



## Factors influencing the perception of organic certification logos in Turkey

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Received 12 October 2012, accepted 16 January 2013.

### Abstract

Consumers' perceptions on organic certification logos and the factors influencing these perceptions were explored. Data from surveys conducted in major cities of Turkey revealed that organic food consumers had little knowledge about logos, although the declared level of trust in organic logos was high. According to ordered logit models, consumer's perceptions on organic certification logos were influenced by purchasing frequency and weight of organic foods in total food consumption. Dummy variables representing additional private certification company logos as well were generally found to have a significant effect on logo perception. This result suggests that consumers' attitudes towards these logos and towards the governmental logo are not the same. Female and older people were more sceptical about the trustworthiness of the logos. While the credibility of the logos and the standards and control systems underlying the logos increased as frequency of purchasing organic food increased, those consumers who prefer organic open markets for buying organic food were hesitant to trust the credibility of the organic certification logos. The mandatory governmental logo and the underlying standards are trusted more than the private company logos. However, the difference of the attitudes toward logos decreases when the control system is in question. When a comparison between perceptions towards labels including different additional certification companies' logos is made, the additional logo was found to affect the stated preferences more negatively when the companies were foreign. Enhanced interest and trust in the organic certification logos among consumers would foment the development of the organic sector, and the findings of this paper serve as an input for the achievement of this aim.

**Key words:** Organic certification, logo, consumer preference, ordered logit, Turkey.

### Introduction

Parallel to the trends of increased demand for high quality products and enhanced health and environment awareness; demand for products of sustainable production techniques, such as organic products, has also increased. Because "being a product of organic agriculture" is not an observable quality but an intrinsic one, today's complex food supply chain for organic products may be subject to asymmetric information and opportunistic behaviour. By assuring credibility of organic products, organic certification system enables the evolution of organic sector.

The Law on Organic Agriculture (Law No. 5262) <sup>1</sup> states that, in Turkey, only products certified as organic may carry organic product labels. Therefore, organic certification is the only way for organic products to carry "organic" tag and to obtain a price premium for this attribute. As more companies participate in the business of organic certification, the number of logos found on organic products has increased in Turkey, similar to the worldwide trend. Currently, 20 companies<sup>†</sup> certify organic products, and each has its own logo.

The certification of organic agricultural products is also regulated by Law No. 5262. The Ministry of Food, Agriculture and Livestock is the official national authority and authorises private control and certification bodies with regard to performing certification activities according to Law No. 5262. All organic products to be offered on the domestic market should be certified according to the Turkish Republic organic standard and carry the "Turkish

Republic Organic Agriculture" logo. Certification according to the Turkish republic organic standard is performed by the above-mentioned private certification companies, which place both their own logo and the logo of the "Turkish Republic Organic Agriculture" on the product package. Therefore, most of the organic products offered in the domestic market carry two logos. The logo of the organic product control and certification companies could be considered to be an assurance of the quality of the control and certification services they provide.

Earlier studies on consumers' degree of awareness and their perceptions of quality assurance or certification of food products revealed that consumers were uncertain regarding the credibility of organic logos <sup>2-7</sup>. However, the number of consumer studies performed on organic food standards and certification is limited <sup>8-11</sup>. Moreover, as underlined by some researchers <sup>3,12</sup>, research on consumer behaviours and attitudes toward organic products does not answer certain questions, for example, "Which factors affect consumers' perceptions of organic logos and in which way?"

In their study on consumer sensitivity to labels on the packaged food products in Izmir, Turkey, Özgül and Aksulu <sup>13</sup> found that from 1995 to 2005, consumers' level of interest in and use of the product labels increased considerably. In addition, the priority of various types of information changed over time, especially the "price" information, which moved from second place to forth. Nevertheless, no research has focused on consumers' awareness and perception of the organic product labels and logos.

<sup>†</sup> The figure was 13 in 2010, when the research was performed.

The aim of this paper was to analyse consumers' perceptions of organic certification logos. Using survey data gathered from organic food consumers in Turkey, the factors influencing consumers' perceptions of organic logos were investigated and the results of the research model on the impact of various factors on organic logo perception presented.

### Materials and Methods

The material used in this paper consisted of data collected via a survey of organic food consumers in Turkey. During February and March 2010, a survey of 400 consumers was conducted at various organic food sales points in the cities of Ankara and Izmir. The survey participants were identified during the survey study, by the use of a short questionnaire. For the organic food consumers to be eligible to participate in the survey, they should be mainly responsible or co-responsible for their household's food purchases and must buy organic products at least once or twice a month. Additionally, age and gender quotas were determined by dividing the population between 18 and 75 years of age into two groups (18-44 and 45-75 years) and considering the consumer profile obtained from the organic food consumption studies. The interviews were performed in three shops in Izmir and two shops in Ankara. Two hundred consumers were interviewed in each city. Because no reliable data were available on the shares of various marketing channels in total organic food sales in Turkey, in both cities, the number of interviews was equally distributed between supermarkets and organic food shops.

To achieve a realistic survey design, first, the presence of products carrying different organic certification logos in the market was investigated by a market inventory study at major organic food sales points. The market inventory study identified the organic certification logos most frequently found in the organic food markets in major cities of Turkey, such as Istanbul, Ankara, Izmir, Antalya and Konya. Before the quantitative research (the consumer survey) was performed and the questionnaire was designed, a qualitative study was also conducted in the form of focus group discussions with organic food consumers. The aim of this study was to achieve an effective survey design to adequately meet the objectives of the research. In this context, three focus group discussions were organized with organic food consumers in May 2009, one in Istanbul (with 9 individuals) and two in Izmir (with 9 and 11 individuals, each).

The inventory study determined that there were two organic certification logos on 94.9% of the products. Additionally, 3.4% of the products carried one logo, and 1.7% of the organic products carried three logos on their packages. Of the two logos, one was the organic certification logo of the Turkish government (Turkish Republic Organic Agriculture logo), and the other was the logo of a private certification company that performed the Turkish Republic Organic Agriculture certification. While governmental logo was present on the 99.5% of the products, at least one private company logo was found on 97% of the products. Of the private company logos, only three were encountered on more than 5% of the organic products. The two most frequently observed logos were used in the survey study; both logos belonged to foreign

companies. However, in the focus group discussions, it was observed that the organic food consumers thought that there was difference between the Turkish and foreign certification companies. Therefore, a logo of a Turkish certification company was also included in the survey study. Thus, the aim of the study included to assess the difference between consumers' perceptions of the certification companies of Turkish and foreign origin. To measure the difference created by the presence of a certification company logo, one of the labels presented to the consumers carried the governmental logo only, while all others carried two logos (one of which was the governmental logo), as the presence of two logos is common in the market. The logos placed on the labels are given in Table 1.

The survey questions used to elicit consumers' perceptions of the logos were based on the most prominent factors detected during the focus group discussions. These factors were listed among the reasons for preferring certain organic certification logos to others. In the consumer survey, the relevant questions were formulated as a seven-point semantic differential scale (Table 2).

In addition to identifying consumer perceptions based on the attitude scale, the factors affecting these perceptions were investigated using regression analysis. In the regression models, perception rankings constituted the dependent variables. It should be noted that both the attitude scores and the regression analysis were estimated based on the rankings for the four labels presented to the consumers, three of which included two logos: the governmental logo and the logo of a certification company (Table 1). Because one of the labels only included the governmental logo, it was possible to determine the influence of the additional logos present on the other three labels on the perception of these labels.

It was hypothesized that consumers' perceptions of organic certification logos could be attributed to demographic variables on one hand and to organic food consumption related variables on the other. Because the dependent variables used to represent the perceptions are categorical instead of quantitative (taking on values from one to seven), ordered logit models were used, which gave better results than ordered probit models. Ordered response models constitute a simple variation on ordinary logit/probit models and are used when the dependent variable is a discrete and ordered measurement - not simply binary, but on an ordinal rather than an interval scale<sup>14</sup>.

In the general case, consider an ordered response variable,  $y$ , that can take on any of the  $J+1$  values  $0, 1, 2, \dots, J$ . It is assumed that a latent variable underlies the observed response:

$$Y^* = X\beta + \epsilon = z + \epsilon$$

Then, "cut points"  $\alpha_1 < \alpha_2 < \dots < \alpha_j$  are defined, such that,

$$\begin{aligned} y &= 0 \text{ if } y^* \leq \alpha_1 \\ y &= 1 \text{ if } \alpha_1 < y^* \leq \alpha_2 \\ &\dots \\ y &= J \text{ if } y^* > \alpha_j \end{aligned}$$

Because the response takes on seven values in our case, there

**Table 1.** Organic product logos used during survey study.

Label 1	Label 2	Label 3	Label 4
TR Organic Agriculture and IMO	TR Organic Agriculture and ECOCERT	TR Organic Agriculture and ORSER	TR Organic Agriculture

**Table 2.** Questions used to evaluate consumers' perceptions of organic logos\*.

Interview question	Answer categories
<b>Awareness:</b> Please rate the labels on the following scale from 1 to 7.	1 = This label is completely unknown to me. 7 = This label is well-known to me.
<b>Trust:</b> Please rate the labels on the following scale from 1 to 7.	1 = I do not trust this label; 7 = I trust this label. 0 = I don't know
<b>Credibility:</b> Please rate the labels on the following scale from 1 to 7.	1 = This label does not stand for organic production. 7 = This label stands for organic production. 0 = I don't know
<b>Standard:</b> How strict are the organic standards behind the label? Please rate the labels on the following scale.	Scale from 1 to 7: 1 = below average ; 4 = average ; 7 = above average 0 = I don't know
<b>Control:</b> How strict is the control system behind the label? Please rate the labels on the following scale.	Scale from 1 to 7: 1 = below average; 4 = average; 7 = above average 0 = I don't know

\* Source of the dependent variables in the ordered logit models.

are six such cut points, from  $\alpha_1$  to  $\alpha_6$ . The probability that individual  $i$  exhibits response  $j$ , conditional on the characteristics  $x_i$ , is then given by:

$$P(y_i = j | x_i) = \begin{cases} P(y^* \leq \alpha_1 | x_i) = F(\alpha_1 - z_i) & \text{for } j = 0 \\ P(\alpha_j < y^* \leq \alpha_{j+1} | x_i) = F(\alpha_{j+1} - z_i) - F(\alpha_j - z_i) & \text{for } 0 < j < J \\ P(y^* > \alpha_J | x_i) = 1 - F(\alpha_J - z_i) & \text{for } j = J \end{cases}$$

The unknown parameters  $\alpha_j$  are estimated jointly with the  $\beta$ s in terms of maximum likelihood.

The Gretl econometric software<sup>14</sup> was used for the ordered logit estimations. Overall probabilities were calculated at the mean values of the variables using estimated intercepts and coefficients. The significance of the model was verified by calculating the  $\chi^2$  statistics for log-likelihood functions.

A total of five models were estimated for five different dimensions of the consumers' perceptions of organic certification logos. Data on consumers' attitude scores for each of the four labels presented to them were pooled so that 1600 observations were available for each model. To avoid "I don't know" answers, which could convert the attitude scale variables to nominal ones, these answers, which constituted 0 to 20% of each series, were treated as missing values. After eliminating the "I don't know" answers and the other missing values, a total of 1261 to 1573 observations were used for modelling the perceptions.

The purpose of the estimated models was to measure the impact of the most relevant explanatory factors on the consumers' perceptions of various aspects of organic certification logos. Several alternative specifications of the model were tested, which related consumers' perceptions of organic certification logos with different combinations of individual explanatory variables. The final model, which was selected to analyse the dependence of perception on demographic and organic product consumption variables included the variables given in Table 3.

## Results

**Sample characteristics:** The average household size of the consumers who participated in the survey was three. The average age in the sample was approximately 41 years, and approximately 70% of the participants were less than 45 years old. Approximately 60% were females, and almost 75% had at least a college-level education. More than half of the sample had a monthly household income of more than 3600TRY, while this figure was more than 4800TRY for approximately one third of the sample. The demographic characteristics of the sample were similar to those found in previous studies<sup>15,16</sup> (Table 4).

While the share of the monthly food expenditure spent on organic products was generally below 40%, those consumers buying organic food more than once a week constituted a minority. Among the sales points where these consumers primarily bought organic food products, 72% of the respondents shopped at hypermarkets and 57% shopped at specialised organic food shops, followed by the organic open market (28% of the respondents).

### Consumers' perceptions of organic product certification logos:

On the seven point attitude scale where 1 meant "completely unknown to me" and 7 meant "well-known to me", the average score attached to the labels was 3.3. In other words, consumers declared that their level of recognition of the organic certification logos was less than medium. Where 1 meant "I do not trust" and 7 meant "I trust", the average score of 4.85 implies a high level of trust in the organic certification logos. However, 20% of the consumers responded to this question with the "I don't know" option. According to organic food consumers, their level of trust in organic certification logos is high: these consumers believed that the products were really organic (mean value = 5.18), had high standards (mean value = 4.66) and were properly controlled (mean value = 4.69).

When comparing labels, it was observed that labels including the logos of certification companies did not receive higher scores than the labels with the governmental logo alone. The consumers exhibited the highest level of familiarity with the governmental logo (4.44 points on a 7-point scale). The fact that this logo is mandatory for all organic products sold in the domestic market explains the relatively high level of awareness. However, this logo would be expected to be more frequently recognised for the same reason. It is understood that consumers do not pay much attention to certification logos. With respect to the consumers' level of awareness, the governmental logo is followed by the logos of ORSER, ECOCERT and IMO, in that order; however, little difference was observed between the levels of awareness regarding these three logos (Table 5).

With respect to trust, the consumers attached lower ratings to the products with two certification logos (governmental logo plus the logo of a certification company) compared to those with just one certification logo (governmental logo). This finding implies that consumers are confused about the unfamiliar logos. Ratings of the logos with respect to "being real organic products" and "standards implied" revealed a similar picture. Consumers seem to be rather confident that products with organic certification logos are really organic and that these products are held to high standards but assign higher ratings to the products with the governmental logo alone.

In contrast to other aspects, regarding "control", the label with the governmental logo alone had ratings that were similar to those given to other labels. In this case, the difference between the ratings of the different labels was not statistically significant (Chi square value for Kruskal Wallis Test = 4.79,  $p = 0.184$ ).

**Table 3.** Description of the independent variables used in the ordered logit models.

Variable	Explanation	Symbol
<b>Demographic characteristics</b>		
Gender	Female = 1; male = 0	FEMALE
Age	Years	AGE
Household size	Number of individuals	HSIZE
Level of education	Primary school, secondary school = basic category High school, collage, university education = 1	HIGHEDU
Level of income *	Less than TRY 1200 = basic category TRY1200-2399 = 1 ; other = 0 TRY2400-3599 = 1 ; other = 0 TRY3600-4799 = 1 ; other = 0 Equal or more than TRY4800=1; other = 0	INC1200_2399 INC2400_3599 INC3600_4799 INC > 4800
City	Izmir = 1 ; Ankara = 0	IZMIR
<b>Logos</b>		
Logos	TR Organic Agriculture = basic category IMO Logo = 1; other = 0 ECOCERT Logo = 1; other = 0 ORSER Logo = 1; other = 0	IMO Logo ECOCERT Logo ORSER Logo
<b>Organic food buying behaviours</b>		
Share of organic products in total expenditures of food and beverages	0– 20% = basic category 21– 40% = 1 ; other = 0 41– 60% = 1 ; other = 0 61– 80% = 1 ; other = 0 81– 100% = 1; other = 0	FOOD%21_40 FOOD%41_60 FOOD%61_80 FOOD%81_100
Organic food buying frequency	1 or 2 times per month = basic category Once per week = 1; other = 0 Several times per week = 1; other = 0	WEEK = 1 WEEK > 1
Sales point where organic food is most frequently purchased**	Organic food shop = 1; other = 0 Super/hypermarket = 1; other = 0 Open market = 1; other = 0 Other = basic category	ORGSHOP HYPERM OPENM

\* TRY 1 = € 0.48 (exchange rate of Turkish Central Bank on the 1<sup>st</sup> February, 2010). \*\*Health stores, product-specific shops, producer etc.

**Table 4.** Characteristics of the interviewed consumers.

<b>Demographic characteristics</b>					
	N	Mean	Std. Deviation	Minimum	Maximum
Household size	399	3.03	1.19	1.00	10.00
Age	400	41.25	12.26	19.00	75.00
		Category	Frequency	%	Cumulative
Gender	400	Female	238	59.5	59.5
		Man	162	40.5	100.0
Level of education	399	Primary school	8	2.0	2.0
		Secondary school	9	2.3	4.3
		High school	85	21.3	25.6
		Higher education	297	74.4	100.0
Level of income	399	Less than 1200 TRY*	21	5.3	5.3
		1200-2399 TRY	83	20.8	26.1
		2400-3599 TRY	90	22.6	48.6
		3600-4799 TRY	69	17.3	65.9
		4800 TRY and more	136	34.1	100.0
<b>Organic food buying behaviours</b>					
Share of organic products in total expenditures of food and beverages	400	0 – 20%	152	38.0	38.0
		21 - 40%	131	32.8	70.8
		41 - 60%	56	14.0	84.8
		61 - 80%	40	10.0	94.8
		81 - 100%	21	5.3	100.0
Organic food buying frequency	400	1 or 2 times per month	149	37.3	37.3
		Once per week	176	44.0	81.3
		Several times per week	75	18.8	100.0
Primary organic food purchase point **		Super/hypermarket	288	72.0	
		Organic food shop	228	57.0	
		Open market	112	28.0	
		Producer	18	4.5	
		Other***	18	4.5	

\* TRY 1 = € 0.48 (exchange rate of Turkish Central Bank on the 1<sup>st</sup> February, 2010). \*\* Because more than one response was possible, the sum of the percentages exceeds 100. \*\*\* Health stores, product-specific shops, producer etc.

**Table 5.** Consumers' perceptions of organic product certification logos.

	N <sup>a</sup>	Mean	Std. Dev.	Kruskal-Wallis Test
Awareness-TRO <sup>b</sup> +IMO	396	2.84	2.22	Chi-square = 111.94 df = 3 Asymp. Sig. = 0.000
Awareness-TRO+ECOCERT	397	2.88	2.14	
Awareness-TRO+ORSER	395	3.04	2.11	
Awareness+TRO	397	4.44	2.52	
Trust-TRO+IMO	311	4.71	1.92	Chi-square = 25.88 df = 3 Asymp. Sig. = 0.000
Trust-TRO+ECOCERT	314	4.61	1.86	
Trust-TRO+ORSER	316	4.83	1.82	
Trust-TRO	332	5.23	1.90	
Credibility-TRO+IMO	344	4.86	2.07	Chi-square = 22.91 df = 3 Asymp. Sig. = 0.000
Credibility-TRO+ECOCERT	346	5.00	1.95	
Credibility-TRO+ORSER	345	5.36	1.75	
Credibility-TRO	359	5.48	1.86	
Standard-TRO+IMO	332	4.56	1.61	Chi-square = 9.50 df = 3 Asymp. Sig. = 0.023
Standard-TRO+ECOCERT	334	4.56	1.51	
Standard-TRO+ORSER	328	4.68	1.46	
Standard-TRO	341	4.83	1.67	
Control-TRO+IMO	359	4.65	1.69	Chi-square = 4.79 df = 3 Asymp. Sig. = 0.184
Control-TRO+ECOCERT	356	4.55	1.66	
Control-TRO+ORSER	352	4.79	1.57	
Control-TRO	362	4.75	1.73	

<sup>a</sup>"Don't know" answers were omitted from the estimates. <sup>b</sup>TRO: Turkish Republic Organic Agriculture logo

### **Ordered logit models of the factors affecting consumers' perceptions of organic certification logos:**

The results of the ordered logit models on the relation between the consumers' perceptions of the organic certification logos and the explanatory variables are given in Table 6. The results reveal that, logo awareness was positively influenced by household size, by increased share of organic foods in the total food expenditure of the household and by preference for the hypermarket as one of the main sources of organic purchases. However, it is understood that age and household income above a certain level decreases the interest in organic certification logos. Because the reference logo is the "Turkish Republic Organic Agriculture" logo, it is not surprising that the consumers are less familiar with the alternative labels, including the logos of the certification companies in addition to that one. As mentioned above, familiarity with the governmental logo, which is present on all labels, was not valued by the consumers as a basis score for the labels with two logos; instead, a mean score for the two logos present on the label was given. Therefore, these coefficients should be considered to represent the influence of the additional logo on the relevant perception aspect with reference to the governmental logo. It is an unexpected finding that organic food consumers in Izmir city, which is the centre of organic production and the base for most of the organic certification companies, were less aware of the organic certification logos than consumers in Ankara.

Females were found to have less trust in the organic certification logos and in the control systems behind them, while younger consumers expressed more trust in the logos. In addition, consumers in households with a higher share of organic products in their food expenditures and those buying organic products more frequently appeared to have more trust in the logos.

Consumers' trust in the logos of private certification companies was found to be lower compared to the trust in the governmental logo. When considering that the consumers were less familiar with these logos, this finding is compatible with the expected result. Conversely, the finding that the consumers in Izmir had less trust in the organic certification logos should be debated. It is understood that the consumers did not fully understand that

the IMO and ECOCERT logos indicated the organic nature of the products. This observation could be because these logos contain English abbreviations that are not familiar to many Turkish consumers. While those buying organic products more frequently and those buying organic food from specialised organic shops expressed more trust in the credibility of the logos, those preferring organic open markets, as well as older consumers, did not seem to trust that the logos represented real organic products. The group of consumers with a medium level of income and the group that spent 21 to 40% of their food budget on organic food expressed a relatively high level of trust that the logos denoted real organic products. This finding could indicate the

tendency of these groups to consume certified organic products more frequently. Trust in the standards and the control systems behind the logos increased with the frequency of consumption. However, the consumers with higher levels of income, the consumers who buy organic products in hypermarkets, and the consumers in Izmir expressed less trust in the strength of the standards compared to the respective reference groups. The lack of knowledge regarding the logos of the certification companies resulted in lower levels of trust in the standards and the control systems behind them. However, the amount of pessimism declined when the control systems are concerned.

No relation was found between higher education (high school and university) and the perception of organic logos. More specifically, university graduates were found to be more sceptical regarding the trustworthiness of the logos. In a study on consumers' use of food labels, it was found that from 1995 to 2005, the influence of income level, gender, employment status, as well as the positive impact of education level on the use of nutritional labels disappeared over time. While the sensitivity of primary school and high school graduates to product labels was found to increase over time, the sensitivity of university graduates was found to decrease<sup>13</sup>. Therefore, the finding on the impact of educational level on awareness and perception of organic food certification logos could be considered reasonable.

### **Discussion**

In this study, consumers were found to have little knowledge of organic certification logos and of the standards underlying these logos. Nevertheless, their trust in the logos with respect to essential dimensions was found to be fairly high.

The finding that the increased share of organic food spending in the total food expenditures increased the consumers' logo awareness is coherent with the expected result. The decreasing levels of interest in logos with the increase of income over a certain level might be interpreted as these consumers consuming organic products mostly because they perceived such products as luxurious, i.e., special products that appeal to the high-income class, and that they did not dwell much on the qualification of

**Table 6.** Influence of various factors on consumers' perceptions of the certification logos: Results of the ordered logit models.

Dependent variables N	AWARENESS 1573		TRUST 1261		CREDIBILITY 1382		STANDARD 1323		CONTROL 1417	
	Coef.	Odds Ratio	Coef.	Odds Ratio	Coef.	Odds Ratio	Coef.	Odds Ratio	Coef.	Odds Ratio
FEMALE	-0.005 (0.098)	0.99	-0.284*** (0.105)	0.75	-0.150 (0.102)	0.86	-0.110 (0.104)	0.90	-0.337*** (0.100)	0.71
AGE	-0.009** (0.004)	0.99	-0.017*** (0.004)	0.98	-0.011** (0.004)	0.99	0.000 (0.004)	1.00	-0.006 (0.004)	0.99
HSIZE	0.200*** (0.043)	1.22	-0.059 (0.044)	0.94	0.105** (0.047)	1.11	0.045 (0.047)	1.05	-0.060 (0.044)	0.94
HIGHEDU	0.018 (0.232)	1.02	0.206 (0.253)	1.23	0.171 (0.243)	1.19	0.250 (0.260)	1.28	-0.144 (0.224)	0.87
INC1200_2399	-0.347 (0.233)	0.71	0.047 (0.255)	1.05	0.093 (0.245)	1.10	-0.188 (0.246)	0.83	0.053 (0.225)	1.05
INC2400_3599	-0.365 (0.237)	0.69	-0.010 (0.255)	0.99	0.415* (0.246)	1.51	-0.168 (0.247)	0.85	-0.022 (0.229)	0.98
INC3600_4799	-0.286 (0.242)	0.75	0.112 (0.265)	1.12	0.045 (0.252)	1.05	-0.267 (0.253)	0.77	-0.114 (0.235)	0.90
INC>4799	-0.831*** (0.242)	0.44	-0.072 (0.260)	0.93	-0.254 (0.250)	0.78	-0.594** (0.251)	0.55	-0.330 (0.231)	0.72
IZMIR	-0.507*** (0.108)	0.60	-0.422*** (0.115)	0.66	-0.156 (0.113)	0.86	-0.304*** (0.117)	0.74	-0.279** (0.112)	0.76
IMO Logo	-1.357*** (0.136)	0.26	-0.624*** (0.145)	0.54	-0.603*** (0.140)	0.55	-0.399*** (0.142)	0.67	-0.151 (0.135)	0.86
ECOCERT Logo	-1.289*** (0.135)	0.28	-0.730*** (0.144)	0.48	-0.500*** (0.138)	0.61	-0.419*** (0.141)	0.66	-0.257* (0.135)	0.77
ORSER Logo	-1.111*** (0.133)	0.33	-0.484*** (0.143)	0.62	-0.191 (0.138)	0.83	-0.260* (0.141)	0.77	-0.007 (0.135)	0.99
FOOD%21_40	0.068 (0.117)	1.07	-0.034 (0.125)	0.97	0.279** (0.124)	1.32	-0.114 (0.125)	0.89	-0.129 (0.119)	0.88
FOOD%41_60	0.328* (0.172)	1.39	0.279 (0.188)	1.32	0.145 (0.177)	1.156	0.309* (0.178)	1.36	0.057 (0.170)	1.06
FOOD%61_80	0.617*** (0.192)	1.85	0.507** (0.206)	1.66	0.082 (0.197)	1.09	0.358* (0.207)	1.43	0.365* (0.202)	1.44
FOOD%81_100	1.020*** (0.250)	2.77	0.804*** (0.275)	2.23	0.323 (0.248)	1.38	0.139 (0.262)	1.15	0.940*** (0.255)	2.56
WEEK=1	0.173 (0.113)	1.19	0.234* (0.121)	1.26	0.558*** (0.121)	1.75	0.451*** (0.122)	1.57	0.260** (0.116)	1.30
WEEK>1	0.246 (0.154)	1.28	0.701*** (0.163)	2.02	1.098*** (0.167)	3.00	1.239*** (0.166)	3.45	0.592*** (0.154)	1.81
ORGSHP	-0.118 (0.126)	0.89	0.159 (0.135)	1.17	0.219* (0.133)	1.25	0.083 (0.133)	1.09	0.026 (0.128)	1.03
HYPERM	0.217* (0.131)	1.24	-0.027 (0.140)	0.97	0.000 (0.133)	1.00	-0.369*** (0.137)	0.69	-0.483*** (0.132)	0.62
OPENM	0.134 (0.111)	1.14	0.099 (0.121)	1.10	-0.232* (0.119)	0.79	0.064 (0.117)	1.07	-0.188* (0.113)	0.83
Log-likelihood	-2524.6		-2230.2		-2310.4		-2140.9		-2382.9	
Percent correctly classified	46.2		29.8		37.0		41.5		37.7	
LR test: Chi-square (21)	416.88 [0.000]		372.21 [0.000]		362.17 [0.000]		469.56 [0.000]		440.74 [0.000]	

Figures in parentheses are absolute values of the t-ratio. \*, \*\* and \*\*\* indicate significance levels of 10%, 5% and 1%, respectively.

being organic. However, further research is needed before this finding can be generalised.

The finding that females had less trust in the organic certification logos and in the control systems behind these logos appears to be compatible with the sensitivity of females as consumers, which is well documented in the consumer research literature. Concurrence of the higher levels of trust in organic certification logos with younger age, more frequent purchase and a greater allocation of the food budget to organic products is coherent with the expected result.

Association of the higher levels of trust in the credibility of the logos and in the standards and control systems behind these logos with the increased frequency of purchases might be interpreted as an increased level of consumption because of an increased level of trust in organic certification logos. The finding that the organic open market shoppers were hesitant to trust the credibility of the organic certification logos indicates that these consumers prefer organic open markets because they can connect with producers. These findings imply that the distrust in the organic certification logos constitutes a real obstacle to increased organic food consumption. Also, as has been argued, the organic open markets represent a tool for overcoming this obstacle, particularly for certain groups of consumers.

Given that the reference logo was that of the government, which is mandatory and present on almost all of the organic products, it is natural that the logos of the certification companies are recognised less often. The finding that the logos of the certification companies and the underlying standards were also trusted less than the governmental logo might be attributed to a lack of knowledge about these logos.

During the consumer survey, it was observed that the consumers were confused by the logos that consisted of English abbreviations of expressions relating to "Organic certification", such as those of IMO and ECOCERT. Some of the consumers were hesitant about whether these logos represented organic products and whether the products stamped with these logos were produced in Turkey. However, when considering food products, Turkish consumers tend to prefer foods that are local in origin. Therefore, it is predictable that the confusion regarding the meaning of the logos and the origin of the products negatively influenced the acceptability of these products. The reduction in the level of pessimism concerning the control system could be interpreted as a reflection of the traditionally high level of trust in the products imported from developed countries, as well as trust in the services of European companies.

## Conclusions

Based on the above results and discussion, increased levels of awareness and trust in the organic certification logos among consumers would clearly stimulate the development of the organic sector. It is suggested that both the government and private certification companies make efforts toward achieving this aim. These and other institutions could cooperate to provide consumers with organic certification information. The findings of this paper constitute an input supporting the achievement of this aim.

Although Turkish consumers are known to become more sensitive to food safety issues over time, the claim that they still do not take on a sufficient level of responsibility to reflect this on the producer sector also seems to be true for organic food consumers. Given the low levels of logo recognition, it is understood that consumers' perceptions of the logos are, to a great extent, subjective in nature. Improved service quality in organic certification requires increased consumer interest in the certification logos.

## Acknowledgements

This publication was generated as part of the CERTCOST Project, agreement No. 207727 (<http://www.certcost.org>), with financial support from the European Community under the 7<sup>th</sup> Framework Programme. The publication reflects the views of the authors and not those of the European Community, who is not to be held liable for any use that may be made of the information contained herein. The authors gratefully acknowledge funding from the European Community.

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