TIME SERIES ANALYSIS in AQUATIC PRODUCTS: A RESEARCH ON ISTANBUL FISH MARKET

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ABSTRACT

İstanbul Bosphorus is a strategic fishing area with its physico-chemical and geographical characteristics. Also becuase of İstanbul metropole is taking part there, İstanbul Fish Market has become an important position in the region. The high variety of species and product entrance quantity rates provided us a continuous data flow for our study. The study was done between the dates of 1 January and 31 December 2014. Species were examined in two groups there such as fish and invertebrates. In 2014, 75 species (68 fish and 7 Invertebrates) were processed in İstanbul Fish Market and the total production was 42 244 tonnes (41 466 tonnes fish and 5 778 tonnes invertebrates) there.

Quantities and prices of fish and invertebrates, which were added into the concept of research, were collected daily in survey form. Research results showed us that quantity of total products, which entered to Fish Market from 15 April until 1 September in fishing ban period, was decreased. This situation was caused the increasing of product unit price and there became seasonal fluctuations. Also there had been observed that the quantity of production was related to natural conditions mostly and aquaculture products were not related to unit price formation too much. In addition, we established that the quantity of products which entered to Fish Market was in maximum rates in October and in minimum rates at the end of finishing the fishing ban period in August.

INTRODUCTION

Fisheries sector is one of the most important resources about agricultural activities that provides continuous contribution to the national economy. Fisheries products are healthy food materials; which provide a balanced and healthy diet to people and also they contain minerals, vitamins, essential fatty acids that are necessary for a healthy lifestyle and omega - 3 and omega - 6 like as found rich in animal protein. Developed societies who are aware of balanced and healthy diet benefit highly from aquatic products to obtain the needs of animal protein. If the world's population continues to grow rapidly like today, specialists think that the world's population will reach from 7 billion to 8 billion after 20 years later. However population is increasing, there is a significant decrease in people's food sources. According to experts, fisheries products are seen as important resources to provide the food needs of the people and especially the needs for natural protein in quality.

When national and international literature has been examined, there will be seen the subjects researched about physical conditions of the Fish Market, types and quantities of promoted products. Aquatic products covers a large market which are integrated with the food industry at first and also health, fuel, ornaments sectors etc. There are not any enough

studies about price-quantity relationship of aquatic products sector in our country. Because of this reason, price-quantity analysis was used in this study.

Price and quantity of the fisheries products affect the earnings of the producers and they are also important for manufacturers, retailers and consumers. It's thought that our study that was made in İstanbul Fish Market will be shown as source with its numerical data to other studies that will be made in the future about sustainable policies. Not only public sector but also private sector's interest about these kind of researches is increasing in recent years. There are strategic workings and short-term and long-term studies about fisheries sector in sustainable sector policies subjects. The importance of the fisheries products sector has also been emphasized in national development plans. Many researches are continued to make with the support of national and international fund. In conclusion, the main aim of this study is to examine the relationship between the price and quantity of some fish and invertebrates kinds in İstanbul Fish Market and reach the price formation structure by this analysis.

ISTANBUL FISH MARKET (KUMKAPI)

The Byzantine Empire, and later the Ottoman Empire early in the fishing technique primitive, less the number of fishermen, the boat used for fishing small and insufficient number of the year in question because it is said to be a systematic fishing in Istanbul. However, the fishermen catch fish they had at the time said the "Fish Market" they buy in areas that operate under the name, it is understood the historical information and documents.

Since the era of the Ottoman Empire to the rise in wholesale "" Istanbul Topkapi Palace under the name of the fish to meet the needs of a connected to Bostanci Furnace is an organization and Topkapi Palace overlooking the Marmara to part of the Ahirkapi Otluk wholesale between the door and the house near the door it was understood that the records the same recordings in the last years of the Ottoman state fishery appreciate, experts from abroad, Istanbul and around lagoons up and push the revenues of the state of the Ottoman Empire if the debt refers to the payment is used.

OPERATIONS

From the early days in the fishing port and fishing vessels are docked state product acceptance process starts with the evacuation of the products in one. Every morning, hours: 04:30 to 11:00 a.m. of products they carry out the handover of the product by removing the state auction. aquaculture becomes the first hours of the morning, they are divided into genera and species. Later determined to broker the sale of the products. Brokers, people are undertaking the sales process on behalf of the head of the fishermen catch fish. Sales method is carried out by auction. Sales of its products are made in the order of entry made.

Total sales by type of product and generally pack (weight) is done on the basis of. For example: anchovies, fish such as mackerel pack (weight) and sold tunny fish, such as bonito couple pieces of fish, such as bluefish are priced as a piece. Brokers sell the product sales are performed and completed declaration form output processing of the product by paying municipal taxes accounting for 3%. Later that day are sent to the statistics unit of the state directorate to create actual sales charts and fish market sales are recorded in the database. Fish market statistics unit of the Istanbul Municipality fish daily fish prices are

published on the official web address. Fish, seafood, days and hours 7 days regardless of differences has been operating for 24 hours. In addition, all products auctions, storage and output operations during the Food, Agriculture and Livestock Ministry audit staff by 1380 fisheries law to, 3/1 Commercial Fishing and 3/2 Sports Fishing is controlled by reference to the Legal Regulations.

MATERIAL AND METHODS

The material of this study includes the amounts and prices of aquaculture and catching species that brought to Istanbul Fish Market. Data of Fish Market obtained from General Directorate of Fisheries and Aquaculture Statistics Department for year 2014. In the case of the aquatic products and prices for same species are grouped on a daily basis. Istanbul Fish Market production of the year 2014 total 79 kind of aquatic products (68 fish and 11 invertebrates). Aquatic products examined in the study determining the week with 3 invertebrate species entering at least one day become an annual output of 10 species of fish that are taken into account and over 1000 tones. Also, when assessing the types invertebrates of squid and sepia, fish species with atlantic horse mackerel and mediterranean horse mackerel, wild sea bass and farm sea bass, imported mackerel and atlantic mackerel with perspectives. Analyzed fish species in the study (10) Istanbul Fish Market 92.26% of the total fish production of invertebrate species (3) constitute 95.76% of the total production of Invertebrates. In this study, which examined the Istanbul Fish Market become a daily product price and quantity of water covers the period 01 January-31 December, 2014. Data evaluation was made on the weekly average of the prices and amounts, although collected on a daily basis. Data does not occur because of the fish market weekends it is not done input and auction. Unspecified products aquatic quantity and the price of the weekly relationship using the SPSS statistical analysis programs and the results of the analysis of the correlation of perspectives. 1 January-31 December 2014, in which the work is to be Performed in the April 15 (Week 16) - 01 September (35.Week) of commercial fishing is ban. For this reason the operations in the event of aquatic products producer, imports and small fishing boats is composed of the products.

FINDINGS

In 2014, 79 species (68 fishes and 11 invertebrates) were processed in İstanbul Fish Market and total annually production between the dates of 1 January and 31 December 2014 was 42 044 253 kg.

Total annually production range of İstanbul Fish Market in 2014 was % 7.82 when it's compared with the total production of our country. Anchovy production range was %35.02 in total annually production of İstanbul Fish market in 2014. In Turkey, anchovy production was 96 440 tonnes in 2014. % 15.27 range of this amount was processed in İstanbul Fish Market.

When the analysis results were evaluated (Table 1), it can be understood that weekly price-quantity relationship of examined horse mackerel, bluefish, whiting, gilt-head bream, sardine, octopus and shrimp species was found statistically significant.

Table 1. Weekly price-quantity correlation analysis results of examined species

Species	R (Pearson correlation)	Sig
European anchovy	-0,144	0,304
Atlantic horse mackerel	-0,507	0,000**
Bluefish	-0,640	0,000**
Atlantic bonito	-0,063	0,654
Atlantic mackerel	-0,214	0,123
Sea Bass	0,152	0,276
Whiting	-0,309	0,024*
Sea Bream	-0,322	0,019*
European pilchard	-0,290	0,035*
Bluefish	-0,156	0,265
Octapus	-0,423	0,002**
Squid	-0,021	0,880
Shrimp	-0,598	0,000**

CONCLUSIONS

Making the analysis with using the long years' weekly data instead of weekly data analysis of one year will be more effective about finding the results of how price and quantity relationship changing seasonally and in long time period.

Examining the compare of the İstanbul Fish Market data togehter with other Fish Markets' data will provide much more detailed information obtaining about price formation in fisheries. It's thought that this data will help to decision makers for policies of fisheries sector.

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