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Competitiveness of Malaysia's Palm-Based Finished Products.

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Abstract
The palm oil industry is one of the key economic drivers and contributors to Malaysia's national economy. Currently, Malaysian palm oil products are exported to more than 150 countries worldwide. However, the industry faces significant challenges, including labor shortages and declining cultivable lands due to deforestation and environmental degradation concerns. For this purpose, this study aims to assess Malaysia's relative trade competitiveness in palm-based finished products using the Revealed Trade Advantage (RTA). The export of high-value-added downstream products could hopefully help improve the country's export, national income, and overall quality of life.

Keywords: Trade Competitiveness; Sustainable Palm Oil; Revealed Trade Advantage; Income Generation.

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1.0 Introduction

Palm oil is widely used in millions of products such as food, soap, personal care items, cosmetics, and feedstock for biodiesel. In 2020, 39.76 %, equivalent to 82.71 million tonnes, of the global total vegetable oil consumption was contributed by palm oil (including palm kernel oil). The palm oil downstream products are defined as products that utilize oil palm extract resulting in higher value-added outputs (Mahat, 2012). The high export demand is mainly due to the lower price relative to other vegetable oils. However, the current exports trends indicate that Malaysia has lost out to competitors, especially Indonesia. One of the reasons behind this weak export performance is the lack of competitiveness.

Moreover, the industry faces significant challenges, including labor shortages and declining cultivable lands due to deforestation and environmental degradation concerns. The growing environmental and sustainability problems of oil palm farming may adversely affect palm oil's import demand and hence the Malaysian economy. Given its current domestic production, it is expected that Malaysia's palm oil export in the future will continue dropping.

After Indonesia, Malaysia is the world's second-largest palm oil supplier contributing approximately 30% of the global export market (Indonesia supplies around 60%). Globally, Malaysian palm oil plantation accounted for only 2.09% or 5.81 million hectares of the total global 276.85 million hectares, which is planted with the ten major oilseed crops. Despite the small land size, it can still supply 22.8 % (19.919 million tonnes) of the total global 17 vegetable oil and fats exported in 2017 (MPOB, 2018). The oil palm plantation area in Malaysia

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reached 5.81 million hectares in 2017. The Malaysian Palm Oil Board (MPOB) has indicated that the maximum planted area in Malaysia is 5.6 million hectares, and it is already exceeded the limit. This issue of land constraint is a result of domestic policy, which states that at least 50% of the country should remain forested. Therefore, less land is left to expand the oil palm plantations.

Although Indonesia has overtaken Malaysia in palm oil production, Malaysia is still the largest palm oil exporter in export ratio to the local production (Yoyo et al., 2014). In 2017, approximately 83 % of palm oil produced in Malaysia was exported to global markets compared to Indonesia, which exported 74 % of its total production. This indicates that Malaysia is more reliant on palm oil exports than Indonesia (Malaysian Oil Palm Statistics, 2018). Most of the palm oil produced in Indonesia is for the domestic market because it is home to a larger population than Malaysia (World Bank, 2017). Thus, Malaysia must find ways to improve the palm oil downstream competitiveness to strengthen, recover, and maintain its solid worldwide position against other major competitors. It is thus crucial to investigate the trade competitiveness of palm-based finished products, an important part of the downstream palm oil industries. Study by Othman (2018) proposed that firms can deploy their resources in strategies and policies that will make them more efficient and effective. He also suggested that idiosyncratic, immobile strategic resources owned or controlled by a firm could be sources of competitive advantage. Therefore, the objectives of this study are to identify the potential market for Malaysia's palm-based finished products.

The rest of the paper is organized as follows: Section 2 provides the literature review in trade competitiveness empirical studies; Section 3 explains the methods and the data used in this study; Section 4 presents and discusses the empirical results, and Section 5 concludes the research findings.

2.0 Literature Review

Several studies used the export demand model to analyze Malaysian palm oil exports, either individually or in comparison to Indonesia. Most studies on palm oil industry competitiveness focus on the upstream sector. Alias, Arshad, and Rahman (1992) assessed the competitiveness of crude palm oil (CPO) in Malaysia relative to the global market. The results showed that market size determines Malaysian exports. Competitiveness is a minor factor and has been declining. Shamsudin and Arshad (1993) used a two-stage least square to model the Malaysian CPO export demand from 1965 to 1990. Their findings show that own and substitute prices affect export demand.

Shariff et al. (2006) estimated the elasticity of Malaysian palm oil exports to China, India, Pakistan, Egypt, and South Korea from 1980 to 2003. The results showed that the price of palm oil affects its export. Yulismi and Siregar (2007) estimated the price elasticity of exports from Indonesia and Malaysia using an export demand model from 1990 to 2004. They found that Indonesian palm oil exports are inelastic in India but highly elastic in China. India and China have a high price and income elasticity, while the European Union (EU) has high cost and income inelasticity. Rifin (2010b) used the Almost Ideal Demand System (AIDS) to study 43 years of data from 1964 to 2006. Their results mirrored Yulismi and Siregar's (2007) findings. To summarise, Malaysian palm oil exports are more price elastic than Indonesian, while Indonesian palm oil exports are more income elastic.

Subramaniam (1997) used Constant Market Share (CMS) to assess Malaysian and Indonesian CPO millers' competitiveness. Compared to Indonesia, Malaysia is unable to meet the global demand for palm oil. The competitive effect showed an increase in Indonesian market share while Malaysian market share decreased. Malaysia is thus gradually losing market share to Indonesia. Nesti & Tan (2017) used the Revealed Comparative Advantage (RCA) index to assess the competitiveness of West Sumatra CPO on the Indonesian and global markets from 2000 to 2015, and the study concluded that West Sumatra is globally competitive.

Some studies examine the palm oil industry's competitiveness in larger markets like China (Sinaga, 2007), The Association of Southeast Asian Nations (ASEAN) (Sari, 2010), and India (Dewanta, Arfani, and Erfita, 2016). From 1999 to 2005, Sinaga (2007) compared Indonesian and Malaysian palm oil exports to China. The study concluded that Indonesia is competitive in China. However, Malaysian palm oil performs better than Indonesian palm oil in terms of competitiveness. Sari (2010) used the Revealed Comparative Advantage (RCA) and Constant Market Share (CMS) to capture the competitiveness of Indonesia's palm oil products in the ASEAN market from 2004 to 2008. The results showed that Indonesian palm oil had a higher RCA than other commodities, indicating a competitive advantage in the ASEAN market. Dewanta, Arfani, and Erfita (2016) used the Error Correction Model (ECM) and RCA to examine the competitiveness of Indonesian palm oil exports to India from 1990 to 2014. The results showed that Indonesian palm oil export competitiveness in India has declined over time. There are substitutes for palm oil in the form of vegetable oils readily available in the Indian market. Due to increased competition from local suppliers, the Indonesian palm oil export share has decreased in India, reducing its competitiveness.

Wisena et al. (2015) used qualitative analysis to identify policies on the palm oil industry for Indonesian palm producers to gain a sustainable competitive advantage. The data was analyzed using the Analytic network process (ANP) method. Their findings suggested that the industry should focus on low-cost leadership and organizational process as an upstream eco-efficiency strategy and downstream environmental cost leadership. Yoyo et al. (2014) used the International Institute for Management Development (IMD) framework to assess the competitiveness of the Indonesian palm oil-based fatty acid and fatty alcohol industry. Their findings show the biggest efficiency gap between current and ideal (future) conditions.

Most empirical studies of palm oil downstream competitiveness use traditional international trade performance as the key metric. Arip, Yee, and Fang (2013), and Salleh et al (2016). Hassanpour and Ismail (2010) used the RCA and Revealed Symmetric Comparative Advantage (RSCA) indices to compare Malaysian palm oil exports to other industrial plantation products in ASEAN and China. Malaysia has a competitive advantage in palm and palm kernel oil. While this study is significant, it does not consider higher value-added products in the palm oil industries. According to Rifin (2010a), Indonesian and Malaysian palm oil exports are competitive in Asia, Europe, and Africa. The results showed that Indonesia's market share increased in Asia and Africa, while Malaysia's share increased in Europe. The products chosen in this study are crude palm oil (CPO) and processed palm oil (PPO).

A most recent study by Othman et al., 2021 investigates the impact of energy tax imposed in European Union countries on Malaysia's downstream palm oil trade competitiveness adopted from the Porter Diamond Model (PDM) framework using the dynamic generalized method of moments (GMM). The results indicate that energy taxes positively and significantly influence Malaysia's trade competitiveness of palm oil downstream products. Arip, Yee, and Fang (2013) used RCA to assess the comparative advantage of palm oil-related products in Indonesia and Malaysia. Their research revealed that Malaysia outperforms Indonesia in most downstream palm oil industries. But this study only looked at 20 related palm oil products and concentrated on production. According to Salleh et al. (2016), few empirical studies on palm oil export competitiveness in downstream sectors. So, they compared CPO and PPO exports from Malaysia and Indonesia to five major markets: China, India, the EU, Pakistan, and the USA. The RCA index was used from 1999 to 2014. Their findings showed that Indonesia has a significant comparative advantage over Malaysia in the USA and Pakistan. The downstream products in this study are limited to PPO.

Therefore, this study points out some of the previous studies' empirical gaps. First, a small study on palm oil competitiveness focused on palm-based finish products, except for Arip et al. (2013), who studied several downstream products. Second, most previous studies on palm oil competitiveness used revealed comparative advantage (RCA). Scholars have criticized this technique for its asymmetric value and double counting issues. As such, this study aims to fill the gaps by assessing trade competitiveness using relative competitiveness advantage (RTA) for palm-based finish products at the HS 6-digit code.

3.0 Research Methodology

Scott and Vollrath (1992) extended the Balassa-index (Balassa, 1989). They constructed the Relative Trade Advantage (RTA) index, which considers both export and import activities by taking the difference of the Relative Export Advantage Index (RXA) and the Relative Import Penetration Index (RMP). RTA index gained more popularity over B-index due to the unique feature of RTA, which avoids the double-counting issue that can lead to biased index values (Vollrath, 1991). This is explained in detail as in the following discussion.

The RXA index is the ratio of a country's export of a particular product in the world market to the same country's share in the world export of all other commodities. In contrast, the RMP index is the ratio of a country's import of a particular product in the world market to the same country's share in the world import of all other commodities. The formula of Relative Export Advantage Index (RXA) is presented in equation 1 as per below equation:

$$RXA_j = \left\{\frac{X_j}{X_t}\right\} \div \left\{\frac{X_{wj}}{X_{wt}}\right\} \quad (1)$$

The Relative Import Penetration Index (RMP) is shown in equation 2:

$$RMP_j = \left\{\frac{M_j}{M_t}\right\} \div \left\{\frac{M_{wj}}{M_{wt}}\right\} \quad (2)$$

In equations 1 and 2, X and M represent the export and imports values, respectively. X_j represents the country's export of product *j* and X_t country's export of all commodities. X_{wj} denotes the world's export of product *j* and all commodities, respectively. Notably, t and w represent the rest of commodities (excluding j) and countries (excludes the country understudy). The values of RTA may be positive in the case of the competitive advantage and negative in the opposite situation. The RXA shows a competitive advantage when it is greater than 1 and a competitive disadvantage when the values are between 0 and 1.

Relative Trade Advantage (RTA) is shown in equation 3:

$$RTA_j = RXA_j - RMA_j \quad (3)$$

Vollrath (1991) explained the RTA index as shown in equation 3. It takes into account exports and imports simultaneously and is calculated as the difference between RXA and RMP indices. If RTA is greater than zero, it indicates a relative trade advantage in palm-based finished products and vice versa if RTA is less than zero. The index is calculated entirely on Microsoft EXCEL spreadsheets using data from UN-Comtrade.

The study utilized data of export (on Free on Board - FOB price) and import (Cost, Insurance, and Freight-CIF price) for palm-based finished products are based on HS six-digit codes retrieved from the UN Comtrade database spanning annually for 18 years from 1999 to 2016. The detail of selected palm oil downstream products based on HS six-digit codes and the definition of the products were obtained from Malaysia Revision of customs tariff codes for oil palm products published by MPOB (2013). All 12 products listed under HS 6-digit codes are shown in Table 1.

The analysis takes into account products listed under HS 6-digit codes as these specifically represent palm-based finish products. The Harmonized System is an international nomenclature for product classification. It enables participating countries to classify traded goods for customs purposes on a common basis. The first two digits (HS-2) indicate the chapter in which the goods are classified, for example, 15 = Animal or vegetable fats and oils. The next two digits (HS-4) identify groupings within that chapter, for example, 15.17 = Margarine,

other edible mixtures (excluding fats, oils and their fractions). The following two digits (HS-6) are even more specific, e.g., 15.17.90 = Vegetable ghee/ Vanaspati.

Table 1: List of Palm-based Finished Products under the HS-6 Digit Code

Product Code (HS 6 digit)	Product definition
151710	Margarine, excluding liquid margarine
151790	Vegetable ghee/ Vanaspati
151800	vegetable fats and oil and their fraction, boiled, oxidised, dehydrated, sulphurised, blown, polymerized by heat or in inert gas or otherwise ch
152000	Crude glycerol
152200	Soap stock
340111	Toilet soap, bath soap
340120	Soap chips/flakes/soap noodles/blend
340213	Non-ionic Organic surface-active agents (other than soap)
340219	Other non-ionic Organic surface-active agents (coco amides, alcohol ethoxylate, palm kernel diethanolamine)
340490	Other artificial waxes and prepared waxes
293621	vitamin a and their derivatives
293628	vitamin e and its derivatives

4.0 Findings and Discussion

Table 2 indicates the results of the Malaysian RTA index for the palm-based finished product group. In 2016, Malaysia obtained the most vital competitive advantage in soapstock (HSC 152200), Soap chips (HSC 340120) and vegetable ghee (HSC 151790). Corresponding values of the average RTA index and world market shares for the respective product categories are also the highest among all the products in the group. The RTA index's average value for 1999 to 2016 is the highest for crude glycerol (HSC 152000), although it had the lowest RTA index in 2016. This result indicates that Malaysia significantly lost its competitive advantage in crude glycerol (HSC 152000) over time. According to Rodrigues, Bordado, and Santos (2017), crude glycerol largely generated from biodiesel production is impure (10 kg of glycerol is generated in every 100 kg of biodiesel produced) and thus affecting demand for this particular product (Nomanbhay, Hussein and Ong, 2018). Overall, Malaysia had a competitive advantage in the finished product group in the six products in 2016 and five products on average within 1999 – 2016.

Table 2: The Competitive Advantage of Malaysia's Palm-Based Finished Products at HSC-6 Digit Level

HS code	World Market Share (2016)	RTA (2016)	Average RTA (1999-2016)
152200	13.81	4.03	1.93
340120	18.41	3.33	3.31
151790	7.79	2	3.60
293621	3.07	0.28	-0.23
151800	2.27	0.26	-0.44
151710	1.65	0.03	-0.11
340111	4.29	-0.2	0.15
293628	0.76	-0.46	-0.39
340490	0.00	-0.5	-0.07
340213	1.79	-0.51	-0.34
340219	0.00	-2.47	-1.44
152000	2.14	-6.38	7.54
Max		**4.03**	**7.54**
Average		**-0.04**	**1.25**
Competition divisions		**6**	**5**

(Source: Author's own calculations on UN COMTRADE data)

Figure 1 shows the comparative RTA index in 1999 and 2016 for the palm-based finished product between Malaysia and Indonesia. Since Malaysia and Indonesia cover more than 80 percent of the world's export in palm oil products, this study will only employ Indonesia's Palm-based products market share as an indicator for international rivalry. From this figure, it can be concluded that Malaysia is losing so much of its RTA index compared to Indonesia, which has more stable competitiveness.

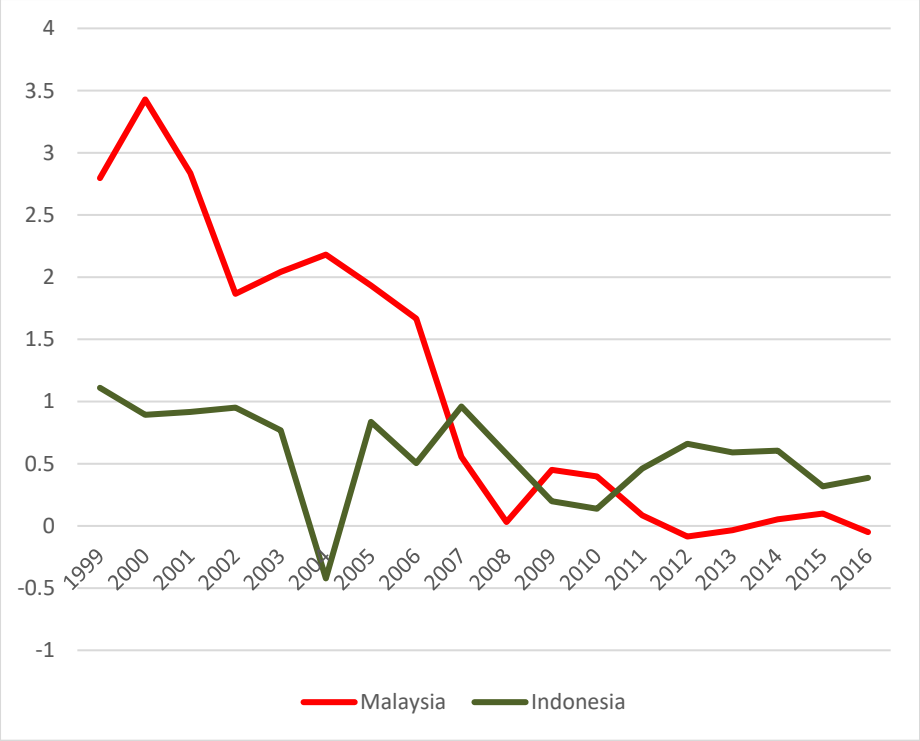

Figure 1: The Relative Trade Advantage (RTA) for Malaysia and Indonesia From 1999 to 2016
(Source: Author's own calculations on UN COMTRADE data)

Currently, Indonesia leads in palm oil, with a competitive advantage over Malaysia. Despite this, the palm oil industry's competitiveness gap between Indonesia and Malaysia has grown over time. Malaysia's major palm oil companies must diversify into high-value-added downstream products to sustain the industry's growth. The efficiency of palm oil as a crop should not be understated as palm oil is the world's most widely traded, versatile, and highly efficient crop. The growth of downstream palm oil products is critical for creating new economic opportunities and assisting Malaysia in becoming a high-income country. Unfortunately, the palm oil industry's exports remain disproportionately concentrated in the upstream sector, implying an excess of lower-value-added products. As a result, the Malaysian government must promote the downstream palm oil business, which focuses on high-value-added finished products. To maintain the competitiveness of palm oil downstream products, Malaysia must make proper decisions to ensure that palm oil development in the country is within the bounds of sustainable development that minimizes environmental degradation. Zainuddin (2018) and Kumaran (2019) indicated that It's important to remember that both national and international elements are always changing and evolving, resulting in shifting competitive conditions. In this regard, the MSPO Certification Scheme should be made compulsory among the major producers to ensure the sustainability of palm oil and its competitiveness.

5.0 Conclusion

Malaysian palm oil industry is one of the key economic drivers of the agricultural sector and a significant contributor to the national economy. However, the results of RTA show that only 5 out of 12 Malaysian palm-based finished products had a competitive advantage from 1999 to 2016. The results also show that Malaysia is losing a significant portion of its RTA index compared to Indonesia, which has more stable competitiveness. This study has a few limitations that should be addressed in future research. First, this study uses secondary data, which consists of 12 items in the HSC system at the six-digit level. As more data becomes available, this can be further subdivided into subgroups, resulting in more robust findings. The comparative studies on palm-based competitiveness have been limited to Malaysia and Indonesia only. Future research related to this study can investigate competitiveness in a more specific way by using HS nine-digit codes for the downstream palm oil industry. A comparative study of the trade competitiveness of palm oil products between Malaysia and other significant producers of vegetable oil, such as Indonesia, the United States, Argentina, China, and the European Union, is also recommended.

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Paper Contribution to Related Field of Study

The findings from this study imply crucial policy recommendations that can be addressed by the government, producers, and stakeholders to enhance the competitiveness of the palm oil industry in Malaysia.

References

Alias, M. H., Arshad, F. M., and Rahman, A. A. A. (1992). Market Share Analysis of Malaysia's Palm Oil Exports: Implication on its Competitiveness. Journal of Economic Malaysia, 26 (Disember 1992), 3-20.

Arip, M. A., Yee, L. S., and Feng, T. S. (2013). Assessing the Competitiveness of Malaysia and Indonesia Palm Oil Related Industry. World Review of Business Research, 3(4), 138–145.

Asfaranjan, Y.S and Moayyed A.Z. (2012). Assessing Export Opportunity of Malaysia's Palm Oil Products: Using Shift-Share Technique. European Journal of Scientific Research, 70(2), 323-333.

Balassa, B. A. (1989). Comparative Advantage, Trade Policy and Economic Development. Harvester Wheatsheaf.

Dewanta, A. S., Arfani, R. N., and Erfita (2016). Elasticity and Competitiveness of Indonesia's Palm Oil Export in India Market. Economic Journal of Emerging Markets, 8(2), 148-158

Hassanpour, B. and Ismail, M. M. (2010). Regional Comparative Advantage and Competitiveness of Malaysian Palm Oil Products. Oil Palm Industry Economic Journal, 10(2), 23-28.

Kumaran, S. (2019). The Dynamics for Mandatory MSPO Certification Scheme to Be Successfully Implemented. Journal of Oil Palm, Environment & Health, 10(2019), 1-7

Mahat, S.B.A. (2012). The Palm Oil Industry from the Perspective of Sustainable Development: A Case Study of Malaysian Palm Oil Industry. Master Thesis, Graduate School of Asia Pacific Studies Ritsumeikan Asia Pacific University Japan.8AN

Malaysian Palm Oil Board. (2013). Revision of customs tariff code for oil palm products and schedule of tariff rates. Economic and Industry Development Division, MPOB

Malaysian Palm Oil Board. (2018). Malaysian Oil Palm Statistics 2018, 38th Edition. Economic and Industry Development Division, MPOB

Nesti, L. and Tan, F. (2017). The Competitiveness Crude Palm Oil Product of West Sumatra in Domestic and World Market. Reports on Economics and Finance, 3(1), 37–43

Nomanbhay, S., Hussein, R., and Ong, M. Y. (2018). Sustainability of biodiesel production in Malaysia by production of bio-oil from crude glycerol using microwave pyrolysis: a review. Green Chemistry Letters and Reviews, 11(2), 135-157.

Othman, R. A. (2018). Exploiting Resources for Competitive Advantage of Cooperative Organizations in Malaysia. Asian Journal of Behavioural Studies, 63–71 doi:https://doi.org/10.21834/ajbes.v3i12.124

Othman, N., Yusop, Z., Ismail, M. M., & Afandi, S. H. M. (2021). Energy Tax and the Downstream Palm Oil Trade Competitiveness Nexus in Malaysia: An Application of GMM Approach. International Journal of Energy Economics and Policy, 11(5), 593-599.

Rifin, A. (2010a). Export competitiveness of Indonesia's palm oil product. Trends in Agricultural Economics, 3(1), 1-18.

Rifin, A. (2010b). An Analysis of Indonesia's Palm Oil Position in the World Market: A Two-stage Demand Approach. Oil Palm Industry Economic Journal, 4(2), 35-42.

Rodrigues, A., Bordado, J. C., and Santos, R. G. D. (2017). Upgrading the glycerol from biodiesel production as a source of energy carriers and chemicals—A technological review for three chemical pathways. Energies, 10(11), 1817.

Salleh, K. M., Abdullah, R., Rahman, M. A. K. A., Balu, N and Nordin, A. Z. A. (2016). Revealed Comparative Advantage and Competitiveness of Malaysian Palm Oil Exports against Indonesia in Five Major Markets. Oil Palm Industry Economic Journal, 16(1), 1-7.

Sari, E. T. (2010). Revealed comparative advantage (RCA) and Constant Market Share Model (CMS) of Indonesian Palm Oil in ASEAN Market, Unpublished Master Thesis, Agribusiness Management Prince of Songkla University, Bangkok

Scott, L. and Vollrath, T. L. (1992). Global competitive advantage and overall bilateral complementarity in agriculture: a statistical review. Statistical Bulletin No. 850. US Department of Agriculture, Economics Research Service: Washington, DC.

Shamsudin, M. N., and Arshad, F.M. (1993). Malaysian Palm Oil Market Model. In Arshad, F.M., Shamsudin, M.N. and Othman, M.S. (Eds.) Malaysian Agricultural Commodity Forecasting and Policy Modelling. Centre for Agricultural Policy Studies.

Shariff, F., Rahman A. K. A. and Amiruddin, M. N. (2006). The elasticity of foreign demand for Malaysian palm oil. Oil Palm Industry Economic Journal, 6(2), 1-6

Sinaga, R. H. (2007). Competitiveness Analysis of Indonesian Palm Oil Export in China, Unpublished master thesis, Graduate Program Management and Business, Institut Pertanian Bogor, Bogor.

Subramaniam, D. (1997) Assessing the Competitiveness of the Malaysian Palm Oil Industry. Masters thesis, Universiti Putra Malaysia.

Vollrath, T. L. (1991). A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. Weltwirtschaftliches Archiv, 127 (2), 263– 279.

Wisena, B. A., Daryanto, A., Arifin, B., and Oktaviani, R. (2015). Sustainable development strategy for improving the competitiveness of oil palm industry. International Research Journal of Business Studies, 7(1), 13-37.

World Bank (2017). world development indicator. Retrieved from http://data.worldbank.org/indicator

Yoyo, T., Daryanto, A., Gumbira, S. A., and Hasan, M. F. (2014). Competitiveness Model and Gap Analysis of Indonesian Palm Oil-Based Fatty Acid and Fatty Alcohol Industry. International Journal of Economics and Finance, 6(2), 218-225

Yulismi and Siregar, H. (2007). Determinant Factors of Indonesia Palm Oil Export to Major Importing Countries: An Error Correction Model Analysis. Economics and Finance in Indonesia, 55(1), 65-88.

Zainuddin, Z. M. (2018). Perceived Destination Competitiveness of Langkawi Island: An evaluation. Asian Journal of Environment-Behaviour Studies, 3(10), 12-123. doi: https://doi.org/10.21834/aje-bs.v3i10.318