AGRISOCIONOMICS
Jurnal Sosial Ekonomi dan Kebijakan Pertanian
ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

EXPORT PERFORMANCE OF INDONESIAN BLACK PEPPER IN THE UNITED STATES MARKET

Anita Carolin Aprilia Tarigan*, Suharno, and Harmini
Departement of Agribusiness, Faculty of Economics and Management, IPB University, Bogor, West Java, Indonesia

*Correspondence Email: anitacarolintarigan@apps.ipb.ac.id

Submitted 09 May 2023; Approved 04 July 2023

ABSTRACT

Indonesia pepper, contributing 11% of the U.S. market, is below Vietnam as a significant supplier and is followed by Brazil. Based on the growth rate of Indonesian pepper exports to the U.S. market, Indonesia is second after Vietnam. Indonesian pepper exports to the American market have limitations, and competition exists between the countries exporting pepper. The research used the export of a sort of whole black pepper. This study aims to determine Indonesian black pepper's competitiveness and demand position in the U.S. market. The performance of Indonesia's black pepper exports to the U.S. market was analyzed using the revealed comparative advantage (RCA) method, export product dynamics (EPD), and the almost ideal demand system (AIDS) method. The dependent variable is the share of Indonesia, Vietnam, Brazil, and India, and the independent variable is the price of pepper from the countries. The analysis results show that black pepper has comparative and competitive competitiveness. Indonesian black pepper has the highest expenditure elasticity, elastic price elasticity, and cross elasticity; it is a substitute for Vietnam and complementary to Brazil and India. Indonesian black pepper has good export performance and a high demand for imports, so Indonesia has the potential to increase exports by increasing the export volume of quality pepper at competitive prices, according to what the U.S. market wants.

Keywords: *black pepper, demand elasticity, RCA, EPD, AIDS*

BACKGROUND

One of the countries in the world dominated by the production of spice plants in Indonesia, especially in the pepper commodity, so it is one of the largest pepper exporting countries. It can increase agricultural export trade (Fathya et al., 2021). Data International Pepper Community (2021) shows that global and Indonesian export trends have the same trend, which fluctuated and tended to increase in recent years, so pepper exports should develop in Indonesia's mainstay market. The mainstay markets for Indonesian pepper are the European Union (Germany, France, the Netherlands, England, Spain and others) and the United States (Sudjarmoko et al. 2015).

The value of world pepper imports has increased in recent years, but there is a considerable difference compared to the export value of Indonesian pepper. Even though Indonesia is one of the world's exporters, it still needs to have the ability to become a major world exporter like Vietnam. The well-known peppers marketed worldwide are black and white, in great demand in food processing. Indonesia has the main areas in producing pepper, namely in Lampung and the Bangka Belitung Islands, so pepper is marketed worldwide using the identities Lampung Black Pepper and

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

Muntok White Pepper (Nurdjannah, 2006). Research by Fazaria et al. (2016) said that the two peppers are substitute commodities, so changes in the prices of these two commodities have an impact on the development of the pepper trade, and in general, the price of black pepper is always lower than white pepper, causing consumers to choose black pepper. Based on data from Kementerian Pertanian (2021) Indonesian pepper exports to the world in 2020, white pepper dominated 46.96% (USD 75.32 thousand) of the total export value of pepper, black pepper 40.93% (USD 65.64 thousand). Other peppers were small at only 8.97% (USD 14.38 thousand). White pepper has a decreasing export value based on the type of pepper exported, while the export value of black pepper has increased in the last two years and shows that black pepper can be improved in the future.

This research will analyze black pepper because there are differences in export levels which are relatively low in Indonesia compared to white pepper. One of the countries that have the highest demand for black pepper imports in the world every year is the United States, making it a potential market for export trade in this commodity (International Pepper Community, 2021). As Indonesia's leading export destination country, the demand for pepper exports from the United States has a higher export volume of black pepper than white pepper, with a percentage of 50.12% for black pepper exports and 49.88% for white pepper exports.

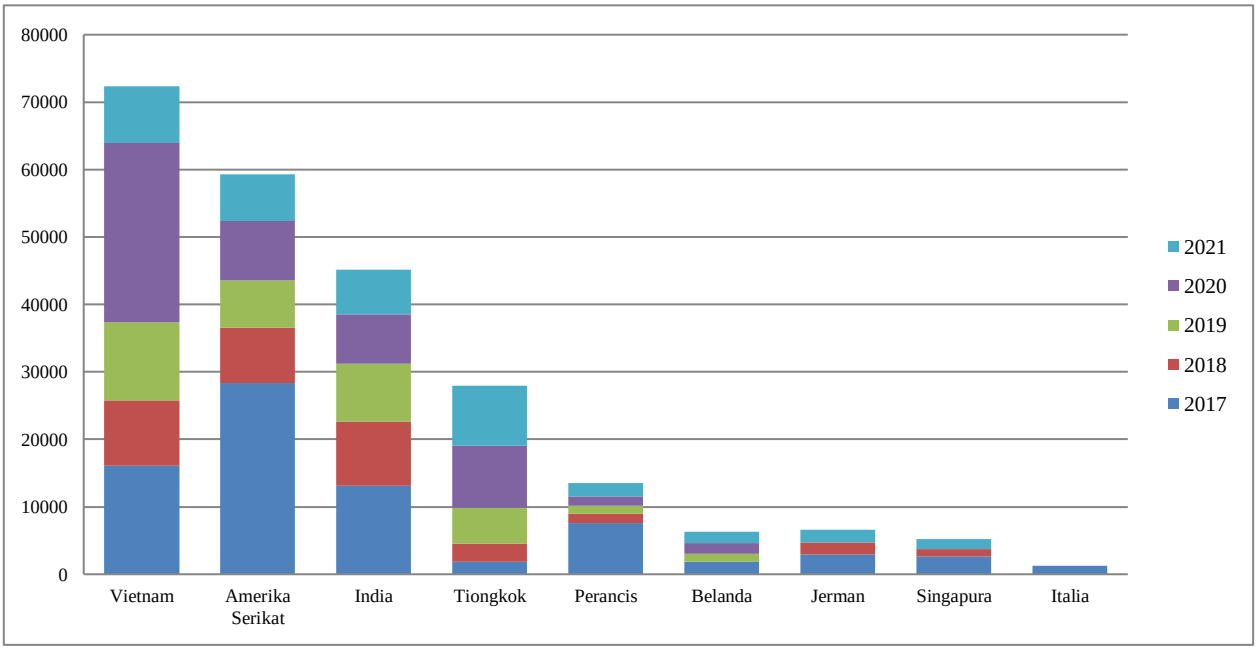

Figure 1. Development of Indonesian Black Pepper Export Value
Source: Central Bureau of Statistics (2021)

Based on Figure 1, it is known that the development of the export value of black pepper to destination countries and that the United States and Vietnam are the highest importers in Indonesia. The United States will be used as the destination market for Indonesian black pepper exports because Vietnam has a different import objective, namely to re-export black pepper to end-consuming countries and is the largest exporter in the world, especially the United States. According to research Marliani et al. (2021) state that Indonesian pepper production responsiveness can affect the volume of pepper exported to the United States. Therefore, it is necessary to improve Indonesian pepper production to increase the volume of exports to the United States market. American pepper importers included in the most significant export category are Vietnam, Brazil, Indonesia, India, South Africa,

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

China and Ecuador. The selection of countries Vietnam, Brazil, Indonesia and India were conducted in the study based on developing the most significant export value to the United States market each year.

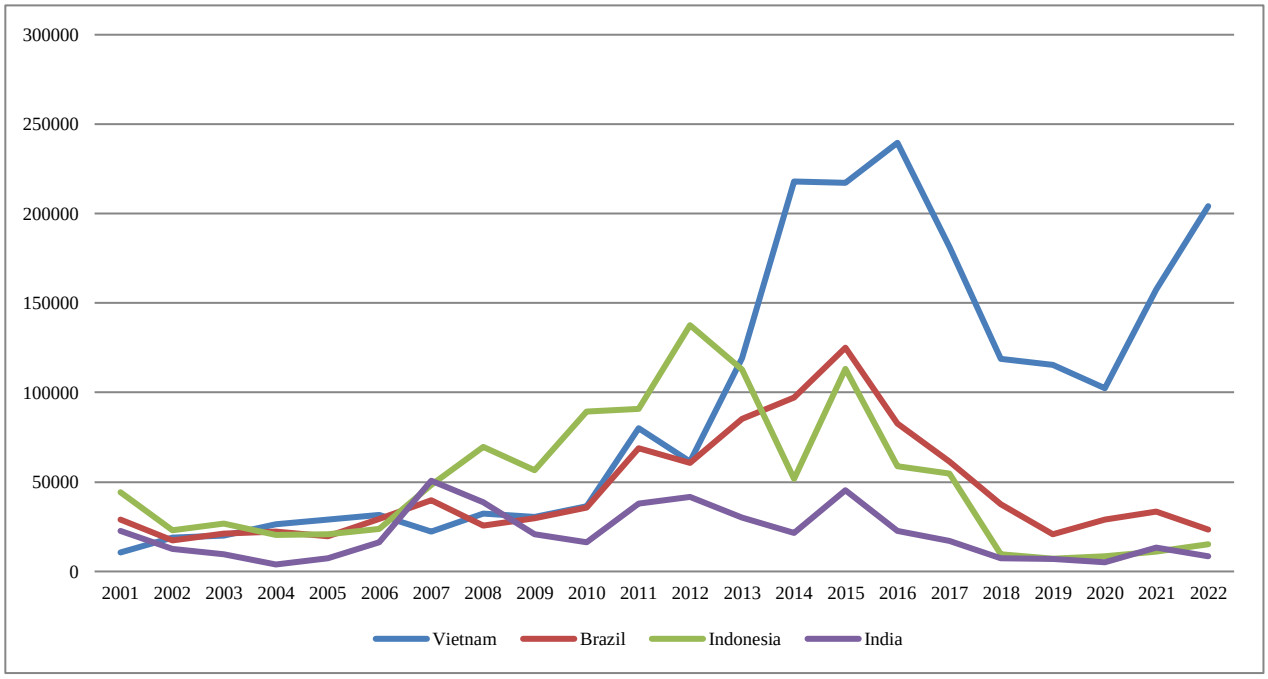

Figure 2. Export Value Development of Black Pepper Exporters
Source: Trade Map (2021)

Based on Figure 2, we know that the export values of Vietnam, Brazil, Indonesia and India have fluctuated from 2001-2021, and Vietnam's export share is the highest compared to Brazil, Indonesia and India each year. The export value of Vietnamese black pepper has been increasing, while the export value of black pepper from Brazil, Indonesia and India tends to decrease yearly. Previous research on pepper exports and imports in Indonesia has been carried out, including research (Mahdi & Suprehatin, 2021; Abdullah, 2016; Edizal, 2007; Marliani et al., 2019). The results of the study by Mahdi & Suprehatin (2021) using the AIDS model state that Indonesia's demand for white pepper imports has a positive expenditure elasticity, elastic self-price elasticity and negative (complementary) cross-elasticity with India, China, Brazil and Vietnam in the world pepper market. However, a study from Edizal (2007) also used the AIDS model, stating that the demand for imported white pepper in Singapore is elastic. In the United States, EEC, Japan and the rest of the world are inelastic.

The use of other models, namely the Partial Adjustment Model (PAM) and Error Correction Model (ECM) in research from Abdullah (2016) conducted in foreign markets and the United States, it is known that the demand for white pepper exports from South Sumatra in the short and long term ranges to The United States has an inelastic self-price elasticity, a positive expenditure elasticity, a positive cross-price (substitution) elasticity with black pepper. Research by Marliani et al. (2019) uses the Two Stage Least Squares (2SLS) model, stating that Indonesian pepper exports offered to the United States and the Netherlands are influenced by Singapore's production and re-export volume, for Germany, the exchange rate and re-export volume influence it. Singapore's exports, as well as of Vietnam and Brazil, are affected by production. Researchers have researched Indonesian pepper

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

export before, so the research gap is using commodity black pepper in the United States market research that did not carry out. Apart from white pepper, Indonesia also needs to analyze export performance to determine the position of demand for black pepper in the US market. The level of black pepper export competition must consider because each exporting country will try to increase the quality and quantity of exports to meet the demands of export destination countries. The research results increase demand for black pepper exports to the United States by determining appropriate policies.

RESEARCH METHODS

Secondary data use collected for each month from January, 2005 to December, 2021. The secondary data used is time series data for 2005–2021 obtained from several sources, especially on the Trade Map, namely pepper volume data in kilograms and pepper value in USD units. The price of black and white pepper used was obtained by dividing the export value and export volume of the importing countries on the American market. The commodity under study is the (whole) black pepper that is not crushed and ground with HS code (0904110020) the research year to use starts 2005-2021 for 17 years.

RCA is a measure of trade flows in economic conditions that can also be used in analyzing the stability of the trade performance index, the effect of changes in relative prices on the index, or the relationship between the level of technological development and comparative advantage (Balassa, 1965) by using the following equation.

$$\mathrm{RCA} = \frac{\mathrm{X_{IJ}}}{\mathrm{X_t}} \times \frac{\mathrm{W_{ij}}}{\mathrm{W_t}}$$

Information:
Xij : Export value of black pepper from Indonesia to the United States (US$)
Wij : Export value of black pepper from the world to the United States (US$)
Xt : Total value of exports from Indonesia to the United States (US$)
Wt : Total value of exports from the world to the United States (US$)

In preventing the problem of asymmetry to yield, so Dalum et al. (1998) and Laursen (2015) modified the RCA index and obtained a measurement with the term revealed symmetric comparative advantage (RSCA), which carries after the stages of RCA values are obtained and explained in the following equation.

$$\mathrm{RSCA} = \frac{\mathrm{RCA} - 1}{\mathrm{RCA} + 1}$$

The results of the calculation of the RSCA value have a magnitude index of about zero to one ($-1 \leq \mathrm{RCA_{ij}} \leq 1$); that is, when the $\mathrm{RSCA_{ij}}$ value of country i is above zero, it will be a comparative advantage for product j. Conversely, a country's $\mathrm{RSCA_{ij}}$ index below zero becomes a comparative loss for product j in country i.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

The following method used to measure competitive export advantage is Export Product Dynamics (EPD). The matrix uses market attractiveness on the horizontal axis (X-axis) and business strength on the vertical axis (Y-axis), which analyzes the growth of product demand in specific markets and the growth in market share of a country in specific market destinations (Khairunisa & Novianti, 2018). This method's analysis results have four position categories: Rising Star, Falling Star, Lost Opportunity and Retreat (Esterhuizen, 2006). The formula described in the following equation.

Export share growth (X-Axis)

$$\frac{\sum_{t=1}^{t}\left(\frac{Xivj}{Wivj}\right)_{t} \text{ x } 100\% - \sum_{t=1}^{t}\left(\frac{Xivj}{Wivj}\right)_{t-1} \text{ x } 100\%}{T}$$

Product market share growth (Y-Axis)

$$\frac{\sum_{t=1}^{t}\left(\frac{Xivt}{Wt}\right)_{t} \text{ x } 100\% - \sum_{t=1}^{t}\left(\frac{Xivt}{Wt}\right)_{t-1} \text{ x } 100\%}{T}$$

Information:

Xivj : The export value of black pepper from Indonesia to the United States (US$)
Xivt : Total value of exports from Indonesia to the United States (US$)
Wivj : Black pepper commodity export value from Indonesia to the world (US$)
Wt : Total value of exports from the world to the United States (US$)
t : Year
t-1 : Previous year
T : Number of years of analysis

The best market conditions are the rising star export share which shows that a country can achieve a dynamic product market share and demand for its products overgrows. A lost opportunity position indicates that a country can lose the opportunity to achieve a dynamic product market share. Falling stars show that a country has an increasing market share but has smaller opportunities to achieve market share so that the products it owns are not dynamic. The lowest is called a retreat which shows a country has lost the opportunity to gain market share and has products that could be more dynamic (Esterhuizen, 2006).

The method used to analyze the demand for black pepper in the United States market is the Almost Ideal Demand System (AIDS). The model was described in 1980 by Dealton and Muelbauer and then developed to be used in agricultural economics to analyze import and export demand (Green & Alston, 1990). The two main assumptions made when applying AIDS to import or export demand analysis are the aggregation of products across import/export sources or preventing separability between goods. Product aggregation implies that prices aggregated across import sources change together by the same proportion (Yang & Koo, 1994). This study discusses the demand for black pepper exports in the American market with competition between Indonesia, Vietnam, India and Brazil as the most significant exporters. The pepper import data obtained from export destination

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

countries with HS code 0904110020 (Pepper of The Genus Piper, Neither Crushed Nor Ground, Black) can describe in the following formula.

$$wviet = \alpha_1 + \gamma_1 lnpv + \gamma_2 lnpb + \gamma_3 lnpio + \gamma_4 lnpi + \beta_1 ln\frac{x}{p^*} + \theta_1 lngdp + \lambda_1 lnpop + \sigma_1 lnpp + \phi_1 lner$$

$$wbraz = \alpha_2 + \gamma_5 lnpv + \gamma_6 lnpb + \gamma_7 lnpio + \gamma_8 lnpi + \beta_2 ln\frac{x}{p^*} + \theta_2 lngdp + \lambda_2 lnpop + \sigma_2 lnpp + \phi_2 lner$$

$$windo = \alpha_3 + \gamma_9 lnpv + \gamma_{10} lnpb + \gamma_{11} lnpio + \gamma_{12} lnpi + \beta_3 ln\frac{x}{p^*} + \theta_3 lngdp + \lambda_3 lnpop + \sigma_3 lnpp + \phi_3 lner$$

$$windia = \alpha_4 + \gamma_{13} lnpv + \gamma_{14} lnpb + \gamma_{15} lnpio + \gamma_{16} lnpi + \beta_4 ln\frac{x}{p^*} + \theta_4 lngdp + \lambda_4 lnpop + \sigma_4 lnpp + \phi_4 lner$$

Information:

α, γ, β, θ, λ, σ	: Regression parameters
I	: American market
wviet	: Share of Vietnamese black pepper imports in the US market
wbraz	: Share of imported Brazilian black pepper in the United States market
windo	: Share of Indonesian black pepper imports in the United States market
windia	: Share of Indian black pepper imports in the United States market
pv	: Export price of Vietnamese black pepper in the US market (US$/tonne)
pb	: Export price of Brazilian black pepper in the United States market (US$/ton)
pio	: Export price of Indonesian black pepper in the United States market (US$/ton)
pi	: Export price of Indian black pepper in the United States market (US$/tonne)
GDP	: United States Gross Domestic Product
Pop	: United States population
pp	: Price of white pepper in the US market
er	: Exchange Rate
x	: Total value of imports (tons)
p*	: Stone geometric price index

The step taken after measuring the AIDS parameters is determining the elasticity value, which consists of own price elasticity, cross price elasticity, and expenditure elasticity to explain the level of competition between countries in a market with the following formula.

Self-Price Elasticity

$$eij = \frac{\ddot{y}ij - \beta iwi}{wi} - 1$$

Cross Price Elasticity

$$eij = \frac{\dot{y}ij - \beta iwj}{wi} ; i \neq j$$

Expenditure Elasticity

$$\eta ij = 1 + \frac{\beta i}{wi}$$

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

Information:
yi : Parameter price of item I in the market j
βi : Total import value of goods I in market j
wi : Share item i
wj : Share goods j

The equation model will be consistent if the AIDS approximation has been applied empirically as a demand system with the following restrictions.

Engel aggregation/adding up $= \sum_{i=1}^{n} \alpha_i = \sum_{i=j}^{n} \gamma_{ij} = 0,\ \sum \beta_i = 0$
Homogenity $= \sum \gamma_{ij} = 0$
Simetry $= \gamma_{ij} = \gamma_{ji}$

RESULT AND DISCUSSION

Competitiveness Value of Indonesian Black Pepper

Comparative Advantage Analysis

The comparative advantage of Indonesian black pepper will be analyzed using the Revealed Symmetric Comparative Advantage (RSCA) method, which aims to analyze the competitive position of Indonesian black pepper in the United States market.

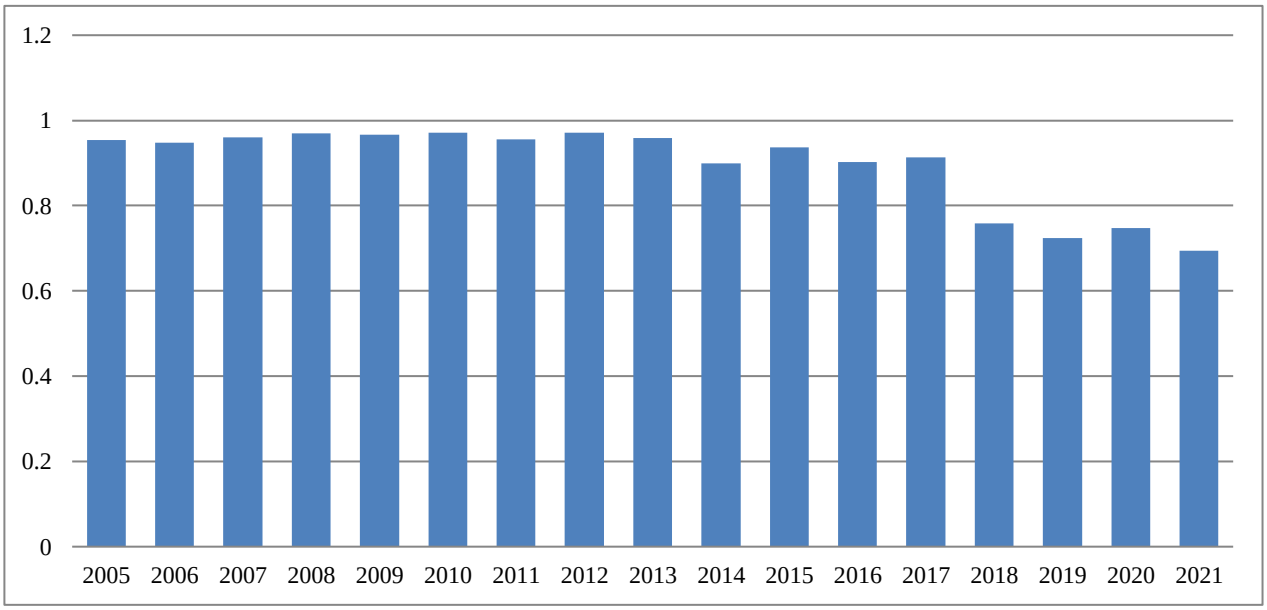

Figure 3. Indonesian Black Pepper RSCA Value
Source: Processed Data (2023)

The measurement of the RSCA value for Indonesian black pepper commodities is 0 and 1 (more than zero). Results show that black pepper exports to the United States market are comparatively daylight. Research from Asrol & Heriyanto (2019) and Kanaya & Firdaus (2014) support the result using the RCA method in analyzing the competitiveness of Indonesian spice plants and found that Indonesia is competitive in exporting spice plant products to the world. Research by

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

Hasibuan & Sudjarmoko (2008) and Suwanto et al. (2017) states that black pepper farming systems, especially those originating from Lampung in international markets, are comparatively competitive compete and have the advantage of geographic specialization effects, namely Lampung Black Pepper and Lampung Black Pepper and White Muntok, which is known as the best quality pepper in the pepper trade.

Competitive Advantage Analysis

The competitive advantage of Indonesian black pepper is analyzed using the Export Product Dynamics (EPD) method, which aims to analyze the market position of black pepper and determine whether or not the performance of Indonesian black pepper is dynamic in the United States. The results get from a market attractiveness matrix and black pepper business strength information.

Table 1. Export Product Dynamics Value of Indonesian Black Pepper in 2005-2021

Export Market Share Growth (Axis X)	Product Market Share Growth (Axis Y)	Market Position
18.86 (Competitive)	0.56 (Dynamic)	Rising Star

Source: Processed Data (2023)

Based on the analysis results, a rising star position shows that Indonesian black pepper is competitively competitive and profitable because Indonesian black pepper commodities can grow in a competitive and dynamic market in the United States market. This position also shows that Indonesia can achieve the highest market share in dynamic products with product characteristics that are developing rapidly, and the market share is getting wider. This growth was supported by developing Indonesia's black pepper commodity exports, which have experienced positive growth in the last 17 years. The percentage growth of the Indonesian black pepper market from the analysis increased by 0.56%, and the growth in the export market share of all Indonesian commodities increased by 18.86%.

Indonesia was able to obtain a rising star position because the export value of Indonesian black pepper was higher than the value of world exports in the year of the study, which was supported by the fact that Indonesia was the largest exporter to the United States. A rising star position means Indonesia has a competitive export advantage in superior quality, distinctive taste, and low prices. Even though the value and volume of exports have decreased due to quiet land area and productivity, pepper still has the opportunity to develop in the United States.

This research is in line with research from Kurnianto et al. (2016) and Trilarasati et al. (2023) using the Export Product Dynamics (EPD) and Trade Specialization Index (ISP) that Indonesian pepper has competitive and comparative competitiveness. However, research by Fathya et al. (2021) states that in the Vietnamese market, the competitiveness of Indonesian pepper could be higher than exports to other countries because Indonesia prioritizes American and European export markets.

Factors Influencing Indonesian Black Pepper Import Demand

The demand for Indonesian black pepper imports in the United States describes in Table 2, and based on the estimation results in the AIDS model, the percentage of the R-Square value is 44.29%. This value shows that the independent variable (free) of 44.29% can explain the variation in

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

the proportion of Indonesian black pepper import demand to the United States. Other variables outside the model explain the rest. The statistical p-value obtained is below 0.05, so it significantly affects the 5% significance level (0.000) and is explained in the following table 2.

Table 2. Factors Affecting the Share of Indonesian Black Pepper Demand in the United States

Independent Variable	Coefficient	P-value
Vietnamese Black Pepper Prices (Pviet)	0.164	0.000**
Brazil Price of Brazilian Black Pepper (Pbraz)	-0.048	0.15
Indonesian Black Pepper Prices (Pindo)	-0.091	0.016**
Indian Black Pepper Price (Pindia)	-0.036	0.061*
Price of Black Pepper Rest of the World (ROW)	0.011	0.126
Gross Domestic Product (GDP)	-0.002	0.037**
American Population (POP)	-1.575	0.003**
White Pepper Prices (PP)	0.101	0.000**
Exchange Rate (ER)	0.069	0.000**
Total Import Value (X/P*)	0.927	0.039**
Constant	22.03	0.005**
R square	44.29%	
p-value	0.000	

Note: (**) significant at a real level of 5% (0.05)
(*) significant at a real level of 10% (0.1)
Source: Processed Data (2023)

Based on research results, demand for Indonesian black pepper imports to the United States influences black pepper prices in Vietnam, Indonesia, and India, Gross Domestic Product (GDP), the American population, white pepper prices, exchange rates and total black pepper imports. The price variable for Vietnamese black pepper has a p-value of 0.000. It has a positive effect on the demand for black pepper imports, meaning that a 1% increase in the price of Vietnamese black pepper causes a 0.164% increase in the share of import demand for American black pepper from Indonesia. Because Vietnam is a competitor country for Indonesian black pepper exports, it can be categorized as a substitute country and influences demand for black pepper imports to the American market. The Indonesian black pepper price variable significantly affects the share of demand for black pepper imports from the United States. The p-value obtained is 0.016, which negatively affects the demand for black pepper imports. An increase of 1% in the price of Indonesian black pepper causes a 0.091% decrease in the share of import demand for American black pepper. The United States market has substituted for black pepper exporting countries other than Indonesia. This variable is by the hypothesis and demand theory, but in research from Brahmana & Novianti (2022), Wardani & Sunyigono (2021), Supriana & Yanti (2013), and Sanny et al. (2018) obtained that the export price of Indonesian pepper does not cause export volume in export destination countries.

The Indian black pepper price variable has a significant effect at the 10% level on the share of demand for US black pepper imports from Indonesia. The p-value obtained is 0.061, which negatively affects the demand for imported black pepper, meaning that when the price of Indian black pepper rises by 1%, the share of demand for imported American black pepper from Indonesia will decrease by 0.036%. It was caused by changes in the price of India, causing the United States to choose another exporting country to meet the demand for black pepper imports other than Indonesia,

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

which is to the needs of the United States market. The Gross Domestic Product (GDP) variable has a p-value of 0.002. It negatively affects black pepper import demand, meaning that when GDP rises by 1%, the share of American black pepper import demand decreases by 0.037%. This variable is by the hypothesis and similar to research Jannah et al. (2021), which states that if the rupiah gets strengthened, it will indicate that the condition of the Indonesian economy is increasing. The economies of importing countries are weakening.

The following variable, namely population, has a p-value of 0.003 and negatively affects the demand for black pepper imports, meaning that when the population increases by 1%, the share of import demand for American black pepper decreases by 1.575%. This variable does not follow the hypothesis and similar research by Kanaya & Firdaus (2014) that the population negatively affects export values. However, this contradicts research from Supriana & Yanti (2013) which states that Indonesian black pepper exports to importing countries are positively affected by population. The American population is very concerned about food safety in food. However, in Indonesia, the common problem with black pepper is the presence of foreign material that exceeds the U.S. Food and Drug Administration (USFDA) standards, which have a maximum of 1%. Therefore, when there is an increase in the American population, there will be a reduction in demand for black pepper imports from Indonesia. The white pepper price variable has a p-value of 0.000. It positively affects the demand for black pepper imports, meaning that a 1% increase in the price of white pepper causes a 0.101% increase in the share of American black pepper imports. This variable follows the hypothesis and research from Supriana & Yanti (2013) that black and white pepper are not mutually exclusive. However, the results show that black pepper exports from Indonesia to export destination countries are negatively affected by the price of white pepper.

The exchange rate variable has a p-value of 0.000. It has a significant and positive effect on black pepper import demand, meaning that when the exchange rate rises by 1%, the share of American black pepper import demand increases by 0.069%. The results obtained are not by the hypothesis and research by Marliani et al. (2019) and Ginting (2013) which states that the exchange rate negatively affects the export of a commodity. It is because Indonesia is the second largest black pepper exporter after Vietnam and has the best quality black pepper, so if there is a change in the exchange rate, it will not cause a change in demand for imports of this commodity. However, in research from Sanny et al. (2018) and Brahmana & Novianti (2022) the volume of pepper exports is positively influenced by the Rupiah exchange rate against the United States Dollar because changes in the exchange rate will only have an impact on the income level of exporters and farmers so that importers do not consider it a big concern.

The total import variable has a p-value of 0.039. It positively affects black pepper import demand, meaning that when total imports increase by 1%, the share of American black pepper import demand increases by 0.927%. This variable is by the hypothesis. That is if the increasing demand for US pepper imports for Indonesian black pepper reflects that Indonesia has the best quality black pepper in the United States market, so exports continue to occur throughout the year and make Indonesia the second largest exporter of black pepper after Vietnam so that these conditions utilize for expanding market share of black pepper in the United States. However, the Brazilian black pepper price and the rest of the world variables have no significant effect on the share of demand for US black pepper imports from Indonesia because the significance value of these variables is not by the research hypothesis. Therefore, these two prices do not impact changes in demand for Indonesian black pepper imports to the United States.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

Competitiom of Black Pepper Exporting Countries in the United States Market

The black pepper competition discussed in this study is in Vietnam, Brazil, Indonesia and India, the central exporting countries in the United States. In analyzing the level of competition for black pepper, demand elasticity is used, grouped into three parts, namely the value of expenditure elasticity, self-price elasticity and cross-price elasticity. Import share value, expenditure elasticity, own price elasticity and the cross price elasticity of black pepper commodities in Vietnam, Brazil, Indonesia and India in the United States market describe as follows.

Table 3. Import Share Value, Expenditure Elasticity, Own Price Elasticity, and Black Pepper Cross Price Elasticity in Exporting Countries to the United States

Country	Share	Expenditure Elasticity	Self-Price Elasticity (Uncompensated)	Cross Price Elasticity (Compensated)			
				Vietnam	Brazil	Indonesia	India
Vietnam	40.65	1.049	-2.001	-	0.657	0.631	0.315
Brazil	20.66	0.908	-1.440	1.292	-	-0.005	-0.177
Indonesia	22.76	1.409	-1.307	1.127	-0.004	-	-0.049
India	10.84	0.428	-1.063	1.182	-0.338	-0.105	-

Source: Processed Data (2023)

Import Share Value

In Table 3, the share of imports of black pepper from Vietnam, Brazil, Indonesia and India, it is explained that Vietnam, as the prominent black pepper exporting country to the United States market, has a share value of 40.65%. The next order of exporters is Indonesia which has a share value of 22.76%; Brazil is in third place with a value of 20.66%; India is in fourth place with a value of 10.84%. The import share of other countries (ROW) which export pepper to the United States but not mentioned in the study is 5.09%. Therefore, Vietnam is an exporter with the most significant US market share.

Expenditure Elasticity

The result of the elasticity of Indonesian black pepper expenditure is 1.409, meaning that a 1% addition to black pepper import expenditure from the United States market causes a 1.409% increase in demand for black pepper imports originating from Indonesia. Indonesian black pepper is elastic because it has an absolute value above 1, which is 1.409, so it is sensitive to changes in total expenditure and has better quality black pepper than other pepper exporters in the United States. Furthermore, Vietnam has a score of 1.049 on expenditure elasticity, meaning that a 1% increase in black pepper import spending in the American market will lead to a 1.049% increase in demand for imports from Vietnam.

Brazil's expenditure elasticity is 0.908, meaning that a 1% increase in black pepper import expenditure in the American market causes a 0.908% increase in demand for black pepper imports from Brazil. India has a 0.428 on expenditure elasticity, meaning that a 1% increase in black pepper import spending in the American market causes a 0.428% increase in demand for black pepper imports from India. Black pepper products in Vietnam and Indonesia are elastic goods, but in Brazil and India, black pepper is inelastic. Based on the expenditure elasticity value above 1, Vietnamese and Indonesian black pepper are considered luxury goods. Hence, an increase in the total value of

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

imports causes a higher demand for black pepper from Vietnam and Indonesia with a percentage value of the elasticity obtained, as well as Brazilian and Indian black pepper, including essential goods, because the elasticity value is below one.

Self-Price Elasticity

The results of self-price elasticity analysis with value (uncompensated) black pepper in Vietnam, Brazil, Indonesia and India have a negative sign and follow the demand theory so that when there is an increase in the price of a commodity, it causes a reduction in the demand for that commodity. The analysis results of Indonesia's price elasticity have an elasticity value of -1.307, meaning that adding 1% to the price of Indonesian black pepper causes a 1.307% decrease in demand for US black pepper imports. The self-price elasticity value of Indonesian black pepper is elastic because the self-price elasticity value obtained is above one, so price changes will be responsive to the demand for black pepper in the United States.

Vietnam has a value of -2.001 on its price elasticity, meaning that an additional 1% of the price of Vietnamese black pepper causes a 2.001% decrease in demand for imported US black pepper. The results of Brazil's price elasticity analysis have an elasticity value of -1.440, meaning that if there is a 1% change in the price of black pepper in Brazil, it will reduce the demand for imported black pepper from the United States by a percentage of 1.440%. The results of India's price elasticity analysis have an elasticity value of -1.063, meaning that if there is an increase of 1% in the price of black pepper in India, it will cause a decrease of 1.063% in demand for black pepper imports to the United States. Black pepper's price elasticity value in Vietnam, Brazil, Indonesia and India is elastic with a value above one so that it is responsive to requests for imports of black pepper from the United States.

Cross Price Elasticity

Based on Indonesia's cross-price elasticity analysis results in Table 3, the elasticity values for Vietnam, Brazil and India are 1.127, -0.004 and -0.049. Indonesia has black pepper, a substitute for Vietnamese black pepper, which indicates a positive cross-elasticity sign, and complementary black pepper, which indicates a negative cross-elasticity sign with Brazil and India in the United States market. It means that if there is an increase of 1% in the price of Vietnamese black pepper, it will increase the share of Indonesian black pepper imports to the United States by a percentage of 1.127%. However, Brazil and India have differences; namely, increasing 1% of the price of black pepper from Brazil and India will cause a decrease of 0.004 and 0.049%, respectively, in the share of Indonesian black pepper imports in the United States. The analysis results show that Vietnam has black pepper that substitutes for Indonesia in the United States market. Hence, a 1% increase in the price of Indonesian pepper causes an increase of 0.631% in the import share of Vietnamese black pepper in the United States. The results of the elasticity analysis for Brazil and India show that these two countries have black pepper that is complementary to Indonesia, so an additional 1% in the price of pepper from Indonesia causes a decrease in the share of Brazilian and Indian black pepper imports to the United States by 0.005% and 0.105% respectively.

Indonesian pepper has specific requirements in export shipments to the United States. Namely, it must meet standards from ASTA (American Spice Trade Association) and USFDA (United States Food and Drug Administration) and not exceed certain Salmonella and E. Coli microbes. Vietnam is Indonesia's main competitor in exporting pepper to the United States, with

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

different productivity levels. Vietnamese pepper has a productivity of 3,271 kg/ha/year, that higher than Indonesian based on Kementerian Pertanian (2023) that in 2021 the productivity of pepper is 718 kg/ha/year. Therefore, Vietnam charges lower production costs to dominate the world pepper trade (Anggraini et al., 2021; Fathya et al., 2021). In addition, the Vietnamese government also plays an active role in providing pepper import policies to increase exports to the world. Adjustment of agro-ecosystem characteristics and the use of available technology that farmers do not utilize properly, so it is necessary to provide guidance and supervision in applying operational technology standards appropriately and consistently in increasing Indonesia's presence as the world's largest pepper exporter (Siswanto et al., 2021).

CONCLUSION AND SUGGESTION

The performance of black pepper exports in Indonesia is comparatively competitive in the United States market. They can compete with black pepper in Vietnam, Brazil and India and synergize between countries in fulfilling their export capacity. Black pepper prices influence demand for Indonesian black pepper imports in the United States in Vietnam, Indonesia, and India, Gross Domestic Product (GDP), the American population, white pepper prices, exchange rates, and total black pepper imports. Indonesia's black pepper import demand has a positive expenditure elasticity meaning it is an ordinary commodity and has better quality than other exporters, its price elasticity is elastic, meaning that price changes are responsive to changes in demand for black pepper imports, and positive cross elasticity with Vietnam is a substitution in exports. Furthermore, the negative cross elasticities with Brazil and India complement exports to the United States. The government can improve the performance of Indonesia's black pepper exports to the United States by focusing on increasing production and import volumes of black pepper to meet the demands of export destination countries every year and adjusting prices appropriately to market demands in export destination countries.

REFERENCES

Abdullah, Z. (2016). Analisis Permintaan Ekspor Komoditi Lada Putih Daerah Sumatra Selatan 1970-1990 [Universitas Gadjah Mada]. http://etd.repository.ugm.ac.id/penelitian/detail/144270

Anggraini, D., Syapsan, S., & Darmayuda, D. (2021). Daya Saing Ekspor Lada Indonesia ke Amerika Serikat. Convergence: The Journal of Economic Development, 3(2), 90–105. https://doi.org/10.33369/CONVERGENCE-JEP.V3I2.17875

Asrol, A., & Heriyanto, H. (2019). Daya Saing Ekspor Pala Indonesia Di Pasar Internasional. Dinamika Pertanian, 33(2), 179–188. https://doi.org/10.25299/DP.2017.VOL33(2).3831

Balassa, B. (1965). Trade Liberalisation and "Revealed" Comparative Advantage. The Manchester School, 33(2), 99–123. https://doi.org/10.1111/j.1467-9957.1965.tb00050.x

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

Brahmana, M. N. E., & Novianti, T. (2022). Daya Saing Dan Faktor Yang Mempengaruhi Ekspor Lada Indonesia Ke Amerika: Pendekatan Revealed Comparative Advantage. JSEP (Journal of Social and Agricultural Economics), 15(2), 113–122. https://doi.org/10.19184/JSEP.V15I2.28675

Dalum, B., Laursen, K., & Villumsen, G. (1998). Structural Change in OECD Export Specialisation Patterns: de-specialisation and 'stickiness.' International Review of Applied Economics,

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

12(3), 423–443. https://doi.org/10.1080/02692179800000017

Edizal. (2007). Strategi Peningkatan Daya Saing Lada Putih Indonesia melalui Analisis Penawaran Ekspor dan Permintaan Impor Lada Putih Dunia. SOCA: Jurnal Sosial Ekonomi Pertanian, 7(3), 44051. https://www.neliti.com/publications/44051/

Esterhuizen, D. (2006). An evaluation of the competitiveness of the South African agribusiness sector. https://repository.up.ac.za/handle/2263/30241

Fathya, F. D. U., Wahidah, A. H., Hasanah, U. U., Hartanti, M. I., & Fajrina, A. (2021). The Potency of Indonesia-Vietnam Pepper Commodity Trade as One of the Non-Traditional Markets. Jurnal Ekonomi Dan Kebijakan Pembangunan, 10(1), 55–71. https://doi.org/10.29244/jekp.10.1.2021.55-71

Fazaria, D. A., Hakim, D. B., & Sahara, S. (2016). Analisis Integrasi Harga Lada Di Pasar Domestik Dan Internasional. Buletin Ilmiah Litbang Perdagangan, 10(2), 225–242. https://doi.org/10.30908/bilp.v10i2.55

Ginting, M. (2013). Pengaruh nilai tukar terhadap ekspor Indonesia. Buletin Ilmiah Litbang Perdagangan, 7(1), 1–18. http://jurnal.kemendag.go.id/bilp/article/view/96

Green, R., & Alston, J. M. (1990). Elasticities in AIDS Models. American Journal of Agricultural Economics, 72(2), 442–445. https://doi.org/10.2307/1242346

Hasibuan, A. M., & Sudjarmoko, B. (2008). Daya saing usahatani lada di Lampung. Buletin Ristri, 1(1), 1–8. https://www.researchgate.net/publication/317712260

International Pepper Community. (2021). Countrywise Export. https://www.ipcnet.org/project/crop-report-analytics/

Jannah, E. M., Nurmalina, R., & Asmarantaka, R. W. (2021). Aliran Perdagangan Lada Indonesia Di Pasar Internasional. Risalah Kebijakan Pertanian Dan Lingkungan Rumusan Kajian Strategis Bidang Pertanian Dan Lingkungan, 8(2), 60–76. https://doi.org/10.29244/jkebijakan.v8i2.28042

Kanaya, I. A., & Firdaus, M. (2014). Daya Saing Dan Permintaan Ekspor Produk Biofarmaka Indonesia Di Negara Tujuan Utama Periode 2003-2012. Jurnal Manajemen & Agribisnis, 11(3), 183–198. https://doi.org/10.17358/JMA.11.3.183-198

Kementerian Pertanian. (2021). Analisis Kinerja Perdagangan Lada (Vol. 11). Pusat Data dan Sistem Informasi Pertanian Kementerian Pertanian 2021. https://satudata.pertanian.go.id/assets/docs/publikasi/Analisis_Kinerja_Perdagangan_Komoditas_Lada_Semester_II_Tahun_2021.pdf

Kementerian Pertanian. (2023). Statistik Perkebunan Unggulan Nasional 2021-2023. In Statistik Perkebunan Unggulan Nasional (pp. 1–1114). Kementerian Pertanian.

Khairunisa, G. R., & Novianti, T. (2018). Daya Saing Minyak Sawit Dan Dampak Renewable Energy Directive (RED) Uni Eropa Terhadap Ekspor Indonesia Di Pasar Uni Eropa. Jurnal Agribisnis Indonesia, 5(2), 125. https://doi.org/10.29244/jai.2017.5.2.125-136

Kurnianto, D., Suharyono, & Mawardi, K. (2016). Daya Saing Komoditas Lada Indonesia Di Pasar Internasional (Studi Tentang Ekspor Lada Indonesia Tahun 2010-2014). Jurnal Administrasi Bisnis (JAB), 40(2), 58–64.

Laursen, K. (2015). Revealed comparative advantage and the alternatives as measures of international specialization. Eurasian Business Review, 5(1), 99–115. https://doi.org/10.1007/s40821-015-0017-1

Mahdi, N., & Suprehatin, S. (2021). Posisi Pasar Lada Indonesia di Pasar Global. Jurnal Ekonomi Pertanian Dan Agribisnis, 5(2), 595–605. https://doi.org/10.21776/ub.jepa.2021.005.02.26

Marliani, Y. U., Fariyanti, A., & Tinaprilla, N. (2019). Penawaran Ekspor dan Permintaan Impor Lada Indonesia di Pasar Internasional. Jurnal RASI, 1(2), 204–215. https://doi.org/10.52496/rasi.v1i2.49

Marliani, Y. U., Fariyanti, A., & Tinaprilla, N. (2021). Penawaran Ekspor dan Permintaan Impor Lada Indonesia di Pasar Internasional. Jurnal RASI, 1(2), 204–215.

ISSN 2580-0566; E-ISSN 2621-9778
http://ejournal2.undip.ac.id/index.php/agrisocionomics
Vol 8 (1): 216-230, March 2024

https://doi.org/10.52496/rasi.v1i2.49

Nurdjannah, N. (2006). Perbaikan Mutu Lada Dalam Rangka Meningkatkan Daya Saing di Pasar Dunia o Title. Perspektif: Review Penelitian Tanaman Industri, 5(1), 13–25.

Sanny, L., Polla, J. R., & Fatmawati, I. (2018). The analysis of export potency for Indonesian pepper. Pertanika Journal of Social Sciences and Humanities, 26(T), 237–246. http://www.pertanika.upm.edu.my/

Siswanto, S., Ardana, I. &, & Karmawati, E. (2021). Peluang peningkatan produktivitas dan daya saing lada Opportunity for increasing productivity and competitiveness of pepper. Perspektif, Review Penelitian Tanaman Industri, 19(2), 149. https://garuda.kemdikbud.go.id/documents/detail/2148859

Sudjarmoko, B., Wahyudi, A., Ermiati, E., & Hasibuan, A. M. (2015). Strategy For Developing Indonesian Pepper Export Based On Trade Performance Index And Analytic Hierarchy Process. Buletin Penelitian Tanaman Rempah Dan Obat, 26(1), 63. https://doi.org/10.21082/bullittro.v26n1.2015.63-76

Supriana, T., & Yanti, C. W. (2013). Prospect of Indonesia black and white peppers export. Economic Journal of Emerging Markets, 5(1), 1–14. https://doi.org/10.20885/ejem.vol5.iss1.art1

Suwanto et al. (2017). Analisis Daya Saing Lada Hitam di Kabupaten Lampung Timur. Agroinovasi Spesifik Lokasi Untuk Ketahanan Pangan Pada Era Masyarakat Ekonomi ASEAN, 1, 1194. https://repository.pertanian.go.id/handle/123456789/6967

Trilarasati, L. S., Khafiya, N. N., Adriananta, M., Fitriana, A. N., & Velma, G. M. (2023). Komparasi Daya Saing Ekspor Lada Indonesia Terhadap Vietnam Dan Amerika. Jurnal Economina, 2(1), 230–240. https://doi.org/10.55681/ECONOMINA.V2I1.281

Wardani, V. A. T., & Sunyigono, A. K. (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

Yang, S.-R., & Koo, W. W. (1994). Japanese Meat Import Demand Estimation with the Source Differentiated AIDS Model. Journal of Agricultural and Resource Economics, 19(2), 396–408. https://www.jstor.org/stable/40986854