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Analysis of The Potential Competitiveness of Indonesian Wood Charcoal Exports In The International Market 2000-2022

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Abstract

Based on UN Comtrade data from 2007-2022, Indonesia emerged as a leading exporter of wood charcoal in the international market, despite a downward trend in export growth. This study analyzes the market structure concentration, competitiveness, trade position, and trade integration between Indonesia and its trading partners using data from UN Comtrade and BPS. Analytical methods include Concentration Ratio (CR-4), Herfindahl Index, Revealed Comparative Advantage (RCA), Revealed Symmetric Comparative Advantage (RSCA), Index of Trade Specialization (ISP), and Intra-Industry Trade (IIT). Results indicate that wood charcoal operates in a monopolistic competition market with low concentration, strong competitiveness, and a trade position at the maturation stage. However, trade integration with partners remains weak, positioning Indonesia primarily as an exporter. Strengthening competitiveness through increased production can enhance export volume and value, optimizing Indonesia's role in the international wood charcoal market.

Keywords: Wood Charcoal, Competitiveness, Export, ISP, RCA

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INTRODUCTION

The activities of the agriculture, forestry, and fisheries sectors are the utilization of biological resources by humans to produce food, industrial raw materials, and energy to manage their environment (Wijaksana et al., 2017). One of the derivatives of the agriculture, forestry and fisheries sectors is that the forestry subsector is

still widely relied upon by people living in inland tribes, forests are still used as a place to fulfill their needs (Dewi, 2018).

According to the Central Bureau of Statistics (2023), in 2018 - 2019 there was a decrease in the growth rate of the forestry subsector by 2.41% due to deforestation (Ministry of Environment and Forestry, 2020). The growth rate of the forestry and logging subsectors has decreased, but the level of community dependence on forests is quite high, which has led to a reduction in forest area (Zendrato et al., 2020). Existing forest resources produce a variety of forest product commodities including various types of wood that can be used and processed into goods such as furniture and paper. In addition to producing wood, forests also produce various types of non-timber commodities or so-called Non-Timber Forest Products (NTFPs) such as pine resin, resin resin, natural honey, wicker, charcoal, etc.

Based on UN Comtrade data (2023), Indonesia's NTFP export commodities, namely wood charcoal (HS 4402), have the highest export value among pine resin (HS 3805), resin resin (HS 1301), natural honey (HS 0409), wicker (HS 4601). The export value of wood charcoal was highest in 2022 at US $360,325,362 UN Comtrade (2023). The high export value of wood charcoal provides an opportunity for wood charcoal to become one of the leading commodities in the international market.

UN Comtrade data in 2022 shows that there are 4 main exporters of wood charcoal in the international market, namely Indonesia, China, Poland, and the Philippines. Indonesia is the main exporter of wood charcoal commodities in the international market from 2007 to 2022. The data on the growth rate of wood charcoal exports in 2007-2022 are as follows.

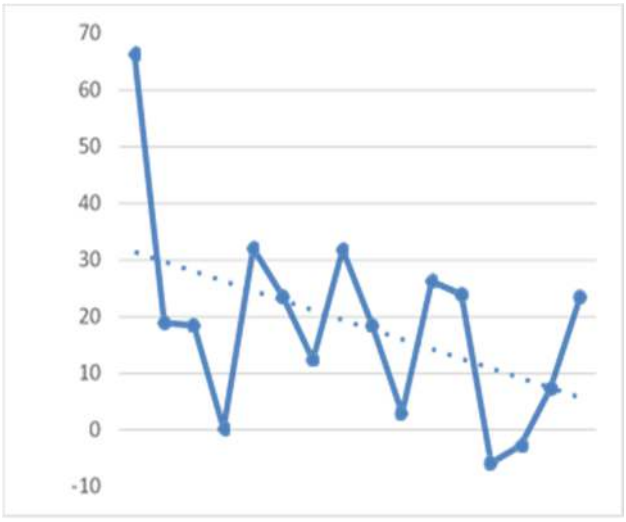

Figure 1. Growth of Indonesian Wood Charcoal Exports in the International Market 2007-2022
Source: UN Comtrade, 2023

Based on UN Comtrade data (2023), the average export value in 2007-2022 was US $176,015,425. Graph 1. shows that the growth rate of Indonesia's wood charcoal exports is fluctuating, so this study was conducted with several research questions, namely analyzing the concentration of market structure, potential competitiveness, trade position, and the relationship between the level of trade integration of exporting countries and trading partners of wood charcoal commodities in the international market.

Competitiveness arises from the comparative advantage of a commodity or product produced (Kang et al., 2023). The competitiveness of a country can be measured through a trade-based index. The purpose of measuring a country's trade index is to see how high the value of exports and imports made by the country concerned (Kariyasa & Dewi, 2011).

International trade is one of the sources of a country's income to increase the country's wealth (Huala Adolf, 2006). The existence of transactions in the global market directly impacts

the economy of countries that conduct international trade. Excess supply or production of goods in a country and demand for the same product in other countries gives rise to economic activity in the global market (V. Wardani & Sunyigono, 2021).

According to Adam Smith in Salvatore (2014:32), a trade can be mutually beneficial if both countries benefit from each other. In absolute advantage, the direction of international trade is determined by the costs incurred in producing a good, then countries that conduct international trade specialize according to the advantages of each country if it is not limited (Schumacher, 2012).

David Ricardo in his 1817 book Principles of Political Economy and Taxation, regarding the law of comparative advantage, is one of the most important laws of international trade and is an economic law that has not been challenged in economics and can be applied (Salvatore, 2014:34).

The theory of comparative advantage states that even if one country has an absolute disadvantage compared to other countries in producing a commodity, it can still conduct profitable trade through specialization (Salvatore, 2014:35).

RESEARCH METHODS

The data used in this study are secondary data, sourced from BPS, United Nations Commodity Trade Statictics Database (UN Comtrade), and International Trade Center (ITC) from 2000-2022.

The data used are the export value of wood charcoal commodities of Indonesia, China, Poland, and the Philippines, the total export value for wood charcoal commodities in the world, the total export value of all commodities of Indonesia, China, Poland, and the Philippines, the total export value for all export commodities in the world.

The analysis used in this research includes the following, the first objective of this study is to determine and analyze the concentration of wood charcoal commodity market structure in the international market using the concentration ratio (CR) and Herfindahl Index (HI).

To be able to determine the concentration of the market structure, it is necessary to calculate the market share first, as for the mathematical equation for market share as follows (Muslika & Tamami, 2019).

$$Si = Xiy/TXy \; x \; 100\%$$

Where Si is market share (%); Xiy is export value of commodity j from country i; Txy is total export value of commodity j After calculating the market share then calculate the concentration ratio, by summing up the 4 main exporting countries of wood charcoal in the international market. The CR4 mathematical equation is as follows (Narulita et al., 2014).

$$CR4 = Si1 + Si2 + Si3 + Si4$$

Where CR 4 is concentration ratio S is market share. The second objective of this study is to determine and analyze the potential competitiveness of wood charcoal commodities in the international market using Revealed Comparative Advantage (RCA).

Revealed Comparative Advantage (RCA) explains the competitiveness or comparative advantage of a country's export commodities with other countries' commodities in the international market through the RCA value. Based on the concentration ratio value, the market structure can be classified as shown in table 1.

Table 1. Market Structure Concentration Ratio Value Classification

Ratio	Market Structure
CR-4 = 0	Perfect Competition
0 < CR-4 < 40	Monopolistic Competition
40 ≤ CR-4 < 60	Loose Oligopoly or Monopolistic Competition
60 ≤ CR-4 < 90	Strict oligopoly
CR-4 ≥ 90	Monopoly (few dominant firms)
CR-4 = 100	Perfect monopoly

Source: Ken Ayu Khansa, 2022

If a country has an RCA value greater than one (RCA> 1), then the country has a comparative advantage in related products and is strongly competitive (M.A. Wardani & Mulatsih, 2018). The mathematical equation of RCA is as follows (Karsinah et al., 2017).

$$RCAaj = (Xaj/Xa)/(Xwj/Xw)$$

Where $RCAaj$ is Revealed Comparative Advantage Xaj is export value of country a for commodity j Xa is total export value of all commodities of country a Xwj is export value of commodity j in the world Xw is total export value for all commodities in the world. Laursen improved RCA known as Revealed Symmetric Comparative Advantage (RSCA), in testing competitiveness that is not effective using RCA calculations.

$$RSCA = ((RCA\ ij - 1))/((RCA\ ij + 1))$$

Revealed Symmetric Comparative Advantage (RSCA), this improvement is determined by the interval value between -1 and +1 (Maya Nihayah, 2012). The mathematical equation of Revealed Symmetric Comparative Advantage (RSCA) according to Laursen is as follows (Maya Nihayah, 2012).

The third objective of this study is to determine and analyze the trade position of wood charcoal commodities in the international market using the Trade Specialization Index (ISP). The Trade Specialization Index (ISP) is used to determine whether a type of product in a country tends to be an exporting country or an importing country (Balqis & Yanuar, 2021). The mathematical equation of ISP is as follows (Karsinah et al., 2017).

$$ISP = (Xaj - Maj)/((Xaj + Maj))$$

Where TSI is Trade Specialization Index; Xaj is export value of country a for commodity j; Maj s import value of country a for commodity j The following is the interpretation of the ISP value as follows (Firmansyah et al., 2017) -1 to -0.5 is introduction stage in international trade or, -0.4 to 0.0 is import substitution stage in international trade, 0.1 to 0.7 is export expansion stage, 0.8 to 1.0 is maturation stage or very high competitiveness.

The fourth objective of this study is to determine and analyze the level of trade integration of wood charcoal commodities in the international market using Intra-Industry Trade (IIT). According to Salvatore, (2014) Intra-Industry Trade (IIT) is international trade that involves the exchange of products from the same industrial sector, these countries export and import products from the same industry in other words this trade is intra industry trade. The following mathematical equation of the IIT index is as follows (Prasetyo, 2010).

$$IIT = \sum(X+M) - \sum|X-M|\ x\ 100 \sum(X+M)$$

Where *IIT* is intra-industry trade; *X* is export value of country a for commodity j; *M* is import value of country a for commodity j.

Tabel 2. IIT Value Classification

IIT Value	Classification
0, 00	no integration
>0, 00 – 24, 99	weak integration
25, 00 – 49,99	moderate integration
50, 00 - 74, 99	strong integration
75, 00 – 99,99	very strong integration

Source: (Kurniawan & Setyari, 2018)

RESULTS AND DISCUSSION

Wood charcoal (HS 4402) is a NTFP commodity, wood waste produced from wood processing that produces dark solids that are burned to produce heat (Silalahi et al., 2020). Wood charcoal is one of the alternative fuel sources to replace fossil fuels (ITPC, 2022). Wood charcoal has a selling value at a relatively lower price compared to fuel oil (Inzon et al., 2016).

The selling value of wood charcoal makes wood charcoal one of the non-oil and gas export commodities in the international market, in several countries that produce wood charcoal. Market control is one of the efforts used by a country in conducting international trade.

The results of the calculation of the market share of the 4 largest wood charcoal exporting countries in the international market from 2000 to 2022 obtained an average market share of Indonesia of 15, 071%, China of 11, 78%, Poland of 7, 72%, and Philippiness of 3, 417%. After knowing the market share of each country, the calculation of CR-4 and Herfindahl Index on wood charcoal commodities is carried out. The calculation results are as follows:

Tabel 3. Calculation Results of CR4 and IH

Year	CR-4 (%)	IH
2000	44.069	862.833
2001	45.905	972.324
2002	42.851	930.254
2003	38.003	749.914
2004	30.101	502.408
2005	27.039	476.051
2006	27.940	492.121
2007	25.730	549.459
2008	28.660	600.2
2009	28.903	597.146
2010	30.285	570.138
2011	32.241	582.979
2012	36.853	589.154
2013	37.724	602.149
2014	42.652	686.513
2015	46.546	765.214
2016	44.184	797.712
2017	44.621	864.005
2018	48.057	922.251
2019	48.446	953.625
2020	48.456	889.97
2021	46.888	834.711
2022	50.696	1016.32
Average	38.993	730.759

Source: UN Comtrade (processed), 2024

Based on the CR-4 results, most of the concentration values of wood charcoal commodities are in the monopolistic competition market structure leading to oligopoly with a low level of concentration. The shape of the market structure based on the limitation dimension of the concentration ratio value of Joe S. Bain is oligopoly, because the CR-4 value ranges from 22% - 87%. Based on the limitation dimension of the concentration ratio value from Prasetyo (2010), it also shows a monopolistic competition

market structure, because the CR-4 value is less than 70%.

The number of countries exporting wood charcoal commodities in the international market from 2000 to 2022 varies annually between 100 and 127 countries. The results of the calculation of the Herfindahl index each year show that the value is more than 100 and less than 1500 (100 < 730,759 < 1500) which indicates that the market structure in wood charcoal commodities is a monopolistic competition market. The market concentration of wood charcoal commodities in the international market is also classified as low concentration, the competition is quite intense because there are many sellers or producers.

Competitiveness analysis was conducted in this study by looking at the comparative advantages of the largest exporting countries of wood charcoal in the international market, namely Indonesia, China, Poland, and the Philippines in the period 2000 to 2022. The calculation results of the RCA and RSCA of Indonesia, showed the lowest RCA value in 2003 amounting to 7, 332, while for the highest RCA value in 2019 amounting to 25, 927, with an average value of 15, 586 the value is greater than

The RSCA calculation of the Indonesian wood charcoal commodity, obtained the lowest RSCA value in 2004 with a value of 0, 773 and the highest in 2019 with a value of 0.925, with an average value of 0, 862 the value is greater than 0 but less than 1. Based on this value, it shows that the RCA index with a value greater than one and the RSCA index with a value close to one and a positive value, thus indicating that Indonesian wood charcoal commodities have strong competitiveness in the international market.

The calculation results of the RCA and RSCA of China, showing the lowest RCA value in 2009 of 0, 510 while for the highest RCA value in 2001 of 5, 922, with an average value of 1, 533, the value is greater than 1. The calculation of RSCA obtained the results of the calculation of the

lowest RSCA value in 2012 with a value of -0, 262 and the highest in 2001 with a value of 0, 711, with an average RSCA of 0, 0120 the value is greater than 0 and less than 1. Based on these values, it shows that the RCA index is mostly an index value of less than one and the RSCA index is mostly negative, thus indicating that China's wood charcoal commodities have weak competitiveness in the international market. This happens because the leading export commodities from China are not wood charcoal, but machinery and transport equipment, iron and steel, and medical equipment (Movania Ayu Rizati, 2021).

The calculation results of the RCA and RSCA of Poland, the lowest RCA value in 2022 amounted to 4, 292 and the highest value in 2000 amounted to 13,38976, with an average RCA of 8, 793 the value is greater than 1. RSCA calculation of the lowest value in 2022 with a value of 0, 622 and the highest in 2000 with a value of 0, 861, with an average RSCA of 0, 781 the value is greater than 0 and less than 1. Based on this value, it shows that the RCA index shows an index value of more than one and the RSCA index value is positive and close to one, so that China's wood charcoal commodities have competitiveness and potential in the international market.

The calculation results of the RCA and RSCA of the Philippiness country, the lowest RCA value in 2003 amounted to 4, 234 and the highest RCA value in 2013 amounted to 20, 421, with an average RCA of 9, 375 the value is greater than 1. The RSCA calculation of the Philippines wood charcoal commodity, obtained the calculation results of the lowest RSCA value in 2003 with a value of 0, 617 and the highest in 2013 with a value

of 0, 906, with an average RSCA of 0.767 the value is greater than 0 but less than 1. Based on this value, it shows that the RCA index shows an index value of more than one and the RSCA index value is positive and close to one, so that the wood charcoal commodity of the Philippines has competitiveness and potential in the international market.

The Index of Trade Specialization (ISP) is used to illustrate whether wood charcoal commodities tend to be export or import commodities. In addition, it is also used to see the stage of development of wood charcoal commodities in the international market, the calculation of ISP shows the position or stage of a country in the introduction stage, replacement stage, expansion export stage, or maturation stage. The ISP value is obtained from the export value and import value of wood charcoal commodities from Indonesia, China, Poland, and the Philippines. The following are the results of the ISP value calculation.

Based on the results of the ISP analysis in Table 4, the average value of ISP for Indonesia of 0, 994 and the Philippines of 0, 983 indicates that Indonesia and the Philippines are at the maturation stage and the competitiveness of wood charcoal commodities of the two countries is very high.

The average value of China's ISP of 0, 397 and Poland of 0, 522 indicates that China and Poland are at the expansion stage or expansion of the wood charcoal export commodity market.

The same research conducted by Arlita et al. (2024) shows that the position of Indonesia, China, Malaysia, and Vietnam exporting wood charcoal commodities in Saudi Arabia in 2014 to 2022 has the potential to occupy the position of the maturation stage of trade.

Indonesia's ISP value of 0, 99 the value is almost close to 1 which indicates that Indonesian wood charcoal commodities in the Saudi Arabia market are at the maturation stage.

Table 4. TSI Calculation Results

Year	Country			
	Indonesia	**China**	**Poland**	**Philippines**
2000	0.988	0.930	0.928	0.984
2001	0.998	0.905	0.877	0.990
2002	0.988	0.955	0.849	0.992
2003	0.971	0.937	0.874	0.994
2004	0.992	0.866	0.806	0.995
2005	0.997	0.575	0.720	0.997
2006	0.997	0.633	0.665	0.989
2007	0.998	0.344	0.497	0.996
2008	0.989	0.237	0.449	0.980
2009	0.995	0.195	0.372	0.990
2010	0.995	0.217	0.399	0.990
2011	0.997	-0.069	0.374	0.814
2012	0.998	-0.133	0.375	0.997
2013	0.997	0.013	0.446	0.993
2014	0.999	0.179	0.419	0.998
2015	0.997	0.371	0.375	0.999
2016	0.998	0.379	0.387	0.991
2017	0.995	0.347	0.394	0.994
2018	0.997	0.190	0.355	0.995
2019	0.995	0.255	0.277	0.996
2020	0.995	0.438	0.418	0.977
2021	0.993	0.307	0.385	0.974
2022	0.996	0.068	0.355	0.993
Average	0.994	0.397	0.522	0.983

Source: UN Comtrade (diolah), 2024

Intra-industry trade is trade conducted by two countries with the same type of commodity. This study analyzes the level of trade integration between four countries exporting wood charcoal commodities in the international market,

namely Indonesia, China, Poland and the Philippines, while the trading partners of each country can be seen in Table 5. The level of integration is calculated using the Intra-Industry Trade (IIT) analysis tool with the IIT index ranging from 0 to 100.

The IIT index result of 0 indicates that trade involves only one party, the country tends to export or import only, and if the index value is 100, the exported commodity is the same as the imported commodity.

Table 5. IIT Calculation Results

Repoter	No	Trade Partner	IIT	Classification
Indonesia	1	Saudi Arabia	0.024238	Weak Integration
	2	Iraq	0.011987	Weak Integration
	3	Korea, Republic. Of	0.201652	Weak Integration
	4	Japan	0.80737	Weak Integration
	5	Lebanon	0	no integration
China	1	Japan	0.85153	Weak Integration
	2	Saudi Arabia	0.008563	Weak Integration
	3	United Emirates Arab	0.250506	Weak Integration
	4	Iraq	0	no integration
	5	Korea, Republic. of	4.281808	Weak Integration
Poland	1	Germany	1.297229	Weak Integration
	2	Sweden	0.021866	Weak Integration
	3	Norway	15.04379	Weak Integration
	4	France	27.55209	Intermediate Integration
	5	Netherlands	9.648352	Weak Integration
Philippines	1	China	3.917558	Weak Integration
	2	Japan	0.094228	Weak Integration
	3	Korea, Republic. of	0.348872	Weak Integration
	4	Turkiye	0	no integration
	5	India	0.00075	Weak Integration

Source: UN Comtrade (diolah), 2024

Analysis of the level of trade integration of wood charcoal commodities in Indonesia's trading partner countries shows that Saudi Arabia, Iraq, South Korea, and Japan have a weak level of integration in intra-industry trade while between Indonesia and Lebanon have no level of integration. Analysis of the level of integration in China's trading partner countries shows that Japan, Saudi Arabia, United Arab Emirates, and South Korea have a weak level of integration, while between China and Iraq there is no level of integration.

Analysis of the level of integration in Poland's trading partner countries shows that Germany, Sweden, Norway, and the Netherlands have a weak level of integration, while between

Poland and France has a medium level of integration. Analysis of the level of integration in the trading partner countries of the Philippines shows that China, Japan, South Korea, and India have a weak level of integration in intra-industry trade, while between the Philippines and Turkey there is no integration.

CONCLUSION

The results of the concentration ratio analysis (CR-4) of Indonesia, China, Poland, and the Philippines obtained an average CR-4 of 38, 993%. And the average Herfindahl Index (HI) of 730, 759 which indicates that wood charcoal commodities in the international market have a monopolistic competition market structure that tends to lead to oligopoly with a low level of concentration.

The results of the analysis obtained the average RCA and RSCA of Indonesia amounting to 15, 586 and 0, 862, China amounting to 1, 533 and 0, 0120, Poland amounting to 8, 793 and 0,781 and Philippines amounting to 9, 375 and 0, 767 which indicates that the four countries have a comparative advantage in wood charcoal commodities.

The results of the Trade Specialization Index (ISP) analysis show that Indonesia and the Philippines are at the maturation stage or the competitiveness of wood charcoal commodities of the two countries is very high, while China and Poland are at the expansion stage or market expansion of wood charcoal export commodities.

Analysis of the level of trade integration of wood charcoal commodities in Indonesia with its trading partners, China with its trading partners, Poland with its trading partners, and the Philippines with its trading partners shows that most of them are at a weak level of integration. This shows that Indonesia, China, Poland, and the Philippines tend to be exporting countries and their trading partner countries tend to be wood charcoal importing countries.

Indonesia's market dominance in wood charcoal is still quite small, this is because there are quite a lot of wood charcoal exporting countries in the international market ranging from 100 to 127 countries. Therefore, to be able to increase the market share of Indonesian wood charcoal exporters, it is necessary to increase economic cooperation with wood charcoal importing countries in the international market.

Indonesia is in a maturation position where its competitiveness is high so there is a tendency for Indonesia to become a major exporter of wood charcoal. Indonesia is in a mature position where its competitiveness is high so there is a tendency for Indonesia to become a major exporter of wood charcoal. Therefore, the government also participates in determining policy directions, such as integrating the role of the agro-industrial sector, so that development can be more extensive.

REFERENCES

ITPC] IndonesianTrade Promotion Center Osaka. (2022). Laporan Analisis Intelejen Bisnis Arang Kayu (*Wood Charcoal*) HS 4402. https://itpc.or.jp/wp-content/uploads/2023/01/3.-Charcoal-MB- 2022.pdf

Arlita, A. D., Benalywa, Z. A., & Ismail, M. (2024). Measuring The Comparative And Competition Of Indonesian Wood Charcoal Exports In The Saudi Arabian Market a Elpawati , *b Titik*. 1–28.

Badan Pusat Statistik. (2023). Laju Pertumbuhan PDB Seri 2010 (Persen), 2023. *Badan Pusat Statistik*. https://www.bps.go.id/id/statistics-table/2/MTAoIzI=/-seri-2010--laju- pertumbuhan-pdb-seri-2010.html

Balqis, P., & Yanuar, R. (2021). Daya Saing Ekspor Lada Indonesia di Pasar Amerika dan Eropa. *Forum Agribisnis*, 11(2), 182–194. https://doi.org/10.29244/fagb.11.2.182-194

Dewi, I. N. (2018). Kemiskinan masyarakat sekitar hutan dan program perhutanan sosial. *Buletin Eboni*, 15(2), 65–77.

Firmansyah, F., Widodo, W., Karsinah, K., & Oktavilia, S. (2017). Export Performance and Competitiveness of Indonesian Food Commodities. *Jejak*, 10(2), 289–301. https://doi.org/10.15294/jejak.v10i2.11294

Huala Adolf. (2006). *Hukum Perdagangan Internasional Prinsip Prinsip Dan Konsepsi Dasar*.

Inzon, M. R. B. Q., Espaldon, M. V. O., Florece, L. M., Rebancos, C. M., & Alcantara, A. J. (2016). Environmental sustainability analysis of charcoal production in Mulanay, Quezon, Philippines. *Journal of Environmental Science and Management*, 2016(Special Issue 2), 93–100. https://doi.org/10.47125/jesam/2016_sp2/09

Kang, H., Yang, Z., & Zhang, Z. (2023). The competitiveness of China's seaweed products in the international market from 2002 to 2017. *Aquaculture and Fisheries*, 8(5), 579– 586. https://doi.org/10.1016/j.aaf.2021.10.003

Karsinah, Oktavilia, Shanty, Rahman, Yozi Aulia, Setiawan, Avi Budi, Firmansyah Widodo, W. (2017). Analysis for the Export Competitiveness of Food and Agricultural Commodities in Central Java Province, Indonesia. *Advanced Science Letters*, 23. https://doi.org/https://doi.org/10.1166/asl.20 17.9313

Kemeterian Lingkungan Hidup dan Kehutanan. (2020). Hutan Dan Deforestasi Indonesia Tahun 2019. *Kemeterian Lingkungan Hidup Dan Kehutanan.* https://ppid.menlhk.go.id/siaran_pers/brow se/2435

Ken Ayu Khansa, S. (2022). Perbandingan Pengukuran Struktur Persaingan Herfindahl-HirschmanIndex dan Concentration Ratio Industri Perbankan Indonesia. *Contemporary Studies In Economic, Finance And Banking*, 1(3), 451–465.

Kurniawan, I. P. dan, & Setyari, N. P. W. (2018). Determinan Intra-Industry Trade Komoditi Kosmetik Indonesia Dengan Mitra Dagang Negara ASEAN-5 Fakultas Ekonomi dan Bisnis Universitas Udayana (Unud), Bali , Indonesia Pendahuluan Integrasi dalam bidang ekonomi merupakan cara yang dipil. *E-Jurnal EP Unud*, 7, 58–90.

Maya Nihayah, D. (2012). Kinerja Daya Saing Komoditas Sektor Agroindustri Indonesia (Performance Competitiveness of Agro Commodities Sector Indonesia). *Jurnal Bisnis Dan Ekonomi* (JBE), 19(1), 37–48.

Movania Ayu Rizati, D. (2021). 10 Negara Eksportir Terbesar di Dunia (US$ Milyar) (2020) *Databoks.Katadata.Co.Id.* https://databoks.katadata.co.id/datapublish/2021/08 /02/tak-terkalahkan-tiongkok- negara-eksportir-terbesar-di-dunia-pada- 2020

Muslika, R., & Tamami, N. D. B. (2019). Daya Saing Komoditas Ekspor (Karet) Indonesia Ke China. *Agriekonomika*, 8(2), 194–205. https://doi.org/10.21107/agriekonomika.v8i2. 5426

Narulita, S., Winandi, R., & Jahroh, S. (2014). Analisis Dayasaing Dan Strategi Pengembangan Agribisnis Kopi Indonesia. *Jurnal Agribisnis Indonesia*, 2(1), 63. https://doi.org/10.29244/jai.2014.2.1.63-74

Schumacher, R. (2012). *Adam Smith ' s theory of absolute advantage and the use of doxography in the history of economics*. 5(2), 54–80.

Silalahi, R. H., Sihombing, B. H., & Sinaga, P. S. (2020). Potensi Hasil Hutan Bukan Kayu (HHBK) Di Hutan Lindung Raya Humala Kabupaten Simalungun. *Jurnal Akar*, 8(1), 38–51. https://doi.org/10.36985/jar.v8i1.113

UN Comtrade. (2023). *Trade Data*. Un Comtrade. https://comtradeplus.un.org/TradeFlow?Fre quency=A&Flows=X&CommodityCodes=TO TAL&Partners=0&Reporters=all&period=202 3&AggregateBy=none&BreakdownMode=pl us

Wardani, M. A., & Mulatsih, S. (2018). Analisis Daya Saing Dan Faktor-Faktor Yang Memengaruhi Ekspor Ban Indonesia Ke Kawasan Amerika Latin. *Jurnal Ekonomi Dan Kebijakan Pembangunan*, 6(1), 81–100. https://doi.org/10.29244/jekp.6.1.81-100

Wardani, V., & Sunyigono, A. (2021). Daya Saing dan Faktor yang Mempengaruhi Ekspor Lada Indonesia ke India. *Jurnal Ekonomi Pertanian Dan Agribisnis*, 5(3), 655–666. https://doi.org/10.21776/ub.jepa.2021.005.03. 5

Wijaksana, G., Safri, M., & Parmadi, P. (2017). Kontribusi dan elastisitas subsektor dalam sektor pertanian di Kabupaten Tebo. *Jurnal Paradigma Ekonomika*, 12(2), 77–86. https://doi.org/10.22437/paradigma.v12i2.39 43

Zendrato, D. T., Rustiadi, E., & Rusdiana, O. (2020). Peranan Subsektor Kehutanan dalam Pembangunan Wilayah Provinsi Jawa Barat: Pendekatan Input-Output dan Pewilayahan. *Journal of Regional and Rural Development Planning*, 4(1), 1–13. https://doi.org/10.29244/jp2wd.2020.4.1.1-13