IJEBAS
International Journal of Economic, Business, Accounting, Agriculture Management and Sharia Administration

ANALYSIS OF SHRIMP IMPORT DEMAND IN THE UNITED STATES

Dina Hafizah Siregar[1], Sri Fajar Ayu[2], Sinar Indra Kesuma[3]
[1,2,3]Agribusiness Masters Study Program, Faculty of Agriculture Universitas Sumatera Utara
Corresponding E-mail: [1)]dinahafizah1708@usu.ac.id , [2)]sfa@usu.ac.id , [3)]sinar@usu.ac.id

Abstract

Indonesia, the world's largest archipelagic country, has abundant water and marine resources. Frozen shrimp is a leading commodity, with an export value reaching USD 1.53 billion or 37.72% in 2021. The United States is a significant market opportunity for importing countries, reinforced by the high demand for shrimp imports in the United States from various countries in the world, reaching around > 600 tons in 2022 and increasing by 4.75% every year. This research aims to analyze the factors that influence the market share of demand for shrimp from Indonesia in the United States market, as well as the relationship between competition for shrimp commodities from Indonesia, India, Ecuador, Mexico and Vietnam based on the elasticity value of demand in the United States market. The research uses purposive sampling and modern data analysis methods. Using the Almost Ideal Demand System (AIDS) econometric model and SAS software for data processing, focusing on the US market's five largest shrimp supply countries. The results of this research show that Indonesia has the potential to increase its market share because of its positive cross-elasticity with India, which indicates a mutually substitutive relationship. Factors that influence demand for imported Indonesian shrimp in America include the price of Ecuadorian shrimp, Mexican shrimp, and total value of Indonesian shrimp imports.

Keywords**: *Import, Shrimp, Almost Ideal Demand System***

1. INTRODUCTION

Indonesia is the biggest archipelago country in the world. This makes Indonesia have abundant water and marine resource potential. Indonesia's territorial area is 7.81 million km2, consisting of land of 2.01 million km2 and sea area of 3.25 km2, Exclusive Economic Zone (EEZ) of 2.55 million km2, this makes Indonesia also known as a maritime country. Indonesia occupies the fourth largest position in the world after the United States, Canada and Russia, judging from the length of its coastline, which is 95,181 km. This shows that Indonesia has rich fishery resources and has great potential to be utilized as well as possible (Directorate General of Marine Spatial Management 2023). Indonesia has a very diverse range of fishery products, from fish to seaweed. There are several main Indonesian fisheries commodities that have large production quantities and high export value. These commodities are shrimp, tuna, tuna and skipjack. Based on data from the Central Statistics Agency, since 1987 Indonesia has become one of the world's most important suppliers of shrimp. Shrimp, consisting of fresh and frozen shrimp, is the main export commodity from the marine and fisheries sector. The contribution of shrimp exports to Indonesia's foreign exchange earnings is quite large, especially from the non-oil and gas sector group, even the largest when compared to the agricultural sector export commodity groups such as coffee, tea, spices, tobacco and cocoa beans. Some of the main destination countries for Indonesian shrimp exports are the United States (64.3%), Japan (19.7%), China (6.6%), Canada (1.7%) and the Netherlands (0.8%) (Trademap).

Developed countries such as America, China, Japan and Spain are the largest shrimp importers in the world. The United States has a shrimp import value of USD 5.9 billion, followed by China at USD 5.6 billion, Japan at USD 1.5 billion, and Spain at USD 1.1 billion (Trademap). This abundance of natural resources can provide hope for Indonesia to continue to be able to

compete with shrimp supplier countries in the international market, especially with India as the market leader in terms of shrimp exports to the United States. The Fish Quarantine, Quality Control and Fishery Product Safety Agency (BKIPM) of the Ministry of Maritime Affairs and Fisheries (KKP) in collaboration with the US FDA (United State Food and Drug Administration) held a socialization on "FDA Import Operations Regulations". This of course aims to continue to increase not only the quantity but especially the quality of fishery export products to the United States. The United States imposes strict quality requirements on all goods entering its territory, including fishery products. This is to protect the public from health threats caused by food products. Domestic and imported fishery products into the United States must follow the terms and conditions determined by the Food and Drug Administration (FDA), one of which is Hazard Analysis & Critical Control Points (HACCP) (Indonesian Fishery Producers Processing & Marketing Association 2023).

Regulations (HACCP) are the embodiment of a seafood safety program that has many aspects and considers risks. In this management system, seafood safety is addressed through analysis and control of biological, chemical, and physical hazards from production, procurement, and handling of raw materials (including storage temperature settings and post-mortem handling), to manufacturing, distribution (packaging methods) , and consumption of finished products. Oversight of seafood imports for regulatory compliance includes inspection of processing facilities, sampling of seafood offered for import into the United States, inspection of importers, evaluation of seafood product filers, assessment of foreign countries' (importers') food safety programs, and review of relevant information from foreign partners (Food and Drug Administration). The explanation above provides the background for the author to analyze further efforts to increase the share of Indonesian shrimp imports in the United States market and take advantage of existing opportunities. The hope of meeting demand for sustainable foreign consumption of fishery commodities, especially shrimp, can soon be realized.

2. LITERATURE REVIEW

2.1 International trade

International trade can be defined as trade transactions in goods and services between the economic subjects of one country and the economic subjects of other countries. The economic subjects in question are citizens, import-export companies and other industrial companies. International trade occurs due to differences in the potential of natural resources, capital resources, human resources and technology developed between countries (Ibrahim et all., 2021).

A country's commodities will be exportable or importable if seen from the quantity and production factors of the commodity. The following is the international trade curve coined by Salvatore (1997):

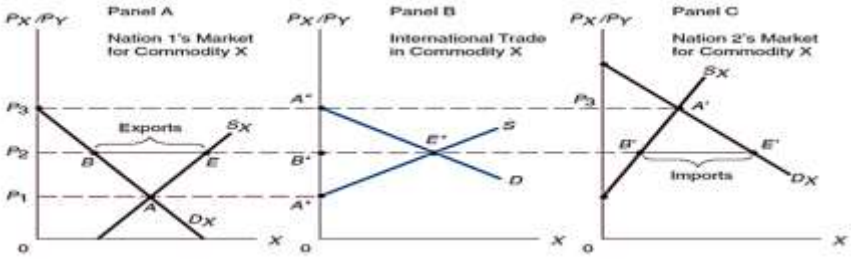


Figure 1 International Trade Curve (Salvatore, 1997)

Theoretically, a country, for example country 1, will export commodity

The price structure that occurs in country 1 is lower because domestic production is greater than domestic consumption so there is excess supply in country 1. On the other hand, in country 2 there is excess demand because domestic consumption is greater than domestic production so prices in country 2 higher. Thus, country 1 has the opportunity to sell its excess production to other countries, while country 2 wants to buy commodity X from other countries which is relatively cheaper. If communication occurs between country 1 and country 2, then trade will occur between the two at the same price in both countries. Figure 2.2 shows that before international trade occurred, the price in country 1 was P1, while the price in country 2 was P3. Supply in the international market occurs if the international price is higher than P1, while demand in the international market occurs if the international price is lower than P3. With international trade, country 1 will export commodity X amounting to BE, while country 2 will import commodity X amounting to B'E' at the international price level (P2). From this theoretical explanation, the concept of commodity imports between countries is known.

2.2 Theory and Functions of Demand

Demand is one of the important economic activities. It could be said that if economic activities are divided equally, demand contributes 33.3% of the activity and the rest is production and distribution activities. Apart from its quite large contribution to the economy, demand activities have a large impact or multiplier. This means that if there is demand, there will be income for sellers in the form of profits, on the other hand there will also be an increase in production from a number of manufacturers, thus creating income in the form of (salaries, wages, rent and interest) for owners of production factors. This domino effect of added value in income will occur throughout activities, starting from procuring raw materials, processing, transporting and selling to consumers or buyers (Priyagus, 2016). Demand theory is a theory to explain the nature of consumers in purchasing or demand for goods. Demand theory explains the relationship between the quantity demanded and the price level demanded (Daniel in Agustin, 2016). The law of demand is that the lower the price of an item, the greater the demand for that item and vice versa, the higher the price of an item, the less demand for that item. (Sukirno, 2005).

The demand function is an equation function that shows the relationship between the quantity of a good demanded and the factors that influence it. The demand function is a mathematical study used to analyze consumer behavior and prices. The demand function follows the law of demand, that is, if the price of a good increases, the demand for that good also decreases and conversely, if the price of a good falls, the demand for that good increases.

2.3 Import Request

Physically, imports are the purchase and entry of goods from abroad into an economy. Imports can also be said to be trade by bringing goods from abroad into Indonesian territory by complying with applicable regulations (Septiana, 2011). Import policy is part of trade policy which protects national interests from the various influences of the entry of goods from other countries. This refers to Law no. 7 of 1994 concerning ratification of the agreement to establish a world trade organization which contains guidelines that must be obeyed by every country (Nirwana, 2021). A country's imports are determined by several factors, including the country's competitiveness and foreign exchange rates. However, the main determinant of imports is the income of the people of a country. The higher people's income, the higher the imports they will make (Septiana, 2011). Imports are not always influenced by income. There are other factors that influence imports.

Changes in these factors will shift the import function. For example, if inflation occurs domestically so that competitiveness decreases, imports tend to increase.

A country's import demand is the difference between domestic consumption of a product or commodity and domestic production plus the remaining stock of products or goods from last year. The formula for import demand for a country's commodities/products can be written as follows:

$$\mathbf{Mt = Ct – (Qt + St\text{-}1)}$$

Information:

Mt = Number of imported products of a commodity in year t

Ct = Total domestic consumption of a commodity in year t

Qt = Total domestic production of a commodity in year t

St-1 = Total domestic stock of a particular commodity in year t-1

Furthermore, import demand is influenced by the price of the commodity itself, the price of import substitute commodities, the income level of the importing country, population, and so on. Then the import demand function can be written as follows:

$$\mathbf{Mt = f\ (PMt, Yt, PSt, Pt, Zt)}$$

Information:

PMt = Import price of a commodity in year t

Yt = Income of the importing country in year t

PSt = Price of import substitute commodities in year t

Pt = Population of the importing country in year t

Zt = Other factors

2.4 World Price Formation

Market price is the high or low price level that occurs based on an agreement between producers or supply and consumers or demand. Market prices are also called equilibrium prices. The most important factors in forming a price are the forces of demand and supply. Demand and supply will be in balance at market prices if the quantity demanded is equal to the quantity supplied (Adrio, 2020). Changes in world production will have an impact on world supply, while changes in world consumption will affect world demand. Therefore, the prices of internationally traded commodities can be influenced by forces that influence import demand, export supply or the influence of both together. Commodity prices on world markets are also influenced by previous year's prices.

2.5 Elasticity of Demand

Elasticity of demand is a concept used to measure the degree of sensitivity or response to changes in the quantity or quality of goods purchased as a result of changes in influencing factors (Ali, 2021). Then, according to Widarjono (2016), elasticity is an indicator that measures how responsive the quantity of demand is to changes due to changes in one of the influencing factors, including the price of the good itself, the price of other goods (cross prices), and income.

3. RESEARCH METHOD

3.1 Location Selection Method

The selection of the research location, namely the United States as an importing country for shrimp commodities, was carried out deliberately (purposive sampling). This is because the United States is one of the largest shrimp importing countries in the world. The largest shrimp supplier

countries in America are Indonesia, India, Ecuador, Mexico and Vietnam. The number of shrimp imports to the United States has fluctuated, tending to increase from Q1 2012 to Q4 2022.

3.2 Data Determination Method

The data used in this research is secondary data in the form of a time series from Q1 2012 to Q4 2022. The objects of this research are 1 (one) largest shrimp importing country, namely the United States and 5 (five) largest shrimp supplier countries in the United States, namely Indonesia, India, Ecuador, Mexico and Vietnam. The data used is the number/quantity, price and total value of shrimp imports from exporting countries (Indonesia, India, Ecuador, Mexico and Vietnam) in the United States market.

3.3 Method of collecting data

Secondary data in this research comes from national and international sources. The data sources used are the Central Statistics Agency (BPS), Trademap, as well as other sources such as journals, books or ebooks, theses and theses to support this research.

3.4 Data analysis method

This research uses the Almost Ideal Demand System (AIDS) econometric model. This model has the advantage of producing simultaneous equations that are able to explain the relationship between commodities (Desti et all., 2012), is flexible and easy to estimate (Farras, 2020), can take into account consumer decisions in determining a set of commodities together. This is not found in other demand models, so that a two-way cross-relationship between two commodities can be determined. This is in accordance with the existing fact that the choice of a commodity is made by consumers together(Wardani, 2007). Different from other demand models, as a perfect model, this model can answer the demands of consumer preferences and its functional form is more flexible. This is because the restrictions of this model such as Adding up, Homogeneity and Slutsky symmetry can be tested statistically (Deaton and Muellbauer, 1980). This research uses SAS software tools to process data. SAS includes appropriate techniques for small data sets, high-performance statistical modeling tools for big data tasks, and modern methods for analyzing data.

4. RESULTS AND DISCUSSION

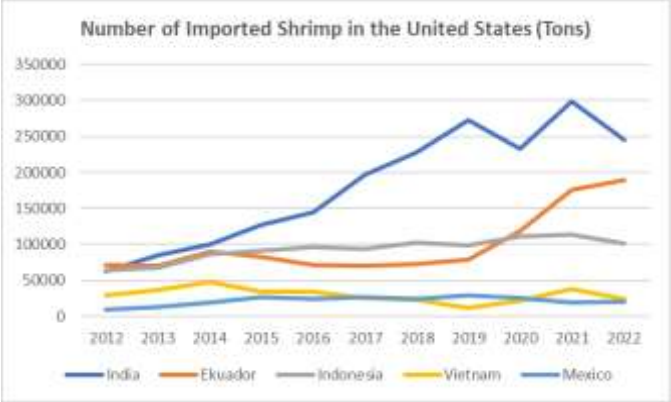
4.1 Price and Quantity of Imported Shrimp from Indonesia, India, Ecuador, Mexico and Vietnam in the United States Market

The price of imported shrimp is defined as the amount of money paid by the United States to each shrimp supplier country in the United States. The price of imported shrimp is not the same every year. There have been price fluctuations from year to year from 2012 to 2022. This indicates that there is competition between shrimp supply countries (Indonesia, India, Ecuador, Mexico and Vietnam) in the United States market. The following graph explains changes in the price of imported shrimp in the United States in USD/Ton units.

Source: Trademap data processed

Figure 2 Price of Imported Shrimp in the United States (USD/Ton)

Based on the picture above, it can be seen that there are price fluctuations from year to year in each country. In 2014 the price of imported shrimp from all supplier countries increased by around 2,000 USD/ton compared to the previous year. The country with the lowest shrimp price is Ecuador, with an average price of 7,801 USD/ton, followed by India (market leader) with an average shrimp price of 9,841 USD/ton, then Indonesia at 10,013 USD/ton. Vietnam 12,338 USD/ton then Mexico with the highest price value among the four other countries, namely 12,511 USD/ton. Based on the graph above, it can be seen that Indonesia has prices that tend to be the same as India every year. This indicates that there is price competition between Indonesia and India. Then we can see the relationship between price and the number/quantity of imported shrimp in the United States market.



Source: Trademap data processed

Figure 3 Number of Imported Shrimp in the United States (Tons)

Based on the picture above, when prices increase, the quantity of shrimp imports decreases, and the countries with the highest prices, namely Mexico and Vietnam, have the lowest quantity of shrimp imports compared to other supplier countries in the United States market. This is in accordance with demand theory, namely that when prices rise, demand will fall and consumers will tend to choose other goods at cheaper prices (Sunnahty, 2021).

4.2 Total Import Value of Shrimp from Indonesia, India, Ecuador, Mexico and Vietnam in the United States Market

The total value of shrimp imports is defined as the total expenditure paid by the United States to supplier countries (Indonesia, India, Ecuador, Mexico and Vietnam) based on the number of shrimp imported and the prices set.

Source: Trademap data processed

Figure 4 Total Import Value of Imported Shrimp in the United States (Tons)

Based on the picture above, India as the market leader has an average import value of 1.7 billion USD, followed by Indonesia with a difference of 800 million USD, which is around 929 million USD from 2012 to 2022. Then the country with the largest total import value third is Ecuador with an average of 768 million USD, then Vietnam with an average of 373 million USD, and finally Mexico with the smallest import value among the five shrimp supply countries in the United States market, namely an average of 263 million USD.

4.3 Almost Ideal Demand System (AIDS) Analysis

This research analyzes the United States' demand for shrimp which is met by five main importing countries, namely Indonesia, India, Ecuador, Mexico and Vietnam. Then this research also analyzes the level of sensitivity or elasticity of shrimp and the percentage share of shrimp imports from Indonesia, India, Ecuador, Mexico and Vietnam in the United States market and the factors that influence this. Table 4.1 below presents the shares of Indonesian, Indian, Ecuadorian, Mexican and Vietnamese shrimp in the United States market.

Table 1 Share of Shrimp Imports from Indonesia, India, Ecuador, Mexico and Vietnam in the United States Market in 2012-2022

Country	Share
Indonesia	24%
India	40%
Ecuador	20%
Mexico	6%
Vietnamese	10%

Source: Trademap data processed

Table 1 shows the import share of the five largest shrimp importing countries in the United States market from 2012 to 2022. Based on the data above, it can be seen that India has the largest import share value at 40%. Then followed by Indonesia with a difference of approximately half of India's share value, namely 24%. Not far from Indonesia's large share, Ecuador is the third largest importing country in the United States market with an import share of 20%. Then in fourth position is Vietnam which has a share of 10% and finally with the smallest share is Mexico at 6%. The gap resulting from the share value of shrimp imports from Indonesia and India (market leaders) in the

United States market is a challenge for Indonesia to increase the volume of shrimp imports in these importing countries.

Factors that influence the demand for shrimp imports in the United States market in the Almost Ideal Demand System (AIDS) model can be considered based on the coefficient value and p-value of each independent variable. This value is used to determine the level of influence of each variable. The dependent variable used in this research is the shrimp budget share from the five supplier countries, namely Indonesia, India, Ecuador, Mexico and Vietnam. The independent variables used are the price of Indonesian shrimp, the price of Indian shrimp, the price of Ecuadorian shrimp, the price of Mexican shrimp and the price of Vietnamese shrimp; total imports of Indonesian shrimp, total imports of Indian shrimp, and total imports of Ecuador shrimp, total imports of Mexican shrimp and total imports of Vietnamese shrimp; as well as the total value of shrimp imports from the five countries in the United States market. The following are the results of the AIDS model estimation of shrimp demand in the United States market:

Table 2 AIDS Model Estimates of Shrimp Demand in the United States 2012-2022

Independent Variable	Indonesia		India		Ecuador		Mexico		Vietnamese	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	1,330 (0.166)	0,000	-1,237 (0.474)	0.013	0.364 (0.382)	0.346	-0.218 (0.267)	0.420	0.762 (0.185)	0,000
Indonesian Price (USD/Ton)	-0.080 (0.121)	0.516	0.212 (0.106)	0.051	-0.209 (0.061)	0.001	-0.010 (0.107)	0.960	0.082 (0.101)	0.424
Indian Prices (USD/Ton)	0.212 (0.106)	0.051	-0.111 (0.234)	0.647	-0.281 (0.165)	0.097	0.269 (0.113)	0.022	-0.089 (0.104)	0.400
Ecuador Price (USD/Ton)	-0.209 (0.061)	0.001	-0.281 (0.165)	0.097	0.364 (0.146)	0.017	-0.156 (0.080)	0.058	0.282 (0.064)	0,000
Mexico Price (USD/Ton)	0.082 (0.025)	0.002	-0.034 (0.065)	0.603	0.021 (0.053)	0.696	0.032 (0.039)	0.426	-0.099 (0.027)	0.001
Vietnam Price (USD/Ton)	-0.009 (0.050)	0.870	-0.129 (0.136)	0.351	0.303 (0.108)	0.008	-0.162 (0.076)	0.040	-0.004 (0.054)	0.940
Total Import Value	-0.100 (0.012)	0,000	0.209 (0.034)	0,000	-0.054 (0.028)	0.060	0.029 (0.020)	0.140	-0.084 (0.013)	0,000
R-square	0.783		0.626		0.221		0.27			

Source: Trademap data processed

Based on the data above, the equation results that can be obtained from data processing using the SAS On Demand application by entering three demand restrictions, a new equation model for Indonesian, Indian, Ecuador, Mexican and Vietnamese shrimp is obtained as follows:

- Indonesia:
  wb= 1.330 - 0.080ln pb + 0.212ln pc – 0.209ln pn + 0.082ln po – 0.009ln pt – 0.100ln (X/(a)P*) + eb
- India:
  toilet= - 1.237 + 0.212ln pb - 0.111ln pc – 0.281ln pn - 0.034ln po – 0.129ln pt + 0.209ln (X/(a)P*) + ec
- Ecuador:
  wn= 0.364 - 0.209ln pb - 0.281ln pc + 0.364ln pn + 0.021ln po + 0.303ln pt – 0.053ln (X/(a)P*) + en
- Mexico:
  wow= -0.218 - 0.010ln pb + 0.269ln pc – 0.156ln pn + 0.032ln po – 0.162ln pt + 0.029ln (X/(a)P*) + eo
- Vietnam:
  wt= 0.762 + 0.082ln pb - 0.089ln pc + 0.282ln pn - 0.099ln po – 0.004ln pt – 0.084ln (X/(a)P*) + et

IJEBAS
International Journal of Economic, Business, Accounting, Agriculture Management and Sharia Administration

4.4 Elasticity of Demand Value

Table 3 Elasticity Value of Shrimp Demand in the United States Market 2012 – 2022

	Indonesia	India	Ecuador	Mexico	Vietnamese
			Price Elasticity		
Indonesian Prices	-0.916	1,307	-0.458	0.761	0.384
Indian Prices	0.009	0.009	-1,194	-0.590	-0.821
Ecuador prices	-0.811	-1,193	1,183	0.389	1,863
Mexican Prices	-0.539	3,790	-2,913	-0.964	-3,010
Vietnamese prices	1.7	-0.046	3,754	-0.159	-0.181
			Expenditure Elasticity		
Expenditure	0.582	1,508	0.721	1,454	0.138

Table 4 Positive Cross Price Elasticity Values Between Shrimp Supplier Countries

Variable	Commodity				
	Indonesian Shrimp	**Indian Shrimp**	**Ecuadorian Shrimp**	**Mexican Shrimp**	**Vietnamese Shrimp**
Indonesian Prices	-	1,307		0.761	0.384
Indian Prices	0.009	-			
Ecuador prices			-	0.389	1,836
Mexican Prices		3,790		-	
Vietnamese prices	1.7		3,754		-

Based on Table 4.4 above, the cross price elasticity value for Indonesian shrimp and Indian shrimp in the United States market is positive at 1.307. A positive value indicates there is price competition for imported Indonesian shrimp with the large demand for Indian shrimp (substitution). The cross price elasticity value states that every 1% increase in the price of imported shrimp from Indonesia results in an increase in demand for Indian shrimp by 1.307% in the United States market. The cross price elasticity values for Indonesia and Mexican and Vietnamese shrimp are also positive at 0.761 and 0.384 respectively. This means that if the price of imported Indonesian shrimp increases by 1%, then demand for Mexican and Vietnamese shrimp will increase by 0.761% and 0.384% in the United States market.

The price of imported Indian shrimp relative to demand for Indonesian shrimp also has a value that is much smaller than the elasticity value for Indonesia towards India, which is 0.009. This indicates that for every 1% increase in the price of imported Indian shrimp, the demand for Indonesian shrimp in the United States market will increase by 0.009%. Furthermore, the price of imported Ecuadorian shrimp has a positive value of 0.389 relative to the demand for Mexican shrimp and 1.836 relative to the demand for Vietnamese shrimp, which means that for every 1% increase in the price of Ecuadorian shrimp, it will increase the demand for Mexican and Vietnamese shrimp by 0.389% and 1.836% in the market. United States of America.

Furthermore, the price of imported Mexican shrimp only has a substitution relationship with Indian shrimp with a cross price elasticity value of 3.79. This explains that when there is an increase in the price of imported Mexican shrimp by 1%, the United States' demand for Indian shrimp will increase by 3.79%. Meanwhile, the price of imported Vietnamese shrimp has a positive elasticity value with Indonesian and Ecuadorian shrimp, namely 1.7 and 3.754. This means that for every 1% increase in the price of imported Vietnamese shrimp, the demand for Indonesian and Ecuadorian shrimp in the United States market will increase by 1.7% and 3.754%. The price and quality of fishery products are the main factors in export-import competition in the international market. Countries that offer cheaper prices with good quality will tend to have higher demand

compared to competing countries (Ministry of Maritime Affairs and Fisheries, 2023). Indonesia must be able to compete with other shrimp exporting countries, especially with India as the market leader, by paying attention to quality and quality in accordance with standards set by the importing country (United States) but still at an affordable price.

4.5 Negative Cross Price Elasticity

Table 5 Negative Cross Price Elasticity Values Between Shrimp Supplier Countries

Variable	Commodity				
	Indonesian Shrimp	**Indian Shrimp**	**Ecuadorian Shrimp**	**Mexican Shrimp**	**Vietnamese Shrimp**
Indonesian Prices	-		-0.458		
Indian Prices		-	-1,194	-0.590	-0.821
Ecuador prices	-0.811	-1,193	-		
Mexican Prices	-0.539		-2,913	-	-3,010
Vietnamese prices		-0.046		-0.159	-

Based on Table 5 above, it can be seen that the price of imported Indonesian shrimp has a negative elasticity value with Ecuadorian shrimp of 0.458, which means that every 1% increase in the price of imported Indonesian shrimp will reduce demand for Ecuadorian shrimp in the United States market (it is complementary). The price of imported Ecuadorian shrimp is also complementary to the demand for Indonesian and Indian shrimp with elasticity values of 0.811 and 1.193. This means that if there is an increase in the price of imported Ecuador shrimp by 1%, it will reduce the demand for Indonesian shrimp (0.811%) and India (1.193%) in the United States market.

The price of imported Indian shrimp has a negative elasticity value for Ecuadorian, Mexican and Vietnamese shrimp of 1.194 respectively; 0.59 and 0.821, which means that for every 1% increase in the price of imported Indian shrimp, demand for Ecuadorian, Mexican and Vietnamese shrimp will decrease by 1.194%, 0.59% and 0.821%. Furthermore, there is a complementary relationship between Indonesian, Ecuadorian and Vietnamese shrimp and the price of imported Mexican shrimp. If we look at it based on existing data, every 1% increase in the price of Mexican imports will reduce demand for Indonesian, Ecuadorian and Vietnamese shrimp by 0.539%, 2.913% and 3.01% in the United States market. In contrast to the price of imported Mexican shrimp, the price of imported Vietnamese shrimp has a negative elasticity value for Indian shrimp and Mexican shrimp of 0.046 and 0.159, which means that if there is an increase in the price of Vietnamese shrimp by 1%, the United States' demand for Indian and Mexican shrimp will decrease. of 0.046& and 0.159%.

The negative cross elasticity between shrimp importing countries in the United States market from 2012 to 2022 is caused by several factors, including differences in product characteristics. Shrimp from different countries have different characteristics, both in terms of price, quality, taste and availability, where availability is also influenced by differences in season and climate which influence shrimp production in a country. These differences in characteristics make consumers have different preferences for shrimp from each country. Then in terms of differences in government policy. The governments of each shrimp importing country have different policies, such as import tariffs, import quotas and quality requirements. These policy differences can also influence consumer preferences for shrimp from each country (Aristiyani, 2017).

4.6 Elasticity of Expenditures or Income

Table 6 Expenditure/Income Elasticity Values

Commodity	Elasticity Value	Nature of Goods
Indonesian Shrimp	0.582 (inelastic)	Normal
Indian Shrimp	1,508 (elastic)	Luxurious
Ecuadorian Shrimp	0.721 (inelastic)	Normal
Mexican Shrimp	1,454 (elastic)	Luxurious
Vietnamese Shrimp	0.138 (inelastic)	Normal

Based on Table 6 above, the income elasticity value or expenditure elasticity value for imported shrimp from Indonesia has a positive value of 0.582, which means that when there is an increase in United States spending on imported Indonesian shrimp by 1%, it will increase demand for imported shrimp from Indonesia by 0.582 %. This value shows that imported Indonesian shrimp tends to be inelastic to changes in United States expenditure or income. This is because the change in demand for imported Indonesian shrimp is smaller than the change in United States expenditure on shrimp imports from Indonesia.

In contrast to Indonesia, India's imported shrimp have a positive expenditure elasticity value of 1.508. This means that if there is an increase in US spending on imported shrimp from India by 1%, it will have an impact on increasing demand for Indian shrimp by 1.508%. Indian imported shrimp tend to be elastic to large changes in expenditure/income in the United States because changes in the amount of demand for imported Indian shrimp are greater than changes in the amount of expenditure/income. Similar to India, Mexico's imported shrimp tend to be elastic to changes in income or expenditure. Imported Mexican shrimp has an elasticity value of 1.454, which means that if there is an increase in United States spending on imported Mexican shrimp by 1%, it will increase demand for imported shrimp from Mexico by 1.454%. The elasticity of shrimp production from Ecuador and Vietnam is 0.721 and 0.138 respectively. The expenditure elasticity value shows that if there is an increase in expenditure on shrimp imports by the United States by 1%, it will increase the share of Ecuadorian and Vietnamese shrimp imports in the United States market by 0.721% and 0.138%.

Based on the explanation above, it can be seen that the largest expenditure elasticity value is India (1.508), followed by Mexico (1.454), Ecuador (0.721), then Indonesia (0.582) and finally Vietnam (0.138). The demand for shrimp imports from Indonesia, Ecuador and Vietnam is an inferior commodity or included in basic needs (E<1), which means that when there is a change in the expenditure budget in the United States, the change in demand for Indonesian, Ecuador and Vietnamese shrimp will not be greater from changes in expenditure/income. Meanwhile, shrimp from India and Mexico are a luxury commodity (E>1) which will experience changes in demand that are greater than changes in expenditure/income in the United States. A product is called a luxury good (high elasticity of demand) meaning that a small price change can result in a significant change in the quantity demanded by consumers. This means that consumers will be more responsive to price changes, which is generally due to the very good quality of the product. Then the product is called a normal good, meaning that price changes have a relatively small impact on the quantity demanded by consumers and the product is considered a necessity good (Dimantara, 2019).

Imported shrimp from India as the market leader is a quality product that is in great demand in the United States market. This is in accordance with the theory by Tomek and Robinson in Situmorang (2023) which states that the greater the value of a country's expenditure elasticity, the

better the quality of the product. Indonesia continues to strive to increase shrimp exports to the United States, one of which is by collaborating with the United States FDA (Food and Drug Administration) in improving the quality of Indonesian shrimp in accordance with standards existing in the United States market. Indonesia must be able to imitate competing countries in shrimp cultivation, especially in preventing disease. Importing countries such as India and Ecuador choose disease-resistant shrimp parents in their cultivation, thereby minimizing the potential for crop failure and lowering production costs. Indonesian shrimp production must also have a sustainable aspect, which means that shrimp cultivation and catching must be done in environmentally friendly ways with clear traceability starting from pre-production, production, processing, distribution, to marketing and have proof of certification (Indonesian Shrimp Forum, 2023).

5. CONCLUSION

The results of this research provide several conclusions that can be drawn based on the discussion of the problem that has been carried out. The following are the conclusions in this research:

1. The results of the analysis show that the factors that significantly influence the demand for Indonesian shrimp imports in the United States market are the price of shrimp imports from Ecuador, the price of shrimp imports from Mexico, and the total value of shrimp imports from Indonesia.
2. Indonesia has the opportunity to increase its market share as seen from the cross-elasticity with India as the market leader which has a positive value. This value shows a relationship that is substitute, in other words, mutually replacing or competing.

REFERENCES

Adrio, M. B. 2020. Harga, Pembentukan Harga dan Keseimbangan Pasar. Skripsi. Jawa Timur: Universitas Muhammadiyah Sidoarjo (UMSIDA).

Agustin, K. D. 2016. Analisis Permintaan Impor Beras di Indonesia Periode 1998-2014. Skripsi. Jogjakarta: Universitas Islam Indonesia.

Ali, N. N. 2021. Elastisitas Permintaan dan Penawaran. Skripsi. Makassar: Fakultas Ekonomi dan Bisnis Islam Universitas Islam Negeri Alauddin.

Aristiyani, R. 2017. Analisis Daya Saing Udang Indonesia di Pasar Internasional. Skripsi. Bandar Lampung: Universitas Lampung.

Asmal, K. A. 2018. Elastisitas Permintaan dan Penawaran Dodol Markisa di UD. Wisata Malino Desa Tonasa Kecamatan Tombolo Pao Kabupaten Gowa. Skripsi. Makassar: Universitas Muhammadiyah Makassar.

Asmarantaka R.W., Jamil, and Destiarni. 2018. Analisis Permintaan Impor Daging di Indonesia: Pendekatan Error Correction Almost Ideal Demand System. PANGAN, Vol. 27 No. 1 April 2018.

Badan Pusat Statistik. 2023. Produksi Perikanan Budidaya Menurut Komoditas Utama (Ton). https://www.bps.go.id/indicator/56/1515/1/produksi-perikanan-tangkap-di-laut-menurut-komoditas-utama.html

Bank Indonesia. Sitasi: https://www.bi.go.id/id/default.aspx

Deaton, A., dan Muellbauer, J. 1980. An Almost Ideal Demand System. The American Economic Review, Vol. 70, No. 3 (Jun., 1980), pp. 312-326 (15 pages).

Desti, C. F., Devianto, D., & Hg, I. R. 2012. Analisis Keterkaitan Antar Komoditas Protein dengan Menggunakan Model Almost Ideal Demand System (AIDS), Vol. 2, No. 3.

Dimantara, R. W. 2019. Analisis Daya Saing Ekspor Udang Beku Indonesia di Pasar Amerika Serikat. Skripsi. Pekanbaru: Universitas Islam Riau.

Direktorat Jenderal Pengelolaan Ruang Laut. 2020. https://kkp.go.id/djprl/artikel/21045-konservasi-perairan-sebagai-upaya-menjaga-potensi-kelautan-dan-perikanan-indonesia.

Farras, M. F. 2020. Pola Konsumsi dan Permintaan Komoditas Protein Hewani di Kota Malang dengan Model Almost Ideal Demand System (AIDS). Skripsi. Malang: Universitas Brawijaya

Firdauzi, I. 2021. Analisis Pola Konsumsi Pangan Pokok Rumah Tangga di Indonesia Tahun 2000–2014. Jurnal Ekonomi Indonesia Vol. 10, No. 1, 2021.

Firohmatillah, A. dan Andreas S. 2022. Analisis Permintaan Impor Uni Eropa Untuk CPO Indonesia dengan Pendekatan Almost Ideal Demand System (AIDS). Jurnal AGROTRISTEK Vol. 1 No. 1, September 2022.

Food and Drug Administration. Seafood Imports and Exports Regulations. https://www.fda.gov/food/food-imports-exports/seafood-imports-and-exports

Forum Udang Indonesia (FUI). 2023. Menjaga Ketahanan Pangan di Tengah Ketidakpastian. https://www.cnbcindonesia.com/news/20230221095056-4-415554/ekspor-udang-indonesia-terhalang-ekuador-kok-bisa

Hafizah, D., Dedi B. H., Harianto, dan Rita N. 2021. Analisis Elastisitas Pendapatan Rumah Tangga di Indonesia. Jurnal Ilmu Pertanian Indonesia (JIPI) Vol. 26, No. 3, Juli 2021.

Heriyanto. 2018. Permintaan Pangan Rumahtangga Provinsi Riau: Model Linear Approximate Almost Ideal Demand System. Jurnal Agribisnis Vol. 20, No. 2, Desember 2018.

Ibrahim, Hilmi, R. I., dan Hamka H. 2021. Perdagangan Internasional & Strategi Pengendalian Impor. Lembaga Penerbitan Universitas Nasional (LPU-UNAS): Jakarta Selatan (e-book). ISBN: 9786237376224

Indonesian Fishery Producers Processing & Marketing Association. 2023. http://ap5i-indonesia-seafood.com/indoap5i/2022/07/23/sosialisasi-regulasi-fda-import-operations-22-juli-2022/

Kedutaan Besar Republik Indonesia. Sitasi: https://www.kemlu.go.id/newdelhi/id

Kedutaan Besar Negara Republik Indonesia. Sitasi: https://www.kemlu.go.id/mexicocity/id

Kementerian Keuangan. 2022. https://www.kemenkeu.go.id/

Kementerian Kelautan dan Perikanan. 2023. Artikel Kompas Online https://kompas.com/read/2023/02/21/155533526/penyebab-udang-beku-ri-sulit-bersaing-dengan-ekuador-dan-india

Kementerian Perdagangan. 2022. Laporan Siaran Pers https://www.kemendag.go.id/berita/siaran-pers/dukung-perusahaan-rintisan-perdagangan-perikanan-wamendag-lepas-ekspor-rajungan-senilai-usd-500-ribu-ke-kanada

Kinawy, A. A., Amal S. A., dan Ibrahim, A. A. 2022. Estimating the Domestic Demand for Saudi Citrus Using an Almost Ideal Demand Model in Light of Corona Pandemic. Open Journal of Social Sciences, 2022, 10, 398-409.

Koeshendrajana, S., Freshty, Y. A., dan Fitria, V. 2021. Price and Income Elasticities of Selected Fish Commodities in Indonesia: a Multi Stage Budgeting Framework. IOP Conf. Series: Earth and Environmental Science 860 (2021) 012059.

Lama, A. W. H. 2019. Optimasi Padat Tebar Terhadap Pertumbuhan dan Kelangsungan Hidup Udang Vaname (Litopenaeus Vannamei) dengan Sistem Resirkulasi. Skripsi. Makassar: Universitas Muhammadiyah.

Laporan Perdagangan KBRI Washington DC. Sitasi: https://www.kemlu.go.id/washington/id

Muzahar. 2020. Teknologi dan Manajemen Budidaya Udang. Umrah Press: Kepulauan Riau.

Ngginak, J., Haryono S., Jubhar C. M., Ferdy S. R. 2013. Komponen Senyawa Aktif pada Udang Serta Aplikasinya dalam Pangan. Sains Medika, Vol. 5, No. 2, Juli - Desember 2013.

Ningsi, A. L. 2018. Aktivitas Antioksidan dari Ekstrak Daun Tembakau (Nicotiana Tabacum L.) yang Berasal dari Desa Cabbenge Kabupaten Soppeng. Skripsi. Makassar: Universitas Islam Negeri Alauddin.

Nirwana. 2021. Analisis Permintaan Impor Komoditas Jagung di Indonesia. Skripsi. Makassar: Universitas Muhammadiyah.

Situmorang, P. S. I. 2023. Analisis Permintaan Impor China Terhadap Buah Manggis (Garcinia Mangostana L.). Tesis. Medan: Universitas Sumatera Utara.

Pinto, J. S., Suharno dan Amzul, R. 2022. Kinerja Ekspor Cengkeh Indonesia di Pasar India: Pendekatan Linear Approximate Almost Ideal Demand System (LA/AIDS). Jurnal Agribisnis Indonesia (Journal of Indonesian Agribusiness) Vol. 10, No. 2, Desember 2022.

Prasetiyo, Anam, Djajadi dan Sudarto. 2016. Kajian Produktivitas dan Mutu Tembakau Temanggung Berdasarkan Nilai Indeks Erodibilitas dan Kepadatan Tanah. Jurnal Tanah dan Sumberdaya Lahan Vol. 3, No. 2: 389-399, 2016.

Pratama, D. B. 2020. Hubungan Elastisitas Permintaan dengan Usaha Mikro, Kecil dan Menengah (UMKM) di Jawa Timur. Skripsi. Jawa Timur: Universitas Muhammadiyah Sidoarjo (UMSIDA).

Priyagus. 2016. Fungsi Permintaan Marshallian (Marshallian Demand Function). Fakultas Ekonomi Universitas Mulawarman. FORUM EKONOMI Vol. 17, No. 2, 2016.

Salvatore. 1997. Ekonomi Internasional, alih bahasa oleh Haris Munandar edisi 5 cetak 1. Erlangga: Jakarta.

Septiana, R. 2011. Faktor - Faktor yang Mempengaruhi Permintaan Impor Indonesia dari Cina Tahun 1985 – 2009. Skripsi. Semarang: Universitas Diponegoro.

Sukirno, S. 2005. Mikro Ekonomi Teori Pengantar. Jakarta: PT Raja Grafindo.

Sunnahty, I. 2021. Analisis Permintaan Impor Amerika Serikat Terhadap Ikan Nila (Oreochromis niloticus). Tesis. Medan: Universitas Sumatera Utara.

Suryana, E. A., Drajat M., dan Yayuk F. B. 2021. Consumption, Elasticity and Demand Estimation of Animal Sources Food in Indonesia. Jurnal Agrisocionomics Vol. 5, No. 2, November 2021.

Suryanty dan Reswita. 2016. Analisis Konsumsi Pangan Berbasis Protein Hewani di Kabupaten Lebong: Pendekatan Model AIDS (Almost Ideal Demand System). AGRISEP Vol. 16, No.1 Maret 2016.

Trademap (Trade Statistics for International Business Development). https://www.trademap.org/Index.aspx

VOV Vietnam. 2022. Sitasi: https://vovworld.vn/

Wardani, T. P. K. 2007. Analisis Pola Konsumsi dan Permintaan Buah Pada Tingkat Rumah Tangga Di Pulau Jawa Penerapan Model Almost Ideal Demand System (AIDS). Skripsi. Bogor: Institut Pertanian Bogor.

Widarjono, A. 2016. Modeling Sistem Permintaan untuk Penelitian Ekonomi dengan SAS. UPP STIM YKPN: Yogyakarta.