

Comparative and Competitive Advantages of Palm Oil in International Markets

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ABSTRACT

This research aims to (1) Analyze the competitiveness of Indonesian cocoa butter exports in international markets based on comparative advantages. (2) Analyzing the competitiveness of Indonesian cocoa butter exports in the international market based on competitive advantages. The competitiveness of palm oil is analyzed in two ways: comparative advantage analysis and competitive advantage analysis. The approaches used in comparative advantage analysis are RCA, RSCA, and Product Mapping (RSCA and TBI). Meanwhile, the competitive advantage analysis uses the ECI approach. The competitiveness of Indonesian palm oil exports has a comparative advantage (RCA 54.15); based on Product Mapping analysis, Indonesian palm oil is in Group C, which means it has export specialization and has a comparative advantage. The competitiveness of Indonesian palm oil exports shows a competitive advantage or an upward trend; the value shows more than one (ECI 1.01).

INTRODUCTION

Palm oil is a plantation commodity that produces the most palm oil (CPO) and has high economic value. This is because it can create job vacancies for the community; oil palm plantations are also the country's largest source of foreign exchange earnings after oil and gas. (Prayitno & Widyawati, 2021). The oil palm commodity has experienced relatively rapid production growth compared to other plantation crops in Indonesia (Aznur, 2021). The increase in Indonesia's palm oil (CPO) production is due to the increase in the area of palm oil plantations, making Indonesia the largest palm oil producer in the world in recent years (Kurniawan et al., 2019). Most of the oil palm is cultivated by large private companies (PBS), valued at 54.94 per cent or 7,942,335 hectares. The second is a large state company (PBN) valued at 4.27 per cent or 617,501 hectares. Lastly, there are people's plantations (PR) valued at 40.79 per cent or 5,896,755 hectares (Ministry of Agriculture, 2022).

Most of Indonesia's palm oil production is exported abroad, and the rest is marketed domestically. Indonesia's palm oil exports reach five continents, namely Asia, Africa, Australia, America and Europe, with the leading share in Asia. Indonesia still has the potential to develop because it has potential land support that is still available and still has opportunities to increase productivity. Currently, the highest palm oil export markets are based on the HS Code 1511 in four central countries: Indonesia, Malaysia, the Netherlands and Thailand. Indonesia controls 52% of the world palm oil market share in September 2022. Based on BPS data (2023), it is shown that in 2022, the value of Indonesian CPO exports will reach US\$ 29.63 billion, with an export capacity of 26.22 million tons.

Competitiveness and sustainability are influenced by meeting the needs for raw materials from oil palm plantations (SAfriyana et al., 2019). In international trade, the competitiveness of a commodity can be seen from its comparative advantage and competitive advantage. Competitiveness is the ability of a company, industry, region, country or between regions to generate relatively high and sustainable income and employment factors to face international competition to improve community welfare (Prayitno & Widyawati, 2021). The theory of comparative advantage is a natural factor in a region or country (Sedyastuti, 2018), while competitiveness provides more value to consumers and produces above-average profits (Fahriyah & Yoseph, 2020). International trade requires each country to have specialization and the ability to compete for existing markets, so research is needed regarding market control in terms of both comparative and competitive advantages possessed by these four countries. Several studies have been carried out to determine the competitiveness of palm oil commodities. From research conducted (Riwaldi et al., 2023)(Patone et al., 2020) using RCA and ECI, this research uses the latest data and improves existing ones using the RSCA and product mapping approaches.

This research aims to (1) Analyze the competitiveness of Indonesian cocoa butter exports in international markets based on comparative advantages.

(2) Analyzing the competitiveness of Indonesian cocoa butter exports in the international market based on competitive advantages.

LITERATURE REVIEW

Competitiveness is a function of identifying appropriate product market dimensions for company positioning. It is also an effort to create better customer value compared to competitors by carrying out specific activities economically, with superior quality/service, or a combination of both (Mohamad & Niode, 2020). Competitiveness includes comparative advantage and competitive advantage.

comparative advantage is the marginal cost of labour in a country to produce products or services that are lower than in other countries. This shows the labour productivity for all products made in a particular country (Ermawati & Septia, 2013.) Comparative advantage is a relative measure that will show the superiority of a commodity in the market. The draft was introduced in 1817 by David Ricardo. The theory of comparative advantage is the main basis for international trade between countries. (Widyaningtyas & Widodo, 2017).

Competitive advantage is an advantage over competitors achieved by offering consumers greater value, either using lower prices or by providing greater benefits and services that justify higher prices, Porter (2001). According to Barney and Clark (1991) in *Resource-Based Theory: Creating and Sustaining Competitive Advantage*, sources of competitive advantage include resources and originality, cannot be imitated, and there are no substitutes. The resources in question include all assets, capabilities, organizational processes, company characteristics, information, knowledge, and so on, and these resources are under the company's control when implementing strategies to achieve effectiveness and efficiency.

METHODOLOGY

This research uses a case study approach and applies quantitative methods. It aims to focus on the position and competitiveness of Indonesian palm oil exports in the international market. Comparators are the largest exporting countries of palm oil, so the countries compared in this research are the Netherlands, Malaysia, and Thailand.

This research uses secondary data, namely times series data from 2013-2022, including export and import data for palm oil (CPO), with HS code 1511. This data was obtained from the Directorate General of Plantations, BPS, UN Comtrade, and Trade Map. This data includes export data and import data in US \$ units. The variables examined in this research include:

1. Palm oil's export value is its money value, which includes the costs requested by the exporter in US\$.
2. The import value of palm oil, in US\$ units, is the value in money and is used to calculate import duties and other levies based on customs regulations.

3. A country's Total Export value is the total export of all goods, both in oil and gas and non-oil and gry, in US\$ units.

The analyses used in this research are RCA (Revealed Comparative Advantage), RSCA, and Product Mapping analysis to determine comparative advantage and ECI (Export Competitive Index) analysis to determine competitive advantage.

The RCA value can be formulated as follows (Basri & Munandar, 2010):

$$RCA = \frac{X_{ij}/X_j}{X_{iw}/X_w}$$

Information:

X_{ij} : CPO export value by country j

X_j : Total export value from country j

X_{iw} : Total world export value of CPO

X_w : Total world export value.

Decision-making criteria:

$RCA > 1$: A country's commodities have a comparative advantage.

$RCA = 1$: A country's commodities are the same as the average competitiveness of commodities worldwide.

$RCA < 1$: A country's commodity has no comparative advantage.

Using the RCA approach has weaknesses, namely the asymmetry of the RCA index, so improvements are made using the RSCA approach. The RSCA index value is between -1 and 1 (Laursen, 2015).

Product mapping uses two analytical tools to determine the position of comparative advantage and trade specialization based on the calculation concepts of RSCA (Revealed symmetric comparative advantage) and TBI (Trade et al.) (Widodo, 2009), which are formulated as follows:

$$RSCA\ Index = \frac{RCA - 1}{RCA + 1}$$

Decision-making criteria:

$RSCA > 0$: Palm oil (CPO) has a comparative advantage.

$RSCA < 0$: Palm Oil (CPO) has no comparative advantage.

$$TBI\ Index = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}}$$

Information:

X_{ij} : CPO export value of country j.

M_{ij} : CPO import value for country j

So:

TBI>0: A country can be an exporter.
 TBI<0: A country is only an importer.
 The results of the two indices are then categorized into four groups: A, B, C, and D.

Table 1. Export Competitive Index

Group B	Group A
<i>Comparative Advantage</i> <i>Net-importer</i> (RSCA > 0 dan TBI < 0)	<i>Comparative Advantage</i> <i>Net-Exporter</i> (RSCA > 0 dan TBI > 0)
Group D	Group C
<i>Comparative Disadvantage</i> <i>Net-importer</i> (RSCA < 0 dan TBI < 0)	<i>Comparative Disadvantage</i> <i>Net-exporter</i> (RSCA < 0 dan TBI > 0)

ECI (Export Competitive Index) analysis to determine competitive advantage is formulated as follows (Lindung & Jamil, 2018):

$$ECI = \frac{(X_{ij}/X_{iw})_t}{(X_{ij}/X_{iw})_{t-1}}$$

Information:

X_{ij} : CPO export value by country j

X_{iw} : Total world export value of CPO

Q : Current period.

t-1 : Previous period.

Decision-making criteria:

ECI>1: Has a competitive advantage or has an upward trend.

ECI=1: There is no increase in ECI, and the performance of a country's palm oil exports has not changed from the previous year.

ECI<1: Does not have a competitive advantage or is experiencing a downward trend.

RESEARCH RESULT AND DISCUSSION

The competitiveness of palm oil is analyzed in two ways: comparative advantage analysis and competitive advantage analysis. The approaches used in comparative advantage analysis are RCA, RSCA, and Product Mapping (RSCA and TBI). Meanwhile, the competitive advantage analysis uses the ECI approach. (Nurwansyah et al., 2004)

Revealed Comparative Advantage (RCA)

The RCA index is used to determine the position and competitiveness of Indonesian palm oil. The more The larger the RCA index value, the higher the power competitiveness of Indonesian palm oil commodities. Competitiveness

Indonesian palm oil, compared to other countries Another palm oil producer is Malaysia. The results of the analysis using RCA are presented in Figure 1.

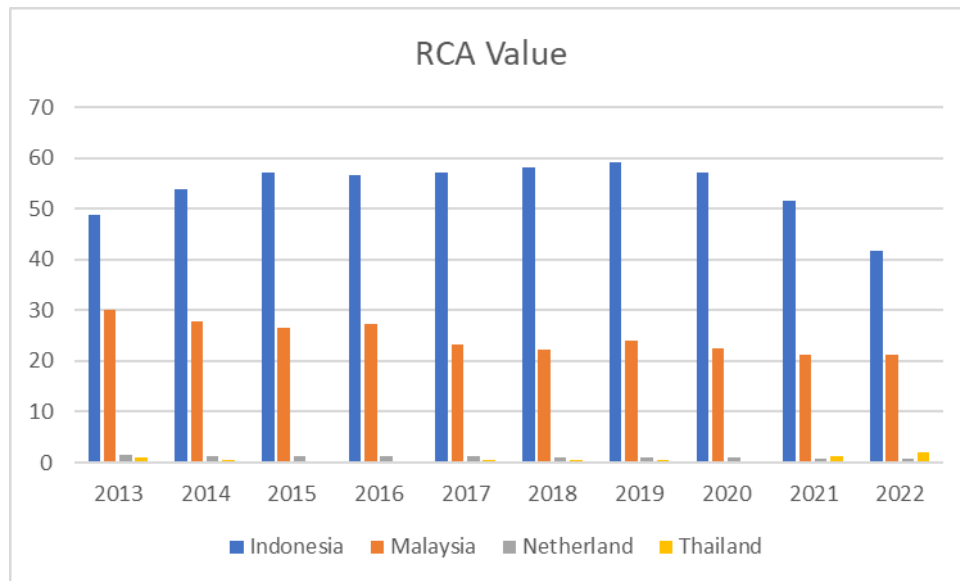


Figure 1. RCA value of palm oil for 2013-2022

The results of Indonesia's RCA analysis over the last ten years show that Indonesia's palm oil exports have a comparative advantage; this can be seen by the RCA value being more than one, with an average RCA value of 54.15. Meanwhile, the results of RCA analysis on Indonesia's main competitor countries in the international market show that these two countries (Malaysia (24.64) & Netherlands (1.12)) have a comparative advantage, and Thailand does not have a comparative advantage with RCA results of less than one (0, 67).

Revealed Symmetric Comparative Advantage(RSCA)

RCA analysis has weaknesses, namely RCA index asymmetry (index Balassa). Therefore, it is used RSCA index, which is a simple modification of RCA, with the RSCA index value ranges from -1 to 1 (Laursen, 2015). The results of the analysis using RCA are presented in Table 1.

Table 2. RSCA Value of Indonesian CPO Exports 2013-2022

HASIL RSCA	Indonesia	Malaysia	Netherland	Thailand
2013	0,959782	0,935957	0,198005	0,031927
2014	0,963571	0,930635	0,135393	-0,35131
2015	0,965661	0,927403	0,128432	-0,77211
2016	0,965288	0,929207	0,139907	-0,80335
2017	0,965683	0,91775	0,087144	-0,352
2018	0,966224	0,913579	0,027087	-0,27903
2019	0,966719	0,92031	0,039264	-0,40542
2020	0,965569	0,91456	-0,03055	-0,464
2021	0,961926	0,910095	-0,11834	0,088167
2022	0,953339	0,909967	-0,1547	0,327178
Rata-rata	0,963376	0,920946	0,045165	-0,29799

Source: UN Comtrade, 2024 (processed)

Based on the Table 1, it can be seen that Indonesia and its two competing countries have comparative advantages. These results can be seen from the RSCA value, which is more than zero. The results of the RCA and RSCA analyses show the same conclusions. Indonesia, in the RSCA analysis, has an average of 0.96, which is in first position, followed by Malaysia (0.92) and the Netherlands (0.04), while Thailand has an average RSCA value of -0.29, indicating that the country does not have an advantage. Compatible with a value less than zero.

Trade Balance Index

The Trade Balance Index (TBI) is used to analyze whether countries specialize in exports (net-exporter) or imports (net-importer) for certain commodity groups. The results of the analysis using TBI are presented in Table 3

Table 3. TBI Value of Indonesian CPO Exports 2013-2022

Hasil TBI	Indonesia	Malaysia	Netherland	Thailand
2013	0,994085	0,913759	-0,25413	0,999323
2014	0,999955	0,938336	-0,21866	0,814523
2015	0,999399	0,863743	-0,22923	-0,01342
2016	0,999427	0,930389	-0,18722	0,376324
2017	0,999804	0,920276	-0,24857	0,895784
2018	0,999889	0,89996	-0,30221	0,986463
2019	0,993832	0,879898	-0,28666	0,97382
2020	0,999892	0,873925	-0,29366	0,974074
2021	0,999948	0,85041	-0,2624	0,998897
2022	0,999899	0,842074	-0,25063	0,998885
Average	0,998613	0,891277	-0,25334	0,800467

Source: UN Comtrade, 2024 (processed)

The table 3, shows that Indonesian palm oil has an average TBI value of 0.99, which indicates a value greater than zero. So, Indonesian palm oil can be an exporting country. The TBI value of Indonesia's main competitor countries shows Malaysia as an exporting country (0.89), the Netherlands as an importing country (-0.25), and Thailand as an exporting country (0.80).

Product Mapping

It can be used to determine product mapping based on the RSCA and Trade Balance Index (TBI) values. The results of the analysis using Product Mapping are presented in Figure 2.

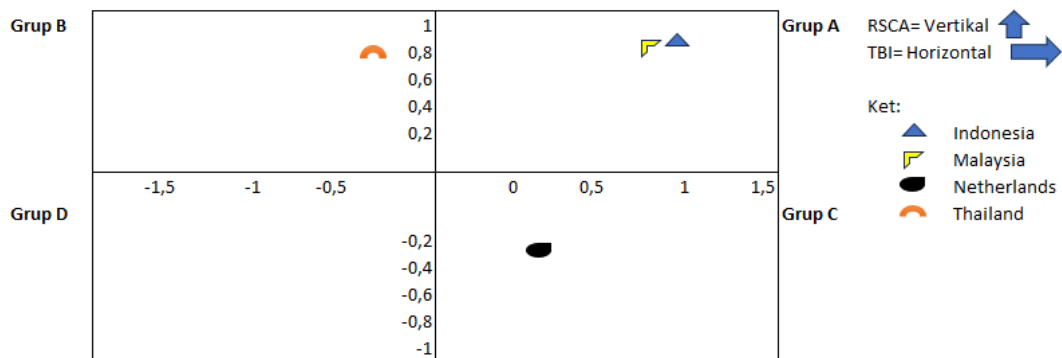


Figure 2. Product Mapping of CPO, 2024

Based on the figure 2, it can be seen that the RSCA value of Indonesia & Malaysia has a comparative advantage because the value is more than zero. Based on TBI results, Indonesia & Malaysia specialize in exports because the value is positive or more than zero. This shows that the two countries are in group A. Another competitor, Thailand, is in group B, which means that as a country that has a comparative advantage, it still does not have an export specialization, while the Netherlands shows that it is in group C, so it only has export specialization but does not have a comparative advantage.

Export Competitive Index

Export Competitive Index (ECI) analysis is used to determine the competitiveness of Crude Coconut Oil exports in terms of competitive advantage. ECI shows the ratio of a country's export market share in the world market for a particular commodity in a certain period to the ratio of a country's export share in the world market for that commodity in that period (Hadianto, 2010). The results of the analysis using TBI are presented in Table 4.

Table 4. ECI Value of Indonesian CPO Exports 2013-2022

Country	ECI Value CPO, 2013-2022									
	2014	2015	2016	2017	2018	2019	2020	2021	2022	Average
Indonesia	1,07	1,04	0,98	1,07	0,99	0,97	1,01	1,02	0,93	1,01
Malaysia	0,94	0,94	1,00	0,89	0,99	1,05	1,00	0,96	1,07	0,98
Belanda	0,88	0,91	1,06	0,92	0,90	1,04	0,89	0,84	0,93	0,93
Thailand	0,04	2,87	0,88	4,30	1,15	0,73	0,91	2,99	1,59	1,72

Source: UN Comtrade, 2024 (processed)

Based on the Table 4, the average ECI value for Indonesian palm oil is more than one, namely 1.01, and is in second place after Thailand, which shows that Indonesia has a competitive advantage or an upward trend. Thailand is in first position with an average ECI value of 1.72, indicating that Thailand has a competitive advantage or has an upward trend. Meanwhile, Malaysia and the Netherlands have an average ECI value of less than one, so the Netherlands (0.98) and Thailand (0.93) do not have a competitive advantage or are experiencing a downward trend.

CONCLUSIONS AND RECOMMENDATIONS

1. The competitiveness of Indonesian palm oil exports has a comparative advantage (RCA 54.15); based on Product Mapping analysis, Indonesian palm oil is in Group C, which means it has export specialization and has a comparative advantage.
2. The competitiveness of Indonesian palm oil exports shows a competitive advantage or an upward trend; the value shows more than one (ECI 1.01).

ADVANCED RESEARCH

This research still has limitations so it is necessary to carry out further research related to the topic "Comparative and Competitive Advantages of Palm Oil in International Markets" to perfect this research, as well as increase insight for readers.

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