Journal of Agribusiness Management and Development, Vol 2 No 2, September 2021, Page 1-9
ISSN 2775-0248 (Print) ISSN 2775-0256 (Online)
Available at https://journal.ugm.ac.id/v3/JAMADEV/

THE PERFORMANCE OF INDONESIAN CRUDE PALM OIL EXPORT

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Received : 15 May 2021 Accepted : 15 August 2021 Published : 25 September 2021

ABSTRACT

This research aims: (1) to examine Indonesia's CPO production and CPO export trends in the international market, (2) to analyze Indonesia's CPO comparative advantages compare to other main exporters, (3) to find out which export target the country has the best market share to expand between main export target countries and (4) to know the factors that affect export volume. This research used descriptive analytics with CPO related time-series data from 2006 until 2016. The research showed that (1) Indonesia's production and export trends are expected to increase each year (2) Indonesia has better comparative advantages compared to other main export country and on maturity stage (3) The best CPO market share to expand is China compare to other export target countries (4) Factors affecting export volume are CPO international price, Indonesia's GDP and total population.

Keywords: *CPO, comparative advantage, constant market share, export performance, trend*

INTRODUCTION

The agricultural sector plays a crucial role in the Indonesian economy. It can be seen from the agricultural sector's contribution to Indonesia's Gross Domestic Product (GDP). The agricultural sector until 2016 contributed 13.52% or was the second largest contributor to GDP after the manufacturing sector. When viewed from the percentage of contributions from each sub-sector in the agricultural sector, the plantation sub-sector is the largest contributor to the agricultural sub-sector, which amounted to 3.57% in 2016. One of the commodities that support the plantation sub-sector is the oil palm commodity. Oil palm is a commodity in the plantation sub-sector, which annually experiences growth in terms of production. Based on Kementrian Pertanian (2017) data, oil palm commodities in 2015 experienced a production growth of 6.12% and a productivity growth of 0.65%.

Several factors can cause the rapid development of oil palm in Indonesia. The first factor is Indonesia's natural conditions that support the growth of oil palm commodities. The second factor is the high population growth in Indonesia. The third factor is the increasing trend among farmers who see palm oil as a commodity with a stable price and will always be needed in the international market. According to Salvatore (1993), international trade occurrence due to price differences between countries can be analyzed through a partial balance analysis. The relative equilibrium price of a commodity in international trade is determined by the power of supply and demand for the commodity in international markets.

Ermawati & Saptia (2013) analyze of the export performance of Indonesian Crude Palm Oil (CPO) and Palm Kernel Oil (PKO) by comparing the competitiveness of palm oil exports both CPO and KPO with palm oil-producing countries and comparing the performance of Indonesia's CPO and PKO exports to several destination countries main export. The results showed that the export performance of Indonesian CPO and PKO was lower than that of Malaysia and Thailand, but the same as Colombia and the export performance of CPO and PKO tended to decline compared to the growth in exports world products.

Kuwornu et al. (2009) research the factors that can affect palm oil exports' performance in the form of CPO in Ghana. The study found that the real domestic palm oil price influenced the export demand for Ghanaian palm oil, the real export price of palm oil, the real export price of Malaysian palm oil (as a competitor), and the exchange rate of the Ghanaian currency.

Alatas (2015) research is focused on production trends and export competitiveness of Indonesian palm oil (CPO). The results showed the factors that influence India's CPO exports: international CPO prices, rupiah exchange rates, per capita income, population, and substitution prices. Then, international prices, state income, population, and substitution prices influenced CPO exports to China. Meanwhile, domestic prices, state income, population, trends, and substitution prices are influenced by CPO exports to the

Netherlands. It was also found that the Indonesian CPO market share is superior and able to compete globally. The objectives of this study are (1) knowing the production and export trends of Indonesian Crude Palm Oil (CPO) in the international market, (2) knowing the competitiveness of Indonesian Crude Palm Oil (CPO) compared to other major exporting countries, (3) knowing the share CPO market is best developed among the main export destination countries and (4) knows the factors that affect the export volume of Indonesian Crude Palm Oil (CPO).

METHOD

This research was conducted using descriptive methods using quantitative and qualitative data to analyze the study's phenomena. The type of data used in this study is secondary data in the form of time-series data, which is adjusted to the availability of existing data. The time-series data used are data collected for 11 years from 2006 to 2016. The data used by the authors are obtained from various sources, both from the Central Statistics Agency, the Ministry of Agriculture, the Ministry of Trade, World Trade, and UNCOMTRADE (United Nations Commodity Trade) Palm Oil Statistics Index Mundi and several other sources related to the trading of CPO.

Hypothesis 1 is assumed that the production trend and export trend of Indonesian CPO are positive, and the time variable has a significant effect. Production trends and export trends for the next five years can be identified through trend analysis. Trend analysis can be done using time series data of production volume and export volume of Indonesian CPO. The data is then analyzed using the Linear Regression Method, which has the following equation (Gujarati, 1995):

$$Y = a + bx \ldots\ldots\ldots\ldots(1)$$

Where:
Y = Indonesia's CPO export volume
a = intercept
b = time change regression coefficient
x = time trend

Hypothesis 2 is assumed that Indonesian CPO has competitiveness compared to other major exporters. Traditionally, several methods can be used to measure the level of competitiveness. The first method used is the Revealed Competitive Advantage (RCA) method to analyze Indonesian CPO competitiveness in the international market. The RCA method is used to see the share of exports that have occurred in a commodity against the export share of that commodity in the world market (Tambunan, 2004). The formula for Revealed Competitive Advantage is as follows:

$$\textit{Revealed Competitive Advantage} = \frac{Xik/Xim}{Xwk/Xwm} \ldots(2)$$

Where:
Xik = Export of Country X's CPO products
Xim = Export all of Country X's products
Xwk = Exports of world CPO products
Xwm = Export all world products

Meanwhile, the RCA index is a comparison between the current RCA value and the previous year's RCA value, so the formula is as follows:

$$\text{Indeks RCA} = \text{RCAt} / \text{RCAt} - 1 \ldots\ldots(3)$$

Where:
RCAt = Current RCA value
RCAt-1 = RCA value of the previous year

In addition to RCA, the Trade Specialization Index (TSI) method can measure a country's competitiveness of commodities. Trade Specialization Index (TSI) is a measure used to analyze the position or stage of developing a product to see a country's trend as an exporter or importer. The Trade Specialization Index (TSI) will identify the growth rate of a product in trade into the following five stages:

1. Introduction stage, if the TSI value is between -1 to -0.50
2. Import substitution stage, if the TSI value is between -0.50 to 0.00
3. Growth stage, if the TSI value is between 0.01 to 0.80
4. Maturity stage, if the TSI value is between 0.81 to 1.00
5. Re-import stage, if the TSI value again decreases from 1.00 to 0.00

Mathematically, the TSI is formulated as follows:

$$TSI = \frac{Xit - Mit}{Xit + Mit} \ldots\ldots\ldots(4)$$

Where:
Xi = The export value of product i in year t
Mi = The import value of the product t in t

Hypothesis 3 is assumed that the best CPO market share to develop is the CPO market share in India as the largest importer of Indonesian CPO. CMSA (Constant Market Share Analysis) is a method used to analyze how export growth performance against world growth is considered standard growth. CMS analysis uses a technique that decomposes changes to the market share of the exporting or importing country.

Indonesia's CPO export destination countries are dominated by five countries: India, China, Pakistan, the Netherlands, and Spain. The decomposition carried out in this method will break down the export or import performance into several components to identify several aspects that affect the export or import performance. This method was first proposed by Leamer and Stern in 1970 and then developed and refined by Fagerberg and Sollie in 1985. Formally, Fagerberg and Sollie describe the equation for changing market share as follows:

$$\text{Constant Market Share Changes} = PE + ME + CE + PEA + MEA \quad \text{.....(5)}$$

Description:
PE = Product Effect
ME = Market Effect
CE = Competitiveness Effect
PEA = Product Effect Adaptation
MEA = Market Effect Adaptation

Furthermore, equation five can be formed by derivations or derivatives of these five components into three main effects: competitiveness, structural effect, and competitiveness. The derivative formed from the derivative of the above equation is:

$$\delta Q = \sum j \sum h \left[\left(\frac{Xtihj}{XtEhj} - \frac{X0ihj}{X0Ehj}\right) x \frac{X0Ehj}{X0E.j} x \frac{X0E.j}{X0E..}\right]$$
(Competitiveness Effect)

$$+ \sum j \sum h \left[\frac{X0ihj}{X0Ehj} x \left(\frac{XtEhj}{XtE..} - \frac{X0Ehj}{X0E..}\right)\right]$$
(Structural Effect)

$$+ \sum j \sum h \left(\Delta \frac{Xihj}{XEhj} x \Delta \frac{XEhj}{XE..}\right)$$
(Adaptation Effect)……..……(6)

Description:
δQ = Changes in Market Share
Notation i = Exporting countries (Indonesia)
Notation j = The main importing countries CPO
Notation h = CPO Commodities
X^0ihj = Indonesian CPO exports to importing countries in the early period
X^tihj = Indonesian CPO exports to importing countries in the final period
X^0Ehj = World CPO exports to importing countries in the early period
X^tEhj = World CPO exports to importing countries in the final period
X^tihj = Indonesian CPO exports to importing countries in the final period
$X^0E.j$ = Total world exports to major CPO importer countries in the initial period
$X^0E..$ = Total world exports in the initial period
$X^tE..$ = Total world exports at the end of the period

A positive value indicates that the competitive advantage of an exporting country. Conversely, a negative value indicates no competitive advantage. The effect of competitiveness is not decomposed and is described following equation 6 (Fagerberg, 1987).

The hypothesis is that it is assumed that the factors that influence the performance of CPO exports in Indonesia are international CPO prices, domestic CPO prices, Indonesia's gross domestic product (GDP), and population. Factors that can affect CPO exports' performance can be determined by analyzing the Ordinary Least Square method with double-log data transformation using each independent variable's natural logarithm. This analysis will show how much the factors are thought to affect Indonesia's CPO exports. Furthermore, the factors that are thought to affect export performance will be estimated by compiling these factors into the equation:

$$\ln Y = \ln\beta_0 + \ln\beta_1 X_1 + \ln\beta_2 X_2 + \ln\beta_3 X_3 + \ln\beta_4 X_4 + \mu \quad \text{.....(13)}$$

Description:
Y = Indonesia's CPO export volume (ton/year)
X_1 = International CPO price (US$/ton)
X_2 = Domestic CPO price (US$/ton)
X_3 = Indonesian GDP (billion Rupiah)
X_4 = the number of population (inhabitants)
μ = Random error
β = Koefisien regresi

Hypotheses:
H_0: βi = 0, each factor of international CPO price, domestic CPO price, GDP of Indonesia, and the population is equal to zero.
H_a: βi ≠ 0, each factor of international CPO price, domestic CPO price, GDP of Indonesia, and the population is not equal to zero.

RESULTS AND DISCUSSION

Based on the regression analysis results, Table 1 and Figure 1 show that the trend analysis

results significantly influenced changes in CPO production volume to the error rate of 0.01.

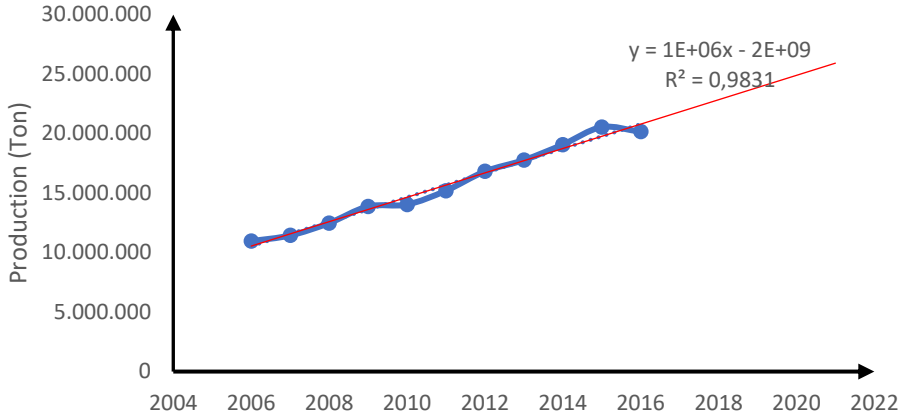

Figure 1. Indonesia's CPO Production Trend
Source: Secondary data analysis, 2018

Table 1. Indonesia's CPO Production Volume Trend

Variable	Coefficient	t-statistic	Sig.
Constants	-2,045,559,448.255(***)	-22.687	0.000
Year	1,024,976.255(***)	22.861	0.000
R-squared	0.983		
F	522.604		
Sig. F	0		

(***) significant at the level of errors (α) 1%
Source: Secondary data processed (2018)

Results of the regression trend known that annually is expected to increase CPO production volume amounted to 1,024,976.255 tons. If the increase is considered constant each year, it is expected that up to 5 years into the future (2021), Indonesian CPO production's expected volume reached 26,188,357.82 tons. The results of linear regression output also show the value of R-squared of 0.983. The year variable can explain the change in CPO production volume by 98.3%, while other variables outside the model explain the remaining 1.7%.

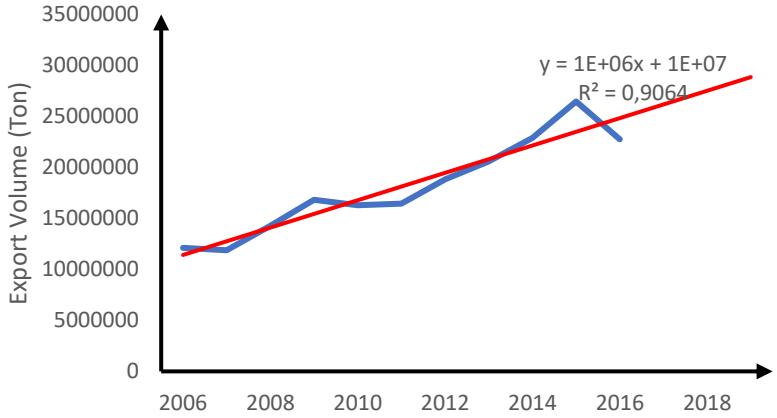

Figure 2. Indonesia's CPO Export Trend
Source: Secondary data analysis, 2018

Indonesia's export performance can be observed based on export trends that have formed over a certain period. The export volume of CPO commodities is influenced not only by the

domestic market but also by the international price of CPO, formed based on world CPO needs. Based on the chart above, there is no significant fluctuation in export volume, and it tends to be following the established trend line. Results of linear regression Indonesia's CPO export volume is shown in Table 2.

Table 2. Indonesia's Export Volume Linear Trend

Variable	Coefficient	t-statistic	Sig.
Constant	-2,678,962,337.882(***)	-9.271	0.000
Year	1,341,166.973(***)	9.334	0.000
R-squared	0.952		
F	87.118		
Sig. F	0.000		

(***) significant at the level of errors (α) 1%
Source: Secondary data processed (2018)

The simple regression test results also show that the trend variable (year) has a significant effect on export volume changes to an error rate of 0.01 where each year, there is an increase in production volume 1,341,166.973 tons. If it is assumed that the increase in export volume each year is constant, the export volume of Indonesian CPO is projected to reach an export volume of 31,975,466.32 tons in 2021. The regression estimation result also shows the coefficient of determination of 0.952, which indicates that the trend (time) can explain production volume changes by 95.2%, and other factors outside the model explain a 4.8% change in production volume. The fluctuation in export volume during this period was often caused by changes in demand, especially in the European Union Region. Meanwhile, a significant increase in export volume occurred in 2014-2015. The significant increase in export volume was due to a significant increase in export volume to several developing countries such as India and Pakistan, which began to develop CPO-based industries.

Indonesia's RCA index values from 2006-2016 in Table 3 always show a positive value. It shows that Indonesia has a competitive edge in producing CPO compared to other CPO exporters. Over the past 11 years, Indonesia has an average RCA index of 1.005. It means that for 11 years from 2006 to 2016, Indonesia has the competitiveness of CPO commodity exports above the world average. Based on the calculation results in the table, it can also be seen that between Indonesia and Malaysia, Indonesia has an average RCA value of 53.857. It means that the export value of Indonesian CPO fulfills approximately 53.857% of the share of world CPO export value from 2006-2016. Indonesia's RCA Index has experienced significant fluctuations in several periods during 2006-2016, although, on average, it is still above the competitiveness of world exports.

Table 3. Comparison of Indonesian and Malaysian CPO RCA Value and Index 2006-2016

Year	Indonesia		Malaysia	
	RCA Value	RCA Index	RCA Value	RCA Index
2006	54.389	1.017	36.853	0.997
2007	55.539	1.021	37.750	1.024
2008	53.610	0.965	38.067	1.008
2009	54.061	1.008	35.799	0.940
2010	49.161	0.909	35.937	1.004
2011	42.506	0.865	38.516	1.072
2012	48.876	1.150	35.752	0.928
2013	55.495	1.135	34.427	0.963
2014	60.749	1.095	31.369	0.911
2015	64.766	1.066	30.039	0.958
2016	53.271	0.823	25.641	0.854
Average	53.857	1.005	34.559	0.969

Source: Secondary data processed (2018)

The RCA index value during the 2006-2016 period also fluctuated with an average RCA index growth rate of -1.28%. Even though during the 2006-2016 period, the competitiveness of Malaysian CPO tended to decline, the competitiveness of Malaysian CPO was still positive or had a competitive edge. Based on UN COMTRADE data, since 2007, Malaysia has experienced a decline in export value and has decreased its ranking to become the world's

second-largest exporter. The decline in exports and competitiveness was caused by a decline in Malaysia's ability to meet international markets due to domestic CPO needs. Limitations of the oil palm plantation area, as well as increased demand for domestic CPO, increased. When compared to Indonesia, Arip *et al*. (2013) noted that Malaysia, as a whole, has a comparative advantage over refined products based on crude palm oil. So when compared, the ratio of Malaysia's domestic CPO needs is higher than Indonesia's. It has resulted in the decline of Malaysia's position as the main exporter of CPO.

During the 2006-2016 period, Indonesia had a stable TSI value in the range of 0.994-1 TSI values with an average value of 0.998 (Table 4). It shows that since Indonesia has become the main exporter of CPO, it has strong competitiveness. In this case, Indonesia has a much higher export rate than the import level of CPO. Indonesia can have a high TSI value because apart from being the largest CPO exporter, Indonesia is also the largest CPO producer. Thus, in fulfilling the domestic CPO market, Indonesia hardly requires imports of CPO during that period. With an average TSI value of 0.998, Indonesia, categorized in the product life cycle, is at the maturation stage. In exporting CPO, Indonesia has been able to independently meet the domestic market's needs and meet the international market's needs, and it can be said that Indonesia can specialize in producing CPO.

During the 2006-2016 period, Malaysia had a reasonably stable TSI value, namely in the TSI value range from 0.8 to 0.938, with an average value of 0.880. It shows that Malaysia has strong competitiveness even though it is still below Indonesia. The average TSI value of 0.880 indicates that Malaysia has a much higher export level than CPO imports. The high value of Malaysian TSIs is because Malaysia is the same as Indonesia, which is apart from being one of the main CPO exporters, Malaysia is also a major CPO producer. Thus, in the domestic market of CPO, Malaysia hardly needs any CPO imports during that period. Malaysia has an average TSI value of 0.880, which indicates that Malaysia could be at a maturity stage with a high specialty in CPO production during this period. However, in 2011, Malaysia experienced a decline in its TSIs from 0.839 to 0.8, which resulted in a decrease in Malaysian CPO competitiveness. It also led to a decline in Malaysian CPO's position from the maturity stage to the export expansion stage. What affected the decline in the value of TSIs in that year was Malaysia's domestic policy, which began to focus on developing the biodiesel industry, which began to intensify so that there was a significant increase in domestic CPO consumptions.

TSI (Trade Specialization Index)

Table 4. Value of Indonesian and Malaysian TSI in 2006-2016

Year	Indonesian ISP	Malaysian ISP
2006	0.997	0.896
2007	1.000	0.931
2008	0.999	0.905
2009	0.997	0.858
2010	0.994	0.839
2011	0.997	0.800
2012	1.000	0.801
2013	0.994	0.914
2014	1.000	0.938
2015	0.999	0.864
2016	0.999	0.930
Rata-Rata	0.998	0.880

Source: Secondary data processed (2018)

Table 5. Value of Constant Market Share of 5 Main Export Destination Countries for Indonesian CPO

Country	China	Netherlands	Pakistan	India	Spain
Competitiveness Effect	0.0000514657	-0.00000153573	0.0000210040	-0.0000154089	0.00000240806
Product Composition Effect	-0.0000221554	0.0000193942	0.0000121877	0.0001092400	0.0000417895
Market Distribution Effect	0.0004047100	-0.0000290173	0.0000122487	0.0001510410	-0.0000559963
Adaptation Effect	0.0000258357	-0.00000535617	0.0000164171	0.0000825135	0.0000186534
Total Market Share Constant	0.0004598560	-0.0000165150	0.0000618575	0.0003273856	0.0000068547

Source: Secondary data processed (2018)

Overall, China has a constant total market share with the highest value of 0.0004598560, which indicates that the hypothesis is rejected. Based on the analysis, Indonesia's CPO exports to China can face all the effects of market share development. Based on the constant total market share value, it can also be seen that for CPO commodities, Indonesia will find it very easy to develop market share in China when compared to other export destination countries. Thus, China is the most strategic CPO export target. It is also hoped that Indonesia can continue to specialize in meeting the high demand for Chinese CPO and increasing the effective value of the product composition.

Indonesia also has the potential to develop the CPO market share in India. Although Indonesia's CPO competitiveness in India has a negative value, Indonesian CPO can easily penetrate India's market share. Indonesia still has to compete strongly with CPO from other countries such as Malaysian CPO and Thai CPO. However, Indonesian CPO can still develop its CPO market share in India. Indonesia is also still able to develop its CPO market share in Pakistan as well. Based on the CMS analysis, Indonesian CPO in Pakistan has the highest value of competitiveness effects than other effects that affect the development of The CPO market share in Pakistan. It means that overall Indonesian CPO can meet the CPO market of Pakistan to develop the Indonesian CPO market share easily.

Although the country of Spain, although the effect of product composition or the specialization effect of Indonesian CPO production, helped Indonesia develop its market share in Spain, it was still heavily influenced by the negative market distribution effect. The negative market distribution effect indicates that there are obstacles to developing market share due to geographic conditions, reducing Indonesia's ability to develop Spain's CPO market share. Thus, to become the main target for CPO exports, there will tend to be an export performance that is not optimal due to geographical constraints. Finally, the market share in the Netherlands will be challenging to develop. Several factors influence it. The first factor is related to Indonesia's difficulty in competing with CPO from other countries. As a trading center for palm oil and the largest export holder in Europe, the Netherlands has the power to re-export CPO from various producing countries. Besides, Indonesia will be constrained by factors such as geographical factors, affecting Indonesian CPO's ability to adapt to demand and market structure changes.

Table 6. Determinant Factors of Export Volume of Indonesia's CPO

Variable	Coefficient	t-statistic	Sig.
Constants	9.396 (***)	19.669	0.000
International CPO Prices	-0.208 (***)	-3.946	0.008
Domestic CPO Prices	-0.060	-1.462	0.194
Indonesia's GDP	0.658 (***)	22.432	0.000
Total population	-0.066(***)	-3.796	0.009
R-squared	0.991		
F-statistic	163.143		
Sig. (F-statistic)	0.000		

(***) significant at the level of errors (α) 1%
Source: Secondary data processed (2018)

When viewed based on Table 6, the OLS estimation results show the coefficient of determination (R^2) of 0.985. It means that the independent variables included in the model, namely production volume, domestic CPO price, international CPO price, and rupiah exchange rate, can explain the dependent variable, namely Indonesia's CPO export volume of 99.1%. Meanwhile, the remaining 0.9% is influenced by other factors outside the model.

The F test (F-statistic) shows some 0,000 or less than the error rate (α) both at the level of 0.1; 0.05 or 0.01. Collectively, all independent variables significantly affect changes in the volume of Indonesia's CPO exports. The partial test (t-test) can be seen from the Sig. or the partial significance of the independent variable. The partial test results are as follows:

The constant variable obtains a probability value of 0,000 or less from the error rate (α) to the critical level of 0.01 (H0 is rejected). means that partially the constant variable has a significant effect on the volume of Indonesia's CPO exports.

The global CPO price variable obtains a probability value of 0.076 or less than the error rate (α) to the critical level of 0.01 (H0 is rejected). It means that partial changes in international CPO prices significantly affect changes in the volume of Indonesian CPO exports.

The domestic CPO price variable obtained a probability value of 0.194 or greater than the error rate (α) to the critical level of 0.1 (H0 failed to be rejected). It means that partial changes in

CPO's domestic price do not significantly affect Indonesian CPO export volume changes.

The Indonesian GDP variable gets a probability value of 0,000 or less from the error rate (α) to the critical level of 0.01 (H0 is rejected). It means that partial changes in Indonesia's GDP significantly affect the volume of Indonesia's CPO exports.

The population variable obtains a probability value of 0.009 or less from the error level (α) to the critical level of 0.01 (H0 is rejected). It means that partial changes in population significantly affect changes in the volume of Indonesian CPO exports.

Based on the linear regression output in Table 6, the multiple regression model is obtained as follows:

$$\ln Y = 9{,}396 - 0{,}208\ln X1 - 0{,}060\ln X2 + 0{,}658\ln X3 - 0{,}066\ln X4$$

The constant in the multiple linear regression equation above is 9.396. It means that if all the independent variables (international CPO price, domestic CPO price, Indonesian GDP, and total population) are zero, the CPO export volume will be 9,396 tonnes.

The regression coefficient for international CPO prices (X1) in the multiple linear regression equation is -0.208. It means that an increase in international CPO prices by 1 USD/ton will cause a decrease in Indonesia's CPO export volume by 0.208 tonnes. The negative correlation between international CPO prices and export volumes is due to an increase in international prices. It will reduce demand for CPO imports abroad following the demand theory.

The regression coefficient for domestic CPO prices (X2) in the multiple linear regression equation is -0.060. It means that an increase in domestic CPO prices by 1 USD / ton will reduce Indonesia's CPO export volume by 0.060 tonnes.

Indonesia's GDP regression coefficient (X3) in the linear regression equation is 1.685. It means that an increase in Indonesia's GDP of 1 billion rupiahs will increase the volume of Indonesia's CPO exports by 1.685 tons. Indonesia's GDP positive correlation to changes in export volume due to increased revenues will decline in domestic CPO consumption and will increase the volume of CPO exports abroad.

The population coefficient (X4) in the linear regression equation is -0.002. It means that an increase in population by one person will decrease the volume of Indonesia's CPO exports by 0.002 tonnes. The negative correlation between population and export volume is that if Indonesia's population experiences growth, domestic consumption of palm oil will also increase and reduce the volume of exported palm oil.

CONCLUSIONS

The trend analysis conducted shows that increasing years significantly affect production volume and export volume, where the production trend and export trend of Indonesian CPO are expected to continue to increase every year for the next five years. Compared to Malaysia as the second-largest exporter, the competitiveness analysis shows that Indonesian CPO has higher competitiveness even though both are at the maturation stage. The market share analysis shows that among the five main export destination countries, the CPO market share that is easiest to enter and best for Indonesia to develop is China's market. Meanwhile, the CPO market in the Netherlands is the most challenging market for Indonesia to develop. Multiple linear regression analysis shows that the factors that significantly influence changes in the volume of Indonesian CPO exports are international CPO prices, Indonesian GDP, and total population.

Efforts to improve the performance of Indonesia's CPO exports can be viewed from several aspects with a focus on developing exports to countries with market shares that are easy to develop and reducing the volume of exports to countries whose market share is difficult to develop. Therefore, exports should be directed to countries with a large constant CPO market share, such as China, India, and Pakistan. Besides, it is recommended to periodically conduct policy-related studies to facilitate the development of CPO market share in other countries and consider the growth of production trends and high export trends every year to improve Indonesia's performance CPO exports.

REFERENCES

Alatas, A. (2015). *Trend Produksi dan Ekspor Minyak Sawit (CPO) Indonesia* (Universitas Gadjah Mada). Retrieved from http://etd.repository.ugm.ac.id/penelitian/detail/80205

Arip, M. A., Yee, L. S., & Feng, T. S. (2013). Assessing the Competitiveness of Malaysia and Indonesia Palm Oil Related Industry. *World Review of Business Research*, *3*(4), 138–145.

Ermawati, T., & Saptia, Y. (2013). Kinerja Ekspor Minyak Kelapa Sawit Indonesia. *Buletin Ilmiah Litbang Perdagangan*, *7*(10), 129–148. https://doi.org/https://doi.org/10.30908/bilp.v7i2.104

Fagerberg, J. (1987). The Method of Constant Market Share Analysis Reconsidered The method of constant market shares analysis reconsidered. *Applied Economics*, *19*(12),

1–16. https://doi.org/10.1080/00036848700000084

Gujarati, D. N. (1995). *Basic Econometrics Third Edition*. New York: McGraw-Hill Companies.

Kuwornu, J. K. M., Darko, F. A., Osei-Asare, Y. B., & Egyir, I. S. (2009). Export of Palm Oil from Ghana: A Demand Analysis. *Journal of Food Distribution*, *40*(1), 90–96.

Pertanian, K. (2017). *Statistik Pertanian 2017*. Jakarta: Pusat Data dan Sistem Informasi Pertanian Kementerian Pertanian Republik Indonesia.

Salvatore, D. (1993). *International Economics Fourth Edition*. New York: MacMillan Publishing.