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North Sumatran Crude Palm Oil Export Competitiveness in the Global Market

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Abstract:
Background*:Indonesia is the world's largest producer and exporter of palm oil. Palm oil in Indonesia is one of the commodities with strategic value to support national development. In general, oil palm plantations are the prime mover of agribusiness development from upstream to downstream, a large enough provider of employment, a source of income for farmers, and one of the main export commodities in generating foreign exchange.*
Materials and Methods*: The determination of the research area was carried out purposively, which was done intentionally with certain considerations, namely the Province of North Sumatra. North Sumatra Province is one of the national oil palm production centers and the processing of palm oil into Crude Palm Oil (CPO) is also carried out in this region. This research uses secondary data consisting of annual time series data from 2010 to 2019 and projections for the next 10 years.Secondary data is complementary data, namely the value of North Sumatra CPO exports, the total value of North Sumatra exports, the national CPO export value, the total national export value, the world CPO export value, the total world export value and the North Sumatra CPO import value obtained from various agencies that related, such as the Central Bureau of Statistics (BPS) of North Sumatra and literature supporting this research. In this study, North Sumatra's CPO export performance will be measured by evaluating the role of CPO exports in North Sumatra's total exports with the share of CPO in world trade. The RCA value of North Sumatra's CPO production will be calculated annually during the 2010-2019 period and is projected for the next 10 years.To see the factors that affect the export of CPO North Sumatra each variable, namely: (1) Value Exchange, (2) Price and (3) Population, (4) Income per capita importers through detection of normality statistically is to use Kolmogorov-Smirnov test.*
Results*: North Sumatra CPO competitiveness through analysis of Revealed Comparative Advantage (RCA) with a coefficient of> 1 shows a comparative advantage over the average (world) or a strong competitive so that it can be maintained export. Likewise with the analysis of Export Dynamic Product (EDP), North Sumatra CPO is in a Falling Star position and palm oil companies must process CPO into derivative products that are of interest to importing countries. Factors affecting North Sumatra's CPO exports: (1) Exchange rate and (2) world CPO prices do not have a significant effect, as can be seen from the small variable coefficient and the variable value is not much different from the average value of exports.*
Conclusion:*CPO export volume from North Sumatra are not unduly influenced by the exchange rate and world market prices, as a result of high world demand for palm oil. However, the most limiting factor for CPO exports is the certification requirements and this is the duty of companies and stakeholders in making sustainability policies in the palm oil industry.*
Key Word*: **Export; Competitiveness; Comparative Advantage; Competitive Advantage; Crude Palm Oil.***

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I. Introduction

Palm oil in Indonesia is one of the commodities with strategic value to support national development. In general, oil palm plantations are the prime mover of agribusiness development from upstream to downstream, a large enough provider of employment, a source of income for farmers, and one of the main export commodities in generating foreign exchange. Global palm oil production is dominated by Indonesia and Malaysia. Both countries together accounted for about 85 to 90 percent of the total global production of palm oil. Indonesia is a producer and exporter of palm oil in the world (Council of Palm Oil Producing Countries, 2021).

The main objective of Indonesian palm oil exports is Asia and partly exported to Africa, Australia, America, and Europe as shown in Table 1.1.

Table 1.1 Indonesian CPO Exports (in tonnes)

Destination Country	2015	2016	2017	2018	2019
India	5.746,0	5.424,6	7.325,1	6.346,2	4.576,6
China	4.105,2	3.111,8	3.601,1	4.166,5	5.791,1
Pakistan	2.325,6	2.106,4	2.193,8	2.458,5	2.215,9
Netherland	1.261,9	1.048,5	1.286,4	1.161,1	914,9
USA	732,7	955,8	1.153,4	1.112,8	1.189,0
Spain	998,9	1.116,1	1.367,9	1.168,6	1.078,8
Egypt	1.156,3	999,2	1.201,4	936,9	1.095,1
Bangladesh	1.134,8	926,1	1.231,4	1.402,3	1.351,5
Italia	1.193,6	913,9	1.066,5	888,9	751,3
Singapore	782,0	718,7	610,8	424,5	580,3
Others	8.233,8	6.745,4	7.732,5	9.236,1	10.003,4
Total	**27.670,8**	**24.066,5**	**28.770,3**	**29.302,4**	**29.547,9**

Source: Central Bureau of Statistics.

Indonesia's total CPO exports in the last four years tended to increase, except in 2016 which decreased. Such increase ranged from 2.07 percent to 19.45 percent per year. In 2016 it decreased by 13.96 percent compared to 2015. North Sumatra is one of the largest palm oil producers in Indonesia after Riau Province. CPO exports from North Sumatera through Belawan and Tanjung Kwala towards India, China, Pakistan, USA and others as shown in Table 1.2 below.

Table 1.2 Exports of CPO North Sumatra (in tonnes)

Destination Country	2015	2016	2017	2018	2019
India	2.298.4	2.169.84	2.930.04	2.538.48	1.830.64
China	1.642.08	1.244.72	1.440.44	1.666.6	2.316.44
Pakistan	930.24	842.56	877.52	983.4	886.36
Netherland	504.76	419.4	514.56	464.44	365.96
USA	293.08	382.32	461.36	445.12	475.6
Spain	399.56	446.44	547.16	467.44	431.52
Egypt	462.52	399.68	480.56	374.76	438.04
Bangladesh	453.92	370.44	492.56	560.92	540.6
Italia	477.44	365.56	426.6	355.56	300.52
Singapore	312	287.48	244.32	169.8	232.04
Others	3.293.52	2.698.16	3093	3.694.44	4.001.36
Total	**11.067.52**	**9.626,6**	**11.508.12**	**11.720,96**	**11.819,08**

Source: Statistics Palm Oil, 2019

Based on Table 1.2, CPO exports decreased in 2016. This was due to El-Nino conditions in 2015 and the domestic biodiesel program led to a reduction in exports of world palm oil supplies for 2016. Then, the quantity of exports in 2017 to 2019 continued to increase. Furthermore, to find North Sumatra CPO export value in million US Dollars can be seen in Table 1.3 as follows:

Table 1.3 North Sumatra CPO Export Value (in million US Dollars)

Destination Country	2015	2016	2017	2018	2019
India	4.091.2	3.862.3	5.215.5	4.518.5	3.258.5
China	2.922.9	2.215.6	2.564.0	2.966.5	4.123.3
Pakistan	1.655.8	1.499.8	1.562.0	1.750.5	1.577.7
Netherland	898.5	746.5	915.9	826.7	651.4
USA	521.7	680.5	821.2	792.3	846.6
Spain	711.2	794.7	973.9	832.0	768.1
Egypt	823.3	711.4	855.4	667.1	779.7
Bangladesh	808.0	659.4	876.8	998.4	962.3
Italia	849.8	650.7	759.3	632.9	534.9
Singapore	555.4	511.7	434.9	302.2	413.0
Others	5.862.5	4.802.7	5.505.5	6.576.1	7.122.4
Total	**19.700.3**	**17.135,3**	**20.484,4**	**20.863,2**	**21.037,9**

Source: Statistics Palm Oil, 2019

Indonesian CPO exports from North Sumatra province made through Belawan Port and Port Kuala Tanjung. CPO export trends from North Sumatra glance looks to follow the trend of national CPO exports. However, the growth of Indonesian CPO exports, especially North Sumatra, was challenged after the European Union conducted a black campaign through renewable energy directives (RED) and indirect land use change. CPO export data from North Sumatra in the period 2018- 2019 is shown in Table 1.4.

Table 1.4 North Sumatra CPO Export Data by Port Period 2018-2019

Port	2018		2019	
	Tonnes	FOB (US $)	Tonnes	FOB (US $)
Export All commodities from Northern Sumatra				
Belawan	8. 058. 832,21	7. 944. 209,54	7. 731. 862,08	6 .786 .714,33
Kwala Tanjung	1. 555. 542,30	953 286,31	1. 580. 027,25	782 .573,35
Export CPO				
Belawan	2.907.383	1.744.429,8	3.273.978	1.964.389,8

Source: North Sumatra In Numbers, 2019and Pelindo1

Consumption of crude palm oil (Crude Palm Oil) in the world in 2019 to 2020 more than 73 million metric tons. That number increased to about 75.45 million metric tons in the previous year. CPO is processed into food (cooking oil, margarine, chocolate and extra for others) as much as 69% of total demand, 27% of industrial materials (soap, cosmetics and cleaning materials), and bioenergy still reach 4% (Our World In Data. 2021).

Hadi and Tety (2013) also stated that Indonesian CPO more competitive in Asia than in Malaysia, but Malaysia's CPO more competitive in Europe than Indonesia. This shows that Malaysia has a better performance in the management of these commodities than Indonesia that Malaysia is able to increase their competitiveness.

In the international market, the Roundtable and Sustainable Palm Oil (RSPO) promotes sustainable CPO production practices as an effort to reduce deforestation, conserve biodiversity, and respect the lives of rural communities in CPO producing countries. RSPO certificate is one of the requirements for CPO exports to America and the European Union. In practice RSPO ensure that:

a. Minimization of use of resources (land, water and energy), reduced utilization of input cost reduction
b. Reduced pollution (water, air, Greenhouse Gases)
c. Increased risk management and assessment management plan
d. More protected ecosystems and optimal productivity
e. Respect for land rights and land use
f. Safe and decent work for all members of society

In connection with the rejection of Indonesian Crude Palm Oil (CPO) in the European Union market, the European Union Parliament has issued a policy to stop the use of Crude Palm Oil (CPO) in 2021. The decision was taken after the European Union Parliament agreed to use environmentally friendly renewable energy, as stated in "Report on the Proposal for a Directive of the European Parliament and of the Council on the Promotion of the use of Energy from Renewable Sources".

The European Union Parliament also agreed to suppress up to a maximum of 7 percent of the use of palm oil for renewable energy sources in transportation until 2030. This decision puts the largest CPO export producing countries such as Indonesia and Malaysia in danger of losing their market in the European Union. It became one of the challenges for palm oil producers in Indonesia, the CPO market to European Union countries. The government encourages entrepreneurs to produce energy sources through the Biodiesel B30 program so that our CPO is processed and used for domestic consumption.

From the description of problems and based on the above studies, the authors wanted to assess the Export Competitiveness of Crude Palm Oil (CPO) in the world market of North Sumatra. Based on the description in the above background, then that becomes the problem in this research are:

a. How is the development of CPO exports from North Sumatra and how are they related to world prices and the exchange rate of the rupiah against the US dollar?
b. How CPO export competitiveness of North Sumatra aspect of total export value of Indonesia?
c. What factors are affecting the North Sumatra CPO export volume to the global market?

II. Material And Methods

Determination of the research area was carried out purposively, which was done intentionally with certain considerations, namely the Province of North Sumatra. North Sumatra Province is one of the centers of national palm oil production and processing of palm oil into palm oil is also carried out in this region. Export ports are also available in North Sumatra, namely Belawan and Kuala Tanjung, which have bulk tank facilities with a capacity of 3000 tons.

This research will be conducted using secondary data consisting of annual time series data from 2010 to 2019 and projections for the next 10 years. Secondary data is complementary data, namely the value of North Sumatra CPO exports, the total value of North Sumatra exports, the national CPO export value, the total national export value, the world CPO export value, the total world export value and the North Sumatra CPO import value obtained from various agencies that related, such as the Central Bureau of Statistics (BPS) of North Sumatra Province and the literature that supports this research.

Type variables used in this study are the independent variables (independent), are variables that affect other variables or the cause, also known as predictor variables or antecedent. In this research, the independent variables used include:

a. Exchange rate (Exchange rate) from 2010 to 2019
b. CPO price from 2010 to 2019
c. Total population of importing countries in this case India and China from 2010-2019
d. Value of Gross Domestic Product of importing countries in this case India and China starting in 2010-2019.

The research problem is answered with a competitiveness analysis (competitive and comparative) CPO results of North Sumatra Province analysis method Export Product Dynamics (EPD) and also methods of Revealed Comparative Advantage (RCA). In this research, North Sumatra CPO export performance will be measured by evaluating the role of CPO exports in total exports of North Sumatra with CPO share in world trade. RCA North Sumatra CPO production will be calculated each year during the period 2010-2019 and projections 10 years into the future. Mathematically, Revealed Comparative Advantage (RCA) is formulated as follows (Abdullah, 2002):

$$RCA_{ij} = \frac{Wij/Xis}{Wj/Ws}$$

Explanation :

RCA_{ij} = comparative advantage (competitiveness) of North Sumatra in year-on-t
X_{is} = North Sumatra CPO export value year-on-t
W_j = total export value of North Sumatra year-on-t
W_s = value of CPO exports in the world year-on-t
t = 2010,…, 2019 = total export value of world products year-on- t

RCA value of a commodity indicates two possibilities, namely:

a. If RCA> 1, then North Sumatra has a comparative advantage over the average of the world so that the CPO has strong competitiveness.

b. If RCA <1, then North Sumatra has a comparative advantage under the world average so that the CPO has weak competitiveness.

The supporting method is the Export Product Dynamics (EPD) method, which is an indicator of competitiveness by measuring the market position of a country for a particular market purpose. This method can measure the dynamics of a product in the market with the competitive position of CPO production in North Sumatra for the 2010-2019 period for export market purposes.

EPD method consists of a matrix that puts the products analyzed into four categories: *Rising (Dynamic), Falling (Stagnant), Rising (Competitive),* dan *Rising Star Falling Star Falling (Non-Competitive) Lost Opportunity Retreat.*

Explanation :

X_{ij} X = export value of North Sumateran CPO
W_t = total export value of North Sumateran CPO
W_{ij} = export value of Global CPO
T_t = number of years used = global total export value

To see the factors that affect the export of CPO North Sumatra each variable, namely: (1) Value Exchange, (2) Price and (3) Population, (4) Income per capita Importers then use the formula:

$Y = a + b_1.X_1 + b_2.X_2 + \ldots\ldots + b_n.X_n + e$

Explanation :

Y = prediction of Y value
X_1 = Independent variable 1
X_2 = Independent variable 2
b_1 = The regression coefficient of the independent variable 1, is the change in Y for each change in X1 of 1 unit with the assumption that X2 is constant
b_2 = The regression coefficient of the independent variable 2, is the change in Y for each change in X2 of 1 unit assuming X1 is constant
e = error term

To get the values of a, b_1 and b_2, the following formulas are used :

$$a = \overline{Y} - b_1\overline{X}_1 - b_2\overline{X}_2$$

$$b_1 = \frac{\left(\sum X_2^2\right)\left(\sum X_1 Y\right) - \left(\sum X_1 X_2\right)\left(\sum X_2 Y\right)}{\left(\sum X_1^2\right)\left(\sum X_2^2\right) - \left(\sum X_1 X_2\right)^2}$$

$$b_2 = \frac{\left(\sum X_1^2\right)\left(\sum X_2 Y\right) - \left(\sum X_1 X_2\right)\left(\sum X_1 Y\right)}{\left(\sum X_1^2\right)\left(\sum X_2^2\right) - \left(\sum X_1 X_2\right)^2}$$

Explanation :

a = Constant
b = Regression Coefficient

Statistical normality detection is by using the Kolmogorov-Smirnov test. Kolmogorov-Smirnov test for normality is a commonly used because the value is more simple and does not cause a difference in perception. Kolmogorov-Smirnov test is done with a significant level of 0.05. For more simply, this test can be done by looking at the profitability of the Kolmogorov-Smirnov statistic Z. If profitability statistic Z is less than 0.05, the value residiual in a regression is not distributed.

III. Result

CPO export competitiveness in the international market, it will be compared to the value of exports of CPO and the total value of exports of North Sumatra. Likewise, the Indonesian palm oil exports and total exports of Indonesia. To analyze the competitiveness of North Sumatra's CPO exports in the international market, data from UN Comtrade is used, it will be seen how the performance of each region will be. The table below illustrates how the position of North Sumatra palm oil exports to Indoenesia and global markets.

Table 3.1
Export Value of North Sumatran CPO and Total Exports (US $)

Year	Export Value of North Sumatran CPO	Export Value of North Sumatra	Export Value of Indonesian CPO	Indonesia Total Export
2010	3.042.747	30.193.200	157.779.103	7.649.965.932
2011	4.022.226	32.841.198	203.496.619	8.777.015.600
2012	3.656.460	25.731.990	190.031.839	6.676.503.846
2013	5.652.307	49.599.774	182.551.754	4.978.532.881
2014	6.042.140	53.517.546	176.036.194	4.206.741.340
2015	2.646.545	29.001.312	150.282.258	4.388.094.011
2016	2.538.065	18.604.584	144.494.206	3.305.575.089
2017	2.852.772	18.593.784	168.810.637	4.698.225.492
2018	2.713.456	17.486.037	180.215.036	3.576.824.756
2019	2.263.803	35.862.552	167.682.996	3.641.686.781

Source: Oil Palm Statistics 2010-2019, UN Comtrade 2021, Trade Map 2021.

The competitiveness of a commodity looks good if it has a comparative advantage and a competitive advantage in it. In this research, Revealed Comparative Advantage (RCA) and Export Product Dynamic (EPD) analysis methods are used. Analysis Revealed Comparative Advantage (RCA) one of the methods used to measure the comparative advantage of CPO production of North Sumatra. RCA value greater than one (RCA> 1) indicates that North Sumatran CPO has a comparative advantage over the average (global) or a strong competitive so that it can be maintained export. RCA value obtained by performing a comparison between the value of exports of CPO North Sumatra year to t with a total export value of North Sumatra in to t. then divided by the comparison of the value of global CPO exports in year t with the value of total global exports in year t. where t is the year of research.

Table 3.2 RCA Value of North Sumatran CPO and Total Exports (US $)

Tahun	Xij/Xis	Wj/Ws	RCA
2010	0,10	0,02	4,89
2011	0,12	0,02	5,28
2012	0,14	0,03	4,99
2013	0,11	0,04	3,11
2014	0,11	0,04	2,70
2015	0,09	0,03	2,66
2016	0,14	0,04	3,12
2017	0,15	0,04	4,27
2018	0,16	0,05	3,08
2019	0,06	0,05	1,37

Source: Processed Data, 2021

RCA counting results, it appears that the range of the study showed a value greater than 1, although it fluctuated. This indicates that North Sumatran CPO is still competitive in the world market, as it is known that so far, the export destination countries are China, India, the Netherlands and others.

To assess the competitive advantage of certain commodities from a country, it is studied using the Export Product Dynamics (EPD) method. If the growth of the commodity is above average and this situation continues for a long period of time, this commodity may eventually become an important source of export earnings of the country. If growth is above average and this situation continues for a long period, the CPO has finally become an important source of export revenue in North Sumatra.

Table 3.3 Estimation Results of North Sumatra CPO EDP Analysis 2010-2019

Year	(Xij/Wij)×100 %	(Xt/Wt)×100 %	X	Y
2010	1,93	0,39	-	-
2011	1,98	0,37	-0,05	0,02
2012	1,92	0,39	0,05	-0,01
2013	3,10	1,00	-1,17	-0,61
2014	3,43	1,27	-0,34	-0,28
2015	1,76	0,66	1,67	0,61
2016	1,76	0,56	0,00	0,10
2017	1,69	0,40	0,07	0,17
2018	1,51	0,49	0,18	-0,09
2019	1,35	0,98	0,16	-0,50

Source: Oil Palm Statistics 2010-2019

North Sumatra is the second largest producer in Indonesia, and could be a representation of Indonesia's CPO exports to the world. However, when compared to its export volume, Indonesia is still inferior to Malaysia, as well as the frequency of transactions. From the description of CPO exports in the past 10 years shows that Indonesia still have much to learn from Malaysia.

Table 3.4 Comparison of Indonesian and Malaysian CPO Export Performance, 2010-2019

Year	Indonesian	Importer	Malaysian	Importer
2010	7.649.965.932	716 transactions including over 10 years USA, Netherlands, Afghanistan, China, Canada.	12.405.401.951	2217 transactions over 10 years to countries around the world including, USA, China, Congo, Netherlands, Thailand, Korea and others.
2011	8.777.015.600		17.446.908.329	
2012	6.676.503.846		15.410.,938.066	
2013	4.978.532.881		12.288.945.749	
2014	4.206.741.340		11.994.812.629	
2015	4.388.094.011		9.501.146.574	
2016	3.305.575.089		9.064.286.309	
2017	4.698.225.492		9.718.503.230	
2018	3.576.824.756		8.667.092.183	
2019	3.641.686.781		8.327.469.138	

Source: Oil Palm Statistics 2010 – 2019, UN Comtrade. 2021, Trade Map 2021.

IV. Discussion

Several factors are assumed to affect North Sumatra palm oil exports to the global market is the value of the Rupiah exchange rate against US $ as payment transactions and also global CPO price. By using regression analysis, it will be examined what factors most influence on CPO exports to the global market.

Table 4. Rupiah Exchange Rate against US $ and Global CPO Prices 2010-2019

Year	Exchange Rate	CPO Price US$/Ton	Export North Sumateran CPO
2010	9.800	1.150	3.042.747
2011	9000	1.206	4.022.226
2012	9637	999	3.656.460
2013	12.180	880	5.652.307
2014	12.343	909,6	6.042.140

2015	13.650	818,2	2.646.545
2016	12.440	700,4	2.538.065
2017	13.795	714,3	2.852.772
2018	13.436	595,5	2.713.456
2019	13.548	855,0	2.263.803

Source: Oil Palm Statistics 2010-2019

Before reseraching further, the distribution of the data is tested with the classical assumption by testing the normality of the residual data. Classical assumption testing this data is distributed normally with the approach of Kolmogorov Smirnov normality test that must be met in the regression analysis. At this stage of the classical assumption, it can be seen that the significance value is still greater than 0.05 for each item, namely the exchange rate of 0.19, the price of CPO 0.18 and the export volume of 0.15. With the description of the results of this normality test, it shows that the data to be analyzed is normal so that it can be continued in the next stage, namely multiple linear analysis, to see how the relationship between the CPO price variable and the value of the Rupiah exchange rate against US $ on the volume of CPO exports from North Sumatra.

Table 4.2 Classical Assumptions: Kolmogorov-Smirnov Test . One-Sample Normality Test

		Exchange Rate	CPO Price	Export Volume
N		10	10	10
Normal Parameters[a,b]	Mean	,0130	,0120	,0080
	Std, Deviation	1767,337	167,337	1257937,501
Most Extreme Differences	Absolute	,306	,161	,330
	Positive	,204	,104	,330
	Negative	-,306	,233	-,158
Test Statistic		,306	,214	,330
Asymp, Sig, (2-tailed)		,19[c]	,18[c]	,16[c]

Source: Primary Data Analysis, 2021

Furthermore, data that has this normality is examined by multiple linear regression analysis to obtain the coefficient value of each variable (Exchange Value and CPO Price) and the processed data results are as below.

Table 4.3 Correlation between Exchange Rates and Global CPO Prices with CPO Export Volume

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig,
		B	Std, Error	Beta		
1	(Constant)	1019195,723	8534258,667		,119	,908
	X1	32,648	425,290	,049	,077	,941
	X2	2419,591	4364,629	,355	,554	,597
a, Dependent Variable: Y						

Source: Primary Data Analysis, 2021

From the processed data, an equation can be formulated that shows what factors affect the volume of CPO exports from North Sumatra. This equation is:

$Y = 1{,}019{,}195 + 32{,}7\ X_1 + 2419{,}6\ X_2$

From this equation it means that:

a) The constant value is 1,019,195 which means that the exchange rate or the rupiah exchange rate and the price of CPO have a fixed value, so the average amount of CPO exported from North Sumatra is 1,019,195 tons
b) The coefficient of X1 (the exchange rate) means that whenever there is an increase in the exchange rate of 1rupiah will provide 32,7ton raise palm oil exports. In this case, a positive and significant value to the increase in the volume of CPO exports from North Sumatra
c) The coefficient of X2 (CPO) is 2,419,6 which means that the global CPO price associated with the volume of exports from North Sumatra, these figures indicate that the rise in price of CPO per US dollar will increase export volume amounted to 2,429,6 tonnes.

In the analysis of the correlation between these two factors, it does not really affect the volume of North Sumatra's exports to the global market, this is related to the relatively stable global CPO demand so that although the exchange rate fluctuates and the global CPO price is dynamic, importing countries do not. In addition to the factors exchange rates and global CPO prices, in this study will also examine the factors that affect the amount of export North Sumatran CPO related to GDP and the population of the importing country, in which case we will choose the country of the largest importers of North Sumatran CPO, namely China and India. Both countries are the largest importer of North Sumatran CPO.

According to the research that India CPO processing into food and cosmetics to the needs of domestic and exported to countries such as Nepal and Bangladesh. Similarly with China, CPO processing into food and cosmetic products and sold back to the importing countries. Normality test as a first step in this discussion are as follows.

Table 4.4 Classical Assumptions: Normality Test One-Sample Kolmogorov-Smirnov Test

		Exchange Rate	CPO Price	GDPId	GDP Ch	PopIn	PopCh
N		40	40	40	40	40	40
Normal Parameters[a,b]	Mean	,034	,54	,13	,56	,92	,14
	Std, Deviation	1167,23	147,37	13,88	20,33	27,69	39,88
Most Extreme Differences	Absolute	,094	,094	,094	,145	,205	,094
	Positive	,070	,070	,070	,145	,205	,070
	Negative	-,094	-,094	-,094	-,093	-,131	-,094
Test Statistic		,094	,094	,094	,094	,145	,205
Asymp, Sig, (2-tailed)		,200[c,d]	,200[c,d]	,200[c,d]	,200[c,d]	,034[c]	,012[c]

Source: Primary Data, 2021

From the classical assumption test, it shows that the data is in a norm distribution, where the significance of each variable is greater than 0.05. By testing multiple linear regression analysis, the data obtained are as follows.

Table 4.5 Correlation between Exchange Rate, CPO Price, Gross Domestic Product, and Population on Export Volume

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	54579926,555	9792420,720		5,574	,000
	Kurs	-74,601	50,513	-,485	-1,477	,149
	harga	530,577	390,706	,254	1,358	,184
	GDPI	200619,085	55286,987	1,592	3,629	,001
	GDPC	-42225,609	312624,319	-,044	-,135	,893
	PopI	11599336,289	5758877,122	1,386	2,014	,052
	POPC	-51874088,056	10237344,966	-2,915	-5,067	,000

From the results of data processing, an equation will be made:

$$\mathbf{Y = 54579926{,}5 - 74{,}6\ X_1 + 530{,}5\ X_2 + 200619{,}01\ X_3 - 42225{,}61\ X_4 + 11599336{,}29\ X_5 - 51874088{,}06\ X_6}$$

From this equation it means that:

a. The constant value is 54,579,926,555 which means that despite the dynamics of exchange rate (dollars), CPO prices (dollars), China's GDP (trillions), India's GDP (trillions), India's population (billions) and China's population (billions), CPO exports (tons) from Sumatra to these two countries amounted to 54578826.5 per year.
b. The coefficient of X_1 (rupiah) is -74.60 tons means that whenever there is an increase in the rupiah in one rupiah actually reduce the value of exports in the amount stated.
c. The coefficient of X_2 (CPO) amounting to 530.57, which means that the CPO price increases by 1 US $ per tonne, will increase the export of CPO at 530 tonnes.
d. The coefficient of X_3 (India GDP) amounted to 200,619.09, which means that the increase in GDP of 1 trillion will raise North Sumatra palm oil exports amounted to 200 619 tonnes.

e. The coefficient of X_4 (China GDP) amounting to -42,225.61 which means that the increase in China's GDP amounted to 1 trillion decrease the number of North Sumatra palm oil exports as much as 42225.61 tons.
f. The coefficient of X_5 (the population of India) amounted to 11,599,336.29 which means increasing the amount of India's population of 1 Billion souls will raise 11,599,336.29 tons of CPO, in other words the increase in population of 1 million inhabitants will raise the demand of 1160 tonnes of CPO.
g. The coefficient of X_6 (total population of China) is -51874088.06, which means that an increase in China's population of 1 billion actually reduces 51874088.06 or in other words, an increase in population of 1 person will reduce CPO exports by 5187 tons. This indicates that agricultural commodities in the form of row material will usually be reprocessed into products that are in accordance with market demand so that the increase in product demand is not directly influenced by population.

V. Conclusion

Based on an analysis of the description discussion that has been described above, the authors conclude three things related to the formulation of the problem, namely:

a. North Sumatra is the second largest producer of CPO in Indonesia after Pekanbaru. The dynamics of CPO exports from North Sumatra since 2010-2019 has fluctuated, in 2010-2014 it increased and contributed 25 percent to North Sumatra's export volume, but decreased in 2015-2019 because the types exported were more categories. Other Palm Oil seperti Refine Olein, Refined Palm Oil, Refined Bleached Deodorized CPU, Stearin and Palm Fatty Acid Destiled.
b. North Sumatran CPO competitiveness through analysis of Revealed Comparative Advantage (RCA) with a coefficient of > 1 shows a comparative advantage over the average (world) or a strong competitive so that it can be maintained export. Likewise with the analysis of Export Dynamic Product (EDP), North Sumatran CPO is in a Falling Star position and palm oil companies must process CPO into derivative products that are of interest to importing countries..
c. Factors affecting North Sumatran CPO exports: (1) Exchange rate and (2) global CPO prices do not have a significant effect, as can be seen from the small variable coefficient and the variable value is not much different from the average value of exports. As for the multiple regression analysis, the factors that influence CPO exports to the global, represented by India and China, the results of the analysis show that exchange rate, CPO price, India's GDP and India's population have an effect on increasing Sumatran CPO exports and China's GDP and The population of China has no effect on volume of CPO exports. This is because China is mostly reprocessing CPO into derivative products.

Based on the conclusions obtained, there are several suggestions that can be taken into consideration in terms of improving economic performance, especially in the capital market, including::

a. As an export commodity, CPO and its derivatives in need of treatment so that it becomes the end product so that it can provide added value to the company in particular and the economy in general area.
b. CPO export volume from North Sumatra are not unduly influenced by the exchange rate and world market prices, as a result of high global demand for palm oil. However, the most limiting factor for CPO exports is the certification requirements and this is the duty of the company and stakeholders in making sustainability policies in the palm oil industry.
c. Encouraging plantation companies to process CPO into demanding products so as to provide added value for the company itself and also regional economic growth.

References

[1]. Abdullah, Piter et al. 2002. *Daya Saing Daerah Konsep dan Pengukurannya di Indonesia*. Yogyakarta: BPFE.
[2]. Amir. 2003. *Ekspor Impor Teori dan Penerapannya*. Jakarta: PPM.
[3]. Amir. 2004. *Strategi Memasuki Pasar Ekspor Seri Bisnis Internasional No.14*. Jakarta: Penerbit PPM.
[4]. Anonimous. 2017. *Ekspor-Impor*. Badan Pusat Statistik (Central Bureau of Statistics).
[5]. Anonimous. 2018. *Statistik Kelapa Sawit*. Badan Pusat Statistik (Central Bureau of Statistics).
[6]. Anonimous. 2020. *Sumatera Dalam Angka 2020*. Badan Pusat Statistik (Central Bureau of Statistics) .
[7]. Aprida. 2009. *Ekonomi Internasional: Sejarah, Teori, Konsep dan Permasalahan dalam Aplikasinya*. Yogyakarta: Graha Ilmu Bappenas.
[8]. Arikunto, Suharsimi. 2006. *Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta: PT, Rineka Cipta.
[9]. Ermawati, T & Saptia, Y. 2013. *Kinerja Ekspor Minyak Kelapa Sawit Indonesia*, Buletin Ilmiah Litbang Perdagangan. 7(2): 129-147.
[10]. Basri, F dan Munandar, H. 2010. *Dasar-dasar Ekonomi Internasional: Pengenalan & Aplikasi Metode Kuantitatif*. Jakarta: Kencana.
[11]. Bustami, B, R, dan Hidayat. 2013. *Analisis Daya Saing Produk Ekspor Provinsi Sumatra Utara*. Jurnal Ekonomi dan Keuangan.
[12]. Fauzian, N, R. 2013. *Urgensi dan Manfaat Analisis Potensi Wilayah Ekonomi Internasional*, Jakarta: Ghalia Indonesia.
[13]. Hasibuan, AM dkk. 2012. *Analisis Kinerja dan Daya Saing Perdagangan Biji Kakao Olahan Indonesia di Pasar Internasional*. Bogor: IPB.
[14]. Meryana, E. 2007. *Analisis Daya Saing Kopi Robusta Indonesia di Pasar Kopi Internasional*. Bogor: Fakultas Pertanian IPB.

[15]. Ni Nyoman Ayu Puri Astrini. 2012. *Analisis Daya Saing Komoditi Crude Palm Oil (CPO) Indonesia Tahun 2001-2012*. E-Journal Ekonomi Pembangunan: Universitas Udayana.
[16]. Council of Palm Oil Producing Countries (2021) Pearson, et,al, 2005, Aplikasi Policy Analysis Matrix Pada Pertanian Indonesia, Jakarta: Yayasan Obor Indonesia, Pusat Data dan Informasi Pertanian (PUSDATIN), 2015.
[17]. Rani Faisal, 2013, Perspektif Green Thought Dalam Paradigma Baru Politik Internasional (Teori Dan Praktek) .
[18]. Siahaan, J, A. 2008. *Analisis Daya Saing Kopi Arabika Indonesia di Pasar Internasional*, Bogor: Fakultas Pertanian IPB.
[19]. Sry March Lely Turnip, Suharyono Suharyono, M, Kholid Mawardi. 2016. *Analisis Daya Saing Crude Palm Oil (CPO) Indonesia di Pasar Internasional*. Jurnal Administrasi Bisnis.
[20]. Sunarti, dkk, 2014. *Posisi Daya Saing dan Spesialisasi Perdagangan Lada Indonesia dalam Menghadapi Globalisasi*. Malang: Universitas Brawijaya.
[21]. Tambunan, T. 2004. *Globalisasi dan Perdagangan Internasional*. Bogor: Ghalia Indonesia.
[22]. https //www.trademap.org/index.aspx
[23]. http://www.bps.go.id/
[24]. https://www,cpopc,org/
[25]. http://administrasibisnis,studentjournal,ub,ac,id/index,php/jab/article/view/1550

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