



ANALYSIS OF FACTORS AFFECTING EXPORTS OF FRESHWATER ORNAMENTAL FISH IN BANDUNG CITY

Selfiana Farida¹, Achmad Rizal², Asep Agus Handaka², Emma Rochima²

¹) Students of Faculty of Marines and Fisheries, Universitas Padjadjaran

²) Lecturer Staff at Faculty of Marines and Fisheries, Universitas Padjadjaran
Departement of Fisheries, Faculty of Marines and Fisheries, Universitas Padjadjaran
Bandung Highway Sumedang Km 21, Jatinangor 40600
Email : Selfianafarida97@gmail.com

ABSTRACT

This study aims to analyze the factors that influence the export of freshwater ornamental fish in the city of Bandung and the factors that have a significant influence on increasing export volume in the city of Bandung. This research was carried out in May to December 2018 in the city of Bandung. The method used is descriptive quantitative method using periodic data and cross check data. Data collection techniques used sampling census technique and purposive sampling. Data tested is Number of types of freshwater decorative fish that are exported in Bandung, Freshwater Decorative Fish Price in Bandung for Importing Countries, Freshwater decorative fish price abroad, The amount of destinations for export of freshwater decorative fish in Bandung, USD Exchange Rate Against Rupiah Data analysis used is multiple linear regression with classic assumption tests, overall tests and partial tests. The results showed that the factors affecting the export of freshwater ornamental fish in the city of Bandung were types of freshwater ornamental in the city of Bandung and Freshwater Decorative Fish Price in Bandung for Importing Countries. The results showed that the factors affecting the export of freshwater ornamental fish in the city of Bandung were types of freshwater ornamental in the city of Bandung

Keyword : Freshwater ornamental fish, Export, Bandung City

INTRODUCTION

Indonesia's freshwater decorative fish has a special appeal in the eyes of the world. It can be seen from the development of the number of exports that has increased over the past five years. The supply of freshwater decorative fish is obtained from various regions including the West Java region. The reason why freshwater decorative fish have a high selling power, especially in the world market is because freshwater decorative fish has a very large amount of species diversity, so consumers have an interest in knowing freshwater

decorative fish even further. Buying and selling of export freshwater decorative fish is not only carried out solely for private collections but most of it is done to be re-traded in the importing country (Satyani dan Subamian 2014). West Java region, for the existence of freshwater decorative fish is very influential because the largest supplier of freshwater decorative fish for export in Indonesia is achieved by West Java at 27.80%, followed by DKI Jakarta 20.67%, West Kalimantan 17.31%, Bali 16.92%, Banten 6.46%, Riau Archipelago 3.83%, East Java 3.57%, South Kalimantan

1.56%, North Sumatra 0.38% and South Sumatra 0.32% (BPS RI 2017 in Suhana 2017).

Bandung itself can produce freshwater decorative fish seeds that have excellent quality standards or are suitable for the demand for export freshwater decorative fish so that it dominates the amount of supply. Production results from Bandung have varied and very captivating color characters and very adaptive to the new environment. In Bandung city, freshwater decorative fish is more effective to be cultivated compared to sea water decorative fish. Freshwater decorative fish consumers spread to various countries. Freshwater decorative fish exports have been going on for a long time and provide promising benefits. This situation makes a new understanding of the country that is a permanent consumer of this export recipient, which means that the absorption capacity of freshwater decorative fish from Bandung is at a high level in the country, because every year there is no excessive level of saturation every year. Saturation level means that the freshwater decorative fish trade activities between two countries are in a stable amount every year and do not experience a drastic increase or decrease. The potential trade in freshwater decorative fish exports in Bandung is very promising so that if there is a significant decline it will have a large influence on the total number of Indonesian exports as a whole. To avoid this, it is

necessary to do an analysis of the factors that influence the export of freshwater decorative fish in Bandung so that it will be known the most significant and very influential factor on the change in export volume and it is this which will become the benchmark of the progress of ornamental fish export in Bandung.

RESEARCH METHOD

This research uses quantitative descriptive method. The sampling technique used in this study is divided into two, the first is to obtain export data from related companies using sampling techniques. The second technique is purposive sampling technique, this technique is used to conduct interviews with cultivators of export freshwater decorative fish suppliers to legal entity exporters in Bandung. The type of data used in this study is secondary data and primary data, primary data obtained from interviews with freshwater decorative fish exporters in Bandung and suppliers of export freshwater decorative fish to authorized exporters companies.

Secondary data is divided into two parts; data time series that have been collected by the parties or relevant agencies within a period of 60 months for 5 years periodically and cross check data from various existing literature. After a study of the export of freshwater decorative fish in Bandung, it was found that the factors that became the

estimating variables were thought to have a significant influence on the fluctuations in the volume of export of freshwater decorative fish in Bandung, including (1) the large number of fish (JI), (2) the price of fish in Bandung for importing countries (HID), (3) the price of foreign fish (HIL), (4) the number of destination countries for export (TNE), (5) the exchange rate of USD against Rupiah (NT).

These five factors are independent variables which will later be known how much influence each variable has on the volume of freshwater decorative fish exports in Bandung using multiple linear regression. At the same time to find out the most influential factors significantly. After the model is established, the model will be tested first to be considered feasible towards further testing. This test is a classic assumption test which consists of normality test, heteroskedacity test, autocorrelation test and multicollinability test.

RESULTS AND DISCUSSION

The analytical model of the factors that influence the export of freshwater decorative fish that has been made in this research must meet certain criteria in testing classical assumptions.

Normality test

This normality test is conducted to find out whether the export volume is normally distributed or not to the alleged independent variables. The results of this test are described in Figure 1. (Sugiyono 2014).

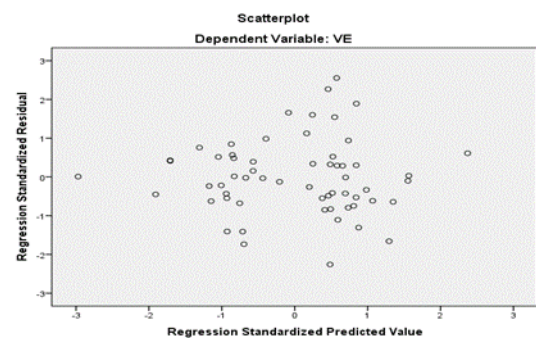


Figure 1. Normality Test

The result of this normality test is that the formed plots are normally distributed to the lines in the graph formed. But these results are concluded from a visual assessment that can still be doubted so the next step will be through Kolmogrov Smirnov testing. The Kolmogrov Smirnov test generally produces a value less than α of 5% or 0.05, on the value, the price of freshwater decorative fish in Bandung for importing countries produces 0.000001, the price of foreign fish produces 0.000073, and the exchange rate currency produces 0.00003. However, there are several estimating variables that are not normally distributed because they have a result greater than α of 5%, namely the type of fish producing 9,774, the exporting country destination produces 1,9835.

Heteroskedacity Test

The next test is heteroskedacity test, this test is done to see whether the error variance is constant or not, if the residual variant is constant then homoskedacity occurs in a model that has been made.

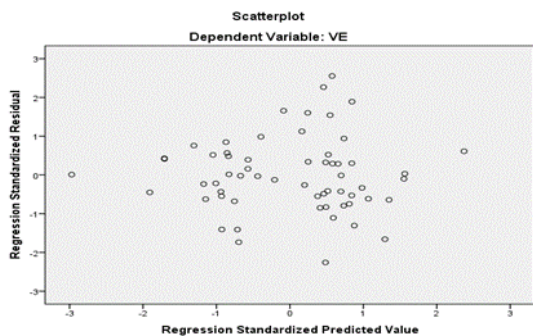


Figure 2. Heteroskedacity Test

This test is done by looking at the plots that are formed in a scater graph (Sugiyono 2014). The results of this test are plots formed from this

model tend to collect both below and above the zero line this means that the model used has symptoms of heteroscedacity.

Multicollinability Test

This test is conducted to see whether one independent variable in the model will affect other independent variables in the same model (Sugiyono 2014). If the VIF value obtained is less than 10, the equation does not have a multicollinearity problem. The result of this test is that the model that has been formed undergoes multicollinearity because the results of VIF in general from each estimator variable that has been tested are at a value greater than 10 and not close to the value of 10.

Table 1. Multicollinearity Test Results

No	VARIABLE	VIF
1.	Number of types of freshwater decorative fish that are exported in Bandung (JI)	1,037
2.	Freshwater Decorative Fish Price in Bandung for Importing Countries	62,413
3.	Freshwater decorative fish price abroad	76,497
4.	The amount of destinations for export of freshwater decorative fish in Bandung	2,164
5.	USD Exchange Rate Against Rupiah	213,176

Autocorrelation Test

The last test is the autocorrelation test, this test is used to find out whether there is a relationship between past errors and current errors in a model that has been created. The basis of this test is to see the value of the durbin watson table (Gurajati 1997). The value of durbin watson in the model that has

been tested produces a value of 1.876, which is explained in table 2 below.

Table 2. Durbin Watson Multicollinearity Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,820 ^a	0,673	0,602	0,11847	1,876

The results of the tests above are then adjusted with the Durbin Watson table to obtain the *dl* and *du* values and obtain the *dl* value of 1.4083 and the *du* value of 1.7672. After that, it is interpreted in the autocorrelation framework table and the result is in accordance with the durbin watson $du < DW > 2$ and $dl < DW > du$ values. Which means receive H_0 , there is no correlation in the model. With this

in mind, it can be concluded that the model that has been made has no correlation.

Export Model of Freshwater Decorative Fish in Bandung

The model that has been made ideally can determine which factor is the most significant in influencing the volume of freshwater decorative fish export in Bandung.

The model that is formed is as follows:

$$Y = -147,640 + 0,491 \text{ JI} - 0,573 \text{ HID} + 12,783 \text{ HIL} + 0,062 \text{ TNE} - 1,700 \text{ NT}$$

Table 3. Export Regression Results of Freshwater Decorative Fish in Bandung

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
VE	-147,640	137,632		-1,073	0,288
JI	0,491	0,177	0,284	2,773	0,008*
HID	-0,573	0,303	-1,503	-1,890	0,064
HIL	12,783	13,231	0,851	0,966	0,338
TNE	0,062	0,324	0,028	0,191	0,849
NT	1,700	2,115	1,181	0,804	0,425

*Tangible at 5% level

R Square

R Square is the result of information from the multiple regression model that has been created. R Square will give a value that describes the accuracy of the independent variables. R Square obtained from this model is 0.67, meaning that 67% of the estimating variables can affect export volume and the

remaining 33% is other variables influence that are not included in the model or can be explained in an error. This result is closer to one and can be said that the formulated model can explain the effect of independent variables with the dependent variable.

F Test

F test or overall test is conducted to find out whether the independent variables together or simultaneously (overall) have a real or no effect on the dependent variable or in this case the export volume of freshwater decorative fish in Bandung. . The results of the F test on this model are explained by the significance value obtained which is equal to 0.000003. This means that the value is smaller than α of

5% or 0.05, which states that the model can be considered valid. Test F produces a calculated F value of 8.938 with F table 1.545768 this answers the hypothesis that F counts > F table and states that H0 is rejected and H1 is accepted. So it is assumed that there is at least one independent variable in the model that significantly affects the dependent variable, namely the volume of freshwater decorative fish exports in Bandung

Table 4. F (Overall) Test Results in Regression Models

	Model	Sum of Squares	Df	Mean Square	F	Sig.
	Regression	0,627	5	0,125	8,938	0,000003
1	Residual	0,758	54	0,014		
	Total	1,385	59			

T Test

T test or partial test is done to determine the effect of each existing independent variable. From the results of the t count can be compared with t table of 1.671. So that the independent variables that have an influence on the volume of exports is the type of fish (JI) and the price of freshwater decorative fish in the city of Bandung for

importing countries (HI) with t count values of 2.773 and 1.890 respectively is obtained. This value states that t counts > t table which means that H0 is rejected and H1 is accepted. So it can be concluded that there is a significant influence on the number of fish species and the price of domestic freshwater decorative fish for the importing country significantly on the volume of freshwater decorative fish exports in Bandung.

Table 4. Results from t Count

No	Variabel Bebas	t Hitung
1.	Number of types of freshwater decorative fish that are exported in Bandung (JI)	2,773
2.	Freshwater Decorative Fish Price in Bandung for Importing Countries	-1,890
3.	Freshwater decorative fish price abroad	0,966
4.	The amount of destinations for export of freshwater decorative fish in Bandung	0,191
5.	USD Exchange Rate Against Rupiah	0,804

Number of types of freshwater decorative fish that are exported in Bandung (JI)

The type of fish greatly influences the increase or decrease in export volume in a country, the variety of fish offered will greatly increase demand, including in some importing countries (Satyani dan Subamian 2014). In the calculation results obtained the coefficient value of the type of fish is positive 0.491. This means that every increase in variation in fish species in Bandung by 1% will increase its export volume by 0.491%. This situation is justified by the data on the types of

freshwater decorative fish in Bandung which are exported to various countries from 2013 to 2017 as described in table 5. From the calculation results the obtained significance value of the variable type of freshwater decorative fish (JI) in this problem has a value most significant is 0.008. This means that the value obtained is less than α which is 5% or 0.05 so it is considered as the variable that has the most significant value that can affect the changes that occur in the volume of freshwater decorative fish exports in Bandung.

Table 5. Data on the amount of freshwater decorative fish types in Bandung

No	Year	Freshwater Decorative Fish Amount (types)	Vexport Volume (Ekor)
1.	2013	40	10.048.446
2.	2014	42	10.318.551
3.	2015	44	11.884.275
4.	2016	44	12.421.369
5	2017	45	12.432.705

Source : *BKIPM Kelas II Bandung* (2018)

Freshwater Decorative Fish Price in Bandung for Importing Countries

The price of freshwater decorative fish in Bandung for importing countries will be different from the price of freshwater decorative fish sold abroad or in importing countries because the importing country will follow the value of the respective country's currency (Soelostyo 1986). Some importing countries choose to import freshwater decorative fish from Indonesia, especially in Bandung, because the value of the currency from within Indonesia is lower than in the

importing country so that the offered fish is considered to have a cheaper price than in other countries or compared by producing in their own country, and the assumption about the fish quality owned in Indonesia is superior (Soelostyo 1986). From the calculation results obtained the variable coefficient value of the price of domestic freshwater decorative fish is equal to (-0.573 / inversely). The value obtained is negative. This means that every increase in the price of domestic freshwater decorative fish by 1% will reduce the volume of exports in Bandung by 0.573%. From the

calculated t value, the value is greater than the t table. This means that the price of freshwater decorative fish in Bandung for importing

countries has a real influence in the change in export volume.

Table 6. Freshwater Decorative Fish Price for Importing Countries in Bandung

No	Year	Freshwater Decorative Fish Price for Importing Countries in Bandung (Rupiah)	Export Volume (Ekor)
1.	2013	2.253	10.048.446
2.	2014	3.195	10.318.551
3.	2015	4.715	11.884.275
4.	2016	4.694	12.421.369
5.	2017	4.840	12.432.705

Source : Exporter Interviews Results (2018)

Freshwater decorative fish price abroad

Freshwater decorative fish in the country and abroad certainly have different prices. This difference is in accordance with the currencies of each country. Countries that conduct international trade transactions have different levels of specialization in each of the goods and services to produced which are then sold to buy (Lindert 1995). As stated by Lindert (1995) that the greater the price and demand for an item, the greater the desire of the country to meet market demand. It is

important to know the price of freshwater decorative fish sold in importing countries to find out whether the price changes affect or not for the change in export volume of freshwater decorative fish in Bandung every month from 2013 to 2017, from the calculation produced a coefficient of 12.778 this value stated that every increase in the price of freshwater decorative fish abroad by 1% would increase its export volume to reach 12.783% below this is the price of freshwater decorative fish abroad as follows :

Table 7. Freshwater decorative fish price abroad

No	Year	Overseas Freshwater Decorative Fish Price (Rupiah)	Export Voliume (Ekor)
1	2013	105.300	10.048.446
2	2014	106.096	10.318.551
3	2015	107.616	11.884.275
4	2016	108.487	12.421.369
5	2017	110.558	12.432.705

Source : Exporter Interviews Results (2018)

Amount of Export Countries

Freshwater decorative fish export activities in Bandung are carried out to various countries in the world. Each year the country that purchases freshwater decorative fish in Bandung varies according to the fish sales season. The number of destination countries for the export of freshwater decorative fish in Bandung, is one of the estimating variables in increasing export volume. The more country destinations for export activities, the more likely it will be

The number of items requested is in accordance with Amir's (1992) statement. Variables in the number of countries that export freshwater decorative fish in Bandung have a coefficient of 0.062. This means that if every country increases the import of freshwater fish in Bandung by 1%, then the export volume will increase by 0.062%. Below is the number of countries conducting export transactions for freshwater decorative fish in Bandung (table 8).

Table 8. Amount of Export Country Destinations for Freshwater Decorative Fish in Bandung

No	Year	Amount of Export Country Destinations for Freshwater Decorative Fish in Bandung	Export Volume (Ekor)
1	2013	14	10.048.446
2	2014	15	10.318.551
3	2015	15	11.884.275
4	2016	18	12.421.369
5	2017	19	12.432.705

Source : BKIPM Kelas II Bandung (2018)

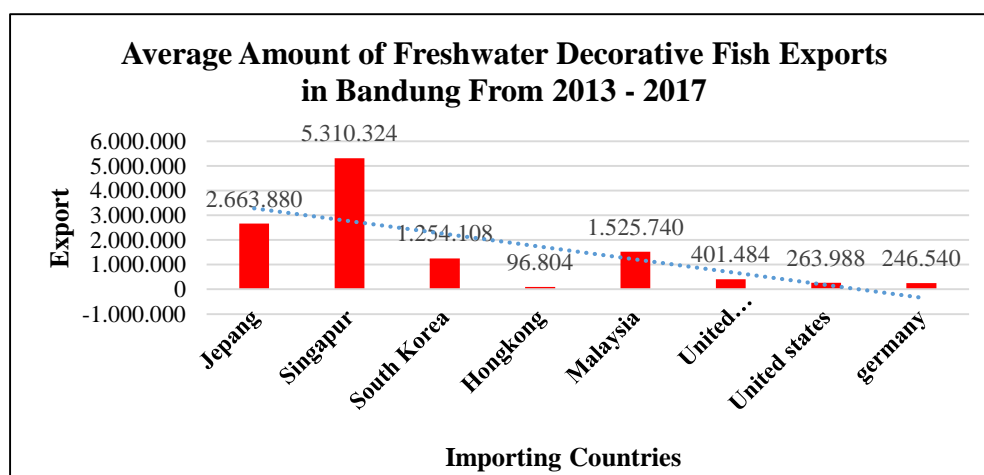


Figure 3. Average Number of Freshwater Decorative Fish Exports in Bandung From 2013 - 2017

USD Currency Exchange Rate Against Rupiah

The exchange rate of importing countries against the rupiah becomes a predictive variable that must be considered, because when the value of a currency has decreased against another country or it can be said to be depreciating, in that country the price becomes relatively cheaper, different from when the value of the currency has increased against other countries or can be said to be appreciated then the country will have a relative price that tends to rise (Salvatore 1995). On the currency exchange rate against the rupiah calculation has a coefficient of 1.7 this

means that if there is a weakening (depreciation) of the rupiah exchange rate against the currency of the destination country by one percent, it will cause an increase in the volume of export of freshwater decorative fish in Bandung 1.7%.

Below is the value of the USD against the rupiah associated with the volume of freshwater decorative fish exports that occurred in Bandung. The situation below is taken from the average per year, so it seems as if it shows that by increasingly depreciating the rupiah exchange rate, the export volume will increase, but if viewed as a whole every month for the last five years has fluctuated against its export volume.

Table 9. USD Currency Exchange Rate Against Rupiah

No	Year	USD Currency Exchange Rate Against Rupiah	Export Volume (Ekor)
1	2013	10.699	10.048.446
2	2014	11.944	10.318.551
3	2015	13.525	11.884.275
4	2016	13.396	12.421.369
5	2017	13.466	12.432.705

Source : *Bank Indonesia* (2018)

Conclusion

Based on the analysis of the factors that influence the export of freshwater decorative fish in Bandung, the conclusions obtained are as follows:

1. Factors that affect the export of freshwater decorative fish in Bandung are (1) the many types of freshwater decorative fish, (2) the price of freshwater decorative fish in

Bandung for the importing country, (3) the price of freshwater decorative fish abroad , (4) the number of destination countries for export (5) the exchange rate of USD against the rupiah, against the volume of export of freshwater decorative fish.

2. The factors that most significantly affect the volume of export of freshwater decorative fish are the many types of

freshwater decorative fish in Bandung and the price of freshwater decorative fish in Bandung for the exporting country. This means that the number of species of fish that most influence freshwater decorative fish export volume fluctuation, the more variety of fish choices to export, the more export volume will request. Even the price offered will greatly affect the changes in export volume that occur.

BIBLIOGRAPHY

- Indonesia Central Agency on Statistics. 2017. *Data on the export growth of freshwater decorative fish in West Java*. Bandung. West Java
- Daryanto, A. 2007. *From Clusters Towards Increasing Competitiveness of Fisheries Industry*. Craby & Starky Bulletin
- Gujarati, D. 1997. *Basic Econometrics*. Zain, Sumarno, Translator. Erlangga. Jakarta
- Gumilar, I., A, Rizal., Sriati., R, S, Putra., 2017. *Analysis of consumer behavior in decision making of purchasing ornamental freshwater fish (case of study at ornamental freshwater fish market at Peta Street, Bandung)*. Asean – Fen International Fisheries Symposium. Series: Earth and Environmental Science 137 (2018) 012081. Faculty of Fisheries and Marine Science, Padjadjaran University (Accessed on August 5th 2018 at 15.41 WIB)
- Lindert P, C, P , Kinderleberger. 1995. *International Economy*. Jakarta: Erlangga
- Rizal, A., H, Herawati., I, M, Apriliani., M, R, Ismail., 2018. *The role of marine sector optimization strategy in the stabilisation of Indonesian economy*. International Scientific Journal. WSN 102 (2018) 146-157. Socio-Economic Studies Center, Faculty of Fishery and Marine Science. (Accessed on August 5th 2018 at 15.41 WIB)
- Rizal, A., L, Apriliani., I, Nurruhwati.,A, Nurhayati. 2018. *The Elasticity of Demand For Catfish Products (Clasrias sp.) In Bandung City Of Indonesia*. International Scientific Journal. WSN 102 (2018) 76-89. Socio-Economic Studies Center, Faculty of Fishery and Marine Science. (Accessed on Oktober 21st 2018 at 15.31 WIB)
- Satyani, D.,W, Subamia. 2014. *Indonesia Freshwater Decorative Fish Export*. Journal of Aquaculture Media Volume 4 No. 1 of 2009. Freshwater Aquaculture Research Station. Depok
- Suhana, D., 2018. *Indonesia Marine Economy. Forum for Indonesian Marine Fisheries Economic Independent Research*.<http://Suhana.web.id/2018/01/17/nilai-ekspor-ikan-hias-air-tawar-2017-tumbuh12,5-persen> (. (Accessed on Oktober 21st 2018 at 11.36 WIB)
- Sugiyono. 2014. *Statistics for Research*. 25th Print. Alfabeta. Bandung
- Soelostyo, M.B.A. 1986. *International Economy*, Gajah Mada University, Yogyakarta.