

RESEARCH PAPER

# Consumers' willingness to pay (WTP) premium price for organic fruits and vegetables (OFV) in Western Tamil Nadu

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## ABSTRACT

Organic food market of India is estimated of 1,000 crore which is growing 20-22 per cent, with about 95 per cent of the brands existing in top 10 metros and other tier II cities (Business Standard, 2012). There are variety of factors that can potentially influence consumers towards OFV consumption like concern for health, environmental protection and chemical residues in conventional food products, pesticides, nutritional concern, as well as improved taste and flavour in organic food products (Ngui *et al.*, 2011). It is also important to understand how willing people are to pay premium price for organic products. The objective of the study is to identify the factors influence the consumer's Willingness to pay (WTP) premium price for Organic fruits and vegetables in Coimbatore city. Primary data were collected with the aid of pretested interview schedule from the selected 400 sample consumer by adopting "mall intercept survey method" (Phau and Teah, 2009). Percentage analysis and ordered logit model were used to analyze the data. The major share of the sample respondents were young, middle aged males, mostly educated and employed, with the annual income ranging from Rs. 2 lakhs to Rs. 5 lakhs. Income, awareness, knowledge and education had significantly influenced the consumers' willingness to pay more for organic fruits and vegetables.

**KEY WORDS :** Consumers, Willingness to pay, Fruits, Vegetables, Ordered logit model

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**G**lobal organic food market grew by 9.8 per cent to reach a value of \$67.2 billion in 2011; among them fruit and vegetables was the market's most lucrative segment, with total revenues being 33 per cent of the market's overall value (Marketline, 2012). With advent of globalization coupled with increased income and awareness, there is greater consciousness for safe and quality food products in India as well. Organic food market of India is estimated of 1,000 crore which is growing 20-22 per cent, with about 95 per cent of the

brands existing in top 10 metros and other tier II cities (Business Standard, 2012). There are variety of factors that can potentially influence consumers towards OFV consumption like concern for health, environmental protection, and chemical residues in conventional food products, pesticides, nutritional concern, as well as improved taste and flavour in organic food products (Ngui *et al.*, 2011). Awareness and knowledge are major factors in influencing attitude and behaviour of consumers towards organic foods (Freeland-Graves and Nitzke, 2002). It is not surprising that organic users have the larger household incomes considering that organic fresh produce commands a price premium from 20 to 40 per cent (Lin *et al.*, 2008). Buyers are likely to

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continue buying such products notwithstanding higher prices of such products (Kuhar and Juvancic, 2006).

The demand for OFV has increased during the recent times, especially in Coimbatore city. The number of retail outlet stores for OFV products has also increased. Traders have reported that consumers are willing to pay price premiums. For further betterment of management, a more detailed study in understanding the perception of people about organic foods is required. It is also important to understand how willing people are to pay premium price for OFV. The objective of the study is to identify the factors influence the consumer's Willingness to pay (WTP) premium price for Organic fruits and vegetables. The outcomes of this research may help in getting better understanding of targetable segments, distribution channel, promotion and price in creating marketing plan for organic products especially fruit and vegetables.

## METHODOLOGY

A study on consumers' Willingness to pay (WTP) premium price for Organic fruits and vegetables was taken up in Coimbatore (2012-13), Western Tamil Nadu. In different selected categories of retail store, 80 consumers were selected by simple random sampling method. Thus, the total sample respondents selected for the study were 400. Primary data were collected with the aid of pretested interview schedule from the selected consumer by adopting "mall intercept survey method" (Phau and Teah, 2009). Ordered logit model were used to analyze the data. In this study the willingness to pay for organic fruits and vegetables (OFV) was segregated in to ranked as following five categories namely WTP<sub>i</sub> = 0, Not ready to pay more, WTP<sub>i</sub> = 1, ready to pay 1 to 5 per cent more, WTP<sub>i</sub> = 2, ready to pay 6 to 10 per cent more, WTP<sub>i</sub> = 3, ready to pay 11 to 15 per cent more and WTP<sub>i</sub> = 4, ready to pay 16 to 20 per cent more. The above outcomes represented multinomial choices and

were inherently ordered. The ordered probit model was estimated using Stata software and adapting the methodology of Gokalp and Kemal (2009).

## ANALYSIS AND DISCUSSION

The gender distribution of consumers showed that 56 per cent were male and rest were female (44%). Average age of consumer in the study was 38 years. Average household income was Rs. 305839 per annum. Their level awareness about organic fruits and vegetables was 74 per cent and knowledge was 68 per cent.

### Consumers' willingness to pay premium for OFV :

Consumers' willingness to pay premium for fruits and vegetables was analyzed to measure of percentage of money; the consumer is ready to pay higher price for Organic fruits and vegetables. It could be inferred from the Table 1 that 44 per cent of respondents were willing to pay an higher price of one to 10 per cent extra. This was followed by about 14 per cent of respondents willing to pay 11-15 per cent higher. Under 16-20 per cent WTP category, 18 per cent of consumers are willing to pay higher prices for organic fruits and vegetables. About one third of sample respondents were not willing to pay more for organic fruits and vegetables.

About 50 per cent of the consumers were willing to pay more than five to 20 per cent extra when the OFV is taken in to consideration. This could be substantiated by the 3/4<sup>th</sup> of the sample respondents forming the aspiring (Rs. 0.90 –Rs. 2.00 lakhs) and seeking (Rs.2.01 – 5.00 lakhs) groups of income category with about 67 per cent of respondents having higher educational level higher than the secondary education. This desire on willingness to pay is fulfilled only by the rising levels of income and improving educational levels.

The results obtained from ordered logit model and t value are given in Table 2. Log likelihood ratio (LR) test reveals that at least one of the predictors' regression co

**Table 1: Consumers' willingness to pay premium for OFV**

Sr.No.	Willingness to pay OFV	Number	Per cent
1.	Not willing	96	24.00
2.	1 to 5 per cent	110	27.50
3.	6 to 10 per cent	67	16.75
4.	11 - 15 per cent	57	14.25
5.	16 - 20 per cent	70	17.50
	Total	400	100.00

efficient is not equal to zero in the model. The LR Chi-square value is 155.01\*\*\* for the fitted model which is higher than the Table value and hence, the model is statistically significant at 0.01 per cent level of probability.

The variables income, awareness and knowledge were significant at 1 per cent level of probability while education was significant at 5 per cent. Other variables viz., sex, age, family type, household size, residence, food habit and culture were not significant. Thus, willingness to pay extra for organic fruits and vegetable is influenced by the five variables mentioned above.

Education level of the consumers positively influenced the willingness to pay higher prices for organic fruits and vegetable. Positive relationship between education and WTP illustrates that educated consumers understand the significance of consuming organic fruits

and vegetable for maintenance of good health.

Income is an important factor that influences positively the WTP higher prices for organic fruits and vegetable. It indicates increase in the household income will increase the WTP higher prices for organic fruits and vegetable. Similar findings were reported by Davies *et al.* (1995); Roddy *et al.* (1996) and Govindasamy and Italia (1999).

Awareness and knowledge of consumers about organic F and V had influenced WTP more for organic fruits and vegetable. Higher the level of awareness and knowledge possessed by the consumers about organic F and V, higher would be their willingness to pay more for such produce. This positive relationship illustrates consumers who are aware about the positive benefits of consuming organic fruits and vegetable possess favourable attitude and prefer organic produce compared

**Table 2 : Willingness of consumers to pay higher price for organic fruits and vegetables: ordered logit model**

Variables of willingness	Co-efficient	t value
Sex	0.306	1.44
Age	-0.0104	-0.12
Education	0.447**	2.22
Income	1.346***	9.30
Family type	0.053	0.22
Household size	-0.001	-0.02
Residence	0.074	0.55
Food habit	0.105	0.51
Culture	-0.222	-1.13
Awareness of organic F and V	0.971***	3.43
Knowledge of organic F and V	1.139***	4.75

Note: \*, \*\* and \*\*\* indicate significance of values at P<0.01, 0.05 and 0.1  
 LR Chi-square (11 df.) : 155.01\*\*\*      Prob.Chi square : 0.0000,      Log likelihood : -554.289,      No. of observations : 400,  
 Pseudo R<sup>2</sup> : 0.1227

**Table 3 : Marginal effects of predictor variables on WTP higher prices for organic F and V**

Variables (% increase in price)	WTP=0 (0)	WTP=1 (1 to 5)	WTP=2 (6 to 10)	WTP=3 (11 to 15)	WTP=4 (16 to 20)
Sex	-0.0469 (-1.40)	-0.2905 (-1.47)	0.0175 (1.34)	0.0271 (1.43)	0.0313 (1.46)
Age	0.0015 (0.12)	0.0010 (0.12)	-0.0005 (-0.12)	-0.00093 (-0.12)	-0.0010 (-0.12)
Education	-0.0669** (-2.20)	-0.0445** (-2.11)	0.0245** (2.01)	0.0399** (2.14)	0.0470** (2.19)
Income	-0.2017*** (-8.21)	-0.1341*** (-5.25)	0.0738*** (4.25)	0.1203*** (6.00)	0.1416*** (7.34)
Family type	-0.0081 (-0.21)	-0.0052 (-0.22)	0.0030 (0.21)	0.0048 (0.22)	0.0056 (0.22)
Household size	0.0001 (0.02)	0.0001 (0.02)	-0.00006 (-0.02)	-0.00010 (-0.02)	-0.0001 (-0.02)
Residence	-0.0112 (-0.55)	-0.0074 (-0.55)	0.0040 (0.55)	0.0066 (0.55)	0.0078 (0.55)
Food habits	-0.1553 (-0.51)	-0.0106 (-0.50)	0.0055 (0.52)	0.0094 (0.51)	0.0112 (0.50)
Culture	0.0333 (1.13)	0.0221 (1.12)	-0.0122 (-1.09)	-0.0199 (-1.12)	-0.0234 (-1.13)
Awareness	-0.1715*** (-2.98)	-0.0585*** (-3.81)	0.0673*** (2.81)	0.0795*** (3.54)	0.0832*** (3.94)
Knowledge	-0.1707*** (-4.60)	-0.1135*** (-3.81)	0.0624*** (3.24)	0.1018*** (4.20)	0.1198*** (4.45)

(Figures in the parenthesis indicate the t-ratio for ordered logit model)

to conventional fruits and vegetable.

### Marginal effects of predictor variables on WTP higher prices for OFV :

Marginal effects measure the changes the predicted variable (WTP for Organic F and V) for an unit change in the predictor variables. In the case of dummy variables, a marginal effect refers to the change in the WTP for organic fruits and vegetable for the discrete change of dummy variables from 0 to 1. For each unit increase in the education level the WTP for organic F and V increases to 0.0245 units for WTP = 2 and 0.0399 units for WTP = 3 and 0.0470 units for WTP = 4. Similarly the income of the consumer had positive significant influences on the WTP higher prices for organic F and V. The highest positive co-efficient for income was 0.1416 in the WTP=4 category.

It means that for every increase in income level results in an increase of 0.1416 units willingness To pay 16 to 20 per cent higher for organic fruits and vegetable. Awareness and knowledge are the other two variables which had positive significant influence on the WTP higher prices for organic F and V. An unit increase in awareness about organic F and V will result in an increase of 0.0832 units WTP 16-20 per cent higher for organic fruits and vegetable. Similarly, an unit increase of knowledge about organic F and V result in 0.1198 units WTP 16-20 per cent higher for organic fruits and vegetable (Table 3).

The results indicates that income and education was inversely proportional to WTP = 0 (Not willing to pay more) and WTP= 1 (1to5 %). This reflects that consumer with higher the income with higher education were WTP more than 10 per cent similarly in the case of awareness and knowledge inverse relationship could be observed in WTP=0 and WTP=1 and positive significant relationship with WTP = 2, WTP=3 and WTP = 4. Highly educated people those who are aware of the benefits of the organic fruits and vegetables had better knowledge on these aspects, their WTP more than 10 per cent up to 20 per cent for organic fruits and vegetables. Therefore, the firms, to educate the high income consumers about the benefits of fruits and vegetable and first target these consumers for selling their products. Income, awareness, knowledge and education had significantly influenced the consumers' willingness to pay more for organic fruits

and vegetables. This information needs to be taken in to account by the modern retailers to identify the target market for organic fruits and vegetables.

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