



Marketing Analysis of Wedgefish and Giant Guitarfish in Tegalsari Fishing Port, Indonesia

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ABSTRACT

Most of the fishermen in Tegal City use Cantrang (Danish seine). The by-catch products from Cantrang includes Wedgefish and Giant Guitarfish. The aim of this study was to determine the marketing of Wedgefish and Giant Guitarfish from fishermen to consumers or traders from outside the city and to determine the value of marketing margins and fisherman's share as well as to determine the marketing efficiency of marketing Wedgefish and Giant Guitarfish in Tegal City. The research method used is quantitative descriptive method with the sampling method is purposive sampling. The data analysis method uses marketing margin analysis and fisherman's share. There are three marketing channels for Wedgefish and Giant Guitarfish in Tegal City. Marketing is divided into two, namely meat and fins. The value of the marketing margin in channels I and II is 78% and the marketing margin in channel III is 30%. The value of fisherman's share in marketing channels I and II is 22% and channel III is 70%. The relationship between marketing margin and fisherman's share is marketing efficiency, of the three marketing channels, channel III Wedgefish is an efficient channel because the value of fisherman's share is higher than the marketing margin. Policy recommendations that can be suggested are (1) limiting the catch of Wedgefish and Giant Guitarfish; (2) Supervision of both export and domestic trade; (3) Providing insight regarding the conditions of Wedgefish and Giant Guitarfish which are included in the CITES II category.

Keywords: Fisherman's Share; Giant Guitarfish; Marketing Efficiency; Marketing Margins; Wedgefish

1. Introduction

One of the catches from Cantrang fishing gear is Stingrays. The types of stingrays are very diverse, from the stingrays which are usually used for smoked fish to the rare stingrays such as Wedgefish (*Rhincobatus* sp.) and Giant Guitarfish (*Glaucoptegus* sp.). These two types of Stingrays are known to have slow growth and reproduction so they are very few in existence. Wedgefish and Giant Guitarfish have a body shape similar to the shark family and have fins. The body part that is often taken from Wedgefish and Giant Guitarfish is the fins (Dharmadi & Fahmi, 2007).

Wedgefish and Giant Guitarfish are by-catches from Cantrang fishing gear. This research was carried out at the Coastal Fishing Port (PPP)Tegalsari is a port that uses a large number of Cantrang fishing fleets, amounting to 584 fleets in 2018 (PPP Tegalsari, 2020). Wedgefish and Giant Guitarfish are known to see the number of catches continuing to decline every year (Tirtandanu, Suprpto & Suwarso, 2018). For comparison, according to Wijayanti, Abrari & Fitriana (2018), the *Himantura* sp. is a stingray species that has a fast and abundant reproductive process and is not a selective species. type food certain. These ray species also live together in similar numbers. Causes of population decline this type of fish resulting from arrests using Cantrang. However, the stingrays become a by-catch or by-catch. The high price of fins on the market means that this fish is still caught even though it is not the main catch from Cantrang (Fahmi, Adrim & Dharmadi, 2008). Wedgefish and Giant Guitarfish are included in the Critically Endangered category (CR) by the International Union for Conservation of Nature because its population is decreasing and habitat conditions are increasingly threatening its population (Yuwandana, Agustina, Haqi & Simeon, 2020). Fish Wedgefish and Giant Guitarfish in 2019 were also included in CITES appendix II category in August 2019 (Yuwandana et al., 2020). CITES Appendix II means that trade in this species must be managed with strict regulations so that its use does not threaten its population numbers. (Rahman et al., 2017).

Wedgefish (*Rhincobatus* sp.) and the Stingray (*Glaucoptegus* sp.) belong to the class Chondrichthyans, order Rhinopristiformes (Yuwandana et al., 2020). Wedgefish and Giant Guitarfish are widely used both from meat and fins. The meat is often used by coastal communities for consumption because it has a good texture and taste. The meat of Wedgefish (*Rhincobatus* sp) is also marketed for the export market in dry form or in salted condition. For the local market the meat is processed in form fish smoke so that sometimes people or processors do not differentiate between what stingray is smoked because they are more familiar with the smoked fish used is stingray regardless of the species of stingray. Objective export market the main thing is China is the biggest market because its fins are priced very high, ranging from US\$ 185/Kg to US\$ 276/Kg or if converted to the rupiah exchange rate IDR 14,500 to

IDR 2,682,500/Kg to IDR 4,002,000/Kg for luxury dishes and served in soup. Apart from consuming the skin of the Wedgefish (*Rhynchobatus* sp) it can be used as craft which is valuable economy high, such as wallets and bags. Body parts that are not used, such as the head, can be used as fertilizer or fish feed, while the snout or cartilage can be used as gelatin. The purpose of this research is to analyze marketing distribution channels and value chains, analyze marketing margins from marketers, analyze fisherman's share calculations, analyze the value chain of Wedgefish and Giant Guitarfish marketing in Tegal City to various market destinations.

2. Research Method

This research was conducted at the Tegalsari Coastal Fishing Port (PPP), Tegal City on 10 - 27 August 2020. Data collection in the field used an interview method based on a questionnaire, the interview method was a question and answer interaction between the researcher and Linarwati respondents, Fathoni & Minarsih, (2016). Interviews were conducted with fishermen, traders and fish processors who sell or process Wedgefish and Giant Guitarfish. The sampling method is purposive sampling, purposive sampling is a method of determining samples based on criteria or conditions that have been determined by the researcher. The criteria determined in this research are fishermen who operate cantrang fishing gear, who have caught Wedgefish and Giant Guitarfish as well as traders who sell Wedgefish and Giant Guitarfish (Sugiyono, 2017) and the data analysis methods used are marketing margin, fisherman's share and value chain analysis.

2.1 Research Location and Time

This research was conducted in Tegal City, specifically in the PPP Tegalsari area, which was carried out on 10 – 27 August 2020. The location was chosen at PPP Tegalsari which is located in Tegal City as one of the bases for boats with Cantrang fishing gear. The Cantrang fishing fleet at PPP Tegalsari has a Gross tonnage (GT) of between 70 – 100 GT with demersal fish catches which enable the landing of Wedgefish and Giant Guitarfish.



Fig. 1. - Location of research

PPP Tegalsari is located in Tegal City with coordinates 109°10'0" East Longitude and 07°01' 0" South Latitude (Istiqomah, Pramonowibowo & Dewi, 2017) precisely on Jalan Blanak No. 10 C Tegalsari Village, District. West Tegal, Tegal City. PPP Tegalsari is included in the Coastal Fishing Port category. PPP Tegalsari has two Fish Auction Places (TPI), namely TPI Harbor and TPI Tegalsari (Istiqomah et al., 2017). PPP Tegalsari is a fishing port that is included in the Type C category. PPP Tegalsari was built by the regional government to support fishing activities that utilize fish resources in Fisheries Management Area (WPP) 712 which includes the Java Sea. PPP Tegalsari provides services to fishing vessels when they dock or depart at the port and facilitates fish processing activities (Agustina et al., 2019)

2.2 Types and Methods of Data Collection

The types of data used in this research are primary data and secondary data. Primary data is data taken directly in the field by researchers and is the main data, secondary data is supporting data obtained from agencies, institutions or scientific references. To determine the number of data sources, the Slovin sample calculation formula in Sari et al (2017) can be used as follows:

$$n = \frac{N}{1+N(a)^2} (1)$$

Where:

n = Number of samples/Amount of Samples

N = Total population/Amount of Population

α = Error level (15% = 0.15)/Level of Error

The number of respondents based on calculations using the formula above was 43 respondents from a population of 1023 fishermen. The sample of traders did not use a sampling method because the number of traders selling Wedgefish and Giant Guitarfish was only 3 (three) sellers. Wedgefish and Giant Guitarfish traders at PPP Tegalsari are middlemen or large traders. These traders only sell Wedgefish and Giant Guitarfish and the purchasing system for Wedgefish and Giant Guitarfish by traders in fishermen is through direct bargaining without going through the auction process.

2.3 Marketing Margin and Profit Margin Analysis

Marketing Margin Analysis is used to find out how big the difference between the selling price and buying price of each marketing actor is (Adhim and Soesilowati, 2018). The marketing margin will be greater if the marketing chain is longer. The following is the formula used in the Marketing Margin analysis in this research, the Marketing Margin formula according to Pamungkas. (2017) are as follows:

$$M_{ji} = P_{si} - P_{bi} \quad (2)$$

Where:

m_{ji} = Margin of the i -level marketing institution/marketing margin in step – i

P_{si} = Selling price of the i -level marketing institution/Selling price in stage – i

P_{bi} = Purchase price of the i -level marketing institution/Buying price in stage – i

For Marketing Margin analysis at merchant level

$$MP = Ku + BP$$

Where:

MP = Marketing Margin

Ku = Profit

BP = Marketing Costs

2.4 Fisherman's share analysis

Fisherman's share analysis is used to find out how big a share the producer gets, the producer in this case is the fisherman. This analysis can determine whether the price received is appropriate or not. Whether or not the marketing chain is efficient can be influenced by the Fisherman's share value. According to Fakhruddin et al (2017), the Fisherman's share value has a value decision point if the value is 0 – 50% which is in the inefficient category and the value of 51 – 100% is in the efficient category. Fisherman's share analysis can be formulated as follows (Bambang, 2018):

$$F_s = \frac{HE - \text{Margin Total}}{HE} \times 100\% \quad (3)$$

Where:

F_s = Fisherman's share

HE = Price at consumer level (Rp/Kg)/Price in consumer stage (Rp/Kg)

3. Result and Discussion

Marketing is a series or process that can move products from the producer point to the consumer point. There are three important things in marketing, namely services, producer point and consumer point (Abidin et al., 2017). The marketing aspects in this research are marketing margin, fisherman's share and the marketing value chain of Wedgefish and Giant Guitarfish. The marketing process for Wedgefish and Giant Guitarfish in Tegal City is divided into fins and meat. There are three marketing channels for Wedgefish and two marketing channels for Giant Guitarfish. The following is the marketing process for Wedgefish and Giant Guitarfish in Tegal City according to Fig. 2 below.

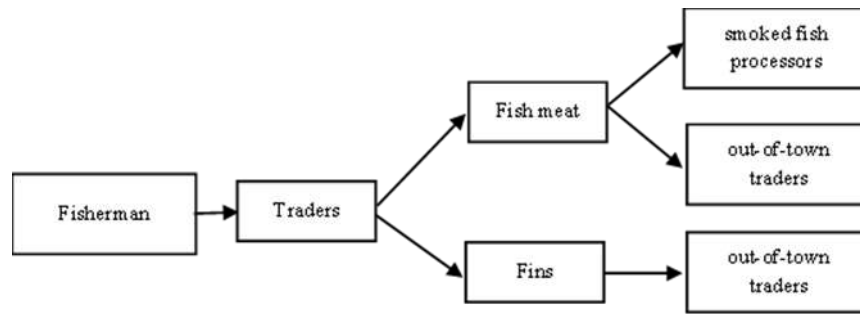


Fig. 2 - Marketing Channel of Wedgefish and Giant Guitarfish in Tegal City.

There are several marketing institutions in Tegal City. Marketing institutions in other cities are Juragan Fishermen, Traders at TPI, smoked fish processors and out-of-town traders. The first channel starts from fishermen or ships then goes to traders at TPI. Traders at TPI separate the meat and fins of Wedgefish and Giant Guitarfish, for the first channel traders sell the meat to smoked fish processors and out-of-town traders. The second marketing channel starts from Juragan Fishermen then goes to Wedgefish and Giant Guitarfish traders at TPI, the traders then sell the fins separately to traders from outside the city or sell merchandise outside the city. The third marketing channel starts from the fisherman skipper or ship then goes to the trader, the trader then sells the meat and is bought by the smoked fish processor. The process of purchasing Wedgefish and Giant Guitarfish by traders at TPI is not through an auction process but through "wholesale" purchases or traders can buy directly through the boss with the boss offering a price and the trader making a price offer.

4.1 Marketing Margin and Fisherman's share

Marketing Margin is the size of the difference in value at the consumer and producer level. Marketing margin is obtained from the difference in prices paid by consumers and at the level of marketing institutions to fishermen (Khairushubhi, Wijayanto & Hapsari, 2017). Fisherman's share is the percentage of selling price at the producer or fisherman level to the price at the retailer or final processor level. Fisherman's share can be used to determine marketing efficiency with Wahiu quantitative analysis, Suhaeni & Sondakh (2018). Marketing margin and Fisherman's share have an inverse ratio where if the marketing margin value is high then the value of Fisherman's share is low and the price received by fishermen is smaller. Marketing efficiency research conducted by Basuki, Budiyanto & Yusuf (2020) shows that if the fisherman's share received by fishermen is >50%, it shows that the marketing included already efficient, whereas if the share received by fishermen is <50% then the marketing is not efficient.

Table 1 - Marketing margin and Fisherman's share Wedgefish and Giant Guitarfish.

Marketing Actors/ Actor	Fish Section/ Part of Fish	Price/Price		Marketing Margin/ Marketing Margins (Rp/Kg)	Total Marketing Margin/ Total of Marketing Margin (Rp/Kg)	Marketing Margin Percentage/ Presentation of Marketing margin	Fisherman's share
		Buy/ Buying (Rp/Kg)	Sell/ Selling (Rp/Kg)				
Marketing Channel 1 and 2 (Meat and Fin) Wedgefish							
Fisherman		18,763	39,382	20,618			
Fresh fish trader/ Seller	Meat Fin	39,382	16,283 694,928	44,675	65,384	78%	22%
Marketing Channel 3 (Processing) Wedgefish/							
Fisherman		18,763	39,382	20,618			
Fresh Fish Trader		39,382	16,283*	-23,099	7,856	30%	70%
Processor		16,283*	26,619	10,336			
Consume		28,571					
Marketing Actors/ Actor	Fish Section/ Part of Fish	Price/Price		Marketing Margin/ Marketing Margins (Rp/Kg)	Total Marketing Margin/ Total of Marketing Margin	Marketing Margin Percentage/ Presentation of Marketing margin	Fisherman's share
		Buy/ Buying (Rp/Kg)	Sell/ Selling (Rp/Kg)				
Marketing Channel 1 and 2 (Meat and Fin) Giant Guitarfish							
Fisherman		18,763	23,630	4,866			
Fresh fish trader	Meat Fin	23,630	15,600 394,000	29,810	34,677	65%	35%
Fresh Fish Consumers	Meat Fin	15,600	- -	- -	- -	- -	- -

Information: * The price of meat from Wedgefish and Giant Guitarfish is equivalent to the price of other Stingray meat

There are three marketing channels for Wedgefish and Giant Guitarfish in Tegal City. Total marketing margin on channels one and two as big as Rp. 65,384/Kg. The marketing margin percentage on marketing channels one and two is 78%. Fisherman's share value in marketing channels one and two is 22%. The marketing margin percentage in channel three is 51% with a total marketing margin of IDR 7,856/Kg. Of the three marketing channels, the largest marketing margin value is in the first and second channels with a percentage of 78% and a total marketing margin of IDR 65,384/Kg. Marketing channels one and two have the same marketing margin because the marketers separate the meat and fin parts, whereas in marketing channel III the marketing margin is high due to the high selling price of product smoked preparation of Wedgefish fish meat. This was reinforced by Mufrihah, Triarso & Kurohman(2019) which states that the level of marketing margin can be an indicator of whether a marketing system is efficient or not, but in fisheries marketing the marketing margin is not the only factor determining marketing efficiency. Determining marketing efficiency in the fisheries marketing system is by comparing the value of the fisherman's share with the marketing margin.

There are three marketing channels for Wedgefish and two marketing channels for Giant Guitarfish in Tegal City. Each marketing channel has a different Fisherman's share value. Wedgefish's first and second channels have a Fisherman's share value of 22%. Wedgefish's third channel with fisherman's share of 70%. Giant Guitarfish's first and second channels have a Fisherman's share value of 35%. Fisherman's share has a meaning that is inversely proportional to marketing margin, the greater the fisherman's share, the higher the share obtained by fishermen. This is confirmed by the results of the study (Hasanah, Ambarsari & Gunawan, 2019) which states that fisherman's share can be a measure of the level of marketing efficiency. Fisherman's share is a comparison of the price received by fishermen to the price received by consumers.

The results of marketing margin and fisherman share analysis show that traders receive the most profits from Wedgefish and Giant Guitarfish. Trader Wedgefish and Giant Guitarfish at PPP Tegalsari get the biggest profits from selling fins. The price of fins reaches IDR 694,000/Kg which is due to high market demand. However, the availability of resources is limited. Fishermen only get a small profit because the fishermen sell the Wedgefish and Giant Guitarfish as whole parts without separating them into parts, as in traders where the fins and meat of the Wedgefish and Giant Guitarfish are sold separately. There needs to be regulation of the sale and purchase of the fins of Wedgefish and Giant Guitarfish for both domestic and foreign sales due to their status in the CITES II category.

Marketing efficiency in a marketing system can be determined by the percentage of Fisherman's share and marketing margins. Wedgefish's marketing channels I and II show that the fisherman's share is 22% and the marketing margin is 78%. Marketing channel III Wedgefish has a fisherman's share value of 70% and a marketing margin of 30%. The marketing margin and fisherman share values on Giant Guitarfish channels I and II are 65% and 35%. Marketing channels I and II of Wedgefish and Giant Guitarfish show inefficient marketing channels because the selling price of fins is very high when compared to the price of stingray meat. The high price of fins further increases profits at the trader level. Marketing efficiency research conducted by Basuki et al (2020) shows that if the fisherman's share received by fishermen is >50%, it shows that the marketing is efficient, whereas if the share received by fishermen is <50%, then the marketing is not efficient.

3.2 Value Chain

The value chain is a series of activities to produce a product or service Wijayanto (2015). The Wedgefish and Giant Guitarfish marketing systems have a series of activities from producers to consumers. There are several factors that influence the marketing value chain of Wedgefish and Giant Guitarfish in the city of Tegal. Factors that influence include purchase price, cost of production, profit margin, selling price, percentage per population and percentage of profit per individual.

Table 2 - Value Chain of Wedgefish and Giant Guitarfish in Tegalsari Fishing Port.

Value Chain Factors	Actor				
	Fisherman	Rays Trader		Smoked Processor	Fish Consumer
		Meat	Fin		
Marketing Channels I and II					
Purchase Price (Rp/Kg)	-	39,382		-	Meat 16,283 Fins 694,928
Main Production Price (Rp/Kg)	18,763	41,462		-	-
Selling Price (Rp/Kg)	39,382	16,283	694,928	-	-
Profit Margin (Rp/Kg)	20,618	42,505		-	-
Percentage / population	32.66%	67.33%		-	-
Marketing Channel III/					
Purchase Price (Rp/Kg)/	-	6,892	-	16,283	28,571
Main Production Price (Rp/Kg)	11,097	12,875	-	19,980	-
Selling Price (Rp/Kg)	22,003	14,587	-	28,571	-
Profit Margin (Rp/Kg)	10,906	1,712	-	8,591	-
Percentage / population	17%	42.52%	-	40.47%	-

Based on Table 2, it can be seen the Value Chain in the marketing system of Wedgefish and Giant Guitarfish in Tegal City. According to Mangifera, (2015) the value chain is a whole production activity from output to input, there are large differences in the percentage per individual between fishermen, traders and fish processors. This difference occurs due to differences in the number of fishermen, traders and fish processors in each marketing institution. The percentage of individual crew members is certainly very small because the number of crew members is very large when compared to the number of processors, which is only 1 processor. The largest percentage per population is among fin traders because the selling price of fins is very high, resulting in high profits and added value in the fin trade. The value chain is influenced by several factors, such as in research by Miftahurrahmi et al (2017), the value chain has several factors such as purchasing price (Rp/Kg), cost of production (Rp/Kg), selling price (Rp/Kg), marketing margin (Rp), percentage per population (person) and percentage per individual. These factors apply to all Wedgefish and Giant Guitarfish marketing actors.

4. Conclusions

There are three marketing channels for Wedgefish and two marketing channels for Giant Guitarfish. Marketing channel 1 is: Fishermen – Traders – Meat traders – Out of town traders. Marketing Channel 2 is: Fishermen – Traders – Fined traders – Out of town traders. Marketing Channel 3 is: Fishermen – Meat traders – Smoked fish processors – Market traders. The marketing margin percentage value in channels 1 and II is 78% with a total marketing margin of IDR 65,384/Kg and the marketing margin for channel III is 30% with a total marketing margin of IDR 7,856/Kg. Fisherman's share value on marketing channels 1 and 2 is 22%. Fisherman's share value for marketing channel 3 is 70%. Marketing businesses for Wedgefish and Giant Guitarfish in Tegal City with the largest population percentage are smoked fish processors at 40.47% and traders at 42.52% and 67.33%. The marketing actor with the largest profit margin is the trader from selling fins amounting to IDR 42,505/Kg. Marketing efficiency in a marketing system can be determined by the percentage of Fisherman's share and marketing margin. Wedgefish's marketing channels I and II show that the fisherman's share is 22% and the marketing margin is 78%. Marketing channel III Wedgefish has a fisherman's share value of 70% and a marketing margin of 30%. The marketing margin and fisherman share values on Giant Guitarfish channels I and II are 65% and 35%. Marketing channels I and II of Wedgefish and Giant Guitarfish show inefficient marketing channels because the selling price of fins is very high when compared to the price of stingray meat. The high price of fins further increases profits at the trader level.

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