

Exploring Influential Factors in East Java's Shrimp Export Market to Japan

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ABSTRACT:

Purpose: Increasing exports is a key government strategy not only for earning foreign exchange but also for boosting economic productivity and job opportunities in Indonesia, particularly in East Java. This research aims to determine the effect of average export prices, the rupiah exchange rate against the US\$, and inflation on East Java Shrimp Exports to Japan.

Method: This study is quantitative research. The study employs a time series sampling technique, utilizing secondary financial data collected from 15 samples. The data is then analyzed using multiple linear regression analysis techniques.

Findings: The findings reveal that while the average export price and inflation variables have no significant effect on East Java Shrimp Exports to Japan, the rupiah exchange rate against the US\$ significantly impacts these exports.

Implication: The results emphasize the importance of monitoring and managing exchange rate fluctuations to enhance the export performance of East Java's shrimp to Japan. This suggests that policy interventions focusing on stabilizing the exchange rate could be crucial for maintaining and increasing export levels.

Originality: This study uniquely contributes to understanding the specific factors influencing East Java Shrimp Exports to Japan by analyzing the distinct roles of export prices, exchange rates, and inflation. It offers valuable insights for policymakers and stakeholders to develop targeted strategies for boosting export performance in the region.

Keywords: average export price, East Java shrimp exports to Japan, inflation, Rupiah exchange rate against US\$.

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INTRODUCTION

Export growth is a fundamental driver of economic development, enabling nations to earn foreign exchange, enhance productivity, and generate employment. In Indonesia, increasing exports has been a cornerstone of government strategy to boost economic resilience and regional development. The prospects for Indonesia's future economic development cannot be separated from the influence of the world economic situation. This is because Indonesia is an open economy and an economic structure that is export-oriented or an economy that relies on exports (Raja, 2022).

These efforts are none other than to increase the country's foreign exchange earnings and create greater employment opportunities in addition to supporting the achievement of national development sustainability. In its implementation, economic development requires quite a large amount of funds where these development funds can be obtained from within and outside the country. From within the country in the form of government and community savings, while from abroad in the form of foreign exchange earnings from export activities. Indonesia is one of the developing countries that has very abundant natural resource potential. These resources such as oil and gas and non-oil and gas. Realizing the abundant natural wealth, the people of Indonesia, especially in East Java, always try to utilize it with the aim of improving the welfare of the community.

This is realized by the government in East Java through the shrimp export policy. Export activities will continue to play an important role as an economic driver in Indonesia in the future. Therefore, in developing policies in the field of export trade, it is aimed at increasing exports of goods, especially shrimp. The export development policy consists of effective policies, namely excise policies on changes in raw materials, finance, monetary, or credit, and policies implemented by many countries, especially those related to prices and government subsidies. Export policies are very important for the country, producers and exporters, especially in international trade relations (Hapsari & Nurhayati, 2023).

In the global trade market, several economic factors shape export performance, including export prices, exchange rate fluctuations, and inflation. These variables can directly and indirectly affect the competitiveness of exports, altering demand patterns and profitability. While the average export price reflects the competitiveness of a product in the global market, the exchange rate determines the affordability of exports for foreign buyers. Inflation, on the other hand, can impact production costs and price stability, influencing the overall economic environment for export activities. This study specifically examines how these factors interplay to shape East Java's shrimp export performance in the Japanese market.

According to N'Souvi & Sun (2025), the relationship between shrimp exports and aquaculture production in key South and Southeast Asian countries. It highlighted that shrimp aquaculture has grown significantly since the 1970s, with exports playing a crucial role in the industry's development. However, the study found no direct causal relationship between shrimp exports and aquaculture production growth, suggesting the need for more comprehensive data and analysis. Instead of shrimp production, this study focusses on the factors affecting shrimp export, especially to Japan.

Several previous studies have examined the factors that influence shrimp exports in Indonesia. Pramastya (2023) proved that shrimp exports are negatively affected by the GDP of the exporting country, the distance of the country, and the price of shrimp. While inflation has a positive effect on shrimp exports. Another study by Prastowo & Wulandira (2023), differentiate the short and long-term of cocoa export. In the long term, cocoa export is influenced by its production negatively. On the contrary, the short term of cacao export is affected by international cocoa prices. Both the short- and long-term, indicated that cocoa export positively depend on exchange rate currency. A study by Sitorus (2023) proved that the exchange rate had a positive effect on shrimp exports, while interest rates and inflation had no effect.

The importance of this study is significant for policymakers and stakeholders in East Java's export sector. The study suggests that stabilizing exchange rates should be a priority to enhance the competitiveness of East Java's shrimp in the Japanese market. Moreover, this research contributes to the understanding of export dynamics by offering a focused analysis of the factors influencing shrimp export performance. By providing actionable insights, the study aims to support the development of targeted strategies that can drive sustainable export growth and strengthen East Java's position in the international shrimp market.

LITERATURE REVIEW

International Trade

International trade shows an economic relationship between countries in the world that often causes dependency (Annisa & Ibrahim, 2023). This is very important for improving the welfare of almost all countries in the world, most countries in the world export a number of goods, services and production factors to be exchanged for imports of goods, services and other production factors that can only be produced at all. While Raja (2022), international trade can be defined as consisting of business activities from a country of origin that crosses trade to a destination country by moving goods and services, moving capital, labor, and transferring technology.

Foreign trade is a process of exchange based on the voluntary will of each party. Exchanges that occur due to coercion, threats of war and so on are not included in the meaning of trade intended in this case. But each party must have the freedom to determine the profit and loss of the exchange from the perspective of their respective interests, and then determine whether they want to make the exchange or not. Countries do not actually trade with other countries, but those who trade are residents of a country with other residents. These residents can be ordinary citizens, can be an export company, can be an import company, can be an industrial company, can be a state company and can also be a government department. Foreign trade is just an abbreviation for exchange activities between residents of a country and residents in other countries. So international trade is no different from the exchange between two people in a country, the only difference is that in international trade one person happens to live in another country (Stankiewicz-Mróz et al., 2018).

Relationship of Variables

Exports are influenced by prices, where high and low prices will affect the amount of demand and supply (Ezeaku et al., 2021). If the price increases it will become one of the supply factors from the exporter for goods (Shrimp commodities) which are supported by high demand abroad so that it will affect East Java Shrimp Exports to Japan. In this international trade, Export Transactions are carried out with payments in the form of exchange rates, namely the comparison of the value of the Rupiah against the Dollar. If the Rupiah exchange rate against the US\$ increases, the value of the Rupiah will also strengthen so that indirectly it will make it easier for producers in East Java to export shrimp, especially to Japan. With the increasing number of shrimps exported, East Java shrimp exports to Japan will also increase. Inflation is a condition where the price of goods and services increases in general and continuously (Wati, 2023; Fadlan & Pratama, 2023). The size of the inflation rate affects the high or low price of raw materials for production. If inflation decreases, the production costs incurred also decrease because the price of raw materials decreases (Lapavitsas, 2022). With the decrease in inflation, shrimp farmers can increase shrimp production which will then increase East Java's shrimp exports to Japan. See Figure 1 to understand the relationship between variables. Based on Figure 1, the hypothesis of this study are as follows.

H1: Average export price in international market affects shrimp export to Japan.

H2: Exchange rate of IDR to USD affects shrimp export to Japan.

H3: Inflation affects shrimp export to Japan.

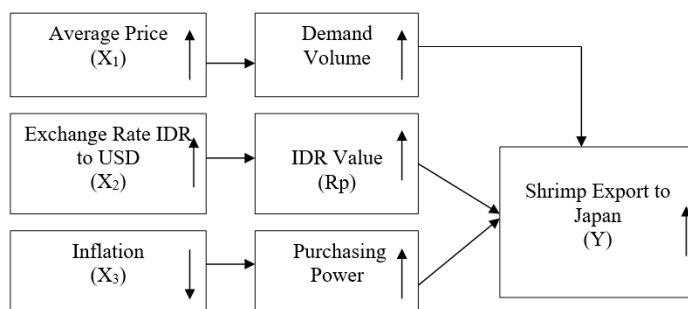


Figure 1. Research Framework

RESEARCH METHOD

The research method of this study is quantitative method using secondary data. Quantitative methods are research approaches that use numerical data and statistical analysis to answer research questions (Sreekumar, 2023). The data obtained can be used in this study obtained from related agencies, namely the Central Statistics Agency (BPS) of East Java Province and Bank Indonesia. In this study, the data used is periodic data (time series) in an annual period, for 15 (fifteen) years from 2009 to 2023.

Operational Variables

Dependent Variable is a variable that cannot stand alone and its value depends on the results of observations. The dependent variable (Y) in this study is East Java Shrimp Exports to Japan. It measured with the number of shrimp produced by shrimp farmers which are then marketed/exported abroad, especially to Japan. The units used as a measure in the volume of shrimp exports are expressed in kg.

Independent variables are variables that can stand alone and their values do not depend on the results of observations. The independent variables (X) in this study are:

1. Average Export Price (X1)
The average price is the price agreed by both parties, the way to calculate the average export price is by dividing the total export value by the export volume. This variable is measured in units (Rp/kg)
2. US \$ exchange rate against the rupiah (X2)
The exchange rate is to state the exchange rate of a country's currency with the currency of another country. This variable is measured in (Rupiah / Dollar).
3. Inflation (X3)
A condition that results in a general and continuous increase in prices. The method of measuring this increase uses the average price level of inflation for a certain period (usually one year) which is expressed in percent (%).

Data Analysis and Hypotheses Testing

To analyze the relationship between the average export price, the Rupiah exchange rate against the US\$ and inflation on East Java shrimp exports to Japan, quantitative analysis is used, namely analysis using calculation data from related agencies. This study uses multiple linear regression analysis as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \dots\dots\dots (1)$$

Where:

Y = East Java Shrimp Exports to Japan

X1 = Average export price

X2 = Rupiah exchange rate against the US\$

X3 = Inflation

β_0 = Constant

$\beta_1, \beta_2, \beta_3$ = Regression coefficient

e = error

Meanwhile, to find out whether the analysis model is suitable enough to be used in research, and to find out to what extent the independent variables are able to explain the dependent variable, it is necessary to know R² (Coefficient of Determination). To test the goodness of fit of the regression model, it is used:

Ho: $\beta_1 = \beta_2 = \beta_3 = 0$ (no effect) – $F_{\text{test}} < F_{\text{table}}$

Hi: at least one of $\beta \neq 0$ (there is an effect) – $F_{\text{test}} > F_{\text{table}}$

To test the influence of independent variables or to test the hypotheses, which means whether each independent variable used has an effect on the dependent variable:

H0: $\beta_i = 0$ (no effect) – $t_{\text{test}} < t_{\text{table}}$

Hi: $\beta_i \neq 0$ (there is an effect) – $t_{\text{test}} > t_{\text{table}}$

Test of Normality and classic assumption were employed to ascertain that the time series data dan variables are normal, free from autocorrelation, heteroscedasticity, and multicollinearity. The classic assumption is important for multiple regression analysis. By ensuring that the regression model meets the classical assumptions, the regression results become more reliable. Models that have passed the classical assumption test are more likely to provide accurate estimates, as well as conclusions that truly reflect the data being analyzed (Sugiyono, 2017).

RESULTS AND DISCUSSION

Multiple Regression Analysis

This analysis uses a multiple regression analysis model which is useful for determining whether or not there is an influence between the independent and dependent variables (see Table 1).

Table 1. Multiple Regression Analysis Results

Independent Variables	Regression Coefficient	Std. Error	t _{count}	r _{partial}	t _{table}
Average Export Price (X ₁)	-2082,248	692,535	-3,007	0,82	2,201
Exchange rate IDR to US\$ (X ₂)	1,266	0,513	2,466	0,77	2,201
Inflation (X ₃)	-83,861	66,894	-1,254	0,59	2,201

Variabel terikat: Ekspor Udang Jawa Timur ke Jepang (Y)

Konstanta: 42629,093

Koefisien Korelasi (R) = 0,837

Koefisien determinasi (R²) = 0,701

Source: Secondary Data Processed

Based on the calculation in Table 1, the multiple linear regression equation is explained as follows:

$$Y = 42629.093 - 2082.248 X_1 + 1.266 X_2 - 83.861 X_3 \dots\dots\dots (2)$$

Based on the equation and Table 1, it can be explained through the following:

- β_0 = Constant = - 42629.093
If it is assumed that X₁ (average export price), X₂ (Rupiah exchange rate against US\$) and X₃ (Inflation) are constant or equal to zero, then the value of Y (shrimp exports) is - 42629.093 kg.
- β_1 = Regression coefficient for X₁ = - 2082.248
If the average export price variable increases by 1 Rupiah, shrimp exports will decrease by 2082.248 kg assuming other independent variables are constant or equal to 0.
- β_2 = Regression coefficient for X₂ = 1.266
If the Rupiah Exchange Rate variable against the US\$ increases by 1 Rupiah, shrimp exports will increase by 1.266 kg assuming other independent variables are constant or equal to 0.
- β_3 = Regression coefficient for X₃ = - 83.861
If the inflation variable increases by 1%, shrimp exports will decrease by 83.861 kg assuming other independent variables are constant or equal to 0.

The value of R² (determination coefficient) = 0.701, this value shows the ability of the dependent variable to influence the independent variable is 0.701, meaning that shrimp exports (Y) can be explained by variations in the average export price variable, the Rupiah Exchange Rate Against the US\$ and inflation of 70.1%. While the remaining 29.9% is explained by other variables. While the value of the multiple correlation coefficient (R) = 0.837, this means that the close relationship between the independent variable and the dependent variable is very strong.

To determine the suitability of the regression model in predicting shrimp exports to Japan, the F test was used (see Table 2). Based on Table 2, Because F_{-count} = 8.577 > F_{-table} = 3.59 at the level of $\alpha = 5\%$ then H₀ is rejected and H_i is accepted. which means the multiple linear regression with the average export price, the Rupiah exchange rate against the US\$ and inflation is a good model to predict East Java shrimp exports to Japan.

Table 2. Goodness of Fit Test (F-test).

Varian	Square	Df	Midle Square	F _{-count}	F _{-table}
Regression	834511074,739	3	278170358,246	8,577	3,59
Residual	356767589,661	11	32433417,242		
Total	1191278664,400	14			

Source: Secondary Data Processed

Based on Table 1, for independent variable average export price, t_{-count} = -3.007 < t_{-table} = -2.201 with a significance level of 0.05. So that the average export price (X₁) does not have a significant effect

on East Java shrimp exports to Japan (Y). The statement above is inversely proportional to the statement of the framework of thought, this is because the price given to consumers (Japan) is too high exceeding the international market price and this has an impact on the interest of consumers (Japan) to make offers for shrimp commodities to decrease. With the decline in the supply of shrimp commodities, it will indirectly affect East Java shrimp exports to Japan. Meanwhile, the Determination Coefficient Value (r^2) for the average export price is 0.82, which means that it can show that East Java shrimp exports to Japan can be explained by the average export price variable up to 82%. While the remaining 18% is explained by other factors.

Based on Table 1, for independent variable exchange rate IDR to USD, $t_{\text{count}} = 2.466 > t_{\text{table}} = 2.201$ with a significance level of 0.05. So that the Rupiah exchange rate against the US\$ (X2) has a significant effect on East Java's shrimp exports to Japan (Y). The determination coefficient value (r^2) of the Rupiah exchange rate against the US\$ is 0.77, which means that it can show that the contribution of the influence of the Rupiah exchange rate variable against the US\$ on the East Java shrimp export variable to Japan is 77%. While the remaining 23% is explained by other variables not included in the model.

Based on Table 1, for independent variable inflation, $t_{\text{count}} = -1.254 < t_{\text{table}} = 2.201$ with a significance level of 0.05. So that inflation does not have a significant effect on East Java shrimp exports to Japan (Y). The decline in inflation has an impact on the purchasing power of the community, especially the Japanese community, which is increasing. With the increase in the purchasing power of the Japanese community for shrimp, it can indirectly increase East Java shrimp exports. While the determination coefficient value (r^2) for inflation is 0.59, which means that it can show that east java shrimp exports to japan can be explained by the inflation variable up to 59%. While the remaining 41% is explained by other factors.

The Influence of Average Export Price on Shrimp Export to Japan

The lack of influence of average export price on shrimp exports to Japan can be attributed to several underlying factors. One significant reason is the relatively inelastic nature of demand in the Japanese market, where shrimp is considered either a staple or a premium commodity. Buyers and consumers in Japan may prioritize factors like quality and consistent supply over price changes, meaning that fluctuations in average export prices do not significantly alter the volume of exports. This insensitivity to price could also reflect a preference for stable, high-quality products over cost considerations (Prastika et al., 2023). Additionally, the global shrimp market is highly competitive, with countries like Indonesia, India, Ecuador, and Thailand all vying for a share of Japan's market. Japanese buyers often benefit from this competition, enabling them to stabilize their costs by sourcing shrimp from alternative suppliers when prices change. This means that changes in average export prices from a single exporting country, such as East Java, have limited impact on the overall quantity demanded by Japan. Furthermore, a large proportion of shrimp trade operates under long-term contractual agreements, where prices and terms are pre-negotiated. These arrangements often shield the trade from short-term price fluctuations, rendering the average export price less relevant to export performance (Rindayati & Akbar, 2022).

Beyond price, other factors such as quality, adherence to strict food safety standards, and logistical efficiency tend to hold more weight in determining shrimp exports to Japan. East Java's shrimp exports may continue to perform well in the Japanese market if they consistently meet the high standards required, even when average export prices shift. This underscores the importance of maintaining product quality and reliability over focusing solely on price competitiveness (Wati & Aini, 2022). Moreover, the study emphasizes that exchange rates play a more critical role in shaping exports, suggesting that favorable exchange rate conditions enhance the affordability of Indonesian shrimp in Japan. This finding highlights the overarching influence of macroeconomic conditions over product pricing in driving export performance. In summary, while price remains a key economic indicator, its lack of influence on shrimp exports to Japan suggests that other factors, including exchange rates and market dynamics, take precedence in shaping trade outcomes. These results do not support the research by Pramastya (2023).

The Influence of Exchange Rate IDR to USD on Shrimp Export to Japan

The exchange rate plays a crucial role in influencing shrimp exports from East Java to Japan by directly affecting the affordability and competitiveness of these exports. When the rupiah weakens against the US dollar, it effectively reduces the cost of shrimp for Japanese buyers, making it more financially attractive compared to shrimp from competing exporting nations. This currency advantage can boost

demand, as buyers are more inclined to purchase a larger volume of shrimp due to the favorable pricing. Such a scenario aligns with the principle of price elasticity in international trade, where a weaker domestic currency often leads to an increase in export volumes. Conversely, if the rupiah strengthens, the cost of Indonesian shrimp rises for Japanese importers, potentially diminishing the competitive edge and reducing export volumes. This demonstrates how exchange rate fluctuations directly impact trade dynamics and determine the volume of exported goods ([Rindayati & Akbar, 2022](#)).

Beyond influencing the purchasing power of foreign buyers, the exchange rate also has significant implications for the production side of shrimp exports. A favorable exchange rate can reduce the cost of imported inputs used in shrimp farming, such as feed, machinery, and other essential equipment, which are often priced in foreign currencies. By lowering production costs, shrimp exporters can offer competitive prices while maintaining profitability ([Sitorus, 2023](#)). On the other hand, an unfavorable exchange rate could inflate these costs, putting pressure on producers and potentially affecting the volume or quality of shrimp exports. Together, these factors illustrate how the exchange rate not only determines market competitiveness but also shapes the operational efficiency and economic sustainability of shrimp exporters in East Java.

The Influence of Inflation on Shrimp Export to Japan

Inflation does not appear to significantly influence shrimp exports to Japan due to the nature of the shrimp trade and the specific dynamics of the Japanese market. In many cases, inflation primarily affects domestic economic conditions, such as production costs and purchasing power, rather than directly impacting international trade volumes. For shrimp exports, factors like quality, compliance with stringent food safety standards, and logistical efficiency often outweigh the influence of inflation. Japanese importers prioritize these aspects to ensure a consistent and reliable supply of high-quality shrimp, making inflation less of a determining factor in trade performance ([Sitorus, 2023](#)). Additionally, the shrimp export industry often operates under long-term contracts or agreements, where prices and terms are pre-negotiated. These arrangements can insulate the trade from short-term economic fluctuations, including inflation. As a result, even if inflation affects production costs in Indonesia, its impact on export volumes to Japan may be minimal. This is particularly true if exporters absorb some of the increased costs to maintain their competitive position in the Japanese market.

Moreover, the Japanese market's demand for shrimp is relatively stable and less sensitive to price changes caused by inflation. Shrimp is considered a premium or staple commodity in Japan, and its demand is driven more by consumer preferences and market reliability than by cost variations. This stability in demand further diminishes the role of inflation as a significant factor influencing shrimp export volumes. Research has also indicated that other macroeconomic factors, such as exchange rates, play a more critical role in shaping shrimp export performance. For instance, a favorable exchange rate can enhance the affordability of Indonesian shrimp in Japan, offsetting any potential negative effects of inflation. This highlights the complex interplay of economic variables in determining export outcomes, with inflation playing a relatively minor role in this study. These results do not support the research by [Pramastya \(2023\)](#).

CONCLUSION

This study concludes that the exchange rate between the rupiah and the US dollar plays a significant role in influencing East Java's shrimp exports to Japan, while average export prices and inflation do not exhibit notable effects. These findings highlight the critical role of macroeconomic factors, particularly exchange rate management, in shaping trade performance. However, the research is subject to certain limitations, including the focus on a single export destination and the reliance on a relatively small sample size of secondary data. Future research could expand the scope to include additional export markets or incorporate primary data to enrich the analysis.

The implications of these findings are multifaceted. For practitioners, especially shrimp exporters in East Java, the results emphasize the importance of monitoring exchange rate fluctuations and adopting strategies to mitigate adverse currency impacts. For policymakers, the study underscores the necessity of stabilizing the rupiah's exchange rate to enhance export competitiveness. Policies aimed at improving monetary stability could support sustainable export growth, ensuring that East Java's shrimp remains attractive in the global market. Additionally, the findings suggest that focusing on non-price factors, such as maintaining quality and meeting international standards, remains critical for export success.

This research contributes to theory by enriching the understanding of how macroeconomic factors influence export performance, particularly for a specific commodity and trade relationship. It bridges the gap in existing literature by highlighting the unique dynamics of East Java's shrimp exports to Japan. Practically, the study offers valuable insights for exporters and industry stakeholders, encouraging the adoption of exchange rate-sensitive strategies. From a policy perspective, the findings advocate for targeted interventions to stabilize exchange rates and support export-oriented industries. Together, these contributions aim to inform both academic discourse and practical decision-making in the field of international trade and economic policy.

Abbreviations

Central Statistics Agency (BPS).

Authors' Information

Nanda Sahabuddin (NS) is a prospect lecturer at Universitas Muhammadiyah Makassar. She was graduated from the same university. Her research interest in Google Scholar: <https://scholar.google.com/citations?hl=en&user=JdIlmc8AAAAJ>.

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Availability of data and materials

Research data and materials easily accessed at Central Statistics Agency (BPS) and Bank Indonesia website.

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