

CASE STUDY IN TRACEABILITY AND CONSUMER'S CHOICES ON FISH AND FISHERY PRODUCTS

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Abstract

The food market needs are generated by human social needs. Thus, fish and fishery products traceability involves the knowing of the issues related to distribution chain of the fishery products. Aspects as safety and quality along the distribution chain are identified and this is necessary to be known in order to eliminate the differences between the social needs and requests. For preventing the Malassis effect and maintaining the food request beyond the saturation area, it needs to know the consumer typology. In order to have a wide and clear image of the fish and fishery market, we have conducted a study on 176 consumers. The items were structured in a certain way which allowed us, after data processing, to identify the consumption and buying habits by age category, living environment and occupational field of the subjects. The statistic interferences shown that people aged between 30-55 years (82.60%) prefer live fish, young people, younger than 30 years (60.97%) prefer fresh fish and/or seafood (43.90%). The most of the respondents (60.00%) prefer to buy from specialized stores (fisheries) and 27.50% direct from the producer. The analysis of the factors that influence the consumer decision to buy fish / fishery products shown that are interesting in the conditions of fish deposit and exploitation (maximum 84%). The results of this study can serve as an informing material for the fish processing area and industry. This is offering a commercial diagnosis of the market, accordingly to the influence of the use of information provided by traceability, on the intention to buy fish /fishery products in the future.

Key words: buying habits, consumer typology, decision making, factors, traceability.

INTRODUCTION

Seafood has the greatest variety of all animal-based foods. Whereas the species like beef, pork, lamb, goat or poultry are represented by very few species, fishes and other aquatic animals show an abundant number of species and variability. The fish group alone is represented by 25,000-35,000 species. However, only a little proportion of this large number of about 5% is present in the world's oceans in amounts huge enough to allow an economical use (catch and following processing) (Nollet, 2010).

Fish and other seafood are highly perishable products when stored without chilling. They deteriorate at ambient temperature in a few days, and only correct storage of wet fish in melting ice or of certain products at chilled temperatures can prolong the shelf life up to weeks or months.

About 75% of the world's total seafood supply is used for human consumption, 25% is converted into fishmeal and other non-food

products, 40% is consumed as wet fish without any further technological processing or preservation, about 20% is converted into deep frozen products, 8% is transformed into cured products and another 8% into canned products (Venugopal, 2006).

Consumer's request is focused more and more on high quality, safe and environment friendly products, as well as having a transparent traceability. This allows a product follow-up along the process from production line as raw material to final product to the consumer

The effective implementing of a traceability system depends on the cooperation of each stakeholder in the supply chain. If the traceability system meets the demands of stakeholders, it will be promoted effective adoption of traceability system of fish and fishery products (Nicolae et al., 2014).

The present work presents the difficulties, challenges and benefits of a traceability system adoption in the fisheries supply chain, which can be (Moga et al., 2015):

- fishery product - all marine or freshwater animals (except bivalve molluscs, live echinoderms, tunicates and marine gastropods), wild or breeding, including all edible parts of these animals;
- fresh fishery product - any unprocessed fishery product, whole or prepared, including the products packed in vacuum or modified atmosphere, that were preserved only by refrigeration;
- prepared fishery product - any unprocessed fishery product that has been submitted to an operation that changes its anatomic integrity (such as evisceration, head removing, deboning, filleting and milling).

Implementing the principles of quality contributes to the increasing of consumer needs satisfaction, increasing the selling volume and essential reduction of costs (Nicolae et al., 2015).

MATERIALS AND METHODS

The method for information collecting was the questionnaire for consumers - "Factors that influence the fishery products buying decision". The questionnaires were completed by 176 consumers in the Bucharest - Ilfov Region, Romania. The results based on the data

collected will be used to project an electronic system for fishery products traceability and specifications writing.

The questionnaire for the key factors identification for consumers has three sections:

- elements for respondents classification (demographic and preferences details about the respondent);
- factors that influence the buying decision for fish / fishery products;
- the influence that using the information provided by the traceability system might have on the buying intention of fish/fishery products in the future.

The respondents were asked to evaluate their answers on a five points Likert scale (from 0 to 5) which varies for "totally agree" to "totally disagree".

RESULTS AND DISCUSSIONS

The questionnaires were filled in by 176 respondents, fish and fishery products consumers, with heterogenic demographic characteristics and different consumption behaviour. Data on demographic and preferences details of the respondents are shown in Table 1.

Table 1. Respondents demographic and preferences details

1. Residence:	Urban 72.80%		Rural 27.20%	
2. Education:	High School: 32.10%	University degree: 53.10%	PhD. Degree: 14.80%	
3. Occupation	Employee: 95.40%	Retired: 2.30%	Unemployed: 2.30%	
4. Occupational field:	Industry	8.80%		
	Construction	5.30%		
	Agriculture	35.10%		
	Distribution	7.00%		
	Services	3.50%		
	Education / Culture	28.10%		
	Health	3.50%		
	Administration	8.80%		
5. Age:	<30 years 43.20%	30 - 40 years 3.70%	years 40 - 55 51.90%	>55 years 1.20%
6. Do you consume fish and fishery products?	Yes: 100.00%		No: -	
7. Which of the following fish and fishery products are your preferred ones? (multiple selection)				
	Live fish	67.90%		
	Refrigerated fish	35.80%		
	Frozen fish	30.90%		
	Semi-canned (marinated, smoked fish)	45.70%		
	Canned fish	46.90%		
	Seafood	44.40%		
8. Form where do you buy fish and fishery products for your own consumption? (multiple selection)				
	Supermarket/hypermarket	65.00%		
	Fishery store	60.00%		
	Agro food market	17.50%		
	Grocery store	7.50%		
	Direct from the producer	27.50%		

The elements that influence the fish and fishery products consumption are related to fish product types: alive, refrigerated, frozen, salted or smoked. These criteria characterize the fish product valorisation. Most of the respondents (67.97%) prefer a live fish, considering it as fulfilling all the quality conditions (freshness, microorganisms, sensorial characteristics). The young consumers, under 30 years old, comply

to this category, 60.97% opting for fresh fish. As it can be shown in Table 2, we have investigated the influence of price, freshness, expiring date and fish provenance on the buying decision of consumers. We have also looked on the influence of farming production, feeding, shipping, storage and processing condition on the same buying decision. Details on answers versions can be observed in Table 2.

Table 2. Factors influencing the fish / fishery products buying decision

Question:	Answer:	Percentage, %				
		1	2	3	4	5
1. Totally disagree; 2. Disagree; 3. Neutral; 4. Agree; 5. Totally agree						
In choosing a fishery product, the price is important		17.30	4.90	25.90	9.90	42.00
In choosing a fishery product the freshness is important		3.70	2.50	1.20	3.70	88.90
In choosing a fishery product the expiring date is important		2.50	3.70	4.90	1.20	87.20
In choosing a fishery product, the provenance is important		-	-	19.80	11.10	69.10
In choosing a fishery product, the farming production conditions of fish are important (water, soil)		1.20	3.70	27.20	13.60	54.30
In choosing a fishery product, the feeding of fish is important		2.50	3.70	24.70	7.40	61.70
In choosing a fishery product, the fish and fishery products shipping conditions are important		3.80	1.30	15.00	7.50	72.50
In choosing a fishery product, the fish and fishery products storage conditions are important		-	1.20	4.90	9.90	84.00
In choosing a fishery product, the fish and fishery products processing conditions are important		1.30	1.30	3.80	7.60	86.10

For the most of the respondents, the price is very important in their buying decision for fish /fishery products (Figure 1). 25.9% of the

respondents have chosen the "neutral" option being rather influenced by the quality of products instead of price.

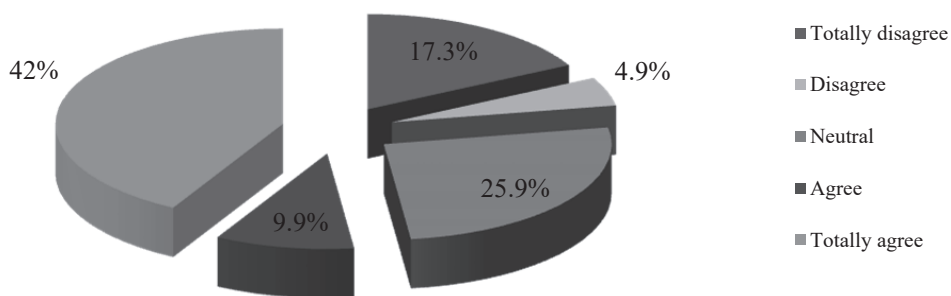


Figure 1. The importance of price in consumer buying decision for fish / fishery products

As expected, for the majority of consumers (80.90%), the buying of fish and fishery

products is very high influenced by the product freshness (Figure 2) and shelf life.

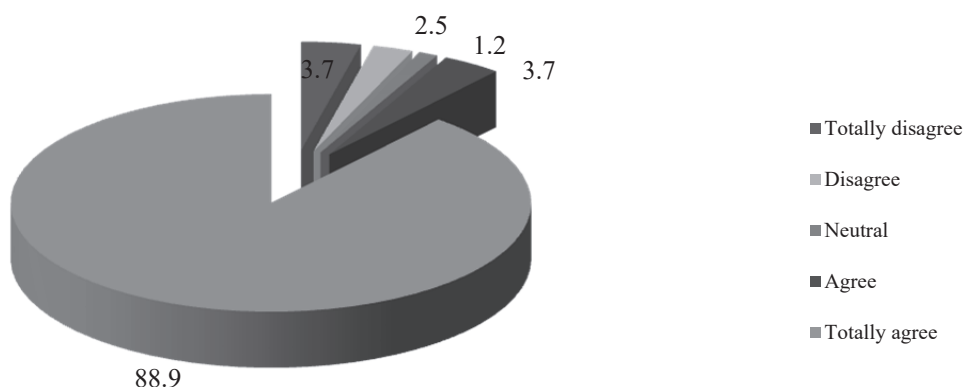


Figure 2. Fish freshness and consumer buying decision for fish/fishery products (%)

In the last years, the majority of consumers is preoccupied to know the farming conditions and also interested in healthier nourishment. This is relevant for the high percentage

response and interest of those willing to know about farming, feeding, transporting and processing of fish (Figure 3).

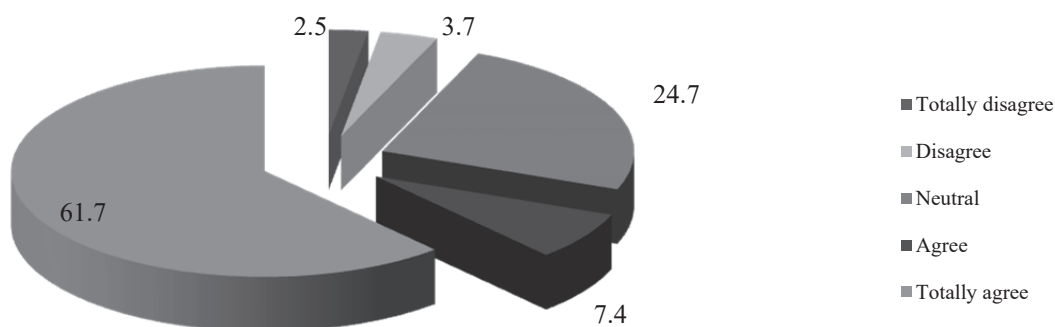


Figure 3. The importance of the fish feeding conditions in the buying decisions of consumers for fish/fishery products (%)

Intention for future buying of fishery products was also an important factor to be investigated and it was included in the questionnaire for consumers. Details are shown in Table 3. The viability of technical of fisheries activities is

dependent on the improvement of fish products quality, market transparency and the consumers informing. Thus, 72.50% of the respondents are "totally agree" to buy fish and fishery products.

Table 3. Intention for future buying of fishery products

Question:	Answer:	Percentage, %				
		1	2	3	4	5
1. Totally disagree; 2. Disagree; 3. Neutral; 4. Agree; 5. Totally agree						
Availability of information related to fishery products quality		-	-	12.50	10.00	77.50
Existence of an proper labelling		1.30	-	8.80	6.30	83.80
Accessing the information related to fishery products quality (traceability) direct from the store (info kiosk)		2.50	1.30	17.50	6.30	72.50
Accessing the information related to fishery products quality (traceability) using mobile devices (phone / tablets)		1.30	5.00	28.80	10.00	55.00
Accessing the information related to fishery products quality (traceability) using your personal computer		6.30	1.30	27.50	8.80	56.3

The respondents (56.30%) are also interested in the distribution chain, starting to raw material, processing up to the consumers. Due to this interest, the policies regarding the fishery

resources management and control are more structured, showing quality in each stage of traceability (Figure 4).

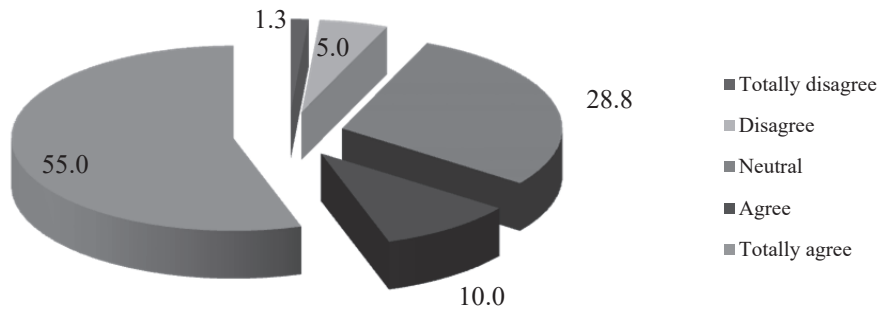


Figure 4. Accessing the information related to fishery products quality (traceability) using mobile devices (phone/tablets) (%)

CONCLUSIONS

1. This study underlines the extensive range of fishery products preferred by the consumers in Bucharest-Ilfov Region. The preferences are quite balanced as percentages, with the exception of the alivefish consumption (67.9%).
2. Although not far away, sea foods were consumed especially in the luxury restaurants, this paper shows that these fishery products are also consumed at home (homemade) and even in the rural area.
3. Fishery production valorisation depends on the fish exhibition strategy, but also on the information regarding the distribution chain of fish and fishery products.
4. The availability of information regarding fish and fishery products quality directly from the store or mobile devices represents an advantage for distributors, the consumers being interested in traceability system.
5. In order to exist an equilibrium between request and offer on the fishery products market, (decreasing the Malassis effect), distributors must adopt and implement a responsible marketing which implies product diversification.

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