Competitiveness of Indonesian ginger exports to Japan, Malaysia, and The United States

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Article Info	ABSTRACT
	The purpose of this study was to determine the competitiveness of Indonesian ginger in Japan, Malaysia, and the United States by analyzing the level of competitiveness, competitiveness position, and concentration of Indonesian ginger exports to Japan, Malaysia, and the United States. The research method used is the descriptive quantitative method. The period under study is 2012–2019, or eight years. The data analysis methods used are Revealed Comparative Advantage (RCA), Trade Specialization Index (ISP), and Market Concentration Index (IKP). The results of the RCA analysis of the competitiveness of Indonesian ginger exports to Japan, Malaysia, and the United States in 2012–2019 have comparative competitiveness 1. The average RCA scores were Japan (0.20), Malaysia (0.95), and the United States (0.07), respectively. In terms of competitiveness, Indonesia is an exporter country because ISPs have an average ISP value, namely Japan (0.93) in the maturation stage, Malaysia (0.61) in the expansion stage, and the United States (1.0) in the maturation stage. For market concentration, Indonesia has a relatively low IKP value, namely Japan (0.000024), Malaysia (0.000132), and the United States (0.000002), with a trade intensity value of (0-1).

INTRODUCTION

At the beginning of 2020, precisely in January, the world was shocked by one of the phenomena of the emergence of a new type of virus, namely the coronavirus, or in its scientific designation referred to as Covid-19. Coronavirus is an infectious disease caused by acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The disease was first discovered in late December 2019 in Wuhan, the capital of China's Hubei Province, and has since spread globally rapidly, resulting in the 2019-2020 coronavirus pandemic (Supriatna, 2020). Ginger is also known as a biopharmaceutical plant, which is part of the horticulture sub-sector. The horticulture sub-sector is part of the agricultural sector, which contributes quite a lot to the value of Indonesia's GDP. The GDP contributed was 14.2 percent of the total GDP of the agriculture, forestry, and fisheries sub-sector, which was 7,695,329.5 billion rupiah. In 2017, biopharmaceutical products played a fairly good role in horticultural GDP, as evidenced by the contribution of biopharmaceutical GDP of 5.84 percent, amounting to 22,136 billion rupiah (Central Bureau of Statistics, 2018). There are fifteen types of medicinal plants cultivated in Indonesia. Of the fifteen types of medicinal plants, nine types of medicinal plants are included in the category of medicinal plants from rhizomes, while the rest are from other types. Ginger rhizome is a commodity in the spice category. Compared to several ginger-producing countries in the world, Indonesia is the fourth largest ginger-producing country after China, India, and the Netherlands. The total amount of ginger production in 2013 in the world was 2.1 million tons and almost 90% of ginger production came from Asia, or an equivalent of 1.9 million tons (FAO, 2016).

Table 1 Production and Land Area of Indonesian Ginger in 2012-2019

Year	Production (Tons)	Land Area (Ha)
2012	114.538	7.316
2013	155.286	10.279
2014	226.115	15.345
2015	313.064	15.324
2016	340.341	12.932
2017	216.587	10.556
2018	207.412	10.227
2019	174.380	8.077

Source: Trade Statistics Data, UN Comtrade Statistics, 2020.

Table 1 shows the production of Indonesian ginger. Above that, during the 2012–2019 period, fluctuating Indonesian ginger production tends to decrease. Within a period of 8 (eight) years, the highest production occurred in 2016 at 340,341 tons and the lowest occurred in 2012 at 114,538 tons. From 2012–2016, ginger production continued to increase, but in 2017–2019, ginger production decreased. Ginger production in 2012 was 114,538 tons and increased to 174,380 tons in 2019. Then the highest land area for Indonesian ginger in 2014 was 15,345 ha and the lowest occurred in 2012, which was 7,316 ha.

Indonesia's ginger commodity has advantages when compared to other competing countries. There are supporting factors such as natural resources, human resources, geographical conditions, and a tropical climate that can increase the production of Indonesian ginger. According to data from UN Comtrade (2020), Indonesia has consistently exported ginger to three destination countries, namely Japan, Malaysia, and the United States.

Table 2 Main Destination Countries for Indonesian Ginger Exports in 2012-2019

Year	In (Tons)		
	1	2	3
	Jepang	Malaysia	AS
2012	258	246	0,709
2013	321	4.587	73
2014	348	7.731	41
2015	248	2.264	36
2016	251	1.604	22
2017	270	2.013	15
2018	326	1.018	10
2019	215	1.300	0,618

Source: Trade Statistics Data, UN Comtrade Statistics, 2020.

The decline in Indonesian ginger exports to Japan is thought to be due to the tight competition among ginger exporters in Japan, such as China, Thailand, and Vietnam, and the difference in tariffs imposed by Japan. Japan is a strategic trading partner country for Indonesia because Japan is ranked first as Indonesia's non-oil and gas export destination. Ginger is a spice that is widely consumed by the Japanese people and has a variety of culinary uses. During the winter, Japanese people use ginger extensively in their cooking with the goal of warming the body and strengthening the body's resistance to influenza attacks (Ministry of Trade, 2012). In Malaysia, Indonesia's ginger exports experience fluctuations in exports. This is because ginger production in Malaysia is relatively constant, but domestic consumption continues to increase, so Malaysia needs to increase demand for ginger exports from Indonesia. While in the United States, ginger consumption has increased every year, but Indonesian ginger exports have decreased to the United States. This is due to the intense competition between ginger-producing countries (FAOSTAT and UN Comtrade Statistics, 2020). Ginger is one of the rhizome plants in Indonesia, which during this COVID-19 period, when everyone has expectations about the content and benefits of ginger, it is possible that the export potential will increase. But at the same time, when viewed from the data, exports of ginger actually tend to decrease towards the export destination countries of Indonesian ginger (Japan and the United States). Among medicinal plants,

ginger is one of the ones with a promising export share, especially as one of the ingredients for the herbal medicine industry, food supplements, and health drinks, which can improve the body's immune system. In connection with this, the authors are interested in conducting research on "The Competitiveness of Indonesian Ginger Exports to Japan, Malaysia, and the United States."

RESEARCH METHODS

Research Site and TimeThis research was conducted in Indonesia and used the 2012-2019 research time. The timing of this research was carried out for eight years, with reasons based on data obtained through UN Comtrade Statistics. It can be seen that Indonesia has only been exporting ginger to the world consistently starting from 2012.

Types and Sources of Data The types and sources of data used in this study are secondary data. The Indonesian ginger export data and time series data over a period of eight years are used for analysis in this study. The data required is sourced from the Central Bureau of Statistics, trade Statistics Data (United Nations Commodity Trade Statistics), food and Agriculture Organization of the United Nations (FAO), Indonesian Ministry of Agriculture (Directorate General of Horticulture), and Indonesian Ministry of Trade

Data Examination The descriptive and quantitative methods of analysis were employed in this study. The descriptive method is used to describe the development of Indonesian ginger, while the quantitative method is used to analyze the competitiveness of Indonesian ginger exports to Japan, Malaysia, and America. This calculation method uses 3 indicators, namely RCA (Revealed Comparative Advantage), which is used to determine the competitiveness of Indonesian ginger exports to Japan, Malaysia, and the United States. ISP (Trade Specialization Index) is used to analyze the competitive position of Indonesian ginger exports to Japan, Malaysia, and the United States, and IKP (Market Concentration Index) is used to analyze the concentration of Indonesian ginger exports to Japan, Malaysia, and the United States.

1. *Revealed Comparative Advantage* (RCA)

Formula *Revealed Comparative Advantage* (RCA) as follows (Tambunan, 2001: 92):

$$RCA = (\frac{X_{ij}/X_{it}}{W_j/W_t})$$

Keterangan:
X_{ij}: The export value of ginger from Indonesia to the three export destination countries (US$)
X_{it}: The total value of Indonesia's exports to the three export destination countries (US$)
W_j: Export value of third world ginger export destination countries (US$)
Wt : Third world export value of export destination countries (US$)

2. Trade Specialization Index (ISP)

Trade Specialization Index (ISP) with the following formula (Tambunan, 2004: 124):

$$ISP = \frac{X_{ia} - M_{ia}}{X_{ia} + M_{ia}}$$

Information:
ISP : Trade Specialization Index
X_{ia}: Indonesian ginger exports to Japan, Malaysia, the United States (USD/Ton)
M_{ia}: Import of Indonesian ginger to Japan, Malaysia, United States (USD/Ton)

3. Market Concentration Index (IKP)

Market Concentration Index, with the following formula (Mia Mikic: UNESCAP,2005) :

$$Hj = \sqrt{\left[\sum \left[\frac{X_i}{X}\right]^2\right]}$$

Information:
Hj : Hirschman Index
Xi : Export value of Indonesian ginger to Japan, Malaysia, the United States
X : The total value of Indonesia's exports to Japan, Malaysia, the United States

RESULTS AND DISCUSSION
Revealed Comparative Advantage (RCA)

RCA is used to measure changes in the comparative advantage or level of competitiveness of a product from a country to the world. If the RCA value is 1 or close to 0, then the competitiveness of the ginger commodity to the destination country (Japan, Malaysia, and the United States) is weak. If the RCA value is > 1, the competitiveness of ginger to the destination country (Japan, Malaysia, and the United States) is weak. The stronger the RCA value, the higher the competitiveness. The results of the study using the Revealed Comparative Advantage (RCA) analysis of Indonesian ginger to export destination countries (Japan, Malaysia, and the United States) in the period 2012 to 2019 can be seen in the table below:

Table 3 Revealed Comparative Advantage (RCA) Jahe Indonesia to Negara Jepang, Malaysia, and Amerika Serikat in 2012-2019

Year	RCA Eksport Indonesia		
	Jepang	**Malaysia**	**Amerika Serikat**
2012	0,15	0	0,01
2013	0,21	1,56	0,17
2014	0,19	1,96	0,05
2015	0,15	0,86	0,07
2016	0,19	1,19	0,14
2017	0,16	1,02	0,08
2018	0,30	0,53	0,06
2019	0,22	0,49	0,01
Average	**0,20**	**0,95**	**0,07**

Source: Data Trade Statistics, UN COMTRADE (2021) processed.

Table 3 shows that in the period 2012–2019, the export destination countries of Indonesian ginger to Japan, Malaysia, and the United States have 1 competitiveness, meaning that ginger in the three export destination countries does not have comparative competitiveness or can be said to be weak. The largest average RCA value is occupied by Malaysia, with an average RCA value of 0.95. Then in second position, namely Japan, with an average RCA value of 0.20. And finally, in the third position, namely the United States, with an average RCA value of 0.07.

Trade Specialization Index (ISP)

The purpose of the Trade Specialization Index (ISP) is to compare the difference between the value of a country's exports and imports with the value of that country's exports and imports. The calculation range of this index is between –1 and +1. The competitive position cycle theory has five stages, according to the Ministry of Trade (2008). These stages are:

1. Introduction stage: when an industry in a country exports new products and a new industry in another country imports these products with an ISP value of -1 to -0.5.
2. Import substitution stage: if the level of production is not high enough to meet economies of scale so that a country imports more than exports with an ISP value of between-0.51 to 0.
3. Export expansion stage: when a country begins to increase its exports with an ISP value ranging from 0.01 to 0.80.
4. The maturation stage, if the end product is already at the standardization stage for the technology used with an ISP value close to 1.
5. re-import stage, if domestic demand exceeds domestic production, with an ISP value ranging from 1.00 to 0.00.

The results of the study using the Trade Specialization Index (ISP) analysis of Indonesian ginger to export destination countries (Japan, Malaysia, and the United States) in the period 2012 to 2019 can be seen in table 4 below:

Table 4 Trade Specialization Index (ISP) of Indonesian Ginger to Japan, Malaysia, and the United States in 2012-2019

Year	ISP Eksport Indonesia		
	Jepang	**Malaysia**	**Amerika Serikat**
2012	0,469055375	-0,855530474	1,000000000
2013	1,000000000	0,294854342	1,000000000
2014	1,000000000	0,989296227	1,000000000
2015	1,000000000	0,986607143	1,000000000
2016	1,000000000	0,877707006	1,000000000
2017	1,000000000	1,000000000	1,000000000
2018	1,000000000	0,655765921	1,000000000
2019	1,000000000	1,000000000	1,000000000
Averange	**0,933631922**	**0,618587521**	**1,000000000**

Source: Data Trade Statistics, UN COMTRADE Statistics (2021) processed.

Table 4 shows that the highest average ISP score is occupied by the United States, with an average value of 1.0000000000. From 2012-2019, the United States has a stable position and is in the stage of export maturation. Then ranked second was followed by Japan with an average value of 0.933631922, which is in the export maturation stage. The smallest ISP value in Japan occurred in 2012 with a value of 0.469055375. Furthermore, the third position, namely Malaysia, with an average value of 0.618587521, is in the stage of export expansion.

The Market Concentration Index (IKP)

The Market Concentration Index (IKP) is one of the methods used to determine the intensity of a country's trade with several other countries. The intensity value is obtained by squaring the percentage of trade between one country and another. If the value of trade intensity is greater than 0-1, the dependence between a country and another will also be greater. This makes them more vulnerable to the economic conditions of their trading partners.

The results of the study using the Market Concentration Index (IKP) analysis of Indonesian ginger to export destination countries (Japan, Malaysia, and the United States) in the period 2012 to 2019 can be seen in table 5 below:

Table 5 Market Concentration Index (IKP) of Indonesian Ginger Exports to Japan, Malaysia, and the United States in 2012-2019

Year	GPA Value		
	Jepang	**Malaysia**	**Amerika Serikat**
2012	0,000014965933	0,000014184039	0,00000020120480093
2013	0,000021671505	0,000222938705	0,00000552692144377
2014	0,000028624441	0,000381953896	0,00000241544785181
2015	0,000025193003	0,000116631234	0,00000313489489619
2016	0,000026519194	0,000103627555	0,00000507071670994
2017	0,000020178955	0,000099438715	0,00000364953667728
2018	0,000034291771	0,000050971095	0,00000265269637654
2019	0,000027556882	0,000070099178	0,00000022379400210
Average	**0,000024875211**	**0,000132480552**	**0,00000285940159482**

Source: Data Trade Statistics, UN COMTRADE Statistics (2021) processed.

Table 5 shows that the Market Concentration Index (IKP) of Indonesian ginger for the three destination countries, namely Japan, Malaysia, and the United States, was low in the period 2012 to 2019. The highest average value was obtained by Malaysia, with a value of 0.000132480552. The second position was followed by Japan, with an average score of 0.000024875211. Furthermore, the third position is held by the United States, with an average value of 0.00000285940159482. This means that the market concentration of ginger products is not the main product exported to the three destination

countries, and ginger products are also not focused on the economic vulnerability of Japan, Malaysia, and the United States.

CONCLUSION

Based on research conducted by researchers, it can be concluded that the revealed comparative advantage (RCA) of Indonesian ginger exports to Japan, Malaysia, and America does not have comparative competitiveness or weak competitiveness. However, the small RCA value indicates that Indonesia is not focused on exporting ginger commodities to destination countries. A small RCA is also not necessarily bad for the economy. The value of the Specialization Index (ISP) for Indonesian ginger exports to Japan shows that Indonesia tends to be an exporter country for ginger commodities and places Indonesia in the position of the export maturation stage. Meanwhile, exports of Indonesian ginger to Malaysia indicate that Indonesia also tends to be an exporter country for ginger commodities and is in the stage of export expansion, while exports of ginger to the United States indicate that Indonesia is tending to become an exporter country for ginger commodities and is in the export maturation stage. The Market Concentration Index (IKP) of Indonesian ginger exports to Japan, Malaysia, and the United States shows that Indonesia has a relatively small Market Concentration Index (IKP) (0-1). This IKP value shows that the export of Indonesian ginger to the three destination countries has a relatively small effect.

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