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Abstract

Since the 1970s, canned tuna industries have been proliferating in Southeast Asian countries, especially in Thailand and Indonesia. Thailand has remarkable performance in developing this industry instead of its competitors including Indonesia. This research mainly objected to comparing key factors influencing the competitiveness of tuna canneries based in Indonesia and Thailand. Diamond Models initiated by Michael Porter was adopted as a conceptual framework. Diamond Models analyzed competitive advantages of industries in a country, by analyzing internal factors, namely factor conditions; demand condition; related and supporting industries; and firm's strategy and rivalry. Then, external factor measures government intervention and chance which determined by importers. By comparing both internal and external factors of competitive advantages, this work found that Thai tuna canneries have better competitive advantages than Indonesian in almost measured factors. Indonesian tuna canneries only have a better competitive advantage in factor condition, which labor wage is lower and more accessible. To foster the canned tuna industry's competitiveness, Indonesia should learn from Thailand.

Keywords: Tuna canneries, Diamond model, Competitive advantage, Indonesia, Thailand

1. Introduction

The world demands of canned tuna are significantly increased due to having a competitive price (generally lower than other forms of traded tuna) as well as containing a lot of proteins. In 2012, a half of 2.5 million Metric Ton (MT) tuna global catch is sent to the canning industry (Rahmah. 2016). Although both Indonesia and Thailand have commenced developing canned tuna industry since the 1970s, the number of production and export of Indonesian and Thai tuna canneries significantly different.

This study attempts to compare the determinant factor influencing tuna canneries performance in Indonesia and Thailand. Then, this work will elaborate the appropriate lesson learned of Thai tuna canneries development in Indonesia, since Thai experience massive canned tuna development in the last two decades. This work will employ a Diamond Model of Michael Porter (1990) as guidance in explaining competitive advantages of canned tuna processors in both analyzed nations.

2. Background and Significance of the Study

Thailand commenced its cannery industry from one cannery in 1972 to 31 in 2005 when its export reached 450,000 tons. Since the industry was able to annually produce 800,000 tons and dominated canned tuna in the world market, Thai canneries employ 40,000 workers (Kuldilok, et al. 2013). Meanwhile, the Indonesian canned tuna industry faced unimpressive development in term of production and export volume. Indonesian canneries are only able to export around 70,000 tons per years during each period of operation. According to the Food and Agriculture Organization (FAO), Thai canned tuna export has increased dramatically since the last three decades from around 200,000 tons in 1989 to approximately 600,000 tons in 2016. Compared to Indonesian export volume, which produced around 30,000 tons in 1989 and slightly increased to approximately 70,000 tons in 2016, Thai canneries experienced remarkable performances. Therefore, Thailand dominated 38% of the global

canned tuna market, whereas Indonesia contributed only less than 5% of the global canned tuna market (ASTUIN, 2017).

The Indonesian government under the Ministry of Marine and Affairs and Fisheries targeted fishery productions to increase from 24.12 million tons in 2015 to 39.97 million tons in 2019. Besides, the Indonesian government has an ambitious export acceleration on fisheries value product from USD 6.82 billion in 2016 to USD 9.54 billion in 2019 (IMFB, 2017). According to the information, the author eager to focus on canned tuna industry development in Indonesia since this commodity is important to Indonesian fisheries as well as possess higher export value. In addition, tuna has significantly contributed to Indonesian national income, it becomes the second largest exporting fishery commodity after shrimp with exporting value more than 406 million USD in 2016 (IMFB, 2017).

This research attempts to find the reasons behind the remarkable performance of Thai canned tuna industries compare to Indonesia despite both countries commenced the industry sector for the same period.

2.1. Research Objectives:

These are several aims of the work:

1) Analyzing determinant factors influencing canned tuna industries
2) Finding the relationship between internal and external determinant factors toward tuna canneries development
3) Comparing competitive advantage of canned tuna processors in Indonesia and Thailand

2.2. Research Question:

This work mainly attempts to answer how the internal and external factors of competitive advantages influencing tuna canneries development in Indonesia and Thailand.

3. Literature Review:

3.1. Introduction

This research utilizes a diamond model which was introduced by Michael E. Porter (1990) to measure industry competitiveness in a certain country. The Diamond model calculated that the competitive advantage of industries, mainly influenced by four determinant factors, namely factor condition; demand condition; related and supporting industries; and firm strategy, structure, and rivalry. In addition, the diamond model perspective measure two external factors which also influence national competitive advantage, namely chance and government intervention.

3.2. Determinant Factor of Tuna Canneries Development

3.2.1. Factor Condition

According to Porter's diamond model condition factor explained as the nation's position in factors of production. Regarding canned tuna industries, Campling and Doherty (2007) compared the labor cost in some canned tuna exporters. This work finds that low labor cost accelerated canned tuna industry development in Thailand. The lower labor cost meaning that production cost should be lower and lead to a more competitive price of the product. This finding was supported by Kuldilok, et al. (2013) which argue that low labor cost becomes the key competitive advantages of Thai tuna canneries.

Another aspect categorized as production factors in canned tuna development is frozen tuna. Julintron, A. & Chalatrawat, S. (2007) explained that Thailand imported approximately 82% of raw tuna materials, while the rest at around 18% is relied on those caught by local vessel. Indian Ocean Tuna (IOT) stated that the average share for Skipjack/Yellowfin in the cost of the final canned tuna is around 46%. Consequently, the lower raw tuna price will

enable the canneries to have better competitive advantages of production cost and vice versa.

3.2.2. Demand Condition

Porter (1990) explained that demand may come from domestic or global demand. In terms of canned tuna, particularly in Indonesia and Thailand domestic demand less influence since the industry concerned with the foreign market or export-oriented. According to UN Comtrade complied by ASTUIN (2016), Indonesian canned tuna product mostly are served to the foreign markets, such as Saudi Arabia, Japan, the US, and the UK. Thai canned tuna product mostly also supplies to global markets, particularly in the US, Egypt, Australia, the EU, and Japan (FAO, 2016). In addition, Campling (2015) assessed emerging alternative canned tuna market for canned tuna exporters from Pacific Island Countries (PIC). Campling measured the potency of the alternative canned tuna market include Australia, China, Japan, Latin America, the Middle East, and North Africa, South Africa, and Russia.

3.2.3. Related and Supporting Industries

Porter assumed that the presence of competitive industries in a country that is related often promotes new competitive industries. In terms of canned tuna industries, can industry become crucial which determine the competitiveness of canned tuna processors. Campling and Doherty investigated can price in Mauritius, Seychelles, and Thailand and found that can price in Thailand 25% cheaper than in Mauritius and Seychelles. This impact to price advantage of Thai product with 5% lower since can price counted as the second most expensive input into canned tuna production. Hayes (2005) cited that there are 30 can producing companies located in Thailand in 2005. Consequently, domestic can supply will impact to cheaper production cost toward Thai tuna processors. Campling, Havice, and Ram-Bidesi (2007) speculated that lower can price in Thailand lead to FDI flow, especially from the US much higher to Thai tuna canneries instead of to the other processors such as China,

the Philippine, and Vietnam. In Indonesia, tuna canneries are supported by abundant domestic fishing fleets as well as fishing ports (IMFB, 2017).

3.2.4. Firm Strategy, Structure, and Rivalry

Michael Porter claimed that each nation poses various goals, strategies, and ways in organizing industries. Hamilton et al. explained that two canned tuna producers play dominant roles in Thailand, namely Thai Union (1,000 mt/day) and Sea Value (850 mt/day). In 2006, Sea Value undermined Thai Union position as the Thai (even world) largest canned tuna producers since this cannery merger with two Thai Union's major rivals, ISA Value and Unicord.

Unlike Thailand, which canned tuna processors dominated by two major canneries, Indonesian tuna canneries possess the equal production capacity approximately 5,000 to 30,000 mt per annum for major 6 processors and 1,000 to 6,000 mt per annum for minor processors (Hamilton, et al). Campling, Havice, and Ram-Bidesi (2007) argued that Indonesian tuna canneries split up across the country increase transshipment cost between processors and market access. Meanwhile, Thai tuna canneries which concentrated in Bangkok as an industrial cluster provide the processors with very competitive sea freight rates.

3.3. Additional Determinant Factors

3.3.1. Chance

Non-tariff barrier (NTB) measurement/standard become an external factor which influence tuna canneries development (Porter, 1990). Campling and Doherty's work revealed that the EU authorities alleged that the Thai canned tuna product mostly failed to comply EU Sanitary and Pre-Sanitary (SPS) requirement, which is mean that tuna raw materials processed by Thai canneries caught by unreliable vessels. This information supported by Greenpeace (2016) which confirmed that some of the Southeast Asian tuna canneries failed

to comply with traceability and sustainability procedure in accessing raw materials. Rahmah (2016) researched trade flows and the impact of the standard imposition towards three major canned tuna exporters in Asia, namely Indonesia, Thailand, and the Philippine. According to the result from gravity analysis with Poison Pseudo Maximum Likelihood (PPML) method, the stricter standard imposition reduces canned tuna trade flow from those three countries.

3.3.2 Government Intervention

According to Porter's diamond model, government intervention also contributed to national competitive advantage. Porter speculated that the government can intervene (and be intervened by) each of the four internal determinants either positively or negatively.

3.3.2.1. Import Tariff Duty

In canned tuna industries, government's roles in negotiating import tariff duty become the crucial factor which determines tuna canneries development. Campling (2015) found that tariff duty significantly benefits to canned tuna exporter to boost the export volume and value in the Japanese market. The most two competitive canned tuna exporters, namely Thailand and Philippine already have a preferential tariff to the Japanese market. Canned tuna exported by Thai processors dominated the Japanese market due to zero tariff duty for this product under Japan Thailand Economic Partnership Agreement (JTEPA) implemented in 2007.

3.3.2.2. Import Quota of Frozen Tuna

Hamilton, et al researched that one of the determinant factors of massive Thai tuna canneries development is a Thai government policy on allowing raw tuna imports. In the absence of sizeable domestic purse seine fishing fleet, the Thai government allows Thai canneries to import frozen tuna from the other country which enable canneries to produce

canned tuna as much as their capacity. Unlike the Thai government, the Indonesian government as cited by Ginoga (2017) allows domestic tuna canaries import raw materials 20% of total production capacity. As a result, some Indonesian canneries are able to produce only 50% of their total capacity. The lower raw tuna reservoir leads to lower production capacity of canned tuna processors and influence industry competitiveness to serve demand.

3.4. Conclusion

According to the diamond model initiated by Michael Porter, national competitive advantage influenced by four major factors and two additional external factors which interconnected each other. In case of canned tuna industry, existing related work revealed that Indonesian and Thai tuna canneries possess similarities as well as differences in competitive advantages. However, there is no specific work which comprehensively scrutinized tuna canneries development in Indonesia and Thailand.

4. Methodology

4.1. Research design

This study designed in a qualitative method in order to investigate the factors influencing canned tuna industry development in Indonesia and Thailand by comparing determinant factors of canneries development in both countries using the porter's diamond model.

4.2. Data collection and content analysis

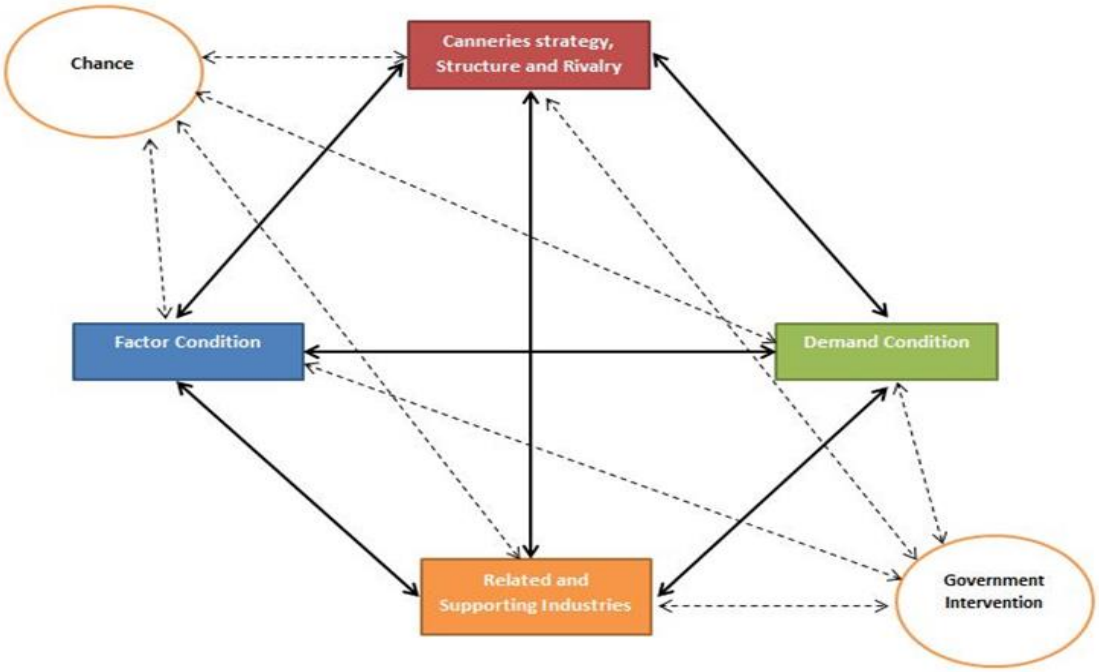
The research mainly utilized the secondary data through a library research approach, including Indonesian Marine Fishery Book (IMFB), Food and Agriculture Organization (FAO), International Monetary Fund (IMF), Indonesian Tuna Association Industries (ASTUIN), the

Ministry of Commerce of Republic Indonesia, the Ministry of Commerce of Kingdom of Thailand, Thammasat University e-Journals Library and online news or articles.

4.3. Conceptual framework

Fundamentally, this conceptual framework introduces a diamond model to analyze the competitiveness of canned tuna industries based in Indonesia and Thailand in a systematic and comprehensive way. The figure below depicts how each determinant factor interconnected each other and lead to the competitive advantage of a company.

Figure 1. Diamond Model of Michael Porter (1990)



Source: Author's interpretation

5. Comparison and Findings

5.1. Factor condition

In terms of factor condition, labor cost and raw material access considered as the major factor in determining canned tuna industry development. Indonesian minimum labor wage is around 174 USD per month, this number is lower compared to other canned tuna processors in ASEAN, such as the Philippines and Thailand, which is 206 USD and 357 USD respectively (ILO, 2014). Indonesian tuna canneries are supplied by abundant domestic workers, whereas Thailand hires migrant workers from neighboring countries such as Myanmar and Cambodia. Campling and Doherty (2007) estimated the data from Thai government office stated around 50% of labor in Thai tuna processors are migrant worker from Myanmar. Migrant workers from Laos and Cambodia also hired on Thai canneries sectors (Kuldilok, 2009). Migrant worker impact to higher labor cost since the transaction cost involved in sourcing migrant workers, including transport to Thailand, agency service fee, local government registration, and housing (Hamilton, et al. 2011). Therefore, Indonesian canned tuna processors have better competitiveness since the country is able to supply abundant cheap labor force instead of Thailand.

Raw material access is also counted as factor condition influencing the performance of canned tuna processors. Indonesian canned tuna canneries rely on domestic raw material caught by local vessels. Meanwhile, Thai canned tuna processors imported around 85% of in accessing raw tuna since the number of domestic tuna vessels was limited. The unpredictable of imported raw materials price influenced canned tuna processing in Thailand. This uncertainty makes Thailand has competitive disadvantages compared to its competitors (Kuldilok, 2013). Nevertheless, the strategic geographical location for dispatching lead Thailand to access low-cost supplies of raw tuna, both from the Pacific and the Indian ocean (Campling & Doherty, 2007). Moreover, the majority of Thai tuna canneries based in and around Bangkok which allow them to import raw materials as well as export their final product efficiently.

5.2. Demand condition

Domestic demand for canned tuna product in both Indonesia and Thailand are limited. Therefore, tuna canneries in the two analyzed countries rely on global demand. According to the data provided by UN Comtrade, the three major canned tuna importers namely the US, European Union (Italy, UK, Spain, France, and Germany), and Japan remain stable in consuming canned tuna during the last few years (see. Table 1.). Those three importers are the main export destination countries of Thai and Indonesian canned tuna product (Hamilton, et al). In addition, global demand for canned tuna product has remained secure since the import volume in new emerging markets significantly increased. Australia and China were the new canned tuna importers where Thai and Indonesian product dominating the market. Canned tuna consumption rapidly increased between 2010 and 2013 in Australia and China, 47% and 92% respectively (UN Comtrade, 2015). Thailand dominates Australian market 90-97% share from 2010 to 2014 and followed by Indonesia as the second largest supplier (Campling, 2015).

In general, global demand for canned tuna product which consistently escalated benefit to canned tuna processors to boost their export volume and value.

Table 1. Canned tuna traded inflow by three major importers

Country	2017		2016		2015		2014	
	Volume (mt)	Value (mil USD)	Volume (mt)	Value (mil USD)	Volume (mt)	Value (mil USD)	Volume (mt)	Value (mil USD)
The EU	542,969	2,775	483,468	2,194	515,703	2,389	514,574	2,859
the US	205,497	976	194,812	839	202,941	908	236,868	1,099
Japan	62,962	346	60,396	299	54,538	270	54,256	297

Source: UN Comtrade, 2018

5.3. Related and supporting industries

Related and supporting industries defined as firms that coordinated and cooperated in the value chain of canned tuna productions or those that involve complementary products. The main related industries are cold storage, shipping, ports, packaging, logistics, and fishing sectors (Kuldilok, 2013). Indonesian canned tuna industries supported by around 600,000 tuna vessels operated across the country. Moreover, the abundant domestic tuna vessels are also supported by fishing port which separately located across the country, such as Bitung, Sorong, Kendari, Ternate, Ambon, and Biak for Eastern Indonesia, and Muara Baru (Jakarta) as well as Telok Benoa (Bali) for Western Indonesia (Rahmah, 2016).

Nevertheless, canned tuna processors as well as the fishing port which widely dispersed lead to higher transportation costs. Therefore, it influences the less competitiveness of production cost to Indonesian canned tuna industries (Hamilton, et al).

In the case of Thai tuna canneries, the number of domestic vessels is limited due to two reasons. First, the high cost of investment in fishing vessels. Second, the scarcity of fisherman, crew, and expert captain (Kuldilok., 2013). However, the huge number of foreign vessels, particularly from Taiwanese, Chinese, Indonesian, Vanuatu, Malaysian, Belizean, Indian, and Bolivian, supply abundant raw materials for Thai tuna canneries. The whole catch of foreign vessels unloaded in Phuket soared from 1,416 MT in 1995 to 5,846 MT in 2014 (Nootmorn, 2015). This is indicated that limited domestic vessels do not give negative impact on Thai tuna processors' competitiveness since there are abundant raw materials supplied by foreign vessels.

Thai tuna industries are supported by sophisticated relating industries. First, some large processors have efficient cold storage to keep frozen tuna in good condition before processing. Second, canning factories are mainly situated near ports for efficient transshipment. Third, there are about 20 companies which produce can. Moreover, can processors increase to 30 companies in 2005 (Hayes). Thus, supporting industries and

facilities significantly escalate the competitiveness of tuna industries in Thailand (Puttipokin, 2001).

5.4. Firm's strategy, structure, and rivalry

Michael Porter (1990) claimed that each nation poses various goals, strategies, and ways in organizing industries. A compatible industries organization with sources of competitive advantage in a particular industry leads to national advantage. Then, domestic competition significantly contributes to the process of innovation and the ultimate prospect for international success.

In terms of firm structure, Indonesian and Thai tuna processors have a different pattern. Indonesian canned tuna industries have equal production capacity, whereas Thai canned tuna industries are an oligopolistic market (Hamilton, et al.). Consequently, dominant producers in Thailand become a price leader while other smaller companies are price-follower (Kuldilok, 2013). The two canned tuna producers play dominant roles in Thailand, namely Thai Union (1,000 mt/day) and Sea Value (850 mt/day). Unlike Thailand, which canned tuna processors dominated by two major canneries, Indonesian tuna canneries possess the equal production capacity approximately 5,000 to 30,000 mt per annum for major 6 processors and 1,000 to 6,000 mt per annum for minor processors (Hamilton, 2011).
Thai canneries are engaged in several complex-production export strategies. Research and Development and product innovation had become a major strength of the Thai industries since 1990 (Campling, et al. 2007). Then, by centralizing the canneries in Bangkok, Thai tuna canneries get access to raw materials and export transshipment effectively and efficiently. Diversification of production is another strategy implemented by the canned tuna industry in Thailand. The majority of canneries are not solely produced canned tuna. They are all diversified into either the processing of other seafood, in order to allow Thai canneries to cross-subsidize between different production lines. Then, if canned tuna price drop, the firm still can obtain profitability through another product while maintaining economies of scale through canned tuna production (Campling, et al.).

In contrast, Indonesian tuna canneries which situated separately in East Java, Bali, Sorong, and Biak lead to the difficulties in accessing raw materials as well as export transshipment. Therefore, the non-strategic colocation influence on the less competitiveness of Indonesian canned tuna industries (Hamilton, et al.). Nevertheless, in terms of Research and Development, Indonesian canneries have been collaborated with national universities to increase labor capacity, especially in managerial and technology application. Besides, the government also established a National Tuna Commission (Komite Tuna Nasional/ KTN) to deal with any constraints in exporting Indonesian canned tuna product to the other countries. In addition, KTN comprehensively and systematically coordinated with national stakeholder related tuna production. The main goal of KTN is developing tuna industries by providing production and research policies (Cahya, 2010).

In case of rivalry, potential emerging canned tuna producers may jeopardize the existing canned tuna processors, especially for those which located do not neighbor the EEZs with abundant tuna resources such as China, Vietnam, and the Republic of Korea (Miyake, et al. 2010). Chinese processed tuna export more doubled from 24,000 mt in 2010 to 83,000 mt in 2015. Market expansion for canned tuna was prominent in the African region. In volume, Chinese canned tuna export almost equal to Indonesia (Anthonysamy, 2016). Vietnam also considered as an emerging canned tuna exporter that has been developed since the early 2000s. Vietnamese canned tuna export constantly increased, especially for the US market, which brought them as the third canned tuna supplier in the US, after Thailand and the Philippine in 2009 (Hamilton, et.al. 2011).

5.5. Chance

Kuldilok (2013) estimated that chance or usually defined as uncontrollable external factors, come from a requirement from importers, such as the requirement of standard and rules of origin. In the international market, exporters need to comply with particular standards and regulations in order its product compatible with the requirement in the target market. In the fish and fishery trade, increasing complex standards have been established. Standards and

regulations imposed by major canned tuna importing countries, such as Europe, US, and Japan (Rahmah, 2016). In terms of dealing with standard and rules of origin, tuna canneries based in Indonesia and Thailand still failed to comply. Greenpeace (2016) researched that majority of canned tuna processors in Indonesia and Thailand still fail in complying traceability and sustainability access in obtaining raw tuna.

The imposition of the standard by importers negatively impacts to canned tuna export from three major canned tuna exporter in ASEAN namely Indonesia, Thailand, and the Philippine. The imposition of specific requirements will reduce 42.76% canned tuna export. Then, national standard leads to 53.57% reduction of canned tuna export. When the importer imposes stricter standards, the reduction of canned tuna export is 70.91% (Rahmah, 2016).

5.6. Government intervention

Government intervention meaning that related regulations and related institution in supporting the development of the fisheries sector and canned tuna industries on the economic development and environmental sustainability (Fatma, 2015). If we are comparing tariff duties imposed by three major importers namely the EU, the US, and Japan toward canned tuna product from Indonesia and Thailand, Thailand have lower tariff duties (0%) to Japanese market instead of Indonesia (7.5%). Meanwhile, tariff rate imposed by the EU and the US are same at 20-24% and 6-12.5% respectively. The lower tariff rates translated into higher export volume and value to the importers (Campling, 2015).

Government's role in allowing raw materials import also significantly influence tuna canneries performance. Indonesian government only allows tuna canneries to import raw materials 20% of its production capacity. Therefore, when raw materials supplied by domestic vessels decreased, some of the Indonesian tuna canneries only able to produce half of its production capacity (Ginoga, 2017). In contrast, since Thai tuna canneries rely 85% on raw materials import, the government totally supports in accessing raw materials from global supply. The Thai government also expands their overseas fishing fleets by cooperating

with coastal state or joint venture partners (Kuldilok, 2013). Depending on imported raw materials allow Thai Canneries enjoy a huge number of raw material supplies, then, increase its productivity on maximum level.

6. Conclusion

In general, canned tuna industries in Thailand have better competitive advantages instead of Indonesian tuna canneries according to Diamond Model's measurement. By comparing both internal and external factors of competitive advantages, this work found that Thai tuna canneries obtain more positive influence of both internal and external factors than Indonesian. Indonesian tuna canneries only have a better competitive advantage in factor condition, which labor wage is lower and more accessible. Therefore, to foster the canned tuna industry's competitiveness, Indonesia should learn from Thailand.

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