OVERVIEW OF ACEH TUNA EXPORT COMMODITY: POLICY PAPER

Hasfiandi[*a]

[*]*Aceh Development Planning Board (Bappeda Aceh)*
Corresponding Author: [a] andi.tpt@gmail.com

A R T I C L E I N F O R M A T I O N   A B S T R A C T

Keywords: Export, Tuna, Competitiveness

This study is part of a policy paper that aims to provide an overview of tuna exports in Aceh. It will examine the competitiveness of fresh, chilled, or frozen tuna commodities and the impact of their export value on the GDP of the fisheries sub-sector in Aceh. The findings will propose strategies for the development and management of tuna exports in Aceh. The study found that the competitiveness of Aceh's fresh, chilled, or frozen tuna commodities is low, with an RCA value of less than 1. Additionally, an increase in tuna export value did not lead to an increase in the GDP of Aceh's fisheries sub-sector. Strategies suggested for developing tuna exports in Aceh include improving logistics processes and cold chain systems at ports, enhancing the potential of processed tuna products like canned tuna and tuna loin, developing medium to large-scale Industrial Processing Units for canned and loin tuna, raising quality standards through regular audits and inspections of local producers implementing HACCP, optimizing the use of fiscal incentives for exporters to help cover the cost of rising export cargo rates, strengthening partnerships with start-ups for trading missions of tuna in the global market at more competitive prices, and enhancing and developing the branding of fresh, frozen, chilled, and processed tuna products through joint councils and chambers of commerce of tuna importing countries.

1. INTRODUCTION

The fisheries industry plays a crucial role in the economic development of regions with access to marine waters. Aceh, which is surrounded by Fisheries Management Areas (WPP) 571 and 572 and has a coastline stretching 2.666 km, has a geographical advantage in the fisheries sector. According to Statistics Central Bureau, over the past five years, Aceh's fisheries sub-sector has contributed over 5 percent to the region's economy. However, this is still considered low compared to the agriculture sub-sector, which contributed over 21 percent during the same period. To increase this contribution, there is a potential to optimize fishery export commodities.

The export performance of Aceh's fisheries has been inconsistent. In 2022, it peaked at USD 2,491,778. This amount only represents 0.33 percent of Aceh's total exports for the same year, which amounted to USD 745.801.580. When compared to the national fisheries exports under the same Harmonized System Code (HS) 03, which totaled USD 4.009.098.551, Aceh's performance lags significantly. Notably, the national exports encompass a greater variety of fishery commodities, while Aceh is limited to specific types and has shown stagnation in certain years.

Among the various fishery export commodities from Aceh, Yellowfin tuna stands out as a high-value product with a significant global market appeal. Thu et al. (2021) note that tuna is one of the few marine products that command a high export value. Campling (2012) further highlights its substantial role in the industrialization of fisheries, benefiting both

producer and consumer nations. Despite the potential for value chain enhancement through industrialization and downstream processing, the availability of raw materials and tuna production remains critical for tuna-producing regions.

Over the past twelve years, the production of tuna in Aceh has shown fluctuating trends, yet it saw a significant increase in 2022. The Ministry of Marine Affairs and Fisheries reported that in 2022, Aceh produced 23,418 tons of tuna. This production level remains substantially higher compared to other tuna producers on Sumatra Island, which managed to produce less than 5,500 tons of tuna in the same year.

Table 1.
Tuna Production in Sumatra Island (Tons)

Year	Aceh	Sumut	Sumbar	Bengkulu	Lampung	Indonesia
2011	7.	9.089,00	3.140,00	886,00	1.934,00	241.364,00
2012	8.888,00	5.665,00	4.098,00	696,00	1.095,00	275.778,00
2013	4.768,00	3.198,00	13.184,00	454,00	1.646,00	305.435,00
2014	7.094,00	3.938,00	26.063,00	282,00	1.725,00	313.873,00
2015	12.391,00	2.962,00	6.212,00	1.874,00	25,00	255.452,00
2016	15.722,00	3.376,00	4.239,00	1.910,00	31,00	273.336,00
2017	5.994,07	2.315,28	5.375,71	327,86	4.397,69	293.232,00
2018	22.290,79	7.545,47	13.164,91	5.596,82	1.013,87	409.016,00
2019	19.294,97	11.091,90	8.460,91	1.448,23	1.121,84	349.528,00
2020	15.420,65	5.549,15	7.805,58	939,53	1.877,36	300.804,00
2021	13.197,37	2.817,16	4.663,41	1.608,91	8,94	359.130,00
2022	23.418,55	2.046,38	5.251,16	2.145,45	45,46	355.349,00

Sources : Ministry of Marine Affairs and Fisheries, 2022

Although tuna production in Aceh is relatively high, it still accounts for a low percentage of the national production, averaging 4.09 percent. From the tuna production capacity produced, we can assess the impact of this production on the sustainability of fresh and frozen tuna exports in Aceh.

Based on the aforementioned information, it is essential to conduct a comprehensive study on the export of tuna products in Aceh under HS code 03, which includes fresh, chilled, or frozen tuna fish products. This study will be presented in the form of a policy paper that summarizes several analyses. These include: 1) an analysis of the impact of the export value of tuna products on the Gross Regional Domestic Product (GRDP) of the fisheries sub-sector in Aceh; 2) an analysis of the competitiveness of tuna products in Aceh; and 3) an analysis of strategies for managing Aceh's tuna export commodities.

2. METHODOLOGY

The research conducted used quantitative descriptive analysis, leveraging time series secondary data from 2011 to 2022 obtained from the Statistics Central Bureau through the publications of Foreign Trade Statistics of Aceh Province and Indonesia. Additionally, tuna fisheries production data was sourced from the Ministry of Marine Affairs and Fisheries' Satudata. The study employed simple linear regression analysis to explore the correlation between the export value of fresh, chilled, or frozen tuna to the GRDP of the fisheries sub-sector. The competitiveness of Aceh's tuna exports was analyzed using the Revealed Comparative Advantage (RCA) method, and SWOT analysis was utilized to devise strategies for enhancing tuna export development.

Data Analysis
a) Analysis of the Impact of Fresh, Chilled, or Frozen Tuna Exports on the Gross Regional Domestic Product of the Fisheries sub-sector in Aceh

This analysis aims to examine the relationship between the export values of fresh, chilled, or frozen tuna on the Gross Regional Domestic Product (GRDP) of Aceh's fisheries sub-sector. It utilizes export data for fresh, chilled, or frozen tuna with HS codes 030232 and 030342, while GRDP data for the fisheries sub-sector is sourced from BPS Aceh. In this analysis, the export value of tuna is the independent variable (X), and the GRDP of the fisheries sub-sector is the dependent variable (Y). The equation used in the analysis is as follows:

$$Y = \beta o + \beta 1\, x1 + \varepsilon t$$

Note :

Y = GRDP value of the fisheries sub-sector in Aceh
βo = Constant
$\beta 1$ = Regression coefficient
$x1$ = Export value of fresh, chilled, or frozen tuna

The simple linear regression analysis was conducted using SPSS software version 25

b) Analysis of the Competitiveness of Fresh, Chilled, or Frozen Tuna Exports

To assess the competitiveness of tuna exports, a Revealed Comparative Advantage (RCA) analysis is employed. RCA measures the comparative advantage of a specific commodity in the international market (Riwaldi *et al*., 2023). This dynamic analysis, as described by Zuhdi and Suharno (2015), is one of the methods capable of evaluating competitiveness effectively. The RCA concept

involves comparing a country's product market share in the global market to its overall export share relative to global exports. Additionally, RCA can be applied at the provincial level to analyze commodity competitiveness. The mathematical formula for RCA is as follows:

$$Index\ RCA\ ij = \frac{(X_{ij}/X_{it})}{(W_j/W_t)}$$

Note :

X_{ij} = export value of commodity j from country i

X_{it} = total export value (commodity j and others) of country i

W_j = export value of commodity j in the world

W_t = total world export value

The RCA index value is calculated from these figures. If the RCA value is greater than 1, it means that the tested commodity has a comparative advantage. On the other hand, if the RCA value is less than 1, it suggests that there is no comparative advantage for the commodity. A higher RCA value indicates that the commodity is highly competitive in the market.

c) SWOT Analysis

The strategy for managing tuna exports in Aceh is designed to provide a comprehensive and integrated approach to handling tuna commodity exports, considering the strengths, weaknesses, opportunities, and threats involved. SWOT analysis is employed to formulate these strategies, as demonstrated by Furqan *et al.* (2017), who used it to develop quality management strategies for tuna fisheries in Sendang Biru. This analytical method is widely utilized in devising management strategies in the tuna fishing industry.

3. RESULTS AND DISCUSSION
3.1 The Trend of Tuna Exports in Aceh

The export of tuna from Aceh over the last 12 years has shown fluctuating trends. The highest export peak occurred in 2014 with a value of USD 305,073, while the lowest value was in 2012 at USD 428. However, in 2021 and 2022, the export values improved to USD 147,965 and USD 109,336 respectively, with volumes of 15,712 kg and 14,510 kg. According to Hanif and Taufiq (2023), the volume of exports significantly influences the value of the exports. For details on the volume and value of Aceh tuna exports, refer to Figure 1.
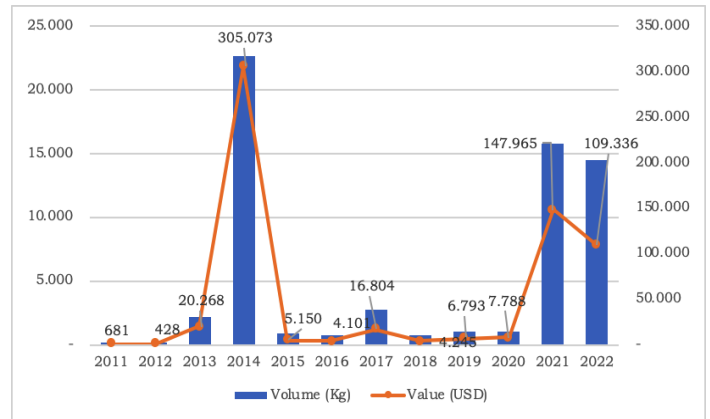

Figure 1.
The trend of volume and value of fresh, chilled, or frozen tuna exports in Aceh, 2011- 2022
(Source: Aceh Statistics Central Bureau, Foreign Trade Statistics of Aceh Province)

The volume of tuna exports from Aceh is still much lower than the amount of tuna produced (Table 1), based on capacity. Despite an average production volume of more than 13,000 tons, the volume of tuna exports should be closer to the production amount. The low export volume is believed to be due to the inadequacy of the quality of fresh, chilled, and frozen tuna, which does not meet the export standards and food safety requirements set by the destination countries. According to Chazinatuddini et al. (2019), the tuna catches in Aceh, particularly in Lampulo, are still not satisfactory, mainly because many fishermen lack the understanding of how to maintain fish quality. Furthermore, a study by Chan et al. (2019) concluded that there has been a significant decline in the quality of tuna in Aceh, as evidenced by a 42 percent and 45 percent increase in defects related to the colour and texture of tuna loin fish, respectively.

Even though the texture and taste of tuna loin may not always meet expectations, a study by Anwar et al. (2021) examined three key quality parameters of fresh tuna (Histamine, ALT, and pH) in Aceh waters. The study found that fresh tuna is suitable for further processing, including its use as raw material for canned tuna and other food products. Processed tuna can serve as an alternative for expanding export efforts, especially considering the fluctuating demand and real tuna prices in the global market, which heavily prioritizes quality standards and food safety.

To maintain stable demand and real tuna prices, it is crucial to prioritize quality and achieve export objectives. One of the steps that can be taken to ensure this is to implement intensive supervision through the HACCP (Hazard Analysis on Critical Control Point) certificate. According to data from the Ministry of Maritime Affairs and Fisheries for the first semester of 2020, Aceh has 9 out of the 336 HACCP certificates in Indonesia, which is 2.67 percent. With this minimum number, the Aceh Government needs to make optimal efforts to

facilitate the issuance of certificates and uphold tuna food safety standards. Maulana *et al.* (2012) emphasized the need for serious attention to the issue of tuna food safety and increased supervision and control of fresh tuna products to remain competitive in the global market.

The export trade of tuna from Aceh to global markets is still quite limited. Most of the importers of fresh and frozen tuna in Aceh are from neighbouring countries in Southeast Asia, such as Singapore and Malaysia. While there has been some expansion of tuna exports to East Asian countries like Japan and Hong Kong, the export growth has been inconsistent in recent years. According to the Central Statistics Bureau, Aceh exported over 133 tons of tuna, along with fish and shrimp, to Japan in 2022, with an export value of USD 886,579. Similarly, Aceh only exported to Hong Kong in 2012 in the last 12 years.

The United States is the only country in the Americas that imports tuna from Yakin Pasifik Tuna firm Banda Aceh. However, the export volume and value remain low. This low value is not only due to the quality of the tuna but is also significantly influenced by the real price of fresh tuna and the weakening exchange rate (Rp/USD) against the US dollar. Nurjasari *et al.* (2023) found that the volume and value of fresh tuna exports to the US are closely related to these factors, with a determination coefficient of 98.40 percent.

3.2 The Analysis of Tuna Exports in Aceh
3.2.1 Analysis of the impact of fresh, chilled, or frozen tuna export value on the GRDP value of Aceh's fisheries sub-sector

The fisheries sub-sector's GRDP has experienced steady growth from 2011 to 2022, with an average annual growth rate of 7.59 percent. The highest growth rate was in 2022 at 15.18 percent, while the lowest was in 2021 at 2.73 percent. The value of tuna exports varied significantly during the same period, with the highest export value recorded in 2014 at USD 305,073 and the lowest in 2012 at USD 428 (Table 2).

Table 2.
Tuna's Export Value (x) and Fisheries GRDP Value (Y) in 2011-2022

Years	Fisheries GRDP Value (Rp Million) (Y)	Tuna's Export Value (USD) (X)
2011	4.925.017	681
2012	5.189.339	428
2013	5.474.303	20.268
2014	5.772.453	305.073
2015	6.333.475	5.150
2016	6.689.674	4.101
2017	7.235.446	16.804
2018	7.907.804	4.245
2019	8.578.069	6.793
2020	9.271.732	7.788
2021	9.525.665	147.965
2022	10.972.603	109.336

(Source: Aceh Statistics Central Bureau, 2023)

For examining the relationship between the export value of tuna and the Gross Regional Domestic Product (GRDP) of Aceh's fisheries sub-sector, a simple linear regression analysis was conducted. Before proceeding with the analysis, classical assumption tests were performed to ensure that the conclusions drawn from the linear regression model were unbiased. These assumptions include: a) normality test; b) linearity; and c) heteroscedasticity.

Based on the results of the classical assumption tests, it was found that the data used in the analysis is normally distributed, as indicated by a significance value of 0.20 (Sig > 0.05). Similarly, the linearity test yielded a significance value of 0.153 (Sig > 0.05), indicating a significant linear relationship between the variables. The heteroscedasticity test showed that the data points do not converge around zero, suggesting any heteroscedasticity in the dataset, thus validating the regression model. Following these tests, a simple linear regression analysis was conducted, with the results as follows:

Table 3. Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,116[a]	,013	-,085	2021041,35961

a. Predictors: (Constant), Nilai Ekspor Tuna

b. Dependent Variable: PDRB Sub Sektor Perikanan

Table 3 above explains that the correlation/relationship value (R) is 0.116. From this output, a coefficient of determination (R Square) was obtained of 0.13, which means that the influence of the independent variable (export value of fresh, chilled, or frozen tuna) on the dependent variable (GRDP value of the fisheries sub-sector) is 13 percent. Furthermore, to see whether there is a relationship/correlation between the independent variable (GRDP value of the fisheries sub-sector) and the dependent variable (GRDP value of the fisheries sub-sector) can be seen in Table 4 below:

Table 4.
ANOVA[a]

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	552639272 670,219	1	552639272 670,219	,135	,721[b]
	Residual	408460817 72509,780	10	408460817 7250,978		
	Total	413987210 45180,000	11			

a. Dependent Variable: PDRB Sub Sektor Perikanan

b. Predictors: (Constant), Nilai Ekspor Tuna

Based on Table 4, it can be concluded that the F-value is 0.135 with a significance level of 0.721 (>0.05) at a 5 percent confidence interval. This significance level indicates that there is no influence between the export value of fresh, chilled, or frozen tuna (X) and the Gross Regional Domestic Product (GRDP) of Aceh's fisheries sub-sector.

These results differ from the findings of Maidila *et al.* (2021), which indicated the existence of both short-term and long-term cointegration relationships between tuna and skipjack export values and the GRDP of the fisheries sub-sector in Aceh from 2014 to 2018. However, the current study only considers the export value of tuna, excluding skipjack. Apart from that, the influence of the two variables does not have a significant effect because the tuna export value has very fluctuating data.

3.2.2 Analysis of the competitiveness of fresh, chilled, or frozen tuna exports

Based on the RCA analysis, the average RCA value from 2011 to 2022 is 0.491. This indicates that the competitiveness of Aceh's tuna export commodities is still very low, as an RCA value of less than 1 signifies a lack of competitive advantage. This finding aligns with Seyoum (2007), who stated that competitive advantage is achieved when RCA > 1, while commodities with RCA < 1 lack competitiveness.

The average RCA value is consistently below 1, except for 2014 when it was 1.868. The high RCA index in 2014 corresponds to the increased volume and value of tuna exports compared to other years within the study period (refer to Table 2). The detailed RCA values for Aceh's tuna exports can be seen in Table 5.

Table 5.
RCA Value of Aceh Tuna Export Commodities

Year	Xij/Xit	Wj/Wt	RCA
2011	4,59021E-07	0,000166732	0,002753054
2012	3,40385E-07	0,000555921	0,000612291
2013	2,10474E-05	0,000486475	0,04326515
2014	0,00060123	0,000321857	1,868004138
2015	5,51766E-05	0,000211366	0,261047642
2016	0,000179322	0,000191089	0,938421927
2017	0,000216326	0,000224896	0,961892562
2018	3,06213E-05	0,000221996	0,137936463
2019	4,07849E-05	0,00024339	0,167569951
2020	4,71846E-05	0,000348312	0,135466649
2021	0,000275579	0,000305205	0,902930228
2022	0,000146602	0,000304144	0,482014514
Average			**0,491826214**

Source : Data Processing Results

The low competitiveness of fresh, chilled, and frozen tuna commodities is not only a problem in Aceh but also in other provinces in Sumatra and Indonesia in general. Although Indonesia ranks first in fresh tuna exports with a 16.86 percent market share of the world's total exports, it only ranks ninth with an RCA value of 1.43 for frozen tuna in the global market. In other words, Indonesia lacks competitiveness or comparative advantage for frozen tuna exports (Lestari *et al.*, 2013).

To enhance the competitiveness of tuna exports in Aceh, it is important to consider product diversification. This can involve processing tuna into canned tuna or tuna loins. Implementing this downstream strategy would be beneficial. One way to achieve this is by developing the cold chain system at the Kuta Raja Lampulo Ocean Fishing Port, which serves as the logistics hub for Aceh's tuna. Additionally, it is essential to intensify and expand the HACCP-certified Fish Processing Units (UPI) at the fishing port. Currently, there are only two medium to large-scale UPIs available, according to data from the Ministry of Marine Affairs and Fisheries.

3.2.3 SWOT Analysis

Based on the review obtained from the previous two analyses, it is illustrated that the export competitiveness of fresh, chilled, and frozen tuna from Aceh is still very low, as indicated by an RCA value of less than 1. Additionally, there is no significant impact from the increase in the export value of fresh, chilled, and frozen tuna from Aceh on the contribution of the fisheries sub-sector as part of Aceh's GRDP. Based on the data and facts detailed in

the aforementioned analyses, a problem review is formulated through a SWOT analysis presented in the following matrix:

Table 6.
SWOT Analysis Matrix

	Strengths	Weaknesses
Internal Factors	1. Kuta Raja Lampulo Ocean Fishing Port has fairly good infrastructure and is one of the areas in Aceh that receives attention for investment in the fisheries industry. 2. Tuna caught fresh from Aceh waters is suitable for further processing into processed tuna. 3. Aceh's tuna production is the largest in Sumatra. 4. There is a focus on developing start-ups that operate in the fisheries sector.	1. The consistency and continuity of Aceh's tuna exports are still low and fluctuating. 2. There is still a lack of diversification in Aceh's processed tuna products, as seen from the HS 16 processed tuna exports which are still not available every year. 3. The competitiveness of Aceh's tuna exports is still low, indicated by the RCA value being less than 1. 4. There are only 2 medium and large UPI units available. 5. The quality of Aceh's fresh tuna is still low. 6. There are limited export destination countries for Acehnese tuna, with exports mainly going to various tuna-importing countries. 7. There are very few HACCP certificates in Aceh, accounting for only 9 out of 336 certificates in Indonesia.
	Opportunities	Threats
External Factors	1. Global market demand for tuna with high food safety standards 2. Opportunities for expanding the tuna export market and partnerships with export destination countries 3. The increase in consumption of processed tuna products in the international market is high: This can be seen from the high volume of exports of processed canned tuna from North Sumatra every year.	1. Intense global competition in tuna pricing 2. Export policy changes leading to high cargo tariffs 3. Fluctuating real price of fresh tuna and adaptive Rp/USD exchange rate

Based on the SWOT analysis above, we can derive several strategic insights to formulate alternative policies for the development of tuna exports in Aceh. These insights are based on the identified strengths, weaknesses, opportunities, and threats. It is essential to formulate a policy strategy that addresses these elements as follows:

1) Strategy (S-O)
   a. Improves logistics processes and cold chain systems at ports, including storage, handling, and distribution, to ensure the availability and timely delivery of exported tuna products (1-1)
   b. Increasing the potential of processed tuna products in Aceh in the form of canned tuna and tuna loin (2-3)

2) Strategy (W-O)
   a) Developing medium to large-scale UPI in the processing of canned tuna and tuna loin (4-3)
   b) Improving quality standards through regular audits and inspections of local producers in implementing HACCP and the Government can collaborate with third parties to facilitate the certification process for tuna producers (7-1)

3) Strategy (S-T)
   a) Optimizing the use of fiscal incentives for exporters to help cover the costs of increasing cargo export tariffs (3-2)
   b) Strengthening partnerships with start-ups in efforts to trade tuna in the global market at more competitive prices (4-3)

4) Strategy (W-T)
   a) Improve and develop the branding of fresh, frozen, chilled, and processed tuna products through the joint council and chamber of commerce of tuna importing countries (2-1)(3-1)

4. CLOSING
Conclusion

Based on the analysis carried out, the conclusions obtained from the picture of tuna commodities in Aceh include: 1) The export value of fresh, chilled, or frozen tuna in Aceh does not affect the increase in the GRDP value of the Aceh fisheries; and 2) The competitiveness of fresh, chilled or frozen tuna commodities in Aceh is low, which is indicated by an RCA value < 1.

The strategies that can be implemented in developing tuna exports in Aceh include: 1) Improving logistics processes and cold chain systems at ports; 2) Increasing the potential of processed tuna products in Aceh in the form of canned tuna and tuna loin; 3) Developing medium-large scale UPI in processing canned tuna and tuna loin; 4) Improving quality standards through regular audits and inspections of local producers in implementing HACCP; 5) Optimizing the use of fiscal incentives for exporters to help cover the costs of increasing export cargo rates; 6) Strengthen partnerships with start-ups in efforts to trade tuna in the global market at more competitive prices; and 7) Improve and develop branding of fresh, frozen, chilled and processed tuna products through the joint council and chamber of commerce in tuna importing countries.

BIBLIOGRAPHY
Anwar, S.H., Wifdha, R.W., Rohaya, S., Hasan, H. 2021. Kualitas tuna kaleng dari Perairan Aceh yang disterilisasi dengan *pressure canner*. JPB Kelautan dan Perikanan. Vol 16 (1), 73-82.

doi: 10.35448/jequ.v6i2.4345.

Campling, L. 2012. The tuna 'commodity frontier': business strategies and environment in the industrial tuna fisheries of the western Indian ocean. Journal of Agrarian Change.Vol. 12 , 252–278.

Chan, S., Tabrani, M., Fiti, F.A. 2019. Maintaining the quality of tuna of Aceh for the Japanese export market. Expert Journal of Marketing. Vol 7 (1) 31-41.

Chazinatuddini, M., Indra., Susanti, E. 2019. Strategi pengembangan usaha industri ekspor ikan tuna (Studi kasus PT. Aceh Lampulo Jaya Bahari). Jurnal Ilmiah Mahasiswa Pertanian. Vol 4 (1), 372-386.

Furqan, I., Nurani, T.W., Solihin, I. 2017. Strategy for the implementation of quality management policy on tuna fisheries in Sendang Biru Malang. Journal of Applied Management (JAM). Vol 15 (3), 513-521.

Hanif, N., Taufiq, M. 2023. Pengaruh nilai tukar, volume produksi, HBA, dan harga minyak dunia terhadap nilai ekspor batubara Indonesia. Jurnal Ekonomi Pembangunan STIE Muhammadiyah Palopo. Vol 9 (1), 267-280.

Lestari, W., Syarief, R., Sumantadinata, K. 2013. Strategi peningkatan daya saing tuna olahan Indonesia di pasar Internasional. Manajemen IKM. Vol 8 (1) 36-44.

Maidila, V.N., Safrida., Abubakar, Y. 2021. Cointegration analysis between tuna and pjack exports with fisheries Gross Regional Domestic Product (GRDP) of Aceh Province. International Journal of Multicultural and Multireligious Understanding. Vol 8 (1), 486-494.

Maulana, H., Afrianto, E., Rustikawati, I. 2012. Analisis bahaya dan penentuan titik pengendalian kritis pada penanganan tuna segar utuh di PT.Bali Ocean Anugrah Linger Indonesia Benoa-Bali. Jurnal Perikanan dan Kelautan. Vol 3 (4), 1-5.

Nurjasari., Amarullah, T., Rahmawati., Insani, S.A. 2023. Faktor-faktor yang mempengaruhi volume ekspor ikan tuna segar pada PT. Yakin Pasifik Tuna Banda Aceh. Jurnal Perikanan Terpadu. 4(1), 1-7.

Riwaldi, S., Wijayanti, I.K.E., Kusnaman, D. 2023. Analisis daya saing ekspor CPO Indonesia di pasar Internasional. Jurnal Ekonomi Pertanian dan Agribisnis (JEPA). Vol 7 (4), 1244-1257.

Seyoum, B. 2007. Revealed comparative advantage and competitiveness in services a study with special emphasis on developing countries. Journal of Economic Studies. Vol 34 (5), 376-388.

Thu, N.D.H., Quyen, C.L., Hang, L.T.M., Thi, N.T.T & Lebally, P. 2021. Market structure and market performance of tuna value chain: a case study of yellowfin tuna and bigeye tuna value chain in three south central provinces of Vietnam. International Journal of Economics and Financial, 11(6), 94-113.

Zuhdi, F., Suharno. 2015. Analisis daya saing ekspor kopi Indonesia dan Vietnam di pasar Asean 5. Habitat. Vol 26 (3),152-1