Analysis of export performance and export competitiveness trade of crude palm oil [CPO] industry in Indonesia with RSPO in India and United States markets

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Abstract. The implementation of the RSPO [Roundtable on sustainable palm oil] has been implemented since 2012 in the United States market, but the Indian market has not. This study aims to describe and compare the export performance and export competitiveness of Indonesia's CPO [crude palm oil] trade in both markets. Comparison is done descriptively and the analysis of compare means independent samples t-test and paired samples test. The description of export performance measured by trade flow [value and quantity] shows the trade value of Indonesia's CPO trade in the Indian market of USD 70,885.52 thousand with an average of USD 388,000.06 thousand in the 1996-2017 period. Whereas in the USA market it was 8,536,001 thousand USD with an average of USD 388,000.06 thousand. Export competitiveness with the RCA index in the USA market is higher than the Indian market, amounting to 26.50% and 19.24%. The results of comparing means independent samples t-test against trade value and quantity have a significant difference between Indonesia's CPO exports in the Indian market and the USA market. However, Indonesian's CPO export competitiveness with the RCA index does not have a significant difference in the Indian and USA markets. The results of the compare mean paired samples test before the RSPO 2006-2011 period and after the RSPO 2012-2017 period, found that the trade value of Indonesia's CPO exports before and after the RSPO was not significant. While the trade quantity and RCA of Indonesian CPO exports there are significant differences in the Indian and US markets.

Keywords: Export performance, export competitiveness, industrial crude palm oil, international market, roundtable sustainable palm oil

1. Introduction

Palm oil is obtained from the fruit of the African palm oil tree [Elaeis guineensis] [1]. Palm oil is Indonesia's leading export commodity to Asian countries, such as India, China, and Pakistan as well as the United States and European Union countries. Palm oil is a vital component of Indonesia's development strategy now and in the future. Indonesia is the world's largest producer and exporter of
Crude Palm Oil [CPO] and CPO is an important component of food security in Indonesia and its consuming countries [2] [3]. Indonesia’s foreign exchange revenue per year from raw CPO commodities reaches 80% of the total export value of the mainstay agricultural commodities in Indonesia, namely CPO, tea, coffee, cocoa, tuna, and shrimp [4].

The average growth rate of Indonesia’s CPO exports for the period of 2001–2015 was 11.94% per year. It was far below those of Thailand, Malaysia, and Colombia with growth rates of 59.55%, 25.19%, and 20.35% per year respectively in the same period. That condition was worsened by higher tax enforcement on Indonesian CPO in EU countries in 2012 causing Indonesia to shift its CPO exports to India, China, and Pakistan [5]. Palm oil is one of the world's most consumed vegetable oils other than soybean oil, canola oil, and sunflower seed oil. Indonesia is one of the largest CPO producers in the world, while India is the biggest consumer in Indonesia as well as in the world [6]. Palm oil has an important position in the Indonesian economy. First, palm oil is the main export commodity that produces high foreign exchange for the country. According to the Ministry of Agriculture [2016], from the twelve primary export commodities, palm oil ranks first in export by 2015 at 81.36% with a value of 15.38 billion US dollars. Second, palm oil is used as the main source of cooking oil in domestic.

World CPO production in 2013 reached 55.7 million tons. Of the 55.7 million tons of CPO, Indonesia contributed 26.70 million tons [produced from six million hectares of plantation land] and followed by Malaysia by 21.7 million tons [generated from five million hectares of plantation land], so that Indonesia and Malaysia together control around 86% of the world's CPO [7]. At the end of 2015, Indonesia's CPO production increased to 32.5 million tons and Malaysia decreased to 17.7 million tons [8].

The role of Indonesia as a major producer country is also the largest CPO exporter in the world in terms of volume and quantity followed by Malaysia, Thailand, Colombia, and Nigeria. Indonesia can become the largest CPO exporting country in the world because of the small amount of CPO derivative products that can be processed domestically in Indonesia even though CPO product derivatives are very diverse [9]. Indonesia only able to process CPO into derivative products by 59.66% and export 40.34% CPO in raw form. The ability to process Indonesian CPO is still far below Malaysia. Malaysia exports only crude CPO of 17.5% and exports 82.5% of CPO which has been processed into various products [4]. Indonesia's inability to process overall CPO-derived products has led to domestic producers to export CPO to CPO-processing countries such as China, India, Pakistan, the Netherlands, and several European Union countries [10].

The RSPO [Roundtable on sustainable palm oil] policy has been implemented since 2012 in the USA market, while the Indian market has not ratified the RSPO. The most important aspect of the SSPO is ensuring rainforests are not cleared for the establishment of new plantations [11], environmentally sound factory waste management [12] and a zero-burning policy [11]. RSPO members account for approximately 35% of the palm oil produced worldwide.

This study aims to describe and compare the export performance and export competitiveness of Indonesia's CPO trade in the Indian and US markets with the adoption of the RSPO policy since 2012. Are there differences in export performance before the RSPO 2006-2011 period and after the RSPO 2012-2017 period in the Indian market and the United States. It is hoped that this research can contribute after the ratification of the RSPO policy in the trade of the palm oil industry on the international market.

2. Materials and methods

2.1. Data sources
Data sources used in this study are statistical data from the Central Statistics Agency [BPS], the Indonesian Ministry of Industry, United Nations Commodity Trade Statistics data, scientific papers relating to the competitiveness and oil palm development strategy, and CPO export and import data [code HS 151110].
2.2. Calculation of time series data on Export Performance and Competitiveness of Indonesian CPO commodity exports in the international market

This research uses quantitative and descriptive approaches. The observation data for regression estimation are used quarterly data within the period of 22 years from 1996 to 2017\(^{[22]}\). The data are modified from an actual data time series with the interpolation method.

Export performance is measured by trade flow, which is the volume of export trade volume [trade value] in USD and the volume of export trade volume of Indonesian CPO commodities in tons on the international market. The measurement of export performance was carried out to see a description of the development of Indonesia's CPO exports in the Indian and US markets for the period 1996-2017. Trade value and trade quantity are seen as developments by measuring the rate of export growth. This descriptive comparison predicted how Indonesia's CPO export trends in the two countries.

The competitiveness and market share of Indonesia's CPO exports are analyzed using the Revealed Comparative Advantage [RCA] and Market share index. In this study, RCA is used to measure the competitiveness of comparative advantage. The RCA value formula is as follows:

\[
RCA_i = \frac{X_{ij}}{X_{iw}} / \frac{X_{w}}{X_{w}}
\]

\(X_{ij}\) = Exports value of commodity i in country j
\(X_{iw}\) = Total exports value of commodity i in country j
\(X_{w}\) = Exports value of commodity i in the world
\(X_{w}\) = Total world exports value

2.3. Comparative analysis in quantitative statistics

After the descriptive and cumulative comparison of Indonesian CPO commodities is known, a quantitative statistical comparison analysis is performed. Comparative analysis of export performance and export competitiveness is carried out with two analyses, namely the analysis of compare means independent samples t-test and analysis of compare means paired samples test. This statistical analysis is related to the existence of RSPO policies that have been consistently applied by the United States market, in this study referred to as the RSPO market, while the Indian market which has not ratified RSPO policy as CPO consumers, in this study is called the Non-RSPO market.

Comparative analysis of the means independent sample t-test was conducted to see whether there were significant differences in the two markets in implementing RSPO policies. Data used for 22 years from 1996-2017. Meanwhile, to answer the question of whether there is an impact of the RSPO policy on the two markets, data is used before the RSPO for the period 2006-2011 and after the RSPO for the 2012-2017 period. The analysis used to see the difference in the impact of the RSPO policy on the Indonesian CPO trade in the Indian and US markets is the comparison means paired samples test analysis. Data is processed using SPSS 21.00 series program.

3. Result and discussion

3.1. Indonesia's CPO Export Performance in the Indian Market

Indonesia's CPO export performance can be seen from the development of trade flow [value and quantity] for the period 1996-2017 to the Indian market. Indonesia's CPO exports in 1996 amounted to USD 139,0823 with a quantity of 269,5158 thousand tons which continued to increase in 2011 amounting to 6,946,172 USD valued at 6,633,228 thousand tons. The development of trade value and trade quantity in 1996-2012 and after that decreased until 2017, is shown in figure 1 below.

The growth rate of Indonesia's CPO trade in the Indian market, as seen in figure 2, started with quite high growth in 1997, with a trade value of 94.35% and a trade quantity of 80.09%. After that, it continued to decrease lucratively and increased by 47.35% in 2002 and the highest in 2007 was
39.15%. After that the growth slowed down and continued negative, it could be caused by the monetary crisis and slowing global growth [global crisis] in 2008 and only in 2011, the growth was quite high at 27.06%. During the 1996-2017 periods, the average growth in trade value and trade quantity was 6.95% and 8.13%. The trade quantity is higher than the trade value because Indonesian CPO prices in the Indian market have continued to decline.

![Figure 1. The trend of trade value and quantity of Indonesia’s CPO export in the Indian market](image1)

The description of the trade value and trade quantity and the rate of growth can be seen in the following figure 2.

![Figure 2. The trend of trade value and quantity along with the rate of growth of Indonesia’s CPO export in the Indian market](image2)
3.2. Indonesian CPO Export Performance in the United States Market

Indonesia's CPO export performance can be seen from the development of trade flow [value and quantity] for the period 1996-2017 on the United States market. Indonesia's CPO exports in 1996 amounted to USD 19,798.44 and the quantity of only 37,387.76 thousand tons continued to mark until 2003. The increase began in 2004 at USD 85,368.35 tons valued at 176,809.9 tons. The development of the highest trade value and trade quantity in 2008 was USD 860,366.1 equivalent to a quantity of 882,339.3 tons. The average growth rate in 1996-2008 experienced an increase and after that growth with a horizontal slope, as shown in Figure 3 below.

![Figure 3. The trend of trade value and quantity of Indonesia’s CPO export in the USA market](image)

A description of the development of trade value and trade quantity and the rate of growth is shown in figure 4 below. The average trade quantity growth in the 1996 period experienced a sharp decline in 2003 of -893.69%. However, the trade value of Indonesia's CPO exports on the US market looks slope flat with an average growth rate of -30.43%. While the rate of trade value growth during the 1996-2017 period was quite good at 11.40%. This condition can illustrate that the negative quantity growth rate, could be due to Indonesia's CPO export quality standardization policy that must include the RSPO certification. It is interesting to examine in more depth, whether the quantity has plummeted, but the trade value is still positive. Descriptively, prices have improved with standardized CPO quality. More details can be seen in the following Figure 4.
Figure 4. The trend of trade value and quantity along with the rate of growth of Indonesia’s CPO export in the USA market

3.3. Description of Comparison of Export Performance and Export Competitiveness

A comparative description of the trade value, trade quantity, and RCA index of the Indonesian CPO trade in the Indian market are shown in Figure 5. Trade value and trade quantity appear to fluctuate from 1996-2007, export competitiveness are quite good in 1996 at 43.42% and after that, it has decreased sharply until in 1998 with an RCA index of 6.58%. After that, Indonesia's CPO export competitiveness began to increase until 2007 with the highest RCA index of 30.51%. However, since 2008 it has continued to decline until the RCA index of 11.48%, as shown in Figure 5 and Table 1 below.

Figure 5. The trend of trade value, quantity, and RCA-index of Indonesia’s CPO export in the Indian market
A comparative description of the export performance and competitiveness of Indonesia's CPO exports in the United States is shown in Figure 6 and Table 1 below. The unsatisfactory export performance was born from 1996-2004 and export competitiveness also with the RCA index of 89.19% continued to decline sharply until 2003 the RCA index of 0.06%, whereas in 2004 it increased sharply by 31.18% and after that, up to 2012 there was no improvement in the export competitiveness index. However, since the period of 2012-2017, the RCA index has increased sharply in the United States market. Whether this is a positive impact of the RSPO policies that have been consistently applied by the US market since 2012, it is necessary to do a statistical test. The complete comparison of export performance and Indonesia's CPO export competitiveness can be seen in Table 1 below.

![Figure 6](image-url)  
**Figure 6.** The trend of trade value, quantity, and RCA-index of Indonesia’s CPO export in the USA market

**Table 1.** A descriptive comparison of trade flow [value and quantity] and RCA of Indonesian CPO in the Indian and US markets for the period 1996-2017

| Years | India |   |   | United States |   |   |
|-------|-------|---|---|----------------|---|---|
|       | Trade Value [000$] | Trade Quantity [000ton] | RCA [%] | Trade Value [000$] | Trade Quantity [000ton] | RCA [%] |
| 1996  | 139.0823 | 269.5158 | 43.41 | 19798.44 | 37387.76 | 89.19 |
| 1997  | 709.6371 | 1353.455 | 13.16 | 37933.4 | 72725.71 | 14.13 |
| 1998  | 977.2037 | 1551.323 | 6.58 | 50722.76 | 86423.39 | 13.94 |
| 1999  | 1378.035 | 3294.455 | 10.23 | 43710.94 | 93314.53 | 19.73 |
| 2000  | 1028.957 | 3593.085 | 14.67 | 33395.85 | 111641.4 | 20.52 |
| 2001  | 802.8331 | 2823.267 | 14.15 | 28618.38 | 67703.53 | 3.03 |
| 2002  | 1144.923 | 3318.787 | 16.35 | 41458.57 | 116859.2 | 8.70 |
Table 2. Output compare means group statistics on Indonesian trade flow and RCA CPO in the Indian and United States markets for the period 1996-2017

|                  | India | USA           | Mean   | Std. Deviation | Std. Error Mean |
|------------------|-------|---------------|--------|----------------|-----------------|
| TradeValue_CPO   |       |               | 3220.71| 2437.22648     | 519.61843       |
|                  | 22    | 32207056      |        |                |                 |
| TradeQuantity_CPO|       |               | 388000.0597 | 344473.15172   | 73441.92271     |
|                  | 22    | 388000.0597   |        |                |                 |
| RCA_CPO          |       |               | 19.24  | 26.50          | 5.55613         |
|                  | 22    | 19.2395       |        |                |                 |

Source: Data processed, UN Comtrade [2019]

The average trade flow value of India and the USA from 1996-2017 was 3220.71 USD and 388,000.06 USD with Indian trade quantity 4,773.24 tons and USA 503,091.20 tons. Whereas Indian RCA is 19.24% lower than the USA at 26.50% per year. Descriptively, trade flow and RCA USA are better than India. This difference can be caused by RSPO policy, where the USA has consistently
applied RSPO since 2012, while the Indian market has not yet paid attention to RSPO certificates as a condition for acceptance of Indonesian CPO imports. Analysis of compare means independent samples t-test seen from the three variables, namely the trade value, trade quantity, and RCA index.

**Table 3.** Output compare means independent samples of Indonesian CPO Trade Flow and RCA tests in the Indian and United States markets

|                  | Levene's Test for Equality of Variances | t-test for Equality of Means | 95% Confidence Interval of the Difference |
|------------------|----------------------------------------|-------------------------------|----------------------------------------|
|                  | F            | Sig. | t    | df | Mean Difference | Std. Error Difference | Lower | Upper   |
| Trade Value_CPO  | 159.549      | .000 | -5.239 | 42 | -384779.35412   | 73443.7609            | -537513.08510 | -232045.623 |
|                  | -5.239       | 21.002 | .000 |        | -384779.35412   | 73443.7609            | -537513.08510 | -232045.623 |
| Trade Quantity_CPO | 120.359     | .000 | -5.987 | 42 | -498317.96018   | 83236.25469          | -666295.52279 | -330340.398 |
|                  | -5.987       | 21.002 | .000 |        | -498317.96018   | 83236.25469          | -671416.28033 | -325219.640 |
| RCA_CPO          | 20.777       | .000 | -1.248 | 42 | -7.26455      | 5.82244           | -19.01471 | 4.48561   |
|                  | -1.248       | 25.083 | .224 |        | -7.26455      | 5.82244           | -19.25407 | 4.72498   |

Source: Data processed [2019]

The value of the Levene's test results on all three Trade Value, trade quantity and RCA variables t is sig. 0.000<0.005, meaning that there is no difference in meaning. The assessment is done by looking at "equal variance nor assumed", trade flow [value and quantity] there are significant differences between the Indian and US markets. While the competitiveness of the Indian market RCA with the United States is not significant [sig. 0.224>0.005]. It can be concluded that despite the significant difference in Indonesia's CPO trade flow to the Indian and US markets, the competitiveness of the Indonesian RCA index to the Indian and US markets is not significantly different [sig. 0.224>0.005].

Based on the discussion above, it can be taken on average that significant [2-tailed] in the t-test column for export performance [trade value and trade quantity] with an average sig. 0.000 <0.050, meaning that there is a significant difference in export performance in Indonesia's CPO trade in the Indian market with the United States. However, there was no significant difference in export competitiveness in the Indonesian CPO trade in the Indian and US markets, as indicated by the RCA index with a Sig value of 0.224> 0.050.

Based on the "independent sample test" output table in the "equal variances assumed" section, the sig. [2-tailed] of 0.224> 0.05, then as the basis for decision making in the independent test sample t-test, it can be concluded that H0 is accepted and Ha is rejected. Thus it can be concluded that there is no significant difference between the average CPO RCA to the Indian and US markets. The average difference in RCA to the Indian and US markets is 7.26455 and the difference in average is -19.01471 to 4.48561 [95% Confidence interval of the Difference Lower Upper].

3.4. Analysis of compare means paired samples to test with RSPO

Analysis of the difference between export performance and export competitiveness of Indonesian CPO with before and after RSPO in the Indian and US Markets, a comparison of paired samples test was conducted. The test was carried out with three variables, namely the variable trade value, trade
quantity, and RCA index on the Indian and US markets before the RSPO 2006-2011 and after the RSPO 2012-2017.

The results of the compare mean paired samples test analysis are used to see whether the trade flow value, trade quantity and RCA variables are different before and after the RSPO policy is applied, namely before the RSPO period 2006-2011 and after the RSPO period 2012-2017 in each Indian and American market Union.

An analysis of compare means paired sample tests are carried out by looking at the differences in the Indian market as Non-RSPO and the United States market as the RSPO market. The two markets are seen the difference before the RSPO 2006-2011 period and after the RSPO 2012-2017 period, with indicators of trade flow value, trade flow quantity and RCA. The paired analysis results are shown with N-6 so that it becomes 6 pairs. The mean trade flow value and quantity show a higher difference after the RSPO than before the RSPO for the Indian market. However, the Indonesian CPO RCA in the Indonesian market before the RSPO was 24.30% and after the RSPO it was lower by 15.28. The competitiveness of Indonesia's CPO RCA has decreased with the adoption of the RSPO. In contrast to the trade flow value, the trade flow quantity and RCA of Indonesian CPO to the US market have increased, but the competitiveness of Indonesia's RCA has increased by almost 500%. This shows that there is a positive impact on Indonesia's CPO competitiveness by the RSPO in the United States market.

Comparison of trade flow [value and quantity] and RCA of Indonesian CPO trade in the Indian market compared to three groups, namely 1) Trade values before and after RSPO 2] trade quantity before and after RSPO and 3] RCA before and after RSPO, with before RSPO the period 2006-2011 and after the RSPO 2012-2017 period. Likewise, the United States market, which is grouped into three groups, namely 1) trade values before and after RSPO, 2] trade quantities before and after RSPO, and 3] RCAs before and after RSPO, with before RSPO 2006-2011 and after 2012-2017 RSPO period. The two markets became 6 pairs with a period before and after the RSPO policy for 6 years, as shown in tables 4, 5 and 6.

### Table 4. Output compare means paired samples statistics trade flow and RCA of Indonesian CPO with before and after RSPO in India and United States Markets

| Pair  | Description                        | Mean     | N  | Std. Deviation | Std. Error Mean |
|-------|------------------------------------|----------|----|----------------|-----------------|
| Pair 1| TradeFValue_before RSPO_India      | 4099.3209| 6  | 2049.63962     | 836.76187       |
|       | TradeValue_afterRSPO_India        | 6005.4478| 6  | 742.67534      | 303.19594       |
| Pair 2| TradeQuantity_beforeRSPO_India    | 5328.9068| 6  | 1567.47197     | 639.91775       |
|       | TradeQuantity_afterRSPO_India     | 7993.2216| 6  | 999.82233      | 408.17576       |
| Pair 3| RCA_beforeRSPO_India              | 24.2950  | 6  | 5.22084        | 2.13140         |
|       | RCA_afterRSPO_India               | 15.2750  | 6  | 2.26356        | .92410          |
| Pair 4| TradeValue_beforeRSPO_USA         | 575880.3357| 6  | 241551.52441   | 98612.99690     |
|       | TradeValue_afterRSPO_USA          | 756067.3522| 6  | 99603.22104    | 40662.84472     |
| Pair 5| TradeQuantity_before_USA          | 7.0645E8 | 6  | 1.10224E8      | 44998936.91491  |
|       | TradeQuantity_afterRSPO_USA       | 9.4562E8 | 6  | 1.53945E8      | 62847920.33246  |
| Pair 6| RCA_beforeRSPO_USA                | 11.7733  | 6  | 5.33731        | 2.17895         |
|       | RCA_afterRSPO_USA                 | 50.7717  | 6  | 24.51818       | 10.00950        |

*Source: Data processed [2019]*

An analysis of compare means paired samples correlation shows that the correlation of Indonesian CPO trade flow values in the Indian market, before and after the RSPO is -0.540 [sig. 0.268> 0.005], which means that the non-significant negative correlation, which implies a decline in CPO prices in the Indian market. Likewise, there is a non-significant positive correlation of trade
flow quantity, meaning that an increase in export quantity after the RSPO, but not significantly different [non-significant]. Likewise, the competitiveness of RCA is positively correlated and non-significant. While the United States market trade flow value and quantity correlate positively and non-significantly. However, the competitiveness of Indonesia's RCA CPO to the US market is negatively correlated and non-significant.

Table 5. Output compare means paired samples correlation trade flows and Indonesian RCA CPO with before and after RSPO in India and United States markets

| Pair | Correlation | Sig. |
|------|-------------|------|
| N    |             |      |
| Pair 1 | TradeFlowV_beforeRSPO_India & TradeFlowV_afterRSPO_India | 6 | -.540 | .268 |
| Pair 2 | TradeFlowQ_beforeRSPO_India & TradeFlowQ_afterRSPO_India | 6 | .028 | .958 |
| Pair 3 | RCA_beforeRSPO_India & RCA_afterRSPO_India | 6 | .731 | .099 |
| Pair 4 | TradeFlowV_beforeRSPO_USA & TradeFlowV_afterRSPO_USA | 6 | .307 | .553 |
| Pair 5 | TradeFlowQ_before_USA & TradeFlowQ_afterRSPO_USA | 6 | .150 | .777 |
| Pair 6 | RCA_beforeRSPO_USA & RCA_afterRSPO_USA | 6 | -.377 | .461 |

Source: Data processed [2019]

Table 6. Output compare means paired samples trade flow tests and Indonesian RCA CPO with before and after RSPO in India and United States Markets

| Pair | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |
|------|------|---------------|-----------------|----------------------------------------|
| N    | Lower| Upper         |                 |                                        |
| Pair 1 | Trade Value_before RSPO_India - TradeValue_after RSPO_India | -1906.12694 | 2529.32143 | 1032.59115 | -4560.48700 | 748.23311 | -1.846 | 5 | .124 |
| Pair 2 | Trade Quantity_before RSPO_India - Trade Quantity_after RSPO_India | -2664.31479 | 1835.26921 | 749.24552 | -4590.31172 | 738.31787 | -3.556 | 5 | .016 |
| Pair 3 | RCA_before RSPO_India - RCA_after RSPO_India | 9.02000 | 3.88777 | 1.58718 | 4.94004 | 13.09996 | 5.683 | 5 | .002 |
| Pair 4 | Trade Value_before RSPO_USA - Trade Value_after RSPO_USA | -180187.017 | 231245.7026 | 94405.66278 | -422864.498 | 62490.46542 | -1.909 | 5 | .115 |
| Pair 5 | Trade Quantity_before USA - Trade Quantity_after RSPO_USA | -2.39162E8 | 1.75371E8 | 71594950.3577 | -4.23203E8 | -55121630.739 | -3.340 | 5 | .021 |
| Pair 6 | RCA_before RSPO_USA - RCA_after RSPO_USA | -38.99833 | 26.98662 | 11.01724 | -67.31906 | -10.67761 | -3.540 | 5 | .017 |

Source: Data processed [2019]
The main output of the analysis of compare means paired samples test shows that the trade quantity and RCA of Indonesian CPO before and after the RSPO there is significant [Sig. 0.016 and 0.002<0.005], on the other hand, the trade value is not significant [sig. 0.124> 0.05], meaning the price variable became the main variable of the trade value of Indonesia's CPO exports to the Indian market. Likewise, the Indonesian CPO trade value in the US market is non-significant [Sig. 0.115> 0.05]. It can be concluded that the price of CPO in the Indian and US markets tends to decrease, which results in export value in USD. While the trade quantity and competitiveness of Indonesian RCA CPO in the United States market are significantly different [sig. 0.021; 0.017 <0.05].

4. Conclusion

This research descriptively reflects that there is a positive tendency to increase Indonesian CPO exports to the Indian and US markets, where the volume of Indonesian CPO trade in the Indian market during the 1996-2017 period was USD 70,885.52 thousand, equivalent to an average of USD 3,220,706 per years and trade quantity of 105,011.2 thousand tonnes with an average of 4,773,237 thousand tonnes per year. The average growth of Indonesia's CPO exports in the Indian market with a value of 6.95% and a trade quantity of 8.13%. Indonesian CPO trade in the United States market during the period 1996-2017 amounted to USD 8,536,001 or the equivalent of USD 388,000.06 thousand annually with a quantity of 11,068,006,347 tonnes or equal to 503,091,198 every year. The average growth rate of trade value is 11.40% while the growth rate and trade quantity is -30.43% of Indonesia's CPO exports in the United States market.

The results of the comparison mean independent samples t-test against differences in export performance and export competitiveness of Indonesian CPO indicate that there are significant differences in the export performance of Indonesia's CPO trade in the Indian and US markets. However, there is no significant difference between the export competitiveness of Indonesia's CPO trade in the Indian and US markets.

The results of the compare mean paired samples test show that in the Indian market there are significant differences in the trade quantity and RCA before the RSPO period 2006-2011 and after the RSPO period 20012-2017, while the trade value there are no significant differences before and after the RSPO in the Indian market. Likewise in the United States market, there are significant differences in trade quantity and RSA index before RSPO [2006-2011 period] and after RSPO [2012-2017 period], however, there is no significant difference in trade value. This situation is suspected to have price variables and other variables that cause no difference in the trade value of Indonesia's CPO exports in the Indian and US markets.

Indonesia as the largest producer country and competes with other producers, such as Malaysia, Thailand and Columbia must seriously prepare RSPO certification to make CPO an export commodity. As a large consumer of CPO, the Indonesian domestic market also needs CPO derivative industry inputs, such as cooking oil, fatty acid, oleochemical, biofuel and other industries that have high added value, so the policy to reduce CPO exports by switching to CPO derivative exports, due to trade The value has not shown a significant difference in the Indian and US markets due to RSPO policy.

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Acknowledgments

Acknowledgments were conveyed by the author to Prof. Rina Oktaviani [deceased], and ITAPS Staff [International Trade Analysis and Policy Studies] Bogor Agricultural University, Miss Syarifah Amalia and Mr. Fazril for the assistance of initial ideas and information about exports and competition in Indonesia's CPO trade; and the Central Statistics Agency [BPS], the UN Comtrade, and the USDA which have helped the writer get the information and data needed in writing this article. Furthermore, the authors thank the promoter for providing direction in the completion of this paper.