THE INDOONESIAN COCONUT OIL EXPORT OPPORTUNITIES WITH MAIN TRADE PARTNER COUNTRIES IN THE INTERNATIONAL MARKET

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ABSTRACT

This study examines the opportunities for trade administration of Indonesian coconut oil in major trading partner countries in terms of the development of area size, production and productivity of coconuts, competition in the marketing of coconut oil, and demand for coconut oil in the international market. The purpose of this research is to (1) develop of area, production, and productivity of coconut in Indonesia, (2) analysis of the competitiveness of Indonesian coconut oil in major trading partner countries, and (3) analysis of trend analysis of demand for Indonesian coconut oil in the international market. The data used in this research is secondary data from UN Comtrade for 25 years (1997-2021) and FAO for 61 years (1961-2001). The method used is to describe the development of a land area, production, and production of coconut in Indonesia and the development of demand for coconut oil in Indonesia in the international market. Revealed Comparative Trade Advantage (RCTA), Revealed Symmetric Comparative Advantage (RSCA), and Trade Balance Index (TBI) analysis methods are used to determine the competitiveness of Indonesian coconut oil in the major trading countries. In addition, a product map is created based on changes in the competitiveness of Indonesian coconut oil products among the main trading partners. The results showed an increase in area, production, and production of coconuts annually. Indonesia has intense competition for coconut oil in its major trading countries. In addition, the demand for coconut oil in the international market will continue to increase due to the ever-increasing industrial needs. This is an opportunity to expand the coconut market share internationally.

Keywords: coconut oil; competitiveness; trade

INTRODUCTION

Coconut is one of the tropical plants that is spread in almost all parts of Indonesia. This commodity has many benefits, processing coconut is not only the content of the fruit, which becomes coconut milk, copra, and coconut oil, but all parts of the coconut plant can be utilized (Dwi PB, 2017). Opportunities for developing Indonesian coconut commodities and their derivative products in the international market are getting more extensive, supported by Indonesia, which has 3.7 million ha of coconut plantations, among the largest in the world (Suhascaryo & Yudiantoro, 2021). Based on the Directorate General of Plantations (2022), the Riau region is the highest generating area, namely 380 thousand tons (11.92%), North Sulawesi with 265 thousand tons (9.33%), East Java with 235 thousand tons (9.17%), and 69.58% spread in all coconut plantation areas in Indonesia except Riau, North Sulawesi, and East Java.

Based on FAO information for 2021, the total area for coconuts, generally, is 5.07% of all rural areas in Indonesia, around 2.82 million ha. The development of the coconut range in Indonesia from 1961 - 2021 saw an increment within the coconut range for 61 a long time, with a development rate of 149.97%. The coconut region increments annually with a normal of 1.60%. In line with this, Indonesia's coconut production for 61 years (1961 - 2021) has increased with a growth rate of 203.71%, with an increased value of 11.51 million tons. Coconut production, processed into coconut oil traded on the world market, has a positive outlook, although every year, it varies.
Global demand for coconut products and coconut derivatives continues to change and increase in line with the development of global value chains (Suprehatin & Al Naufal, 2021), one of them is coconut oil. Export products of semi-finished coconut oil are the most extensive export product with 26.28% of all exported coconut derivative products (Direktorat Jendral Perkebunan, 2022). The trend of demand for Indonesian coconut oil products tends to increase yearly. The expanding request for Indonesian coconut oil items offers future openings for Indonesia’s trade to major exchanging accomplice nations, namely Malaysia, the Netherlands, the United States, China, and South Korea. Indonesia’s agricultural sector is a priority sector to be developed in national economic development (Anggrasari & Saputro, 2021), especially coconut commodities. Indonesia is one of the biggest coconut-producing and sending-out nations in the world showcase (Heriyanto et al., 2019). However, Indonesia still has an absolute advantage over its competitors, namely the Philippines, India, Sri Lanka, and Brazil. Indonesia still needs to increase its competitive and comparative advantages so that coconut commodities and derivative products, especially coconut oil products, can increase its market share. Indonesia has a significant advantage in the number of workers and raw material resources, whereas not all countries have it (Anggrasari et al., 2021).

Expanding the Indonesian coconut oil exchange implementation is carried out by opening trading on leading exchanges in partner countries and potential partners, which are still wide open. According to Sehusman (2021), Indonesia has various problems that can hinder the coconut oil trade, including overlapping land regulations and plantation regulatory issues, which underlie the need for regional laws to protect land and empower farmers. The coconut industry faces social challenges regarding cholesterol in coconut oil carried out by competitors and seed problems. In expansion, Indonesia should keep up and progress quality standards and maintainability. Different endeavors got to be made by Indonesia to grow its showcase share, progress exchange execution, and make strides in the quality and efficiency of Indonesian coconut oil.

The study of trade opportunities for Indonesian coconut oil with major trading partners has not been widely discussed. Research conducted by Astuti & Paksi (2022), Xia & Dewi (2022), and Sukmaya & Perwita (2018) only look at the competitiveness of Indonesian coconut oil compared to its competitors in the international market. Aulia et al., (2020) discussed the likeness of Indonesia’s coconut oil trade with competing nations. Whereas Purba et al., (2021) only conducted a study of the competitiveness of refined coconut oil in the central export destination countries. Hence, this inquiry can complement past thinks since it centers on openings for Indonesian coconut oil, particularly unrefined coconut oil, and handled coconut oil and its subordinates in major exchanging accomplice nations, which are not as it was seen from the trade competitiveness side but too from the arrive and request patterns for Indonesian coconut oil within the international market. Based on this, this inquiry about ponder is depicted through (1) the development of the area, production, and productivity of coconuts in Indonesia, (2) an analysis of the competitiveness of Indonesian coconut oil in major trading partner countries, and (3) an analysis of trends in demand for Indonesian coconut oil in the international market.

MATERIALS AND METHODS

The commodity studied was coconut oil based on the Harmonized Commodity Description and Coding System (HS) code sourced from UN Comtrade (2023), including codes 151311 (crude coconut oil) and 151319 (processed coconut oil and its derivatives). Indonesia's trading partner countries were selected based on Indonesia's largest export destination countries for crude and refined coconut oil and their derivatives for the last five years. Indonesia's major trading partner countries for unrefined coconut oil (HS 151311), namely Malaysia, the Netherlands, and the United States, and Indonesia's central trading partner countries for refined coconut oil and its derivatives (HS 151319), namely China, the United States, South Korea.

Analysis Method

The analytical method used for (1) the development of area, production, and productivity of coconut in Indonesia and (3) an analysis of trends in demand for Indonesian coconut oil in the international market is a descriptive analysis method. Objective (2) is an analysis of the competitiveness of Indonesian coconut oil in major trading partner countries by using the Revealed Comparative Trade Advantage (RCTA), Revealed Symmetric Comparative Advantage (RSCA), and Trade Balance Index (TBI) methods. The three competitiveness analyses complement the results of measuring export competitiveness. The RCTA method looks at export performance relative to imports, while the RSCA looks at export and TBI performance to determine whether a country is a net importer or exporter.
Revealed Comparative Trade Advantage (RCTA)

According to Tambunan (2004), the RCTA Index equation is:

\[
RCTA_c = RXA_c^m - RMA_c^m
\]  (1)

Note: \(RXA_c^m\) = Revealed Export Competitiveness of Indonesia in commodity c to partner countries, \(RMA_c^m\) = Revealed Import Competitiveness of Indonesia in commodity c to partner countries, c = coconut oil (HS 151311 / 151319). The provision of the RCTA value is that if the index value is positive, Indonesia has high competitiveness. If the index value is negative, Indonesia has low competitiveness.

Revealed Symmetric Comparative Advantage (RSCA)

RSCA is a refinement of RCA (Revealed Comparative Advantage) introduced by Balassa (1965). The RSCA index is formulated as follows (Dalum et al., 1998):

\[
RSCA = \frac{RCA-1}{RCA+1}
\]  (2)

Indonesia has a comparative advantage if the RSCA index value exceeds zero. If the index is below zero, Indonesia has no comparative advantage.

Trade Balance Index (TBI)

\[
TBI = \frac{X_{IJ} - M_{IJ}}{X_{IJ} + M_{IJ}}
\]  (3)

Note: \(X_{IJ}\) = Value of Indonesian coconut oil exports to trading partner countries, \(M_{IJ}\) = Import value of Indonesian coconut oil from trading partner countries. TBI values are between -1 to +1. If the TBI value is -1, then the country is a net importer; if the TBI value is +1, then the country is a net exporter.

The results between the RSCA and TBI indices can be used to determine product mapping, which makes it possible to develop a matrix that facilitates the division of the analyzed product range into four parts in the level of comparative advantage (RSCA) and the level of export specialization (TBI) (Figure 1). Product mapping is carried out to track changes in the competitiveness of Indonesian coconut oil commodities with major trading partners.

**Figure 1.** Product mapping with RSCA and TBI values. Source: Widodo (2009)

**RESULT AND DISCUSSION**

Indonesia's coconut oil commodity, namely crude coconut oil and refined coconut oil and their derivatives, has the potential to be developed on the international market, especially in Indonesia's major trading partner countries. Indonesia's major trading partner countries for the coconut oil
commodity are Malaysia, the Netherlands, the United States (crude coconut oil), China, the United States, and South Korea (refined coconut oil and its derivatives). Indonesia’s export opportunities can be seen from the potential of Indonesia’s natural resources, namely the development of area, production, and productivity for 61 years (1961–2021), and comparative competitiveness as seen from Indonesia’s trade performance with primary trading partner countries, competitiveness and oil demand trends Indonesian coconut in the international market for 25 years (1997–2021).

Development of Area, Production, and Productivity of Indonesian Coconut Commodity

According to the Directorate General of Plantations, Indonesia’s largest coconut area in 2020 came from smallholder plantations, 99.09% (Sehusman, 2021). FAO data (2023) shows that in 2021 the total size of Indonesian coconuts will be 5.07% of the total agricultural area in Indonesia, which is around 2.82 million ha. In 2021 Indonesia had the second largest coconut harvested area in the world after the Philippines, which is 24.89% of the world’s total harvested area. The development of the coconut area in Indonesia from 1961–2021 can be seen in Figure 2.

The growth rate of the coconut area for 61 years is 149.97%. The coconut area increases yearly with an average of 1.60%. The most significant increase occurred in 2001, with a rise of 9.47%, but in 2002 it experienced the most significant decrease of 7.13%. The highest coconut area occurred in 2015, which was 30.30 million ha; after 2015, there was a tendency to decrease until 2020 and increase again in 2021. This happened due to a decrease in the area of coconut plantations in Sumatra and Java as central coconut plantations in Indonesia (Pangestu et al., 2022). It may be challenging to expand coconut land due to the conversion of agricultural land to non-agriculture and the transformation of coconut areas to other commodities. On the other hand, the site is one of the essential production factors for increasing Indonesian coconut production. One way that can be done to increase production through agricultural intensification is by rejuvenating old coconuts (Kristiana, 2014; Andilan et al., 2019), use of superior seeds (Wardanu & Anhar, 2014), developing commodities adapted to the potential of land resources (Hidayati et al., 2019).

FAO data shows that Indonesia’s coconut production for 61 years (1961–2021) has increased with a growth rate of 203.71%, with an increased value of 11.51 million tons, as shown in Figure 3. Coconut production 2021 reached 17.15 million tons in the form of coconut (inside the skin (endocarp)). The average annual production growth is around 1.99 percent, with the most significant increase in 2007 at 14.60%. However, in 1982 production experienced the most significant decline, 10.52% percent. The decline in coconut production is suspected to be due to pests and diseases, which have caused a decrease in Indonesian coconut production (Hosang & Warokka, 2018; Marhaeni, 2016). In addition, the lack of fertilizer (Fajrin & Muis, 2016) and a reduced number of productive plants (Vaulina, 2019; Khairizal et al., 2018). Coconut cultivation techniques that are not good also cause production to be not optimal (Sangadji et al., 2022). The highest coconut production occurred in 2007, 19.62 million tonnes, due to an increase of 9.43%.

Based on FAOSTAT data (2022), Indonesia’s coconut production in 2021 ranks first in the world with a share of 26.77%, followed by the Philippines, which ranks second, India third, and Sri Lanka and Brazil, which ranks fourth and fifth. On the other hand, Indonesia’s coconut productivity is far below Brazil and India, with productivity in 2021 of 13.2 tons/ha and 6.5 tons/ha. From 1961 to 2021, coconut productivity in Indonesia increased by 1.08 tons/ha with a growth rate of 21.50%. Coconut productivity shows a positive trend, with an average increase of 0.43% per year. The average coconut productivity in Indonesia for the last five years is 6.08 tons/ha. Coconut productivity
in Indonesia can still be optimized by implementing Good Agriculture Practices (GAP) (Kumar et al., 2022; Kalidas et al., 2021; Rodrigues et al., 2018).

![Production of Indonesia's coconut commodity production in 1961-2021](image1)

**Figure 3. Development of Indonesia's coconut commodity production in 1961-2021**

Indonesia has a geographical advantage regarding its natural resources, Indonesia's relatively large coconut area with favorable climatic conditions. However, in terms of human resources, the quality of human resources is low due to a lack of attention from the government, causing farmers to use still traditional coconut cultivation techniques, which have an impact on not optimal production and productivity of coconut commodities. In recent years the government has begun to provide counseling and assistance to farmers with better seed distribution, and an old plant revitalization program increased world oil prices. So the coconut commodity is still very the potential to be developed and is still in demand by the community (Heriyanto et al., 2019).

![Productivity development of Indonesia's coconut commodity in 1961-2021](image2)

**Figure 4. Productivity development of Indonesia's coconut commodity in 1961-2021**

**Indonesian Coconut Oil Export Performance in Main Trading Partner Countries**

Even though Indonesia's coconut oil exports in the international market fluctuate yearly, the export performance has a positive trend. Over the past 25 years, the value of Indonesia's exports has increased by 2.4 times. In 2021, the export value of Indonesian coconut oil will reach US$959 million, the highest in the last 25 years. However, there was also the highest increase in imports of coconut oil in the previous 25 years, with an import value of US$107 million. This shows that the consumption of coconut oil in the domestic and international markets is increasing. Processing coconut oil is more profitable than just selling it as copra. In addition, coconut oil is used as a raw material in various industrial fields, such as the food, health, and cosmetic industries (Dewanti et al., 2020). The lowest export value occurred in 2001, with a value of US$ 111 million. The low export value can be caused by increased domestic demand for coconut (Subekti et al., 2018). In addition, in 2001, there was an increase in the exchange rate of IDR10,400/dollar. In America and Europe, many mutual funds are facing massive withdrawals. Domestic pressure occurs because, at the end of the year, the demand for local corporations always increases (Primahesa et al., 2022). This causes a decrease in demand for imports from partner countries.
Indonesia's trade performance shows that Indonesia is a net exporter of coconut oil. Indonesia exports coconut oil in the form of crude oil and refined oil. Indonesia has several partner countries as coconut oil export destinations. During 2017-2021, Malaysia, the Netherlands, and the United States were the leading importers of Indonesian coconut oil. China, the United States, South Korea, Singapore, and Russia are the major export destination countries for refined coconut oil and its derivatives. The global supply of coconut oil is dominated by developing countries for its derivative products. Countries that dominate imports of coconut oil from developing countries are the United States, the Netherlands, and Germany (Dewanti et al., 2020).

For 20 years, Indonesia's trade balance of coconut oil with its trading partner countries has been positive even though its value has fluctuated. The trading value of crude coconut oil is higher than refined coconut oil and its derivatives. Compared to refined coconut oil, the increased demand for unrefined coconut oil in Indonesia is due to partner countries processing coconut oil from semi-finished products into products with high export value. One of them is the Netherlands which is an exporter to European countries. So, the demand for refined coconut oil and its derivatives will affect the demand for crude coconut oil. (Sukmaya, 2017).

Refined coconut oil and its derivatives generally have better marketing performance than crude coconut oil. The trade balance of refined coconut oil and its products with the three partner countries increased during the five periods. In 2021, China's imports of refined coconut oil were expected to reach 170 million US$, an increase of almost two times from the previous year (86 million US$). 49% of processed coconut oil imported by China comes from Indonesia; the rest is imported from the Philippines (27%), Malaysia (17%), and other countries. Korea also achieved the highest import figure of refined coconut oil in 2021, valued at US$146 million. The import increase reached four times compared to the previous year (34.9 million US$). This was due to the increasing demand for domestic coconut oil. Based on UN Comtrade data (2023), in 2021, there will be an increase in imports of processed coconut oil by China and South Korea of around 126 million US$ and 41 million US$.
Analysis of Indonesia’s Coconut Oil Export Competitiveness

The analysis results of the export competitiveness of crude coconut oil (HS 151311) and processed coconut oil and its derivatives (HS 151319) fluctuate. Still, Indonesia has high competitiveness, as indicated by positive RCTA values in Malaysia, the Netherlands, the United States, and China. Only in the South Korean Market, refined coconut oil and its derivatives have low competitiveness. Indonesia’s low competitiveness in the South Korean market is due to the high total import value of all commodities from South Korea, which affects Indonesia’s level of competitiveness.

The competitiveness of coconut oil in the major trading partner countries can also be seen using the product mapping of the RSCA and TBI values divided into four groups. The study results show that the commodity crude coconut oil (HS 151311) and refined coconut oil and its derivatives (HS 151319) are in group A. This group includes crude and refined coconut oil and the decline in products that have a comparative advantage and as a country exporters or have export specialization. These results show that the Indonesian crude palm oil commodity in Malaysia, the Netherlands, and the United States has a comparative advantage in being a net exporter and has an export specialization or as an exporter country. Similarly, refined coconut oil and its derivatives have a comparative advantage as net exporters and export specialists in China, the United States, and South Korea.
Pangestu et al., (2022) explained that Indonesia has a comparative and competitive advantage in the world market in crude coconut oil products. Indonesia is a frequent exporter and is considered a country specializing in selling crude coconut oil. According to Purba et al., (2021), processed coconut oil products and their derivatives have comparative competitiveness in all export markets. However, exports did not grow well in the South Korean market. The Chinese market is open, but Indonesia cannot capitalize on this missed opportunity because Indonesia's share of exports continues to decline. Meanwhile, Indonesia has better market potential in the United States market due to the dynamic and increasing growth in exports of refined coconut oil and its derivatives.

Figure 9. Mapping of Indonesian crude coconut oil products with significant trading partners 1997 and 2021

Figure 10. Mapping of Indonesian processed coconut oil products and their derivatives with leading trading partners in 1997 and 2021

The results of previous studies explain that in the international market, Indonesian coconut oil has a comparative advantage (Sukmaya, 2017; Aulia et al., 2020). Indonesia is entering a maturity stage in the coconut oil market, which shows that Indonesia is a coconut oil exporting country and has strong competitiveness in the international market. (Xia & Dewi, 2022). The increase in the competitiveness of coconut oil can be encouraged because the production and competitiveness of copra have increased to meet export needs. The decline in competitiveness can be caused by the entry of new producers in the international market (Sukmaya & Perwita, 2018), which shifted Indonesia's market share. Based on FAO data (2023), Papua New Guinea's copra production has continued to increase over the last ten years (2011-2021) at an average rate of 4% per year.

Intense competition in the international market can be one of the causes of Indonesia's fluctuating competitiveness. One of Indonesia's competitor countries is the Philippines which has strong competitiveness in the global market (Aulia et al., 2020). According to Dewanti et al., (2020), the Philippines is the largest coconut oil exporter after the United States and the Netherlands. Indonesia's coconut oil product competitor is the Philippines. The drop in the price of coconut oil in the Philippines could be one of the reasons for the reduction in demand for coconut oil in Indonesia. The price of substitute goods can also cause a decline in competitiveness. Palm oil is also one factor that
has reduced the demand for coconut oil in the Netherlands. Palm oil and coconut oil are classified as commodities that replace each other.

**Trends in Demand for Indonesian and World Coconut Oil in the International Market**

The demand for coconut oil in the international market is dominated by several countries developing derivative products (e.g., the Netherlands and the United States) (Dewanti et al., 2020). Malaysia and the Philippines are Indonesia's competitor countries and have strong competitiveness, just like Indonesia (Heriyanto et al., 2019).

The positive drift of Indonesia's unrefined coconut oil sends out, and the expanding utilization of crude coconut oil within worldwide advertising demonstrates a colossal advertising potential so that countries with competitiveness in the commodity of coconut oil have an excellent opportunity to dominate the market. (Pangestu et al., 2022). Vegetable oil subordinates play a crucial part in the worldwide oil nourishing exchange the world request for vegetable oil proceeds to extend. Crude coconut oil could be a vegetable oil that's utilized in vegetable oils around the world due to well-being concerns (Ximenes et al., 2022). In Indonesia, there is competition for market share between palm oil and crude coconut oil. In any case, crude oil has the advantage of being moderately costly compared to other vegetable oil auxiliaries.

![Figure 11. Trends in demand for Indonesian and world coconut oil in the international market Years 1997-2021](image)

Another generation issue for the small-scale coconut oil industry is the instability over the crude fabric cost of new coconut meat. The increase in the price of coconut oil was due to the rise in coconut meat. This provides opportunities for competing countries to expand their trade worldwide because they have more competitive prices; Indonesia's coconut output reaches 18.3 million tons per year, making Indonesia the largest coconut producer in the world (FAOSTAT, 2021). Indonesia must create approaches that favor coconut ranchers and the industry regarding exchange streams (Ximenes et al., 2022). The low supply of mechanical crude materials, monoculture manor frameworks, wasteful supply chains, cost variances, restricted item enhancement, and low quality cause the meager salary of coconut ranchers and the coconut industry (Alouw & Wulandari, 2020).

The competitive advantage of Indonesian coconut crude is being able to compete in the international market. Indonesia benefits from geographical conditions that can produce coconuts in abundant quantities. Indonesia has become the world's largest coconut producer; even though Indonesia's world export ranking is in second place after the Philippines, Indonesia still includes a competitive advantage in developing rough oil as a trade product. This may be seen from Indonesia's add-up to trades. Crude coconut oil is Indonesia's leading source of animal and vegetable fats and oils, with the highest export value in 2021 (Astuti & Paksi, 2022).

Crude coconut oil is one of Indonesia's rural commodities. The world's demand for natural coconut, which increases yearly, affects oil-producing countries, including Indonesia. It can be seen that Indonesia's crude coconut oil has far better competitiveness than other Asian and European countries. Natural coconut oil has noteworthy esteem and openings, as the hypothesis of competitive advantage proposes. As a potential send-out advertisement in Asian and European nations, particularly the Netherlands, crude coconut can develop financially in Indonesia. Presently is time for the government, society, and other on-screen characters to see and realize that palm oil can be traded in Indonesia (Astuti & Paksi, 2022).
As a result of these advancements, Indonesia must reinforce its neighborhood coconut oil industry to preserve its position within the worldwide coconut exchange. To extend volume and esteem, the crude coconut industry must be strengthened into refined coconut oil and its subsidiaries. Trade since it has more significant benefits. The production of crude and refined coconut oil and its derivatives is adjusted to the demand and supply of the local coconut oil production industry. From the supply side, raw material challenges and subsidies can be reflected through capacity building with human resources such as coconut farmers and copra and coconut oil traders. The coconut industry also needs investment incentives for copra and coconut oil as appropriate production technologies to help increase domestic coconut oil production (Fudjaja et al., 2020). Meanwhile, from the demand side, directing exports of raw coconut shells and processed coconut shells and their derivatives to be more market-oriented, responsive to pressure from the government and the external environment, and developing the Indonesian coconut oil industry (Aulia et al., 2020).

**CONCLUSIONS AND RECOMMENDATIONS**

Indonesian coconuts' area, production, and productivity tend to increase yearly. Indonesia has strong coconut oil competitiveness in major trading partner countries. In addition, the demand for coconut oil in the international market will continue to increase due to rapidly growing industrial needs. This is an opportunity and a challenge for Indonesia to expand its market share so that Indonesia can become the largest coconut exporter in the international market. Increasing the competitiveness of Indonesian coconut oil can be done by empowering the government to assist farmers in providing added value to coconut oil. Then from a production perspective, it is necessary to increase production, productivity, and quality through Good Agriculture Practice (GAP) for the sake of the sustainability of the production of coconut commodities and their derivative products. In addition, it is necessary to develop market intelligence and increase the role of attaches in Indonesia's coconut oil trade diplomacy with primary trading partner countries. In the future, Indonesia can establish cooperation with countries that have a strong correlation in each direct coconut product so that it can affect the world price of coconut oil.

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