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Analysis of Procurement and Demand for Raw Materials of Dried Fish Making Business in Bengkulu City

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ABSTRACT: This study is intended to analyze the source of fresh fish and the quantity of fresh fish used in the business of making dried fish in Bengkulu City and analyze what factors affect the quantity of demand for fresh fish in the business of making dried fish in Bengkulu City. This research was conducted from January to February 2022 in Bengkulu City, more precisely, Sumber Jaya Village, Kampung Melayu District. The research location was determined purposively, and 86 dried fish makers were selected using the census method. The data used are primary and secondary, and the data analysis used is qualitative and quantitative. Sources of raw materials in dried fish are divided into three: self-catch, buy, and self-catch and buy. The largest percentage of sources of raw materials is to buy, where the place to get the most comes from fishermen directly. The quantity of raw material used is 10,563 Kg per production process. The factors that partially affect the quantity of demand for fresh fish by dried fish makers are the price of ice and the dummy of the business scale at the 95% confidence level.

Keywords: Procurement, demand, raw materials, dried fish

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INTRODUCTION

Various important sectors support the economic development of a country, the agricultural sector is one of them. Good resource management by a government means that the country has achieved growth. The vital role of the agricultural sector is as a source of food for the community, state revenue, creating jobs, providing raw materials for other sectors such as the food and beverage processing industry, and playing a role in the formation of Gross Domestic Regional Product (GDRP) (Budiyanti et al., 2019).

One of the sub-sectors that have great potential in Indonesia is fisheries. As it is known, Indonesia has 17,508 km of coastline, which is used in the territory of the largest archipelagic country in the world, of which 70% of the part consists of sea. In addition, the total area of Indonesia's marine waters is 5.8 million Km^2, making the area rich in resources and non-biological (Nurlina, 2018). The wealth of these resources can be used as initial capital in national development and play an important role in the development of Indonesian marine and fisheries. The contribution of the fisheries sub-sector to Indonesia's GDRP in 2020 is 2.80% (BPS Indonesia, 2021).

Bengkulu Province, most of the regencies/cities in it are in coastal areas, making the fishery sub-sector the mainstay of the community in choosing business fields. Capture fisheries production in Bengkulu Province is divided into marine capture fisheries and public water fisheries. In 2019, the most significant fishery production came from capture fisheries at sea, with 70,829 tons valued at 2.626 billion (BPS Bengkulu Province, 2021). According to

Reswita et al. (2018), the number of fisheries in Bengkulu City has an average of 68% with economic value, and the remaining 32% are non-economic fish. As much as 32% of the total non-economic fish production is mostly carried out by preserving dried fish which can eventually make Bengkulu City's leading commodity, and a small portion of it is eaten fresh.

Kampung Melayu Subdistrict, more precisely, Sumber Jaya Village, is a center for making dried fish in Bengkulu City. Preliminary survey data of the study indicate that the number of dried fish makers in this area is more than in other areas, which is 86 dried fish makers. It shows that Sumber Jaya Village can market dried fish products to meet market needs. In meeting market needs, it is necessary to procure suitable raw materials to maintain production continuity. Bodnar and Hopwood (2003) in Putra et al. (2015) argue that procurement is an activity of selecting sources, ordering, and how to get goods or services (raw materials).

Based on the survey results, the raw material for the business of making dried fish in Bengkulu City, more precisely in Sumber Jaya Village, is generally in the form of fish with low economic value, or what local people call *ruca* fish. The types of *ruca* fish include *beleberan*, *kase, beledang, kerong,* and so on. In this area, processed fish in dried fish are made by fishermen's families with a clear division of labor. The head of the family (husband) catches fish on the high seas, and the catch is then processed by other family members (wife). In comparison, some people process fresh fish into dried fish by buying raw materials from big fishermen or small fishermen who get a lot of fish when they go to sea.

The proximity of this area to the Fish Auction Place (TPI) does not guarantee the continuous availability of fresh fish raw materials. It is reflected in the large number of dried fish makers who only produce when it is fish season or cannot produce optimally because of the limited quantity of raw material sources. In addition, the number of businesses making the same dried fish in Sumber Jaya makes the demand for fresh fish needed to be processed into dried fish also increase and get bigger. Therefore, it is necessary to study the procurement and market for raw materials for the dried fish-making business in Bengkulu City. The demand for raw materials is a function that describes the relationship between various factors and the quantity of demand for raw materials. These factors will later affect the need for the raw material itself. The raw material demand function can be derived from the Cobb Douglas production function, which is generally written as follows:

$Q = AKd^{\alpha}L^{\beta}$

$\pi = TR - TC$

$\pi = P.Q - rKd - wL$

$d\pi/dKd = 0 \quad d\pi/dL = 0$

$d\pi/dKd = P.\ \alpha.\ Q/Kd - r = 0 \rightarrow \alpha/Kd = r/P.\ Q$

$d\pi/dL = P.\ \beta.\ Q/L - w = 0 \rightarrow \beta/L = w/P.\ Q$

Or

$\alpha/Kd\ /\ \beta/L = r/w \rightarrow$ whereas $L = \beta.r.Kd/\alpha.w$

If the value of L is entered into the π equation, then:

$\pi = P\ .\ A\ .\ Kd^{\alpha}\ .\ L^{\beta} - rKd^{\alpha} - wL^{\beta}$

$\pi = P\ .\ A - r - w$

$Y = Kd = f\ (P, A, r, w)$

Where: π = Profit;

Kd = Quntity of demand for raw materials; w = Wages of labor; P = Product price; A = Technological level; r = Input price; αβ = Coefficient; Q = Production; K = Capital input (raw materials).

Based on the above formula, the quantity of demand for raw materials (fresh fish) in making dried fish is influenced by several factors: product price, technological level, input price, and labor wages.

MATERIALS AND METHODS

The research location was determined purposively, namely the selection technique used by researchers with specific considerations in taking research subjects. The research was conducted in Sumber Jaya Village, Kampung Melayu Subdistrict, Bengkulu City, considering that the number of dried fish makers in the research area was more than in other Bengkulu City areas, and was carried out from January to February 2022. The population in this study were fishermen who also worked as fishermen dried fish makers. The fishermen and their families make this dried fish—for example, the wife or other family members. The total population is 86 people. This study uses the entire population as a sample, so the sampling method is a census or a saturated selection.

This study's types of data include primary and secondary data. Primary data is data obtained by going down to the field. Preliminary data were obtained through direct interviews with respondents with a list of questions that have been prepared (questionnaire). The primary data taken in this study are data on the source of fresh fish, the quantity of fresh fish used, the price of dried fish, the cost of fresh fish, the price of ice, and so on. Meanwhile, according to Suryani and Hendryadi (2015), secondary data is collected from reliable sources related to the research topic. The data is usually from the web, books, journals, and others.

The data analysis used in this research is qualitative and quantitative analysis. The qualitative data method was carried out with descriptive analysis to answer the first objective, namely regarding the source of fresh fish. At the same time, the quantitative approach is used to answer the other first objective, namely regarding the quantity of fresh fish used. Mathematically it can be written as follows:

$$\sum \text{IS} = \sum_{n=1}^{n} (\text{IS}_1 + \text{IS}_2 + \text{IS}_3 \ldots\ldots + \text{IS}_n)$$

Where:

IS = Fresh fish,
IS_1 = Fresh fish type 1,
IS_2 = Fresh fish type 2,
IS_3 = Fresh fish type 3,
ISn = Fresh fish type n,
n = 1,2,3, ...n.

Quantitative methods are also used to answer the second objective regarding the factors that affect the quantity of demand for fresh fish in making dried fish. This objective was analyzed using multiple linear regression analysis. Mathematically it can be written as follows:

$$\text{Jisd} = a + b_1\text{Hik} + b_2\text{His} + b_3\text{Hes} + dD + e$$

Where:

Jisd = Quantity of demand for fresh fish (Kg/Production Process),
a = Constant,
b_1-b_3 = Regression coefficient,
d =Dummy variable regression coefficient,
Hik = Price of dried fish (Rp/Kg),
His = Price of fresh fish (Rp/Kg),
Hes = Price of ice (Rp/Kg),
D =Dummy business scale variable, 0 if revenue is Rp 225,000-Rp 1,950,000 (small business scale) and 1 if revenue is Rp 1,950,001-Rp 3,675,000 (large business scale),
e = Error.

RESULTS AND DISCUSSION

Source and Quantity of Fresh Fish

Source of Fresh Fish

Raw materials are the main ingredients used in making a product. These raw materials can be obtained from natural sources or can be purchased from suppliers

who supply these raw materials. The raw material used in this business of making dried fish is fresh fish. Dried fish makers obtain fresh fish from several sources. Table 1 displays data on origins, places to get, procurement systems, and payment methods for fresh fish raw materials.

Table 1. Sources, Places to Get, Procurement Systems, and Payment Methods for Fish Raw Materials

No	Description	Total (Person)	Percentage (%)
1	Sources of Fres Fish		
	a. Self-catch	5	6
	b. Buy	76	88
	c. Self-catch and buy	5	6
	Total	86	100
2	Places to Get		
	a. Sea	5	6
	b. Fisherman	63	73
	c. TPI	2	2
	d. Fisherman & TPI	11	13
	e. Sea & Fisherman/TPI	5	6
	Total	86	100
3	Procurement Systems		
	a. For 1-time production	86	100
	b. For > 1-time production	0	0
	Total	86	100
4	Payment Methods		
	a. Not buying	5	6
	b. Cash up on the front	68	79
	c. Pay half	4	5
	d. Cash on the back	9	10
	Total	86	100

Source: Primary Data Processed, 2022

Table 1 shows that the sources of fresh fish raw materials used in dried fish are divided into three: self-catch, buying, and self-catching and buying. The most significant percentage of sources of raw materials is to buy, with a rate of 88%. It is in line with the research of Sumantri et al. (2016) that the business of making dried fish in Bengkulu City obtains the most extensive raw material for fresh fish obtained through purchases (89.09%), and the rest is obtained from self-catching (10.91%). This situation shows that although the research area is a coastal area where many people work as fishermen, not all the catches can be used as raw materials, or the yield cannot meet the needs of raw materials to manufacture dried fish.

On average, dried fish makers buy raw fish raw materials directly from fishermen, with a percentage of 73%. It is because dried fish makers consider that the price offered when buying directly from fishermen will be cheaper when compared to buying at the Fish Auction Place (TPI), which is not only determined by the purchase of the highest price but also mostly sold by

fishermen or intermediary traders who make the price is higher. Dried fish makers provide fresh raw materials for only one time in the production process. It is because fresh fish is easily damaged, affecting the quality of dried fish products. Meanwhile, 79% of fresh fish purchased by dried fish producers are paid in cash. Payment is made in cash at the source of raw materials after the dried fish makers get fresh fish. In other words, most dried fish makers pay directly for the fresh fish and do not pay half or cash behind when processed fish products (dried fish) are sold. The dried fish maker makes half payment or cash back when it has small capital to buy fresh fish. This payment system is usually based on mutual trust between the source of raw materials and dried fish makers.

Quantity of Fresh Fish

Fresh fish used in the business of dried fish in the research area are fish with low economic value, or local people call it ruca fish. There are many types of ruca fish that are generally used as dried fish in the study area. However, in this study, only the five most widely used ruca fish types were selected: *beleberan, kase*, *beledang, kerong*, and *pala batu*. Table 2 presents the average quantity of fresh fish used in one production process in making dried fish.

Table 2. Quantity of Fresh Fish Used in Making Dried Fish

No	Types of Fresh Fish	Total (Kg/PP)	Percentage (%)
1	*Beleberan*	1,231	11.65
2	*Kase*	2,592	24.54
3	*Beledang*	4,027	38.13
4	*Kerong*	1,480	14.01
5	*Pala batu*	1,233	11.67
	Total	10,563	100.00

Source: Primary Data Processed, 2022

Table 2 shows that the types of fresh fish most widely used in dried fish are *beledang, kase, kerong, pala batu*, and *beleberan*. The use of these types of fish is unpredictable because the use of these fresh fish species may vary according to the fish season or weather conditions. The quantity of fresh fish equals the quantity of fresh fish demanded by the dried fish maker. The use of fish is in line with the research of Sumantri et al. (2016) that in the city of Bengkulu, *beledang* and *kase* fish are the types of fish that are mostly obtained from the catch of fishermen to be used as raw materials in the business of dried fish.

Factors Affecting the Quantity of Demand for Fresh Fish

Factors that affect the quantity of demand for fresh fish by dried fish makers were analyzed using multiple linear regression. This analysis was used to examine the effect of the independent variables, namely the price of dried fish, the price of fresh fish, the cost of ice, and the dummy variable of business scale on the quantity of demand for fresh fish by dried fish makers in Bengkulu City. The results of multiple linear regression analysis are presented in Table 3.

Table 3. Estimated Results of Demand for Fresh Fish by Dried Fish Makers

Variables	Regression Coefficient	Standard Error	t-value	Sig.
Constanta	197.588	47.891	4.126	0.000
Price of dried fish (Hik)	0.000	0.001	0.786	0.434
Price of fresh fish (His)	-0.001	0.006	-0.119	0.906
Price of ice (Hes)	-0.110	0.037	-2.968	0.004*
Dummy variable business scale (D)	151.818	11.752	12.919	0.000*
R-Squared	0.702			
Adjusted R-Square	0.687			
F-value	47.717			
Sig. (F-value)	0.000*			

Source: Primary Data Processed, 2022

Description *: Significant at the 95% confidence level

Based on the results of data analysis, the function model of the quantity of demand for fresh fish by dried fish makers in Bengkulu City is as follows:

Jisd = 197,588 + 0,000 Hik – 0,001 His – 0,110 Hes + 151,818 D + e

R^2

The coefficient of determination (R^2) test is used to explain how much the model's ability to explain the variation of the dependent variable is. The value of the coefficient of determination of the demand for fresh fish by dried fish makers is 0.702. It means that the contribution of the independent variable consisting of the price of dried fish, the price of fresh fish, the price of ice, and a business scale dummy to the variations in the ups and downs of the value of the dependent variable is 70.2%. The remaining 29.8% contributes to other variables not included in the model used in this study. According to Sugiyono (2014), the value of R^2, or the coefficient of determination, is said to be good if it is above 0.5 because the value of R2 ranges from 0 to 1.

F-Test

The F-test or the simultaneous test is used to determine whether the variable price of dried fish, the price of fresh fish, the price of ice, and the business scale dummy affect the quantity of demand for fresh fish by dried fish makers. The F test results show that the calculated F's significant value is smaller than the 5% significance level (0.000 < 0.05). Then it was concluded that at the 5% level of significance, the independent variables, namely the price of dried fish, the price of fresh fish, the price of ice, and the dummy of the business scale simultaneously or simultaneously gave an effect on the dependent variable, namely the quantity of demand for fresh fish by dried fish makers.

t-test

The t-test or partial test is a partial test of the independent variable on the dependent variable to find out how far the influence of the independent variables on the dependent variable is (Sugiyono, 2014). The partial effect (of each) of the independent variables in this study, namely the price of dried fish, the price of fresh fish, the price of ice, and the business scale dummy on the dependent variable (quantity of demand for fresh fish by dried fish makers) can be known through the t-test.

The results of the t-test can be described as follows:

1. Price of Dried Fish

The estimation results found that the significance value of the variable price of dried fish is greater than the 5% significance level (0.434 > 0.05). The price of dried fish (product) does not affect the quantity of demand for fresh fish by dried fish makers because, according to the dried fish makers, the price range of dried fish, if there is an increase or decrease, is not too far. It has not prompted the dried fish makers to increase demand for fresh fish if the price drops, and vice versa. The results of this study are supported by the research of Gultom et al. (2017) and Fitrianto et al. (2021). Gultom et al. (2017) in his study stated that the price of fried foods (products) did not affect the demand for wheat flour by fried food traders in Bandar Lampung City. Fitrianto et al. (2021) revealed that the price of *tempe* (product) did not affect the demand for soybeans in the *tempe* industry in South Semarang District.

2. Price of Fresh Fish

The price of the goods concerned, in this case, the price of fresh fish, is significantly greater than the 5% level of significance (0.906 > 0.05). It means that the price of fresh fish does not affect the quantity of demand for fresh fish by dried fish makers. This situation is caused by the presence of fresh fish as raw material in producing dried fish so that although the price of fresh fish increases, the demand for fresh fish does not affect it because the business of making dried fish is impossible to produce without fresh fish. In addition, fresh fish is a fishery product that is easily damaged, so dried fish makers will not buy large quantities of fresh fish for stock if the price of fresh fish drops. This result is in line with Suparyana's research (2017) which states that the price of bananas does not affect the quantity of demand for bananas by fried food traders in Denpasar, Bali. The results of this study are also in line with Rozalina and Bahagia (2017) research, which states that the price of milkfish has no effect on the demand for milkfish in the Peureulak Market, East Aceh Regency.

3. Price of Ice

The multiple linear regression estimation results show that the value of the ice price regression coefficient is -0.110, with a significantly smaller value than the 5% significance level (0.004 < 0.05). So, it can be interpreted that the price of ice harms the quantity of demand for fresh fish by dried fish makers. If the price of ice increases, the quantity demanded of fresh fish by dried fish makers will decrease. If the price of ice drops, the quantity demanded of fresh fish by dried fish makers will increase. It is because ice is a complementary input in making dried fish. This result is in line with the law of demand, where the demand for an item will increase if the price is low. At the same time, the demand for goods will decrease if the price of the goods is high. Or in other words, demand is inversely proportional to the price of the goods in question. It is also in line with the research of Ikhsan et al. (2019) that the price of fish, which is a complementary item, negatively affects the demand for white tofu in the city of Medan.

4. Dummy of The Business Scale

The results of the multiple linear regression estimation on the business scale variable obtained that the regression coefficient value for the business scale was 151.818 with a significant value of less than 5% (0.000 < 0.05). It means that the business scale variable positively affects the quantity of demand for fresh fish by dried fish makers. If the business scale increases, the demand for fresh fish from dried fish makers will also increase. Dried fish

makers with large-scale businesses will generally receive higher revenue and income compared to dried fish makers with small-scale businesses. It causes the demand for fresh fish by large-scale dried fish makers to be higher than those of small-scale dried fish makers. This result is in line with the opinion of Maryati et al. (2017), which states that generally, if operating income increases, producers will wish to expand their business scale, resulting in increased demand for inputs. The development of the business scale will increase income. In other words, business scale positively affects the number of input requests. The results of previous research by Sari et al. (2017) also showed that the business scale variable positively impacted the demand for catfish-by-catfish *pecel* traders in Bandar Lampung City.

CONCLUSION

Sources of raw materials for fresh fish in the business of making dried fish in Bengkulu City are 88% sourced from purchases, where the place to get the most income is from direct fishermen. The quantity of raw material used is 10,563 Kg per production process, which is dominated by the type of *beledang* fish.

Meanwhile, the factors that partially affect the quantity of demand for fresh fish by dried fish makers are the price of ice and the dummy of the business scale at the 95% confidence level.

SUGGESTION

The government should pay more attention to MSMEs, such as the business of making dried fish, for example, by distributing assistance in the production process considering the limited capital owned by dried fish makers in operating their business.

In procuring raw materials, dried fish makers should utilize many available sources of raw materials to maintain production continuity.

REFERENCES

Badan Pusat Statistik Indonesia. (2021). *Statistik Indonesia 2021*. Jakarta. Retrieved from https://www.bps.go.id/publication/2021/02/26/938316574c78772f27e9b477/statistik-indonesia-2021.html

Badan Pusat Statistik Provinsi Bengkulu. (2021). *Provinsi Bengkulu Dalam Angka 2021*. Bengkulu. Retrieved from https://bengkulu.bps.go.id/publication/2021/02/26/633c571c715c9dadf1b7f53c/provinsi-bengkulu-dalam-angka-2021.html

Budiyanti, S. A., Setyowati, N., & Agustono, A. (2019). Peran Sektor Pertanian, Kehutanan, dan Perikanan Terhadap Distribusi Pendapatan di Kabupaten Gunungkidul. *Jurnal AGRISTA*, 7(2), 1-7.

Fitrianto, R. F., Prasetyo, E., & Roessali, W. (2021). Analisis Permintaan Kedelai Pada Industri Tempe di Kecamatan Semarang Selatan. *Jurnal Sungkai*, 9(1), 7-18.

Gultom, Y. A., Sayekti, W.D., & Kasymir, E. (2017). Analisis Permintaan Tepung Terigu Oleh Pedagang Gorengan di Kota Bandar Lampung. *Jurnal Ilmu Ilmu Agribisnis: Journal of Agribusiness Science*, 5(2), 156-163. http://doi.org/10.23960/jiia.v5i2.1653

Ikhsan, M. F., Astuti, R., & Saragih, F. H. (2019). Faktor-Faktor Yang Mempengaruhi Permintaan Tahu Putih di Kota Medan. *Jurnal Agriuma*, 1(1), 1-10. http://doi.org/10.31289/agr.v1i1.2291

Maryati, S., Supartiningsih, S., Hidayati, A., Efendy, E., & Rosmilawati, R. (2017). Analisis Permintaan Kedelai Pada

Agroindustri Berbasis Kedelai di Kota Mataram. *Jurnal Agrimansion*, 18(1), 19-31. https://doi.org/10.29303/agrimansion.v18i1.24

Nurlina, N. (2018). Analisis Keterkaitan Sub Sektor Perikanan Dengan Sektor Lain Pada Perekonomian di Provinsi Aceh. *Jurnal Samudra Ekonomika*, 2(1), 20-29. https://doi.org/10.1234/jse.v2i1.774

Putra, M. R. A., Atmanto, D., & Azizah, D. F. (2015). Analisis Sistem Pengadaan Barang/Jasa Dalam Meningkatkan Pengendalian Intern (Studi Pada PT. Pembangkitan Jawa-Bali (PJB) Unit Pembangkit Paiton). *Jurnal Administrasi Bisnis*, 2(2), 1-11.

Reswita, R., Suryanti, M., & Yuliarti, E. (2018). Penganekaragaman Konsumsi Pangan Rumah Tangga Masyarakat Pesisir di Kota Bengkulu Melalui Teknologi Pengolahan Produk Hasil Laut dan Non Hasil Laut. *Dharma Raflesia*, 16(2), 131-142. https://doi.org/10.33369/dr.v16i2.6450

Rozalina, R., & Bahagia, B. (2017). Faktor-Faktor Yang Mempengaruhi Permintaan Ikan Bandeng (Chanos-chanos) di Pasar Peureulak Kabupaten Aceh Timur. *Jurnal Penelitian Agrisamudra*, 4(2), 39-48. http://doi.org/10.33059/jpas.v4i2.283

Sari, M. A., Murniati, K., & Sayekti, W. D. (2017). Analisis Permintaan Ikan Lele (Clarias sp) Oleh Pedagang Pecel Lele di Kota Bandar Lampung. *Jurnal Ilmu-Ilmu Agribisnis*, 5(2), 149-155. http://doi.org/10.23960/jiia.v5i2.1652

Sugiyono. (2014). *Metode Penelitian Bisnis* (Edisi Ke-18). Bandung: Alfabeta.

Sumantri, B., Purwoko, A., & Sriyoto, S. (2016). Analisis Kinerja Usaha Pembuatan Ikan Kering di Kota Bengkulu. *Jurnal Agrisep*, 16(1), 15-26. https://doi.org/10.31186/jagrisep.15.1.15-26

Suparyana, P. K. (2017). Analisis Permintaan Buah Pisang Oleh Pedagang Gorengan di Kota Denpasar, Bali. *AGRIMETA: Jurnal Pertanian Berbasis Keseimbangan Ekosistem*, 7(14), 36-43. Retrieved from

Suryani & Hendryadi. (2015). *Metode Riset Kuantitatif: Teori dan Aplikasi Pada Penelitian Bidang Manajemen dan Ekonomi Islam*. Jakarta: Kencana.