Consumer Willingness to Pay for Organic Products in Urban Turkey

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Summary

The objective of the paper is to present the preliminary results of the survey project whose aim is to explore the Turkish consumer's perceptions regarding food safety and the tradeoff they make between chemical residues and cosmetic quality in fresh fruit and vegetable marketing chain. Previous research in Turkey contends that Turkey' organic food exports are growing and that there is a small but growing domestic market. A lacking component of the prevailing studies is that none of the studies have focused on the cosmetic quality component of organic products. Another aspect that is missing in the previous studies is that it is not possible to make inferences for the Turkish urban consumers due to designs in sampling and population definition. The aim of the project will be fulfilled by estimating a representative sample of Turkish urban consumer's willingness to pay for reduced chemical residues in food and the tradeoff they make between cosmetic quality and food safety. The data is obtained through consumer focus group studies and consumer surveys with a representative sample of Turkish urban population.
Higher income and educated individuals show more interest and have more knowledge regarding organic products. The choice for organic products is due to consumer perception that organic products have higher nutritional value and carry low health risk. It is also found that consumers do not perceive that organic products have higher prices than conventional counterparts. Consumer willingness to pay for products with organic labels and certified products is up to 36%, thus representing a strong demand potential for organic products in Turkey's urban markets.

KEYWORDS: Organic fruits and vegetables, consumer preferences, willingness to pay, perceived risk

1. Introduction

Turkey's organic production started with demand from the European Union countries in 1984-1985. The first production and exports were limited with traditional agricultural export items of Turkey: raisins and dried figs. Organic exports started with simply 8 items particularly after the 1980s both the number of organic products and volume of exports started to increase. Turkey's export for organically produced agricultural products has been rapidly growing mostly in response to increasing demand in the European Union countries. Common view and findings of the research on organic trade in Turkey confirms that European market is expanding. With respect to the distribution of organic production exports across product groups, more than half of the value is attributed to Turkey's traditional crops: hazelnuts, raisins, dried figs and dried apricots. The share of these four products in total organic exports is 80% in 1998, however due to increase in the number of various other product groups in export value; the share has dropped to 60% in 2004. However, it is clear that traditional product groups have a central importance in Turkey's organic food production and exports.

2. Background

Domestic consumption of organic products is still at its very early stages. After 1999, specialized stores started selling organic products particularly in centers such as İzmir, Adana, Antalya, Kuşadasi, Bodrum. Organic demand has started to grow with several supermarkets starting to include such products in their selection. Akgüngör, Miran and Abay demonstrate that Turkish consumers are willing to pay up to 10% premium to avoid health risks due to pesticides and thus for products with organic labels (Akgüngör, Miran and Abay, 2001). Several other studies have pointed our interest and demand for products with organic labels (Koç, Akyıl, Ertürk and Kandemir, 2002). The market however is still in very weak. Organic products, produced in 0,14% of total arable land has a sales volume of 3 million (including what is being sold as labeled "natural"; products which are not certified organic). Considering certified organic products, the market share of labeled products are less than 1% (Turkish Ecological Agricultural Association). However, it is estimated that the annual growth rate of the supermarket sold of organic products are growing at a rate of 50% (Wiler and Yuseffi, 2005).

3. Objectives

The objective of the study is to explore consumer attitudes towards organic products and their willingness to pay. In dong so, the project also aims to:

- Analyse consumers' attitudes towards organic foods,
- Determine the factors that influence the decision to buy,
- Consumer willingness to pay for products that are labeled as organic.

4. Data and methods

The data is compiled through a questionnaire collected from a random sample of 202 consumers in Istanbul and Izmir. Personal interviews were performed in February 2007 via a structured questionnaire with the household member who performs most of the food shopping. The questionnaire was constructed through extensive pre-testing of each particular question via personal interviews with the consumers. The interviewed individuals were asked to state their interpretations of a series of suggested questions.

The fieldwork was conducted in cooperation of a professional marketing research firm. To ensure close collaboration with the researchers and the research firm, the research team played an active role throughout the fieldwork. The research team, along with the field directors and field supervisors of the professional research firm, held training sessions with the field workers regarding the survey questions and the sampling scheme.[1] The supervisors asked the respondents about the length and the quality of the interview and several demographic questions. Following validation, the completed questionnaires were checked for the quality of data.

5. Results

5.1. Sample Profile

The sample is made up of a total of 202 individuals whose main socio-economic characteristics are shown in Table 1.

(Table 1)

[1] Details regarding the random sampling scheme can be obtained from the authors.

The majority of the sample is women (75%). The average age is 36. It is expected that the majority of the sample would consist of women since the survey intended to find individuals who do most of the food shopping. Average education is 8.7 years; most of whom are middle school graduates. The average annual income if the household is 9271 €. The average household size is 3.29 persons

5.2. Organic Product Awareness and Individual Characteristics

Tables 2 and 3 show that cross tabulations across organic product awareness and age does not reveal a statistically significant relationship. However, education and income are significant determinants of organic product awareness of the sample.

(Table 2)

(Table 3)

5.7. Consumer Preferences of Organic and Non-Organic Alternatives

This part considers consumers' decision making process when making purchases and evaluating organic and non organic alternatives. To understand such process, we use the analytic hierarchy process to uncover consumer preferences (AHP). AHP is a mathematical decision making technique that allows consideration of both qualitative and quantitative aspects of decisions. It reduces complex decisions to a series of one-on-one comparisons, then synthesizes the results (Mc Caffrey, 2005). In exploring consumer preferences for organic food purchases, we consider that consumer has "quality", "price", "knowledge on how the product is produced (certified)" and "health risk". Under quality, the consumer considers attributes such as "cosmetic quality", "nutritional value", "hygiene" and "taste", all of which leads the consumer to make a decision to purchase organic and non organic alternatives.

The following results in Table 4 present consumer's choices of organic and non organic alternatives using the above criteria. The consumer is asked to indicate the relative importance of the attribute for organic and non-organic alternative; giving % score for each alternative to sum up to 100. The results are presented below:

(Table 4)

Consumers rank organic products higher than non organic products when they consider the cosmetic quality of the product. The percentage score that the consumers give to organic product with respect to cosmetic quality is 0.728, while the percentage score for non organic products are 0.235. Similarly, with respect to nutritional value, hygiene and taste, consumers always rank organic alternatives over non organic alternatives.

When the quality sub criteria (cosmetic quality, nutritional value, hygiene and taste) are evaluated together, the consumers rank nutritional value over the other three attributes (0,357). Their ranking for hygiene comes second; taste comes third and cosmetic quality the last. The results indicate that consumers value health-related attributes such as nutritional value and hygiene over cosmetic and taste related attributes (Table 5).

5.8. Variables that Determine Consumer Awareness of Organic Products

Organic awareness is measured within two steps. First consumers were asked whether they have heard of the term "organic product". If answered yes, they were given alternative definitions which one of them has the correct answer. Those consumers who choose the correct answer are considered to be "aware" with respect to organic food. Probit model is used to estimate the variables that determine awareness. The result of the probit model is presented in Table 6.

(Table 6)

The probit model suggests that age, education, income levels positively affect organic awareness. The results indicate that there is an indication that consumers have an educated awareness towards organic products. The people that know about organic production are high income, older and aducated individuals. All other variables such as gender, household size, employment status does not affect consumers' awareness of organic products. The results indicate that domestic marketing of organic food calls for informing young people and lower income groups of the presence and benefits of organic products.

5.9. Consumer willingness to Pay

Consumer willingness to pay for organic products is elicited using a contingent valuation survey. Scenarios regarding prices and organic and non organic alternatives were presented to the consumers.

The survey was designed to simulate consumers' tomato purchasing behavior for their respective households under alternative prices and scenarios about pesticide residues. Under scenario 1, the consumers were not given any information about pesticide residues in tomatoes (present case). Under scenario 2, the consumers were provided with a label that guarantees that the tomatoes were tested and certified that they do not contain pesticide residues harmful to human health. The price under scenario 2 was above the price under scenario 1. The consumers were informed that the prices of all other fruits and vegetables were at their prevailing levels and none of them were under sale. The sample was divided into 4 sub samples. Each sub sample received different sets of prices. The two sets of prices for 4 sub samples and the number of individuals in each sub sample are given in Table 7.

(Table 7)

Under scenario 1, the survey asks the individuals to state the amount of tomatoes that they would buy at given prices. The individuals were read and shown a statement indicating that "Assume that over stack of the tomatoes that you usually buy, there is a label that says: 'These tomatoes are organic and they are tested and certified that there are no pesticide residues that are harmful for human well-being' and these tomatoes are sold at (price under scenario 2) Turkish Liras (T.L.)/kg.". The individuals were asked whether they would buy tomatoes under the prevailing price and scenario. If so, the individuals were then asked to state the amount of tomatoes that they would buy.

Demand for tomatoes is estimated using OLS model and Tobit model. (Table 8). Since the dependent variable includes "zero" values as well as non negative values, we use Tobit model to estimate consumer willingness to pay (for details regarding willingness to pay estimates and theoretical background, see Akgüngör, Miran and Abay, 2001).

The model suggests that all variables other than income affect tomato demand. All the variable coefficients are as expected by the theory. The organic dummy variable is positive and significant as expected since it represents a demand shift due to presence or an organic label.

(Table 8)

The willingness to pay for organic labels is calculated using the coefficient estimates (for the derivation of willingness to pay, see Akgüngör, Miran and Abay, 2001).
$WTP = - b_2X_2 / b_1$
WTP= -152.457 * 0.5/-93.649 = 0.81398 YTL/kg
Since the average price of non organic product is 2.248 and consumer willingness to pay is 0.81 TL, the consumers' are willing to pay up to 36% price premium.

6. Final remarks

The study on urban consumers' preferences and willingness to pay for organic foods reveal that educated and high income individuals have increased interest on organic product purchases. The choice for organic products is due to consumer perception that organic products have higher nutritional value and carry low health risk. It is also found that consumers do not perceive that organic products have higher prices than conventional counterparts. Consumer willingness to pay for products with organic labels and certified products is up to 36%. This represents a potential demand for organic products in Turkey's urban markets.

7. References

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Appendix:

The Variables Used in the Econometric Model

Variables	Variable description
PRICE	Price of organic and non organic tomatoes
INCOME	Household income
ORGANIC	Dummy variable that takes the value of 1 if the product is organic and 0 if the product is non organic
HOUSEHOLD	Household size
AGE	Respondent's age
EDUCATION	Respondent's education level
MARITAL	Marital status
KID_18	Children under the age 18
KID_3	Children under the age 3
KID3_6	Children between ages 3 and 6
KID7_14	Children between ages 7 and 14
KID15_17	Children between ages 15-18
RISK	Perceived risk
GENDER	Respondent's gender (male=1)
SOCIAL SECURITY	Have social security? (yes=1)
EMPLOYED	Are currently employed? (yes=1)

Tables

Table 1. Socio-economic characteristics of the survey sample

Sex	Frequency	Percent		
Men	51	25.2		
Women	151	74.8		
Total	202	100.0		
Marial Status	**Frequency**	**Percent**		
Married	138	68.3		
Single	49	24.3		
Spouse Deceased	11	5.4		
Divorced	4	2.0		
Total	202	100.0		
Age Groups	**Frequency**	**Percent**	**Mean**	**Std Deviation**
18-30 years old	84	41.6	25.3	3.54
31-40 years old	58	28.7	35.9	2.71
40-50 years old	41	20.3	45.3	3.27
51 + years old	19	9.4	63.4	7.31
Total	202	100.0	36.0	12.26
Education	**Frequency**	**Percent**	**Mean**	**Std Deviation**
Literate	6	3.0	.33	0.58
Elementary	63	31.2	5.02	0.13
Primary	27	13.4	8.22	0.58
High School	89	44.1	11.10	0.43
University	17	8.4	15.18	0.53
Total	202	100.0	8.97	3.42
Income level of household	**Frequency**	**Percent**	**Mean**	**Std Deviation**
<3600 €	24	12.7	2897.5	488.11
3601-6000 €	46	24.3	4641.5	569.80
6001-9000 €	35	18.5	6988.3	749.23
9001-12000 €	28	14.8	9918.0	517.45
12001-15000 €	28	14.8	13091.3	123.92
15001 + €	28	14.8	20726.0	5207.32
Total (no answer: 13 individuals)	189	100.0	9271.1	6109.19
Profession*	**Frequency**	**Percent**		
Civil Servant	27	13.8		
Wage earner	67	34.4		
Self employed	57	29.2		
Pensioner	37	19		
Other	7	3.6		
Total (no answer: 7 individuals	195	100.0		

* Profession of the household member who brings home the majority of income

Table 2. Organic Product Awareness and Education

Question: Have you ever heard of the term "organic product"?

	Literate (no school)		Elementary		Primary		Secondary		University		Total	
	frequency	%	frequency	%	frequency	%	frequency	%	frequency	%	frequency	%
Yes	2	33.3	31	49.2	14	51.9	70	78.7	15	88.2	132	65.3
No	4	66.7	32	50.8	13	48.1	19	21.3	2	11.8	70	34.7
Total	6	100.0	63	100.0	27	100.0	89	100.0	17	100.0	202	100.0

(Pearson Chi-Square value = 23.025, Asymp. Sig. (2-sided) =.000)

Table 3. Organic Product Awareness and Income

Question: Have you ever heard of the term "organic product"?

	<3600 €		3601-6000 €		6001-9000 €		9001-12000 €		12001-15000 €		15001 + €		Total*	
	frequency	%	frequency	%	frequency	%	frequency	%	frequency	%	frequency	%	frequency	%
Yes	9	37.5	27	58.7	23	65.7	20	71.4	20	71.4	22	78.6	121	64.0
No	15	62.5	19	41.3	12	34.3	8	28.6	8	28.6	6	21.4	68	36.0
Total	24	100.0	46	100.0	35	100.0	28	100.0	28	100.0	28	100.0	189	100.0

*13 individuals did not give information regarding their incomes.
(Pearson Chi-Square value = 11.846, Asymp. Sig. (2-sided) =.037)

Table 4. Consumers' Ranking of Organic and Non Organic Attributes (% rank)

Attributes	Min.	Mean.	Max.	S.Deviation
Cosmetic Quality				
Organic	0.000	0.728	1.000	.187
Non organic	0.000	0.272	1.000	.187
Nutritional value				
Organic	0.000	0.756	1.000	0.179
Non organic	0.000	0.244	1.000	0.179
Hygiene				
Organic	0.000	0.771	1.000	0.175
Non organic	0.000	0.229	1.000	0.175
Taste				
Organic	0.000	0.782	1.000	0.171
Non organic	0.000	0.218	1.000	0.171
Price				
Organic	0.000	0.717	1.000	0.202
Non organic	0.000	0.283	1.000	0.202
Knowledge on how product is produced				
Organic	0.000	0.756	1.000	0.177
Non organic	0.000	0.244	1.000	0.177
Health Risk				
Organic	0.000	0.770	1.000	0.182
Non organic	0.000	0.230	1.000	0.182

Table 5. Ranking According to Attributes According to Quality

Sub-criteria	Min.	Mean	Maks.	Std. Deviation
Cosmetic quality	0.017	0.066	0.455	0.065
Nutritional value	0.092	0.357	0.700	0.131
Hygiene	0.068	0.339	0.690	0.128
Taste	0.034	0.238	0.707	0.110

Table 6: Probit Estimates

Independent variable: 0 or 1; 0 if the consumer is not aware of organic products; 1 if the consumer is aware of organic products.

Variable	*Coefficient (Std. Error)*
Const	-2.88529
	(0.909194)
GENDER	-0.15575
	(0.288237)
INCOME	0.000094**
	(0.000041)
SOCIAL SECURITY	-0.00027
	(0.000982)
HOUSEHOLD	0.036135
	(0.089108)
AGE	0.03141*
	(0.009738)
EDUCATION	0.251021**
	(0.112703)
MARITAL	0.179853
	(0.158871)
EMPLOYED	0.000265
	(0.000983)
LR $chi^2(8)$	26.07*
Adjusted R^2	0.12

* Significant at α=0.01 **Significant at α=0.05 ***Significant at α=0.10
Variables are defined in the appendix.

Table 7: Pairs of Tomato Prices for the Four Subsamples

	Non-Organic Tomato Price (TL/kg): Scenerio 1	Organic Tomato Price (TL/kg): (Scenario 2)
Group 1	1.5	3
Group 2	2	3.5
Group 3	2.5	4
Group 4	3	5

Table 8: Estimates of Econometric Demand Model for Tomatoes

Dependent variable: Per capita tomato consumption

	OLS	*Tobit*
Variable	*Coefficient (Std. Error)*	*Coefficient (Std. Error)*
Const	2030.36*	2065.62*
	(127.493)	132.317
PRICE	-80.321**	-93.649**
	(34.8239)	39.9661
ORGANIC	128.138***	152.457***
	(77.9308)	86.7605
RISK	-0.000364961*	-0.000476429*
	(0.000108195)	0.0001308
HOUSEHOLD	-348.445*	-361.744*
	(22.4974)	19.5787
INCOME	0.0294255	0.0443676
	(0.0320445)	0.0439617
F-statistic (5, 368)	54.7072*	
Adjusted R^2	0.42	

* Significant at α=0.01 **Significant at α=0.05 ***Significant at α=0.10

Note

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