

COMPETITIVENESS AND EXPORTS OF INDONESIAN ORNAMENTAL FISH TO MAIN DESTINATION COUNTRIES

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Abstract: This study aims to analyze the competitiveness of Indonesian ornamental fish (HS Code 030111 and HS Code 03119) and the factors affect the exports demand for Indonesian ornamental fish in ten main destination countries (China, the United States, Japan, Singapore, England, Germany, Hong Kong, South Korea, the Netherlands, and Australia) from 2012 to 2021. The methods used in this research are the Revealed Comparative Advantage (RCA), Export Product Dynamic (EPD), X-Model and panel data analysis using the Fixed Effect Model (FEM). The variables used in this research are real GDP per capita of the destination countries, the export price of Indonesian ornamental fish in the destination countries, the competitor export price of ornamental fish in the destination countries, and the real exchange rate of the destination countries. The results show Indonesian ornamental fish are strongly competitive and have potential market in China, Japan, Singapore, England, Germany, Hong Kong, South Korea, the Netherlands and Australia. In addition, the real GDP per capita of the destination country, the export price of Indonesian ornamental fish in the destination country, and the real exchange rate of the destination country significantly impact the export demand of Indonesian ornamental fish.

Keywords: RCA, EPD, X-Model, Competitiveness, Export, Ornamental Fish, Fixed Effect.

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INTRODUCTION

Indonesia is the largest archipelago country in the world with a water area that is wider than the land area. This vast water condition means that Indonesia has abundant water resources. One of the ways Indonesia uses these aquatic resources is to earn foreign exchange by exporting abroad. Indonesia exports quite a variety of aquatic products, such as fish, crabs, squid, seaweed, and many more. Apart from consumption fisheries, Indonesia is also known as a country that exports ornamental fish. Based on data from the Ministry of Maritime Affairs and Fisheries of Indonesia in 2021, it is known that Indonesia has 4,720 types of fish, both freshwater and seawater and as many as 650 species are ornamental fish. Several types of ornamental fish that Indonesia exports include botia, arowana, betta, oscar, goldfish, and *Panggangi cardinal* (Suhana, 2022).

Indonesia's ornamental fish trade balance during the 2012-2021 period is always in a surplus. Indonesia's highest ornamental fish product surplus occurred in 2018 with a value of US\$ 30.38 million and the lowest surplus with a value of US\$ 19.26 million in 2015. Ornamental fish products are the second largest live fish products exported by Indonesia after crabs. crab. The export value of Indonesian ornamental fish in 2021 will reach US\$ 34.54 million. However, the contribution of ornamental fish exports is

quite small, Indonesian ornamental fish products only contribute 0.015% to total Indonesian exports in 2021.

In 2021, Indonesia ranked fourth as the largest exporter of ornamental fish in the world after Japan, Singapore and Spain. The average ornamental fish export value produced by Indonesia in 2016-2021 was US\$ 30.01 million, still quite far behind Japan which produced US\$ 41.85 million, Singapore which produced US\$ 37.61 million, and Spain which produced US\$ 35.79 million. During 2016-2021, the average export volume of Indonesian ornamental fish was 1.4 tons, this figure is quite large when compared to the average export volume of Japanese and Singaporean ornamental fish, which respectively were 304 Kg and 539 Kg. The export price of Indonesian ornamental fish by proxy is also relatively cheap compared to Japan and Singapore with an average price of US\$ 25/Kg during 2016-2021. Large export volumes and cheap export prices have not been able to make Indonesian ornamental fish superior to competing countries, so it can be said that Indonesian ornamental fish have weak competitiveness.

Indonesian ornamental fish products are marketed to various countries with the main destination countries being China, the United States, Japan, Singapore, the United Kingdom, Germany, Hong Kong, South Korea, the Netherlands and Australia. In 2021, the country that imports the most Indonesian ornamental fish is

Japan. Indonesia received an export value of US\$ 4.39 million in Japan in 2021. The Covid-19 pandemic has had quite an impact on Indonesian ornamental fish exports in the main destination countries. The export value of Indonesian ornamental fish in China decreased by 67.25% from US\$ 7,171,669 to US\$ 2,348,457 in 2020-2021. Meanwhile, in the 2020-2021 period, the export value of Indonesian ornamental fish increased in the United States, Japan, Singapore, United Kingdom, Hong Kong, Germany, the Netherlands and Australia.

RESERACH METHODS

This research uses secondary data. Panel data with time series for 2012-2021 and cross-section of ten destination countries, namely China, United States, Japan, Singapore, United Kingdom, Germany, Hong Kong, South Korea, Netherlands and Australia. The Indonesian ornamental fish products studied were ornamental fish with a Harmonized System Code (HS Code), freshwater ornamental fish (HS 030111 or Fish; live, ornamental, freshwater) and other ornamental fish besides freshwater fish (HS 030119 or Fish; live, ornamental other than freshwater). Data sources were obtained from the United Nations Comtrade, World Bank, and Bank Indonesia. The analytical methods used in this research are Revealed Comparative Advantage (RCA), Export Product Dynamic (EPD), X-Model, and panel data regression using the Fixed Effect Model (FEM).

Revealed Comparative Advantage (RCA)

The RCA method will see whether Indonesian ornamental fish in the destination country have a comparative advantage or not. The RCA calculation compares the proportion of Indonesian ornamental fish exports to destination countries to world ornamental fish exports to main destination countries and the proportion of total Indonesian exports to destination countries to total world exports to destination countries. If the RCA value > 1 means the product has a comparative advantage or is competitive and if the RCA value < 1 then the product does not have a comparative advantage or is not competitive (Basri and Munandar, 2010). The RCA calculation formula is as follows (Rani, Immanuel and Kumar, 2014):

$$RCA = \frac{X_{ij} / X_j}{W_{ij} / W_j}$$

Description:

RCA : RCA value

X_{ij} : Export of Indonesian ornamental fish to destination country j (US\$)

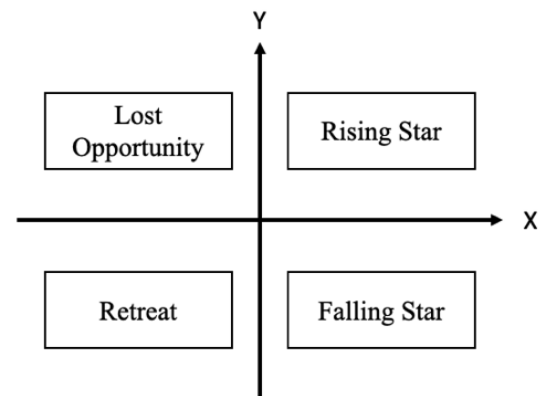
X_j : Total Indonesian exports to destination country j (US\$)

W_{ij} : World ornamental fish export to destination country j (US\$)

W_j : Total world export to destination country j (US\$)

Expor Product Dynamic (EPD)

The EPD method will provide an overview of the market position and performance of Indonesian ornamental fish in the destination country. Market position is divided into a matrix of four quadrants, where Quadrant I (Rising Stars), meaning the product is a dynamic product in the market and experiencing an increase in market share, Quadrant II (Lost Opportunity), meaning the product is dynamic but there is a decrease in market share, Quadrant III (Retreat), meaning the product is not dynamic and losing market share, and Quadrant IV (Falling Stars), meaning the product experiences an increase in market share but is not dynamic (Nabi and Luthria, 2002). Indonesian ornamental fish products are competitive if their market share increases and dynamic if their market share growth is on average faster than the market share growth of other products exported to the destination country.



Souce: Nabi dan Luthria (2002)

Picture 1. Market Position Matrix

The EPD calculation formula is as follows (Wardani and Mulatsih, 2017):

X axis: The export market share growth of Indonesian ornamental fish

$$\frac{\sum_{t=1}^T \left\{ \left(\frac{x_{ij}}{w_{ij}} \right)_t \times 100\% - \left(\frac{x_{ij}}{w_{ij}} \right)_{t-1} \times 100\% \right\}}{T}$$

Y axis: The export market share growth of all Indonesian products

$$\frac{\sum_{t=1}^T \left\{ \left(\frac{x_l}{w_j} \right)_t \times 100\% - \left(\frac{x_l}{w_j} \right)_{t-1} \times 100\% \right\}}{T}$$

Description:

X_{ij} : Export value of Indonesian ornamental fish to destination countries (US\$)

W_{ij} : World ornamental fish export value to destination countries (US\$)

X_i : Total value of Indonesian exports to destination countries (US\$)

W_j : Total value of world exports to destination countries (US\$)

T : Number of years of analysis

t : Year

X-Model Potential Export Products

The X-Model method will combine the results of RCA and EPD calculations to see the market potential for Indonesian ornamental fish in the destination country. In the X-Model there will be four clusters of market potential, namely optimistic markets, potential markets, less potential markets and non-potential markets. The criteria for each market potential group are as follows:

Table 1 Potential Market Clusters

RCA	EPD	X-Model
RCA > 1	<i>Rising star</i>	Optimistic market
	<i>Falling star</i>	Potential Market
	<i>Lost opportunity</i>	Potential market
	<i>Retreat</i>	Less potential market
RCA < 1	<i>Rising star</i>	Potensial market
	<i>Falling star</i>	Less potential market
	<i>Lost opportunity</i>	Less potential market
	<i>Retreat</i>	No potential market

Source: Kementrian Perdagangan (2013)

Panel Data Regression

The panel regression model in this research uses a demand theory approach to see what factors influence Indonesian ornamental fish exports in the main destination countries. In the regression, dummy variables are used, namely the RCA value and country openness. The regression model in this research is as follows:

$$\text{LogDX}_{it} = \beta_0 + \beta_1 \text{LogGDPT}_{it} + \beta_2 \text{PI}_{it} + \beta_3 \text{PC}_{it} + \beta_4 \text{LogEX}_{it} + \varepsilon_{it}$$

Description:

DX_{it} : Export volume of Indonesian ornamental fish in destination countries (Kg)

GDPT_{it} : real GDP per capita of destination country (US\$)

PI_{it} : Export price of Indonesian ornamental fish in destination country (US\$)

PC_{it} : Competitor country's ornamental fish export price in the destination country (US\$)

EX_{it} : The real exchange rate of the destination country against the Rupiah (Rupiah)

B_0 : Constant (intercept)

$\beta_{1,2,3,4}$: Estimated parameters (n=1,2,3,4)

ε_{it} : error term

i : Destination countries for ornamental fish exports (China, United States, Japan, Singapore, United Kingdom, Hong Kong, Germany, Netherlands, South Korea and Australia)

t : Periode 2012 to 2021

Definition of the data:

1. Export volume is the number of ornamental fish exported by Indonesia to the destination country, in kilogram units.
2. Real GDP per capita is the GDP of the destination country divided by the population of the destination country as a measure of the average income of the population of the destination country, in units of US\$ per person.
3. The export price of Indonesian ornamental fish in the destination country is a proxy for the price of Indonesian ornamental fish which is calculated using the formula (Export price = Export value / Export volume), in units of US\$/Kg.
4. The export price of ornamental fish from competing countries in the destination country is a proxy for the price of ornamental fish from competing countries in the main export destination country for Indonesian ornamental fish, in units of US\$/Kg. The competing country taken is the one competing country with the highest export value in each destination country.
5. The destination country's exchange rate against the Rupiah is the relative value of the destination country's currency against the Rupiah, in Rupiah units. The real exchange rate is calculated using the formula (Wardani and Mulatsih, 2007): Real Exchange Rate = Nominal Exchange Rate*(Indonesian CPI / Destination Country CPI)
6. RCA value of Indonesian ornamental fish in the destination country as a dummy variable. A category was created if $\text{RCA} < 10$ means low competitiveness which is marked with the number 0 and if $\text{RCA} \geq 10$ means high competitiveness which is marked with the number 1.
7. Country openness (trade openness) as a dummy variable. It is a comparison between the destination country's exports and imports to that country's GDP (Marelli and Signorelli, 2011). If there is a decrease it will be marked with the number 0 and if there is an increase it will be marked with the number 1.

RESULTS AND DISCUSSION

Competitiveness of Indonesian Ornamental Fish

In 2021, Indonesia ranked fourth position as the largest exporter of ornamental fish in the world after Japan, Singapore and Spain. The main export destination countries for Indonesian ornamental fish are China, the United States, Japan, Singapore, the United Kingdom, Hong Kong, Germany, the Netherlands, South Korea and Australia. Table 4 shows the market share of Indonesian ornamental fish in ten main destination countries. The market share for Indonesian ornamental fish is quite high (>20%) in Japan, Hong Kong and Australia and the lowest (<10%) is in the United Kingdom, United States and Germany.

Table 2 Share of Indonesian Ornamental Fish Exports in Main Destination Countries in 2021

Destination Country	Indonesian Ornamental Fish Export Value (US\$)	World Ornamental Fish Export Value (US\$)	Share (%)
China	2.348,457	15.096.419	15,56
Japan	4.398.275	15.324.338	28,70
Singapore	1.767.553	9.666.406	18,29
United Kingdom	1.615.956	26.963.189	5,99
United States	3.710.345	61.428.071	6,04
Germany	1.117.446	29.905.861	3,74
Hong Kong	3.733.279	14.926.469	25,01
South Korea	870.024	5.391.427	16,14
Netherlands	1.227.366	11.446.002	10,72
Australia	1.442.370	6.076.455	23,74

Source: United Nation Comtrade (2023)

Indonesia competes with various countries in exporting ornamental fish to main destination countries. The competitor countries shown in Table 3 are the competitor countries with the highest export value in the main destination countries. When compared with the data in Table 2, of the ten main destination countries, Indonesian ornamental fish is only superior to its competitor Singapore in Japan, Indonesia controls 28.70% of the ornamental fish market share in Japan. Meanwhile, in the remaining nine destination countries, Indonesia's position is still inferior to its competitor countries.

Table 3 Share of Ornamental Fish Exports from Competitor Countries in Main Destination Countries in 2021

Destination Country	Competitor Country	Competitor Country Ornamental Fish Export Value (US\$)	World Ornamental Fish Export Value (US\$)	Share (%)
China	Japan	6,946,562	15,096,419	46.01%
Japan	Singapore	2,170,815	15,324,338	14.17%
Singapore	Malaysia	3,159,292	9,666,406	32.68%
United Kingdom	Singapore	2,206,921	26,963,189	8.18%
United States	Singapore	12,757,591	61,428,071	20.77%
Germany	Netherlands	10,618,428	29,905,861	35.51%
Hong Kong	Malaysia	3,743,023	14,926,469	25.08%
South Korea	Thailand	1,109,435	5,391,427	20.58%
Netherlands	Japan	4,293,713	11,446,002	37.51%
Australia	Singapore	1,926,617	6,076,455	31.71%

Source: United Nation Comtrade (2023)

Table 4 shows the results of RCA calculations for Indonesian ornamental fish during 2012-2021. The calculation results show that Indonesian ornamental fish in the ten main destination countries have an average RCA value > 1 , which means that Indonesian ornamental fish have comparative competitiveness in all main destination countries. The RCA value of Indonesian ornamental fish has a positive trend in Japan, Singapore, the Netherlands and Australia and has a negative trend in China.

Table 4 RCA Value of Indonesian Ornamental Fish in Destination Countries 2012-2021

Destination Country	Year				
	2012	2013	2014	2015	2016
China	10,50	26,83	18,82	24,37	27,09
Japan	4,18	3,68	5,12	6,09	8,24
Singapore	5,82	2,94	3,59	4,06	4,32
United Kingdom	14,70	14,45	15,03	15,61	19,10
United States	13,42	10,75	9,39	9,46	11,34
Germany	9,98	11,83	13,77	9,80	15,80
Hong Kong	35,83	30,17	18,50	11,31	5,95
South Korea	3,15	4,44	4,15	6,39	7,41
Netherlands	6,17	7,62	6,74	7,47	7,75
Australia	7,88	7,42	6,11	7,58	10,18

Destination Country	Year					Average
	2017	2018	2019	2020	2021	
China	18,43	13,83	13,69	12,91	6,31	17,28
Japan	7,11	8,35	8,87	11,86	10,33	7,38
Singapore	5,06	5,17	4,83	5,65	5,29	4,67
United Kingdom	23,14	34,58	23,08	23,50	27,33	21,05
United States	10,16	13,15	9,41	8,30	7,42	10,28
Germany	22,62	25,95	17,15	18,65	17,31	16,28
Hong Kong	7,32	15,54	15,33	30,92	89,96	26,08
South Korea	7,07	7,73	8,69	12,99	9,74	7,18
Netherlands	8,59	13,93	10,12	15,62	16,14	10,01
Australia	14,55	17,70	19,00	25,41	18,05	13,39

Source: United Nation Comtrade, 2023 (processed)

The results of the EPD calculation are shown in Table 5. Indonesian ornamental fish are in a Lost Opportunity market position in China, which means that demand for Indonesian ornamental fish in China is decreasing but demand for other Indonesian products is increasing in China. Falling Star's position in Japan, Singapore, United Kingdom, Hong Kong, Germany, Netherlands, South Korea and Australia means that demand for Indonesian ornamental fish is increasing but demand for other Indonesian products is decreasing. Retreat's position in the United States means that demand for ornamental fish and other products from Indonesia has decreased. From the EPD results, it can be said that the competitiveness of Indonesian ornamental fish tends to be weak.

Table 5 Results of EPD Analysis of Indonesian Ornamental Fish in Destination Countries

Destination Country	EPD Calculation		Market Position
	Indonesian Ornamental Fish	All Indonesian Products	
	Market Share Growth (X-axis)	Market Share Growth (Y-axis)	
China	-0,00247	0,00086	Lost Opportunity
Japan	0,01474	-0,00261	Falling Star
Singapore	0,00253	-0,00250	Falling Star
United Kingdom	0,00247	-0,00005	Falling Star
United States	-0,00007	-0,00002	Retreat
Germany	0,00154	-0,00007	Falling Star
Hong Kong	0,01629	-0,00025	Falling Star
South Korea	0,00830	-0,00241	Falling Star
Netherlands	0,00777	-0,00026	Falling Star
Australia	0,00463	-0,00111	Falling Star

Source: United Nation Comtrade, 2023 (processed)

Table 6 is the result of the X-Model which combines the RCA and EPD results. It is known that Indonesian ornamental fish have potential markets in China, Japan, Singapore, United Kingdom, Germany, Hong Kong, South Korea, the Netherlands and Australia. Meanwhile, the United States market has less potential for the development of Indonesian ornamental fish exports. Indonesia needs to pay attention to this potential market to increase the competitiveness of the Indonesian ornamental fish trade.

Table 6 X-Model Analysis Results

Destination Country	RCA	EPD	Potensi Pasar
China	17,28	Lost Opportunity	Potential Market
Japan	7,38	Falling Star	Potential Market
Singapore	4,67	Falling Star	Potential Market
United Kingdom	21,05	Falling Star	Potential Market
United States	10,28	Retreat	Less Potential Market
Germany	16,28	Falling Star	Potential Market
Hong Kong	26,08	Falling Star	Potential Market
South Korea	7,18	Falling Star	Potential Market
Netherlands	10,01	Falling Star	Potential Market
Australia	13,39	Falling Star	Potential Market

Source: United Nation Comtrade, 2023 (processed)

Exports of Indonesian Ornamental Fish Determinants

The results of the Chow test and Hausman test found that the most suitable regression model was the Fixed Effect Model (FEM). The multicollinearity test shows that the correlation values between variables are all greater than 0.8, which means that no multicollinearity was found. The heteroscedasticity test using the Glacier test produced a probability value for each variable greater than the alpha ($\alpha = 0.05$), meaning that no heteroscedasticity problems were found. The autocorrelation test shows a Durbin-Watson statistic value of 1.212, which means a positive autocorrelation problem was found. This positive autocorrelation problem is corrected by using heteroscedasticity and autocorrelation-consistent (HAC) standard errors. The following regression equation is obtained:

$$\text{LogDX}_{it} = 6,2968 + 1,3212 \text{LogGDPT}_{it} - 0,0157 \text{PI}_{it} - 0,0013 \text{PC}_{it} - 1,0674 \text{LogEX}_{it} + 0,2753 \text{RCA}_{it} + 0,0331 \text{OPEN}_{it} + e_{it}$$

Table 9 FEM Estimation Results

Variabel	Koefisien	t-Statistik	Probabilitas
C	6.296886	1.007409	0.3166
LnGDPT	1.321227	2.380208	0.0196
PI	-0.015735	-4.715188	0.0000
PC	-0.001355	-1.402673	0.1644
LnEX	-1.067467	-2.060203	0.0425
RCA (Dummy)	0.275327	3.039924	0.0032
OPEN (Dummy)	0.033151	0.465775	0.6426
Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0,861076	F-statistic	34.70974
Adjusted R-squared	0,836268	Prob(F-statistic)	0.000000
S.E. of regression	0,313563	Durbin-Watson stat	1, 212300

Significance at alpha 95% ($\alpha = 0,05$)

From the estimation results, the F-statistics value is 34.709, this value is greater than the F-table value of 2.467, meaning that the variables are real GDP per capita, Indonesian ornamental fish export prices, competitor countries' ornamental fish export prices, and the destination country's exchange rate together. The same affects the demand for Indonesian ornamental fish exports in destination countries. The R-square value is 0.861, meaning that 86.1% of changes in demand for Indonesian ornamental fish exports in the destination country can be explained by the variables real GDP per capita, Indonesian ornamental fish export prices, competitor countries' ornamental fish export prices, and the destination country's exchange rate.

The real GDP per capita of the destination country has a significant effect on demand for Indonesian ornamental fish exports in the destination country. GDP per capita of the destination country has a positive relationship with demand for Indonesian ornamental fish exports in the destination country with a coefficient of 1.321. This means that every real increase of US\$ 1 in GDP per capita of the destination country will increase demand for Indonesian ornamental fish exports in the destination country by 1,321 kg, and vice versa.

The export price of Indonesian ornamental fish in the destination country has a significant effect on demand for Indonesian ornamental fish exports in the destination country. The export price of Indonesian ornamental fish in the destination country has a negative relationship with the demand for Indonesian ornamental fish exports with a coefficient of -0.015. This means that every US\$ 1 increase in the price of Indonesian ornamental fish in the destination country will reduce the export demand for Indonesian ornamental fish in the destination country by 0.015 kg, and vice versa.

The export price of Indonesian ornamental fish in the destination country does not have a significant effect on the demand for Indonesian ornamental fish exports in the destination country. The export price of ornamental fish from competing countries in the destination country has a negative relationship with the demand for Indonesian ornamental fish exports in the destination country with a coefficient of -0.001. This means that every US\$ 1 increase in the price of ornamental fish from competing countries in the destination country will reduce demand for Indonesian ornamental fish exports by 0.001 kg, and vice versa.

The destination country's exchange rate has a significant effect on demand for Indonesian ornamental fish exports in the destination country. The destination country's land exchange rate has a negative relationship with demand for Indonesian ornamental fish exports in the destination country with a coefficient of -1.067. This means that every real increase of IDR 1 in the destination country's exchange rate will reduce demand for Indonesian ornamental fish exports in the destination country by 1,067 kg, and vice versa, assuming ceteris paribus. This is not in accordance with the research hypothesis. This is due to the inability of the ornamental fish sector to respond to the depreciation of the rupiah currency because it still depends on catching it from the wild so it cannot increase production supplies (Brun et al., 2022).

CONCLUSION

This research found that Indonesian ornamental fish competitiveness in ten main destination countries based on RCA, EPD and X-Model analysis is strongly competitive and has potential markets in China, Japan, Singapore, United Kingdom, Germany, Hong Kong, South Korea, the Netherlands and Australia. Indonesia needs to increase promotion of Indonesian

ornamental fish, such as by opening ornamental fish exhibitions in destination countries. With the increasing recognition of ornamental fish from Indonesia, it is likely that the market share and demand for Indonesian ornamental fish can continue to increase.

Variables that significantly affects the export demand for Indonesian ornamental fish in ten destination countries are real GDP per capita, the export price of Indonesian ornamental fish in the destination country, and the real exchange rate of the destination country. Further research is needed regarding Indonesian ornamental fish exports by considering other variables such as export barriers that Indonesia faces in exporting ornamental fish to the international market.

REFERENCES

- Basri, F., & Munandar, H. (2010). Dasar-dasar ekonomi internasional: pengenalan dan aplikasi metode kuantitatif. *Jakarta: Kencana*.
- Blinder, A. S., & Baumol, W. J. (1988). *Economics: principles and policy*. Harcourt Brace Jovanovich Publishers.
- Bernheim, B. D., Whinston, M. D. (2008). *Microeconomics*. New York: McGraw-Hill.
- Bris A., Sorell M., Stehli S., Caballero J. dan Cabolis C. (2016, January). The competitiveness challenge. . IMD Business School for Management and Leadership Courses. <https://www.imd.org/research-knowledge/economics/articles/the-competitiveness-challenge/>.
- Brun, M., Gambetta, J. P., & Varela, G. J. (2022). Why do exports react less to real exchange rate depreciations than to appreciations? Evidence from Pakistan. *Journal of Asian Economics*, 81, 101496. <https://doi.org/10.1016/j.asieco.2022.101496> Carbaugh R. J. 2005. *International Economics 10th edition*. Ohio: South Western.
- Budidaya, D. J. P., & Tahun, L. T. D. P. (2014). DIREKTORAT JENDERAL PERIKANAN BUDIDAYA. *Jakarta, Kementerian Kelautan dan Perikanan*.
- Frank, R. H. (2008). *Microeconomics and behavior*. Granite Hill Publishers.
- Ginting, C. P., & Kartiasih, F. (2019). Analisis ekspor kopi Indonesia ke negara-negara ASEAN. *Jurnal Ilmiah Ekonomi Dan Bisnis*, 16(2), 143-157. <https://doi.org/10.31849/jieb.v16i2.2922>
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics*. McGraw-hill.
- Hanck, C., Arnold, M., Gerber, A., & Schmelzer, M. (2021). *Introduction to Econometrics with R*. Universität Duisburg-Essen. <https://www.econometrics-with-r.org/>
- Apriliani, I. M., Dewanti, L. P., & Putra, P. K. (2022). Pemanfaatan Kapal Bantuan Kementerian Kelautan Dan Perikanan (KKP) Yang Berbasis Di Kabupaten Subang. *ALBACORE Jurnal Penelitian Perikanan Laut*, 6(1), 011-017.
- Kementerian Kelautan dan Perikanan. (2021). *Buku Statistik Ekspor Produk Perikanan Tahun 2017-2021*. <https://kkp.go.id/>
- Kementerian Perdagangan, R. I. (2013). Kajian potensi pengembangan ekspor ke pasar non tradisional. *Jakarta: Pusat Kebijakan Perdagangan Luar Negeri, BP2KP*.
- Krugman, P. R., & Obstfeld, M. (2009). *International economics: Theory and policy*. Pearson Education.
- Mankiw, N. G. (2011). *Study Guide for Mankiw's Principles of Economics*, 6th. Cengage Learning.
- Muttaqien, Z. (2010). *Potret Daya Saing Industri Manufaktur Indonesia Dalam Pasar Global*. Bandung: Unpad Press.
- Nabi, I., & Luthria, M. (Eds.). (2002). *Building competitive firms: incentives and capabilities*. World Bank Publications.
- Nurhayati, E., Hartoyo, S., & Mulatsih, S. (2019). Analisis pengembangan ekspor pala, lawang, dan kapulaga Indonesia. *Jurnal Ekonomi dan Pembangunan Indonesia*, 19(2), 3. <https://doi.org/10.21002/jepi.v19i2.847>
- Porter, M. E. (1990). The Competitive of Nations. *New York: Free Press*, 10, 978-1.
- Salvatore, D. (2019). *International economics*. John Wiley & Sons.
- Rani, P., Immanuel, S., & Ranjan, N. (2014). Ornamental fish exports from India: Performance, competitiveness and determinants.
- Santosa, E. P., Firdaus, M., & Novianti, T. (2016). Daya saing komoditas hortikultura negara berkembang dan negara maju di pasar internasional. *Jurnal Ekonomi Dan Kebijakan Pembangunan*, 5(2), 68-86. 10.29244/jekp.5.2.68-86.
- Sugiyono, S. (2010). Metode penelitian kuantitatif dan kualitatif dan R&D. *Alfabeta Bandung*, 170-182.
- Suhana. (2022, November 4). *Ekspor Ikan Hias: Pertumbuhan dan Tingkat Konsentrasi*. Literasi Ekonomi Kelautan Tropika. <https://suhana.web.id/2022/11/05/ekspor-ikan-hias-pertumbuhan-dan-konsentrasi/>
- Tambunan, T. T. (2001). *Industrialisasi di negara sedang berkembang: kasus Indonesia*. Ghalia Indonesia.
- Wardani, M. A., & Mulatsih, S. (2017). Analisis Daya Saing Dan Faktor-Faktor Yang Memengaruhi Ekspor Ban Indonesia Ke Kawasan Amerika Latin. *Jurnal ekonomi dan kebijakan pembangunan*, 6(1), 81-100. <https://doi.org/10.29244/jekp.6.1.81-100>
- Widarjono, A. (2005). EKONOMETRIKA: Teori dan Aplikasi untuk Ekonomi dan Bisnis (Cetakan Pe). *EKONISIA Kampus Fakultas Ekonomi UII*.