channel. Collector traders can store rubber for a longer period of time, where risks may occur during this storage phase.

The auction market does not make changes to the ownership in the exchange function on the auction market. The auction market only facilitates the location as a place for *bokar* buyers and sellers to be reunited in one place. Service fees taken from buyers and sellers are calculated as value added facilitating functions obtained. The payment system applied in the auction market is in the form of cash to prevent risks that might occur when sellers delay their payments irresponsibly.

The amount of interest of the community to join the auction market held by UPPB is a positive development for the rubber trading system which so far has been inefficient and ineffective because of the large margin that is not enjoyed by farmers. The development of UPPB will also positively correlate with the improvement in the quality of *bokar* produced, which will increase the bargaining position of farmers.

But in its development, UPPB still has several weaknesses including the absence of storage, transportation and financial functions even though the three marketing functions are owned by small and large traders. This also results in the existence of many obstacles for farmers to join the auction market. The lack of resources owned by farmers, especially related to the problem of *bokar* storage facilities, transportation facilities for transporting *bokar* from gardens to warehouses and auction markets, and the immediate need for money for daily life caused many farmers to experience dependence on collecting traders.

Big Traders/wholesalers accommodate sales within the regency and province. *Bokar* purchase transactions are usually carried out in a smaller scope by buying directly to smaller traders (village collectors), in which *bokar* is temporarily stored before reselling it in large volumes to factories or exporters. Based on the data obtained, most wholesalers sell more than 20 tons of rubber every year. Market information is collected more easily by large traders who often have special relationships with factories or exporters.

They have better knowledge in developing their business and higher capital to support marketing activities with a high level of risk as well. Large traders use trucks to facilitate buying and selling activities. Wholesalers usually have their own warehouse facilities to accommodate large quantities of *bokar* purchases. Storage is carried out with the aim of collecting large quantities of *bokar* before sale while waiting for a better market price level when it is ready to be sold.



The factory is able to process *bokar* forms from rubber into high-value products. Most rubber products in the South Sumatra Province are in the form of SIR (Standard Indonesian Rubber) 20. SIR 20 is exported to various countries as the main raw material for tires. These institutions get raw materials from farmers, traders and auction markets. To produce quality products in accordance with international standards, rubber factories always try to use clean raw materials and run integrated production processes with reliable quality control, long-term partnerships with farmers and rubber traders. Therefore, it is necessary for sellers to maintain the quality and continuity of rubber production.

*Analysis of Rubber Trading Channels in Musi Banyuasin Regency.* The efficiency of rubber trading is a very important thing to consider in analyzing rubber trading systems. Rubber marketing efficiency is measured to evaluate the performance of rubber trading channels. Operational efficiency is one of the two more straightforward and easier trading efficiency indicators to get the data needed. Operational efficiency correlates with the implementation of marketing activities that are able to increase or maximize the marketing output-input ratio.

In addition, it can also be measured by analysis of marketing margins and share of farmers (Asmarantaka, 2014) which shows the minimum costs that can be achieved by applying basic marketing functions, namely collection, transportation, storage, processing, distribution and physical activity, and facilities to add value to along the chain. In line with the above problems, farmers also managed to obtain the highest profits by considering several indicators such as the amount of production, marketing costs, channel choices..

Farmers can basically choose which marketing institutions are more profitable to sell the *bokar* they produce. There are six channels found in *bokar* trading channels in Musi Banyuasin Regency which can be seen in Figure 3 below. The existing *bokar* trading channel pattern has been traced from producers, in this case rubber farmers, to crumb rubber factories as exporters or national processing plants. All rubber marketing channel patterns found in Musi Banyuasin Regency are as follows:

- Channel I: Farmers → Small Traders → Big Traders → Factories;
- Channel II: Farmers → Small Traders → Factories;
- Channel III: Farmers → Small Traders → Auction Market → Factories;
- Channel IV: Farmers → Auction Market → Factories;
- Channel V: Farmers → Big Traders → Factories;
- Channel VI: Farmers → Factories.

*Marketing Characteristics of Rubber Farmers in Study Area.* This study looked at six characteristics of rubber trading systems which allegedly influenced the decision of rubber farmers to sell *bokar* to the auction market. The six independent variables are education, land area, distance, quality, participation in farmer groups, and attachment of farmers to buyers. The observation results through questionnaire instruments and interviews conducted with 400 sample rubber farmers are shown from Table 3.

The first variable observed is the education level of rubber farmers. From the results of the questionnaire, it was found that the majority of Musi Banyuasin Regency's rubber farmers had an equivalent of senior high school education level with a percentage of 47.8%, followed by elementary school graduates at 24.8%, junior high school graduates by 15% and not completing elementary school by 8.5%. While for the other education level, namely the Diploma, Bachelor and Postgraduate degrees which are classified into University Graduates are recorded at only 4%.

Variable area of land is one of the factors that are thought to provide guidance for the decision of rubber farmers to sell their *bokar* to the auction market. Consideration of land area is closely related to the amount of *bokar* produced. Most rubber farmers in Musi Banyuasin Regency only cultivate 1 ha of rubber land with a percentage of 40%. Whereas rubber farmers who cultivate land of 2 ha were recorded at 21.8% and farmers who cultivated above 3 ha were 38.2%. The status of land ownership of sample rubber farmers is 52.3%, which is cultivated with a profit sharing system with landlords. While as many as 47.7% of farmers own their own land.

The observations show that most farmers live and try to get their rubber land very close to the auction market. It is recorded that 45% of farmers are very close to the auction market or less than 10 Km. On the other hand, rubber farmers who live far away from auction market or >30 Km are 36.6% or 146 people. Of the total of 146 people or 36.6% of farmers who live far away from the auction market, there are 106 farmers (26.5%) who feel that the distance traveled has made it difficult for them to come to the auction market.

Table 3 – Marketing Characteristics of Rubber Farmer

Variable	Description	Percent (n=400)
Bokar Sales Decision	The trading channel chosen by Rubber Farmers	
	0: Non Auction Market 1: Auction Market	48.8 51.2
Education	Last Education	
	1: Not complete in primary	8.5
	2: Primary	24.8
	3: Middle	15.0
	4: High	47.8
5: Graduate	4.0	
Land Area	Area of land cultivated in Ha	
	1 Ha	40.0
	2 Ha	21.8
	3 Ha	29.3
	4 Ha	5.0
	5 Ha	1.8
	6 Ha	0.3
	7 Ha	0.8
8 Ha	1.3	
Distance	Distance traveled to the auction market	
	1: <10 Km	45.0
	2: between 10 to 20 Km	10.8
	3: between 20,1 to 30 Km	7.8
	4: between 30,1 to 40 km	25.8
5: > 40 Km	10.8	
Awareness of Quality	Awareness of the Importance of Product Quality	
	1: Not at all	
	2: Little	14.5
	3: Normal	27.0
	4: Important	2.5
5: Very Important	34.0	
		22.0
Farmers group	Participating in Farmers group	
	0: No 1: Yes	48.5 51.5

Awareness of the importance of the quality of *bokar* produced is one of the drivers for a farmer to become a bidder. From the results, 56% or as many as 224 farmers already have awareness that the quality of the *bokar* produced is important in order to increase its selling value. On the other hand, there are 41.5% of farmers who do not feel the need to improve the quality of the *bokar*.

This study show that some farmers are members of farmer groups and are actively involved in their activities. It is recorded that 51.5% of farmers participate in farmer groups and 48.5% are not involved in farmer groups. Of the 51.5% of farmers who are members of farmer groups, as much as 48% or 192 people feel the benefits and contributions in groups they are joining, namely, they feel that it is easier to market their products.

*Model Results for the Factors Determining Rubber Farmers Selling their Products to Auction Market.* Analysis of factors that influence the decision to sell *bokar* whether to the auction market or non-auction market is done using logistic regression statistical analysis. The following is a table of results of the logistic regression analysis that has been carried out.

From the results of the model made, if seen from education factor, it is concluded that it has a significant effect on the decision whether to sell *bokar* to auction or non-auction

market. The results of the statistical test show the significance value of the education factor of 0.001, which is smaller than 0.005, which means it accepts  $H_1$  and rejects  $H_0$ . Factor of land area from the test results obtained a significance value of 0.037, which is smaller than 0.05, while the value of regression coefficient is -0.357. This explains that the land area has a significant effect on the confidence level by 95%. The influence given by the land area is negative, if seen from the value of Exp (B) or odd ratio of 0.7, it means that the greater the land cultivated by farmers, the smaller the possibility of selling their *bokar* to the auction market by 0.7 times.

Table 4 – Factors Affecting Bokar's Sales Decision

Variable	Coefficient	Wald	Exp (B)
Constant	-4.988** (1.752)	8.104	
Education	0.814** (0.249)	10.663	2.256
Land Area	-0.357* (0.171)	4.330	0.700
Distance	-1.451 ** (0.276)	27.705	0.234
Awariness of Quality	1.209** (0.276)	19.146	3.350
Participating in Farmers Group	4.384** (0.683)	41.239	80.131

Note: (1) Cox and Snell R squared =0.714; Nagelkerke R squared =0.952; Chisquare = 500,95; df =6; p =0.000.

(2) \*\* Sig at 1%, and \*sig at 5%

The distance factor to the auction market from the test results obtained a significance value of 0,000, which is smaller than 0.05, while the regression coefficient value is -1,145. This explains that the distance factor has a significant effect on the 95% of confidence level. The influence given by the distance to the auction market is negative. If you look at the Exp (B) or odd ratio of 0.234, it means the greater the distance to the auction market, the smaller the probability of rubber farmers to sell their *bokar* to the auction market by 0.234 times.

The factor of awareness of the quality has a significance value of 0,000, which is smaller than 0.05, while the regression coefficient value is 1.209. This explains that the quality awareness factor has a significant effect on the 95% of confidence level. The influence given by quality awareness is positive, if seen from the value of Exp (B) or odd ratio of 3.350, it means that the greater awareness of rubber farmers on the quality of *bokar* they produce, the greater they may sell their *bokar* to the auction market by 3,350 times.

The factor of participation in farmer groups from the test results get a significance value of 0,000, which is smaller than 0.05, while the regression coefficient value is 4.384. This explains that the factor of participation of farmers in farmer groups has a significant effect on the 95% of confidence level. The influence given by quality awareness is positive, if seen from the value of Exp (B) or the odds ratio of 80.131, it means that the participation of farmers in farmer groups increases their chances of selling their product to the auction market by 80,131 times.

## CONCLUSION

Based on the results of research and statistical analysis, it can be concluded that the Auction Market held by UPPB (Rubber Processing and Marketing Unit) has been able to carry out its roles and functions (Sorting, Grading and Information) as agents of changes in quality improvement produced by farmers, so as to be able to increase the bargaining position of farmers towards buyers which has an impact on increasing the selling value of *bokar*. The *bokar* sales decision of Musi Banyuasin Regency's rubber farmers is influenced by education, the area of land cultivated, distance to the auction market, awareness of the quality of *bokar* produced, and participation in farmer groups.

The results of this study suggested that having government support to improve the functions and roles of UPPB (Bokar Processing and Marketing Unit) as *bokar* (rubber processed materials) auction operators is necessary, especially on the functions of transportation, warehousing and finance. Many farmers need transportation facilities to facilitate their access to the auction market, and they also need warehousing facilities to reduce the risk of rubber storage that is kept for too long, in addition, the farmers also need the financial function so that the immediate need for farmer cash can be met without being dependent on middlemen.

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# ANALYSIS OF FACTORS INFLUENCING AUCTION MARKET CHANNEL CHOICE BY NATURAL RUBBER FARMERS IN MUSI BANYUASIN REGENCY OF SOUTH SUMATRA PROVINCE, INDONESIA

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