

A Research on Consumer Awareness about Quality and Food Security Systems in Fruit Juice Products

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Abstract: The Food security concept can be defined as following the rules during foods production processing, storage, transportation and distribution phases and taking precautions in order to obtain healthy foods production. In order to provide basic competition and continuity for the competition towards "food security", "quality control" and "quality management systems" were formed. In this study, consumers' awareness level and thoughts in Antalya Province about fruit juice products' quality and food security systems were researched. For this purpose, 400 household who reside in Antalya province city center were interviewed through face-to-face interview method. It was revealed that households tend to have an aware and healthy consumption style and give importance to food security and pay attention to certificates such as ISO and HACCP. Turkish Food Regulations started applying lots of new development about food security. Turkish food system started going towards security approaches where quality systems such as HACCP are applied. Considering the fact that lots of products enter the food product market but many fail to achieve the same success, it will be fruitful to convey the future studies according to the results that reveal.

Key Words: Consumer Awareness, Consumer Behavior, Food Safety, HACCP, ISO

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I. Introduction

Positive or negative perceptions and knowledge of consumers for the use of any product in question are important factors on the product preference and consumption level. Turkey is an important country both in terms of fresh fruit variety and production and fruit juice products produced. Turkish people have a high tendency to consume fresh fruit. Significant developments have also been observed especially for the trend of consumption of industrially produced fruit juice in recent years. It can be predicted that this tendency will increase even more with the increase of the level of consciousness of the consumers about the fruit juice products and confidence in the product.

Consumers around the world have long been turning to juice for liquids for their need of vitamins and minerals, but in Turkey, fruit juice is only recently being consumed as a food product. The health consciousness, the increase in demand for good living and the easy consumption all have major roles in rise of the fruit juice. It is emphasized that the production of fruit juice, which started its industrial life in Turkey in 1960, accelerated in parallel to the world in the 2000s, which is also the mainly caused by the "rising health consciousness" all over the world. Parallel to the purchasing power of the consumer, it is observed that after the development of healthy nutrition knowledge, the companies have turned to highly different products and new flavors and the same trend is also experienced in Europe. Fruit varieties preferred in fruit juices vary depending on the cultural diversity. While orange and apple juice are consumed mostly in European countries, peach and cherry nectar are preferred in Turkey.

It is observed that the number of researches on consumer desires and consciousness in Turkey is limited while in the world there is an intense agenda in terms of food safety both in producers and consumers. In this study the socio-demographic characteristics of consumers in Antalya province and their level of consciousness and thoughts on quality and food safety systems in fruit juice products were investigated. In this perspective, the study has dealt with the non-alcoholic beverages sector from the food sector as one of the locomotive sectors of the Turkish economy, and the approaches related to consumers' quality and food safety in the consumption of fruit juice, which is closely related to community health.

1.1 Previous literature: There are two kinds of nutritional problems in the world. One of these, and perhaps the most important, is the people's accessibility to enough nutrients. The second is that these people can consume nutrients that are physiologically sound, healthy, and at the same time safe. [1].

With regard to the first problem, the concept of "Food Security" has emerged. This concept can be defined as the ability of all the people in the world to reach food products that are high in terms of nutritional value at all times, in order to ensure that they can continue their lives in a healthy and active manner. [2] [3]. This concept embraces the concepts of "getting food", "getting food" and "using food". [4].

As mentioned above, the second problem with nutrition is the inability to provide food safety. This problem has also led to the concept of "Food Safety". This concept is defined as the compulsory adherence to rules and measures in the production, processing, storage, transport and distribution processes of food to ensure healthy food production. Safe food means a food that is healthy and at the same time beneficial to the health [5]. It can also be described as producing food product that is appropriate with its physical, chemical and biological properties, suitable for consumption and does not lose its nutritional value. [6].

Both the lack of food security as well as food safety cause various problems both nationwide and on a global scale. In addition to the indispensability of food products in human life, the healthy food issue as a whole comes first in terms of government policies and enforcement procedures when considering economic benefits. The sustainability of public health, the reliability of food and providing and even increasing balanced nutrition are all under the social dimension of this matter. In economical dimension of the subject, there comes obtaining affordable prices so that people can get maximum benefit from their consumption [7].

Detection and elimination of these problems can be achieved by controlling food products in many steps from production to consumption, and achieving certain standards.

The Total Quality concept first took place of the quality control processes developed from this way and expressed as the protection of the superior features of the products from the manufacturer to the consumer, Later on, instead of this concept various quality assurance systems that can be used on almost every product such as HACCP, GAP, GMP, GHP have been introduced for food products [8]. Interest in HACCP, GMP, GHP, ISO, EUREPGAP and other quality assurance practices have increased in many developing countries [7].

International Standards are needed to ensure the safety of the global food supply chain, as most of today's food products can be consumed outside the borders of the country of origin. ISO-22000, one of the ISO systems developed by the International Organization for Standardization, is an application that helps businesses identify and control food safety risks [9]. ISO-22000 is one of the most commonly used systems in the production of food products and is the most commonly preferred food safety system. ISO-22000 is a standard that can be applied to all direct and indirect actors in the food supply chain from production to consumption [10].

The HACCP, meaning the Hazard Analysis Critical Control Point, aims to prevent hazards originating from vegetable or animal raw materials in the entire process starting from the foundation to the final product; including preparation, processing, production, packaging, storage and transportation activities [11]. In other words, HACCP is a management system that identifies, controls and maintains the physical, chemical and biological risks of food safety at all stages of procurement, production and distribution; from consumption of raw materials to consumption of final product by consumers [12]. Unlike the previous control systems, HACCP does not only control the final product, but also includes the control of raw materials at various critical points in the food production process [13].

II. Materials and Method

This article has been brought to the attention of some of the findings of a scientific research project named "*The Analysis of Public Awareness on Fruit Juice Consumption and the Optimum Product Design: The Example of Antalya Province*" which the authors have personally accomplished and concluded. The method has also been used for different results in other scientific outputs of that project [14].

Main data source of this scientific research project is household level cross-section data. In this concept, data obtained from the surveys which were done using face-to-face interview method on determined number of sample consumer mass were evaluated. In marketing researches, different sample sizes are used assuming different groundmass in application and specific reliabilities for tolerance levels and specific groundmass variance. When the groundmass is separated in two qualification group (in this study they are: fruit juice consumers and nonconsumers) and the groundmass size is more than 500,000 (Antalya center district population: 775,157), sample mass calculated [15] for %95 reliability and 0.25 (0.5 x 0.5) variance is 384. The research was applied on 400 households in total assuming there may be defective surveys. After the correction of the surveys, 389 surveys were evaluated. Original data obtained from households using face-to-face survey method were evaluated via "SPSS 13.0" software on computer.

III. Findings and Results

3.1. Socio-demographic profiles of consumers: In the late twentieth century, developments in the world of science have caused significant changes in the world and therefore also in social and economic areas in Turkey. Developments such as the widespread use of technological innovations in agriculture, the increase in agricultural production amounts, the increase in the level of education of individuals, and the introduction of women into working life have also changed consumer expectations of food products. This change in expectation reveals variations in food products as well as in many other products. However, the risks associated with the health of industrially processed food products have also increased. Rapid growth in the food industry has led to an increase in the number of diseases caused by food, and in particular this matter becoming widespread worldwide in recent years has led consumers to have more awareness of "safe food" and a tendency to consume it [16].

From this point of view, the demographic situation of the consumers participating in the study was evaluated before evaluating food safety information. The socio-economic structure is an important approach for determining the consumer profile. Basic characteristics such as gender, age, occupation, educational status, family life period can give important clues as to how consumption will be for certain groups.

According to this, 41.6% of the 389 cases participating in the survey were male and 58.4% were female consumers, indicating that the city of Antalya is compatible with the gender distribution of the urban area. In the distributions according to age groups, approximately one fifth of the population consists of young individuals, the majority being composed of middle-aged individuals and a relatively small proportion of the elderly individuals to other age groups. 47.8% of the sample households with a deviation of $\pm 5\%$ from the research population represent the young population, 44.7% to the middle age group and 8.9% to the elderly population. In the education level distribution of the sample kit, which is examined as one of the main variables explaining consumer behavior, the proportion in the low and middle education group is in majority. When the educational status of the subjects were examined, the largest group in the total population was composed of university education areas with 45%, followed by high school graduates and literate and primary school graduates, respectively. Approximately 21% of the respondents in the survey included housewives and students attended almost the same amount. In addition, approximately 16% of the total number of respondents are retired, 41% are employed and 1% are unemployed. When the survey participants are assessed in terms of their marital status distribution, more than half of the population consists of married individuals. In other words, 62% of the consumer mass is married, 32.9% is single, 2.6% is divorced-widowed. The sample mass, when evaluated in terms of household size, was observed to be a small family model of 3-4 people. In the study, the average household size was determined as 3.2 persons, the single person household rate was 7% while the family ratio consisting of 5 and more persons was found at 13%. (Table 1).

Table 1: Socio-demographic profiles of consumers

		F	%
Age groups	Age 18–24	77	19.8
	Age 25–34	105	27
	Age 35–44	81	20.8
	Age 45- 54	93	23.9
	Age 55 and +	93	8.9
Gender	Male	162	41.6
	Female	227	58.4
Marital status	Married	241	62
	Single	128	32.9
	Divorced	10	2.6
	Widow(er)	10	2.6
Education	Literate + Primary Education	51	13.1
	High school	144	37
	University	175	45
	Master's + Ph.D.	19	4.9
Working status	Housewife	81	20.8
	Retired	61	15.7
	Student	84	21.6
	Qualified self-employment	41	10.5
	Tradesman-merchant	25	6.4
	Officer	57	14.7
	Qualified specialist technical staff	11	2.8
	Worker-servant	24	6.2
	Unemployed	2	1,3

Number of people living in the household	1 person	27	7
	2 people	91	23.5
	3 people	113	28.9
	4 people	107	27.6
	5-8 people	51	13

One of the main factors affecting people's decision to consume and purchase is their level of disposable income. Individuals take decisions about the type of the products they consume based on their income levels and it is generally assumed that individuals who have higher income have more tendencies towards ready food consumption. As is known, industrially produced fruit juice products are also included in ready-to-eat foods. This perspective and the points interviewed within the scope of the research are also considered in terms of monthly disposable income levels.

It is observed that more than half of the consumer masses participating in the survey during the survey period are composed of the households with monthly income between 1000-2999 TL. Those who have a monthly income of over 3,000 TL have been in a 1/3 ratio. It has been determined that one in every ten households has household income below 1000 TL (Table 2).

Table 2: Monthly Household Income (TL:Turkish Lira)

Income range (TL:Turkish Lira)	N	%
0 among 999 TL	36	9.3
1000 among 1999 TL	120	30.8
2000 among 2999 TL	119	30.6
3000 among 3999 TL	74	19.0
4000 TL and over	40	10.3
Σ	389	100.0
Average Household Income (TL)		2401.76

3.2. Consumers' level of knowledge about HACCP and ISO: HACCP and ISO applications have been considered as important criteria considered as references for food quality and safety, and consumers' sensitiveness about the issue have tried to be evaluated.

Firstly, it was measured how much the consumers know the main application systems related to food quality and safety. While 78.4% of the participants said that they know about ISO (International Standards Organization); 63.2% said that they knew Turkish Food Codex and 91% of them said Turkish Standardization Institute . 74.3% of the same participants did not know HACCP (Hazard Analysis at Critical Control Points) and 94.1% stated that they did not know BRC (British Retail Consortium Standard) (Table 3).

Table 3: Level of Knowledge of Consumers towards Quality and Food Security Systems

		Yes	No	Σ
ISO	N	305	84	389
	%	78.4	21.6	100.0
BRC	N	23	366	389
	%	5.9	94.1	100.0
TSE	N	354	35	389
	%	91.0	9.0	100.0
HACCP	N	100	289	389
	%	25.7	74.3	100.0
Turkish Food Codex	N	246	143	389
	%	63.2	36.8	100.0

In the next stage it is also aimed to determine the level of conceptual knowledge. According to this, the ratio of those who know the concept of ISO 22.000 among consumers is 22.9% while the rate of those who do not know is 77.1%. 41.6% of those who understood the concept of ISO 22000 stated that ISO 22,000 was a Quality Assurance / Assurance / Document, while 21.3% said that it was Food Supervision / Control and Food Safety. 72.9% of those who know the ISO 22,000 stated that they control the suitability of fruit juices for this quality and food safety system (Table 4). At this point, it can be said that some of the consumers are sensitive to quality assurance.

Table 4: Consumers' ISO 22.000 Knowledge Level

	N	%
Yes, I know the ISO 22.000	89	22.9
No, I don't know the ISO 22.000	300	77.1
Σ	389	100.0
Food Inspection / Control	19	21.3
Quality Assurance / Security / Certificate	37	41.6
Food Safety	19	21.3
Quality Standard	13	14.6
Production Guarantee	1	1.1
Σ	89	100.0
Yes, I check	65	72.9
No, I do not check	24	27.1
Σ	89	100.0

Within the scope of the research, the main questions about the application of HACCP as well as the ISO application were directed and 81.7% of participants stated that they understood the meaning of the concept of "HACCP". 56.3% of the respondents declared that the concept means Food Control / Critical Control Point. 16.9% of the respondents stated that it means Food Security. The rate of those who control the compliance of fruit juices with the concept of "HACCP" is 52.4%. The rate of those who do not control is 47.6% (Table 5).

Table 5: Consumers' HACCP Knowledge Level

	N	%
Yes, I know the HACCP	71	18.3
No, I don't know the HACCP	318	81.7
Σ	389	100.0
Food Safety	12	16.9
Food Control / Critical Control Point	40	56.3
Hygiene and Production Control in Production Place	6	8.5
Safe Farming Practices	2	2.8
Food Production Procedure	3	4.2
Healthy Content	5	7.0
European Health Standard	1	1.4
Content	1	1.4
Consumption Practices	1	1.4
Σ	71	100.0
Yes, I check	37	52.4
No, I do not check.	34	47.6
Σ	71	100.0

IV. Discussion and Conclusion

The increase in diseases and health risks stemming from food in recent years has made the issue of food safety important both nationally and internationally. Preventing food safety threatens human health as well as trade. For this reason, international initiatives have begun to implement a number of applications aimed at taking measures. The changes in the quality perception of consumers and hazards resulting from food are increasing the production for this. In developed countries, conscientious consumers can cause measures to be taken in order to change the law on food safety.

In this study, it has been observed that the consumers in Antalya have more knowledge of ISO and TSE among the main quality assurance systems. After that, Turkish Food Codex is another known application in terms of food safety. On the other hand, it has been found that about four-thirds of the same consumers do not know the HACCP and almost all of them do not know BRC.

With a generalization, each of the five consumers knows the ISO 22,000 concept, but the remaining

four do not. Nearly half of those who know the concept of ISO 22000 said that ISO 22,000 is a Quality Assurance / Certification, and the fourth one said it is a Food Inspection / Control and Food Safety. About three quarters of those who know ISO 22,000 have indicated that they control the suitability of the fruit juices they buy for this quality and food safety system.

According to the results of the research, it is not wrong to say that consumer consciousness of consumption has improved in terms of food safety. According to this, in order to be able to respond to the demands of the domestic and foreign consumers, there are important tasks for the manufacturers and supervisory agencies in terms of renewing and updating themselves according to these conditions. Unfortunately, the increase in food products that are harmful to health, distorted and fraudulent has come to frightening dimensions in Turkey . There are national press releases that indicate that unexportable, low-quality and deteriorating food products are being diverted from time to time to the domestic market for consumption. For the solution of the problem, it is very important for the companies operating in the food sector to update themselves according to international standards and the state to establish a strong inspection system of analysis laboratories with up-to-date technology in control of the food inspection related organization's expert staff [17]. Because companies need to implement effective supervision in addition to their own auto control systems. In this way, it will be possible to keep the social health from risks.

The authors of this article think that this issue is applicable to future consumer groups across the country and even to different food products in future research. Not only demographic characteristics of consumers but also psychological factors and psycho-social factors affecting purchasing behavior can be included in future research. It is thought that it is also possible to produce new policies and strategies in order to eliminate the shortcomings of the society by following the developments in consciousness of healthy consumption by the studies in this scope to be carried out with successive time intervals.

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