

## Factors Affecting Consumers' Potential Willingness to Pay for Organic Food Products in Iran: Case Study of Tabriz

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### ABSTRACT

In recent years, consumers' concerns about environmental and health issues related to food products have risen; consequently, the demand for organically grown products has increased. In this respect, the aim of this study was to investigate factors affecting consumers' potential willingness to pay premium prices for organic food products in Tabriz, Iran. An Ordered Logit regression model was applied to obtain the value of willingness to pay and determine the factors affecting it. Survey results showed that about 95 percent of the respondents were willing to pay a premium; while about 10 percent of them were willing to pay more than 35 percent premium for organic food products. Results revealed that factors like "individual's income", "family dimension", "environmental concerns" and "wholesome diet", besides "the general criteria of shopping", and "consumers' awareness of these products' characteristics" significantly increased consumers' willingness to pay a premium. According to the results, married respondents as well as females were willing to pay a higher premium. In addition, those who had children younger than 10 years old, elderly, or people with family members having special disease were significantly willing to pay a higher premium price for these products. More than 80 percent of the consumers mentioned "absence of certifications and organic labels", "lack of advertisement", and "higher prices" as their most important problems in purchasing organic food products.

**Keywords:** Contingent valuation method, Ordered-Logit model, Organic food, Price premium, WTP.

### INTRODUCTION

Organic farming is an agricultural production system based on respect for natural cycles that sustain the health of soils, ecosystems, and people (Koocheki, 2004). Growing markets for certified food products indicate that organic farming offers an important opportunity for the rural sector to benefit from international trade (Ghorbani *et al.*, 2007). On the other hand, Iran has diverse climatic conditions and vast area of land, thus, it has a rich biodiversity. Agriculture plays a major role in Iranian economy. Many Iranian farmers cultivate according to traditional techniques, which

are comparable to organic agriculture, and minimum use of agrochemicals such as pesticides, herbicides, and chemical fertilizers is quite common among them. According to Ghorbani *et al.* (2007), in Iran, 13659 ha and 125802 hectares of lands are cultivated without application of any agrochemicals for field and horticultural crops, respectively. Although there are many traditional small farming that could be classified as organic, taking a certificate has an expensive procedure for them. Hence, many of small farmers are unable to pay the cost of such procedures. Nevertheless, there are 1113 hectares of certified organic land in Iran (Mahmoudi and Mahdavi Damghani, 2010). Institute of Standards and Industrial

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Research of Iran released the first version of a national guideline for organic production and labeling in 2009.

On the other hand, there is an increasing public concern about food safety, but only a few people really know about organic farming. A recent survey (Ghorbani *et al.*, 2007) indicates that there is lack of information on organic farming in Iran. Yet, studies concerning consumers' potential willingness to pay for safer foods show a great demand and tendency for organic products between Iranian consumers (Akbari and Asadi, 2008; Alizadeh *et al.*, 2008; Ghorbani and Hamraz, 2009). According to Akbari and Asadi (2008), consumers claimed they were willing to pay 26 percent premium price for agricultural organic products in average, whereas extension experts were ready to pay 27 percent more for these products. It is necessary to indicate that most of these studies were based on descriptive statistics, and they tried to get the consumers' attitudes about safer food products. As a result, they all have revealed that there is a good potential market for such products in Iran's internal markets.

Besides, some studies tried to measure the production side's attitudes toward organic farming. Malek-Saeidi *et al.* (2012) investigated agricultural professionals' attitudes towards organic agriculture, since they are key factors in increasing farmers' information. Findings of the study revealed that having a negative attitude towards conventional agriculture, general attitude towards the environment, perceived transitional difficulty, and moral norms were effective factors on professionals' positive attitude towards organic farming.

The future of organic farming largely depends on consumers' demand. Therefore, a consumer-oriented approach to appreciation of organic farming has an essential role (Bonti-Ankomah and Yiridoe, 2006). Since price premium is a certain attribute of organic food, many researchers have tried to find out those characteristics in organic foods that increase consumer's utility, so that he would be willing to pay

more than usual amount of money to obtain these products. On the other hand Which factor and mannerism affects consumer's WTP for safer foods, and lead him to pay higher prices for these products. Considering the aforementioned points, outlook of organic food market in Iran, like all over the world, is tremendously dependent on the studies that identify factors affecting consumer's WTP for safer food.

Numerous studies have examined consumers' WTP a premium for food safety issues. Some have examined consumer WTP for organic food (e.g. Bennett *et al.*, 2009; Xia and Zeng, 2007; Wang and Sun, 2003; Millock and Hansen, 2002; Krystallis and Chrysosoidis, 2005; Gil *et al.*, 2000; Rodriguez *et al.*, 2007, Roitner-Schobesberger *et al.*, 2008; Tranter *et al.*, 2009). Some of the researches focused on consumers' attitude toward locally grown food product (e.g. Brown, 2003; Buchardi *et al.*, 2005; Darby *et al.*, 2006). The other studies investigated reduced pesticide-free fresh products (e.g. Cranfield and Magnusson, 2003; Ott, 1990; Misra *et al.*, 1991; Eom, 1994; Buzby *et al.*, 1995, Huang *et al.*, 1999; Boccaletti and Nardella, 2000). The results have shown broad range of factors affecting consumers' WTP for healthy food; nevertheless, in all of them, consumers would be willing to pay a positive premium for these products that mostly varied between 5-35 percent. Moreover, factors like consumer's concerns about food safety, perception of conventional food's health risk like agrochemicals, as well as consumers' friendly attitude toward environment and their comprehension of these products as trustful food, have positive effect on WTP. While high premiums and substantial lack of information about these products and their proper certification erode consumer's trust, barriers to marketing such products may result in consumer's negative attitude towards such food crops. To elicit consumers' WTP, most of these studies have used methods like contingent valuation method (CVM), or Choice Experiment.

Also, to investigate effective factors on consumers' WTP, regression models such as Logit, Probit, Ordered-Logit, and Ordered-Probit are mostly applied.

Even though there is no organized market for organic food products in Iran, some evidence show that there is a rising willingness among Iranians for such food stuffs. Therefore, this study aimed to investigate factors affecting consumer's potential WTP for organically grown food products in Tabriz, which in this situation is considered an essential marketing study for organic food. To collect data, a contingent valuation survey was conducted at two large supermarkets in Tabriz. The results of this research could provide important information for the policy makers to make proper plans for extension of consumption and production of these crops. Simultaneously, it can be useful for potential producers and retailers to help them understand the main factors affecting consumers' decisions and, therefore, improve their marketing strategies.

## MATERIALS AND METHODS

### Conceptual Framework

Evidence has shown that agricultural organic foods in Iran are non-market goods. These products still have an inadequate diffusion because consumers are not always able to recognize organic products from the conventional ones, due to deprivation in certification procedure and insufficiency of awareness about these food products. With respect to previous statements, Iranian organic food products market does not follow the usual market rules and consumers often doubt the authenticity of "organic" products displayed in the market, perceiving them as "non-market" goods; nevertheless, many consumers seek food safety and are willing to pay higher prices for organic products, since they increase their utility levels, thereby reducing health risks. However, they are unable to ascertain food safety before purchase. The same

evidence is shown in Italy (Boccaletti and Nardella 2000). As a general result, since "safety" is the most important characteristic of these products, being a non-market good for such food stuffs is a normal definition in most countries, including Iran. There are some economic methodologies to value non-market goods. One of them is contingent valuation method (CVM).

Contingent valuation is a survey-based economic technique for the valuation of such goods. CVM survey is a technique used to measure aspects like higher health, quality, and taste, or reduced risks in food products. CVM is often referred to as a stated preference model, in contrast to a price-based revealed preference model. Typically, the survey asks how much money people would be willing to pay (or willing to accept) to use (or be compensated for the loss of) organic food products feature, such as environmental benefits. Indeed, CVM permits a direct estimation of WTP by means of different elicitation techniques (Boccaletti and Nardella, 2000). Consumers simply indicate their WTP without purchasing the hypothetical product. As earlier explained, the CVM relies on directly asking individuals about their WTP for a specific commodity. The most important part in applying CVM is to choose appropriate survey and elicitation methods to reach the most accurate data. Various survey methods are possible for collection of data. In-person interviews are usually held to produce the highest-quality WTP data, although telephone and mail surveys are applied in a number of researches. There are various techniques for eliciting consumers' WTP, such as dichotomous-choice format. In this approach, respondent is given a question to appoint if he would pay \$X for the good, or not. Open-ended question about consumer's WTP is another technique. An alternative method is to present a number of possible WTP values on a card to the respondent, called "payment card". Then respondent would choose the nearest quantity to his WTP among others written on the card. The chosen amount can be taken as consumer's WTP. Since a payment card is simple, and it lightens an unaware respondent's



picking options, by giving him a range of pre-designed price premiums, it is an appropriate approach in these studies (Buccaletti and Nardella, 2000). According to the previous statements, in this study, in-person interviews besides a payment card format were applied to investigate factors affecting consumer's WTP for organic food products.

### Regression Model

Regarding discrete nature and ordinal ranking of the WTP variable, an Ordered Logit regression was applied, which is the most appropriate choice in studying these issues (Greene, 2006). The model is set up around a latent regression that begins with the following equation:

$$y^* = X'\beta + \varepsilon \quad (1)$$

Where,  $y^*$  is unobserved, and what can be observed is:

$$y_i = \begin{cases} 0 & \text{if } y \leq \mu_1 \\ 1 & \text{if } \mu_1 \leq y \leq \mu_2 \\ 2 & \text{if } \mu_2 \leq y \leq \mu_3 \\ \vdots & \vdots \\ J & \text{if } \mu_{J-1} \leq y \end{cases} \quad (2)$$

Model 2 is a form of censoring and the  $\mu$ 's are unknown parameters to be calculated with  $\beta$ .

It is presumed that  $\varepsilon$  is normally distributed across observations. By normalizing the mean and variance of  $\varepsilon$  to zero and one, the following probabilities are obtained:

$$\begin{aligned} \text{Prob}(y = 0|X) &= F(-X'\beta) \\ \text{Prob}(y = 1|X) &= F(\mu_1 - X'\beta) - F(-X'\beta) \\ \text{Prob}(y = 2|X) &= F(\mu_2 - X'\beta) - F(\mu_1 - X'\beta) \\ &\vdots \\ \text{Prob}(y = J|X) &= 1 - F(\mu_{J-1} - X'\beta) \end{aligned} \quad (3)$$

$$0 < \mu_1 < \mu_2 < \dots < \mu_{J-1}$$

Because all probabilities must be positive, the following condition should be established:

$$0 < \mu_1 < \mu_2 < \dots < \mu_{J-1}$$

In this model, the coefficients are not equal to the marginal effects of regressors  $x$  on the probabilities. Yet, the marginal effects of changes in the regressors can be calculated by the following patterns:

$$\begin{aligned} \frac{\partial \text{Prob}(y = 0|X)}{\partial X_i} &= -F(-X'\beta)\beta \\ \frac{\partial \text{Prob}(y = 1|X)}{\partial X_i} &= [F(-X'\beta) - F(\mu_1 - X'\beta)]\beta \\ &\vdots \\ \frac{\partial \text{Prob}(y = J|X)}{\partial X_i} &= F(\mu_{J-1} - X'\beta) \end{aligned} \quad (4)$$

The aim of model estimation was to fathom the impact of the most relevant explanatory factors on consumer WTP for organic food products.

The final model, chosen to interpret the dependence of WTP on explanatory variables, was specified as follows:

$$\begin{aligned} WTP_i &= \beta_0 + \beta_1 INC_i + \beta_2 AGE_i + \beta_3 FML_i + \\ &+ \beta_4 Gshop_i + \beta_5 ENV_i + \beta_6 KNOW_i + \beta_7 Frisk_i \\ &+ \beta_8 EDU_i + \beta_9 Gender_i + \beta_{10} MATRI_i \\ &+ \beta_{11} Aged_i + \beta_{12} Infant_i + \beta_{13} DSS_i + u_i \end{aligned} \quad (5)$$

The Limdep 7.0 econometric software was used to estimate the regression. Model significance was verified by computing the Chi-square ( $\chi^2$ ) statistics, calculated from the restricted and unrestricted log-likelihood function ( $(-2) \times (\text{Log likelihood ratio}) = \chi^2$ ). It should be noted that variables of the model 5 are presented in the following section.

### Survey Design

In this study, after taking a small pre-test from 50 persons, a contingent valuation survey was developed and 423 in-person interviews were conducted during spring and summer 2009 in two big Supermarkets in Tabriz. Surveys main objective was to gather data on

individuals' WTP, with explanatory variables such as demographic, attitudinal, and information assessment about respondents and their household, that, in other similar studies, were believed to affect consumers purchasing behavior.

In the first section, information was collected on consumers' attitudes. The first question was about shopping habits to value individual's solicitude about general shopping criteria (Index of general shopping criteria e.g.: Price, freshness, national standards, convenience of packaging, taste and ease of preparation. This question was Likert scales, which contained different items to evaluate individual's care about our objective criteria on this matter. Complete way of measuring variables is shown in Table 1.

The second question was about individuals' friendly attitude toward environment (friendly environmental attitude index). The question consisted of some points to evaluate consumers' friendly attitudes toward environment, such as surrendering some utilities to safeguard environment going for sustainable methods, and their tendency toward organic farming to save environment. The third question was asked to assess individual's knowledge of organic food products characteristics (knowledge of organic food Index), e.g. being safer, no agrochemicals threat, better taste, more nutritive value, being in consonance with the environment. In both questions, consumers were asked to evaluate some statements applying a five-level Likert item (Table.1).

The fourth question was to evaluate respondents food-born risk perception (food-born risk index). They were asked about four dangerous food components: Cholesterol, Fat, Salt, and Sugar.

The second part of the questionnaire was dedicated to some demographic characteristics of respondents, such as the individuals' age, family dimension, monthly income, education, gender, and marital status. Moreover, consumers were asked if they had seniors, children younger than 10 years old or people with special disease in their family.

The third part was designed to determine consumer's WTP a premium for organic food products. Respondents were asked about the price premium they would be willing to pay to use organic products instead of conventional ones (Table.1)

Last part was appraisal evaluation that meant to assess consumers' attitude by getting some extra information about their main reasons for purchasing organic products, and most important problems in consumption of these products.

## RESULTS AND DISCUSSION

### Descriptive Results

According to WTP sample distribution, most respondents (95 percent) were willing to pay a premium for organic food products, while 28 percent were willing to pay a premium between 15-24, and 10 percent were willing to pay a price premium higher than 35 percent of the regular price (Table. 2).

Sample statistics of independent variables are presented in Table 3. Some of them are scale variables (INC, Age, FML), some are ordinal (Indices: Gshop, ENV, KNOW, Frisk, and EDU) and the others are nominal (Gender, MATRI, Aged, INFNT, DSS).

In the sample, 69 percent of consumers were males and most of them (86 percent) were married; 12 percent of them had seniors in their family; 15 percent had children younger than 10 years old, and 8 percent had people with special disease in their household. The average consumer was 40.6 years old, with an average monthly income of 5,350,000 Rials (about 2,000 USD), and 3.3 family members.

Results revealed that the average of "General shopping criteria" and "friendly environmental attitude" indices were, respectively, 4.2 and 3.8, reflecting their importance among the sample consumers. Results also revealed a propitious "knowledge of organic food products"

**Table 1.** Independent variable and exploratory variables names and definitions.

WTP	Respondent's willingness to pay premium for organic food: 0= Not Willing to Pay 1= Willingness to pay less than 5 percent premium 2= Willingness to pay 5 to 14 percent premium 3= Willingness to pay 15 to 24 percent premium 4= Willingness to pay 25 to 34 percent premium 5= Willingness to pay more than 35 percent premium
INC	Monthly income of respondent (Rials)
Age	Age of respondent (Years)
FML	Family dimension (Person)
Gshop	General shopping criteria Index (Likert scales made of 5 speeches): 1= Extremely unimportant 2= Unimportant 3= Neither important nor unimportant 4= Important 5= Extremely important
ENV	Respondent's Friendly attitude for environment Index (Likert scales of 5 speeches): 1= Strongly disagree 2= Disagree 3= Neither agree nor disagree 4= Agree 5= Strongly agree
KNOW	Respondent's knowledge of organic food Index (Likert scales of 8 speeches): 1= Strongly disagree 2= Disagree 3= Neither agree nor disagree 4= Agree 5= Strongly agree
Frisk	Respondent's food-born risk perception index (Likert scales of 8 speeches): 5= Very dangerous 4= Dangerous 3= Undedicated 2= Fairly harmless 1= Harmless
EDU	Education of respondent (Ordinal Variable): 1= Illiterate 2= Primary School 3= Junior high school 4= Senior high school 5= Associated Diploma (AD) 6= BSc 7= MSc 8= PhD
Gender	Gender of respondent (Dummy variable): 1= Female 0= Male
MATRI	Matrimony of respondent (Dummy variable): 1= Married 0= Single
Aged	Seniors in the household (Dummy variable): 1= Existence 0= Nonexistence
INFNT	Children younger than 10 years old in the household (Dummy variable): 1= Existence 0= Nonexistence
DSS	People with special disease in the household (Dummy variable): 1= Existence 0= Nonexistence

among respondents (with the average of 3.7 for the index); furthermore, consumers had an opportune "perception of food-born risk", with average index of 4. Descriptive results also showed that consumers' mode of education was 5 i.e. Associated Diploma.

Finally, the results for the two appraisal evaluations revealed that consumers' three main reasons for purchasing these food products were: lower agrochemicals risk (84 percent), better taste (74 percent), and being more natural (67 percent). Also, consumers

indicated that their most important problems in purchasing organic products were lack of advertisement (97 percent), non-existence of certification (91 percent), and higher prices (81 percent).

### Inferential Results

The estimation results of the Ordered-Logit model is presented in Table 4. The Chi-square ( $\chi^2$ ) test, significant at the 1% level, indicates satisfactory explanatory

**Table 2.** Distribution of Willingness to pay (WTP) responses during 2009 in Tabriz city.

WTP category	Frequency	Proportion
Not Willing to Pay	23	5
Willingness to pay less than 5 percent premium	46	11
Willingness to pay 5 to 14 percent premium	114	27
Willingness to pay 15 to 24 percent premium	118	28
Willingness to pay 25 to 34 percent premium	80	19
Willingness to pay more than 35 percent premium	42	10

power of the estimated model. The scaled  $R^2$  of about 45 percent points to proper overall ability of the model to provide accurate prediction for WTP. From 13 estimated coefficients, 11 of them were statistically significant.

Variable EDU did not show a significant relationship with WTP. Considering non-specialized question for measuring individual's education (general educational ranks, ignoring their connection with organic or sustainable agriculture were probed) and the deficiency in Iranian educational system in teaching any feature of safer food products, this conclusion seems logical. However, in some studies

(Buccaletti and Nardella, 2000; Ghorbani and Hamraz, 2009), education showed a negative connection with WTP.

The variable Age also had no relevant effect on consumers' potential WTP for organic food product. This indicates that the age itself is not an influencing factor on consumer's tendency to pay a higher price for organic food products. Some similar studies like Buccaletti and Nardella (2000) and Cranfield and Magnusson, (2003) found the same result.

Positive sign on the INC coefficient indicates that consumers with higher income are more likely to be willing to pay higher prices for organic food products. This can be considered a logical conclusion of consumer

**Table 3.** Descriptive statistics of collected variables during 2009 in Tabriz (n= 423).

Variable definition	Variable name	Mean <sup>a</sup>	SD	Max	Min
Monthly income of respondent (Rials)	INC	5342789.60	2355962	18000000	800000
Age of respondent (Years)	Age	40.63	10.14	71	24
Family dimension (Person)	FML	3.23	1.40	1	8
General shopping criteria Index	Gshop	4.26	0.60	3	5
Friendly attitude for environment Index	ENV	3.84	0.80	2	5
Knowledge of organic food Index	KNOW	3.67	0.74	1	5
Food-born risk index	Frisk	4.04	0.71	2	5
Education of respondent	EDU	5.00	1.22	2	8
Gender of respondent	Gender	0	0.46	0	1
Matrimony of respondent	Matri	1	0.34	0	1
Seniors in the family	Aged	0	0.32	0	1
Children younger than 10 years old in family	Infant	0	0.28	0	1
People with special disease in family	DSS	0	0.34	0	1

<sup>a</sup> For the binary variables, the mode of the variable is shown instead of its mean.

**Table 4.** Result of estimation of Ordered Logit model.

Variable	Estimated coefficient	Standard error	Z-ratio
Constant	-9.90 <sup>***</sup>	0.951	-10.4
INC	0.002 <sup>**</sup>	7.067	2.71
Age	0.001 <sup>ns</sup>	0.018	0.061
FML	0.26 <sup>***</sup>	0.105	2.93
Gshop	0.60 <sup>***</sup>	0.212	2.87
ENV	0.81 <sup>***</sup>	0.158	5.10
KNOW	1.24 <sup>***</sup>	0.175	7.08
Frisk	0.42 <sup>**</sup>	0.190	2.20
EDU	0.006 <sup>ns</sup>	0.112	0.052
Gender	1.10 <sup>***</sup>	0.250	4.41
MATRI	0.78 <sup>**</sup>	0.375	2.09
Aged	0.60 <sup>*</sup>	0.369	1.63
INFNT	0.57 <sup>**</sup>	0.360	2.04
DSS	1.47 <sup>***</sup>	0.279	4.07

\*\*\*:  $P < 0.01$ ; \*\*:  $P < 0.05$ ; \*:  $P < 0.1$ , ns: Non-significant.

purchase pattern caused by the rise of purchasing power, which is confirmed by similar studies (Oni et al., 2005; Loureir and Umberger, 2004; Roitner-Schobesberger et al., 2008). According to the results, family dimension had a significantly positive effect on WTP, meaning consumers with larger family extension would be willing to pay higher prices for organic products. This could be because of an increase in household economic power (Oni et al., 2005), whereas some studies reported the opposite (Govindasamy and Italia, 1999). Results revealed that the consumers with higher care of general shopping criteria were more likely to pay more premiums for organic food products. Furthermore, those with friendly attitudes with respect to environment would be willing to pay higher prices for these products. Some other researchers are evidentiary to this (Williams and Hammitt, 2000; Underhill and Figueroa, 1996; Roitner-Schobesberger et al., 2008). Table 4 indicates that respondents' knowledge of organic food characteristics has a significant effect on their WTP for these goods (Oni et al., 2005 and Ghorbani and Hamraz, 2009). Positive sign on the Frisk coefficient shows that those with higher perception of food-born risks were more likely to pay higher premium for organic products.

Results reveal a significantly positive relationship between being female and WTP, explaining female consumers are more likely to pay higher prices for organic food products (Govindasamy and Italia, 1999; Loureir and Umberger, 2004; Oni et al., 2005). The same interpretation can be cited for married consumers. Positive sign on INFNT coefficient shows that people who had children younger than 10 years old in their household were willing to pay a higher premium (Thompson and Kidwell, 1998), whereas some researches cited the opposite (Wang and Sun, 2003). Moreover, consumers who had seniors in their family and those with family members having special diseases in their household were willing to pay higher premiums for organic food products.

Measuring the impact of a change in a particular explanatory variable on WTP, for non-linear models (like this study), marginal effects of independent variables should be calculated. For a specific variable, the marginal effects across the six categories must sum to zero. The elucidation of marginal effects for non-binary variables is not complicated. If all other parameters stay fixed, one unit change in the explanatory variable will result in an increase or decrease in the predicted probability equal to the degree of marginal effect; nevertheless, for a binary variable the marginal effect indicates change in the predicted probability based on whether the respondent falls into the category or not. Finally, the marginal effects show the change in the predicted probability for different classes of WTP regarding an average consumer, concerning the particular variable. Table 5 shows the marginal effects for all explanatory variables in the six WTP classes.

The marginal effects of FML were negative for the first three classes of WTP (i.e. for the "not willing to pay", "willingness to pay less than 5 percent", and "willingness to pay 5 to 14 percent" premium), whereas it was positive for the next three classes. As the family dimension increased, the probability of being "Willing to Pay between 15-24 percent", "willing to pay 25-34 percent and WTP more than 35 percent" premium price increased, while the probability of the first three mentioned classes of WTP, declined. Thus,



**Table 5.** Marginal effects after estimation of Ordered Logit model.

Variable	WTP= 0	WTP< 5	5≤ WTP≤ 14	15≤ WTP≤ 24	25≤ WTP≤ 34	WTP≥ 35
INC	0	-0.0001	-0.0004	0.0002	0.002	0
Age	0	0	-0.0002	0.0001	0.0001	0.000
FML	-0.001	-0.01	-0.052	0.031	0.027	0.005
Gshop	-0.002	-0.023	-0.121	0.073	0.062	0.013
ENV	-0.004	-0.03	-0.163	0.097	0.083	0.017
KNOW	-0.006	-0.047	-0.249	0.149	0.127	0.026
Frisk	-0.002	-0.016	-0.085	0.05	0.044	0.089
EDU	0	-0.0002	-0.0012	0.0007	0.0006	0.0001
Gender	-0.004	-0.036	-0.212	0.094	0.129	0.03
MATRI	-0.005	-0.038	-0.15	0.114	0.067	0.013
Aged	-0.002	-0.019	-0.119	0.052	0.073	0.016
INFNT	-0.004	-0.034	-0.253	0.027	0.205	0.058
DSS	-0.002	-0.018	-0.116	0.051	0.067	0.015

persons with large family dimension were, in all likelihood, consumers who would pay a higher price for organic food products. The same interpretation can be expressed for the INC variable, even though sizes of marginal effects were small for it. Probably, for lower WTP classes, these products were considered to be “luxurious goods”, while the three higher classes of WTP, regarded them as “necessary goods”. Yet, it can be mentioned that people with higher income, would pay a higher premium for these products.

The marginal effects of Gshop, ENV, KNOW, and Frisk, following the same pattern, were positive for the “willingness to pay 15-24 percent”, “willingness to pay between 25-34 percent”, and “willingness to pay more than 35 percent” premium classes of WTP, while they were negative for the three other classes. This indicates that as consumers attention for general shopping criteria increases, and their friendly attitudes toward environment rise, if their knowledge of organic food products characteristics extends those with WTP more than 14 percent premium would be willing to pay higher prices for these products. We also can mention that people with higher scales for these indices fall into higher categories of WTP, while people with lower scales of general shop criteria index, those with less friendly attitudes regarding environment, and consumers with limited knowledge of organic products characteristics are, in any case,

consumers who would pay a lower price or would not pay a premium for these products.

The marginal effects for the gender dummy variable indicated that female consumers were more likely to be willing to pay higher premium price (i.e. more than 15 percent), and were less likely to be willing to pay no or small premium (i.e. less than 15 percent). The same explanation can be cited for the Gender variable, i.e. married consumers were more likely to fall into three high classes of WTP. Also, consumers who had seniors in their families, and respondents with children younger than 10 years old, beside those who had members with special disease in their family, were more likely to be willing to pay higher than 15 percent premium price for organic food products.

## CONCLUSIONS

The descriptive results revealed that 95 percent of the respondents were willing to pay a premium for organic products, with 55 percent willing to pay between 5 to 24 percent above regular prices while 10 percent declared to be willing to pay more than 35 percent premium price for organic foodstuffs compared with conventional ones. Most of the respondents (more than 90 percent) declared "lack of advertisement", and "absence of certification" as their most important problems in purchasing organic food. This indicates a potent national



market for organic food products. Considering these findings as well as the regional potential for organic agriculture and the regression model results, the following suggestions are presented.

Just like the other new technologies, organic farming needs governmental support such as financial aids, green subsidies, and provision of loans to the producers. Government aids to the farmers must emphasize target products and help their production through national markets, beside trying to make proper standards and labels for these goods. Considering consumers concern about health risks (such as sugar and salt content) of food products and its link to their WTP, making an appropriate packing system that includes material analysis, and setting a proper advertisement system with respect to safer foodstuffs, could be suggested. Moreover, running training programs in all educational levels for all age groups and efforts to increase society's awareness towards safer food characteristics, can promote consumption of these products. Since our study shows that some families with special members have more WTP for organic foods, targeted labeling of organic foodstuffs for females, infants, seniors, and people with special diseases could ease some consumers' choice and increase their willingness towards these foodstuffs.

Since such food products normally have a price premium, governmental help, such as provision of subsidies, is recommended to promote the consumption of these foods that have positive external effect on society's health. Also, making a proper marketing system for organic products to reduce marketing margins would help consumers to obtain these products at moderate prices, thereby expanding the consumption of such food stuffs.

Finally, since our study shows a significant link between consumers' environmental attitudes and also consumers' knowledge of organic foods, it is recommendable that the government assist NGO's formation regarding environment, organic agriculture, sustainable development, and related subjects, along with encouraging them to have activities for elevating society's awareness of organic agriculture's advantages, as well as disadvantages of conventional planting system. That is because the philosophy and

nature of such organizations is to raise these kinds of information in the society or do activities like that. Moreover, governmental activities like special TV programs or setting up advertisement billboards in appropriate sites to elevate public knowledge are suggested.

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## عوامل مؤثر بر تمایل به پرداخت بالقوه مصرف کنندگان برای محصولات غذایی ارگانیک در ایران، مطالعه موردی: تبریز

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### چکیده

در سال‌های اخیر رویکرد مصرف کنندگان به سمت موضوعات و مسائل سلامتی و زیست محیطی مرتبط با تولیدات غذایی افزایش یافته است. این امر سبب شده است که تقاضا برای محصولات غذایی ارگانیک افزایش یابد. در این راستا هدف تحقیق حاضر شناسایی عوامل مؤثر بر تمایل به پرداخت بالقوه اضافی مصرف کنندگان برای محصولات غذایی ارگانیک نسبت به انواع متداول در شهرستان تبریز می‌باشد. به منظور شناسایی عوامل مؤثر بر تمایل به پرداخت مصرف کنندگان از روش ارزشگذاری مشروط و مدل لاجیت ترتیبی که به روش حداکثر راستنمایی برآورد شد، بهره گرفته شده است. نتایج توصیفی نشان می‌دهند که حدود ۹۵ درصد مصرف کنندگان حاضر به پرداخت مبلغی اضافی برای خرید محصولات ارگانیک نسبت به انواع متداول هستند و حدود ۱۰ درصد آنها حاضر به پرداخت مبلغ اضافی بالای ۳۵ درصد برای خرید این محصولات هستند. نتایج حاصل از تخمین مدل حاکی است که عواملی چون درآمد افراد، بعد خانوار، تمایلات حفظ محیط زیست، سطح اهمیت معیارهای عمومی خرید در میان افراد، سطح اطلاع افراد از ویژگی‌های محصولات ارگانیک و ریسک مواد غذایی خطرناک اثر مثبت و معنی داری بر تمایل به پرداخت آنها برای محصولات غذایی ارگانیک نسبت به انواع متداول نشان می‌دهند. همچنین خانم‌ها و افراد متأهل تمایل به پرداخت بیشتری داشته و وجود افراد با بیماری خاص، کودکان زیر ده سال و سالمندان در خانواده سبب افزایش معنی دار تمایل به پرداخت مصرف کنندگان برای محصولات ارگانیک هستند. نتایج حاکی است بیش از ۸۰ درصد مصرف کنندگان «عدم وجود برچسب‌های تضمینی»، «عدم وجود تبلیغات مناسب» و قیمت‌های بالا را جز مشکلات خود در زمینه خرید و مصرف محصولات ارگانیک عنوان کردند.