

**COMPETITIVENESS ANALYSIS OF INDONESIAN ESSENTIAL OIL AS AN EXPORT COMMODITY IN THE INTERNATIONAL MARKET USING REVEALED COMPARATIVE ADVANTAGE (RCA) METHOD****Putu Fajar Kartika Lestari<sup>1\*</sup>, Amallia Ferhat<sup>2</sup>, and Mohammad Prasanto Bimantio<sup>3</sup>**<sup>1</sup>Faculty of Agriculture and Business, Universitas Mahasaraswati, Denpasar, Indonesia<sup>2</sup>Faculty of Agriculture, Institut Pertanian STIPER, Yogyakarta, Indonesia<sup>3</sup>Faculty of Agricultural Technology, Institut Pertanian STIPER, Yogyakarta, Indonesia\*Correspondence Email: [amallia@instiperjogja.ac.id](mailto:amallia@instiperjogja.ac.id)

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**ABSTRACT**

The demand for Indonesian essential oils in the global market has trended quite well in the past decade. However, there has been no significant effort to increase the competitiveness of Indonesian essential oils in the global market. Seeing the increasing demand for Indonesian essential oils and the competition between the fierce producing countries, it shows that Indonesian essential oils have the potential to be developed, especially by looking at Indonesia's position which is in the 6th order as the world's essential oil exporter in the last ten years (2011-2020). The purpose of this study is to determine the competitive position of Indonesia's essential oil exports in the international market using a comparative advantage approach and competitive advantage with the five main export destination countries of Indonesian essential oils (United States, India, France, China, and Singapore) using the Revealed Comparative Advantage (RCA) analysis method, based on comparative advantage analysis, Indonesia's essential oil position commodities are said to be strongly competitive because Indonesia's essential oil commodities have a comparative advantage or  $RCA > 1$  value in all major export destination countries that are the object of research, with the highest competitiveness between Indonesia and France. This happens because of the trend of export value that decreases from year to year and the market is less dynamic. Indonesian essential oil commodities can be declared quite strongly competitive but development is still needed so that Indonesian essential oil commodity products are increasingly in demand in export destination countries so that export market share increases consistently from year to year and Indonesian essential oil commodities are increasingly competitive.

**Keywords:** *competitiveness, essential oils, comparative advantages, RCA***BACKGROUND**

As an agricultural country, Indonesia has natural wealth in the form of large landscape, superior varieties and an adequate climate for plantation crops so as to produce various types of natural products including cloves (*Eugenia aromatica*), fragrant roots (*Vetivera zizonioides*), patchouli (*Pogostemon cablin*), citronella (*Cymbopogon nardus*), nutmeg (*Myristica fragans*), and so on which are raw materials for essential oils. Essential oil or commonly referred to as volatile oil is one of the plantation commodities

that is a support for Indonesia's national income and foreign exchange. Indonesia's total essential oil exports in 2020 reached US\$ 215,807 million (International Trade Centre, 2022). Essential oils also known as etheric oils or flying oils (volatile oils) are produced by plants. The oil is volatile at room temperature without decomposition, has a tart taste (pungent taste), smells fragrant according to the smell of the producing plants, generally soluble in organic solvents and insoluble in water.

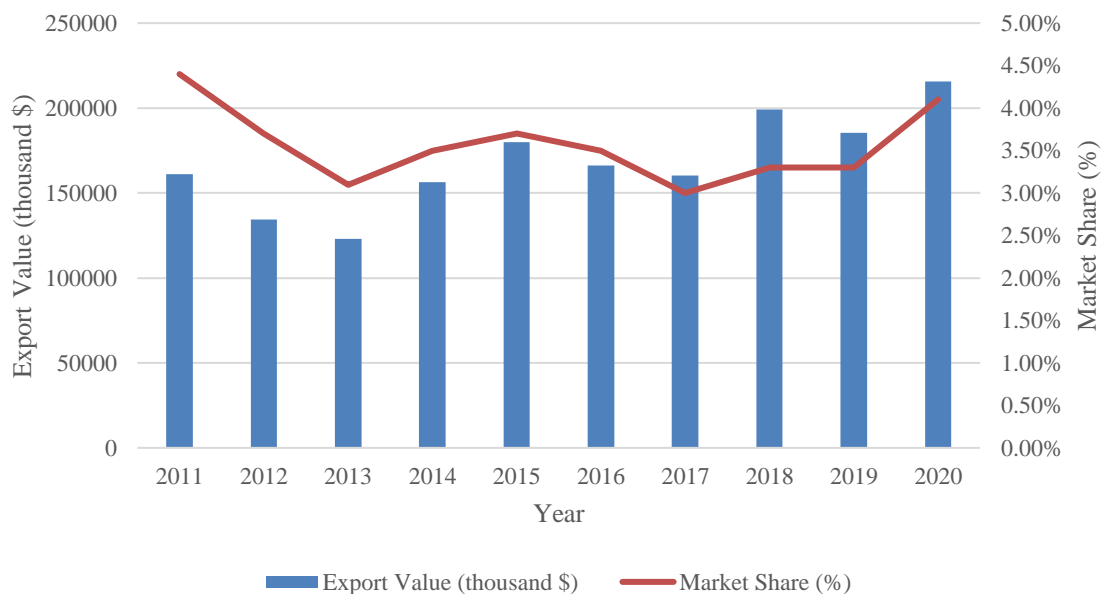
The use of essential oils is huge, depending on the type of plant taken from the distilled. Essential oils are used as raw materials in flavorings as well as fragrances. The cosmetics and perfume industry uses essential oils sometimes as fragrances for soap, toothpaste, shampoo, lotions and perfumes. The food industry uses essential oils after undergoing processing as flavors or adding flavors. The pharmaceutical industry uses it as an anti-pain, anti-infective, bacterial killer drug. The utility of essential oils as fragrances is also used to mask the unpleasant odors of other ingredients such as insect repellent drugs required by the preservatives and insecticidal agents' industry.

International Trade Centre (ITC) data shows that Indonesia has a crucial role in the world essential oil market because it is one of the largest producers of essential oils for several commodities. Indonesian essential oils, especially patchouli oil, have been known to have the best quality in the world essential oil market. Indonesia is the world's main producer of patchouli oil, controlling around 95% of the world market. Around 85% of Indonesia's essential oil exports are dominated by patchouli oil with a volume of 1,200-1,500 tons/year, and are exported to several countries including Singapore, the United States, Spain, France, Switzerland, England, and other countries (Kementerian Pertanian Direktorat Jenderal Perkebunan, 2020). For a decade (2011-2020), there were ten countries that dominated the world essential oil market, including India, the United States, France, China, Brazil, Indonesia, Germany, the United Kingdom, Argentina, and Spain. Indonesia is ranked as the 6th largest exporter of essential oils.

Figure 1 shows that the export value of Indonesia's essential oils is very fickle with growth from 2011 to 2020 of 34% and an average annual growth of 3.65%. Although in ten years there were several periods of decline in the value of exports, namely in 2012-2013, 2016-2017, and 2019, but in the long-term trend, the value of exports remains up. However, it can be seen that the contribution of Indonesia's essential oil exports to the world market is also fickle but tends to decline. The highest market contribution occurred in 2011 at 4.4%. Market contribution increased in the 2014-2015 period but stagnated at 3.3% for the 2018-2019 period and then rose again to 4.1% in 2020.

Despite being the world's 6th exporter of essential oils, Indonesia also imports essential oils from other countries. This is because certain types of essential oils such as lavender oil and menthol must be imported from a number of countries, such as France and India. Indonesia needs both types of essential oils for raw materials. For example, essential oil from lavender for the raw materials of the perfume industry, while menthol essential oil is used for the food industry, as well as toothpastes whose demand is constantly increasing. Local essential producers cannot make lavender and menthol essentials because plants for these types of essentials cannot be grown in tropical countries, thus they can only live in the subtropics and Mediterranean regions. The types of essential oils produced in Indonesia include lemongrass, cloves, patchouli, and nutmeg. All types of plants it blooms in the tropics (Tragistina, 2011). The total import value of Indonesian essential oils in 2020 reached US\$ 145,799 million. The largest imports of Indonesian essential oils are from China, India, and Madagascar. In 2020, the total value of imports from China reached US\$ 58,783 million, from India worth US\$ 17,583 million, and from Madagascar worth US\$ 15,756 million. Until now, the domestic industry of essential oil in Indonesia is

still limited to exporting products that have not been processed as finished products. In addition, there is still a low understanding of farmers and cooperatives in implementing a good plantation manufacturing process (Alamil Huda, Meitasari, & Widyawati, 2021).



**Figure 1.** Export Value and Contribution of Indonesian Essential Oils to The World Market (2011-2020)

Source: International Trade Centre, 2022.

Research conducted by Bara (2020) on the analysis of the competitiveness of Indonesian essential oils in the international market using the Revealed Comparative Advantage (RCA) and Export Product Dynamics (EPD) methods with databases for 2009-2018. The results showed that Indonesian essential oils are strongly competitive in the United States, France, Spain, and Singapore. The results of the EPD Calculation show that the market position of Indonesian essential oil is in the rising star position in the United States and India, Falling Star in France, Spain, and Singapore. The results of the Gravity Model estimation found that the variable export prices of Indonesian essential oil exports, the exchange rate against the currency of the export destination country, and the gap of the Indonesian economy to the destination country had a significant effect on the export value of Indonesian essential oils.

Research conducted by Faradiva (2020) on the analysis of the competitiveness of Indonesian essential oil exports using the Revealed Comparative Advantage (RCA) and Export Product Dynamic (EPD) methods with a database for 2014-2018. From the calculation of the RCA, it shows that Indonesia's essential oil commodities have a comparative advantage above the world average, meaning that the country concerned has a very strong competitiveness ( $RCA > 1$ ). Meanwhile, based on the results of EPD, the market position of Indonesian essential oil commodities in France and China occupies the "Rising Star" position, in Spain Indonesia is in the "Lost Opportunity" position, in the United States, India and Singapore Indonesia is in the "Retreat" position. This means that Indonesian essential oils have a comparative advantage but do not yet have a competitive advantage in some of these countries. This is indicated to occur due to the lack of skilled labor, supporting infrastructure, rare and uncompetitive

supporting industries, sophisticated machines and modern equipment must be imported and the price is expensive so that the productivity and quality of Indonesian essential oils cannot be maximized.

Research conducted by Cahyaning (2021) regarding the competitiveness and level of competition of Indonesian essential oils in the global market using the HI, RCA, EPD, and TSI methods. The Herfindahl index (HI) test results obtained an average value of 826.20 for the United States of America; 1,622.82 for Singapore; 1,692.49 for the India; 1,006.04 for Spain; and 485.60 for the French. The results of assessing the potential competitiveness of Indonesian essential oils based on the Revealed Comparative Advantage (RCA) show that Indonesian essential oils have good export opportunities in the Spanish and French markets with an average RCA value of 19.38 and 28.45, respectively, which is indicated by the growth trend of RCA values continuing to increase every year. The competitive potential of Indonesian essential oils based on Export Product Dynamic (EPD) shows that Indonesian essential oils have a competitive advantage in all five main destination countries by being in the Rising Star position. The trade specialization index (TSI) test results obtained a value of 0.61 for the United States; 0.47 for India; 0.66 for Spain; and 0.59 for France and in Singapore at 0.87. The conclusions of this study show that Indonesian essential oil has an oligopoly in Singapore and India. While in the United States, Spain and France are in a monopolistic market structure. Indonesian essential oils have comparative advantages and competitive advantages in all five of its main destination countries. Indonesian essential oil specializes in the stage of expanding exports in all four destination countries and specializes as a net exporter country in Singapore.

According to Ekananda (2014) that competitiveness is the ability to produce products and services that meet international testing, at the same time it can also maintain a high and sustainable level of income, or the ability of the region to produce a high level of income and job opportunities while remaining open to external competition. Competitiveness can also be interpreted as the nation's capacity to face the challenges of competition in the international market and still maintain or increase its real income. Rahardja (2008) a country that doesn't have competitiveness will be abandoned by the market. By not having competitiveness means not having an advantage, and not excelling which shows there is no reason for a country to survive in a competitive market for the long term. Competitiveness relates to how effective a country is in a competitive market, compared to other organizations that offer the same or similar products or services. Countries that are able to produce good quality products or services are effective countries in the sense that they will be able to compete. And Apridar (2009) told that The Heckser-Ohlin theory considers that a country will export commodities whose production absorbs more factors of relatively abundant production and at low prices in the country, and at the same time the country will import commodities whose production requires relatively scarce resources and has a high price in the country. Furthermore, the law of comparative advantage applies with several assumptions, namely (1) there are only two countries and two commodities, (2) trade is free, (3) there is perfect labor mobility inside but there is no mobility between two countries, (4) constant production costs, (5) no transportation costs, and (6) no technological changes.

Indonesia is still listed as one of the world's largest suppliers of essential oil raw materials, even once supplying up to 90% of patchouli essential oil (around 1,600 tons year). Of the 150 types of essential oils traded in the international market, 40 of them can be produced in Indonesia, but only a few that are used commercially and that meet export quality are only 12 types such as cinnamon oil, fragrant root oil, sandalwood oil, kemukus oil, patchouli oil, cananga oil, nutmeg oil, clove oil, and eucalyptus oil (Rahmi, Competitiveness Analysis of Indonesian Essential Oil (Kartika et al., 2023)

2018). The demand for Indonesian essential oils in the global market has trended quite well in the past decade. However, there has been no significant effort to increase the competitiveness of Indonesian essential oils in the global market. Seeing the increasing demand for Indonesian essential oils and the competition between the fierce producing countries, it shows that Indonesian essential oils have the potential to be developed, especially by looking at Indonesia's position which is in the 6th as the world's essential oil exporter in the last ten years (2011-2020). Increasing the competitiveness of essential oils by looking at the development of the world market is a must. In this study, aims to analyze the competitive position of Indonesian essential oils in the world market by using the comparative advantages of Indonesian essential oil commodities measured using the Revealed Comparative Advantage (RCA) analysis method to see whether Indonesian essential oils are competitively high or low. The results of this study will be used as a reference for international trade specialization and increasing the competitiveness of Indonesian essential oils to Indonesia's export market share.

## RESEARCH METHODS

This research has a scope that includes the competitive position of Indonesia's essential oil exports in the global market with an analysis in terms of comparative advantages. The countries used as the object of this study consist of five main importing countries of Indonesian essential oils, there are United States, India, France, China, and Singapore. This study used secondary data in the form of a time series for ten years (2011 to 2020). The essential oil data that is the object of this study is a combination of essential oils as a whole (patchouli, lemongrass, fragrant root and others), with group code 3301 on the Trade Map International Trade Centre (Trade Map ITC) website. The data used was obtained from several sources including the ITC, the Central Statistics Agency (BPS), books, theses, journals, and various sites related to research.

Revealed Comparative Advantage (RCA) is an analytical tool used to analyze the comparative advantage of a commodity within a country. RCA is one of the methods used to measure the export performance of a commodity from a country by evaluating the role of exports of certain commodities in a country's total exports compared to the share of these commodities in world trade. The data used is time series data on the export value of Indonesian essential oil based on export destination countries (India, the United States, France, China, and Singapore) from 2011 to 2020.

The variable measured is the performance of Indonesia's essential oil exports to destination countries. Variable measurements are carried out by calculating the share of the export value of Indonesian essential oil commodities to the total exports of all Indonesian commodities to the importing country of Indonesian essential oil then comparing with the share of the export value of essential oils from all countries to the total export value of all commodities from all countries to the importing country of Indonesian essential oils. So that it can be quantitatively known the competitiveness of Indonesian essential oils in the destination country. According to Tambunan (2004) the calculation method of RCA is as follows:

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

## Information:

RCA : RCA value

X<sub>ij</sub> : The export value of essential oil commodities from Indonesia to the destination countryX<sub>j</sub> : The total value of exports of all commodities from Indonesia to the destination country for Indonesian essential oil exportsX<sub>iw</sub> : The export value of essential oil commodities from all countries to the destination country of Indonesia's essential oil exportsX<sub>w</sub> : The total export value of all commodities from all countries to the destination country for Indonesian essential oil exports

If the value of  $RCA > 1$ , then it is stated that the products have a comparative advantage or are strongly competitive. However, if the value of  $RCA < 1$ , then it is stated that these products do not have a comparative advantage or are weakly competitive. In addition, the RCA Index value can also be classified into 4 classes (Faradiva, 2020).

1. Class a:  $0 < RCA \leq 1$  (indicating that the commodity has no comparative advantage)
2. Class b:  $1 < RCA \leq 2$  (indicating that the commodity has a weak comparative advantage)
3. Class c:  $2 < RCA \leq 4$  (indicating that the commodity has a medium comparative advantage)
4. Class d:  $4 < RCA \leq \infty$  (indicating that the commodity has a strong comparative advantage).

## RESULT AND DISCUSSION

### Comparison of Exports of Indonesian Essential Oil Commodities in 5 Main Importing Countries for the 2011-2020 Period

The maturity of Indonesia's essential oil exports commodity in the 5 main importing countries has different trends according to the observations in table 1 for export value, table 2 for export quantity, and table 3 for Indonesia's export market share. In the United States, negative trends occur in all aspects, namely export value, export quantity, and market share. While in India the value of exports and the quantity of exports showed a positive trend, but the market share showed negative growth. The value of exports and the quantity of exports in France have a positive trend but the market share chart shows a downward trend. Positive trends in the charts of export value, export quantity, and market share can be seen in the Chinese market. Meanwhile, in Singapore, all export value, export quantity, and market share showed a negative trend. Details on the comparison and trends in export value, export quantity, and market share of Indonesian essential oil in the 5 main importing countries can be seen in the following table.

**Table 1.** Comparison of Developments and Trends in The Export Value of Indonesian Essential Oil in 5 Main Importing Countries for The Period 2011-2020 (In Thousand USD).

Year	Importer Country of Indonesian Essential Oil										Average of all importing countries	
	USA		India		France		China		Singapore		Value	Trend
	Value	Trend	Value	Trend	Value	Trend	Value	Trend	Value	Trend		
2011	42,346	N/A	15,309	N/A	16,698	N/A	7,093	N/A	27,756	N/A	21,840	N/A
2012	33,222	-21.55%	16,105	5.20%	16,282	-2.49%	4,474	-36.92%	18,468	-33.46%	17,710	-17.84%
2013	27,564	-17.03%	17,899	11.14%	16,393	0.68%	1,914	-57.22%	20,381	10.36%	16,830	-10.41%
2014	31,929	15.84%	20,659	15.42%	16,166	-1.38%	5,109	166.93%	24,630	20.85%	19,699	43.53%
2015	29,589	-7.33%	24,250	17.38%	21,228	31.31%	7,061	38.21%	24,979	1.42%	21,421	16.20%
2016	27,947	-5.55%	22,227	-8.34%	20,986	-1.14%	17,055	141.54%	20,306	-18.71%	21,704	21.56%
2017	26,156	-6.41%	23,182	4.30%	20,079	-4.32%	8,710	-48.93%	21,195	4.38%	19,864	-10.20%
2018	39,385	50.58%	33,639	45.11%	27,841	38.66%	11,605	33.24%	22,505	6.18%	26,995	34.75%
2019	33,252	-15.57%	28,684	-14.73%	23,815	-14.46%	21,636	86.44%	18,187	-19.19%	25,115	4.50%
2020	35,315	6.20%	36,997	28.98%	23,601	-0.90%	22,528	4.12%	19,957	9.73%	27,680	9.63%
10 years average	31,595	-0.09%	24,849	11.61%	20,710	5.11%	11,121	36.38%	21,179	-2.05%	21,891	10.19%
10 years minimum	26,156	-21.55%	15,309	-14.73%	16,166	-14.46%	1,914	-57.22%	18,187	-33.46%	15,546	-28.28%
10 years maximum	42,346	50.58%	36,997	45.11%	27,841	38.66%	22,528	166.93%	27,756	20.85%	31,494	64.42%

**Table 2.** Comparison of Developments and Trends in The Quantity of Indonesian Essential Oil Exports in 5 Main Importing Countries for The Period 2011-2020 (In Ton).

Year	Importer Country of Indonesian Essential Oil										Average of all importing countries	
	USA		India		France		China		Singapore		Value	Trend
	Value	Trend	Value	Trend	Value	Trend	Value	Trend	Value	Trend		
2011	894	N/A	592	N/A	278	N/A	346	N/A	762	N/A	574	N/A
2012	5,317	494.74%	722	21.96%	422	51.80%	460	32.95%	681	-10.63%	1,520	118.16%
2013	603	-88.66%	599	-17.04%	368	-12.80%	97	-78.91%	690	1.32%	471	-39.22%
2014	663	9.95%	534	-10.85%	308	-16.30%	155	59.79%	744	7.83%	481	10.08%
2015	576	-13.12%	809	51.50%	456	48.05%	267	72.26%	1,184	59.14%	658	43.57%
2016	698	21.18%	706	-12.73%	470	3.07%	2,632	885.77%	776	-34.46%	1,056	172.57%
2017	574	-17.77%	954	35.13%	504	7.23%	269	-89.78%	800	3.09%	620	-12.42%
2018	948	65.16%	1,642	72.12%	756	50.00%	433	60.97%	782	-2.25%	912	49.20%
2019	878	-7.38%	1,418	-13.64%	565	-25.26%	1,113	157.04%	604	-22.76%	916	17.60%
2020	1,284	46.24%	1,617	14.03%	549	-2.83%	934	-16.08%	538	-10.93%	984	6.09%
10 years average	1,282	56.70%	1,000	15.61%	489	11.44%	707	120.44%	755	-1.07%	847	40.63%
10 years minimum	574	-88.66%	534	-17.04%	278	-25.26%	97	-89.78%	538	-34.46%	404	-51.04%
10 years maximum	5,317	494.74%	1,642	72.12%	756	51.80%	2,632	885.77%	1,184	59.14%	2,306	312.71%

**Table 3.** Comparison of Developments and Market Share Trends of Indonesian Essential Oil Exports in 5 Main Importing Countries for The Period 2011-2020

	Importer Country of Indonesian Essential Oil												
	Year	USA		India		France		China		Singapore		Average of all importing countries	
		Value	Trend	Value	Trend	Value	Trend	Value	Trend	Value	Trend	Value	Trend
<b>Share Against Import</b>	2011	7.00%	N/A	13.09%	N/A	4.09%	N/A	4.04%	N/A	25.01%	N/A	10.65%	N/A
	2012	5.08%	-1.92%	16.04%	2.95%	6.04%	1.95%	2.06%	-1.98%	21.03%	-3.98%	10.05%	-0.60%
	2013	6.03%	0.95%	10.07%	-5.97%	6.06%	0.02%	1.04%	-1.02%	18.07%	-2.96%	8.25%	-1.80%
	2014	6.02%	-0.01%	12.07%	2.00%	4.09%	-1.97%	3.00%	1.96%	23.07%	5.00%	9.65%	1.40%
	2015	5.00%	-1.02%	16.06%	3.99%	6.09%	2.00%	3.08%	0.08%	22.09%	-0.98%	10.46%	0.81%
	2016	4.01%	-0.99%	13.00%	-3.06%	6.01%	-0.08%	3.09%	0.01%	16.08%	-6.01%	8.44%	-2.03%
	2017	3.03%	-0.98%	10.06%	-2.94%	5.04%	-0.97%	4.09%	1.00%	12.05%	-4.03%	6.85%	-1.58%
	2018	3.03%	0.00%	9.07%	-0.99%	5.01%	-0.03%	5.01%	0.92%	14.05%	2.00%	7.23%	0.38%
	2019	3.04%	0.01%	4.03%	-5.04%	5.02%	0.01%	6.02%	1.01%	12.01%	-2.04%	6.02%	-1.21%
	2020	4.01%	0.97%	15.00%	10.97%	5.07%	0.05%	6.00%	-0.02%	15.01%	3.00%	9.02%	2.99%
	10 years average	4.36%	-0.33%	11.71%	0.21%	5.38%	0.11%	3.71%	0.22%	17.05%	-1.11%	8.44%	-0.18%
10 years minimum	3.03%	-1.92%	4.03%	-5.97%	4.09%	-1.97%	1.04%	-1.98%	12.01%	-6.01%	4.84%	-3.57%	
10 years maximum	7.00%	0.97%	16.06%	10.97%	6.09%	2.00%	6.02%	1.96%	25.01%	5.00%	12.04%	4.18%	

**Results of the Competitiveness Analysis of Indonesian Essential Oil Exports in Five Main Importing Countries for the 2011-2020 Period**

In Table 4, the calculation results using the RCA method are obtained, it can be observed that the competitiveness of Indonesian essential oil commodities is getting stronger if the RCA value obtained is higher. Based on the results of the 2011-2020 RCA calculation, it was obtained that Indonesia's essential oil commodities in the United States have an RCA value of 5.50. This value shows that Indonesian essential oil commodities in the United States have a strong comparative advantage because the RCA value of Indonesian essential oil commodities in the United States is in class d ( $4 < RCA \leq \infty$ ). This also shows that when there is an increase of 1% to the export value of Indonesian essential oil commodities in the United States, the comparative advantage of Indonesian essential oil commodities in the United States will increase by 5.50%. Conversely, if there is a 1% decrease in the export value of Indonesian essential oil commodities in the United States, then the comparative advantage of Indonesian essential oil commodities in the United States will decrease by 5.50%.

During the period from 2011 to 2020, the export value of Indonesian essential oil commodities in the United States has a trend that still tends to decline every year. The lowest export value occurred in 2017 at US\$ 26,156 million then in 2018 the export value of Indonesian essential oil commodities experienced a significant increase of US\$ 39,385 million. In 2019 the value of exports again decreased by US\$ 33,252 million and then there was an increase in 2020 of US\$ 35,315 million. Likewise, the market share of Indonesian essential oil exports in the United States. The trend on the chart tends to decrease but there began to be an increase in 2020, which was 4.01% or an increase of 0.97% from 2019.



The quantity of exports has a downward trend on the chart but began to move up, especially in 2017 until 2020.

**Table 4.** RCA Analysis Results of Indonesian Essential Oil Commodities

Countries	Revealed Comparative Advantage (RCA)	
	RCA	Competitiveness
United States	5.05	Strong
India	3.54	Medium
France	31.13	Strong
China	3.87	Medium
Singapore	2.98	Medium

Indonesia's essential oil commodity in India has an RCA value of 3.54. This value shows that Indonesian essential oil commodities in India have a moderate or quite strong comparative advantage because the RCA value of Indonesian essential oil commodities in India is in class c ( $2 < RCA \leq 4$ ). This also shows that when there is an increase of 1% to the export value of Indonesian essential oil commodities in India, the comparative advantage of Indonesian essential oil commodities in India will increase by 3.54%, vice versa. The development of the export value of Indonesian essential oils in India has a positive trend. The lowest export value in the 2011-2020 period occurred in 2011, which was US\$ 15,309 million. Meanwhile, the highest export value was in 2020, which was US\$ 36,997 million. The quality of exports also has a positive trend or is rising from year to year. The lowest quantity of Indonesian essential oil exports to India occurred in 2014 amounting to 534 tons and the highest quantity was achieved in 2018 of 1,642 tons. After declining to 1,418 tons in 2019, the quantity of Indonesia's essential oil exports to India increased by 199 tons to reach 1,617 tons in 2020. The market share chart of Indonesia's essential oil exports in India has a downward trend, especially in 2015 to 2019. However, there was an increase of 10.97% until Indonesian essential oils had a market share of 15% in 2020.

The best competitiveness of Indonesia's essential oil commodity is in France, that has an RCA value of 31.13. This value shows that Indonesian essential oil commodities in France have a strong comparative advantage because the RCA value of Indonesian essential oil commodities in France is in class d ( $4 < RCA \leq \infty$ ). This also shows that when there is an increase of 1% to the export value of Indonesian essential oil commodities in France, the comparative advantage of Indonesian essential oil commodities in France will increase by 31.13%, vice versa. Indonesia's exports of essential oil commodities in France from 2011 to 2020 also had a positive trend. The lowest export value of Indonesian essential oil to France occurred in 2014 at US\$ 16,166 million. Meanwhile, the highest export value occurred in 2018 with a value of US\$ 27,841 million. The percentage of Indonesian essential oil market share in France shows a stuck trend. The percentage of market share in 2020 was 5.07%.

Meanwhile for China, the RCA value is 3.87. This value shows that Indonesian essential oil commodities in China have a moderate or quite strong comparative advantage because the RCA value of Indonesian essential oil commodities in China is in class c ( $2 < RCA \leq 4$ ). This also shows that when there is an increase of 1% to the export value of Indonesian essential oil commodities in China, the comparative advantage of Indonesian essential oil commodities in China will increase by 3.87%, vice versa. In the period from 2011 to 2020, the export value of Indonesian essential oil commodities in China

has an increasing trend every year. The lowest export value occurred in 2013 at US\$ 1,914 million. After that, the value of exports fluctuated until in 2020 it was US\$ 22,528 million or the highest in the 2011-2020 period. The highest export value actually has a smaller quantity compared to the previous year. The quantity of Indonesia's essential oil exports in 2020 was 934 tons, 179 tons lower than the previous year. The highest export quantity was achieved in 2016 at 2,632 tons. While the lowest was in 2013 it was 97 tons. The percentage of Indonesia's essential oil market share in China shows a positive trend. The percentage of market share in 2020 was 6%.

Indonesia's essential oil commodity in Singapore has an RCA value of 2.98. This value shows that The Indonesian essential oil commodity in Singapore has a moderate or quite strong comparative advantage because the RCA value of Indonesian essential oil commodities in Singapore is in the class c group ( $2 < RCA \leq 4$ ). This also shows that when there is an increase of 1% to the export value of Indonesian essential oil commodities in Singapore, the comparative advantage of Indonesian essential oil commodities in Singapore will increase by 2.98%, vice versa. This can be seen in the development of export value, export quantity, and market share of Indonesian essential oil in Singapore has a negative trend or tends to decline. The export value in 2019 of US\$ 18,187 million was the lowest in the 2011-2020 period. Meanwhile, the highest export value in the same period occurred in 2011 at US\$ 27,756 million. The export quantity of Indonesian essential oil in Singapore in 2020 of 538 tons is the lowest in the last ten years. The percentage of Indonesia's essential oil market share in Singapore still shows a figure of 15.01% in 2020, but the overall trend is negative.

Based on these values, it can be seen that Indonesia's essential oil commodity products have a comparative advantage in the five main export destination countries of Indonesian essential oil commodities, namely the United States, India, France, China, and Singapore. The overall research results show that Indonesia's essential oil commodities have strong comparative advantages so that they are able to enter the international market. However, competitive advantage is indispensable for the product to excel and be able to continue to survive in the international market. Some of the obstacles faced by Indonesia in exporting its products include the quality of products that are not yet in accordance with the market, rejection or embargo from the destination country, high costs, etc. According to Ridhwan et al. (2015), competitiveness analysis indicates a challenge on Indonesia's export performance and competitiveness. Their study discusses national competitiveness and industrial strategy in the era of AEC (ASEAN Economic Community). It also mentions that the main challenge for Indonesia's trade performance is from the aspects of intensive margin and quality margin. Intensive margin indicates that the Indonesia's current trade openness tends to decrease, compared to that in early 2000. In terms of quality margin, there is a shift in Indonesian export products from low and high-tech to med-tech and resource-based products. From the perspective of competitiveness, the challenge of Indonesia's exports is caused by low market access, incentive framework, factors conditions, and trade promotion facilitation.

## CONCLUSION AND SUGGESTION

The conclusion of this study is that based on the analysis of comparative advantages, the position of Indonesian essential oil commodities is strongly competitive because Indonesian essential oil commodities have comparative advantages or  $RCA > 1$  in all major export destination countries that are the object of research, namely the United States, India, France, China, and Singapore. Thus, Indonesia's Competitiveness Analysis of Indonesian Essential Oil (Kartika et al., 2023)

essential oil commodities can be declared quite strongly competitive but development is still needed so that Indonesian essential oil products are increasingly in demand in export destination countries so that export and product market share increase annually and Indonesian essential oil commodities are become competitive, especially the target of exports to France as the country with the highest RCA value in this study so that it becomes a potential entrance to the development of Indonesian essential products in the world market. The suggestion of this research it can be developed by conducting a competitive advantage analysis in the main export destination countries of Indonesian essential oils, or focusing on the export strategy of Indonesian essential products to France, where Indonesian essential products are very strongly competitive.

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