Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 18, Issue 2, 2018
PRINT ISSN 2284-7995, E-ISSN 2285-3952

DETERMINATION OF CONSUMERS' CONSCIOUSNESS LEVEL ON FOOD SAFETY: CASE OF ISPARTA, TURKEY

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Abstract

The lack of both food assurance and food safety is of global concern. With the welfare of the countries increasing, consumers have put more importance on the food content, reliability and health of the food they consume. With the development of technology, radio, television, and internet, consumers' awareness about safe food has also begun to evolve through communication tools. In this study, it was aimed to determine the level of consciousness of consumers in Isparta province on food safety. The main material of the study was the data provided from the questionnaires conducted by face-to-face interviews with families residing in Isparta city centre. Single-step simple random probability sampling method was used to determine the number of families to be surveyed. The number of samples in the calculation is 384. The study shows that 57.8% of consumers heard about the concept of food safety and 42.2% of them did not hear the concept of food safety. It was found that 13.8% of the consumers had knowledge about the quality control and audit institutions and 86.2% of them had no information on this issue.

Key words**:** *food safety, consumers, informed, Isparta, Turkey*

INTRODUCTION

In recent years, issues related climate change, poverty, food safety and sustainability have been leading discussions in the world. Some of the issues are certainly interrelated. Food safety is a source of concern on a global scale. Consumers' concerns over food are not only about health, but also about agriculture, ecology and food culture. Modern food production and the use of pesticides are as vital as technological and environmental changes, and genetic engineering (Holm and Kildevang, 1996) [8]. This is because microbiological food safety problems and the estimation of foodborne diseases, and in general their social and economic costs are still at unacceptable levels. New emerging tools that can be useful in managing such food safety problems have become increasingly sophisticated. Countries face different and diverse food safety risks and problems, depending on consumption patterns, production processes, trade order, and so on (FAO, 2016; FAO, 2017) [6, 7]. For this reason, food safety issues, pesticide residues, anti-microbial resistance, wax coatings, nanomaterial, and genetically modified organisms increasingly continue to be anxiety sources for consumers. It becomes important to determine the purchasing behaviour of consumers depending on these concerns. Consumers make more conscious choices and their demands on safe food rise along with the increasing levels of communication, transportation and technology as well as increasing income and wealth levels of the countries.

In this study, it was aimed to determine the level of consumers' consciousness on food safety in Isparta province. To this end, the study intends to provide information on consumers' demographic characteristics, food expenditures, places to buy food products, the futures that consumers pay attention when purchasing food products, the situations of finding consumed foods risky in terms of health, the level of knowledge about food safety concept and food safety management systems, information sources on food safety and the willingness to pay extra for reliable food.

MATERIALS AND METHODS

The main material of the research is the data obtained from 384 questionnaires conducted by face-to-face interviews with selected families in Isparta city centre. The non-clustered, single-step simple random probability sampling method based on the primary mass ratios was used in determining the number of families to be surveyed (Collins, 1986) [5]. After the sample size was determined, the total neighbourhoods in Isparta city centre are divided into three groups according to the socio-economic characteristics: low, medium and high income. The survey was conducted in 15 neighbourhoods which represent the research area. The number of the questionnaires to be made from each district was distributed in proportion to the population of the neighbourhoods and the consumers were chosen by chance. The data were interpreted using chi-square, simple and weighted average methods with absolute and relative distributions.

RESULTS AND DISCUSSIONS

Social and demographic characteristics

Demographic and economic characteristics and lifestyles can be decisive in determination of the consumers' food purchasing behaviours. In addition, changes in the traditional family structure and intra-family distribution of roles, divorce, increase in the number of working women and people living alone reveal changing consumer behaviour patterns (Gracia, 2005; as cited in Onurlubas and Gurler, 2015) [9].

As a result of the evaluation of 384 questionnaires, 40.1% of the respondents are female and 59.9% are male. In the survey, 56% of the consumers hail from urban background and 44% of them are of rural origin. Monthly average income of the consumers' families is 2,925.39 TL (801.5 USD) while the monthly average expenditure is 1,790.47 TL (490.5 USD). Monthly food expenditures of the consumers are also found as 829.52 TL (227.3 USD) in average.

The surveyed consumers are mostly in the middle age group (57%), married (70%), high school graduates (44%), and workers (29%) or unemployed (25%).

Consumers' Consciousness about Food Safety

Increasing eating habits outside home, prolongation of the process from production to consumption of the food, preference of fresh or less processed foods and changes in food consumption lead to foodborne illnesses caused by microorganisms (WHO, 2002) [13]. Much research has shown that consumers do not have enough information to take precautions to prevent foodborne illness in the home. Contaminated raw foods, inadequate cooking, and unsafe source for food consumption are the most common factors in association with reported outbreaks of foodborne illness inside the home (Mederios, et al., 2001; as cited in Unusan, 2007) [11]. Previous research has revealed that the knowledge of food safety in adults tends to increase with age and practice, that women are better off in this regard, and that young people also need additional training on food safety. In addition, urbanites are far behind the rural people in this subject (Albert, 1995; Bruhn and Schutz, 1999; Rimal et al., 2001) [1, 4, 10].

In the study, nearly half of the consumers (57.8%) heard the concept of food safety, but the vast majority of them still did not hear about it (42.2%). Those who hear correctly define the concept of food safety to a great extent (93.2%). The relationship between the consumers who hear or not hear the concept of food safety and education ($p=0.00$, $p<0.05$), and income ($p=0.02$, $p<0.05$) are statistically significant. Also, there is a significant relationship between those who define the concept of food safety right-wrong and education ($p=0.00$, $p<0.05$), and income ($p=0.03$, $p<0.05$).

Republic of Turkey Ministry of Food, Agriculture and Livestock has established a telephone line (174 Food line) to receive consumers' complaints and audit requests about food. Although 65.9% of consumers know the function of this line, 30.2% of them (which is not a low rate) stated that they have

never heard of this line. The correlation between recognition of 174 lines and education ($p=0.00$ $p<0.05$), and income ($p=0.00$, $p<0.05$) are found significant. Turkish Standards Institutions (86.5%) and International Organization for Standardization (59.9%) are the most known food security systems.

Table 1. Consumers' Social and Demographic Characteristics

	Women		Men		Total	
	Number	%	Number	%	Number	%
Age						
18-25	20	12.9	25	10.9	45	11.7
26-30	38	24.7	38	16.5	76	19.8
31-40	56	36.4	90	39.1	146	38.0
41-50	26	16.9	46	20.0	72	18.8
51-60	8	5.2	29	12.6	37	9.6
61+	6	3.9	2	0.9	8	2.1
Total	154	100.0	230	100.0	384	100.0
Marital Status						
Married	112	72.7	158	68.7	270	70.3
Single	35	22.8	55	23.9	90	23.4
Divorced	7	4.5	17	7.4	24	6.3
Total	154	100.0	230	100.0	384	100.0
Education Level						
Not Literate	2	1.3	1	0.4	3	0.8
Literate	6	3.9	8	3.5	14	3.6
Primary school	20	12.9	18	7.8	38	9.9
Secondary school	33	21.4	43	18.7	76	19.8
High school	66	42.9	103	44.8	169	44.0
Graduate	27	17.6	57	24.8	84	21.9
Total	154	100.0	230	100.0	384	100.0
Occupation						
Civil Servant	14	9.1	58	25.2	72	18.8
Worker	33	21.4	78	33.9	111	28.9
Self-employed	24	15.6	65	28.3	89	23.2
Retired	2	1.3	15	6.5	17	4.4
Not working	81	52.6	14	6.1	95	24.7
Total	154	100.0	230	100.0	384	100.0
Family Income (USD/monthly)*	Number	%				
>411	35	9.1				
412-1233	312	81.3				
1234 <+	37	9.6				
Total	384	100.0				
Food Expenditures (USD/Monthly)*	Number	%				
>68,5	5	1.3				
69.0-137.0	97	25.3				
138.0-205.5	80	20.8				
205+	202	52.6				
Total	384	100.0				

Source: Authors 'calculations based on survey data

*Calculated according to the average exchange rate of the CBRT (Central Bank of the Republic of Turkey) year 2017 (1 USD= 3.65TL).

While there is no relationship between knowing food security systems and gender, a significant relationship is found between knowledge of food security systems and education, and income. The results show that the consumers still have insufficient knowledge of food safety. In the survey, it is determined that consumers use radio and television (69.8%) the most as information sources on food safety. There is a significant correlation between the sources of information and education in the chi-square analysis.

According to the results, it is necessary to give more space to these resources to inform consumers about the issue. Giving more space

to food safety issues especially in radio and TV programs can increase the knowledge and awareness level in this subject.

It is very important that food can be stored for long periods without losing its properties in transportation, storage and sale phases. In order to do it, food additives are used in various doses during the production of food.

The food additive is defined as substances, which are not consumed alone as food or not used as raw food or auxiliary material. It also permitted to be used for the purpose of preserving, correcting or preventing unwanted changes in the taste, smell, appearance, structure and other qualities of the food during preparation, sorting, processing, packaging, transport, storage and distribution of the food (Anonymous 2004; Bekar, 2013) [2, 3].

Table 2. Consumers' Knowledge about Food Safety Concept

	Women		Men		Total	
	Number	%	Number	%	Number	%
Food Safety Concept						
Consumers who hear	85	55.2	137	59.6	222	57.8
Consumers who do not hear	69	44.8	93	40.4	162	42.2
Total	154	100.0	230	100.0	384	100.0
Food Safety Concept						
Correctly Defining	80	94.1	127	92.7	207	93.2
Wrongly Defining	5	5.9	10	7.3	15	6.8
Total	85	100.0	137	100.0	222	100.0
Food Line Definitions						
Assessment of all complaints and requests of consumers regarding food	93	60.4	160	69.6	253	65.9
A phone number that consumers seek to learn about food-related qualifications	3	1.9	5	2.2	8	2.1
It is a line to find out which brands of food are good	2	1.3	5	2.2	7	1.8
I have not heard of the line	56	36.4	60	26.1	116	30.2
Total	154	100.0	230	100.0	384	100.0
Knowledge of Food Security Systems						
Turkish Standards Institutions (TSE)	130	39.2	202	60.8	332	86.5
International Organization for Standardization (ISO)	88	38.3	142	61.7	230	59.9
Hazard Analysis and Critical Control Points (HACCP)	19	31.1	42	68.9	61	15.9
Organic and Ecological Product Certificate	17	35.4	31	64.6	48	12.5
Good Agricultural Practice (G.A.P.)	13	31.7	28	68.3	41	10.7
Do not Know Anything	19	51.4	18	48.6	37	9.6
Willingness to Pay More for Reliable Food						
Do	110	71.4	154	67.0	264	68.8
Do not	44	28.6	76	33.0	120	31.2
Total	154	100.0	230	100.0	384	100.0

Source: Authors 'calculations based on survey data

Table 3. Consumers' Information Sources about Food Safety

	Number	%
Radio-TV	268	69.8
Gazette-Journal	62	16.1
Scientific Writings, Books	34	8.9
Friend, Spouses, Companions	64	16.7
Subject Experts	42	10.9
No knowledge	49	12.8

Source: Authors 'calculations based on survey data

However, the amount of food additive used is important to prevent any health problems. Consumers are therefore concerned about whether the food they buy is safe.

The majority of consumers indicate that packaging (86.5%) and labels (77.6%) are now better than in the past while prices (55.5%) and tastes (57.6%) are better in the past. According to the data, it is seen that consumers are not satisfied with the deterioration of tastes in food and the rise in prices although there is now progress in packaging and labelling.

Consumer Attitudes about Food Safety

Consumer attitudes on food safety can be differentiated according to the type of food safety issues. Brewer et al. (1994) state that participants' attitudes to the food safety are dominated by six factors. These are chemicals (e.g. hormones in milk and food additives), health (e.g. cholesterol content and nutritional imbalances), degradation problems (e.g. microbial contamination), regulatory issues (e.g. food inspection and labelling), deceptive practices (e.g. weight loss diets) and ideal conditions (e.g. time for insecticide safety) (as cited in Wilcock et al., 2004) [12].

Table 4. Consumers' Thoughts on Food

	Same		Better in the Past		Better Now		Total	
	Number	%	Number	%	Number	%	Number	%
Price	88	22.9	213	55.5	83	21.6	384	100.0
Quality	38	9.9	151	39.3	195	50.8	384	100.0
Label	57	14.8	29	7.6	298	77.6	384	100.0
Packing	31	8.1	21	5.5	332	86.5	384	100.0
Freshness	60	15.6	127	33.1	197	51.3	384	100.0
Taste	66	17.2	221	57.6	97	25.3	384	100.0
Reliability	57	14.8	150	39.1	17	46.1	384	100.0

Source: Authors 'calculations based on survey data

According to another study conducted in Turkey (Bekar, 2013) [3], consumers are most concerned about artificial colour substances added to food, hormone and antibiotic residues in meat, milk and poultry, food with pesticide residues, food additives, GMO foods, contamination risk for food by microorganisms, microbiologically inappropriate food production, and restaurant sanitation. It is notable that the consumers are less anxious about food content, technological applications and production. It is important how the consumers behave when choosing food in this respect. In the research, the most important subject for consumers when buying product is the hygiene where the purchased products are produced (62.2%). It is followed by the effects of products on environment when buying those (58.6%) and not harmful food packaging for health (58.1%). Sales promoting campaigns such as promotions and product campaigns are seen as the least important issue.

Table 5. The Subjects That Consumers Pay Attention When Consumers Purchase Products (%)

	Very Important	Important	Have no Idea	Not Important	Not Important at All	Score	Sorting
Effects on environment when buying products	58.6	33.9	6.5	1.0	0.0	4.50	3
Being delicious when buying food products	49.7	46.9	1.6	0.8	1.0	4.43	7
To check the packaging stability of food products	52.1	41.7	4.7	1.6	0.0	4.44	6
Origin of the purchased product	39.3	40.1	16.4	2.3	1.8	4.12	11
Cooking and storing food products according to instructions	50.3	34.9	12.8	0.8	1.3	4.32	8
Low price when purchasing food products	31.5	43.0	5.2	16.1	4.2	3.81	12
Hygiene at the place where the purchased products are produced	62.2	34.4	2.1	1.3	0.0	4.57	1
Packaging used in food products is not harmful to health	58.1	40.1	0.8	0.3	0.8	4.54	2
Satisfying purchased products	36.5	51.8	4.4	6.8	0.5	4.16	10
Considering the health risk of purchased products	53.6	43.0	2.6	0.5	0.3	4.49	4
Nutritional values of purchased food products	45.8	40.6	7.6	3.9	2.1	4.24	9
Sales promotion campaigns such as promotions and product campaigns	20.3	41.4	13.0	16.4	8.9	3.47	5

5= Very Important 4= Important 3= Have no idea 2= Not important 1= Not important at all
Source: Authors 'calculations based on survey data

The relationship between the education which consumers attach importance to while purchasing products and the effects of buying products on environment (p=0.04) is found to be significant. The relation between education and the origin of the purchased product (p=0.01) is also significant.

Table 6. Evaluations of Food Sales and Consumption Places in Terms of Reliability (%)

	Very Reliable	Medium Reliable	Less Reliable	Unreliable	Never Reliable	Score	Sorting
Luxury Restaurants	12.2	61.7	20.1	2.6	3.4	3.74	3
Fast food	5.5	42.4	27.1	16.1	8.9	3.19	11
Canteens	1.0	37.5	43.0	12.8	5.7	3.15	12
Restaurants	3.4	53.6	31.3	7.0	4.7	3.44	8
Dining Halls	2.9	49.7	32.3	9.6	5.5	3.34	10
Cafeterias	0.8	57.8	29.7	6.8	4.9	3.42	9
Bakeries	4.9	57.3	26.0	6.3	5.5	3.50	7
24/7 Convenience Store	2.1	25.3	35.4	25.8	11.5	2.80	13
Supermarkets	22.7	66.1	8.6	1.0	1.6	4.07	1
Butchers	9.1	66.4	20.3	1.6	2.6	3.70	4
Fish Markets	7.8	54.2	26.0	4.4	7.6	3.50	6
Groceries	7.3	59.1	25.8	4.4	3.4	3.62	5
Hawkers	3.1	9.6	32.0	26.6	28.6	2.32	15
Neighbourhood Markets	13.8	68.2	11.5	3.6	2.9	3.86	2
Other (Buffet, Wrap Seller)	1.0	11.2	34.4	28.4	25.0	2.34	14

5= Very Reliable 4= Medium Reliable 3= Less Reliable 2= Unreliable 1= Never Reliable
Source: Authors 'calculations based on survey data

Furthermore, the relationship between income and storing and cooking food products according to the instructions (p=0.01), low price when purchasing food products (p=0.04), and not harmful food packaging for health (p=0.01) are significant.
The relationship between age and the effects of products on environment when buying products (p=0.03), and taking into account the health risk of the purchased products (p=0.047) are also significant.

Table 7. Tools That Affected Consumers during Food Purchase

	Number	%
TV Advertisements	249	64.8
Discount Days	145	37.8
Radio Advertisements	5	1.3
Promotional Sales	65	16.9
Newspaper-Magazine Advertisements	13	3.4
Wall Banners - Hand Banners	31	8.1
Friend, Neighbour, Business Circle	110	28.6
Other	53	13.8

Source: Authors 'calculations based on survey data

Consumers find that supermarkets are the most reliable places for the reliability of food sales places, followed by neighbourhood markets and luxury restaurants. Hawkers and 24/7 convenience stores are considered to be unreliable.
In addition, the consumers are mostly affected by TV advertisements and discount days while buying food. The least affecting one is radio advertisements.

CONCLUSIONS

Food safety is very important issue, especially in developing countries, concerning producers, intermediaries who process and store food, policy makers, decision makers, and consumers. Health, environment and agriculture are directly related to food safety. In the study, it is aimed to determine the level of consciousness of consumers on food safety in Isparta province. In the research, it is understood that the consumers' food safety concerns tend to increase nowadays along with technological progress and diversification of food processing technology. It is also found that consumers are not sufficiently knowledgeable and conscious about food safety systems and other issues related with it. They do not also know how to report their complaints about it. The most

common information source in related to food safety is televisions.

In terms of a sustainable food safety system, consumers need to be trained about providing the necessary hygienic and sanitary conditions in preparation and preservation of food at home. They should demand from the industry and the state that the food provided for consumption should be safe. The state should also make a legal framework and audit in order to ensure safe food. The effectiveness of these efforts will be enhanced by the fact that the trainings on food safety are carried out by the joint efforts of the state, industry and educational institutions, and by using televisions as information tools.

ACKNOWLEDGEMENTS

The authors thank to the Scientific and Technological Research Council of Turkey (TUBITAK) for supporting the research project 2209-A under which this work was financed.

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