Fresh seafood consumption determinants and inventory satisfaction

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SUMMARY

The aim of this study was to describe the consumption of fresh seafood on the Zagreb market and to examine the importance of particular consumer preferences for fresh seafood, as well as to explore consumers' attitudes towards fresh seafood and their satisfaction with seafood inventory. The results of the study were conducted on a sample of 100 consumers of fresh seafood in Zagreb and showed that fresh seafood was consumed relatively rarely, usually no more than once a month. The most commonly consumed types of seafood were squids, followed by shrimp and octopuses respectively. The most significant consumer preferences regarding the fresh seafood choice were flavour and freshness. Surveyed consumers considered fresh seafood a healthy, nutritious and fairly safe food. The largest number of respondents was fairly satisfied with the inventory of offered fresh seafood. The research results demonstrated that although women represented more loyal consumers of such products, they were more demanding than men. This study provided valuable information for the development of fresh seafood market in the city of Zagreb.

Key words: *frequency of consumption, importance of particular consumer preferences, attitudes, socio-demographic characteristics of respondents*

INTRODUCTION

Consumers nowadays seek to make wiser decisions when buying food, in order to ultimately consume the food that is healthy (Mason-Jenkins, 1991). The categories of food that are considered healthy also include seafood. Seafood is a natural source of omega 3 fatty acids, rich in certain minerals and vitamins, and poor in both saturated fat and cholesterol (Sioen et al., 2008). Many studies report on the health benefits of consuming seafood. For example, studies conducted by Daniels et al. (2004), Colombo et al. (2004), and Innis et al. (2003) thus stress the importance of seafood consumption in cognitive development and for sight, and studies conducted by He et al. (2004) and Iso et al. (2006) stress the significant influence of seafood consumption in the prevention of coronary heart disease. Influenced by such research, the consumption of seafood has increased (Swartz et al., 2010). This is best demonstrated by the fact that the global consumption of seafood amounted to 9.9 kg per capita in 1960s, but rose to 16.7 kg per capita in 2006 (FAO, 2009).

In order to better understand the patterns of seafood consumption, it is necessary to determine the consumer behaviour pertaining to consumption, consumer attitudes towards seafood products, the importance of certain product attributes for the choice to purchase them, and the satisfaction with the inventory. The familiarity with the level of satisfaction is very important because it not only adds to the better insight into buying behaviours (Seider et al., 2005) but it represents a good indicator of future buying behaviours (Kasper, 1988).

Literature provides several scientific studies that describe consumers and their attitudes towards seafood. Donath et al. (2000) investigated the consumption of seafood in the USA and Norway. Their research results showed that 65% of Americans and more than 96 % of Norwegians consumed seafood at least once every two weeks. The favourite type of seafood among Americans

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was shrimp, and among Norwegians codfish. In their work Lebiedzinska et al. (2006) investigated due preferences and the importance of certain attributes in choosing seafood among Polish students. Their research results showed that salmon and shrimp were more often consumed than other types of seafood categories.

The most important factors in choosing seafood, for respondents, were taste and freshness. Previous scientific research showed that certain socio-demographic characteristics also affected the frequency of seafood consumption. It follows that persons with higher education consumed seafood more often (He et al., 2003; Gillespie et al., 1975) as did persons with higher income (Erdogan et al., 2011). Nguyen et al. (2012) revealed that persons aged between 30 and 54 years consumed seafood considerably more often than other age groups, with women consuming bivalves and men choosing gastropods and cephalopods more often. Zhang et al. (2004) noted several significant differences in the frequency of seafood consumption related to a region where respondents lived. The majority of consumers considered seafood to be beneficial for health (Erdogan et al., 2011) and nutritious (Gillespie et al., 1975), while a smaller number of consumers considered seafood completely safe (Wessells et al., 1996). Kreider et al. (1993) revealed that respondents in Delmarva Region (USA) considered seafood healthier than veal, pork and chicken. In their research related to the consumption of shellfish, Batzios et al. (2003) discovered that consumer attitudes towards warty venus depended on consumer's age, level of education and place of residence, but not on earned income. The results of research conducted by Wessells et al. (1996) showed that consumer perception about seafood safety depended on how often seafood was consumed. According to available literature, no studies on the consumption of fresh seafood were conducted in Croatia. The aim of this research was to determine the frequency of fresh seafood consumption, the importance of certain attributes in choosing seafood, attitudes towards fresh seafood and the satisfaction with inventory offered on Zagreb market.

MATERIAL AND METHODS

The categories of fresh seafood included in this research were: crustaceans, gastropods, cephalopods and bivalves. In this research, only the consumption and attitudes toward fresh seafood were investigated. The primary data was collected through face-to-face survey conducted on 100 consumers of fresh seafood in the city of Zagreb. The selection of samples was made in two steps. First, two types of places that sell fresh seafood, namely the city fish market and a supermarket, were selected. After that, every other buyer of fresh seafood

was asked to participate in the survey. If a certain buyer refused to participate in research, a buyer that followed was approached. 50 buyers from each store type participated in research.

Questionnaire

The definition of fresh seafood used in this research was given at the beginning of the questionnaire: "The term fresh seafood in this study implies seafood in the narrower context. It signifies the following categories: crustaceans (European lobster, spiny lobster, Norwegian lobster, rose shrimp, etc.), bivalves (mussel, oyster, date shell), cephalopods (squid, common octopus, common cuttlefish, etc.), and gastropods. Sea fish is not included in this research." The questionnaire included several groups of questions related to the purchase and consumption of fresh seafood, the importance of certain fresh seafood attributes, attitudes towards fresh seafood, the satisfaction with fresh seafood inventory on Zagreb market, and socio-demographic characteristics of respondents (gender, age, place where they grew up, level of education, economic status). Respondents were able to answer the question on the type of seafood they consumed with more than one answer. Respondents' attitudes on fresh seafood, the importance of certain fresh seafood attributes (taken from Lebiedzinska et al., 2006) and the satisfaction with fresh seafood inventory were measured using the 5 point Likert scale (1- I strongly disagree/ irrelevant attribute/ I am not satisfied at all; 5- I strongly agree/ very important attribute/ I am very satisfied). The economic status of respondent's family was measured as a subjective assessment by the respondent. The significance level for all analyses was set to 5 %. The obtained data was analysed using the SPSS software. Chi-square test, ANOVA and simple regression analysis were carried out.

Table 1: Description of sample population

		N	%
Gener	Female	61	61
	Male	39	39
Age	18 - 25	31	31
	26 – 35	17	17
	36 – 45	19	19
	46 – 60	27	27
	Over 60	6	6
Place where they grew up	Countryside	26	26
	City	74	74
Education	Elementary school	3	3
	High school	45	45
	Faculty	44	44
	MSc or PhD	8	8
Economic status of family	Bad	7	7
	Medium	29	29
	God	43	43
	Very good	21	21

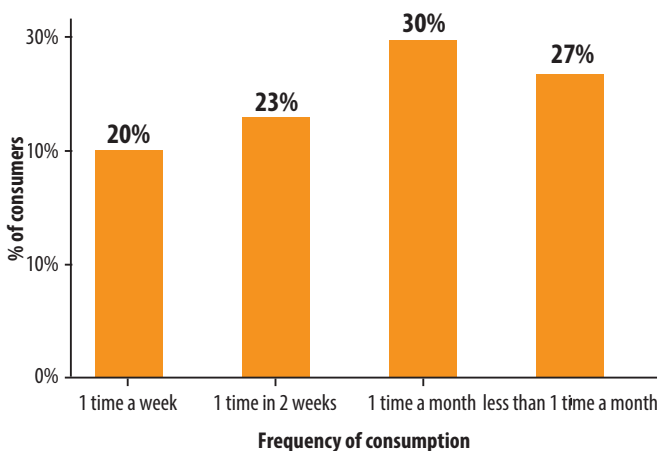*Source: survey*

RESULTS AND DISCUSSION

Description of sample population
The description of sample population is presented in Table 1.

Purchase and consumption of fresh seafood
Research results showed that 67% of respondents mostly purchased fresh seafood in city fish market, and 33% of respondents mostly purchased seafood products in supermarkets. The frequency of fresh seafood consumption is shown in Figure 1. Research results proved that consumers consume fresh seafood relatively rarely. The biggest share of respondents (30%) consumed fresh seafood once a month, and slightly smaller share (27%) consumed fresh seafood less than once a month. For comparison, while this research showed that 20% of respondents consumed fresh seafood at least once a week, the research conducted in Istanbul (Erdogan et al., 2011), that was not limited to fresh seafood but had also included fish, showed that 35 % of respondents consumed seafood once a week.

Fig 1. Frequency of fresh seafood consumption

Source: survey

Surveyed consumers stated that they consumed ten different types of fresh seafood. The majority consumed squids (81%). This was followed by respondents that consumed rose shrimps (40%), common octopuses (36%) and mussels (33%). Norwegian lobsters that represent the favourite fresh seafood type of American consumers (Donath et al., 2000) were consumed by only 25% of respondents in our research. Common cuttlefish was consumed by 12 % of respondents. A smaller percentage of respondents also consumed oysters (4%), date shells (3%), spiny lobsters (2%), and snail limpets (2%). More than 40% of consumers listed at least two or more reasons for consuming fresh seafood. Health concerns and good flavour were listed as main motives for consuming fresh seafood. Other motives for consuming fresh seafood included its texture, ease of preparation and its nutritional value.

Out of all socio-demographic characteristics observed in this research (gender, age, economic status, level of education, place where they grew up), a significant difference in the frequency of fresh seafood consumption was dependant only on gender. Chi-square analysis showed that women consumed fresh seafood more often than men ($X^2 = 7.966$, $p = 0.047$). Similar results were obtained by Nguyen et al. (2012) in their research that was carried out in South Vietnam.

Importance of certain fresh seafood attributes
As expected, this research showed that fresh seafood attributes that were the most important to respondents included flavour (4.69) and freshness (4.63). As many as 97% of respondents answered that flavour was important or very important when they were choosing fresh seafood, and 92% of respondents regarded freshness as important or very important in choosing seafood products. These two attributes were also determined as the most important attributes in choosing seafood products by Polish students (Lebiedzinska et al., 2006). Attributes that were considered less important by respondents included price, appearance and nutritional value of fresh seafood (Table 2).

Table 2. Importance of some attributes of fresh seafood

Attribute	Importance of attributes from 1 to 5 in %			Mean	Standard deviation
	1 2	3	4 5		
Taste		3	97	4,69	0,525
Nutritional value	8	26	66	3,76	0,911
Appearence	17	17	66	3,78	1,151
Freshness	1	7	92	4,63	0,691
Price	5	24	71	4,05	0,914

Remark: 1- very unimportant attribute; 2- unimportant attribute; 3- neither important nor unimportant attribute; 4- important attribute; 5- very important attribute. Values for 1 and 2, as well as for 4 and 5 are presented together. Source: survey

Out of all socio-demographic variables observed in this research (gender, age, economic status, level of education, place where they grew up), a significant difference in the importance of fresh seafood attributes was dependant only on gender. Namely, ANOVA results showed that women considered flavour more important than men when choosing fresh seafood (mean 4.78 and 4.51; F = 6.742; p = 0.011).

The appearance of fresh seafood was also more important to women than to men (mean 4.04 and 3.33; F = 9.996; p = 0.002). The frequency of fresh seafood consumption did not significantly influence the importance of certain attributes when choosing fresh seafood.

Attitudes towards fresh seafood

The research of consumer attitudes is very important because they influence and predict consumer behaviour (Wilcock et al., 2004). In this research, consumer attitudes regarding health, nutritional value and safety of fresh seafood were investigated. The importance of researching attitudes regarding the three mentioned concepts stems both from the fact that health and nutritional value represent two major consumers' concerns (Capps and Schmitz, 1991) and that food safety represents one of central issues in food economics (Grunert, 2005).

According to research results, respondents regarded fresh seafood as healthy (mean 4.44) and nutritious food (mean 4.11). Safety of fresh seafood was assessed as passable (Figure 2).

Fig 2. Attitudes towards fresh seafood

1 - totally disagree   5 - totally agree

Source: survey
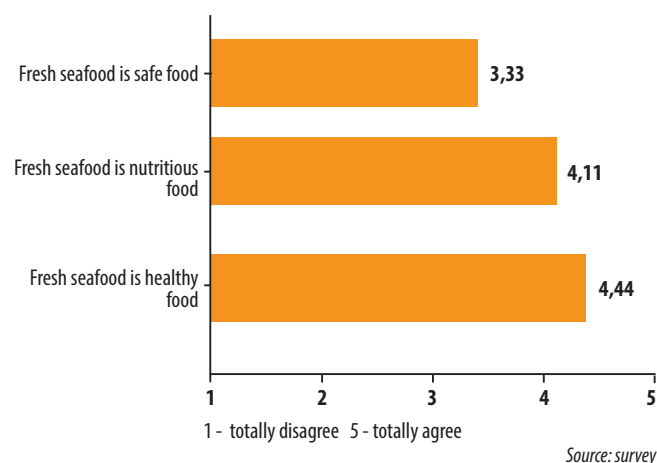
Given that the perception of safety is associated with the choice of food (Grunert, 2005), research results indicated possible obstacles in fresh seafood market development in the city of Zagreb. Generally, obtained results were in agreement with previous research. Namely, Wessells et al. (1996) found that a smaller share of respondents considered seafood safe, and a larger share of respondents considered these products nutritious (Gillespie et al., 1975) and healthy (Erdogan et al., 2011).

Research results showed that socio-demographic characteristics of respondents did not significantly influence attitudes towards fresh seafood.

Satisfaction with fresh seafood inventory and factors that affect consumer satisfaction

In view of the assumption that satisfaction or dissatisfaction affects repurchase (Simintiras et al., 1997), the research of total satisfaction or some of its segments seems very important for understanding consumer behaviour. In this research we investigated satisfaction with the inventory of fresh seafood among consumers

on Zagreb market. Research results revealed that the highest percentage of respondents, namely 44 %, were "neither satisfied nor dissatisfied" with fresh seafood inventory available on Zagreb market. 41 % of consumers were either "satisfied" or "very satisfied" with the inventory, and the remaining 15 % were either "not satisfied at all" or "not satisfied" with the inventory of fresh seafood.

Out of all socio-demographic variables observed in this research (gender, age, economic status, level of education, place where they grew up), a significant difference in the importance of fresh seafood attributes was dependant only on gender. Out of all variables observed in this research (consumption frequency, attitudes towards fresh seafood, importance of certain fresh seafood attributes, and socio-demographic characteristics of respondents) a significant difference in the satisfaction with the fresh seafood inventory was dependant only on price and the appearance of fresh seafood. Results of linear regression analysis showed that respondents who said that price was more important in choosing fresh seafood were more satisfied with the inventory of seafood products ($\beta = 0.215$; $t = 2.178$; $p = 0.032$) than respondents who regarded the appearance of fresh seafood as more important ($\beta = 0.327$; $t = 3.423$; $p = 0.001$).

Several previous studies showed that the satisfaction with the inventory of certain food products was significantly affected by certain socio-demographic characteristics of respondents, as well as by the demand. Namely, Radman (2005) discovered in her research that satisfaction with the supply of organic food products in Croatia was affected by gender and consumption frequency. However, our research could not confirm the influence of these or tested socio-demographic variables on satisfaction with inventory of fresh seafood.

CONCLUSION

Research results showed that fresh seafood was consumed rarely. The largest share of surveyed respondents consumed fresh seafood once a month. The most commonly consumed types were: squids, followed by rose shrimps and common octopuses. The most important attributes of fresh seafood for surveyed respondents were flavour and freshness. Out of all tested socio-demographic characteristics, only the gender of consumers significantly affected the frequency of consumption and the importance of certain attributes when choosing fresh seafood. Namely, women consumed fresh seafood more often than men, and in choosing such products placed more importance on flavour and appearance than men. Respondents regarded fresh seafood as healthy and nutritious. The safety of these products was assessed as passable. Respondents

were moderately satisfied with the present inventory of fresh seafood on Zagreb market. Consumers that assessed price and appearance as more important in choosing seafood were more satisfied with the present inventory of fresh seafood. Based on research results, we could conclude that since women were greater and more demanding consumers, it is advisable to focus the advertising on sensory characteristics of fresh seafood. Not so highly assessed safety of fresh seafood and moderate satisfaction with the inventory represent potential obstacles for further development of seafood market in the city of Zagreb. Further investments in building the image of fresh seafood as safe, and strengthening the inventory of fresh seafood on Zagreb market are necessary. This study has provided the initial information for further development of fresh seafood market in our country. However, in order to gain a deeper insight into the actual consumption of these valuable foodstuffs, it is recommended to carry out additional research that will, except determinants included in our research, also include the consumption of sea fish, as well as the consumption of frozen and smoked seafood.

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