The Determinants of Indonesia's CPO Export in Non – Traditional Market

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Abstract. Countries in Europe, China and USA are the main destination of Indonesia's CPO exports so that in order to avoid more significant declining in value and export volume because of trade war and the existance of CPO black campaign, Indonesia must take a diversified step, especially for export market diversification. This study illustrates the condition of Indonesian CPO competitiveness in non-traditional markets, measures the position of Indonesia CPO export market attractiveness, and analyzes factors influence CPO exports. Data used are secondary data obtained from various resources. The time series and cross sections data consecutively consist of variables from 2002 to 2017 and 11 non-traditional importing countries. Time series variables consist of volume export of Indonesia CPO, exchange rate, export price, Indonesia GDP, importers GDP, and economic distance. X–model product export potential and gravity model were used to address the objectives. Indonesian CPO has optimistic market development potential because Indonesia CPO has strong competitiveness and in a rising star position.The analysis result with gravity model showed the factors affecting Indonesian CPO export to non-traditional countries was exchange rate, Indonesia GDP, importers GDP, and economic distance. Government role is important to initiate a long term trade agreement which benefits both parties.

1 Backgrounds

Since 2006, Indonesia is the largest CPO producer in the world [1] and recently the CPO industry is the agricultural export sector that has the highest economic value in the past decade. One of Indonesia's potentials has become the largest exporter of CPO in the world because Indonesia has an area of oil palm plantations reaching 12.30 million hectares and the area has increased by 9.80 percent compared to the previous year [2]. Indonesia has an oil palm plantation area spread in 25 provinces with Riau Province as a province with the largest plantation area in Indonesia. Based on data compiled by Subdirektorit Statistik Tanaman Perkebunan (2017), Indonesia's CPO production has increased every year with the largest increase occurring in 2016 (an increasing around 53.28 percent). In 2017, Indonesia's CPO production is estimated to increase to 34.47 million tons, an increasing around 9.46 percent compared to the previous year. Based on World Growth (2011) data, in

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2006 there were 1.7 - 2 million people working in the CPO industry. Indonesia's CPO production sector is estimated to provide employment for more than six million people so that it becomes a sector that plays a role in alleviating poverty and improving the welfare of the Indonesian. Based on Outlook 2017 Kelapa Sawit [3], there are more than 6.6 million tons of CPO produced by small farmers who have more than 41 percent of the total oil palm plantations.

The abundance of CPO production and making Indonesia as the largest exporter of CPO in the world, one of which is supported by agronomic conditions in Indonesia that are suitable for oil palm cultivation (endowment factor). Based on BPS data [2], Indonesia's CPO exports amounted to 24.34 of the total exports of palm oil. Indonesian CPO exports show an increasing trend with an average increasing in export volume ranging from 9.44 - 16.06 percent [2]. In 2017, Indonesia's export volume reached 7 076 068 tons, an increasing around 33 percent compared to the previous year. The range of Indonesian CPO exports covers five continents with the total Indonesian CPO export market share reaching 47 percent and the three largest Indonesian CPO export markets, including India, China and the European Union.

At present, CPO is still excellent among other vegetable oils. This is influenced, among others, because oil palm has the highest productivity compared to other vegetable oil producers [4]. However, CPO began to get challenges related to environmental issues, namely the opening of oil palm plantations is one of the causes of deforestation [4]. Indonesia as the largest producer and exporter of CPO in the world feels the impact of this challenge. Environmental issues related to the negative impact of CPO are echoed by the European Union which is one of the main export destinations for Indonesian CPO. For Indonesia, the issue is a form of black campaign [4] because in fact the European Union raised the issue to cut the gap between CPO and RPO (rapeseed oil) and SFO (sunflower oil). The European Union made a policy to decompose the use of CPO and label each product made from vegetable oil with "free CPO" [5]. The European Union will consider using CPO if the CPO has been certified [6–8]. The existence of this issue constitutes discrimination and will have an impact on reducing the volume of Indonesian exports in the long run [9]. In addition, Indonesia is faced with a trade war between China and the USA which results in a depressed CPO price. China is the USA soybean export market, and China and the USA are Indonesia's CPO export markets. The existence of a trade war between the two countries made world soybean prices fall and had an impact on the depressed CPO prices even though the volume of CPO exports increased but the value of CPO exports tended to decline.

The existence of these two issues makes Indonesia must take a diversified step. One way that can be taken by Indonesia is to expand the market by looking at potential markets other than the main destination country or so-called export destinations on non-traditional country markets, namely countries in the African continent, countries in South Asia, and Middle Eastern countries. These countries have the potential to become the new main market for Indonesian CPO to see their needs for CPO for food and non-food. According to the explanation, it is conducted a study to see the potential of the country to become the main market for Indonesian CPO by looking at the condition of Indonesian CPO competitiveness in non-traditional markets, measures the position of Indonesia CPO whether it has dynamic or stagnant market attractiveness and what influence factors of CPO exports to these non-traditional countries.

2 Material and Methods

Data used in this study are secondary panel data obtained from various resources including United Nation Commodity Trade (UN Comtrade), Trademap, Statistic Center

Bureau, World Bank, CEPII, and Agricultural Information and Data Center, Indonesia Ministry of Agriculture. The time series data include volume export of Indonesian crude palm oil using Harmonized System Code 151110, exchange rate, export price, Gross Domestic Product (GDP) of Indonesia, GDP of importing countries and economic distance ranging from 2002-2017. The cross sectional data consist of 11 non-traditional countries such as Pakistan, Egypt, Bangladesh, Kenya, Mozambique, Singapore, Ghana, United Republic of Tanzania, Morocco, Côte d'Ivoire and Cameroon. The study focuses on Indonesia's CPO export competitiveness and determinants influencing export volume of Indonesia's CPO. X – model potential export products and Gravity model were employed to adress the objectives.

X – model potential export products is a method which combine Revealed Comparative Advantage (RCA) and Export Product Dynamic (EPD) [10]. The usage of X - model potential export products produces a more comprehensive analysis of competitiveness because it can see commodities from both sides at once, namely RCA and EPD. This method is used to cluster potential products in certain regions [11]. This clustering is done to focus on the trading market.

Tabel 1. Clustering of X – Model Potential Export Product Analysis

RCA	EPD	X – Model
>1	Rising star	Optimistic market
	Lost opportunity	Potential market
	Falling star	Potential market
	Retreat	Less potential market
<1	Rising star	Potential market
	Lost opportunity	Less potential market
	Falling star	Less potential market
	Retreat	Non potential market

Source: The Ministry of Trade (2013)

To get an analysis on the X – model potential export products, it is necessary to calculate the RCA and EPD values in each non traditional market. RCA is one method used to measure the competitiveness or comparative advantage of a product from a country to the world. The concept of RCA itself is the ratio between market share of a product of a country in the world market, with the share of exports from a country to total world exports [12]. The RCA method has the advantage of reducing government interference so that the competitive advantage of commodities can be clearly seen from time to time. If RCA value was bigger than 1, the product had comparative superiority or strong competitiveness, otherwise, if RCA value is smaller than one, the product did not have comparative superiority or weak competitiveness [11]. The calculation method of RCA is formulated systematically, as follows:

$$RCA = \frac{(X_{aj})/(X_{tj})}{(W_{aj})/(W_{tj})} \tag{1}$$

Where:

X_{aj} : Indonesia export value to country j

X_{tj} : Indonesia total export value to country j

W_{aj} : World export value to country j

W_{tj} : World total export value to country j

EPD is one of methods which regularly uses to analyze export competitiveness of a country. EPD is an analytical method used to measure the position of Indonesian product market in destination countries [13]. In addition, this indicator is able to

measure whether a product is dynamic or not on the market. Based on Esetrhuizen (2006) EPD is used to determine the dynamics of commodity export based on indicators of business strengh (X) and market attractiveness (Y) in export destination countries [13]. The indicator of business strength is mathematically formulated as follows:

$$\frac{\sum_{t=1}^{t}\left\{\left(\frac{X_{aj}}{W_{aj}}\right)_t \times 100\% - \sum_{t=1}^{t}\left(\frac{X_{aj}}{W_{aj}}\right)_{t-1} x100\%\right\}}{T} \tag{2}$$

The indicator of market attractiveness was mathematically formulated as follows:

$$\frac{\sum_{t=1}^{t}\left\{\left(\frac{X_{tj}}{W_{tj}}\right)_t \times 100\% - \sum_{t=1}^{t}\left(\frac{X_{tj}}{W_{tj}}\right)_{t-1} x100\%\right\}}{T} \tag{3}$$

Where:

X_{aj} : Indonesia commodity export value (a) to country (j)

W_{aj} : World commodity export value (a) to country (j)

X_{tj} : Indonesia export total value to country (j)

W_{tj} : World export total value to country (j)

T : Year

The values of X axis and Y axis then place the examined product into 4 categories including rising star, falling star, lost opportunity and retreat (Figure 1).
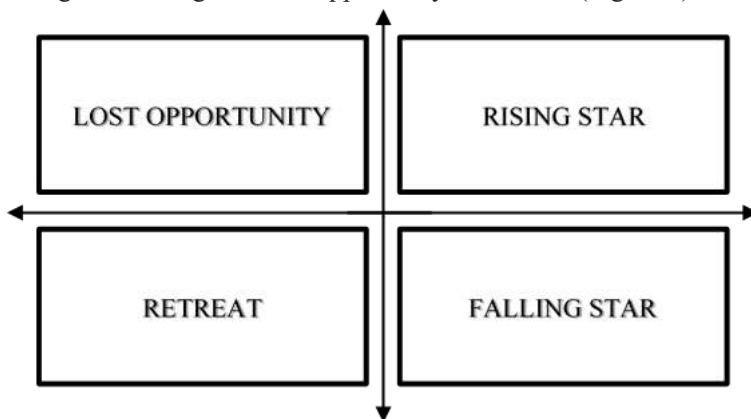

Fig. 1. Matrix of EPD

The position of rising star means that the product has the highest market share of the product. The second method used in this study was gravity model. The falling star market reveals an increase in market share of export in stagnant products. The lost opportunity indicates the decline of market share of export in dynamic products. While the market's least favored position is Retreat because it has the lowest market share in both its product and the country's exports [14].

Gravity model was used to analyze factors influencing export volume of Indonesia's CPO. The gravity model of trade was used because of its considerable empirical robustness and explanatory power [15]. This model consists of dependent and independent variables. Dependent variable used in this study is export volume of Indonesia CPO, while the independent variables are exchange rate, export price, Gross Domestic Product (GDP) of Indonesia, GDP of importing countries and economic distance. All of the variables are in log natural form. This is conducted in order to avoid the violation of classical assumptions. Transformation data is one of the methods

that can be conducted to overcome violation of classical assumptions [16]. In addition, transformation into log form will also ease variable interpretation, where the coefficient of variable is the value of elasticity. The model formulation could be written as follows:

$$\ln Y_{ijt} = \beta_0 + \beta_1 \ln G_{it} + \beta_2 \ln G_{jt} + \beta_3 \ln E_{ijt} + \beta_4 \ln P_{ijt} + \beta_5 \ln L_{ijt} + \varepsilon \quad (4)$$

where:

β_0 : Intercept
$\beta_1,..., \beta_5$: Parameter of each variable which will be tested statistically and econometrically
t : (1,….,T) between 2002 -2017
Y_{ijt} : Trade flows (Export volume) of CPO from country I to j in the year t
G_{it} : GDP of country i in the yar of t (US$)
G_{jt} : GDP of country j in the year of t (US$)
E_{ijt} : Exchange rate (LCU/US$)
P_{ijt} : Export Price (US$/kg)
L_{ijt} : the distance between exporter countries and importer countries (km)
ε : error

The distance between exporter country and importer country can be measured using economic distance, which is meant the geographical distance between the capital of the country of origin and destination country is multiplied by the share of GDP of a country against the total GDP of the country studied. The use of economic distance is used as an indicator of transportation costs in conducting trade. The calculation is formulated systematically, as follows:

$$Economic\ distance_{ij} = Capital\ distance_{ij} \times \frac{PDB_j}{\sum PDB_j} \quad (5)$$

The gravity model was estimated using three approaches/models namely Pooled Least Square (PLS), Fixed Effect Method (FEM) and Random Effect Model (REM). One of the approaches then would be chosen using two tests including Chow and Hausman test. Chow test was used to determine a better model between Pooled Least Square (PLS) and Fixed Effect Model (FEM). The null hypothesis of Chow test is Pooled Least Square. Hausman test was used to determine a better model between Random Effect Model (REM) and Fixed Effect Model. The null hypothesis of Hausman test is Random Effect Model (REM).

3 Result and Discussion

3.1 Export Performance of Indoensia CPO in Non Traditional Market

Since 2006, Indonesia has become the world's largest CPO exporter [17,18]. Indonesia's CPO exports at that time reached a volume of 10.5 million tons with an export value of US $ 3.5 million [2]. With increasing global demand, business in palm oil commodities in Indonesia is profitable because (1) large profit margins, (2) growing international demand, (3) cheap CPO production costs in Indonesia, (4) higher productivity levels. higher than other vegetable oils, and (5) prospects for increased consumption of biofuels [2]. However, the debate about CPO began to emerge in 2011 related to health issues and forest

deforestation [5]. Indonesian CPO faces challenges from five directions, there are regarding the environment, biodiversity, health, taxes, and anti-dumping.

There are two main issues that in the long run could cause a negative trend for the development of Indonesia's CPO exports. The two issues are claims from the European Union that deforestation occurs due to oil palm plantations in Indonesia which are not in line with sustainable agriculture [7,9,19] and the occurrence of a trade war between China and the USA which had an impact on Indonesia's macroeconomics [20] one of which is in the international trade activities of CPO because the European Union, China and the USA are big markets for Indonesian CPO. In the long term, these two issues will have a negative impact on the development of the volume and value of Indonesia's CPO exports. CPO exports are one of the exports that contribute the highest to the country's foreign exchange from the non-oil and gas sector. Foreign exchange generated by CPO decreased in 2018 by 11 percent compared to 2017. The decline occurred because the export value of CPO had decreased compared to the previous year.

The government must have an alternative strategy in facing the challenges faced by Indonesia as the largest CPO producer in the world and maintain Indonesia's existence as the largest CPO exporter in the world. One strategy that can be implemented is to expand into new export markets. The focus of Indonesia's CPO exports is not only on the main export market but also on countries that have the potential to absorb Indonesia's CPO production, which are known as non-traditional countries because they are not the main export destination countries and the export volume in these countries can still be increased considering the country's needs related commodities. There are 11 countries that can become alternatives to the Indonesian CPO market, that is Pakistan, Egypt, Bangladesh, Kenya, Mozambique, Singapore, Ghana, United Republic of Tanzania, Morocco, Côte d'Ivoire and Cameroon. Indonesia competes with Malaysia to export CPO to these countries.
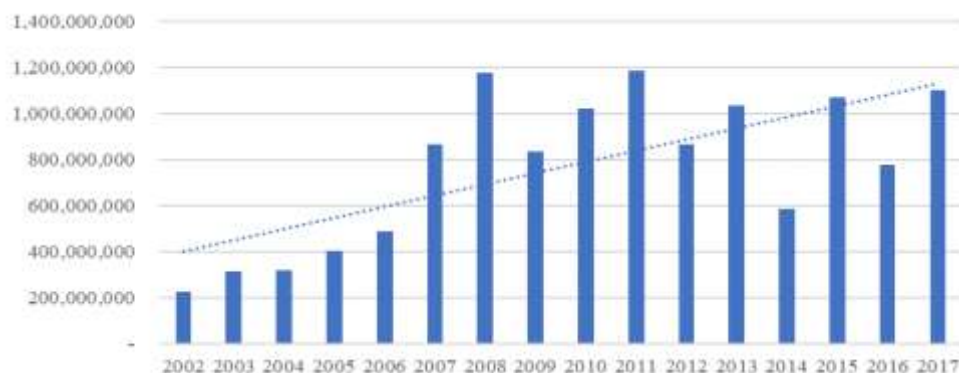

Fig. 2. Export Value (Source: UN Comtrade, 2019)

Based on data obtained from the UN Comtrade in 2002 - 2017, the export value of Indonesian palm oil shows an increasing trend with an increase of 17.13 percent each year. During this period, the largest increase in the value of CPO exports to non-traditional countries occurred in 2015, amounting to 81.84 percent, while the largest decrease in CPO exports occurred in 2014 with a percentage of 43.26 percent compared to the previous year.
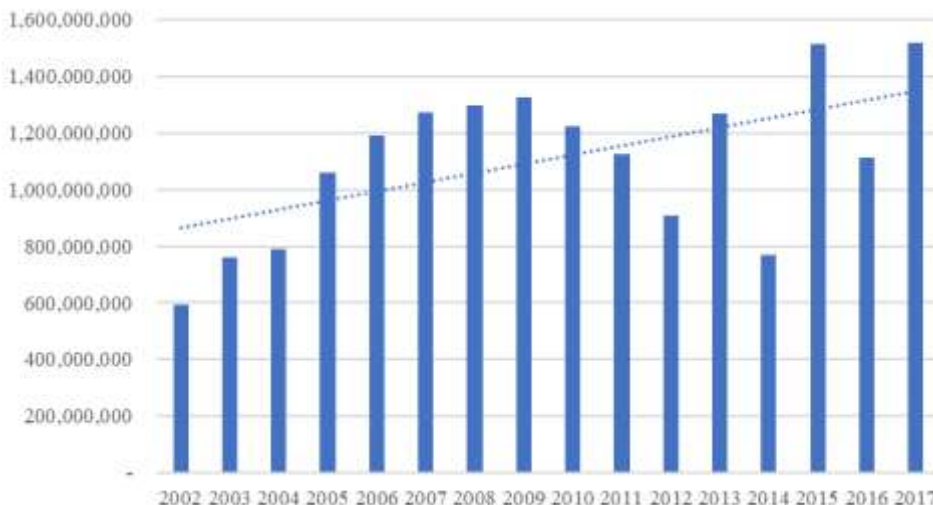
Fig. 3. Export Volume (Source: UN Comtrade, 2019)

Indonesia's palm oil export volume is experiencing a positive trend, showing an increase of 10.77 percent per year in non-traditional markets. In 2017, Indonesia experienced an increase in exports by 36.4 percent compared to the previous year. The export volume in 2015 experienced an increase of close to 97 percent due to a decrease in the volume of exports in 2014 by 39.27 percent.

Palm oil exports to non-traditional countries such as Pakistan have fluctuated. The lowest export value of CPO to Pakistan was in 2017 amounting to 54 thousand tons, however, it has increased by 90.4 thousand tons (1,644 percent). The largest export volume occurred in 2006, which reached 236.2 thousand tons. On the other hand, CPO exports to Bangladesh increased by 1,158 percent (580 thousand tons) in 2015 compared to 2014. However, after that, it decreased every year until 2017, the total decline that occurred reached 48 percent. CPO exports to Singapore also showed a fluctuating volume with an increasing trend during the period 2002 - 2009. However, it began to decline in 2010 by about 6 percent compared to the previous year and began to increase again in 2012 and in 2018 the volume of CPO exports to Singapore reached 424.3 tons.

Indonesia's palm oil exports to several African countries, especially Ghana, during 2012 to 2018 experienced a drastic decline. The decline is thought to be related to the issue of Prohibition from the Food and Drugs Authority or the Food and Drug Authority in Ghana after it was found that large amounts of palm oil using synthetic dyes are harmful to health. The export of Indonesian palm oil to Ghana in 2018 was the lowest number of exports compared to exports in 2002 to 2017. Namely, only 329 tons, compared to the highest number of exports in 2013 which was 19.99 thousand tons. CPO exports in other African countries, namely Tanzania, Egypt, Mozambique and Kenya, showed a downward trend in 2017 compared to the previous year even though the volume of exports fluctuated. In contrast to CPO exports to Morocco which reached the highest number of exports in 2017, while Cameroon and Côte d'Ivoire showed a downward trend in exports so that in 2018 there was no record of the volume of CPO exports in the two countries.

The performance of Indonesian CPO exports in non-traditional markets shows that the most potential non-traditional markets for Indonesia are markets in the Asian continent compared to markets in the African continent. Even though it has a fluctuating volume, the markets in the Asian continent have better export volume consistency compared to markets

in the African continent which can be seen that there is no record of Indonesia exporting CPO to Cameroon and Côte d'Ivoire after 2017. In addition, there is a negative CPO campaign in Ghana related to the use of CPO as a synthetic dye which is bad for health. However, the African market is one of the alternative markets that can be developed by Indonesia, especially in the markets of Egypt, Kenya, Mozambique, United Republic of Tanzania, and Morocco.

3.2 Competitive and Comparative Advantage

Exports to non-traditional markets are an alternative step that can be taken by Indonesia so that the trade balance can show positive results and Indonesian CPO can be absorbed by the market. Countries in non-traditional markets in the short term will not replace countries in traditional markets that consistently import CPO from Indonesia and in large quantities, but the potential in non-traditional markets cannot be ignored because countries in this market can be an opportunity for Indonesia to expand market reach and in the long term could become a new traditional market for Indonesian CPO. The potential in non-traditional markets can be seen by clustering CPO based on Indonesia's export areas [10]. This clustering is carried out using X - a potential export product model that combines two competitiveness analyzes, namely RCA, which is used to measure a country's comparative advantage to a product and its competitive position in its export destination market, and EPD, which is used to capture an overview of a country trade by looking at the dynamic rate of export growth in a period [10,21,22]. The clustering in X - the potential export product model will be divided into four market clusters, namely optimistic market development, potential market development, less potential market development, and non potential market development.

Table 2. RCA Value of Indonesia CPO in Non Traditional Market

Year	Country										
	Pak	Egy	Bang	Kenya	Mozam	Singap	Ghana	Tanz	Marocc	Cote D' Ivore	Camm
2002	20.03	69.56	0.95	19.61	64.42	20.16	50.21	29.57	507.95	163.85	113.90
2003	33.93	54.27	1.81	21.21	7.75	24.13	25.27	30.47	442.03	54.23	86.32
2004	12.99	32.23	2.38	31.97	27.89	28.20	34.79	7.09	490.08	232.13	36.17
2005	34.77	15.24	3.21	29.39	39.62	25.16	4.27	22.73	655.97	684.95	200.98
2006	23.77	35.07	1.66	29.46	28.33	26.55	14.66	11.23	225.13	367.22	196.19
2007	15.76	249.43	2.31	25.43	31.28	25.13	36.91	93.77	468.04	289.60	190.42
2008	16.74	63.26	1.70	24.03	21.40	25.10	11.96	57.13	620.67	133.77	143.56
2009	5.86	50.39	1.03	24.97	34.74	23.69	24.11	50.07	357.44	150.75	91.33
2010	2.22	41.62	1.80	19.84	20.39	18.54	37.68	50.01	326.96	94.09	67.46
2011	2.22	2.69	2.30	51.78	22.35	15.06	20.41	32.11	111.20	79.01	48.82
2012	0.51	68.38	1.07	55.16	39.24	15.86	7.23	28.78	148.73	75.70	9.35
2013	4.81	49.78	0.14	26.10	54.72	17.29	7.70	30.52	126.91	16.14	8.89
2014	0.98	11.99	2.28	57.66	34.76	20.18	13.66	9.38	112.70	107.40	24.89
2015	5.85	56.25	5.79	45.42	54.31	23.05	28.31	44.90	162.34	24.75	88.46
2016	3.66	37.35	40.04	43.25	57.69	24.08	8.11	13.79	153.06	124.38	26.13
2017	0.01	38.31	32.60	24.36	25.65	23.54	1.84	19.32	149.58	111.18	12.64
Average	11.51	54.74	6.32	33.10	35.28	22.23	20.45	33.18	316.17	169.32	84.09

Before plotting the X - potential export product model to see the clustering of Indonesian CPO exports in non-traditional markets, a competitiveness analysis is carried out to see its comparative advantage using Revealed Comparative Advantage (RCA). RCA measures the export share of Indonesia's CPO commodity compared to the share of world CPO exports in the same export destination market. The measurement results will display a value that ranges from zero to infinity where a country is considered to have

competitiveness if it gets a value above one. The higher the RCA value, the better the competitiveness is. Conversely, if the value obtained is below one, it can be said that the measured commodity has no competitiveness [11,21,22].

Based on the results of the analysis using the RCA method (Table 2), during the period 2002-2017, the competitiveness of Indonesian CPO commodities in each market had quite varied comparative advantages. However, overall Indonesian CPO commodities in the eleven non-traditional markets studied have a comparative advantage and are highly competitive. The highest RCA is in Morocco market with an average RCA value of 316.17. Then, in sequence, followed by Cote D 'Ivore, Cameroon, Egypt, Mozambique, Tanzania, Kenya, Singapore, Ghana, Pakistan, Bangladesh (Table 2). It can be concluded that Indonesian CPO in the traditional con market has strong comparative competitiveness despite fluctuating export volume and value coupled with the emergence of several negative issues related to CPO, but there is a potential that these countries become an alternative to Indonesian exports.

Furthermore, an EPD analysis is carried out to measure the market position of Indonesian CPO commodities for the export market of non-traditional CPO. This method shows whether the performance of each commodity is dynamic or not. EPD analysis can show the competitiveness position of a commodity which is divided into four positions, namely rising star (increasing market share), falling star (decreasing market share of products), lost opportunity (losing export market share), and retreat (market share decline) [10,22]. The results of the EPD analysis show that the market position for CPO in each of the markets studied is in quadrant – I with eleven non-traditional market countries in a rising star condition.
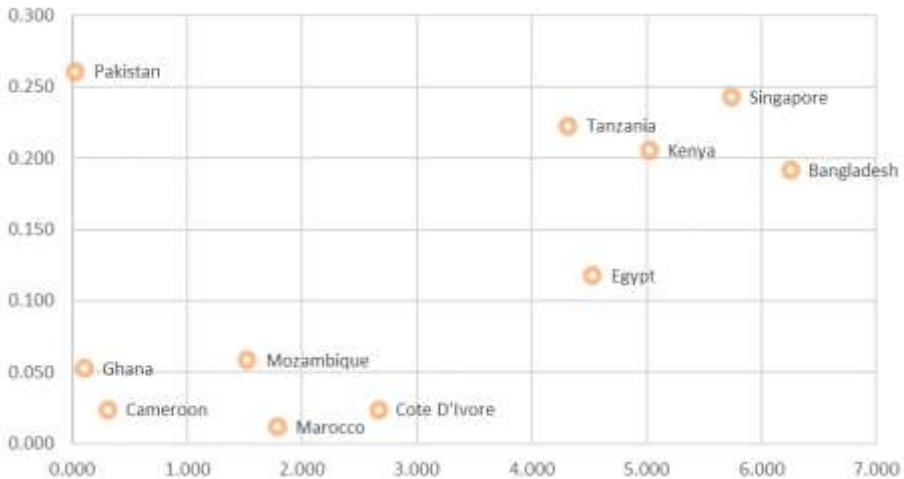

Fig. 4. EPD Matrix of Non Traditional Market

Based on the results of the RCA and EPD, it is possible to cluster the potential development of the CPO commodity market in eleven non-traditional markets. The method used for clustering is the x-model potential export products method, which is a method that considers the value of competitiveness obtained from the results of the RCA analysis and the market position obtained from the results of the EPD analysis. By using this method, the results of the competitiveness analysis under study will be more comprehensive because it sees the competitiveness of Indonesian CPO commodities from two sides at once, namely the RCA and EPD sides.

Table 3. X – Model Potential Export Product of Indonesia CPO in Non Traditional Market

Negara	RCA	EPD	Market Development Potential
Pakistan	11.51	Rising Star	Optimistic market
Egypt	54.74	Rising Star	Optimistic market
Bangladesh	6.32	Rising Star	Optimistic market
Kenya	33.10	Rising Star	Optimistic market
Mozambique	35.28	Rising Star	Optimistic market
Singapore	22.23	Rising Star	Optimistic market
Ghana	20.45	Rising Star	Optimistic market
Tanzania	33.18	Rising Star	Optimistic market
Marocco	316.17	Rising Star	Optimistic market
Cote D' Ivore	169.32	Rising Star	Optimistic market
Cameroon	84.09	Rising Star	Optimistic market

Based on Table 3, CPO commodity exports in eleven non-traditional markets have the potential for optimistic market development as a whole because based on the RCA calculation results, the average RCA value of the eleven countries is more than one and on the EPD plot, the eleven countries are in a rising star condition. Based on the results of the x-model potential export products, it can be seen that non-traditional markets have the potential as an alternative to the Indonesian CPO export market so that Indonesia with abundant CPO yields can / develop its market throughout the world.

3.3 Factor That Influence CPO Export in Non Traditional Market

In determining the best model, the Chow test and Hausman test were performed. Based on the results of the Chow test, it shows that the probability is smaller than the 5% real level (0.00 <0.05), which means that there is sufficient evidence to reject H0, meaning that the model approach chosen is the fixed effect model approach. Furthermore, the Hausman test was performed. The Hausman test results show that the probability value is smaller than the real level of 5% (0.01 <0.05), which means that there is sufficient evidence to reject H0, meaning that the model approach chosen is the fixed effect model approach. Based on the test results, the best model approach chosen is the fixed effect model approach [10,23].

Tabel 4. Estimation Factor That Influence CPO Export in Non Traditional Market

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Economic Distance	-1.567167	0.454663	-3.446876	0.0007
Importing GDP	-1.294605	0.311674	-4.153717	0.0001
Indonesia GDP	1.418005	0.313820	4.518532	0.0000
Export Price	-0.207810	0.141101	-1.472775	0.1428
Exchange Rate	-0.665556	0.151814	-4.384039	0.0000
C	31.43308	4.785615	6.568243	0.0000
R-squared	0.948203	Mean dependent var		37.45609
Adjusted R-squared	0.943347	S.D. dependent var		52.51245
S.E. of regression	1.037763	Sum squared resid		172.3124
F-statistic	195.2649	Durbin-Watson stat		1.817733
Prob(F-statistic)	0.000000			

The Fixed Effect model had been consistent with the classical assumption test including normality test, heteroscedasticity and autocorrelation. The analysis result with gravity

model showed the factors affecting Indonesian CPO export to non-traditional countries was exchange rate, Indonesia's gross domestic product (GDP), importing countries' GDP and economic distance, while export price was not significant to influence export volume [24,25]. Those variables significantly affected export volume on the alpha level of 5%. Based on estimation result, exchange rate variable had a negative influence to Indonesia's CPO export volume with the coefficient of -0.665556. the coefficient sign was in accordance with the study hypothesis [26]. It means that if local current unit depreciates by 1% then it will cause a decrease in export volume by 0.665556%, cateris paribus. Indonesia's GDP variable had a positive sign which is in accordance with study hypothesis [27]. The coefficient of 1.418005 means that if Indonesia's GDP increase by 1%, then it will increase export volume by 1.418005% cateris paribus. Meanwhile, GDP of importing countries had a negative sign. It means that if GDP of importing countries increase by 1%, then it will decrease export volume of Indonesia's CPO by 1.29460%. Because most of Indonesia's CPO export was used as cooking oil, an increase in people income will reduce the use of imported CPO from Indonesia. On the economic distance, the variable sign was in accordance with the hypothesis [28,29]. It means that getting further importing countries from Indonesia, it will decrease export volume of Indonesia's CPO. An important necessary steps is to find a suitable strategies for sustainable palm oil production which implies maximizing its socio and economic benefits [30].

4 Conclusion

The development of Indonesia's export market is carried out as a measure to anticipate the long-term black campaign related to oil palm plantations and the use of CPO. If Indonesia does not have an alternative market, it will have a domino effect on domestic CPO agribusiness. Indonesia must look for market alternatives and strategies to anticipate the black campaign and trade wars that occur in Indonesia's main CPO market. One of the initiatives that can be taken in finding alternative markets is trading with countries that are Indonesia's non-traditional markets.

The volume of Indonesian CPO exports to non-traditional countries fluctuates but shows a downward trend. There are two countries that have no record of CPO imports from Indonesia since 2018, namely Cameroon and Ivory Coast. Despite the negative trend, non-traditional markets in Asia have more potential to develop. In addition, Indonesia can develop in the African continent, especially in the countries of Egypt, Kenya, Mozambique, United Republic of Tanzania, and Morocco.

Indonesian CPO has optimistic market development potential in 11 non-traditional countries because Indonesian CPO has strong competitiveness and is in a rising star position. The analysis result with gravity model showed the factors affecting Indonesian CPO export to non-traditional countries was exchange rate, Indonesia's gross domestic product (GDP), importing countries' GDP and economic distance. Those variables significantly affected export volume on the alpha level of 5%.

The existence of this study is expected to be an illustration for the government to form policies and cooperation agreements that benefit Indonesian CPO exports in the non-traditional market. The challenges faced by the government to make these countries as the main market are related to the absence of bilateral agreements between the two parties, not yet reached a trade agreement, especially in the use of currencies, trade procedures, and facilities and infrastructure that have not been supported in the destination country.

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