

ANALYSIS OF COMPARATIVE AND COMPETITIVE ADVANTAGES OF LOBSTER SHRIMP EXPORTS (*Panulirus sp.*) INDONESIA

This research aims to analyze the competitiveness (comparative and competitive advantages) of Indonesia's lobster commodity exports. The data used in this research consists of secondary data in the form of panel data. Secondary data was obtained from the Ministry of Marine Affairs and Fisheries of Indonesia, the Food and Agriculture Organization (FAO), the United Nations Commodity Trade (UN Comtrade), and the International Trade Center (ITC). Comparative advantage is measured using the Revealed Comparative Advantage (RCA) index, and competitive advantage is measured using the Export Competitiveness Index (ECI). The average RCA value for Indonesia in international markets is 25.46, while the average RCA value for lobster exports from Vietnam in international markets is 13.08. It can be said that both Indonesia and Vietnam have a comparative advantage in international markets, with Indonesia having a stronger comparative advantage compared to Vietnam. The average ECI value for Indonesia's lobster exports to international markets is 3.57, while the average ECI value for Vietnam's exports to international markets is 3.28. This suggests that both countries have competitive competitiveness. Indonesia, based on the average RCA analysis, outperforms Vietnam in terms of lobster exports during the research period. However, Indonesia's ECI value is still relatively low.

Keywords: Competitiveness, Comparative Advantage, Competitive Advantage.

INTRODUCTION

The Ministry of Marine Affairs and Fisheries of the Republic of Indonesia has revealed that Indonesia, as a country with the highest number of islands in the world, boasts 17,504 islands and a vast marine territory covering 5.8 million km². This territory consists of island waters spanning 2.95 million km², territorial seas covering 0.3 million km², and an Exclusive Economic Zone (EEZ) expanding over 2.55 million km². The immense potential of Indonesia's marine biodiversity needs to be effectively optimized, both for conservation purposes and for productive economic utilization. Indonesia's seas hold significant potential, including approximately 8,500 fish species, 555 seaweed species, and 950 coral reef biota species. Several fish species in Indonesian waters have high economic value, such as tuna, shrimp, lobster, coral fish, various ornamental fish, seaweed, and sponges. In terms of total fish resources in the ocean, Indonesia encompasses 37% of all fish species worldwide (KKP, 2017).

One of Indonesia's fisheries commodities with significant potential for development is lobster shrimp (*Panulirus sp.*). Lobster is a type of crustacean animal that holds substantial economic value both in the local and global markets. All lobster variants are known as a source of animal protein with high market value. Indonesia is one of the main producers and exporters of lobster due to its rich coral reef ecosystems, which serve as habitats for various lobster species. In Indonesian waters, six different lobster species have been identified, including pearl lobster (*P. ornatus*), bamboo lobster (*P. versicolor*), batik lobster (*P. cygnus*), sand lobster (*P. homarus*), rock lobster (*P. longipes*), and Pakistan lobster (*P. polyphagus*) (Priyambodo, 2018).

Indonesia is one of the countries in Southeast Asia that produces lobsters (FAO, 2011). From an economic perspective, marine creatures belonging to the decapoda family, such as lobsters, are

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among the most sought-after seafood, with exports reaching 9 million tons in the global market (FAO, 2021). Lobster has experienced an approximate 15% increase in demand worldwide. During the period from 2013 to 2016, there was a sustained rise in international market demand for lobsters, as reflected in the increasing annual average of global imports (Lathifah, A., et al., 2022). The impact of the global market has particularly influenced the increased demand from major export destination countries like China. Data from the Fish Quarantine, Quality Control, and Fisheries Product Safety Agency revealed that in January 2021, the total volume of live lobster exports reached 682,870 individuals, with an average daily export of approximately 42,679 individuals.

Indonesia has a competitive advantage in the fisheries industry, coupled with a comparative advantage and market potential, which includes domestic fish consumption growth and increased exports of fisheries products to international markets. To continue benefiting from global trade, Indonesia needs to maintain its competitive edge. Fisheries products with strong competitiveness are expected to endure and grow, resulting in increased exports that will support local production, fishermen's and fish farmers' income, create job opportunities, and boost the country's foreign exchange earnings (Saptanto, S., 2011).

To maintain its presence on the international stage, Indonesia needs to focus on enhancing its competitiveness in lobster shrimp exports. This becomes a crucial element, considering that Vietnam, a neighboring country in Southeast Asia, also has a highly significant lobster shrimp export industry. The commercial success and aquaculture development of lobster shrimp in Vietnam have made it the only country in the world to fully succeed in this regard (Shaffa, A., et al.). Therefore, it is only fitting for the Indonesian government to make improvements in the competitiveness of the lobster shrimp commodity.

Indonesia's marine wealth encompasses approximately 8,500 fish species, 555 seaweed species, and 950 coral reef biota species. Some marine fish species in Indonesia hold significant economic value, such as tuna, shrimp, lobster, coral fish, various ornamental fish, sponges, and seaweed. In fact, the quantity of fish resources in Indonesian waters constitutes 37% of the total fish species worldwide (KKP, 2017).

Empirical research on the comparative and competitive advantages of lobster shrimp commodities has been limited. In this study, the competitive status of lobster shrimp from Vietnam, which serves as a competitor to Indonesia in terms of exports, is also included as a benchmark, considering that Vietnam remains the largest lobster shrimp exporter in Southeast Asia and is Indonesia's closest export competitor since Indonesia is the second-largest lobster shrimp exporter after Vietnam. Therefore, it is essential to understand the extent of Indonesia's lobster shrimp export competitiveness through the research conducted by the author with the title "Analysis of Comparative and Competitive Advantages in the Export of Lobster Shrimp (*Panulieus* sp.) from Indonesia."

RESEARCH METHODOLOGY

Scope of the Research

The scope and limitations of this research exclusively cover the focus on lobster exports from Indonesia and Vietnam. The commodity that will be the object of this study is the lobster commodity with the 6-digit HS code, which is 030631 (Rock lobster and other sea sea crawfish "*Panulirus spp.*, *Panulirus spp.*, and *Jasus spp.*," weather in shell or not, live, fresh or chilled).

Types of Research

This research utilizes secondary data as its methodology with a quantitative approach. A quantitative approach is a method of acquiring understanding that relies on numerical data to gather information about the topic under investigation (Samsu, 2017). The quantitative data includes the export and import values of Indonesian lobster shrimp, the total export value of Indonesia, the export value of lobster shrimp worldwide, and the total export value of the world to major destination countries.

Types and Sources of Data

The data used in this research consists of secondary data in the form of panel data. Panel data comprises time series data or data collected at specific time points along with cross-sectional data. The time series data used includes the last five years from 2017 to 2021. Meanwhile, the cross-sectional data includes five destination countries for exports: Singapore, Malaysia, Thailand, China, and Korea. Secondary data was obtained from the Ministry of Marine Affairs and Fisheries of Indonesia, the Food and Agriculture Organization (FAO), the United Nations Commodity Trade (UN Comtrade), and the International Trade Center (ITC).

Data Analysis

The data analysis methods used in this research involve descriptive and quantitative approaches. The descriptive approach is used to illustrate the export situations of Indonesia and Vietnam's lobsters. Meanwhile, the quantitative approach, which involves applying numerical data, is used to analyze comparative advantage and competitive competitiveness. In this research, an approach to analyze the competitiveness of lobster commodities is used:

1. Revealed Comparative Advantage (RCA)

This method allows the evaluation of a country's export performance for a specific product by comparing the export value of that product to the country's total export value, and then comparing it to the export value of that product to the total world export value. The formula for the Revealed Comparative Advantage (RCA) Index used is as follows

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

Where:

X_i = Lobster export value by country X

X_j = Total export value of country X

X_{iw} = Lobster export value worldwide

X_w = Total world export value

If the RCA value is > 1 , it indicates that the products have significant comparative advantage or strong competitiveness. If the RCA value is < 1 , it suggests that the products do not have comparative advantage or have low competitiveness..

1. Analisis Export Competitiveness Index (ECI)

Export Competitiveness Index (ECI) is a value that depicts the proportion of a country's exports in the global market concerning a specific commodity in a given period (t) when compared to a previous period (t-1). The formula used to calculate ECI, as per Mahmood (2000), is as follows:

$$ECI = \frac{(X_{ki}/X_w)^t}{(X_{ki}/X_w)^{t-1}}$$

Where:

X_{ki} = Exports of commodity in country i at time t

X_w = Exports of commodity in country i at time t-1

t = World exports of the commodity at time t

t-1 = World exports of the commodity at time t-1

If the ECI value for the lobster commodity in the researched countries, both Indonesia and Vietnam, exceeds one (>1), it can be interpreted that this lobster commodity is experiencing growth in competitiveness trends and is capable of creating market opportunities. On the other hand, if the ECI value is less than one (<1), it indicates that the lobster commodity is facing a decline in competitiveness trends, meaning its competitiveness is weakening, and it may be losing market share.

RUSELTS AND DISCUSSION

Export Trends of Lobster from Indonesia and

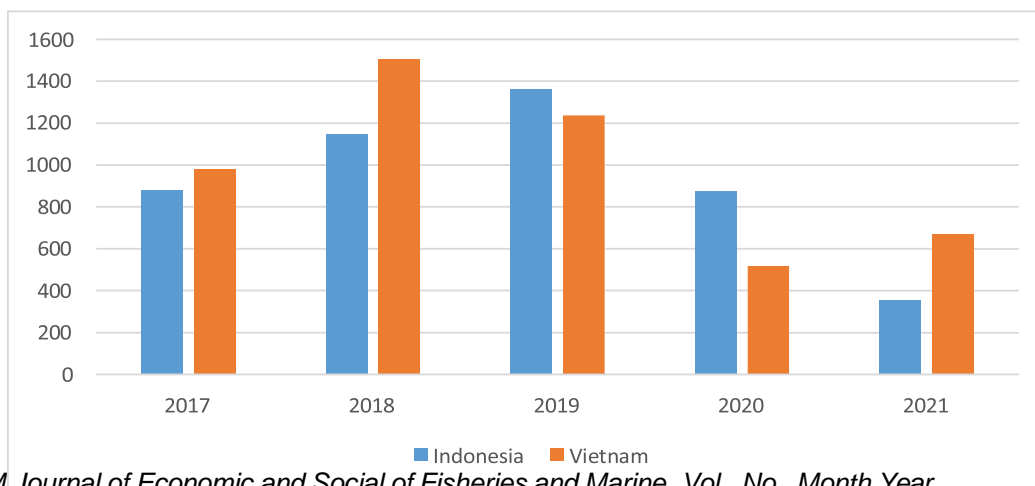


Figure 1. The export value of lobsters from Indonesia and Vietnam in the International Market in the years 2017 to 2020 (in million US dollars). Internasional Tahun 2017 2020 (dalam juta US dol

From the figure, it can be observed that there is a difference in lobster shrimp exports between Indonesia and Vietnam during the period from 2017 to 2021. In 2017, the export value of lobster shrimp from Indonesia to the international market amounted to \$879,561 USD. In 2018, Indonesia's lobster shrimp exports reached \$1,148,453 USD, while in 2019, it amounted to \$1,361,960 USD. However, in 2020, the export value of Indonesian lobster shrimp decreased to \$876,144 USD, and in 2021, it further dropped to \$354,040 USD. On the other hand, for Vietnam, in 2017, the export value of lobster shrimp to the international market was \$978,267 USD. In 2018, Vietnam's lobster shrimp exports significantly increased to \$1,505,592 USD. In 2019, Vietnam's lobster shrimp exports amounted to \$1,236,742 USD. However, in 2020, the export value of Vietnamese lobster shrimp declined to \$518,060 USD, and in 2021, it increased to \$669,264 USD.

To gain a comprehensive understanding of the export market situation for Indonesian lobsters, the following information includes the export values of Indonesian lobsters and other Southeast Asian countries to the worldwide market during the period from 2017 to 2021.

Table 1. Export Values of Lobsters from Southeast Asian Countries (in million US dollars) in the years 2017-2021.

Countries	Export Value (million US\$)				
	2017	2018	2019	2020	2021
Indonesia	22,56	29,92	33,34	76,11	28,62
Vietnam	6,60	7,09	25,02	149,43	39,18
Malaysia	9,41	13,16	15,60	16,61	10,61
Philippines	12,44	7,24	2,35	1,13	3,39
Myanmar	0,88	11,98	15,75	9,79	3,53
Singapore	7,48	5,37	5,52	11,09	9,12
Thailand	0,43	0,25	0,28	1,62	6,91
Cambodia	0,31	0,34	0,37	-	-

Source: UN Comtrade, 2021.

Based on UN Comtrade data for the period 2017-2021 above, it can be seen that Indonesia, Vietnam, and Malaysia are the three main countries in Southeast Asia that export lobsters globally. In 2020, Indonesia held the top position in this list, using HS code 030631 for the export of *Panulirus* spp. As the largest type at that time, Indonesia generated exports worth 71.44 million US dollars out of a total lobster export value of 76.11 million US dollars. Within these figures, 39.41 million US dollars were lobster seed exports. In the same year, Vietnam recorded exports with a value more than double that of Indonesia, totaling 149.43 million US dollars. This sharp increase is believed to be largely due to the illegal entry of Indonesian lobster seeds in the previous years.

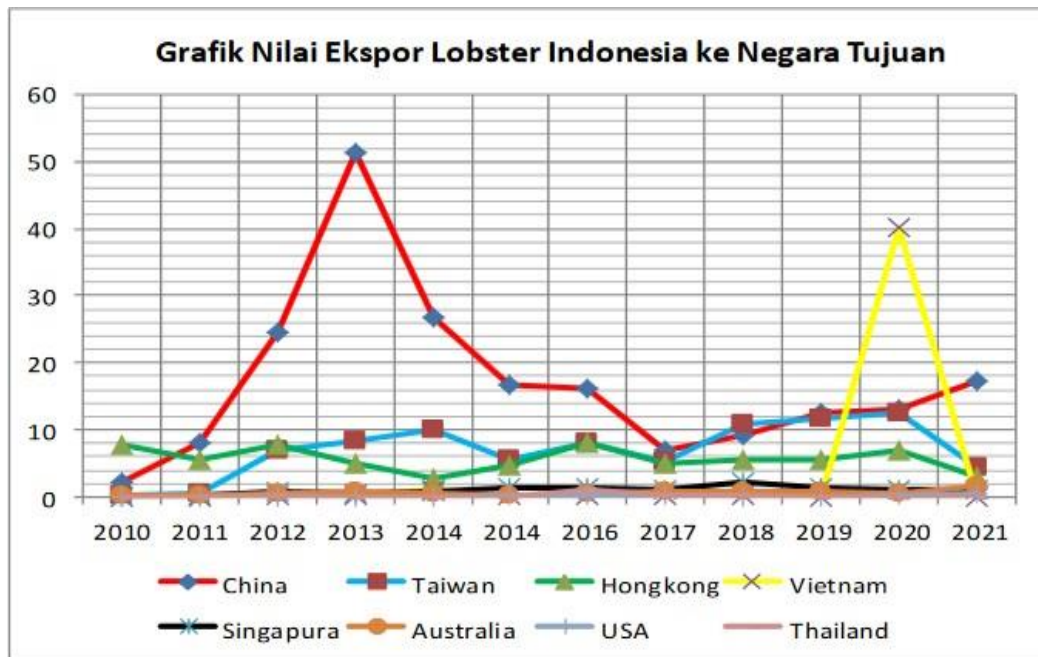


Figure 2: Graph of Indonesia's Lobster Export Values to Main Destination Countries 2010-2021
 Source: UN Comtrade.

The graph above depicts a pyramid-like structure with two peaks, indicating a significant decline in Indonesia's lobster export value after reaching its peak in 2013. Subsequently, the value dropped in the following years and only began to rise again in 2020. The drastic decline between 2013 and 2020 suggests that there was an impact generated by the role of lobster seeds in regulating the fluctuation of Indonesia's total lobster product export graph over the past twelve years, which was also influenced by government policies through Ministerial Regulation of Marine Affairs and Fisheries (Permen KP) Number 56 of 2016 and Permen KP Number 12 of 2020.

The policy of banning lobster seed exports has contributed to a drastic decline in lobster harvesting activities, ultimately impacting the livelihoods of fishermen and the economy. However, if the ban were not implemented, it would be considered counterproductive as it could benefit the lobster industry in Vietnam, which heavily relies on Indonesian lobster seeds. While in monetary terms, lobster seed prices can reach fantastic values, from an ecological standpoint, the risk of massive exploitation of lobster seeds can have extremely negative consequences on their future survival.

Export Competitiveness of Lobster

1. Comparative Competitiveness

Tabel 2. RCA (Revealed Comparative Advantage) Values for Indonesian Lobster Commodities HS Type 036031Daya Saing Komparatif

Year	Destination Countries					
	Singapura	Malaysia	Thailand	China	Korea	International Market
2017	0	2,45	0,52	0,99	53,56	11,50
2018	9,27	8,76	1,01	0,78	29,37	9,83
2019	6,78	25,75	0,41	0,94	123,7	31,39
2020	10,47	31,26	0,36	0,92	123,184	33,23
2021	3,63	88,04	0	1,32	0,02	18,60

Source : *International Trade Center (ITC)*, data sekunder diolah 2022

The analysis results indicate that Indonesia's lobster commodity with HS type 030631 (Rock lobster and other sea crawfish "Palinurus spp., Panulirus spp., and Jasus spp.," whether in shell or not, live, fresh, or chilled) has comparative competitiveness in the international market. This is based on the RCA measurement results, which show that Indonesia's RCA value for this commodity is above 1. This indicates that the lobster of HS type 030631 exported by Indonesia has gained appreciation and possesses a high comparative advantage or strong competitiveness.

Table 3. The RCA (Revealed Comparative Advantage) value for Vietnam's lobster commodity of HS type 030631

Year	Destination Countries					
	Singapura	Malaysia	Thailand	China	Korea	Internasional Market
2017	0	0	0	0	0	0
2018	0,68	1,29	1,10	0,02	20,67	23,76
2019	0,89	7,10	3,63	0,77	0	12,39
2020	1,37	20,98	2,02	3,71	0	28,08
2021	0	0	0,04	1,76	4,13	1.18

Source: *International Trade Center (ITC)* data sekunder diolah, 2022

For the average RCA analysis value of lobster shrimp exports, Vietnam has an RCA value above 1, indicating that Vietnam has a comparative advantage in competitiveness. This aligns with research conducted by Nguyen Tuan Kiet and Zenaida M. Sumalde (Kiet & Sumalde, 2008), which focused on the competitiveness of shrimp exports from Vietnam in the Mekong River Delta region. The analysis method used in their study was the Revealed Comparative Advantage (RCA) Index. The study was conducted in 2010, and its findings concluded that the export of shrimp commodities from Vietnam in the Mekong River Delta region had a comparative advantage in the international market. Indonesia holds a superior position in comparative advantage compared to Vietnam. Despite Vietnam's average RCA value being above 1, Indonesia has a fairly strong comparative

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advantage in the international market for lobster exports.

2. Competitive Competitiveness

Table 4. ECI (Export Competitiveness Index) Values of Indonesian Lobster Commodities Daya Saing Kompetitif

Year	Destination Countries					Internasional Market
	Singapura	Malaysia	Thailand	China	Korea	
2017	0	0	0	0	0	0
2018	2,1	2,37	0,94	1,41	1,81	7,17
2019	0,63	0,82	0,47	1,39	1,08	3,52
2020	1,15	0,62	0,5	1,23	0,58	3,61
2021	0,64	1,26	0,002	1,12	0,06	3,08

Source: *International Trade Center (ITC) data sekunder diolah, 2022*

Based on the ECI analysis results, it is evident that Indonesia had a competitive advantage with the highest value in 2017. However, looking at the values for the last four years, there has been fluctuation in the ECI values, indicating a decline in Indonesia's level of competitive advantage. The decrease in ECI values in Indonesia is attributed to the decline in lobster commodity exports to five countries: Singapore, Malaysia, China, Thailand, and Korea.

Table 5. The ECI (Export Competitiveness Index) value for Vietnam's lobster commodity of HS type 030631.

Year	Destination Countries					Internasional Market
	Singapura	Malaysia	Thailand	China	Korea	
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	1,13	1,52	3,95	39,82	0	42,47
2020	1,23	1,44	0,37	6,22	0	8,89
2021	0	0	0,06	0,21	0	0,27

Source: *International Trade Center (ITC) data sekunder diolah, 2022*

In the analysis of ECI results, Vietnam had the highest competitive advantage in the international market in 2019. On average, Indonesia's ECI values outperformed Vietnam's during the research period. However, Indonesia's lobster shrimp competitiveness is still relatively low.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on the research results and data analysis conducted, the following conclusions can be drawn:

1. Based on the calculation of comparative advantage using the Revealed Comparative Advantage (RCA) analysis, the average RCA value for Indonesia in the international market is 25.46, while the average RCA value for lobster shrimp exports from Vietnam in the international market is 13.08. This indicates that both Indonesia and Vietnam have comparative advantages in the international market. Indonesia has a stronger comparative advantage compared to Vietnam.
2. Based on the competitive advantage using the Export Competitiveness Index (ECI) analysis, the average ECI value for Indonesia's lobster shrimp exports to the international market is 3.57, while the average ECI value for Vietnam's lobster shrimp exports to the international market is 3.28. This suggests that both countries have competitive export advantages. Indonesia, based on the average RCA analysis, outperforms Vietnam in the analysis of ECI values for lobster shrimp exports during the research period. However, Indonesia's ECI values are still relatively low.

Recommendation

For future research, it is recommended to conduct studies using different competitiveness calculation methods and compare them with other lobster-exporting countries.

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Methodology	100 – 250 words

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Results	<i>100 – 250 words</i>
Discussion and Conclusion	<i>100 – 250 words</i>