PRICE TRANSMISSION ELASTICITY ANALYSIS OF CRUDE PALM OIL AND FARMER'S SHARE IN INDONESIA: A CASE OF SELF RELIANCE PALM OIL FARMER IN MUSI BANYUASIN DISTRICT, INDONESIA

Lifianthi[1]*, **Mulyana Andy**[2], **Sari Dwi Wulan**[1]
[1]Faculty of Agriculture, University of Sriwijaya, Indonesia
[2]Professor in Agricultural Economics, University of Sriwijaya, Indonesia
*E-mail: syariwulandwi@gmail.com

ABSTRACT

This study that will examine how self-reliance farmers can conduct their oil palm plantation business activities. Palm oil cultivation carried out by self reliance farmers with its own funds, ranging from procurement of agriculture equipment and inputs to the marketing of product. The marketing of oil palm in the form of Fresh Fruits Bunch (FFB) to the Palm Oil Factory through existing marketing agencies, including collectors or wholesaler. This marketing system will affect the price that the famer received (Famer's Share) and will have an impact on their income. In recent years, some agricultural commodities that have export value such as palm oil face fluctuating selling prices, where CPO selling prices are influenced by the world prices which automatically impacts the price of FFB in the farmer's level. The research conducted in Musi Banyuasin District, South Sumatra Indonesia. This research used primary and secondary data including characteristics, land area, production, cost, FFB Price, and marketing channel. This research also concerns to examine elasticity of price transmission, marketing channels and farmer's share of oil palm. The results obtained there are two patterns of marketing channels, which are efficient to adapt. This study shows share at the farmer level was 66.03% and share at the trader level was 33.97%. The elasticity value of price transmission obtained et < 1, which is et = 0.858, that's means the elasticity of price transmission is inelastic, where the rate of change in FFB price at the farmer level is smaller than the rate of change in world CPO prices.

KEY WORDS

FFB, CPO prices, marketing channels, elasticity value.

Oil palm is one of the plantation commodities that play an important role in building economic activities in Indonesia. Today, oil palm is a prime commodity for most farmers in Indonesia. South Sumatra Province became the third largest producer of palm oil in Indonesia after The Provinces of North Sumatra and Riau. In 2020, palm oil commodity production in South Sumatra reached 3.41 million tons with an area of 1.18 million hectares (Directorate General of Plantation South Sumatra, 2020).

Musi Banyuasin as one of districts in South Sumatra that has abundant natural resources, especially the potential in the mining and energy sector, plantations, agriculture, tourism, and forest products. Until now Musi Banyuasin district is the highest oil palm supplier area among other districts in South Sumatra. Based on data from the Central Statistics Agency Musi Banyuasin (2018), this area produces 431,790 tons of oil palm with a total plantation area of 43,006 hectares.

Sungai Lilin sub-district Located in Musi Banyuasin District is the strategic location, where the location of the area is on the main road across Sumatra. Most people of Sungai Lilin as a farmers of oil palm who build farming independently. Unlike plasma farmers, self-reliance farmers faced marketing problems. As we know that after harvesting oil palm should be processed directly to the factory not more than 24 hours in order to get best quality of oil (Sari et al, 2019). Independent farmers should sell their product, Fresh Fruits Bunch (FFB), through collectors or wholesaler. It means that they cannot sell their product directly to the factory. As a result, this situation will affect to the farmer prices.

The current fluctuations in oil palm prices tend to indicate a downward trend in prices.

According to Mulyana (2008), TBS pricing is determined based on crude palm oil prices on the Kuala Lumpur and Rotterdam futures exchanges. CPO price fluctuations are crucial for the production plan. This is because the CPO price affects the amount of production to be produced and also affects the demand for CPO itself. This will certainly have an impact on CPO demand coming from domestic and foreign markets. Even for Indonesia most CPO production is exported abroad. Fluctuating world CPO prices that affect the ups and downs of FFB prices received by farmers will affect production as well as the income that farmers will receive. If farmers want to make a profit accordingly, farmers must break the marketing chain and sell the harvest directly to the factory and to avoid price differences, then the marketing process carried out by oil palm farmers will be efficient by selling the harvest and no longer rely on the marketing channels in the area.

Based on the description above, researchers are interested to research more about how elasticity of price transmission and farmer's share by self-reliance farmers in Musi Banyuasin Regency. This research aims to describe TBS marketing channels conducted by oil palm self-help farmers in Musi Banyuasin Regency. After that, to calculate the amount of marketing margin, farmer's share, and TBS marketing efficiency carried out by oil palm self-help farmers in Musi Banyuasin Regency. Afterwards, calculate the elasticity of transmission of world CPO prices to the price of FFB level of oil palm non-governmental farmers in Musi Banyuasin Regency. Lastly to formulate policies related to TBS prices received by self-help farmers.

METHODS OF RESEARCH

This research was conducted in one of the self-help oil palm plantations in Musi Banyuasin Regency, South Sumatra, Indonesia. The selection of this location is done purposive sampling method. The research activity was conducted in August 2020.

Primary data collection is conducted by direct observation in the field and interviews with respondents using questionnaire instruments. The types of primary data required in the form of land area data, production, selling price of TBS at the farmer level and TBS prices at the consumer level, marketing flows that take place from farmers to consumers and other related data. Meanwhile, secondary data is obtained from relevant agencies, literature and previous research.

The technique used in sampling is simple random sampling. This sampling technique is used because the population of oil palm farmers who are sampled is self relience oil palm farmer with a total of 90 farmers. To solve all research problems, a mathematical operational model is required that will be described in detail for each research objective.

First research objective will explained descriptively by analyzing all marketing channels that occur on this research site. Second objective, will analyze with the following formula and then describes in more detail. To calculate the marketing margin can be calculated based on the following formula (Daniel, 2002):

$$M = CP - PP \qquad (1)$$

Where: M = Marketing Margin (IDR/kg), PP = Producer Prices (IDR/kg), CP = Costumer Prices (IDR/kg).

Farmer's share is the percentage between the price the farmer receives and the price paid by the end consumer. The formula for calculating farmer's share is as follows (Septiani, 2016):

$$FS = \frac{CP}{PP} \times 100\% \qquad (2)$$

Where: FS = *Farmer's Share*.

To calculate the level of marketing efficiency of each institution can be used with the following formula (Soekartawi, 2004):

$$\text{MEi} = \frac{TMCi}{TRi} \text{ x } 100\% \qquad (3)$$

Where: MEi = marketing efficiency i-level (%), TMCi = total marketing cost i-level (IDR/kg), TRi = total revenue i-level (IDR/kg).

Criteria of marketing efficiency, where 0 < MEi < 100% (Soekartawi, 2004):

- 0 – 50% = efficient;
- 51 – 100% = not efficient.

Elasticity of price transmission can be obtained by using the following mathematical formula (Lastinawati et al., 2018):

$$\text{Et} = \frac{\partial \text{Pf}}{\partial \text{Pr}} \text{ x } \frac{\text{Pr}}{\text{Pf}} \qquad (4)$$

Price has a linear relationship with mathematical equations as follows:

$$\text{Pf} = b_0 + b_1 \text{Pr} + e \qquad (5)$$

$$\frac{\partial \text{Pf}}{\partial \text{Pr}} = b \qquad (6)$$

$$\text{Et} = b \text{ x } \frac{\text{Pr}}{\text{Pf}} \qquad (7)$$

Where: Et = elasticity of transmission price, ∂Pr = change in world prices (IDR/kg), ∂Pf = change FFB price in farmer's level (IDR/kg), Pr = average price of CPO (USD/tons), Pf = average price FFB in farmers' level (IDR/kg), b = coefficient of regression equation.

According to Hasyim in Prayitno et al. (2013):

- If Et = 1, then the rate of change in TBS price at the farmer level is equal to the rate of change in the world CPO price;
- If Et < 1, then the rate of change in TBS price > at the farmer level is smaller than the rate of change in world CPO prices.

RESULTS AND DISCUSSION

Oil palm farmers who as samples, is farmers that stay in Mekar Jadi Village, amounted to 90 samples. Farmers taken for this research are farmers who work on oil palm independently and have an area between 1 to 5 hectares of land and have experience ≥ 10 years. Farmers' examples in this study both produce TBS with a harvest period every 2 weeks. Farmers' Characteristics can be seen in Table 1.

Farmers in this research are in the age range of 30 years to 70 years. Most of farmers have families and have children. The identity of farmers based on their age according to the age classification issued by the Central Statistics Agency.

The level of education is one of the most important factors in supporting oil palm farming because the higher the level of education, the better quality of oil palm produced. Experience in farming is also one of the particularly important factors in improving the quality and quality of FFB. The experience of farming shows how long example farmers have started to farm oil palm since the nursery stage or since owning private land. Known the largest number of farmers examples based on the experience of farming is at 10-14 years. While the longest experience of farming is ≥ 25 years only several five people. Based on the results, it can be concluded that the longer the farming, the better the quality and production of FFB produced. This is evident because example farmers who have ≥ 25 years of farming experience produce an average TBS production above 1,400 kg / ha / month, while the lowest average production is in the range of < 25 years. The average area of farmers' land is 2.33 hectares.

Marketing institutions are individuals or groups of people who distribute FFB from farmers to the factory. These marketing institutions include small traders (collectors),

wholesale traders, and other institutions involved. Based on survey, the marketing institutions involved are only collectors. Musi Banyuasin district has its own wholesale trader but the last two years have been inactive so it cannot be used as a sample. Characteristics of marketing institutions include identity based on age, level of education and trading experience. Collectors are in the age range of 30-60 years. The identity or characteristics of the collector by age can be seen in more detail in Figure 1.

Table 1 – Farmers' Characteristics

| No	Farmers' Characteristic	Number of Farmer (person)	Percentage (%)
1	Farmers' Age		
	15 – 44 years old	33	36.67
	45 – 60 years old	48	53.33
	> 60 years old	9	
2	Farmers' Education Level		
	Elementary	51	56.67
	Junior High School	30	33.33
	Senior High School	9	10.00
3	Farmers' Experience		
	10 – 14 years	36	40.00
	15 – 19 years	30	33.33
	20 – 24 years	9	10.00
	≥ 25 years	15	16.67
4	Land Area		
	1 ha	21	23.33
	2 ha	42	46.67
	3 ha	6	6.67
	4 ha	18	20.00
	5 ha	3	3.33

Source: Data Analysis, 2020.
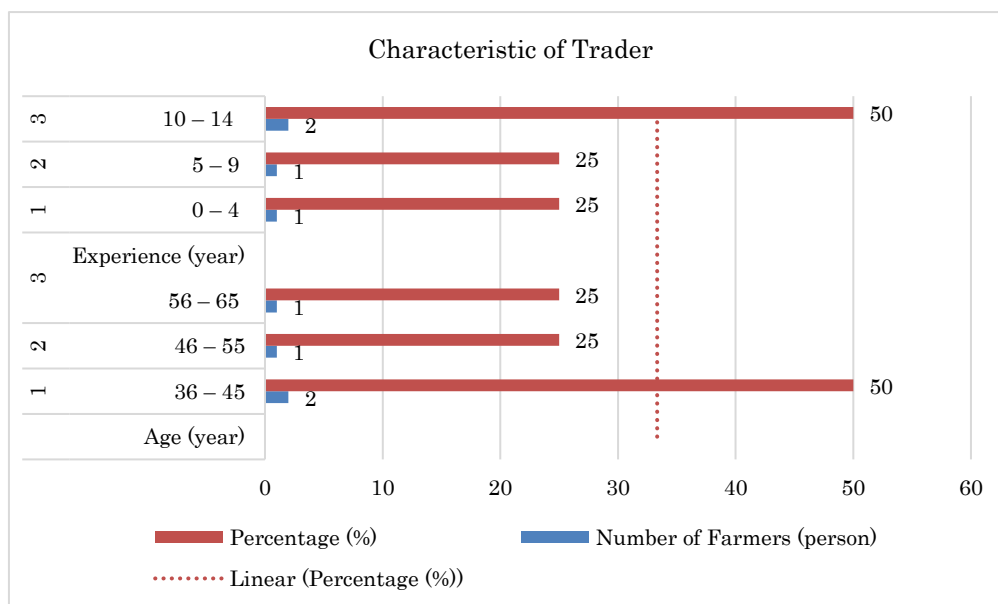
Figure 1 – Traders Characteristics (Source: Data Analysis, 2020)

The level of education is an example of the many factors that are very important in increasing oil palm marketing activities because the higher the level of education, the better knowledge that farmer has, especially to the marketing process itself. The level of education of collecting traders in Mekar Jadi Village is divided into elementary, junior high, and high school. The identity of the collector who according to his level of education. Based on the level of education, the highest number of elementary schools is three people who have a percentage of 75%, while et the high school education level is only 25%.

The level of education is an example of the many factors that are very important in

increasing oil palm marketing activities because the higher the level of education, the better the knowledge that has, especially to the marketing process itself. The level of education of collecting traders in Mekar Jadi Village is divided into elementary, junior high, and high school. The identity of the collector who according to his level of education. Based on the level of education, the highest number of elementary schools is three people who have a percentage of 75%. At the high school education level amounted to one person with a percentage of 25%.

Experience in trading as a trader who collects it is one of the most important factors in marketing FFB products to Palm Oil Processing Mills (PPKS). Trading experience shows how long it has taken for collecting traders to start marketing oil palm activities, namely buying FFB from farmers to selling it to factory. The identities or characteristics of the traders, according to trading experience.

The final consumer of this research is PPKS which buys FFB from a few collecting traders to meet the production needs of CPO. Based on the results of a survey conducted in the research area, Mekar Jadi Village has one PPKS namely PT. Sustainable Brilliant Light (CCL).

PT. CCL is a subscription Factory in Mekar Jadi Village. This is because PT. CCL does not provide specific terms or criteria for purchasing FFB. Based on the results of research surveys and interviews of farmers, PT. CCL receives crops from privately owned (self-reliance) gardens. In addition, this factory tends to receive whatever FFB results obtained by farmers.

The marketing channels in Mekar Jadi Village have different marketing patterns. One of the causes of the formation of different marketing patterns is because farmers tend to choose where FFB could be sold. The greater the profit obtained by farmers, the greater the chance of farmers to choose the marketing channel. The formation of this marketing pattern also involves marketing institutions located in the local area. This is because most farmers cannot market their own products directly to the factory. They did not have a transport truck while a long distance and an agreement between farmers and collectors who are factors of self-reliance palm oil farmers are difficult to sell directly to the factory. Based on the results of the research, two palm oil marketing channels were obtained from self-reliance farmers that occurred in Mekar Jadi Village.

The marketing channel in the first pattern of oil palm from self-reliance farmers in Mekar Jadi Village started from farmers selling FFB products to collectors to be weighed in advance at the collection point. Collectors come directly to farmers' plantation and then the collectors buy the FFB directly. FFB that has been collected will be transported using transport truck that will be sold to the Palm Oil Processing Factory through delivery order (DO) system. Based on the description, it can be described in a diagrammatic model of the first marketing pattern of FFB by self-reliance farmers in Figure 2.

Figure 2 – First Marketing Pattern

After data processing, the average selling price of palm oil FFB obtained from 30 samples of self-reliance farmers is 930 IDR/kg. The current price has increased much when compared to the price in the previous month, which is an average of 800 IDR/kg. Meanwhile, the average selling price obtained from four samples of collectors who sell FFB to PT. CCL is Rp1,200/kg. PT. CCL decided the price, so farmers tend to be price takers. In its implementation, payment through two ways, among others, by paying directly and by giving a maturity time. It usually takes two or three days after the sale process and then it will be paid in cash.

The marketing flow of the second pattern of self-help palm oil in Mekar Jadi Village,

namely from smallholders selling FFB products directly to the Palm Oil Processing Plant (factory). The process of selling FFB is not done directly, but through a group among self-help farmers that was deliberately formed to sell the proceeds of oil palm TBS in bulk. The formation of groups among self-help farmers is because factory does not accept purchases in small quantities. The average production produced by self-help farmers in Mekar Jadi Village per harvest is very small so that a group of self-help farmers who sell FFB products and collected in large quantities is usually at least one truck car or about 12 tons of FFB. Smallholder oil palm farmers who are not members of this group are still difficult to sell directly to factory because of the agreement between farmers and collectors involved so as to force the self-help farmers to continue selling the proceeds through collectors. Can be seen in the following image.

Figure 3 – Second Marketing Pattern

Based on Figure 3, it is known that the distribution flow of oil palm FFB results is a zero-level marketing channel (direct) that is from non-governmental farmers directly to Factory. The average production of FFB in the second marketing channel produced by eight non-oil palm farmers and the amount of FFB sold by farmers to factory. Based on the calculation results, the average production of FFB of the second marketing channel amounted to 1,137 IDR/kg. Based on the results of data analysis, the average selling price of palm oil FFB self-reliance farmers to the factory, PT. CCL, is 1,200 IDR/kg. Based on this, it can be concluded that as many as 90 oil palm self-reliance farmers in Mekar Jadi Village each choose their own marketing channel.
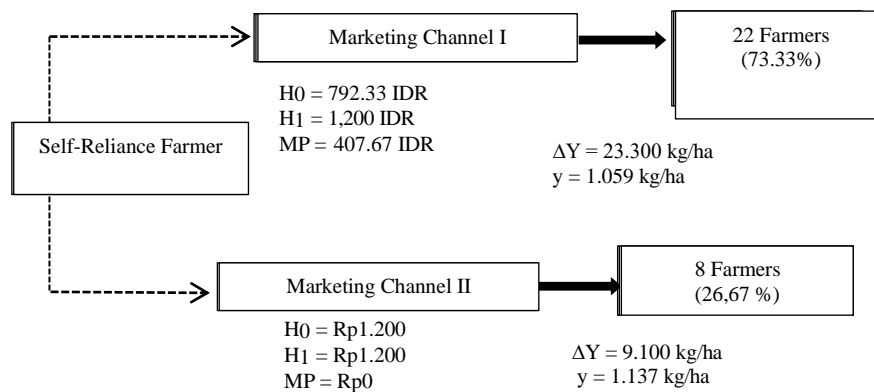

Figure 4 – First and Second Marketing Pattern (Source: Data Analysis, 2020)

Based on Figure 4, it can be concluded that smallholders in Mekar Jadi Village prefer the first marketing channel. This is due to various factors including the agreement. Farmers who have made deals with collectors are difficult to sell directly to the factory. Regardless, collecting traders often provide capital loans for farming activities and daily needs for farmers, it caused farmers prefer the first marketing channel over the second marketing channel. Mileage to the factory is quite far and farmers who do not have their own truck transport cars are also another factor farmer prefer the first marketing channel.

Marketing channels or marketing patterns of CPO in Mekar Jadi Vilage had two marketing patterns namely marketing patterns level one and direct marketing. To solve the second problems in this study, CPO marketing analysis will be explained in more detail

includes marketing costs, marketing margins, marketing profits, farmer's share, as well as marketing efficiency.

Marketing costs are all costs incurred by marketing agencies to market FFB from farmers to factories. FFB's marketing costs include sorting, transporting, and loading cost. The amount of marketing costs was varied which depend on the distance from the oil palm plantation to the factory. The total marketing cost is 192.5 IDR/kg. The average cost of marketing channels can be seen in the following figure.

Cost Item (IDR/kg)

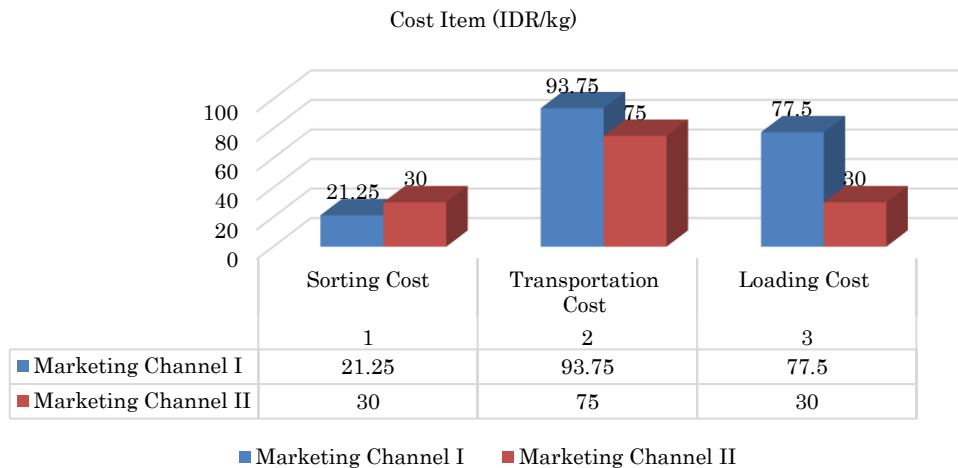|	Sorting Cost	Transportation Cost	Loading Cost
	1	2	3
Marketing Channel I	21.25	93.75	77.5
Marketing Channel II	30	75	30

■ Marketing Channel I   ■ Marketing Channel II

Figure 5 – Cost Item in Each Marketing Channel (Source: Data Analysis, 2020)

Based on Figure 5 mentioned that the costs on the marketing channel include loading and unloading costs, sorting costs and transportation costs. Sorting cost was paid by collectors to choose a FFB that is in good condition. Sorting fee is 21.25 IDR/kg. Transportation costs are the costs incurred by collectors that bring FFB from the collect point area to factory. The cost is the wages of labor as a truck driver amounting 93.75 IDR/kg. Loading costs are costs incurred by collectors when unloading FFB that has been brought to the factory amounting to 77.5 IDR/kg.

Marketing margin is a comparison between prices at the consumer level and prices at the producer level at each marketing agency involved. Marketing margin shows the price paid by the factory at the price received by the farmer. Marketing margin obtained is 407.67 IDR/kg, in detail can be seen in the following figure.

Price in Farmer and Factory Level

	Marketing Channel I	Marketing Channel II
1 Price in Farmer Level (IDR/kg)	792.33	1,200
2 Price in Factory Level (IDR/kg)	1,200	1,200

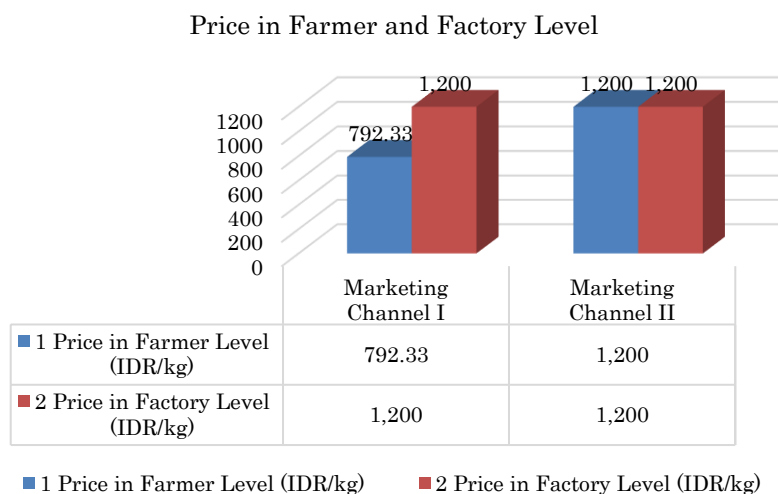■ 1 Price in Farmer Level (IDR/kg)   ■ 2 Price in Factory Level (IDR/kg)

Figure 6 – Price in Farmer and Factory Level (Source: Data Analysis, 2020)

Figure 6 shows the sale and purchase prices of the marketing agencies involved in the FFB marketing process. The price at the farmer level is 792.33 IDR/kg while the price in the factory is 1,200 IDR/kg. The value of marketing margin is obtained from the difference in price at the farmer level and the price at the factory level.

Table 2 shows the marketing advantages of the first marketing channel. Marketing margin obtained is 407.67 IDR/kg and marketing costs are 192.5 IDR/kg. The marketing calculation obtained by collectors from selling FFB products at the factory is a total of 215.17 IDR/kg. More clearly can be seen in the following table.

Table 2 – Marketing Profit

No	Component	Marketing Channel I	Marketing Channel II
1	Marketing Margin (IDR/kg)	407.67	-
2	Total Product Value (IDR/kg)	-	1,200
3	Marketing Cost (IDR/kg)	192.50	135
	Marketing Profit (IDR/kg)	215.17	135

Source: Data Analysis, 2020.

Farmer's share is the share received by farmers in the form of a percentage (%). Farmer's share is a comparison of the price paid by the factory to collector traders with the price received by farmers. The price received by farmers is the selling price of FFB to collector traders, while the price paid by processing factories is the price received by collectors after selling the FFB to The Factory. Farmer's share on each marketing channel can be seen in the following table.

Table 3 – Farmer's Share

No	Component	Marketing Channel I	Marketing Channel II
1	Price in Farmers' Level	792.33	1,200
2	Transportation Cost	1,200	1,200
	Farmer's Share (%)	66.03	100.00
	Trader's Share (%)	33.97	0.00

Source: Data Analysis, 2020.

Based on Table 3, it is obtained that 792.33 IDR/kg is the price at the farmer level and 1,200 IDR/kg is the price at the factory level in the first marketing channel. So that, the share of farmers is 66.03% and the share of traders is 33.97%.

Analysis of FFB marketing in Mekar Jadi Village has two marketing channel. The first marketing channel is a level one channel, which means that farmers sell their product through collector traders and then the collector traders will sell them to the factory. Meanwhile, the second marketing channel is a zero level channel or direct channel, which means that farmers sell their product directly to the factory so that the profits obtained by farmers will be maximized. More details are shown in Table 4.

Based on Table 4, the marketing agencies involved in this first marketing channel were only collectors. It is known that 792.33 IDR/kg is the selling price of the farmers and is also the buying price of the collectors. The marketing costs include the sorting cost of 21.25 IDR/kg, the loading and unloading cost of 77.50 IDR/kg and the transportation cost of 93.75 IDR/kg. Thus, the total marketing costs incurred by the collecting traders are 984.83 IDR/kg and that includes the purchase price of FFB from farmers.

Collector traders sell their products through the factory for 1,200 IDR/kg. This price is determined by factory. The marketing profits obtained by the collectors is 215.17 IDR/kg. The marketing margin is 407,670 IDR/kg and the farmer's share is 66.03%. It can be concluded that the first marketing channel in Mekar Jadi Village runs well and efficiently.

Table 5 shows the level of marketing efficiency. The total marketing cost was 192.5 IDR/kg and the total value of the product was 792.33 IDR/kg, marketing efficiency of 24.29%. Based on the results of the tabulation analysis, the marketing efficiency value is below 50%, which means that marketing runs efficiently.

Table 4 – Marketing Analysis of FFB

No	Component	MM	SP	MC	MP	FS
1	Price in Farmers' Level		792.33			
2	Marketing Cost Price Sorting Transporting Loading TOTAL			792.33 21.25 93.75 77.50 984.83		
3	Price at collectors level	1,200				
4	Marketing profit				215.17	
5	Marketing margin	407.67				
6	Share margin					66.03

Note: MM = marketing margin (IDR/kg), SP = selling price (IDR/kg), MC = marketing cost (IDR/kg), MP = marketing profit (IDR/kg), FS = farmer's share (%).
Source: Data Analysis, 2020.

Table 5 – Marketing Efficiency

No	Marketing Channel	Total Marketing Cost (IDR/kg)	Product Value (IDR/kg)	Efisiensi Pemasaran (%)
1	Farmer → Collector Trader → Factory	192.5	792.33	24.29
2	Farmer → Factory	135.0	1,200	11.25

Source: Data Analysis, 2020.

The price change transmission elasticity is a comparison of the rate of price change in consumers with the rate of price change at producers. The goal is to know how much the rate of price change that occurs in the producer market due to the formation of one-unit price change in the consumer market. Producers are defined by the monthly average FFB price in Musi Banyuasin Regency while consumers are represented by the average monthly price of Crude Palm Oil (CPO) in the world market.

The price transmission analysis was carried out by processing the monthly average FFB and CPO prices on the world market from September 2018 - September 2020. The average FFB price in that period was 1,298.96 IDR/kg. The world average price of CPO for the period 2018 - 2020 is USD 608.37 (14,354.78 IDR/kg). The mathematical equations of this study are:

$$Pf = 343{,}51 + 0{,}087 \, Pr$$

From the above equation, the constant value is 343.51 and the regression coefficient value is 0.087. This means that every 1% increase in the world price of CPO will increase the FFB price at the farm level by only 0.087%. This is due to an increase in inputs such as factory diesel prices, raw material prices and labor wages. Traders' behavior is also one of the other contributing factors when the world price of CPO increases, traders will also increase their profits.

Based on secondary data analysis, the average FFB price at the farmer level is IDR 1,453.99 / kg and the world average CPO price in IDR is IDR 14,354.78. Thus, the transmission elasticity of changes in world CPO prices compared to FFB prices at the farmer level is as follows:

$$\text{ET} = b \, x \, \frac{Pr}{pf} = 0{,}858$$

The calculation of the price transmission elasticity above yields an Et value = 0.858 which shows the result of the Et value <1. Therefore, the price transmission elasticity is inelastic, where the rate of change in FFB prices at the farmer level is smaller than the rate of change in world CPO prices. CPO trading in the local market is inefficient or in other words, price changes at the consumer level cannot be completely transmitted to the producer level.

CONCLUSION

There are two marketing channels TBS oil palm plantations independent farmers or self-help who is located at the research location. The first marketing channel is ranging from producers or farmers to collectors then to factories. The second marketing channel is a direct channel so that farmers directly sell FFB to the factory.

The first marketing channel is known to sell at the farmer level of 792.33 IDR/kg and at the factory level of 1,200 IDR/kg with an efficiency value of 24.29%, while the second marketing channel is known to sell 1,200 IDR/kg which is a direct channel with an efficiency value of 11.25%. Both marketing channels have been efficient. Share at the farmer level of 66.03% and share at the trader level of 33.97%.

Elasticity of transmission price changes in world CPO price compared to the price of FFB at the farmer level of the result of the value obtained et < 1, namely as et = 0.858, therefore the elasticity of price transmission is inelastic where the rate of change in TBS price at the farmer level is smaller than the rate of change in the world CPO price.

REFERENCES

1. Badan Pusat Statistik Musi Banyuasin. 2020. Kecamatan Sungai Lilin dalam Angka 2018 [Internet]. Sekayu. www.musibanyuasinkab.bps.go.id. (Diakses pada tanggal 17 Agustus 2019).
2. Bisuk, P. 2009. Analisis Tataniaga dan Elastisitas Transmisi Harga CPO Internasional Terhadap Harga Tandan Buah Segar (TBS) Kelapa Sawit. Skripsi. Universitas Sumatera Utara, Medan.
3. Daniel, M. 2002. Pengantar Ekonomi Pertanian. Cetakan Pertama. Bumi Aksara, Jakarta.
4. Direktorat Jenderal Perkebunan. 2018. Kelapa Sawit [Internet]. Jakarta. www.ditjenbun.pertanian.go.id. (Diakses pada tanggal 17 Agustus 2019).
5. Lifianthi, S. Oktarina, dan D. Aryani. 2014. Perbandingan Kontribusi Pendapatan Dan Pengeluaran Konsumsi Petani Plasma Kelapa Sawit di Dua Tipologi Lahan di Sumatera Selatan. Jurnal [Internet]. Indralaya. (http://www.pur-plso-unsri.org), diakses pada 6 April 2016.
6. Mulyana, A. 2008. Penetapan Harga Tandan Buah Segar Kelapa Sawit di Sumatera Selatan dari Perspektif Pasar Monopoli Bilateral [Internet]. Palembang. http://download.portalgaruda.org. (Diakses pada tanggal 17 Agustus 2019).
7. Novida, A. 2017. Analisis Efisiensi Pemasaran Kelapa Sawit Petani Rakyat di Desa Prapat Janji Kecamatan Buntu Pane Kabupaten Asahan. Skripsi. Universitas Medan Area, Medan.
8. Prayitno, A.B., A.I. Hasyim, dan S. Situmorang. 2013. Efisiensi Pemasaran Cabai Merah di Kecamatan Adiluwih Kabupaten Pringsewu Provinsi Lampung. JIIA 1(1): 53-59.
9. Ramadhansyah, E. 2017. Analisis Pemasaran Tandan Buah Segar (TBS) Kelapa Sawit Rakyat (Studi Kasus: Kecamatan Bangko Pusako, Kabupaten Rokan Hilir, Riau). Skripsi. Universitas Muhammadiyah Sumatera Utara, Medan.
10. Septiani, E. 2016. Analisis Pengolahan dan Pola Pemasaran Karet di Kecamatan Payaraman Kabupaten Ogan Ilir. Skripsi. Universitas Sriwijaya, Indralaya. (tidak dipublikasikan).
11. Soekartawi. 2004. Agribisnis Teori dan Aplikasinya. Penerbit PT Raja Grafindo Persada, Jakarta.