

## The Preferences of Consumers for Organic Food Products: The Case of Samsun Province in Türkiye

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Received: 11.01.2023

Accepted: 16.03.2023

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**Abstract:** The decreases in the nutritional value of foods and food safety issues resulting from the methods developed to increase food production have become the most important nutritional problems encountered all over the world. To solve these problems, agricultural and food processing methods are purified from all kinds of chemicals, hormones, and genetically modified organisms. The objectives of this study are i) to determine which of the environmentally friendly and certified organic foods are consumed the most, consumer preferences regarding these foods, the perception of the consumers on the concept/definition of organic food, and the expectations of the consumers after organic food consumption, ii) to compare the perception of organic food concept/definition and post-consumption expectations of organic food consumers and non-consumers. This study was carried out in the Samsun province of Türkiye where 19.6 thousand metric tons/year of organic agricultural products are produced. A total of 480 people participated in the study, of which 240 were consuming organic products and 240 were not consuming organic products. Results and statistical data were evaluated using frequency, descriptive statistics, chi-square, and t-test. According to the findings of study, more than half of the organic products consumed are milk, dairy, poultry, fresh fruit, and vegetable products. Most consumers agree that organic products are hormone-free and produced without the use of chemical fertilizers and pesticides. However, those who are aware that organic products are certified products are mostly organic food consumers. Some participants still consider organic products to be only natural or farmer products. In terms of expectations after organic product consumption, both groups consider that the prices of organic products are high, sales points and marketplaces should be accessible, purchasing attempt depends on income, and organic products are bought due to the positive effects of organic foods on health, environment, and farmers.

**Keywords:** Organic, consumer, preference, ecologic, hormone

### 1. Introduction

Organic food is defined as a product obtained from a farming system that avoids the use of synthetic fertilizers and pesticides (Shafie and Rennie, 2012). The purpose of this production method, which is monitorable with label information and a certification system, is to minimize environmental impacts while offering more sustainable food production (Anonymous, 2017). Organic food production offers consumer products that are safe, free from genetically modified organisms (GMOs), and hormone-free. Organic food production can protect consumers, especially producers, and the environment, and therefore public health in general,

by minimizing exposure to toxic and permanent chemical pollution in the working area, soil, atmosphere, and drinking water (Anonymous, 2018). For these reasons, the demand for organic food products has increased in recent years all over the world.

Attitudes towards organic food, where sustainability and environmental concerns are at the forefront, and the response of producers to the demand created by consumer preferences, sectorial production in this area has also started to increase (Lassen and Korzen, 2009). In addition to the sensory properties (aroma, taste, smell, appearance, etc.) of food products, non-sensory properties

(certification, controlled agricultural production, ecological effect of production, production without the use of chemicals, etc.) are also very important for organic food consumers (Magnusson et al., 2003; Hjelm, 2011). The non-sensory properties of organic products directly affect the health of consumers and play an important role in the preference of individuals for organic products instead of conventional products (Apaolaza et al., 2018; Hansen et al., 2018).

There were almost 430 thousand organic producers in Europe (European Union: more than 343 thousand), with the largest numbers in Türkiye (74.5 thousand). According to the land for agricultural production in 2019, more than 16.5 million hectares of farmland were used for organic food in Europe. Spain had the largest area with 2.4 million hectares (Trávníček et al., 2021). From an economic point of view, organic products are in a market of 90 billion euros in the world, while the USA constitutes the largest market with 40 billion euros, followed by Germany with 10 billion euros, France with 7.9 billion euros, China with 7.6 billion euros and Italy with 3.1 billion euros (Rizzo et al., 2020). In 2021, organic agricultural food production in Türkiye has been reported as 1.1 million metric tons/year on 243778 hectares of land, and 19.6 thousand metric tons of this amount were grown in Samsun (Anonymous, 2021).

In the literature, there are studies on non-sensory criteria affecting organic food consumption preferences in addition to the comparison of the sensory properties of organic and conventional products. Studies exist on the knowledge of consumers about the concept of organic products (Briz and Ward, 2009; Aertsens et al., 2011; Van Loo et al., 2013; Turan and Demircan, 2021), quality perception of consumers on organic foods (Cicia et al., 2002; Aarset et al., 2004), organic product preferences of consumers (Christensen et al., 2020; Wojciechowska-Solis and Barska, 2021), attitudes and behaviors of consumers towards the consumption of these foods (Doğan and Kaplan, 2016; Testa et al., 2019; Ranjbar Shamsi et al., 2020), and trust in the certificate (Yin et al., 2016; Murphy et al., 2022). On the other hand, no study has been found about a comparison between the perception of the concept of organic products and the expectations of organic food consumers and non-consumers. In addition, after determining the perception of the organic product concept of the participants, investigating the consumption and preferences of organic products and comparing the preferences of organic food consumers and non-consumers will provide more accurate results. The objectives of this study are i) to determine which of the environmentally friendly and certified organic

foods are consumed the most, consumer preferences regarding these foods, the perception of the consumers on the concept/definition of organic food, and the expectations of the consumers after organic food consumption, ii) to compare the perception of organic food concept/definition and post-consumption expectations of organic food consumers and non-consumers.

## 2. Materials and Methods

The material of this research was obtained through a questionnaire from consumers residing in the Atakum, Canik, and İlkadım districts located in the center of Samsun using the convenience sampling method. The data were collected between May-August 2022. The Cochran sampling formula (Equation 1) was used to determine the number of consumers surveyed (Bartlett et al., 2001).

$$n = \frac{(t)^2(p)(q)}{(d)^2} \quad (1)$$

$$n = \frac{(1.96)^2(0.5)(0.5)}{(0.05)^2} = 384$$

Where; n is the sample volume; t is the tabular value corresponding to the 95% confidence level; p is the probability of occurrence of the investigated event (0.5); q is the probability that the investigated event will not occur (q= 1-p); d represents the allowable margin of error (5%). Accordingly, the number of consumers surveyed was calculated as 384. The number of samples was increased to 480 by adding 25% to the 384 obtained from the formula. Half of the 480 participants consist of those who consume organic products, and the other half of those who do not consume organic products.

The surveys were conducted with the consumers responsible for purchasing food in the family. Consumers are divided into two groups as organic food consumers (who purchased organic food at least once in the last year) and organic food non-consumers according to their responses to the question of “an organic product is a product that is generally produced without using any artificial fertilizers and plant protection chemicals and is monitored by a certification company. Do you consume such a product?” In the questionnaire, questions about the socio-economic characteristics of organic food consumers and non-consumers were included. In data analysis, descriptive statistics such as frequency distribution, percentage, and arithmetic mean were performed. In addition, the difference between the continuous variables of the study (socio-demographic variables) was determined by analysis of variance (t-test), and the categorical variables of the study (socio-demographic variables, perception of organic

product concept) were analyzed using the chi-square test.

### 3. Results and Discussion

Socio-demographic results were presented in Table 1. The mean age of organic food consumers was 34, while that of organic food non-consumers was 38 and also there was a significant difference between these two groups ( $p < 0.05$ ). Household income was found as 13167 TL for those who consume organic food and 12332 TL for those who do not consume organic food (Table 1). Interestingly, no significant difference was found between the incomes of organic food consumers and non-consumers. On the other hand, Durmaz (2010) stated that one of the determinants of the demand in Türkiye for organic products is income. It has also been reported by Denver and Christensen (2015) that income is the first determinant of demand. In fact, income is not the only factor that determines organic food consumption. The limited number or remoteness of

organic food outlets may also affect the consumption of organic products. Tsakiridou et al. (2008) also reported that organic food non-consumers have complaints about limited outlets. Lockie et al. (2002) stated that income does not have a dramatic effect on organic food consumption as well. Regarding the payments for food, the ratio of food expenditures in household income was higher in those who consumed organic food (36.62%) than in those who did not consume organic food (Table 1). In the study conducted by Turan and Demircan (2021) in the province of Isparta, it was determined that the food expenditure of the consumers constituted 23.64% of the income. The difference between 36.62% and 23.64% might be due to the difference in the sales prices in these two provinces and the fact that Samsun is a metropolitan province, but Isparta is not.

Looking at the gender distribution of the population, 60.83% of those who consume organic food and 51.67% of those who do not consume

**Table 1.** The socio-demographic variables of the participants

		Organic food consumers (240)		Organic food non-consumers (240)		<i>P</i>	
Continuous variables		Mean		Mean			
Age (year)	Female	36		38		0.463	
	Male	32		38		0.014**	
	Total	34		38		0.042**	
Individual income (TL/month)		9652.21		9221.89		0.789	
Household income (TL/month)		13167.23		12332.09		0.738	
Ratio of food expenditures in household income (%)		36.62		35.87		0.892	
Categorical variables		N	%	N	%	$\chi^2$	<i>P</i>
Gender	Female	146	60.83	124	51.67	4.097	0.043*
	Male	94	39.17	116	48.33		
	Total	240	100.00	240	100.00		
Marital status	Married	125	52.08	176	73.33	32.475	0.000**
	Single	115	47.92	64	26.67		
	Total	240	100.00	240	100.00		
Children under the age of 15	None	112	46.67	97	40.42	4.567	0.471
	1	77	32.08	82	34.16		
	$\geq 2$	51	21.25	61	25.42		
	Total	240	100.00	240	100.00		
Occupation	Public sector	60	25.00	84	35.00	6.880	0.032*
	Private sector	68	28.33	68	28.33		
	Other	112	46.67	88	36.67		
	Total	240	100.00	240	100.00		
Education level	Primary	20	8.33	21	8.75	1.989	0.575
	Secondary	19	7.92	27	11.25		
	High school	41	17.08	44	18.33		
	University	160	66.67	148	61.67		
	Total	240	100.00	240	100.00		
Home ownership	Yes	162	67.50	145	60.42	4.027	0.045*
	No	78	32.50	95	39.58		
	Total	240	100.00	240	100.00		
Employment status of spouse	Employed	90	72.00	106	60.23	4.460	0.035*
	Unemployed	35	28.00	70	39.77		
	Total	125	100.00	176	100.00		

\*: Different statistically at  $p < 0.05$ , \*\*: Different statistically at  $p < 0.01$

organic food are women. A statistically significant difference was found in terms of gender distribution between these two groups ( $p<0.05$ ) (Table 1). In the study of Çelik (2013), it was determined that gender was effective in purchasing organic food. Regarding the marital status of participants, 52.08% of individuals consuming organic products and 73.33% of organic food non-consumers were married. In addition, a statistical difference was found between the two groups according to marital status ( $p<0.01$ ) (Table 1). Similar to this study, in the study of Çelik (2013), it was determined that married participants were more in the group of those who consumed organic products. While 46.67% of households consuming organic products do not have children under the age of 15, 40.42% of organic food non-consumers do not have children under the age of 15. Compared to those who did not consume organic food, the rate of home ownership was higher in those who consumed organic food ( $p<0.05$ ). On the other hand, the working status of spouses was found to be higher in those who did not consume organic food ( $p<0.05$ ). For the education of the participants, there is no significant difference between the education levels of organic food consumers and non-consumers (Table 1). However, the education level of organic food consumers is expected to be higher than that of non-consumers. This may be related to the high participation rate of university graduates. Lea and Worsley (2005) also found the effect of education level on organic food consumption was to be minimal. Durham (2007) and Pešteket et al. (2018) suggested that organic food purchasing attitude is related to well-being concerns rather than the education level of individuals.

Organic product preferences of the organic food consumers were presented in Table 2. Accordingly, milk and dairy products were the most preferred (85.42%) followed by poultry products with 79.58%, fresh fruit and vegetables with 73.33%, and fresh meat and meat products with 51.25% based on the number of organic food consumer (Table 2). This result can be attributed to the widespread sale of milk and dairy products, thus providing easy access to the products. In the study by İnci et al. (2017) in the province of Diyarbakır, individuals mostly consumed fresh fruits and vegetables, followed by milk and dairy products, meat products, and eggs. Moreover, Çelik (2013) reported that tomato was most consumed, because the research was conducted in an organic marketplace in İstanbul. Changes in food preferences of individuals from region-to-region may lead to the differences in the ranking of the organic products consumed. Likewise, differences in preferences are associated with organic foods commonly produced in countries; tea in India, milk

and dairy products in Denmark, fresh meat and meat products in Argentina, bananas in Central America and African countries, dates and olive oil in Tunisia (Usal, 2006; Merdan, 2014). According to the total scores of products placed in Table 2, milk and dairy products, poultry products, and fresh fruit and vegetables constitute more than half of the total organic product consumption (53.76%).

**Table 2.** The preferences of the consumers for organic foods

Products*	Organic food consumers (240)	
	N	%
Milk and dairy products	205	85.42
Poultry products (egg/chicken)	191	79.58
Fresh fruit and vegetables	176	73.33
Fresh meat and meat products	123	51.25
Dried fruit and vegetables	98	40.83
Bread	93	38.75
Grains/Legumes	92	38.33
Fruit juices	63	26.25
Other	23	9.58

\*: One person could select more than one option

In Table 3, the perception of the consumers toward the concept of organic products was examined. Organic product consumers mostly defined the organic product (70.83%) as a “natural product” based on the number of organic food consumers and non-consumers. This definition was followed by “products produced without using chemical fertilizers and pesticides” (68.33%). On the other hand, organic food non-consumers defined organic products the most (62.92%) as “food produced without the use of chemical fertilizers and pesticides”, followed by “natural product” (62.08%) and “hormone-free product” (48.33%). A statistical difference was found between preferring the expressions “natural product”, “farmer product”, and “certified product” of organic food consumers and organic food non-consumers ( $p<0.05$ ) (Table 3).

The expectations of consumers about organic product consumption are presented in Table 4. When the organic product consumers and non-consumers were compared, it was found that the price is the most important factor in organic product consumption. De Almeida et al. (2017) emphasized in their study conducted in Brazil that high prices are the most important criterion affecting the purchase and the main complaint of those who consume organic foods. Variables following the price factor are related to the promotion of organic products and the proximity of sales points. According to de Almeida et al. (2017), the biggest obstacles to organic food consumption are the limited sales points and product variety following

**Table 3.** The perception of consumers for organic product concept

	Organic food consumers (240)		Organic food non-consumers (240)		$\chi^2$	P
	N	%	N	%		
Natural product	170	70.83	149	62.08	4.122	0.042*
Food produced without the use of chemical fertilizers and pesticides	164	68.33	151	62.92	1.561	0.212
Farmer product	125	52.08	100	41.67	5.229	0.022*
Hormone-free product	125	52.08	116	48.33	0.675	0.411
Certified product	75	31.25	55	22.92	4.220	0.040*
Other (home-made products/products labeled as organic)	7	2.92	3	1.25	1.634	0.201

\*: Different statistically at  $p < 0.05$ **Table 4.** The expectations of the consumers about organic product consumption

	Organic food consumers (240)		Organic food non-consumers (240)	
	Mean	Std. dv.	Mean	Std. dv.
Prices of organic products are important for consumption	4.27	0.97	4.43	1.01
Encouraging and supporting organic products can affect my consumption.	4.24	0.87	4.32	1.20
Sales points of organic products should be close.	4.15	1.21	4.28	0.98
Consumption of organic products helps children grow up healthier.	4.12	1.01	4.11	0.96
Consumption of organic products helps me to be healthier.	4.10	1.11	4.07	1.14
I think I am a responsible citizen by consuming organic products.	4.05	1.20	4.01	0.88
Consumption of organic products helps to create a healthier rural area.	4.04	0.92	3.96	0.79
Consumption of organic products requires higher income.	4.02	0.79	3.91	1.02
Consuming organic products requires paying more.	4.02	1.34	3.88	1.21
Consumption of organic products helps to increase farmer incomes.	4.01	1.32	3.76	0.89
Consumption of organic products helps to reduce environmental problems caused by agriculture.	3.99	1.13	3.75	1.11
I contribute to sustainability in agriculture by consuming organic products.	3.95	0.92	3.55	1.24
High prices for organic products	3.77	1.36	3.12	1.09
I can find enough organic products near my house.	2.56	1.01	2.92	0.62
I can find the desired variety and amount of organic products.	2.38	1.09	3.01	1.23
I have enough confidence in organic products	2.33	1.25	2.55	0.59
My income level is suitable for organic product consumption.	2.21	1.14	2.37	0.71

Std. dv.: Standard deviation

the high price. Besides, opinions about the positive effects of organic products on health and the environment come to the fore. Denver and Christensen (2015) found in their study that the reasons individuals prefer organic food generally were related to both health and environmental concerns. However, since organic products are more expensive than conventional products, the consumption of these products is less than expected.

When the scores of all the expressions were analyzed, there was no great difference between organic food consumers and non-consumers, but the most variation was found in the expression "the prices of organic products are high", followed by "I can find the desired variety and amount of organic products". The statement "the prices of organic products are high" was rated higher by

organic food consumers (Table 4). This result might suggest that organic food consumers follow the prices of organic foods due to the fact that they buy these products. Because only individuals who buy organic food can measure whether the money to be given is worth the product. Padel and Foster (2005) also stated that consumers are willing to pay more because of the advantages of organic products. The statement "I can find the desired variety and amount of organic products" was scored more by organic food non-consumers (Table 4). This finding gives the idea that the reason for not consuming organic products is not related to whether to find organic products or not. Cechin et al. (2021) and de Almeida et al. (2017) also determined that organic product variety is a factor preventing consumption and it was emphasized that this factor is an important parameter only for organic food consumers.

#### 4. Conclusions

Organic farming is an environmentally friendly production technique that increases environmental sustainability. Therefore, the trend of organic product consumption is increasing all over the world. In this study, the definitions of organic food of individuals were determined, and then the socio-economic characteristics of these two groups and their expectations of organic food were compared.

In this study, it has been observed that the organic product preferences of consumers vary depending on demographic characteristics. In this period when we are in the era of fast consumption, it has become increasingly difficult to reach natural food with the use of hormones and GMOs used together with herbicides, pesticides, and other chemicals used during food production in agricultural products. With environmental pollution affecting the food chain, the interest in clean food production comes to the fore both in industry and research.

With the production of clean food, practices such as genetically modified or hormonal foods, which are thought to have long-term negative effects on human health, are tried to be prevented from becoming widespread. For this reason, the demand for organic products, which are tried to be produced with natural inputs, is increasing. In this study, the importance of revealing consumers' attitudes toward organic products and their thoughts about organic products has been tried to be emphasized. These outputs are important both in terms of deciding the directions to increase ecological production and determining the marketing strategies of organic products. In addition, foresight can be created for future research to better understand the factors that lead consumers to buy organic products, and to discuss organic food purchase and consumption experiences.

It is possible to think of organic food consumption as a result of an individual's lifestyle. However, since the multidisciplinary approach of this lifestyle will draw a more realistic framework, it may be useful to increase the available information on the subject and to address it by both producers and consumers for revealing a holistic perspective.

According to the results, the employment status of the spouses, gender, marital status, occupation, and home ownership of organic food consumers and non-consumers differed statistically. Organic food consumers mostly consumed milk and dairy products. More than half of the organic products consumed were milk and dairy products, poultry products, and fresh fruit and vegetable products.

Organic food consumers and non-consumers agreed that organic products were hormone-free and produced without the use of chemical fertilizers and pesticides. However, those who were aware that organic products were certified products were organic food consumers more. It was determined that among the participants in both groups, some thought of organic products as natural or farmer products. This is very common disinformation. In terms of expectations about organic product consumption, both groups considered that the prices of organic products were high, sales points should be accessible, purchasing depended on income, and these products had positive effects on health, the environment, and producers.

In terms of consumers, there are different ways to increase the consumption of organic products. One of them is to increase consumers' demand for organic products. For this, it is important to make promotions that explain the benefits of organic products to consumers. Another way to increase the consumption of organic products is to facilitate access to products. For this reason, the establishment of organic product markets together with public markets will encourage consumers to consume organic products. Conducting a study to investigate the motivations of consumers while determining how much more organic consumers may be willing to pay when purchasing organic products and this payment rate will be complementary to this study.

#### Declaration of Author Contributions

Methodology, Investigation, Data Curation, Formal Analysis, Visualization, Writing-Original Draft Preparation, Editing, *D. BAŞKAYA SEZER*; Conceptualization, Material, Methodology, Writing-Review, *O. KILIÇ*; Writing-Review, *U. BAŞER*. All authors declare that they have seen/read and approved the final version of the article ready for publication.

#### Funding

This research received no external funding.

#### Declaration of Conflicts of Interest

All authors declare that there is no conflict of interest related to this article.

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**CITATION:** Başkaya Sezer, D., Kılıç, O., Başer, U., 2023. The Preferences of Consumers for Organic Food Products: The Case of Samsun Province in Türkiye. *Turkish Journal of Agricultural Research*, 10(1): 60-67.