

Competitiveness Analysis and Factors Affecting Indonesian Banana Exports in the Destination Country

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Abstract: Bananas from Indonesia are a top product with export potential for tropical fruits. Banana agriculture in Indonesia is dominated by local market production, whereas professional plantations are on a small scale. Traditional banana farming will result in variable banana quality, less guaranteed quality, and less probable continuity due to the inefficiency of the cultivation system. This research aims to examine the level of competitiveness of Indonesian banana exports in destination countries and the factors that influence Indonesian banana exports in destination nations. This quantitative study employs Revealed Comparative Advantage (RCA), Export Product Dynamic (EPD), and the gravity model. The study concluded that Indonesian bananas are competitive in various countries, including Malaysia, the United Arab Emirates, and Kuwait. In contrast, the competitiveness of Indonesian bananas in several other nations, including China, Singapore, and Japan, remains relatively low. Several factors are known to influence Indonesian banana exports to destination nations, including the low quality of bananas, the discontinuity of exports, and the real GDP per capita of export destination countries.

Keywords: Banana Export, Competitiveness, Export Product Dynamic, Gravity Model, Revealed Comparative Advantage

I. INTRODUCTION

Indonesia is an agrarian nation with vast potential for the agricultural industry to boost the economy. Agriculture is one of the three most significant contributors to Indonesia's Gross Domestic Product (GDP), along with industry and commerce. According to BPS 2020 data, agricultural exports are expected to increase by 51% in 2019, reaching \$3.61 billion. The increase in exports of the horticultural subsector significantly contributes to the agriculture sector's export performance, particularly for fruits. The development of Indonesian fruit exports from 2009 to 2019 is relatively encouraging. However, Indonesia's fruit trade balance remains in deficit due to its continued importation of subtropical fruits.

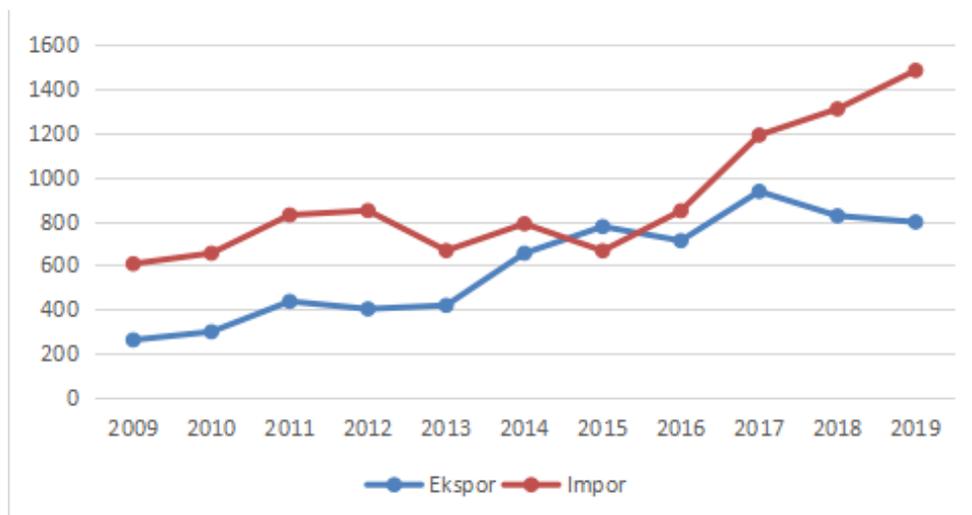


Figure 1. Export-Import Value of Indonesian Fruits in 2009 - 2019 (Million USD)

Source: ITC, 2020

Indonesia has the potential to export tropical fruits, which are the primary commodities. One of them is the banana, a fruit with enormous production. It is anticipated that Indonesian bananas will meet domestic demands and those of the worldwide market. Few Indonesian bananas are grown on professional plantations, and most of the production is destined for the domestic market. As a result of the inefficiency of the conventional growing system, the number of bananas produced will fluctuate, the quality of the bananas will not be assured, and it will be hard to maintain continuity.

Table 1. Production, Export Volume, and Export Value of Bananas in Indonesia

Years	Production (Ton)	Export Volume (Ton)	Export Value (US\$)
2014	6,862,558	26,264	16,177,426
2015	7,299,266	22,308	13,006,366
2016	7,007,117	19,024	10,806,370
2017	7,162,678	18,193	8,878,498
2018	7,264,379	30,373	14,609,697
2019	7,280,658	22,745	11,343,612

Source: BPS, 2020

Banana is a commodity that has the largest production volume in Indonesia. The production of bananas from 2014 to 2019 was 6,862,558 tons; 7,299,266 tons; 7,007,117 tons; 7,162,678 tons; 7,264,379 tons; and 7,280,658 tons (BPS, 2020). In the competition to outperform the market share of Indonesian fruit exports to destination countries and globally with other exporting countries, it is often influenced by the number of production levels, productivity, and fruit harvested areas in Indonesia (Pradipta & Firdaus, 2014). Indonesia has great potential in the amount of banana production, but Indonesia still has problems, such as the diversity of types of bananas and the quality of the bananas that do not meet market demand. In 2018, the volume of banana exports increased significantly, by 12,180 tons, exceeding the export achievement of 2014. In 2019, the volume and value of exports again decreased to 22,745 tons and \$11,343,612. Meanwhile, the total value of world banana imports in 2019 was \$16,255 billion US dollars. This figure shows that Indonesia's potential for exporting bananas is still shallow, with a figure below 0.1%.

Based on the amount of Indonesia's overall banana production, Indonesia has the potential to become an exporter of bananas on the international market. Indonesia is not the sole exporter of bananas on the international market; thus, it must compete with other banana-producing nations in terms of product quality. Improving its position in the worldwide market necessitates a high degree of competitiveness. Competitiveness is essential for a nation's position in the international marketplace. The quantity and quality of Indonesian bananas continue to lag behind those of their largest competitor, the Philippines. Indonesia's principal objective is to increase the global market position and competitiveness of banana exports; this is accomplished by increasing the competitiveness.

This study aims to analyze the competitiveness of Indonesian banana exports and the factors that influence them, particularly in destination nations. Introduction of the paper should explain the nature of the problem, previous work, purpose, and the contribution of the paper. The contents of each section may be provided to understand easily about the paper.

II. RESEARCH METHODOLOGY

This study employs a quantitative research approach utilizing secondary data from the BPS, United Nations Commodity and Trade (UN COMTRADE), International Trade Center (ITC), Ministry of Agriculture, and World Bank. Data on the export value of Indonesian and global bananas using panel data in 2014–2019 from destination countries, notably China, Malaysia, Japan, the United Arab Emirates, Singapore, and Kuwait, were utilized as secondary data. In contrast, the contents of the data to be utilized consist of the export price of Indonesian bananas, the value and volume of Indonesian banana exports, the exchange rate of the destination country to the US dollar, the real GDP per capita of the destination country, the real GDP per capita of Indonesia, and the distance between Indonesia's economy and the economy of the destination country. The focus of this research is bananas (HS 0803).

This study uses the Revealed Comparative Advantage (RCA) and Export Product Dynamic techniques to analyze Indonesian banana exports' competitiveness and market position (EPD). Processing research data with Microsoft Excel, panel data regression analysis with a gravity model technique, and using the Eviews tool to examine the factors affecting Indonesia's banana exports.

RCA analysis is carried out by performing calculations with the following formula and information:

$$RCA = \frac{X_{ij}/X_t}{W_j/W_t}$$

X_{ij} : the value of country i's exports of bananas

X_t : total export value of country i's products

W_j : export value of bananas in the world

W_t : total world export value

Bananas from Indonesia may be claimed to have a competitive advantage in the market of the destination country if the RCA value is larger than 1 (>1). Bananas from Indonesia have no comparative advantage, making them uncompetitive if the RCA is less than one (<1).

EPD analysis is performed to determine market share. The following mathematical equations are used to determine the growth of export market share and product share:

X-axis: export market share i

$$EPD = \frac{\sum_{t=1}^t (X_{ij}/W_{ij})_t \times 100\% - \sum_{t=1}^t (X_{ij}/W_{ij})_{t-1} \times 100\%}{T}$$

Y-axis: product market share n

$$EPD = \frac{\sum_{t=1}^t (X_t/W_t)_t \times 100\% - \sum_{t=1}^t (X_t/W_t)_{t-1} \times 100\%}{T}$$

The combination of export and product market share yielded four distinct categories. These are the four categories: Rising Star, Falling Star, Lost Opportunity, and Retreat. The Rising Star is an ideal market condition since it indicates that the country's exports are expanding with its market share. While market conditions are generally unfavorable, in some instances, they are desired in order to transition from undeveloped to more dynamic items in the target country (Santosa et al., 2016).



Figure 2. Competitive Position Matrix

Using Eviews software, panel data regression analysis was conducted with several tests to determine the optimal model. The model used to follow the test was a fixed-effect model with cross-section weighting and a white cross-section coefficient of variance. Therefore, we have a model containing the following data:

$$\text{LnVEit} = \beta_0 + \beta_1 \text{LnGDPP}_{it} + \beta_2 \text{LnER}_{it} + \beta_3 \text{LnPRICE}_{it} + \beta_4 \text{LnGDPPRI}_{it} + \beta_5 \text{LnED}_{it} + e_{it}$$

Where,

VE : Volume of Indonesian banana exports to destination countries

GDPP : Income per capita of the destination country

PRICE : Indonesian banana export prices in destination countries

GDPPRI : Indonesia's per capita income

ED : The distance between Indonesia's economy and the destination country

After testing using panel data regression analysis, the research data will be retested to discover whether there are deviations in the data or the model employed. The classical assumption test will assess whether the final model falls into a good category. Then, the data will be subjected to tests for normality, heteroscedasticity, multicollinearity, and autocorrelation to determine if they conform to the basic assumptions underlying the development of equations. A statistical test of the coefficient of determination (R^2 / Adjusted R Square), F test, and T-test will be conducted to assess the extent to which the dependent variable can explain the independent variable and the extent to which the independent variable influences the dependent variable.

III. RESULT AND DISCUSSION

Competitiveness of Indonesian Bananas in Destination Countries

The results of the RCA analysis (Table 2) indicate that the average RCA value of Indonesian bananas in Malaysia, the United Arab Emirates, and Kuwait between 2014 and 2019 is 2,206, 1,096, and 1,649, respectively. The average results indicate that Indonesian bananas are competitive inside the country but must be upgraded to compete with bananas from other countries. The average RCA value for Indonesian bananas in China is 0.59, while in Singapore, it is 0.212, and in Japan, it is 0.071. According to Nugraha (2013), an RCA value of less than one indicates that the country is not specialized in the commodity in the market of the destination country; in other words, its competitiveness is low compared to the countries of its competitors. The low competitiveness of Indonesian bananas in China, Singapore, and Japan is since Indonesia is not the primary supplier. Instead, the Philippines and Ecuador are the primary suppliers of bananas in these nations. Exports of Indonesian bananas to Japan and China can serve as a useful example because these nations are notorious for applying stringent entry requirements for agricultural items.

The development of banana exports is hindered by some hurdles, including the low quality of bananas produced and the low quality of bananas available so that demand in destination nations cannot be met. Few Indonesian bananas are grown on large-scale plantations, and most of the crop is grown for the domestic market. Global conditions necessitate quality assurance and food safety to ensure safe consumable commodities. If prompt action is not taken, Indonesian bananas will be unable to compete with bananas from rival nations and may not even survive on the worldwide market. Good Agricultural Practices (GAP) cultivation will produce guaranteed quantities and qualities. Not only does output increase year, but so does the quality of Indonesian bananas. Improving the quality of Indonesian bananas will raise both the volume and price of exports, increasing the export value and making it more competitive on the global market.

Pradipta has also examined the competitiveness of bananas (2014). Malaysia, the United Arab Emirates, and Singapore, the destination countries used to examine the competitiveness of bananas from 2003 to 2012, were also employed in this study. According to Pradipta's (2014) research, Indonesian bananas are only competitive in Malaysia since the average RCA value is 1.0341, indicating that Indonesia has comparative competitiveness in Malaysia. Indonesian bananas have low competitiveness in the United Arab Emirates and Singapore because their average RCA value is below one.

An EPD study was performed to determine bananas' export dynamics and market position in their destination nations. The findings of the EPD analysis determine four market positions: Rising Star, Falling Star, Lot Opportunity, and Retreat.

Table 2. Average RCA and EPD of Indonesian Bananas in 2014 – 2019

Countries	RCA	EPD
China	0,597	<i>Rising Star</i>
Malaysia	2,206	<i>Falling Star</i>
UEA	1,096	<i>Falling Star</i>
Singapore	0,212	<i>Falling Star</i>
Kuwait	1,649	<i>Lost Opportunity</i>
Japan	0,071	<i>Falling Star</i>

Source: Processed Data

The 2014-2019 EPD estimations for Indonesian bananas demonstrate that they are a Rising Star in China. Banana Indonesia has a Falling Star position in Malaysia, the United Arab Emirates, Singapore, and Japan, while Malaysia and the United Arab Emirates are competitive, according to the RCA research. While in Kuwait, the position is one of Lost Opportunity. According to Safrida (2017), the Rising Star status demonstrates that the growth of export share in destination nations is expanding in tandem with commodities export demand. In the meantime, the Falling Star position shows that the exporting nation's commodity markets have expanded in the importing nation, but commodity demand has fallen. Lost Opportunity indicates that, on a dynamic product market in the destination country, the export market share drops annually or that the exporting nation has been unable to match the number of export requests from the destination nation.

The position of the Rising Star for the Indonesian banana market in China indicates that the market is optimal. Due to the rising demand for Indonesian banana exports in China, it has been suggested that China has the potential to become an export destination for Indonesian banana products. Due to the country's Lost Opportunity market position, Kuwait is also a viable destination for banana exports. However, when export demand increases, Indonesia cannot supply the need in this position. In several additional nations, including Malaysia, the United Arab Emirates, Singapore, and Japan, the banana export market is in a Falling Star position, indicating an increase in export market share. However, this situation is not backed by export demand for bananas from Indonesia. The state of Falling Star in Malaysia, the United Arab Emirates, Singapore, and Kuwait is due to the negative average market share value for bananas (y-axis). The reason is that Indonesia's exports to each country decrease annually, although the total value of the world's exports to destination countries changes annually.

Pradipta has likewise conducted an EPD investigation of Indonesian bananas (2014). From 2003 to 2012, Pradipta (2014) research utilized the same target nations, Malaysia, the United Arab Emirates, and Singapore. According to the research, the position of Indonesian banana exports in Malaysia and Singapore is that of a Rising Star; however, in other countries, such as the United Arab Emirates, it is that of a Falling Star.

Factors Affecting Indonesian Banana Exports

According to the results of the Hausman test, the optimal model for this study is the fixed effect model. After applying the model to the panel data regression test, the following findings are obtained:

$$\text{LnVE}_{it} = 120.83 + 47.25 \text{LnGDPP}_{it} + 7.22 \text{LnER}_{it} - 0.26 \text{LnPRICE}_{it} - 40.65 \text{LnGDPPRI}_{it} - 50.48 \text{LnED}_{it} + e_{it}$$

R-Squared equals 0.685. This value indicates that the 68.5 percent change in the volume of Indonesian banana exports can be explained by the variables of the real GDP per capita of the destination country, the exchange rate of the destination country's currency against the US dollar (USD), the export price of Indonesian bananas, Indonesia's real GDP per capita, and the distance between Indonesia's and the destination country's economies. While up to 31.5 percent may be explained by characteristics or variables outside the scope of the study. The F-statistic probability is 0.00442 (5% actual rate). This value suggests that at least one independent variable in the model significantly affects the export volume of bananas from Indonesia. Table 3 displays the significant independent factors, which include the variable GDP per capita of the destination country, Indonesia's GDP per capita, and economic distance at the 5% real level. Neither the

destination country's currency exchange rate against the US dollar (USD) nor the export price of Indonesian bananas had a substantial impact.

Table 3. Gravity Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	120.8370	106.8937	1.130441	0.2695
LNGDPP	47.24862	15.12188	3.124520	0.0046
LNER	7.225574	4.272529	1.691170	0.1038
LNPRICE	-0.263529	1.057325	-0.249241	0.8053
LNGDPPRI	-40.64965	17.36774	-2.340527	0.0279
LNED	-50.48043	23.49761	-2.148321	0.0420

Effects Specification			
Cross-section fixed (dummy variables)			
Weighted Statistics			
R-squared	0.685037	Mean dependent var	20.16397
Adjusted R-squared	0.553802	S.D. dependent var	8.425256
S.E. of regression	1.375026	Sum squared resid	45.37675
F-statistic	5.219932	Durbin-Watson stat	1.803338
Prob(F-statistic)	0.000442		

Source: Processed Data

The estimation results of the Jarque-Bera probability value are more than α ($0.087 > 0.05$), indicating that the model's error term is normally distributed. None of the correlations between variables in the model exceed 0.8, indicating no multicollinearity. The heteroscedasticity results indicate heteroscedasticity in the model, which necessitates cross-section weighting and covariance white cross-section treatment coefficient. The Durbin-Watson statistic value is 1.803338; the number is still within the range of 1.7987 and 2, indicating that there is neither a negative nor a positive autocorrelation, and hence there are no autocorrelation issues.

Real GDP Per Capita Destination Countries

The value of the destination country's real GDP per capita reveals the purchasing power of its citizens for a product or service. Consistent with the hypothesis, the gravity model analysis findings indicate that the destination country's real GDP per capita has a considerable effect on the 5 percent real level, with a probability value of 0.0046 and a coefficient of 47.25, both of which are positive. This value indicates that a 1 percent rise in the GDP per capita of the destination country can result in a 47.25 percent increase in exports, all else being equal. Because an increase in the income of a country's population influences consumption, a destination country with a high GDP per capita is characterized by a higher standard of living. According to earlier studies, the GDP per capita of destination nations has a favorable effect on the number of Indonesian banana exports to destination countries (Pradipta, 2014).

Destination Country Exchange Rate

According to the findings of this study, the exchange rate of the destination country relative to the value of the US dollar has no significant effect on the volume of Indonesian banana exports. Several destination countries, such as the United Arab Emirates, Singapore, Kuwait, and Japan, are classified as developed, high-income nations; therefore, the exchange rate of the destination country relative to the US dollar (USD) is deemed irrelevant. According to the World Bank, two other destination nations, China and Malaysia, are upper-middle-income. A high per capita income can increase people's purchasing power for an export product; therefore, exchange rate variations cannot affect people's purchasing power.

Export Price

The gravity model regression analysis results indicate that the export price does not significantly affect the export volume of Indonesian bananas at the 5% significance level. According to Hanoum (2016), the increase in export prices

indicates the quality and value of a commodity. The price comparison with competitors demonstrates a difference in quality, with the superior quality of bananas from other countries causing premium prices. Thus, it is assumed that the primary destination countries for Indonesian banana exports are not concerned with pricing but rather with the quality of the bananas that meet each country's market criteria.

Indonesia's GDP Per capita

The gravity model research results indicate that Indonesia's GDP per capita substantially impacts at the 5 percent significance level. These data indicate that for every 1 percent increase in Indonesia's GDP per capita, the export volume will decline by 40.65 percent, all else equal. GDP per capita measures the purchasing power of a country's population for goods and services. This condition is one of the causes behind the reduction in banana exports from Indonesia. This research reveals that the Indonesian population's economic level can influence consumer's purchasing power while purchasing and consuming bananas (Karomah, 2011). As domestic demand increases, the number of commodities available for export will decrease.

Economic Distance

The economic distance has a substantial effect at the 5% significance level, according to the results of the gravity model research (coefficient -50.48). This number indicates that assuming all other factors remain constant, the demand for Indonesian banana exports will fall by 50.48 percent further than Indonesia is from the destination country. According to the theory of gravitation, distance has a negative impact on interactions between nations. The economic distance necessary to export bananas from Indonesia to their final destinations is a measure of the transportation burden involved. According to Karomah (2011), the greater the distance to the target country, the higher the transportation costs, which might be impacted by the fall in demand for Indonesian banana exports.

IV. CONCLUSION

The results of the RCA test indicate that Indonesian bananas are competitive in some nations, including Malaysia, the United Arab Emirates, and Kuwait. In contrast, Indonesian bananas are not competitive in several major export markets, including China, Singapore, and Japan. According to the results of the EPD analysis, the competitiveness of Indonesian bananas is as follows: Rising Star in China, Falling Star in the United Arab Emirates, Malaysia, Singapore, and Japan, and Lost Opportunities in Kuwait. Indonesia's ability to expand its banana exports is hampered by some problems, including the low quality of its bananas and the inability of its exports to fulfill demand in destination nations. Few Indonesian bananas are grown on professional plantations, and most of the crop is destined for the domestic market. Good Agricultural Practices (GAP) and Standard Operating Procedures (SOP) cultivation will yield competitive bananas.

The Gravity Model test results indicate that the destination country's real GDP per capita positively and significantly affects the volume of Indonesian banana exports to the destination country. Indonesia's real GDP per capita and economic distance have a negative effect, although export prices and currency exchange rates of destination nations have no substantial impact on exports of bananas from Indonesia.

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