

Original Article

Analysis of the Export Competitiveness of Indonesian Cloves in the Saudi Arabian Market

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Received Date: 22 May 2026

Revised Date: 04 June 2026

Accepted Date: 09 June 2026

Published Date: 13 June 2026

Abstract: Cloves are one of Indonesia’s major agricultural commodities and an important source of foreign exchange. Saudi Arabia is a key export destination due to its relatively stable demand, although Indonesia faces stiff competition from countries such as Madagascar, Sri Lanka, Tanzania, and the Comoros. This study aims to analyze the competitiveness of Indonesian clove exports in the Saudi Arabian market and examine its trade position during the 2015–2024 period. Using a quantitative descriptive approach, secondary data were collected from UN Comtrade, International Trade Centre (ITC), Badan Pusat Statistik (BPS), Direktorat Jenderal Perkebunan, and Kementerian Pertanian. The data were analyzed using the Revealed Comparative Advantage (RCA), Export Product Dynamics (EPD), and Indeks Spesialisasi Perdagangan (ISP) methods. The results indicate that Indonesia possesses a strong comparative advantage, with an average RCA value of 70.84 ($RCA > 1$), signaling high export competitiveness, although it remains below that of its main competitors, particularly the Comoros and Madagascar. The EPD analysis classifies Indonesian cloves in the “missed opportunity” category, indicating that market growth has not been fully utilized. Meanwhile, the ISP value ranges from 0.81-1, indicating that cloves have reached a mature stage in international trade and maintain strong export competitiveness. Increasing productivity, improving product quality, and implementing more effective export development strategies are crucial to strengthening Indonesian cloves’ competitiveness in the Saudi Arabian market.

Keywords: Competitiveness, Export, Clove, RCA, EPD, ISP.

I. INTRODUCTION

The plantation sector is one of the key pillars of Indonesia’s economy, contributing to Gross Domestic Product (GDP), job creation, and foreign exchange earnings. One of the plantation commodities with high economic value is cloves (*Syzygium aromaticum*), which have long been part of the global spice trade. Indonesia has long been the world’s leading clove producer, accounting for about 73.9% of total global production from 2019 to 2023. Cloves not only cater to domestic demand specifically as a raw material for the kretek cigarette business but also become one of the export commodities that will serve as a foreign exchange earner for the country (Pusat Data dan Sistem Informasi Pertanian, 2023). Indonesia is among the biggest merchants of cloves on earth. It is estimated that approximately 66.84 percent of clove plantations are managed by individuals through smallholder farms, while the remaining 5 percent are managed by private or state-owned plantations (Hidayah et al., 2022).

Table 1: Trends in Indonesia’s Clove Export and Import Volumes, 2015–2024

| Year | Export | | | | Import | | | |
|------|---------------|------------|--------------|------------|---------------|------------|--------------|------------|
| | Volume (Tons) | Growth (%) | Value (US\$) | Growth (%) | Volume (Tons) | Growth (%) | Value (US\$) | Growth (%) |
| 2015 | 12.889 | 41.08 | 46.484 | 37.39 | 11 | 0 | 127 | 0 |
| 2016 | 12.754 | -1.05 | 41.569 | -10.57 | 6.952 | 63.1 | 61.473 | 48.303 |
| 2017 | 9.087 | -28.75 | 28.928 | -30.41 | 13.572 | 95.22 | 95.22 | 84.58 |
| 2018 | 20.246 | 122.8 | 101.766 | 251.79 | 13.373 | -1.47 | 105.65 | -6.89 |
| 2019 | 25.99 | 28.37 | 111.537 | 9.6 | 3.865 | -71.1 | 25.38 | -75.98 |
| 2020 | 47.765 | 83.78 | 176.541 | 58.28 | 2.575 | -33.38 | 12.343 | -51.37 |
| 2021 | 20.14 | -57.84 | 96.082 | -45.58 | 10.017 | 289.01 | 77.459 | 527.55 |
| 2022 | 9.481 | -52.92 | 56.909 | -40.77 | 25.104 | 150.61 | 222.559 | 187.32 |
| 2023 | 13.935 | 46.97 | 99.606 | 75.03 | 23.886 | -4.85 | 216.604 | -2.68 |
| 2024 | 51.983 | 273.05 | 324.938 | 226.22 | 6.478 | -72.88 | 57.689 | -73.37 |

The performance of Indonesian clove exports in recent years can be said to be improving. Import volume rose from 12.88 thousand tons in 2015 to 51.98 thousand tons in 2024, valued at US\$324.93 million. Most Indonesian cloves are exported to India, China, the United Arab Emirates (UAE), Saudi Arabia, and Bangladesh. Saudi Arabia is of immediate prominence amongst these markets due to its stable demand for Indonesian cloves. In Saudi Arabia, cloves are used not only as a cooking ingredient



but also in traditional medicine and industry to make perfumes, providing opportunities for those interested and for exports from Indonesia.

The direction of the Middle East is towards the spice market, mainly due to growing consciousness regarding the health benefits individuals gain with spices and growing interest of individuals in traditional dishes, as well as new generation food items. Indonesia is a handful of the biggest cloves-producing countries in the world, making it another potential exporter to Saudi Arabia and the Middle East region. The development presents a strategic opportunity for Indonesia to strengthen its position as a high-quality spice supplier in the global market (Nugraha, 2023).

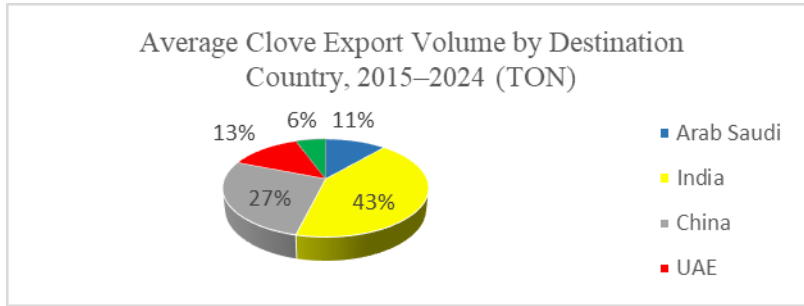


Figure 1. Comparison of Average Export Volumes by Destination Country, 2015–2024 (Tons)

Cooperation between Indonesia and Saudi Arabia offers many opportunities in the fields of exports and the economy. The two countries have established strong economic ties, with trade reaching US\$5.5 billion in 2021. Indonesia’s export potential to Saudi Arabia remains substantial. This bilateral cooperation agreement is expected to boost Indonesia’s exports and strengthen economic and investment ties between the two nations. Furthermore, this partnership has the potential to increase investment and expand market access, thereby supporting the simultaneous economic growth of both Indonesia and Saudi Arabia (Paryadi & Choirulina, 2023).

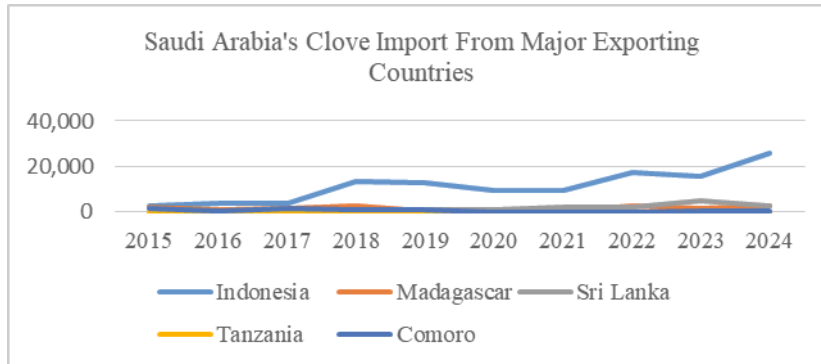


Figure 2. Comparison of Saudi Arabia’s Clove Import Volumes from Major Exporting Countries, 2015–2024 (US\$)

Indonesia is the largest exporter of cloves to Saudi Arabia, but competition from other producing countries, such as Madagascar, Sri Lanka, Tanzania, and the Comoros, remains very tight. Statistics from Saudi Arabia on those imports show that these countries also have sizable market shares, and they are still working to improve their competitive edge in exports. Thus, Indonesia can maintain its competitive advantage, or even improve it, so that Indonesian products are more prominent and its market share in Saudi Arabia increases. According to international trade theory, a country can maintain its competitive export position relative to other countries once it has a comparative advantage.

The purpose of this study is to analyze the competitiveness of Indonesian clove exports in the Saudi Arabian market for the period 2015–2024. The determination of comparative advantage, market position, dynamics, and trade pattern of Indonesian clove commodities was analyzed descriptively using Revealed Comparative Advantage (RCA), Export Product Dynamics (EPD), and Trade Specialization Index (ISP) methods.

II. LITERATURE REVIEW

A) Revealed Comparative Advantage (RCA)

The RCA is used to measure the comparative competitiveness of Indonesia’s clove exports by comparing their share of total exports with that of other countries. The comparative advantage of a particular commodity in a country can be used to

analyze the export market of a specific sector in that country and to illustrate the competitiveness of a country’s industries (Nasir et al., 2021). The formula for calculating RCA (Revealed Comparative Advantage) is as follows:

$$RCA_{ij} = \frac{(X_{ij} \div X_i)}{(X_j \div X)}$$

Explanation:

- X_{ij} : The value of exports of commodity j from country i
- X_i : The total value of exports of all commodities from country i
- X_j : The value of global exports of commodity j
- X : Total value of exports of all commodities worldwide

B) Export Product Dynamics (EPD)

Market share trend and demand growth analysis through Export Product Dynamics (EPD) to measure the dynamic competitive advantage of Indonesian cloves in Saudi Arabia. This approach breaks export performance down into four quadrants—Rising Star, Lost Opportunity, Falling Star, and Retreat—depending on export market share along with market attractiveness. The outcomes of EPD results help to note if the product is growing, declining, or losing out in the global market (Sitiani, 2022). Where EPD (Export Product Dynamics) is calculated as

X-axis (horizontal): growth in export market share

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

Y-axis (vertical): growth in market share of commodities

$$\frac{\sum_{t=1}^t \left(\frac{X_t}{W_t}\right)_t \times 100\% - \sum_{t=1}^t \left(\frac{X_t}{W_t}\right)_{t-1} \times 100\%}{T}$$

Explanation:

- X_{ij} : Value of exports of commodity j to country i
- X_t : Total export value to Country J
- W_{ij} : The value of exports of commodity j from country i
- W_t : The total value of global exports to country i
- T : Number of years analyzed

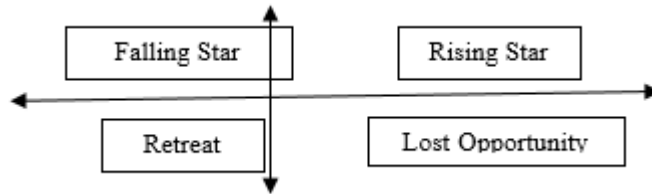


Figure 3. Product Competitiveness Quadrant Using the EPD Method

(Adiguna et al., 2022)

C) Indeks Spesialisasi Perdagangan (ISP)

The Indeks Spesialisasi Perdagangan (ISP) is used to measure a country’s level of specialization and competitiveness in trade in specific commodities. TSI values range from -1 to 1, where a value close to 1 indicates that the country acts as a highly competitive exporter, while a value close to -1 indicates that the country tends to be a less competitive importer (Yudha & Malau, 2022). The formula for calculating the Indeks Spesialisasi Perdagangan (ISP) is as follows:

$$ISP = \frac{X_{it} - M_{it}}{X_{it} + M_{it}}$$

Explanation:

- X_{it} : Export value of commodity j in year t
- M_{it} : The value of imports of commodity j in year t

III. RESULTS AND DISCUSSION

A) Revealed Comparative Advantage (RCA)

To determine how competitive a commodity is in the international market or in its export destination market, the Revealed Comparative Advantage (RCA) index is used. If the RCA index value is greater than one, it indicates that the country has a comparative advantage, while a value below one indicates the absence of a comparative advantage. The results of this calculation are then used to evaluate the commodity's relative competitive position in global trade. Based on RCA calculations for the 2015–2024 period, it is possible to analyze the year-by-year development of Indonesia’s competitive advantage in the Saudi Arabian market for cloves. The analysis of Indonesia’s clove competitiveness focuses on HS code 0907.

The results of the RCA analysis of cloves (HS 0907) in the Saudi Arabian market for the period 2015–2024 reveal differences in competitiveness among producing countries. Based on the average RCA value, the Comoros ranked first with an average of 9,754.54, followed by Madagascar with an average of 6,399.53. Third place is held by Sri Lanka, with an average of 270.95, followed by Indonesia, with an average of 70.84, and finally Tanzania, with an average of 36.07. Based on the RCA analysis, all these countries essentially possess a comparative advantage in exporting cloves to the Saudi Arabian market, as the resulting average RCA values are greater than one ($RCA > 1$). However, the level of competitiveness varies by country; Comoros and Madagascar demonstrate a very high level of export specialization, Sri Lanka and Indonesia have relatively stable competitiveness, while Tanzania tends to be more volatile because it did not export in some years, resulting in an RCA value of zero.

Table 2: RCA Results for Cloves from Indonesia, Madagascar, Sri Lanka, Tanzania, and the Comoros 2015–2024, HS Code 0907

| Year | RCA Indonesia, Madagascar, Sri Lanka, Tanzania, Comoro | | | | |
|------|--|------------|-----------|----------|----------|
| | Indonesia | Madagascar | Sri Lanka | Tanzania | Comoro |
| 2015 | 60.20 | 19426.67 | 649.79 | 0 | 24755.63 |
| 2016 | 110.24 | 11271.21 | 24.50 | 169.13 | 18513.19 |
| 2017 | 44.98 | 7942.83 | 447.84 | 81.01 | 15601.05 |
| 2018 | 89.92 | 4366.24 | 178.11 | 0 | 7679.57 |
| 2019 | 82.07 | 3139.23 | 129.63 | 0 | 0 |
| 2020 | 77.86 | 1108.30 | 224.33 | 4.13 | 10572.59 |
| 2021 | 47.05 | 2424.51 | 243.47 | 0.00 | 12214.52 |
| 2022 | 60.98 | 5435.62 | 252.92 | 106.42 | 8208.80 |
| 2023 | 62.14 | 6057.75 | 367.36 | 0 | 0 |
| 2024 | 72.98 | 2822.91 | 191.50 | 0 | 0 |

B) Export Product Dynamics (EPD)

Table 3: Average EPD Calculations for Cloves from Indonesia, Madagascar, Sri Lanka, Tanzania, and the Comoros in the Saudi Arabian Market, 2015–2024 (HS Code 0907)

| Country | Average X-axis (Growth in export share) | Average Y-Axis (Product market share growth) | Market Position |
|------------|--|---|------------------|
| Indonesia | 0.009936954 | -7.05E-05 | Lost Opportunity |
| Madagascar | -0.03754952 | -9.91E-07 | Retreat |
| Sri Lanka | -0.020661118 | 3.29E-06 | Fallin Star |
| Tanzania | -1.73E-19 | 1.74E-06 | Fallin Star |
| Comoro | -8.79E-05 | -2.56E-08 | Retreat |

The findings of this EPD analysis place Indonesia into the “Lost Opportunity” quadrant, which means that even though demand for cloves in the Saudi Arabian market is increasing overall, Indonesia has failed to convert that opportunity into reality, and as a result, its share of the overall export market shrinks over time. It is, needless to say, related to a constant fall in production. The total production of cloves in Indonesia decreased from 139,611 tons in 2016 to 113,178 tons in 2017. In 2021 and 2023, the decline amounted to -135753 tons and -133408 tons. Everything has affected the supply that can be exported. In (Oktari et al., 2023), it is stated that one of the strategies to increase Indonesia’s export volume is by increasing commodity production in the country. For encouraging innovation among farmers, there is a need for: better access to and training in the operation of information and communication technology (ICT), extensive outreach along with hands-on experience, as well as enabling support from key actors, including extension workers and the government. Moreover, high investment costs, lack of internet access, and negative perceptions about new technology should also be addressed so that farmers are more willing and able to adopt innovations appropriately (Kusmiati et al., 2023). Furthermore, based on Pusat Data dan Sistem Informasi Pertanian (2025), the clove productivity in Indonesia during the period 2016–2025 tends to fluctuate, and the average decrease per year is 0.44 percent

Table 4: Results of the ISP Calculation for Cloves (HS Code 0907) Exported by Indonesia, Madagascar, Sri Lanka, Tanzania, and Comoros to the Saudi Arabian Market, 2015–2024

| Year | ISP | | | | |
|-----------|-----------|------------|------------|----------|--------|
| | Indonesia | Madagascar | Sri Lanka | Tanzania | Comoro |
| 2015 | 1 | 1 | 1 | 0 | 1 |
| 2016 | 1 | 1 | 1 | 1 | 1 |
| 2017 | 1 | 1 | 1 | 1 | 1 |
| 2018 | 1 | 1 | 1 | 0 | 1 |
| 2019 | 1 | 1 | 1 | 0 | 0 |
| 2020 | 1 | 1 | 1 | 1 | 1 |
| 2021 | 1 | 1 | 0.99997488 | 0 | 0 |
| 2022 | 1 | 1 | 1 | 1 | 1 |
| 2023 | 1 | 1 | 1 | 0 | 0 |
| 2024 | 1 | 1 | 1 | 0 | 0 |
| Rata-rata | 1 | 1 | 0.99997488 | 0.4 | 0.6 |

Sri Lanka and Tanzania, on the other hand, are considered a “Falling Star” where they hold market share, but are stagnant. Madagascar and the Comoros are classified in the “Retreat” quadrant, which is characterized by a stagnation of market growth while at the same time the export share decreases, impairing their competitiveness within Saudi Arabia.

C) Indeks Spesialisasi Perdagangan (ISP)

The Terms of Trade Index is calculated by comparing the difference between the value of clove exports and imports relative to total trade. If the Terms of Trade Index yields a positive value, this indicates that a country’s commodities are competitive and have a comparative advantage, and that the country tends to act as an exporter; conversely, if the Terms of Trade Index yields a negative value, this indicates that a country’s commodities have low competitiveness and that the country tends to act as an importer (Baskara & Yuliawati, 2025).

Based on the results of the ISP for cloves (HS 0907) in the Saudi Arabian market for the period 2015–2024, it can be concluded that Indonesia and Madagascar fall within the range of 0.81–1. This indicates that cloves from both countries have entered a mature phase in international trade with a very high level of competitiveness. Sri Lanka also falls within the same range, with an average value close to 1, thus remaining identified as a highly competitive exporter in the Saudi Arabian market. On the other hand, Tanzania and Comoros fall within the 0.1–0.8 range, indicating that clove exports from these two countries are still in the expansion phase of international trade with a fairly high level of competitiveness, though not yet as strong as those of countries that have reached the maturity phase. The ISP analysis shows that the majority of clove-exporting countries in the Saudi Arabian market possess strong export competitiveness, although the level of stability varies among countries.

IV. CONCLUSION

This study shows that Indonesian cloves have a strong comparative advantage in the Saudi Arabian market, with an RCA value consistently above one during the 2015–2024 period. Nevertheless, Indonesia’s position in the EPD analysis falls into the “lost opportunity” category, indicating that while market opportunities for cloves in Saudi Arabia remain significant, they have not yet been fully utilized. Meanwhile, the results of the ISP analysis show that Indonesia has reached a stage of maturity as a clove-exporting country, reflecting a high level of specialization and export competitiveness. These findings confirm that cloves are a strategic commodity that plays a vital role in international trade and the country’s foreign exchange earnings. However, to maintain and enhance competitiveness in the Saudi Arabian market, efforts are needed to improve productivity, product quality, supply chain efficiency, and strengthen export development strategies. Thus, the results of this study contribute to the development of agribusiness and international trade policies aimed at enhancing the competitiveness of Indonesian plantation commodities in the global market.

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