

## Research Article



# Consumers' Preferences and Willingness to Pay for Organic Vegetables in Islamabad, Pakistan

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**Abstract** | The paper analyses the factor that Influence the willingness to pay a high price for organic vegetables by using consumer preferences data by primary sources from Islamabad in Pakistan. The determinants of willingness to pay of consumers estimated by using the probit model. The model contains the information of socioeconomic characteristics, awareness and preferences of organic vegetables and product attributes. The empirical findings indicate that age, employment status, income, education, number of children, taste, no chemical residual, high nutritional value, freshness and colour of the vegetables have positive effects on consumer to pay a high price. While in case of product size and shape has a adverse effect on consumer. Results indicate that when making choices of food, consumers in Islamabad prioritise their health. Furthermore, the households who earn more income perceive a negative impact on health from chemical usage, the more likely they would be willing to pay a high price for a fresh organic vegetable.

**Received** | October 27, 2016; **Accepted** | March 22, 2018; **Published** | June 29, 2018

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**Citation** | Rani, S., H. Shah, N. Habib and M.A. Khan. 2018. Consumers' Preferences and willingness to pay for organic vegetables in Islamabad, Pakistan. *Sarhad Journal of Agriculture*, 34(3): 494-499.

**DOI** | <http://dx.doi.org/10.17582/journal.sja/2018/34.3.494.499>

**Keywords** | Consumer preferences, Organic vegetables, Willingness-to-pay, Probit model, Islamabad

## Introduction

Organic farming is an eco-friendly in which, usage of all types of synthetic contributions are eradicated (IFOAM, 2003). Organic farming depends upon minor usage of inputs, it has higher market demand because of its benefits to environmental and social alarms. According to Valerian, 2011 it is sustainable and environmental pleasant system which offers the wide range of the advantages to the developing countries. Watson (2002) also conclude that it enhanced the biological activity, physical features of the soil, and improved the wildlife habitat. Piyasiri and Ariyawardana (2002) indicate that it is the cure to avoid the different health threats which caused by in organic foodstuffs, In case of environmental benefits in organic farming this improved the soil biological

activities, it also improved soil physical characteristics, reduced nitrate leaching and increased and improved wild life habitat. Since consumption of organic food stuffs the remedial of many health issues which were due to non-organic foodstuff become true (Organic Monitor, 2001), use of organic food considered better and improved food as compared the non-organic (Rani, 2013). As a results of that organic products demand is increasing day by day in all over the world with positive attitudes (Panhwar, 2004).

The world market remarkably witnessed about higher growth in organic food process. Particularly, demand or requirement for organic food foodstuffs in the European countries, America and some in other part of the world is increasing, although market segments quite low (Piyasiri and Ariyawardana, 2002). Ac-

According to Sahota (2010), the international market for organic food reached the US \$ 59.9 billion in the previous year. The Organic Monitor assessed that the global food stuff of organic market was valued at US \$ 26 billion during the year 2001 (Organic Monitor, 2001). Many studies have been reviewed and witnessed about the consumption patterns of organic food in developed countries (Wier and Calverly, 2002; Cranfield and Magnusson, 2003). While literature also showed that fewer consumer studies in developing countries about organic food products (Piyasiri and Ariyawardana, 2002; Rodriguez et al., 2007; Aryal et al., 2009). While in Pakistan instead of benefits of organic foodstuff consumption, information regarding market demand and supply scenarios seems to be very inadequate or little.

There is no literature found in which assessing the consumer preference and perception of organic vegetables. Especially, subjects regarding consumer willingness to pay (WTP) higher price for organic vegetables linked to nonorganic vegetables and horticultural crops in Pakistan have not been thoroughly talked. Traditionally, in Pakistan consumed conventional fruits and vegetables. Therefore to minimize the health hazards and to achieve food safety is possible with the advertising of organic food consumption through campaigns and promotions in the state. This necessarily needed authentic and reliable evidence about users' willingness to pay a high price for organic fruits and vegetables.

The purpose of the current research article is to examine the factors that affect the consumer willingness to pay (WTP) a high price for organic vegetables in Islamabad. The main hypothesis tested in the study socioeconomic characteristics of consumers, consumer perceptions, preference and awareness and regarding produce features incline to affect consumer willingness to pay (WTP) a high price for organic vegetables.

## Materials and Methods

The forty organic vegetables consumers are randomly selected from supermarket organic vegetable sale point and PATCO, NARC sale point in 2014 in Islamabad. The data is collected through the questionnaire from consumers visited both sale points. The aim of this study is to explore factors effect willing to pay a high price in the study area. Therefore the

questionnaire is designed to obtain the information on socioeconomic characteristics (age, gender, number of years of schooling, children less than 15 years, employment status), income (low, middle and high), consumer preferences and awareness (taste, no chemical residues and nutritional level) of organic vegetables and product attributes (freshness, size, colour and shape).

To predict the consumer WTP for organic vegetables following regression model is developed:

$$WTP_{orgveg} = \beta_0 + \beta_1 gen + \beta_2 incomlow + \beta_3 incommid + \beta_4 incomehigh + \beta_5 age1 + \beta_6 age2 + \beta_7 age3 + \beta_8 eduyear + \beta_9 child + \beta_{10} weekly + \beta_{11} Employed + \beta_{12} taste + \beta_{13} nochemical + \beta_{14} nutritional + \beta_{15} freshness + \beta_{16} shape + \beta_{17} colour + \beta_{18} size + \mu \text{-----} (1)$$

Several research articles were investigated the consumer preferences and WTP model for organic food on the market with different methods. Verhoef (2005) examined consumer purchases of organic meat, (Haghiri et al., 2009) analysed consumer preference and Willingness to pay for organic vegetables and fruit in Canada. Michaelidou and Hassan (2010) observed the aspects that influence the buying organic food and free range products for buyers in Scotland and Cranfield and Magnusson (2003) described Canadian consumer's willingness-to-pay for pesticide-free food with an well ordered Probit model. Bocher (2016) also used the same methodology for consumer's preferences and willingness to pay for biofortified juice in Rwanda. Reyna (2017) concluded logit and probit models are basically the same, the difference is in the Distribution Logit-Cumulative standard logistic distribution and Probit-Cumulative standard normal distribution both models provide similar results. According to Agresti (2007), results tend to be similar preference for one over the other tends to vary by discipline. Therefore, in this study Probit model is used to analyse the factor contributing to pay of a high price for organic vegetables. Table 1 describes the variables in the model. The explanatory variables are formed under three groups.

## Results and Discussion

The empirical regression model is specified in equation 1. Table 2 shows the coefficient that affect the respondents WTP for organic vegetables and parallel to this are marginal effects (MEs). The marginal effects

estimates the impact of a unit change in every of the explanatory variables on the likelihood of a success.

The independent variables Age2 and Age3 have a positive relationship with the dependent variable. The variable is statistically significant at 5 percent level. In general, it is shown that with the increase of age consumer preferences changed about the consumption of organic food in a positive way. Specifically, respondents in the age of between 35 to 50 and above from 50 they are 22 percent and 7 percent respectively more probable to give higher price for buying organic vegetables than the lower group-age, i.e., less than 35 years of age. [Buzby et al. \(1995\)](#) in the USA and [Haghiri et al. \(2009\)](#) in Canada report a like form of attitude for customers.

**Table 1:** Variable used in the regression model consumer WTP for organic vegetables.

Variable	Definition of variable
<b>Socio-economic characteristics</b>	
WTP <sub>orgveg</sub>	1 if consumer was willing to purchase organically grown vegetables on high price, 0 otherwise
Gen	1 if consumer is female, 0 otherwise
Income low	1 If consumer's monthly income is up to Rs. 25000/-, 0 otherwise
Income mid	1 If consumer's monthly income from Rs. 25000/- to Rs. 50000/-, 0 otherwise
Income high	1 If consumer's average monthly income is more than Rs. 50000/-, 0 otherwise
Age 1	1 if consumer's age lower than 35 years, 0 otherwise
Age 2	1 if consumer's age is from 35 - 50 years, 0 otherwise
Age 3	1 if consumer's age is more than 50 years, 0 otherwise
Edu year	Number of years of schooling
Child	Children less than 15 years of age
Weekly	1 if consumer Purchasing frequency weekly, 0 otherwise
Employed	1 if the individual is employed, 0 otherwise
<b>Awareness and perception</b>	
Taste	1 if consumer perceive organic vegetables have better taste, 0 otherwise
No chemical	1 if consumer aware of no chemical used in organic vegetables, 0 otherwise
Nutritional	1 if consumer aware that organic vegetable have more nutritional value, 0 otherwise
<b>Product attributes</b>	
Freshness	1 if consumer considers freshness of organic vegetables, 0 otherwise

Shape	1 if consumer considers shape of organic vegetables, 0 otherwise
Colour	1 if consumer considers colourness of organic vegetables, 0 otherwise
Size	1 if consumer considers sizeness of organic vegetables, 0 otherwise

The expected sign with the individual income with willingness to pay was positive because the higher the income, they would pay high price for organic vegetables/food. Therefore, the results showed that participants whose income is between Rs. 25000/- to Rs. 50000/ (Incommid) are 23 percent more likely to pay high price for organic vegetables. The respondent whose income was more than 50000 thousand (income high) showed that positive relationship with paying high price of organic vegetables and statistically significant at 5 percent and other income group were insignificant. The finding was same as of [Haghiri et al. \(2009\)](#), [Owusu and Anifori \(2013\)](#), [Underhill and Figueroa \(1996\)](#), [Govindasamy and Italia, \(1999\)](#) and [Batte et al. \(2004\)](#). [Asafu-Adjaye \(2000\)](#) also identified that role of income with consumer WTP in conformism with economic theory is highly expected to have significant positive relationship. Earlier published work has identified the impact of years of schooling on consumers' buying decisions for organic products to be vague. [Bocher \(2016\)](#) concluded that different socioeconomic groups of consumers with economic class, are between the major factors that need attention in product development along with this purchasing frequency, income classes, gender and age of the consumers influences the juice choice and willingness to pay. [Haghiri et al. \(2009\)](#) and [Owusu and Anifori \(2013\)](#) reported a positive relationship while studies of [Govindasamy and Italia \(1999\)](#) and [Boccaletti and Nardella \(2000\)](#) found the the negative relationship between literacy and willing to pay for organic products. In this study, as the number of the year schooling increase they are willing to pay high price of organic vegetables. Therefore education have positive influence on the decision of the consumer and it is statistically significant at 10 percent. [Table 2](#) shows the participant employment status and willing to pay of organic vegetable have positive relationship and significant at 10 percent. Those consumer who are engaged in any type of job are 27 percent more likely to pay high price of organic vegetables. In the Canadian study [Haghiri et al. \(2009\)](#) report that positive relationship with employment but statistically insignificant. The results shows that the occurrence

of children less than 15 years of age in the household (Child) shows positive relationship but statically insignificant. These observed outcomes agree with Gao et al. (2011) that respondent with children inside the range of 6 to 12 years of age have extra preference for value of fresh and organic fruits comparing with those who are without children.

**Table 2: Probit estimates on consumer WTP High Price for organic vegetables.**

Variable name	Coefficient	z -Value	Marginal effect
Constant	-1.73	0.10	-
<b>Socio-economic characteristics</b>			
Gen	0.68	0.59	0.02
Income low	-4.73	0.01	-0.18
Income mid	3.84	0.40	0.23
Income high	1.82**	2.30	0.05
Age 1	-2.05	0.30	-0.07
Age 2	1.33**	1.66	0.22
Age 3	0.81**	2.20	0.02
Edu Year	0.28*	1.89	0.01
Child	0.55	0.75	0.02
Weekly	-3.57	-1.10	-0.11
Employed	1.87*	1.76	0.27
<b>Awareness and perception</b>			
Taste	3.68*	1.93	0.24
No chemical	4.40*	1.68	0.72
Nutritional	6.01**	2.00	0.78
<b>Product attributes</b>			
Freshness	0.67*	1.80	0.11
Shape	- 0.19	0.27	-0.03
Color	0.52	0.70	0.08
Size	-1.08*	-1.61	-0.21
LR chi2(14)	13.21	Pseudo R2	0.41

**Source:** Author Calculation; \*\*: Significant at 5 %; \*: Significant at 10.

Awareness of consumer regarding the taste of organic vegetables have a positive relationship with the WTP for organic vegetable and statistically significant at 10 percent. These empirical results agree with Voon et al. (2011) and Owusu and Anifori (2013) that the taste is also have positive and statistically significant with WTP. Therefore the positive sign indicates the participants prefer organic vegetables due to better taste be 24 percent more likely to pay the high price of organic vegetable. Consumer awareness of no chemical residues used in organic vegetables positively influence on the WTP and significant at 10 percent. Ap-

proximately 72 percent of the participant more likely to pay the high price of the organic vegetables due to no harmful chemical used in organic vegetables. The results support by the Owusu and Anifori (2013), Nouhoheffin et al. (2004) and Haghiri et al. (2009).

Nutritional aspect is also very important factor in the organic vegetables. The consumer is aware that organic vegetable has high nutritional value. Therefore, they prefer the organic vegetable and willing to pay a high price. The explanatory variable (nutritional) has a positive relationship with the dependent variable and significant at 5 percent. The results indicate that the respondent prefers organic vegetables due to more nutritional value is 78 percent more likely to pay a high price. Freshness, shape and colour of organic vegetable have positive effects showed in above table which indicating that freshness, colour and shape are important factors while paying the price of organic vegetables. The findings also approved with an observed results by Owusu and Anifori (2013) and Pascucci et al. (2011) that customers which are inspired to give higher price finding out for freshness of organic foods. The adverse important coefficient of vegetables size in product qualities designates that consumers are not inclined ample by the size of organic vegetables.

### Conclusion and Recommendations

This study has analysed the factors affecting the willingness of consumers to pay high prices for organic vegetables in Islamabad. Overall empirical results confirm that socioeconomic and demographic variables are an important determiner of the willingness of consumer in Islamabad for paying a high price for organic vegetables. The results described that there is specific consumer segment for organic food in Islamabad. This study is the first effort to explore some of these consumer segment characteristics. Further research could explore these if these characteristics study in more depth. An important finding is that preferences and awareness regarding the no chemical usage and high nutritional value of organic vegetables motivating the consumer willingness to pay for an organic vegetable. It reflects that consumer for organic vegetables in study area prioritised their health. The results also suggested that if targeting the fresh produce in organic sector in Islamabad are likely to see a stronger consumers demand by focusing marketing strategies on positive health perception of organic produce.

## Author's Contribution

**Saima Rani:** Conceptualize the main idea, developed the methodology, analysed the data and wrote the results.

**Nusrat Habib:** Help in data collection and modeling part.

**Hassnain Shah:** Help to conduct the survey in Islamabad.

**Muhammad Azeem Khan:** Help in conceptualize the main idea

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