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THE COMPETITIVENESS OF INDONESIAN SHRIMP EXPORT IN MALAYSIA AND SINGAPORE MARKETS

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ABSTRACT

Shrimp is the main export commodity for Indonesian fishery products. Several shrimp industries have developed export destination markets to ASEAN countries such as Malaysia and Singapore because they are considered to have the same potential as the USA or Japan. The purpose of this study was to determine the position of Indonesia's competitiveness against export commodities of shrimp in the Malaysian and Singaporean markets in 2015-2019, as well as to improve strategies to strengthen the competitiveness of Indonesian shrimp in global markets, especially Malaysia and Singapore. The analysis technique used was the Revealed Comparative Advantage (RCA) index with time-series data for 2015-2019 and the Diamond Porter Model (DPM) method. There were 7 types of Indonesian shrimp that were exported to the Malaysian and Singaporean markets. Based on RCA calculations, 5 out of 7 types of Indonesian shrimp have good competitiveness, but it needs to be improved considering the very competitive competition. Based on DPM analysis, the Indonesian shrimp industry was still weak in terms of strategy, structure, and rivalry. Meanwhile, other factors were very strong, especially the condition factor, government and chances factor. Thus, it was hoped that the competitiveness of the Indonesian shrimp commodity would increase so that it would have a positive impact on the Indonesian economy and the society would be more prosperous.

Key words: Shrimp, Competitiveness, ASEAN Market, Revealed Comparative Advantage, Diamond Porter Model

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1. INTRODUCTION

Fishery products have an important role in the progress of the Indonesian economy. Indonesia's fishery resources are very large, as a maritime country, the maritime and fisheries sector is a priority for national economic development because of its potential. Every year the consumption of global fishery products continues to increase, this condition indirectly has a positive impact on the demand for Indonesian fishery products in the international market (Yusuf et al., 2018; Luhur et al., 2019).

Shrimp is the leading export commodity for Indonesian fishery products, with export figures reaching 35.84% of total exports. In addition, in the period 2014-2018, Indonesia's shrimp export performance was on a positive trend. The volume of shrimp exports increased by 4.81%, only less than the commodity of cuttlefish-octopus which rose 18.92%, while other commodities experienced a lower and even negative export trend (MMAFI, 2019). The main export destinations for Indonesian shrimp to date are the USA and Japan (UN Comtrade, 2020). Indonesia ranks second as the largest fishery producing country in the world after China and is one of the main shrimp producing countries in the world (FAO, 2020). From 2017 to 2019, the export value of shrimp to the main export destination countries, namely the USA and Japan, has experienced a very significant decline (UN Comtrade, 2020). The low value-added products and market conditions that are more dynamic and competitive in terms of quality and quantity have contributed to the decline in the value of Indonesian shrimp exports to major countries, in addition to the economic crisis that is currently hitting these countries, which has had a significant impact on Indonesia's shrimp export performance. (Ciffolilli & Muscio., 2018; Chasanah, et al., 2017; Luhur et al., 2019).

For Indonesia's shrimp export performance to remain on a positive trend, it is necessary to develop markets to potential countries, as well as increase products with added value. Businesses that are more comprehensive and integrated, such as diversifying markets into the ASEAN region which have very promising economic and trade opportunities. Economic integration between countries in ASEAN makes it easier to market Indonesian shrimp products. This is supported by data released by the UN Comtrade (2020), during the last 5 years, there has been a shift in the export market for Indonesian fisheries, including shrimp commodities from the USA and Japan to ASEAN countries such as Malaysia and Singapore, as well as several other East Asian countries (Apridar., 2014).

Free trade in international markets causes the market to be controlled by countries that are competitive (Peneder & Streicher., 2018). A country that has high competitiveness will certainly have a better ability to survive, even dominate the market. The increasingly tighter export competition is caused by competing countries producing the same product with equal quality, so a competitiveness analysis is needed to determine the position of Indonesian shrimp exports.

Several studies have been carried out to determine the position of competitiveness of fishery products in the ASEAN market such as the competitiveness of tuna (Apridar, 2014), live fish, frozen fish, and chilled fish (Luhur et al., 2019). Research on the competitiveness of Indonesian shrimp commodities in the ASEAN market, especially in Malaysia and Singapore, has not been reported. Considering that shrimp is the main export commodity for Indonesian fishery products, moreover, Malaysia and Singapore are ASEAN countries with great potential, this study aims to determine the competitiveness of Indonesian shrimp commodities in the Malaysian and Singaporean markets using the Revealed Comparative Advantage (RCA) method and the Diamond Porter Model analysis (DPM).

2. METHODOLOGY

This study used quantitative data from the United Nations Commodity Trade Exports of Indonesian shrimp products to the Malaysian and Singapore markets from 2015 to 2019. The analytical methods used in this study were RCA and DPM.

2.1 Revealed Comparative Advantage (RCA)

A country's comparative advantage in the global market, which is reflected in its export value, can be measured using the RCA (Startiene & Remeikiene, 2014). The data obtained were then processed, it was analysed based on supporting theories so that conclusions can be drawn. The principle of the RCA method is to measure the export performance of a country's commodity by evaluating the role of the commodity's exports, which shows the ratio between a country's commodity market share in the global market and the country's total exports. The RCA value can be found using the following formula.

$$\text{RCA} = \frac{Xij\ /\ Xit}{Yi\ /\ Yt}$$

Detail:

Xij : export value of shrimp commodity from country j

Xit : total export value of all commodities of country j

Yi : the export value of shrimp commodities from the world

Yt : total export value of all commodities

The value of RCA > 1 indicates that this commodity has a comparative advantage over the average commodity on a world scale. However, if RCA < 1, then the commodity has a low comparative advantage. The higher the RCA value of a commodity, the higher its comparative advantage.

2.2 Diamond Porter Model (DPM)

The level of competitiveness is influenced by the constituent factors of daytime power which can be identified descriptively based on primary and secondary sources using the DPM approach. Porter (1990) introduces the theory of a country's competitive ability to win a market competition by involving 4 main aspects that reinforce each other, namely (1) factor conditions, (2) demand conditions, (3) related and supporting industries, and (4) firm strategy, structure, and rivalry as seen in the image below.

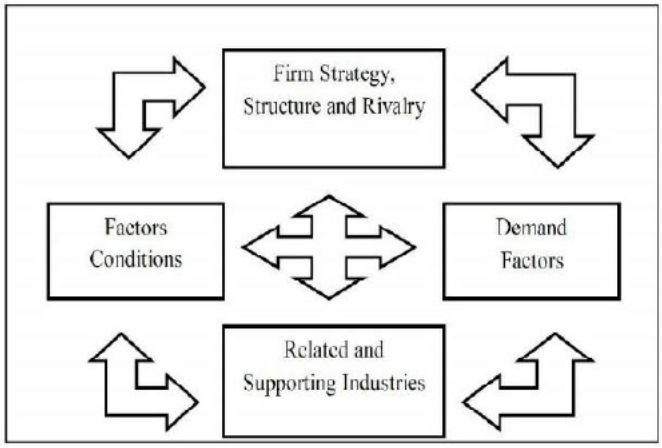

Figure 1 Diamond Porter Model (Porter, 1990)

Apart from the 4 factors above, it also involves supporting components, namely (5) factor government and chances. This model will produce a structure that will determine the rules of competition, and all sectors play an important role in the long-term competition (Sun et al., 2010).

3. RESULTS AND DISCUSSION

3.1 Growth of Indonesian Shrimp Exports to Malaysia and Singapore Markets

During the 2015-2019 period, Indonesia exported 7 types of shrimp products to the Malaysian and Singaporean markets, including shrimp with the code Harmonized System (HS) 030616, HS 030617, HS 160521 HS 160529, HS 030635, HS 030636, and HS 030695. Especially for shrimp with HS 030635, HS 030636, and HS 030695 only started to be exported in 2017.

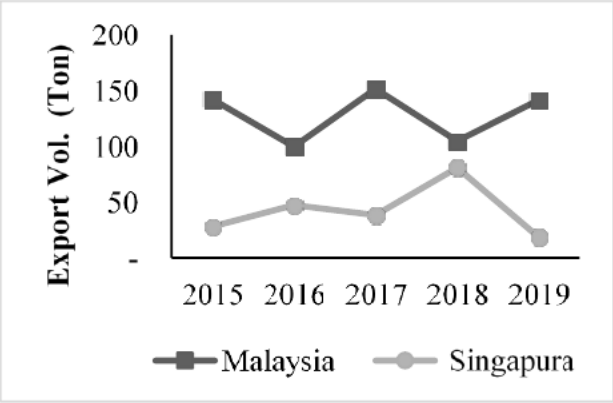

Figure 2 Export Volume of HS 030616

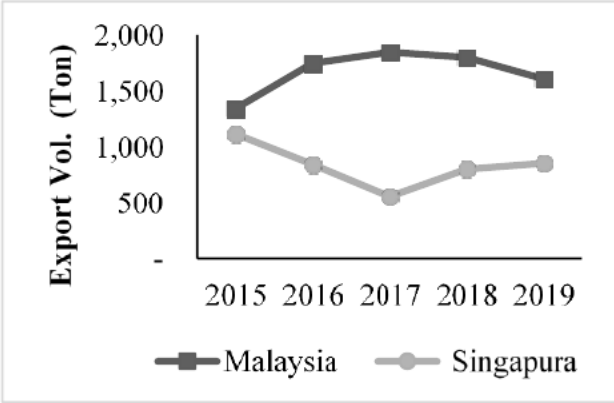

Figure 3 Export Volume of HS 030617

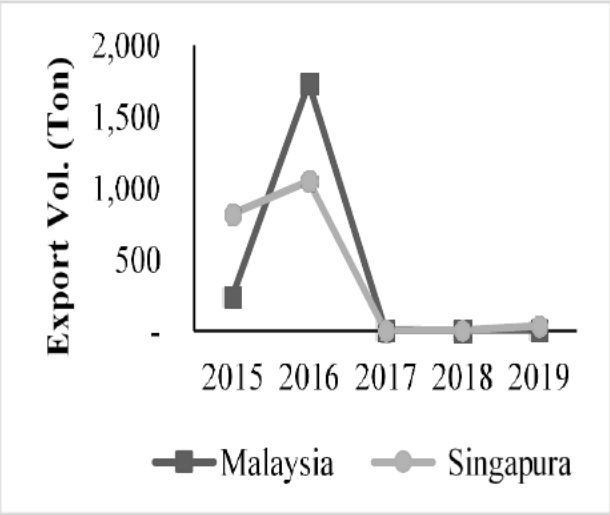

Figure 4 Export Volume HS 160521

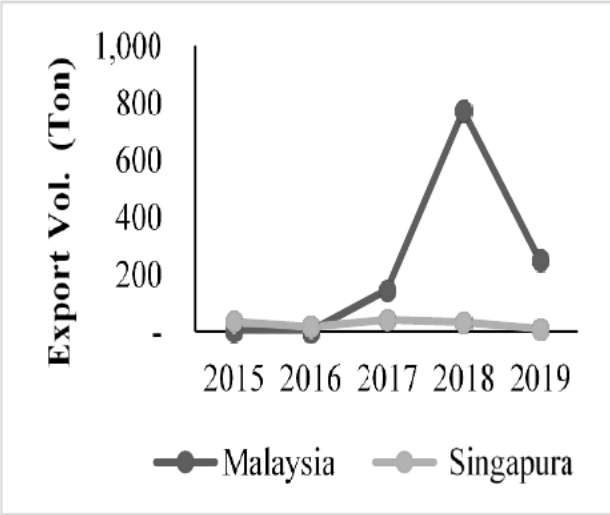

Figure 5. Export Volume of HS 160529

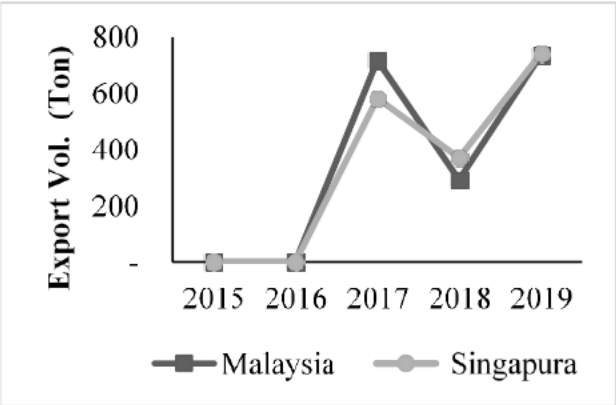

Figure 6 Export Volume of HS 030635

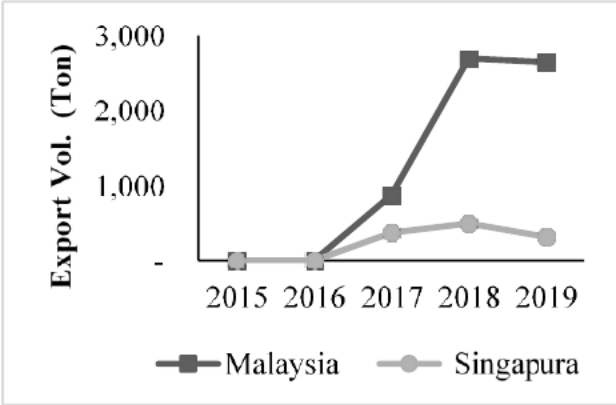

Figure 7 Export Volume of HS 030636

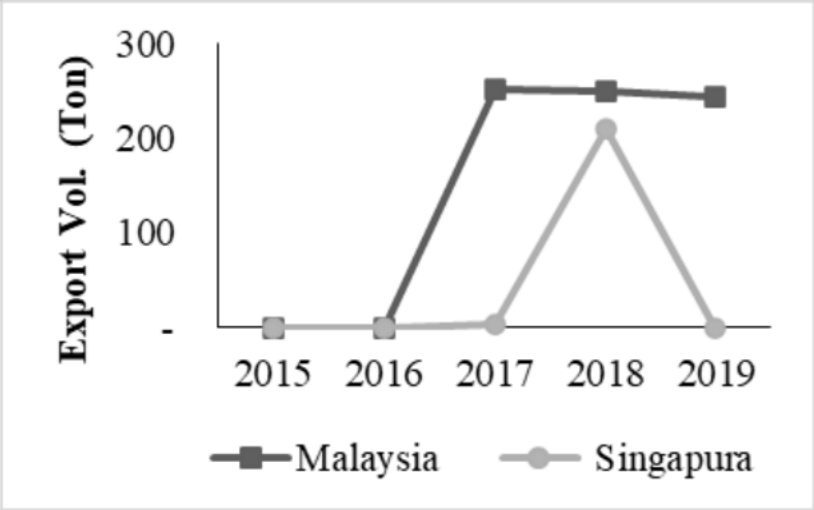

Figure 8 Export Volume of HS 030695

The total export of Indonesian shrimp in the last 5 years to the Malaysian and Singaporean markets reached 30.380 tons, with details of 20.865 tons to the Malaysian market with an average of 4.173 tons/year, and 9.515 tons to the Singapore market with an average of 1.903 tons/year. The volume of Indonesian shrimp exports to the Malaysian market experienced a very significant increase (69.32%), while the volume of Indonesian shrimp exports to the Singapore market tended to be stagnant. HS 030617 is a type of shrimp product that is mostly exported to Malaysia and Singapore, reaching 41.22% of the total export volume. HS 030616 became the type of shrimp with the lowest export volume (2.81%).

The fluctuating export volume was influenced by several aspects such as the amount of market demand and import policies from destination countries, domestic production, selling prices, and product quality from competitors. The increase in export volume was not always positively correlated with export value. Highly competitive competition causes product quality to be a determinant in addition to currency exchange rates which would affect the price of shrimp in the destination market. Good quality shrimp would certainly have high selling power. Summary of Indonesian shrimp prices per kg in the Malaysian market and Singapore market in the 2015-2019 timeframe can be seen in Table 1. The types of shrimp marketed to Malaysia had relatively more stable prices (HS 030617, HS 160529, and HS 030636). Some products even experienced a significant increase in price (HS 030616 and HS 160521), and some products experienced a decrease in price (HS 030635 and HS 030695). Different things were

observed in the trend of Indonesian shrimp prices in the Singapore market which generally tended to decline, only shrimp HS 030636 which had a stable price and experienced a significant increase

Table 1 Indonesian shrimp price trends 2015-2019 in the Malaysian and Singapore markets (US $ / Kg)

HS	Year									
	2015		2016		2017		2018		2019	
	M	S	M	S	M	S	M	S	M	S
030616	5.29	7.70	3.15	8.78	4.31	4.52	6.08	3.70	8.33	5.61
030617	4.41	7.24	4.55	6.70	4.60	6.15	5.23	6.16	4.97	5.78
160521	1.44	3.24	0.65	2.55	2.26	7.94	2.42	1.60	7.24	3.85
160529	0.80	9.67	-	5.43	1.03	3.89	0.67	5.34	0.63	4.37
030635	-	-	-	-	2.40	3.21	2.83	2.06	1.31	2.27
030636	-	-	-	-	1.90	2.17	1.49	2.52	1.88	3.81
030695	-	-	-	-	3.42	12.18	2.31	0.59	1.37	3.00

Note: M (Malaysia); S (Singapore)

In 2019, Indonesian shrimp products such as HS 030617, HS 160521, HS 160529, HS 030635, HS 030636 and HS 030695 which were exported to Singapore had a higher selling price than the selling price of the same shrimp products exported to Malaysia. Only shrimp products HS 030616 and HS 160521 have a higher selling price in Malaysia than in Singapore.

3.2 Revealed Comparative Advantage

Indonesia's shrimp export performance in the Malaysian and Singaporean markets can be seen from its comparative advantage. RCA analysis would produce the comparative value of a commodity whether it has advantages or not. In this study, RCA analysis was carried out on 7 Indonesian shrimp products exported to the Malaysian and Singaporean markets from 2015-2019, namely HS 030616, HS 030617, HS 030635, HS 030636, HS 030695, HS 160521, and HS 160529.

3.2.1 Malaysia Market

Based on Table 2, there are 5 shrimp products with an average RCA value > 1, including HS 030616 (14.36), HS 030617 (1.78), HS 030635 (18.11), HS 030636 (3.00), and HS 030695 (7.75), this showed that the shrimp product had a comparative advantage in the Malaysian market. On the other hand, shrimp products HS 160521 (0.38) and HS 160529 (0.35) had an RCA value < 1, thus shrimp products HS 160521 and HS 160529 did not have a comparative advantage in the Malaysian market.

Table 2 RCA value for Indonesian shrimp commodity in the Malaysian market

Year	Product Code						
	HS 030616	HS 030617	HS 160521	HS 160529	HS 030635	HS 030636	HS 030695
2015	14.19	1.15	0.31	0.01	-	-	-
2016	9.97	1.11	1.51	-	-	-	-
2017	13.32	1.27	0.02	0.57	17.38	1.71	8.76
2018	14.26	2.80	0.01	0.58	17.11	2.98	6.59
2019	20.05	2.55	0.03	0.24	19.84	4.32	7.91
Average	14.36	1.78	0.38	0.35	18.11	3.00	7.75

Shrimp products with HS code 030635 had very consistent competitiveness and should receive special attention. Although only exported from 2017, HS 030635 shrimp products had the highest competitiveness and dominate the Malaysian market up to 77.28%. The main

competitor for HS 030635 products was the United States which controls the Malaysian market by 8.78%. The HS 030616 shrimp product marketed in Malaysia was also very potential, controlling 60.29% of sales with Myanmar's main competitor (24.62%). Had experienced a fairly high decline in competitiveness in 2016, from 2017 to 2019 the HS 030616 product experienced very significant growth in competitiveness.

The HS 030617 shrimp product had very strong competitors in the Malaysian market. Even though it had a good comparative advantage, the market share for Indonesian HS 030617 products in Malaysia was only 7.50%, it was quite far behind the USA (60.71%) and it was competing with India (10.77%). The same thing was experienced by HS 030636 products, which only controlled the Malaysian market by 12.78%, and had not been able to catch up with Thailand's HS 030636 products (84.85). Indonesia's HS 030695 products also have high competitiveness, controlling 33.10% of the Malaysian market needs, competing closely with Singapore (36.72%) and China (23.37). However, Indonesian HS 160521 and HS 160529 shrimp products were powerless in the Malaysian market. China powerfully controlled the sales of HS 160521 (93.73) and HS 160529 (78.72%) in the Malaysian market, while the sales of Indonesian shrimp products HS 160521 and HS 160529 were only able to meet 2% of the needs of the Malaysian market.

3.2.2 Singapore Market

The competitiveness of Indonesian shrimp products to the Singapore market varies greatly. Shrimp product HS 030635 had the highest competitiveness with an RCA value of 15.73 and was able to dominate the Singapore market significantly (67.73%). The main competitors for HS 030635 products were the USA (13.88%) and Malaysia (17.46%). Shrimp products that had the next comparative advantage were HS 030616 with an RCA value of 11.08. Indonesia was able to win the competition for HS 030616 shrimp products in the Singapore market dominantly (47.96%), only Japan was able to compete with Indonesian HS 030616 products in the Singapore Market (7.34%). However, inconsistency, HS 030616 products exported to the Singapore market were still very volatile in the last 5 years.

Table 3 RCA value for Indonesian shrimp commodity in Singapore market

Year	Product Code						
	HS 030616	HS 030617	HS 160521	HS 160529	HS 030635	HS 030636	HS 030695
2015	7.02	2.13	2.62	1.15	-	-	-
2016	13.75	1.63	1.85	0.39	-	-	-
2017	9.29	0.88	0.01	0.72	14.71	2.04	0.41
2018	16.82	1.54	0.01	0.17	12.54	1.53	0.49
2019	8.52	1.48	0.12	0.02	19.93	1.66	0.00
Average	11.08	1.53	0.92	0.49	15.73	1.74	0.30

HS 030617 and HS 030636 products had fairly good competitiveness, each with an average RCA value of 1.53 and 1.74 from 2015 to 2019. Competition of HS 030617 shrimp products in the Singapore market was very dynamic, Indonesia was only able to dominate 6.36% of the needs of the Singapore market, still below the countries of Vietnam (30.03%), Malaysia (25.45%), China (13.95%) and Thailand (8.52%). The same condition was faced by HS 030636 shrimp products. Capable of controlling 7.52% of the Singapore market during the last 5 years, Indonesia's HS 030636 products were still quite tough to compete with Malaysia (59.96%) and Thailand (21.99%).

Several Indonesian shrimp products had an RCA value < 1, including HS 160521 (0.92), HS 160529 (0.49), HS 030695 (0.30). Inconsistent export volumes, significant Chinese dominance, fluctuating prices were some of the conditions that had made Indonesian shrimp

products unable to compete in the Singapore market. Even though they had fairly good competitiveness in 2015, in the following years until 2019 the competitiveness of shrimp products HS 160521, HS 160529, and HS 030695 decreased very significantly. This condition was very unfavourable for Indonesian shrimp exports, considering that the total export value of shrimp HS 160521, HS 160529, and HS 030695 in the Singapore market in 2019 were very high, each reaching US $ 28 million (HS 160521), US $ 39 million (HS 160529), and US $ 17 million (HS 030636).

3.3 Analysis of Export Competitiveness of Indonesian Shrimp with Component of Diamond Porter Model

The development of the international shrimp market will indirectly affect the growth of the shrimp industry in Indonesia, in addition to the position of competitiveness which is the main factor (Wati, 2017). To find out the factors that determine the position of competitiveness of the Indonesian shrimp industry, the DPM approach can be used. Principally, DPM analysis uses 4 main factors (condition factors, conditions demand, related and supporting, as well as structure, competitiveness and strategy), which are then added with supporting factors (factor chance and factor government).

3.3.1 Factor Condition

Resources are the main component that determines the competitive position of a product. Indonesia has abundant natural resources. Indonesian export shrimp production increased significantly (15.2%) from 2017 to 2019. Even though the shrimp production rate is considered not so optimal, with a sea area reaching 5.8 million km2, territorial waters 0.8 million km^2, island waters 2.3 million km^2 and an exclusive economic zone of 2.7 million km^2, of course, these conditions are very favourable for the Indonesian shrimp industry. There are still many natural resources that can be exploited with very promising prospects.

Human resources/labour are the basic factors that will affect competitiveness in the long term, so to attract new investors to invest (Kharub & Sharma., 2017). The availability of adequate labour, level of education, and technical skills that have a direct impact on product quality are indicators of assessment. Labour in Indonesia was available in large numbers, both as industrial employees and fisherman/farmers who work individually or in groups. Workers who work in government and private industries were of course equipped with very adequate technical skills with income in accordance with applicable policies, generally relatively cheap compared to competing countries. The main problem is that the pond workers or traditional shrimp fishermen generally had minimal knowledge. However, in recent years the government has provided training to small fishermen so that they could increase their knowledge.

Science and technology resources certainly cannot be ruled out, the application of science and technology plays a very important role in increasing productivity (Petrakis et al., 2015). Science is very supportive of the creation of value-added products, one of the weaknesses of shrimp exports of Indonesia in Malaysia and Singapore had low value-added products, so that some products are less competitive and have a fairly low selling price compared to competitors. Indonesia did not yet have the latest technology in processing shrimp, while main competitors such as China, Vietnam and even Thailand had more sophisticated technology. The condition factor made the position of the competitiveness of the Indonesian shrimp industry quite taken into account, especially from the aspect of natural resources and human resources. Several respondents gave a positive assessment of this aspect. However, what was of concern is science and technology resources. Although supported by advanced research, Indonesia still lacks in terms of technology. Indonesia was still a little behind its competitors, this had also received a bad response from some respondents.

3.3.2 Factors Demand

Indonesian shrimp production continues to increase, while domestic shrimp consumption is relatively small, only 5% of total production (Wati, 2017), so that it has a positive impact on Indonesian shrimp export activities. Each year the consumption of Malaysian and Singaporean shrimp tends to increase. Throughout 2015 to 2019, there was an increase in world shrimp exports to the Malaysian and Singaporean markets by 43.95% or around 12 thousand tons. Indonesia, as one of the largest shrimp producers in the world, consistently meets the needs of the shrimp market in the two countries. In 2015, Indonesia exported 3,724 tons of shrimp to Malaysia and Singapore or around 13.11% of the total shrimp exports to these countries. In 2019, there was a very significant increase in exports, Indonesia was able to increase the export figure to reach 18.67%, or around 7,609 thousand tons. The increase in demand for Indonesian shrimp exports can be measured by the volume and value of exports which tend to move positively every year.

The increasingly stringent demands made the shrimp industry companies have to meet the standards. According to Thurer et al., (2013), several things are a threat to producers and need to be considered so that demand for products does not decrease, namely delivery waiting time, the ability to meet flexible demand, and product quality. In general, Indonesia had met the applicable standards, it was just that some shrimp products were still an obstacle.

3.3.3 Related and Supporting Industries

The existence of supporting industries from downstream to upstream greatly contributes to costs, flexibility, quality to the product delivery process (Woods & Hecker., 2011). Cultivation land for Indonesian fishery production is very wide, reaching 2.9 million hectares, until 2019 only around 24% has been used (KKP, 2019). Shrimp pond cultivation activities are increasing every year. This was further supported by a government program that targets aquaculture shrimp production to increase by 25.9% during 2020 to 2024 and was a priority for the national strategic plan.

This condition would certainly increase the demand for shrimp feed. About 50% of the cost of cultured shrimp production comes from feed costs (Goss et al., 2000). The shrimp feed business is integrated with the farmer's business, so that it becomes a mutually beneficial business (Sagheer et al., 2007). Indonesia has at least 47 registered shrimp feed industries. Given export competition in the highly competitive global market, this condition encourages companies to improve production and quality of feed along the supply chain, processing to distribution. Several foreign investors have also taken advantage of this to invest in Indonesia. Besides the feed industry, the seed supplier industry also includes the shrimp export support industry. It was different from the feed industry, the seed supply industry in Indonesia tends not to be strong, so it was still a little constrained to obtain superior quality shrimp seeds. Several development centres had conducted seed breeding, but there were still many problems faced by cultivator centres.

3.3.4 Firm Strategy, Structure and Rivalry

The competitiveness of the Indonesian shrimp industry in the Malaysian and Singaporean markets was on a positive path. However, some Indonesian shrimp products could not compete, especially for processed shrimp products, which were still low, even though they had a very high selling value. Indonesia was still under pressure from competitors such as China and Vietnam, even Thailand. About 80% of shrimp ponds in Indonesia were still carried out traditionally, shrimp production using this system was known to be very vulnerable to virus attacks so that farmers anticipate giving antibiotics such as chloramphenicol, which causes the quality of shrimp to decline. This was certainly a challenge for the Indonesian shrimp export

industry. The good news was that Indonesia had prepared a special strategy to develop the competitiveness of the shrimp industry in global markets, including Malaysia and Singapore. This situation was expected to improve the competitive position of Indonesian processed shrimp in the global market including Malaysia and Singapore.

Figure 9 The results of the analysis of the competitiveness of Indonesian shrimp exports using Porter's Diamond Theory

3.3.5 Factor Government and Chances

The role of the government in making policies related to the exploitation of natural resources, the safety and health of workers and the environment, financial health, infrastructure development, and establishing industrial relations with export destination countries is an obligation that must be fulfilled (Dogl et al., 2012; Deniz et al., 2013). In the process of increasing shrimp exports, the Indonesian government provided funding to revitalize shrimp ponds up to Rp. 25 trillion, with a target of growing exports of cultured shrimp at 15% per year. In addition, the government was also preparing programs to increase innovation, adoption and technology to increase shrimp production that has added value. Development of hatchery industry, development of supporting infrastructures such as roads, electricity, water, markets, WWTP and cold storage.

The Indonesian government was serious about supporting shrimp exports. Through a state-owned company, Perum Perindo would produce shrimp feed that was ready to compete in its class. Considering that the shrimp factory-required raw materials and sophisticated new technology machines to produce quality products, Perum Perindo collaborated with PT Sang Hyang Seri to produce competitive feed in the market. Although the role of government and coincidences were only supporting variables, they had a very important role in the diamond model (Tuna, 2006). Policies and regulations made by the government would have a broad impact on all aspects, as well as the coincidence factor that could provide threats and even opportunities for the industry so it needed to be considered. Indonesia always acts quickly in responding to coincidences that occur. Such as changing the export destination country, or replacing uncompetitive shrimp products. This is an option to rebuild new strengths and avoid the advantage of competitors (Bakan & Doğan., 2012).

4. CONCLUSION

Based on the RCA index analysis, shrimp products with HS code 030616, HS 030635 have very strong competitiveness, followed by HS 030617, HS 030636 with fairly strong competitiveness in the Malaysian and Singaporean markets. HS 030695 competes well in

Malaysia, but not in Singapore market. In addition, there are two types of shrimp products (HS 160521 and HS 160529) that are not competitive in both the Malaysian and Singaporean markets. Based on the analysis of the DPM model, it is necessary to increase research and provide sophisticated technology to support the creation of value-added products. The downstreaming of products is also important to note, the provision of superior seeds for fishermen, production education and efficient and effective post-harvest handling must be improved in order to produce quality shrimp that is accepted in the global market. The role of the Indonesian government is already on a positive path, the policies issued are very supportive of increasing the competitiveness of Indonesian shrimp in global markets including Malaysia and Singapore. Overall, it is very likely that Indonesia will begin to look to ASEAN countries, especially Malaysia and Singapore, to become major export destinations, especially for shrimp products, given the increasingly positive position of competitiveness.

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