Marketing analysis of tiger shrimp (*Penaeus monodon*) (case: Belawan Sicanang Village, Medan Belawan District, Medan, North Sumatra)

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Abstract. Shrimp is an important export commodity in North Sumatra. Demand for shrimp will continue to increase with the increasing need for consumption and industrial needs such as food, pharmaceuticals, and cosmetics. The difference in prices at the farmer level with market prices and export prices, and fluctuations of price are faced by shrimp farmers. The objectives of the research are to examine the marketing channel, marketing function, marketing costs, marketing margin, share margin, price spread and the obstacles faced in marketing. The research area is determined purposively in Sicanang Village. The sampling method used is a census, with 37 sample size. Quantitative and qualitative analysis are used to analysis. The results showed that there are 3 marketing channels in the area, and farmers perform 6 marketing functions, while collector traders and retailers perform 8 marketing functions. There is a difference in price and share margin in each channel. Price in channel I is highest while share margin of farmers in channel III is highest. The lack of seed fires and infrastructure, unorganized cooperatives, wet weather during the rainy season, waste from Electric Steam Power Plant Industry, the fluctuation of selling price are the obstacles faced in the research area.

1. Introduction

The development of pond aquaculture is relatively fast compared to other fishery commodities, this is determined by four things, namely the presence of high market absorption, enabling large profits, large business margins, mastery of hatchery technology and the development of industries and other means of production, so that the procurement of production facilities can be relatively on price, on time, on quantity, and on quality, as well as the suitability of natural resources in Indonesia [1].

Tiger shrimp, often referred to as Black Shrimp, are a species of sea shrimp that can have large sizes. In the wild, tiger shrimps can reach a size of 35 cm with a weight of 260 grams, while in pond rearing, their body length can only reach 20 cm weighing 140 grams. The tiger shrimp commodity (Penaeus monodon) has bright prospects in the future and contribute to increasing the country's foreign exchange from the fisheries sector [2].

In North Sumatera, tiger shrimps are also a favourite commodity for consumers. It is not uncommon for tiger shrimps to be more demanded than supply. Table 1 explains that the production of tiger shrimps in North Sumatra in 2010-2016 increased in 2011-2013, and in 2014-2015 there was a decrease in tiger shrimp production due to several factors such as decreased demand, changing climate

and so on, but in 2016 tiger shrimp production has increased again. The selling price of tiger shrimps in Belawan Sicanang Village at the level of farmers as producers is IDR. 85,000 while at the retail level it is 95,000, so the position of tiger shrimp farmers as producers is the most disprofited, due to the difference in prices received between farmers and retailers that are far different. In this case, tiger shrimp farmers cannot do much, because farmers are only the price takers, so that the role of retailers is more prominent and the profits obtained by retailers are greater than the profits received by farmers and this problem causes losses for farmers.

Table 1. Tiger shrimp production, North Sumatra Province, 2010-2016 [3].

Years	Production (Ton)
2010	7,165.3
2011	7,579.6
2012	7,579.6
2013	9,627.3
2014	8,325.9
2015	5,635.1
2016	11,423.0

2. Materials and research methods

2.1. Data
The data collected in this study are primary data and secondary data. Primary data obtained from direct interviews with parties related to this research or samples with a list of questions that have been prepared in advance according to the objectives and needs of the study.

2.2. Analysis method of marketing tiger shrimp
To solve problems 1 and 2 used descriptive analysis (by describing) based on a survey in the research area, namely by analysing: a. The types of marketing channels in each marketing channel in the research area b. Marketing functions used by traders. To solve problem 3, namely marketing costs and marketing margins of tiger shrimp products at the marketing agency level in the marketing channel in Medan Belawan, namely by calculating the cost, marketing margin, price spread and Share Margin of each intermediary agency on various marketing channels selected, with the help of the formula:

a. Marketing costs

$$Bp = Bp1 + Bp2 + \ldots + Bpn \qquad (1)$$

Where:
Bp = Marketing costs for tiger shrimps
Bp1 + ... + Bpn = Marketing costs for tiger shrimp products in each of the marketing channels

b. Marketing profit

$$Kp = Kp1 + Kp2 + \ldots + Kpn \qquad (2)$$

Where:
Kp = Profit Marketing of tiger shrimp products
Kp1 +… + Kpn = Profit from marketing tiger shrimp products in every marketing channels

c. Marketing margin

$$M = Pr - Pf \; atau \; M = Bp + Kp \qquad (3)$$

Where:

M = Marketing margin of tiger shrimp products

Pr = Price of tiger shrimp products at the consumer level

Pf = Price of tiger shrimp product at the producer level

Bp: Marketing costs (IDR / kg)

Kp: Marketing profit (IDR / kg)

d. Share margin

To calculate the Share Margin received by each marketing agency, a formula is used:

$$Sm = \frac{Pp}{Pk} \qquad (4)$$

Where:

Sm = Share Margin (%)

Pp = Price received by producers and traders (IDR)

Pk = price paid by consumers (IDR) [4].

e. The Price Spread is obtained by grouping trading costs according to the same cost component.

For problem 4, to determine the obstacles faced by tiger shrimp farmers using descriptively analysed.

3. Results and discussion

3.1. Tiger shrimp marketing channels in Belawan Sicanang Village

There are 3 tiger shrimp marketing channels in Belawan Sicanang Village, namely:

1. Channel I, namely: Farmers - Collector Traders - Retailers-Consumers
2. Channel II, namely: Farmers - Retailers - Consumers
3. Channel III, namely; Farmers – Collector Traders – Consumers

3.2. Marketing functions

Table 2a and 2b show that every marketing agency performs almost all marketing functions. Producers perform 6 marketing functions, namely, the functions of purchasing, selling, packaging, financing, sorting and market information. The collector traders in this case perform 8 marketing functions. namely, purchasing, selling, packaging, storage, transportation, financing, sorting and market information. The retailer in this case performs 8 marketing functions, namely purchasing, selling, packaging, storing, transportation, financing, and sorting.

Table 2a. Marketing functions carried out by farmers and the Tiger Shrimp Marketing Institute in Belawan Sicanang Village.

No.	Marketing Function	Farmers	Collector traders	Consumers
1	Purchase	Yes	Yes	Yes
2	Sales	Yes	Yes	Yes
3	Transportation	No	Yes	Yes

Table 2b. Marketing functions carried out by farmers and the Tiger Shrimp Marketing Institute in Belawan Sicanang Village (Continue).

No.	Marketing Function	Farmers	Collector traders	Consumers
4	Packaging	Yes	Yes	Yes
5	Storage	No	Yes	Yes
6	Financing	Yes	Yes	Yes
7	Processing	No	No	Yes
8	Sorting	Yes	Yes	Yes
9	Market Information	Yes	Yes	No

Source: Primary Data Analysis, 2020.

3.3. Price spread, and share margin marketing of tiger shrimp

Table 3a and 3b show the smallest share margin in channel I, namely 84.33%. The marketing cost on channel I is IDR 1,310 / Kg. Share Margin Marketing cost in channel I is 1.31%. Meanwhile, in channel II, the Share Margin obtained is 87.69% and the Marketing Cost Share Margin is 2.05% and the marketing costs are IDR 2,000 / Kg. In channel III, you get a Share Margin of 89.01% and a Marketing Cost Share Margin of 1.05% with a marketing cost of IDR 1,000 / Kg.

Table 3a. Price spread, and share margin marketing of tiger shrimp on channels I, II and III.

Description	Price Spread (IDR)			Share Margin (%)		
	Channel I	Channel II	Channel III	Channel I	Channel II	Channel III
1. Farmers						
Farmer Selling Price (IDR/Kg)	85,000	85,500	85,000	84.33	87.69	89.01
2. Collector traders						
a. Purchase Price	85,000		85,000			
b. Labour	800		250	0.8		0.26
c. Transportation	250		150	0.25		0.16
d. Ice Cube	150		600	0.15		0.63
e. Rent						
f. Retribution						
g. Profit	4,800		9,500	4.8		9.95
h. Marketing Costs	1,200		1,000	1.2		1.05
i. Marketing Margin	6,000		10,500	6		10.99
j. Selling Price	91,000		95,500			
3. Retailers						
a. Purchase Price	91,000	85,500				
b. Labour						
c. Transportation	20	60		0.02	0.06	
d. Ice Cube	75	75		0.08	0.08	
e. Rent	14	1,365		0.01	1.40	
f. Retribution	1	500		0.00	0.51	

Table 3b. Price spread, and share margin marketing of tiger shrimp on channels I, II and III (Continue).

Description	Price Spread (IDR)			Share Margin (%)		
	Channel I	Channel II	Channel III	Channel I	Channel II	Channel III
g. Profit	9,690	10,000		9.6	10.26	
h. Marketing Costs	110	2,000		0.11	2.05	
i. Marketing Margin	9,800	12,000		9.7	12.31	
j. Selling price	100,800	97,500	95,500			

Source: Primary Data Analysis, 2020.

3.4. Constraints faced by tiger shrimp farmers

In the research area, farmers face several obstacles in marketing their products, among others are:

1. Tiger shrimps (fries) are difficult to find because the seller does not provide a definite schedule for supplying seeds to farmers, this has been complained by almost all farmers or about 26 people.
2. As many as 19 farmers explained that another obstacle in the tiger shrimp production process was wet weather or rainy days which affected the tiger shrimp cultivation process and caused a decrease in production.
3. As many as 15 farmers explained that another obstacle is the limited infrastructure such as bridges or damaged roads in the area.
4. Poorly organized association of fishery groups in the area.
5. As many as 10 farmers explained that another obstacle is that the waste from the Electric Steam Power Plant Industry which is close to the pond location affects the quality of pond water.
6. Farmers explained that another obstacle was that the selling price of farmers tended to fluctuate.

4. Conclusions

There are 3 marketing channels in the area, namely channel 1: Farmers-Collectors-Collector traders-Consumers, Channel 2: Farmers-Retailers-Consumers and Channel 3: Farmers-Collector traders-Consumers. Farmers perform 6 marketing functions, while collector traders and retailers perform 8 marketing functions. There is a difference in price and share margin. Price in channel I is highest while share margin of farmers in channel III is highest. Channel 1 gets a share margin of 84.33%, channel II is 87.69%, and channel III is 89.01%. The lack of seed fires and infrastructure, unorganized cooperatives, wet weather during the rainy season, waste from Electric Steam Power Plant Industry, the fluctuation of selling price are the obstacles faced in the research area.

References

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