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Research Article

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Fisheries Marketing Channels of Marmara Sea in Turkey

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Abstract The set of pathways and places through which products flow following their production, where they undergo processing, such as storage, packaging and transfer of ownership are all called "marketing channels". It is crucial that the goods produced in a given area are conducted to consumers on a timely and convenient manner, in good condition and at minimum cost. The flow through the distribution channels is of crucial importance, especially where perishable goods such as seafood are concerned, the flow through the distribution channels is of crucial importance.

The major intermediaries in seafood marketing channels are local traders/retailers, brokers, cooperatives, fish meal/fish oil factories, hotels, restaurants, seafood processing plants, grocery stores and retailers. As the goods flow through marketing channels to reach consumers, their prices increase exponentially due to the addition of the intermediaries' profits.

The main purpose of this study is to determine the structure of the marketing channels and marketing methods of aquaculture products in the Sea of Marmara, as well as to determine the fishermen's marketing channel preferences for various fish species and vessel sizes. The study is mainly based on original data obtained from a survey carried out in seven provinces located along the coast of the Sea of Marmara during the 2007/2008 fishing season, through face to face interviews with 258 vessel owners selected using 'stratified random sampling' method.

According to the results of the survey, the pressure by brokers is considered to be a significant factor in the market. A vast majority of fishermen (73.6%) prefer marketing their goods through brokers, whereas marketing through cooperatives remains at around 2%.

Keywords Fisheries marketing, marketing channel, market outlook

1. Introduction

Agricultural marketing is described in various sources as the set of all the activities from the decision about the quantity and quality of the goods to be produced, to the products' preparation for the market, standardization, storage and transportation and finally presentation to the consumer.

The set of pathways followed by the goods from their production area to the consumers is called a "marketing channel". It is very important that the goods produced in a given area are conducted to the consumers on a timely and convenient manner, in good condition and at minimum cost, especially for the marketing of easily perishable goods such as aquaculture products. As the goods flow through marketing channels to reach consumers, their prices increase exponentially with the addition of the intermediaries' profits.

The population of the seven provinces by the sea side in the Marmara Region represents almost half that of the total population of Turkey. The density of population intensifies the demand pressure and causes seafood prices to rise. Moreover, the importance of the region rises due to the fact it's location on the migration paths of delicious fish such as bonito and bluefish.

Consumption of fish/seafood is high due to of its dense population of the city of Istanbul and its central position with regard to business, tourism and culture. Most part of the fish caught in the Sea of Marmara is sold in Istanbul, which makes “Istanbul Wholesale Fish Market” the largest in Turkey, with a determining effect on fish prices countrywide.

Due to the specifics of the region, the supply is gradually decreasing owing to many adverse factors whereas the demand is continually on the rise, which is reflected in higher consumer prices, yet the fishermen themselves fail to benefit from this increase. The income level of fishermen remains unsatisfactory due to the factors such as climate and environmental conditions as well as having to deal with brokers as they are not organized to form cooperatives.

In this regard, "distribution" function is extremely important in fish marketing. Distribution covers all activities that bring the fish caught to the consumer, thus connecting production and consumption.

One of the major decisions a vessel owner has to take is to choose the right distribution channel and determine the physical distribution conditions for conveying the product to the required places in time, in good condition and with minimum cost.

This study explores fisheries in the Sea of Marmara with regard to marketing, particularly the structure and importance of marketing channels. Research findings were based on the original data obtained from face to face interviews with 258 vessel owners.

2. Material and Method

The research is based on a study conducted in the 7 cities (Istanbul, Kocaeli, Yalova, Bursa, Balıkesir, Çanakkale and Tekirdağ provinces) located on the coast of the Sea of Marmara, through face to face interviews, surveys and survey forms.

Following "Full Size" based classification, the arithmetic mean and standard deviation were calculated for each province and placed in the formula, allowing a confidence interval of 95% and an error margin of 5%. A sample size of 258 was deemed to be representative of the total number of 3445 vessel owners based on "Stratified Random Sampling Method".

In order to determine the survey sample size, the following formula was used [1]:

$$\mathrm{n} = \frac{N\ \sum(N_h {S_h}^2)}{N^2 D^2 + \sum(N_h {S_h}^2)}$$

The vessels were sorted according to size and fishing method into the following four groups: Group I: vessel size ≤ 8.99 m, Group II: vessel size from 9 to 15.99 m, Group III: vessel size from 16 to 25.99 m, and Group IV: vessel size ≥ 26 m. The number of vessels to be surveyed from each group was determined using “Stratified Random Sampling Method”, and the results are shown in Table 1.

Table 1: Distribution of the Number of Participants in Groups in Different Provinces

Groups/ Provinces	**Group I (<8.9m)**	**Group II (9-15.9m)**	**Group III (16-25.9m)**	**Group IV (>26m)**	**Total**
Istanbul	28	10	4	4	46
Çanakkale	30	6	3	2	41
Balıkesir	14	12	9	6	41
Kocaeli	26	2	1	1	30
Yalova	23	7	2	2	34
Tekirdağ	25	8	2	2	37
Bursa	18	6	3	2	29
Total	**164**	**51**	**24**	**19**	**258**

The data obtained from the surveys were organized, calculated and evaluated as absolute and proportional.

3. Research Findings

In general, the main channels, in the processing and marketing of agricultural products can be grouped under 5 categories, as; middlemen (traders, brokers, first buyers and wholesalers etc.), speculative brokers, organizations that facilitate marketing, and processors.

In fisheries products marketing system, the first recipient who buys the fish from the fishermen to pass to the other channels is generally called "middlemen". Every intermediary in the marketing channel has a distinct characteristic structure. The fishermen select the marketing channels they will use according to the type of fish they catch; the marketing tools, funding and staff they have available; their vessel; and the level of competition or cooperation with the other vessels in the system. The product's features also play an important role. More perishable products with higher prices should preferably be directly delivered to retailers and consumers as soon as possible.

The seafood marketing network in the Sea of Marmara is schematically represented in Figure 1, where various marketing channels of seafood supply to the market place can be seen, the most important of which are:

- Middlemen (Traders, brokers, first buyers and wholesalers etc.),
- Processors,
- Retailers,
- Organizations facilitating marketing (cooperatives),
- Service sector (Restaurants, hotels etc.)

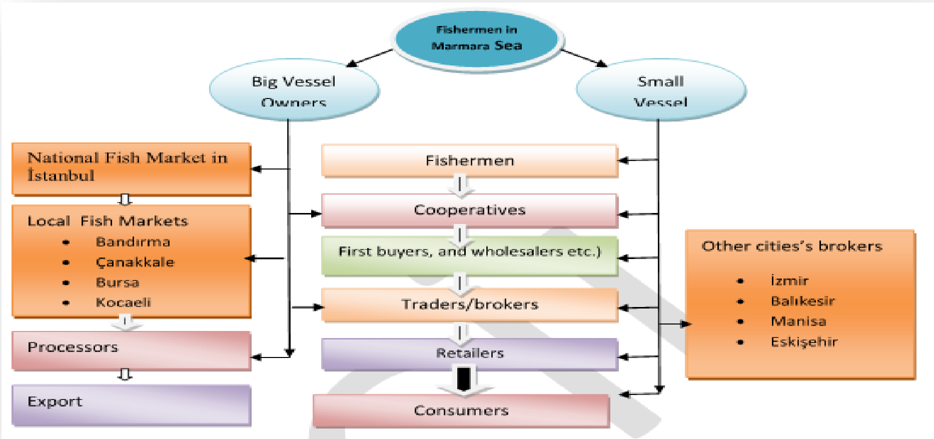

Figure 1: *Marketing Channels in Marmara*

Available marketing alternatives for the fisherman:

- Direct sale
- Selling through middleman (trader/broker)
- Selling through cooperatives
- Selling directly to national fish market
- Big vessels' marketing chain

Direct sale indicates sales on stalls (retailers) and sales to fish restaurants by fishermen and is usually preferred by small fishermen with a small amount of fresh/live fish to sell. The payment is collected in cash.

The second alternative, selling through a middleman, is a system based on a prior agreement with the middleman, where a discount of 15 to 18% is made on the sale price for brokerage. This is generally preferred by small and medium-sized vessel owners.

The third option is selling through cooperatives, where the fish is brought to the cooperative, where it is weighed and the necessary deductions are made. The payments to fishermen are generally made after the products are sold. Although this is the most reliable and profitable selling method for fishermen, it is not often preferred due to the difficulties in organization.

The fourth alternative is selling directly to the national fish market which enables selling large amounts of fish. The most important markets for seafood are the wholesale fish markets in the provinces, where products are sold through auctions. Since most of the fish is consumed fresh, it has to be sold on the same day. However, with this method, the number of middlemen (brokers in particular) may increase, pushing the final prices upwards. On the other hand, sometimes the abundance of supply may cause the prices to decrease significantly depending on the level of demand.

The last alternative for marketing seafood is through the large vessels' marketing chain. This method has been created by large fishermen and has become quite common in recent years in Turkey, extending directly from the fishermen to the consumer. It consists of the fish caught being sold at the fishermen's own point of sale after processing at their own processing plant and/or restaurant. As there are no intermediaries involved, the fishermen using this method benefit significantly, however, this may not be reflected on the final consumer prices.

Marketing channels in Marmara Region, determined through the research study, are presented in Table 2.

Table 2: Marketing Channels in Marmara Region

Number of steps	Marketing channels				
Direct	Fisherman			Consumer	
Single Stage	Fisherman	Retailer (direct sales on stalls, to restaurants, hotels etc.)			Consumer
2 stage	Fisherman	National fish market (trader/broker)		Retailer	Consumer
	Fisherman	Cooperative		Retailer	Consumer
	Fisherman	Cooperative		Processor	Consumer
3 stage	Fisherman	Cooperative	Trader/broker	Retailer	Consumer

In addition to the marketing channels shown in table 2, there is an increase in marketing networks owned by the vessel owners themselves to reach consumers through various channels in the Marmara region in the recent years. In the aforementioned networks, large fishermen send the fish they have caught to their own points of sales, restaurants and/or processing plants, thus eliminating intermediaries and increasing their profit margin.

As a consequence, competitive ability of markets is adversely affected. And cause a change resulting with reduction of the profitability of the middle and small fishermen.

In addition, large fishing vessels benefits from price control position, tax avoidance and increase in profits by showing the characteristics of monopoly or duopoly market. Also as another result of these marketing networks, large scale fisherman avoid from price fluctuations and gain all the profits from marketing channels. While this type of marketing provides positive results for the owners of large fishing vessels, resulted with adversely effects on middle and small fishermen and and other marketing channels.

Market intensification, when a certain number of firms reach a size that controls the total production of a certain product, is a very important concept for businesses and [2]. The competitiveness of the environment in which the firms act is determined using concentration ratio. Intensification rate is the sum of the shares of the firm with the highest share in the total output of the sector [3]. In the sectors with high market intensification, efforts to be able to control the market results with improper distribution of resources. In addition, adversely effects consumers and provide a suitable environment for a price system without competition [4]. Most of the sectors of our country suffers from high market intensification. This reduces the efficiency of many sectors in Turkey.

Thus, according to the results of a DIE (State Statistics Institute of Turkey) research conducted in 1991, there is a partial monopoly structure in aquaculture products markets [5]. Another survey carried out in 1996 revealed that, according to the Herfindahl index (one of the methodologies for assessing the intensification rate), there are competitive markets in the sub-sectors of the food industry; however, the seafood sub-sectors is relatively larger and more concentrated [6].

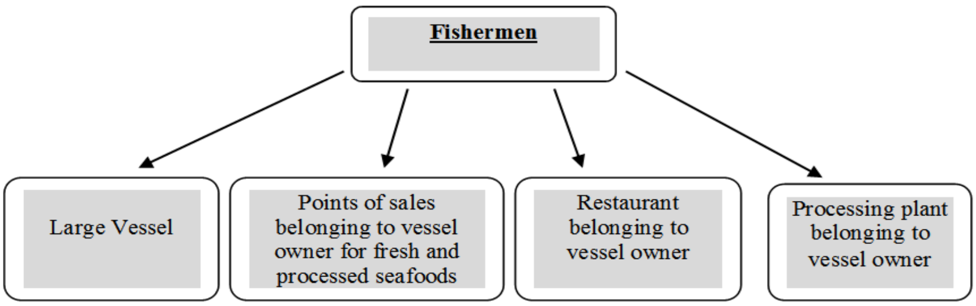

Figure 2: Large vessels' marketing chain

Table 3 shows the marketing channels preferred by the fishermen in the Marmara Region. As can be seen in the table, most of the fishermen (73.6%) prefer marketing their fish through middlemen, whereas marketing through cooperatives amounts to a mere 2% although it should be expected to be the most important marketing channel [7-8].

Table 3: Marketing Channel Preferences of Fishermen

Marketing Preferences of Fishermen	Vessel Groups								Total	
	Group I		Group II		Group III		Group IV			
	Number	%	Number	%	Number	%	Number	%	Number	%
Middlemen	103	62.8	46	90.2	23	95.8	18	94.7	190	73.6
Cooperatives	5	3.0	2	3.9	0	0.0	0	0.0	7	2.7
Processing Plants	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Retailers	15	9.1	1	2.0	1	4.2	1	5.3	18	7.0
Direct Sales	22	13.4	1	2.0	0	0.0	0	0.0	23	8.9
Sales to peddlers	16	9.8	0	0.0	0	0.0	0	0.0	16	6.2
Self-Consumption	2	1.2	0	0.0	0	0.0	0	0.0	2	0.8
Total	**164**	**100.0**	**51**	**100.0**	**24**	**100.0**	**19**	**100.0**	**258**	**100.0**

Although cooperatives should be the most important marketing channel, sales through cooperatives are only 2.7%. For example, in Hatay Province of Turkey, the producers stated that they marketed 55% of their products through wholesalers (merchants), 38% without the use of any middlemen and 7% by cooperatives.

Table 4 shows the marketing channel preferences of the fishermen in the Sea of Marmara depending on fish species, which do not display significant variation and are in favor of brokers for all fish species.

68% of the fishermen in Group I prefer marketing bluefish through brokers, 9.7% prefer selling themselves, 7.7% sell to markets, 6.5% to restaurants and 3.0% prefer selling through cooperatives. It is seen that cooperatives are effective in marketing shrimp, blue whiting and red mullet.

Table 5 shows the satisfaction level of fishermen with the current marketing system. As seen in the table, a large proportion of fishermen (72.5%) stated that they were not satisfied with the existing system, which they attributed to the following reasons, among others: Inadequate marketing network, high brokerage deductions, inadequate and instable prices, low production, quick depreciation of fish when not sold promptly due to spoilage, EU legislation applications, not receiving sales documents such as invoice/receipt, delays in payments due to the majority of the fish being sold to the Istanbul market, having to pay cash for the expenses while the collection of the proceeds is deferred.

Table 4: Marketing Channel Preferences of Fishermen According to Fish Species (%)

	Groups	Middlemen	Coop.	Processors	Department Stores	Sales to peddlers	Restaurants/ Hotels	Direct Sales	Self-Consumption
Bluefish	**I**	68.0	3.2		7.7	2.4	6.5	9.7	3,.5
	II	95.0				0.4	0.8	3.8	
	III	98.3			20				
	IV	99.2						0.8	
Shrimp	**I**	95.6	1.8	1.8			0.7		0.1
	II	84.4	6.1	3.0	1.2	0.3	4.2	0.8	
	III	92.9	7.1						
	IV	100.0							
Mullet	**I**	54.4	7.8		11.0	3.3	7.4	18.3	
	II	83.3	16.7						
	III	100.0							
	IV	72.0			28.0				
urbo t	**I**	47.5			15.0	5.0	11.0	21.0	0.6
	II	85.7					14.3		

	III	100.0							
	IV	75.0		25.0					
lue whiting	**I**	34.7	5.9		5.9		11.2	42.2	0.1
	II	84.0	10.0				6.0		
	III	100.0							
	IV	100.0							
Anchovy	**I**	76.8						23.2	
	II	100.0							
	III	100.0							
	IV	99.2						0.8	
Horse Mackerel	**I**	63.9	5.2		8.2	4.2	1.6	10.9	6.0
	II	86.3	5.0					8.8	
	III	98.5			1.5				
	IV	99.3						0.7	
Sardine	**I**	87.5	0.2		2.0	2.3	0.9	5.9	1.1
	II	90.8	5.3					3.9	
	III	100.0							
	IV	98.9						1.1	
Atlantic Bonito	**I**	77.9	2.8		6.7	2.4	1.3	6.1	2.8
	II	95.2				0.4		4.4	
	III	100.0							
	IV	99.2						0.8	

Table 5: Satisfaction Level of Fishermen with the Current Marketing System

Satisfaction Level	**Group I**		**Group II**		**Group III**		**Group IV**		**Total**	
	Nr.	**%**	**Nr.**	**%**	**Nr.**	**%**	**Nr.**	**%**	**Nr.**	**%**
Satisfied	54	32.9	6	12.5	2	9.3	3	17.6	65	25.2
Not satisfied	106	64.5	43	83.3	22	90.7	16	82.4	187	72.5
Indifferent	4	2.6	2	4.2	0	0	0	0	6	2.3
Total	164	100	51	100	24	100	19	100	258	100.0

4. Conclusion and Suggestions

The results obtained from the study and proposed solutions to the problems are as follows:

There are various marketing channels in the market of aquaculture products, the most important of which are:

- Middlemen (Traders, brokers, first buyers and wholesalers etc.),
- Processors
- Retailers (department stores, restaurants/hotels, peddlers etc.),
- Organizations facilitating marketing (cooperatives),

A large proportion of fishermen (85.7%) sell through middlemen and the share of cooperatives in the marketing network is quite low (2%). Although the values vary to some extent according to fish species and vessel sizes, the share of brokers outweighs that of cooperatives throughout the market.

Recent years have seen an increase in the number of large vessel owners who have their own marketing network to reach consumers through various channels. This system consists of large fishermen's taking the fish they catch to their own points of sales, restaurants, and/or processing plants, thus eliminating intermediaries and increasing their profit margins.

The results show that a large proportion of fishermen (72.5%) are not satisfied with the existing system. The major common complaints are given below:

- Price instability in the market
- The pressure of brokers on the market

- Ineffectiveness of cooperatives in market
- Fellow fishermen’s indifference towards cooperatives

The following may be suggested towards the solutions of these problems:

- Fishermen should be organized and establish cooperatives which will play an active part in the market.
- To encourage this, legal regulations needed to make it easier for cooperatives to own and operate income generating enterprises such as shelters, mooring facilities, restaurants, cafés, etc.
- Support mechanisms should be implemented to ensure price stability as in other agricultural products. For example, fishermen may be given a compensatory payment equal to a certain percentage of the difference between their selling price and the final consumer price of fish.
- Unregistered sales in the wholesale fish markets must be prevented.

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