

Analysis of indonesian banana export performance in major export destination countries

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Abstract

Bananas are one of Indonesia's potential horticultural commodities. The global market favors bananas because they are affordable and highly nutritious, whose exports can be used to increase the country's foreign exchange. During the last five years, Indonesia's banana production has continued to increase, making bananas the most significant fruit production of the whole national fruit. However, when viewed from the other side, Indonesia's banana exports are relatively low. So it is necessary to know the performance of Indonesian banana exports in the international market. This study aims to analyze the performance of Indonesia's banana exports in the five major destination countries, such as China, Malaysia, Japan, United Arab Emirates, and Singapore. The method in this research is Constant Market Share. The analysis results show that the standard growth effect of Indonesia's export performance is better than the world standards growth. The commodity composition effect shows that the contribution of Indonesian bananas is relatively high in the international market. Regarding market distribution effects, Indonesia can distribute and dominate the export market share of bananas in China, Malaysia, and the United Arab Emirates. Furthermore, the competitiveness effect, Indonesia is a strong competitor as a banana exporter to Malaysia, Japan, and Singapore. The conclusion from these four aspects is that Indonesia's export performance as a whole is good. The government must provide the appropriate policies through promotion, bilateral cooperation, product quality improvement, and affordable prices. It is hoped that Indonesian bananas will have strong competitiveness and be able to fulfill international market demand.

Keywords: Banana; Constant Market Shares; Export.

1. Introduction

The agricultural sector is essential in developing Indonesia's economy because this sector functions as the food supply and a source of Indonesia's national income. The agricultural sector contributed 13.28% of the Indonesian GDP, significantly growing positively in 2021 to 1.84%. In the second quarter of 2022, this sector will consistently grow positively by 1.37% with a GDP contribution of 12.98% (KKBPRI, 2022). Horticulture is one of the agricultural sub-sectors

*Corresponding author: Agung Adi Nugraha Email: <u>agung.adnugraha@gmail.com</u> Received: June 22, 2023; Accepted: June 29, 2023; Published online: June 29, 2023. ©Published by South Valley University. This is an open access article licensed under ©ISO that have the potential to be improved because it has many priority commodities, which are a source of foreign exchange for the country. One of the priority horticultural commodities is bananas.

Banana is a horticultural fruit commodity that is the most widely consumed fruit and is available for a year, unlike many other fruits that produce seasonally (Calberto, Staver and Siles, 2015). Bananas are also a fruit commodity originating from Asia which is a favourite by people because they are affordable and nutritious (Gulati, Ganguly and Wardhan, 2022). Indonesian banana production has increased over the last five years, with production in 2016 of 7.16 million tonnes to 8.74 million tonnes in 2021. Bananas are Indonesia's largest production fruit commodity (BPS, 2022), which makes the banana trade potential to develop. On the production side, the average growth in Indonesia's banana production per year has large quantities and continues to increase. However, unfortunately, the export volume of bananas tends to be low, and the domestic market still dominates the trade.

The highest banana export was recorded in 2018, with a quantity of only 30.37 thousand tonnes valued at US\$14.61 million (BPS, 2018). Furthermore, bananas in 2019 contributed 11.62% to national fruit exports, with an export volume of 22 thousand tonnes valued at US\$11.15 million (Aurelia, Kurniati and Hutajulu, 2022). This condition indicates that Indonesian bananas are in great opportunity in the international market, so they must be increased.

There are many vital importers of Indonesian bananas in the global market. In the last five years, Indonesian banana exports to China were the highest, followed by Malaysia, Japan, the United Arab Emirates, and Singapore. Indonesian banana has excellent opportunities in the major destination countries; it is necessary to know the export performance. That can be achieved through market-oriented export а pattern and following market demand (Skriner, 2009). In addition, export performance can be increased by market diversification and product development. Diversification is necessary because if exports are concentrated in one market are vulnerable to external shocks, and this diversification can expand the export market share (Pinandhita and Agustina, 2019).

Based on the description above, it is crucial to examine the performance of Indonesian banana exports in five major destination countries: China, Malaysia, Japan, the United Arab Emirates, and Singapore. Therefore, we will know about the condition of Indonesian banana export performance, including standard growth, composition commodity effects, market distribution effects, and competitiveness effects. The results of this analysis are expected to help provide an overview of government policies in maximizing the performance of Indonesian banana exports.

2. Materials and methods

The basic method of this research is a descriptive method with a quantitative approach. The descriptive method with a quantitative approach is objective research, including collecting and analyzing quantitative data and statistical testing methods (Hermawan, 2005). The data used in this research is annual secondary data. The time series data for 2011 - 2021, the commodity being bananas with the 4-digit HS code; 0803 (Bananas, incl. plantains, fresh or dried). The source of data obtained comes from the International Trade Center (ITC), the United Nations Commodity Trade Statistics Division (UN COMTRADE), the Food and Agriculture Organization (FAO), the Indonesian Central Bureau of Statistics (BPS), and some supporting literature.

The Constant Market Share analysis method is often used to determine the performance and development of a country's exports due to changes in the world's exports in international trade 2008). The Constant (Batista, Market Share analysis assumes that a country's export market share in world markets does not change over time (Suprihartini, 2005). According to Taj and Wani (2019), CMS explains the divergence between real export growth and export growth computed on the assumption that each export flow grows by the import market; that is, the focus country's share of each commodity in each market remains constant. The existence of these divergences then a country can maintain its market share as a competitive effect. A positive competitiveness value illustrates that the country successfully maintains its market share, and vice versa for a negative value (Suprihartini, 2005).

According to Asrol (2017), there are four terminologies for measuring competitiveness with

the CMS model: standard growth effects, commodity effects, market distribution effects, and competitiveness effects. The CMS approach has been applied in a study on developing export markets for agriculture (Prasetyo, Marwanti and Darsono, 2018; Jamilah *et al.*, 2022; Rahmawati, Hadi Purnomo and Marwanti, 2022; Tety, Kurnia and Andriani, 2022) and food processing products by Widodo et al., (2008). Based on Tires, Philips, and Lim (1985) in Widodo *et al.*, (2008), the CMS model can be written as follows:

$$g = \frac{E_{(t)} - E_{(t-1)}}{E_{(t-1)}}$$
(Standart growth)
+ $\frac{\sum i (g_i - g) E_{(t-1)i}}{E_{(t-1)}}$
(Comodity Composition effect)
+ $\frac{\sum i \sum j (g_{ij} - g_i) E_{(t-1)ij}}{E_{(t-1)}}$
(Market distribution effect)
+ $\sum i \sum j (E_{(t)ij} - E_{(t-1)ij} - g_{ij} E_{(t-1)ij})$

 $E_{(t-1)}$

Notes :

$$g = \frac{W_{(t)} - W_{(t-1)}}{W_{(t-1)}}$$
$$g_{i} = \frac{W_{(t)i} - W_{(t-1)i}}{W_{(t-1)i}}$$
$$g_{ij} = \frac{W_{(t)ij} - W_{(t-1)ij}}{W_{(t-1)ij}}$$

Explanation :

g : Standard growth of world all commodities exports

(Competitiveness effect)

g_i : Standard growth of world banana exports

 g_{ij} : Standard growth of world banana export to country j

 $E_{(t)}$: Total export value of all Indonesian commodities in year t (US\$)

 $E_{(t-1)}$: Total export value of all Indonesian commodities in year t-1 (US\$)

 $E_{(t-1)i}$: Total export value of Indonesian banana in year t-1 (US\$)

 $E_{(t)ij}$: Total export value of Indonesian banana to country j in year t (US\$)

 $E_{(t-1)ij} \quad : \qquad \mbox{Total export value of Indonesian} \\ \mbox{banana to country } j \mbox{ in year t-1 (US$)}$

 $W_{(t)}$ Total export value of all world commodities in year t (US\$) $W_{(t-1)}$: Total export value of all world commodities in year t-1 (US\$) W_{(t)i} Total export value of world : banana in year t (US\$) Total export value of world $W_{(t-1)i}$: banana in year t-1 (US\$) W_{(t)ii} : Total export value of world banana to country j in year t (US\$) $W_{(t-1)ij}$: Total export value of world banana to country j in year t-1 (US\$)

The Constant Market Share (CMS) measurement parameters used are :

2.1. The Standard Growth

The standard growth parameter indicates a country's export growth standard compared to the standard of world exports. If Indonesia's export standard growth is higher than world export growth standards, Indonesia will have better export performance (Suhana *et al.*, 2016). If Indonesia's export growth is lower than world export growth standards, Indonesia will have world export growth standards, Indonesia will have worse export performance.

2.2. The commodity composition effect

The commodity composition effect parameter shows the development of the concentration level of commodity exports in imported countries. This effect also explain the commodity's market interest in the global market (Asrol, 2017). If the banana commodity has higher growth than other commodities on the global market, the commodity composition effect will get a positive value. According to Suprihartini (2005), a positive value indicates that Indonesia's exports of agriculture commodities have higher import growth than other commodities in importing countries and vice versa.

2.3. The market distribution effect

The market distribution effect parameter measures export performance by analyzing the gains or losses of exporting countries due to changes in relative market size. The market distribution effect reflects the response of exports by a country to a change in demand from each importing country (Zuhdi and Yusuf, 2021). A positive value for the market distribution effect occurs when Indonesia's banana export growth is higher than the total banana import growth in each importing country.

2.4. The competitiveness effect

The competitiveness effect parameter shows a net gain or loss in the market share of Indonesia's banana exports relative standard after considering changes in commodity composition and market distribution. The competitiveness effect reflects changes in commodity value in each export destination country due to the competitiveness of a country among other exporting countries (Atmadji, Priyadi and Achiria, 2019). A positive value will show that Indonesia is a strong competitor country among its competitors and vice versa (Widodo *et al.*, 2008).

3. Results and discussion

3.1. Overview of Indonesian Banana Exports in Major Destination Countries

China is one of the Asian countries with the most robust economic growth over the last decade. China has a high GDP and the largest population in the world. China must import several commodities to fulfill food needs. The high demand from China for Indonesian banana exports has made China one of Indonesia's major export destination countries. Exports of Indonesian bananas to China show a fluctuating trend, with the highest export value in 2014 amounting to US\$11.04 million (Fig.1).

The high export value was due to China requesting to import bananas in large quantities to Indonesia

to fulfill its domestic banana needs (Syahrizan, 2021). Meanwhile, the lowest export value in 2011 was US\$14 thousand due to the global economic crisis, which impacted decreasing China imports, including bananas (Jamilah *et al.*, 2016). There was a reduction in Indonesia's banana exports to China in 2018-2021 from an export value of US\$8.62 million to US\$331 thousand. This was due to the trade war between the United States and China, which impacted trade tariff policies and reduced demand for Chinese imports (Sari, Marselina and Aida, 2021). Since the end of 2019, the Covid-19 pandemic also disrupted international trade.

Indonesia's banana export market share to Malaysia shows an increasing trend. Figure 1 shows that Indonesia's banana exports to Malaysia from 2011 - 2021 have continued to increase, except in 2018 and 2020. The highest export value for Malaysia's market share in 2021 was US\$2.4 million, and the lowest was in 2011, amount US\$17 thousand. The export increase was due to Malaysia's domestic consumption and processing industry (Aurelia, Kurniati and Hutajulu, 2022). As the second leading export destination, Malaysia has a strong influence because demand in that market will reflect in total Indonesian banana exports. Furthermore, Indonesian bananas exported to Japan, the United Arab Emirates, and Singapore showed a fluctuating trend. The highest export value for the Japanese market share in 2016 was US\$3.93 million, and the lowest was in 2013 at US\$30. While the highest export value for the United Arab Emirates market in 2015 amounted to US\$1.71 million, and the lowest was in 2013. amounting to US\$20 thousand.

The last country is Singapore, with the highest export value in 2018, amount US\$641 thousand, and the lowest was in 2012, amounting to US\$5 thousand.

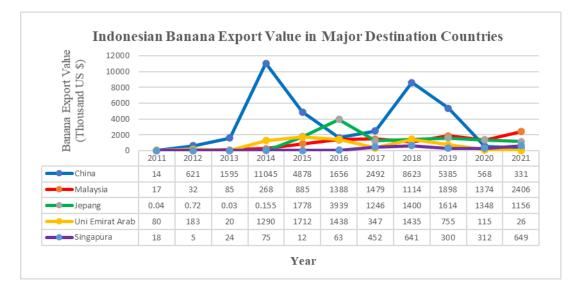


Figure 1. Graph of Indonesian Banana Export Value in Major Destination Countries 2011 - 2021

3.2. Constant Market Share Analysis

This research uses The Constant Market Share approach to analyze Indonesian banana export performance in international trade. The parameters of the Constant Market Share consist of the standard of growth, the effect of commodity composition, the effect of market distribution, and the effect of competitiveness.

3.3. The Standard Growth

Indonesia's banana export standard growth is strongly influenced by the growth in demand from importing countries. The value of Indonesia's banana export standards growth in 2011 – 2021 (Table 1.) fluctuated with the average value of Indonesia's banana export standards growth of 0.6166; this value is higher than the average value of world banana export (0.0453) and all world commodities (0.0241). This value shows that Indonesia's banana export performance is better than the world export performance for bananas and all commodities. This high value is due to the soaring Chinese demand for Indonesian bananas, especially in 2013-2014 (fig. 1). China imports bananas from Indonesia to fulfil domestic needs (Syahrizan, 2021).

Table 1. Banana Export Standards Growth in 2011 - 2021

| Year | World all Commodities | World Banana Export | Indonesian Banana Export | |
|---------|------------------------|---------------------|--------------------------|--|
| 1 cai | Export Standard Growth | Standard Growth | Standard Growth | |
| 2011 | n/a | n/a | n/a | |
| 2012 | 0.0141 | -0.0569 | -0.1383 | |
| 2013 | 0.0249 | 0.1661 | 2.4106 | |
| 2014 | 0.0000 | 0.1070 | 4.4395 | |
| 2015 | -0.1297 | -0.1014 | -0.1960 | |
| 2016 | -0.0301 | 0.0856 | -0.1692 | |
| 2017 | 0.1033 | 0.0602 | -0.1784 | |
| 2018 | 0.1005 | 0.0954 | 0.6456 | |
| 2019 | -0.0297 | 0.1129 | -0.2235 | |
| 2020 | -0.0675 | 0.0086 | -0.5019 | |
| 2021 | 0.2554 | -0.0240 | 0.0779 | |
| Average | 0.0241 | 0.0453 | 0.6166 | |

Note : n/a = not available

3.4. The commodity composition effect

The positive effect on commodity composition shows that the contribution of Indonesian bananas to the international market is relatively high compared to other commodities. So it is concluded that Indonesian bananas are preferred in the international market. The commodity composition effect has a positive value with an average of 0.00000182 (Table 2). According to Jamilah et al., (2022), a positive value on the effect of commodity composition also shows that Indonesia can use opportunities to export a product with the standard specifications by importing countries. Besides that, Indonesia can fulfill the demands of banana export in the international market.

Table 2. Effects of Indonesian Banana CommoditiesComposition in 2011-2021

| Year | Commodity Effects | Composition |
|---------|----------------------|-------------|
| 2011 | n/a | |
| 2012 | -0.00000035 | |
| 2013 | 0.00000065 | |
| 2014 | 0.00000174 | |
| 2015 | 0.00000261 | |
| 2016 | 0.00001001 | |
| 2017 | -0.00000322 | |
| 2018 | -0.0000027 | |
| 2019 | 0.00001156 | |
| 2020 | 0.00000515 | |
| 2021 | -0.00000967 | |
| Average | 0.00000182 | |

Note : n/a = not available

This composition effect's positive value was because the demand for Indonesian bananas increased in the international market. A significant increase occurred in the three major export destination countries for Indonesian bananas (China, Malaysia, and Japan).

Similar to the theory of comparative advantage, if a country is more efficient in production than other countries, this country can have an absolute advantage. The Absolute advantage of producing a commodity can promote mutually beneficial international trade (Irandu, 2019).

3.5. The market distribution effect

The positive values are shown in Table 3. for China, Malaysia, and the United Arab Emirates, with an average of 0.00000103, 0.00000005, and 0.00000026. This positive value indicates that Indonesia tends to focus more on these three countries, as seen by the growth in Indonesia's banana exports which is higher than the growth in total banana imports. This positive value also shows that Indonesia can distribute and control these three countries' export markets. The results of research from Rahmawati, Hadi Purnomo and Marwanti (2022), showed that the market distribution effect on other agricultural products also has a positive value in the Chinese market share, where China is the largest export destination country that has a high demand.

Furthermore, the market distribution effect to Japan and Singapore shows a negative value with an average of -0.00000040 and -0.00000009. The negative values indicate that Indonesia distributes less and not dominates the market. This is due to the slowing ability of Indonesian banana exports to be marketed in the two countries.

3.6. The competitiveness effect

Table 4 shows that Malaysia, Japan, and Singapore's market share positively affects competitiveness with an average of 0.00000113, 0.00000051, and 0.00000047. The positive value indicates that as a banana exporter, Indonesia is a strong competitor to the three countries. In addition, a positive value can also explain that Indonesia's banana commodity has strong competitiveness and comparative advantage. The positive value shows that Indonesia can manage its market, especially in competition with other producing countries. According to Dyadkova and Momchilov (2014), the factors influencing the competitiveness effect are price and non-price (consumer preferences, product development, quality improvement, and others). Price is a vital factor in the effect of competitiveness; prices are formed when there is a balance between supply and demand. The equilibrium price can be explained as the price that occurs when the number of commodities demanded is the same as the number of goods offered (Goenadhi and Nobaiti, 2017). Uncertain prices will affect the quantity of export volume (Pradipta and Firdaus, 2014). If the price increases, it will decrease the quantity demanded and vice versa(Lipsey, 1997). China and the United Arab Emirates have negative values of the competitiveness effect with an average of -0.00000185 and

0.00000068. China and the United Arab Emirates in 2019-2021 have shown weak competitiveness, where both markets have decreased. It is indicated that Indonesia cannot manage its market share or compete with other competing countries. Research by Zuhdi and Yusuf (2021), showed that the effect of competitiveness on other agricultural products has a negative value which is influenced by the product quality and prices that are not affordable..

| Table 3. Market Distribution Effect of Ir | ndonesian Banana Commodities in Ma | ajor Destination Countries 2011 – 2021 |
|---|------------------------------------|--|
| | | |

| | Market Distribution Effect | | | | |
|------------|----------------------------|-------------|-------------|-------------------------|-------------|
| Year | China | Malaysia | Japan | United Arab Emirates | Singapore |
| 2011 | n/a | n/a | n/a | n/a | n/a |
| 2012 | -0.00000000 | 0.0000018 | 0.00000000 | 0.00000005 | 0.00000002 |
| 2013 | -0.00000081 | 0.0000025 | -0.00000000 | 0.00000273 | -0.00000000 |
| 2014 | 0.00001147 | 0.00000015 | -0.00000000 | 0.00000001 | 0.00000000 |
| 2015 | 0.00000329 | 0.00000011 | 0.00000000 | 0.00000187 | 0.00000006 |
| 2016 | -0.00001065 | -0.00000108 | 0.00000012 | -0.00000062 | -0.00000000 |
| 2017 | -0.00000081 | -0.00000032 | -0.00000388 | 0.00000018 | -0.0000002 |
| 2018 | 0.00000667 | -0.00000065 | -0.00000015 | -0.00000040 | -0.00000041 |
| 2019 | 0.00000514 | 0.00000326 | -0.00000048 | -0.00000105 | -0.0000060 |
| 2020 | -0.00000445 | -0.00000012 | 0.00000021 | 0.00000005 | 0.00000006 |
| 2021 | 0.00000040 | -0.00000131 | 0.00000014 | -0.0000020 | -0.00000006 |
| Average | 0.00000103 | 0.00000005 | -0.00000040 | 0.00000026 | -0.00000009 |
| Note · n/a | – not available | | | | |

Note : n/a = not available

 Table 4. Competitiveness Effects of Indonesian Banana Commodities in Major Destination Countries 2011 – 2021

| | Competitiveness Effect | | | | |
|---------|------------------------|-------------|-------------|-------------------------|-------------|
| Year | China | Malaysia | Japan | United Arab Emirates | Singapore |
| 2011 | n/a | n/a | n/a | n/a | n/a |
| 2012 | 0.00000299 | -0.00000010 | 0.00000000 | 0.00000048 | -0.00000008 |
| 2013 | 0.00000539 | -0.00000000 | -0.00000000 | -0.00000375 | 0.00000010 |
| 2014 | 0.00003937 | 0.0000080 | 0.00000000 | 0.00000693 | 0.00000026 |
| 2015 | -0.00003197 | 0.00000354 | 0.00001010 | 0.00000127 | -0.0000038 |
| 2016 | -0.00001357 | 0.00000392 | 0.00001324 | -0.00000217 | 0.00000034 |
| 2017 | 0.00000590 | 0.0000037 | -0.00001640 | -0.0000833 | 0.00000268 |
| 2018 | 0.00002824 | -0.00000235 | 0.0000036 | 0.00000665 | 0.00000128 |
| 2019 | -0.00002851 | 0.0000039 | 0.00000079 | -0.00000362 | -0.00000169 |
| 2020 | -0.00002456 | -0.00000311 | -0.00000188 | -0.00000391 | -0.00000001 |
| 2021 | -0.00000177 | 0.00000784 | -0.00000112 | -0.0000033 | 0.00000217 |
| Average | -0.00000185 | 0.00000113 | 0.00000051 | -0.00000068 | 0.00000047 |

Note : n/a = not available

Bananas are perishable (easily damaged) and need special handling to maintain their quality. This special treatment causes the price to be higher. The results of this study are supported by the research of Fatimah, Marwanti and Supardi (2020), on fresh fishery products; the high cost of

shipping also causes a negative effect because they are perishable, the special handling is required in shipping to export destination countries. The Covid-19 pandemic at the end of 2019 also significantly impacted international trade, resulting in export and import bans on certain commodities due to the implementation of a lockdown system in several countries (Onyeaka *et al.*, 2021)

4. Conclusion

Based on the results and discussion above, the performance of Indonesia's banana exports to the major destination countries showed relatively good results. The standard growth effect shows that Indonesia's export performance is better than the world's standard growth. The positive average value is obtained for the commodity composition effect; Indonesian bananas are in greater demand than other commodities, so they have a high contribution to the international market. In the market distribution effect, the average value is positive for the market share of China, Malaysia, and the United Arab Emirates. However, in the market share of Singapore and Japan, the average value is negative. A positive value indicates that Indonesia can distribute and dominate the export market share in that country. Furthermore, on the effect of competitiveness, the negative average value is shown in the market share of China and the United Arab Emirates. In contrast, positive values are shown in the market share of Malaysia, Japan, and Singapore, which means that Indonesia is a strong competitor as a banana exporter in those countries.

The government needs to support improving Indonesia's banana export performance, which can be achieved with appropriate policies such as expanding the target of export destination countries through promotion and strengthening bilateral cooperation. In addition, it is necessary to improve product quality, make prices more affordable, and fulfill international market demands so that Indonesian bananas have strong competitiveness compared to other exporting countries.

Authors' Contributions

All authors are contributed in this research. Funding Scholarship by BPSDMP Ministry of Agriculture Republic of Indonesia **Institutional Review Board Statement** All Institutional Review Board Statements are confirmed and approved. **Data Availability Statement** Data presented in this study are available on fair request from the respective author. **Ethics Approval and Consent to Participate** *Not applicable* **Consent for Publication** *Not applicable.* **Conflicts of Interest** The authors disclosed no conflict of interest starting from the conduct of the study, data analysis, and writing until the publication of this research work.

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