

A Comparative Study of Iranian Consumers' Versus Extension Experts' Attitudes towards Agricultural Organic Products (AOP)

Morteza Akbari and Ali Asadi

Department of Agricultural Extension and Education, College of Agricultural Economics and Development, University of Tehran, Karaj, Iran

Abstract: The main purpose of this study was to assess the attitudes of consumers and extension experts towards Agricultural Organic Products (AOP) in Iran. The statistical population included all of the consumers and extension experts (1000). A sample of 416 consumers and 289 extension experts were selected by the use of proportional random sampling methods. Questionnaires were used to collect data. For determining the validity of questionnaires, the facet content validity was used. Cronbach's alpha was used to measure reliability of the instrument, which was 0.91 and showed the instrument reliability. SPSS/win software was used for data analyzing. Data was analyzed using descriptive and inferential statistics such as extent of mean, standard deviation, coefficient of variation, correlation analysis and factor analysis. The findings revealed that the main communicative channel were TV and Radio and the main supply method was labeled organic products is supply in the special markets. The results showed four effective factors. The first factor was educational- supportive factor and other was informing, constructive- institutional and infrastructure development factors. Also the result of factor analysis as view point of consumer showed four effective factors, the first factor was educational factor and others were supportive, monitoring and economical factors. Consumers were ready to pay 26% more money for AOP and extension experts' believed that 27% extra price was appropriate in average.

Key words: AOP, attitudes, WTP, consumers, extension experts

INTRODUCTION

In the past two decades, growing environmental awareness in combination with concerns about safer foods have led people to question modern agricultural practices. This has been reflected in an increasing demand for organic produce, which is perceived as less damaging to the environment and to be healthier than conventionally grown foods^[33,42]. Research related to consumer attitudes to organic products indicated that the consumption of organic products is related to decreasing confidence in the quality of conventional products and to an increasing concern for health^[39]. Public concern about health appeared to be the main reason for buying organic products^[6,33,36]. This public concern is part of a widespread anxiety among consumers about the quality of products we eat. Iran is not except from these scenarios and there were use a large amount of pesticides and chemical materials in agriculture section. According Babaakbari and Movahedian (2004), as many as 4 million ton of fertilizers and chemical material distributed among

farmers during 2003-2004 and were increased yearly^[3]. Pay attention to this information consumers have been convinced to use agricultural organic products, but there wasn't any study in this case about attitude and willingness to pay for organic products. And this research is one of the first studies about consumer and extension expert attitudes and WTP.

A generic problem of organic is the term organic. There are many different meanings and interpretations and there is often confusion with terms such as green, ecological, environmental, natural and sustainable^[18,33]. The term organic is also commonly interpreted on many different levels and may mean quite different things to different people. For example, what is organic to one consumer may be anything but organic to another.

Research related to consumer preferences and demands for organic products were sparse^[16,20,41]. A number of studies exploring consumer attitudes to organic foods have been undertaken in various countries including the UK^[36], USA^[21], Norway^[40], the Netherlands^[33], Denmark^[17] and Ireland^[32]. Other researches were regarding consumer attitudes and WTP

Corresponding Author: Morteza Akbari, Department of Agricultural Extension and Education, College of Agricultural Economics and Development, University of Tehran, Karaj, Iran

for environmental friendliness and/or quality/safety in food production^[2,5,7-9,13-15,18], As well as for non-food products^[24,38] or services^[37]. In the majority of studies, many consumers (33-61 per cent) declare that they have a preference for and an interest in organically produced foods^[12,29,40,41].

In general, these studies have identified the importance health, products safety, environmental concerns and a better taste as principal factors promoting the purchase of organic products. However the extent to which these factors differ amongst consumers, according to various demographic criteria and over time, remains under- researched.

There are a several studies that investigated the effect of organic quality attributes and other characteristics on consumer preferences^[1,10,11,25,27,31,35]. These studies differ in several respects, making comparisons across studies difficult. For example, there was inconsistency in defining the concept of quality.

Several studies suggest that groups of consumers were willing to pay price premiums for organic products^[4,10,19,22,28,34,43]. A major obstacle to the purchase of organic products was the existing price difference^[17,21,26,32,36]. The results of studies about WTP showed that different people were different in WTP. For example, Millock *et al.* (2002) reported that 59% of respondents in Denmark were willing to pay a price premium of 32% for organic milk, 41% of respondents would pay 40% extra for organic potatoes, 51% were willing to pay a price premium of 23% for organic rye bread, and 41% indicated they would pay 19% extra for minced organic meat. In general, the proportion of respondents willing to pay a price premium decreases as the premium increases, consistent with the law of demand^[28].

However, many authors have indicated that consumers seem to be willing to pay a little more, about 5-10%, for organic foods^[12,17,21,23,26,30,39,40].

The result of Zhou and Chen^[44] that they were asked about the channel through which consumer heard about the organic food, 56% of the yes group had heard about organic food from TV, 47% learned about organic food from magazines, 23% through internet, 16% get the information from supermarket, 10% had the knowledge from friends, and 5% get the organic food information from other channels.

The present study was one of the first studies about AOP in Iran, and was planned based on the following goals:

- Assessing level of consumer and extension expert knowledge's towards AOP and chemical materials in Iran

- Assessment level of WTP for AOP
- Identification Communicative channel, place and methods for AOP developing
- Identification of effective factors on AOP development in Iran

MATERIALS AND METHODS

The present survey was exploratory in nature, since we assumed that no prior knowledge existed about the Iranian consumers and extension experts' attitudes towards AOP. This study compared Iranian consumers versus extension experts' attitudes towards Agricultural Organic Products (AOP). The study was carried out in 2007 through survey technique. The statistical population of the study were consisted of consumers and extension experts who dealing with activities about agricultural organic products in agricultural extension organizations. Sample size included 289 extension experts and 489 Agricultural Organic Products (AOP) consumers. The research was conducted in five provinces which have been introduced in Table 1.

In this study attitudes towards organic products were measured by set of questions introduced in questionnaires.

For determining the validity of questionnaire, the content and face validity were obtained by a group of specialists. A pilot test was conducted to determine the questionnaire's reliability. (Cronbach's alpha = 0.81 for consumer questionnaire and alpha = 0.92 for extension expert questionnaire).

The questionnaires had also several groups of questions. The questions were about the concept of agricultural organic products, knowledge about AOP attributes, appropriate places and methods for AOP development, and finally general questions about their attitudes towards AOP. Agricultural organic products considered in this study were produced without artificial fertilizer or chemical pesticides, nor containing artificial coloring, flavoring or aromatic substances, preservatives, or genetically modified ingredients^[34].

Table 1: Frequency distribution of respondents

Sample	Consumers		Extension experts	
	frequency	percent	frequency	percent
Tehran	167	40.1	39	13.5
Fars	63	15.1	75	26
Esfahan	56	12.5	53	18.3
Kerman shah	60	14.4	-	-
Mazandaran	-	-	40	13.8
Azerbaijan Shargi	70	16.8	82	28.4
Total	416	100	289	100

Data collected was analyzed using the Statistical Package for the Social Sciences (SPSS). Appropriate statistical procedures for description were used. Data analysis was carried out in two sections, consisting data description and data inferential analysis. Statistics such as frequencies, percentage, cumulative percentage, and median were used in the descriptive section. Inferential analyses such as t-test, f-test, correlation coefficient and factor analysis were also used to reach the research objectives.

RESULTES AND DISCUSSION

Personal and socio-economic characteristics of consumers: Respondents were on average 23 years old. A total of 70.1% of those were men, and 29.1% were women. Fifty five percent of the respondents stated that they earned U\$S 300 or less monthly, 33.2% among 300-600 per month, while for the remaining 11.1%, the household monthly income was above U\$S 600. Regarding educational level, 3.5% of the consumers had not completed high school, and more than a half had gone into further education, even though they had not graduated. 56.5% held a university or postgraduate degree (Table 2).

Personal characteristics of extension experts: The sample of extension experts were consisted of 90 women and 185 men that 64% of them were men and 31.1% were women, and 4.8% of them did not identify their gender. The average age of the extension experts was 27 years old. 55.7% of them were younger than 30, 24.9% were between 30 and 40, 7.6% were 40-50 years old, and 11.8% were older than 50. 83.7 of the respondents were Graduate students and 15.9 were Postgraduate students (Table 3).

Respondent Knowledge and perception about AOP and disadvantages of chemical material materials: The first question asked respondents' knowledge about AOP and their perceptions about disadvantages of pesticides and fertilizers. As can be seen at Table 3, 42% (121 extension experts answered medium, the respondents who answered, Low were 19.8 (57 respondents) and 37.2% (111 respondents) answered high also nearly 50% of consumers had knowledge low and only 24.2% had high knowledge (Table 4).

In addition, the result showed that 64% extension experts had high knowledge about disadvantages of fertilizers and other chemical materials also 47.5% of consumers had high knowledge (Table 5).

Table 2: Demographic characteristics of consumers

Demographic variables	F	%	M	SD
Gender	265	70.1		
Men	113	29.9		
women				
Marital staturse				
Bachelor	166	41.2		
Married	237	58.8		
No response	13			
Age			32	10.32
20>	19	4.6		
20-30	212	51		
30-50	137	32.9		
50<	26	6.3		
No response	22	5.3		
Incom			400	0.685
300≥	232	55.8		
300-600	138	33.2		
600≤	46	11.1		
Household numbers				
Less Than 3	177	42.5		
3-5	164	39.4		
Above5	75	18		
Nation (Tribe)				
Pars	244	58.24		
Tork	103	24.8		
Lor	19	4.6		
Kord	36	5.7		
No response	14	3.3		

Table 3: Demographic Characteristics of extension experts

Demographic variables	F	%	M	SD
Gender			27	10.1
Men	185	64		
Women	90	31.1		
No response	14	4.8		
Marital staturse				
Bachelor	120	41.7		
Married	169	58.3		
Age				
30>	161	55.7		
30-40	72	24.9		
40-50	22	7.6		
50<	34	11.8		
Education level				
Graduate	242	83.7		
Post graduate	46	15.9		
No response	1	0.3		
Nation (Tribe)				
Pars	188	65.1		
Tork	95	32.9		
Lor	6	2.1		

Table 4: Knowledge about AOP

	Extension experts		Consumers	
	f	%	f	Valid %
Low	57	19.8	181	48.4
Medium	121	42	174	42.1
High	111	37.2	100	24.2
No response	-	-	3	-
Total	289	100	416	100

Communicative channel for AOP development:

Respondents were asked about the channels through which AOP could be developed. The results showed that TV & radio were of high priority. This selection maybe because the TV nature and area to excite clients. Also newspapers were sitting at the last priority sitting (accordance to the result of Zhou and Chen (2007) and Malek-Mohammadi (2000) (Table 6).

Appropriate place and method for AOP supply:

Consumer and extension experts believed that appropriate AOPs to buy, were those having special labels. They also believed that well-known markets

were the best place for supplying AOP. Open packaged and Chain supermarkets were of lowest priority for supplying AOP. It seems that because the information of consumers about AOP was not much and in other side at the first stage it seems that supply is not very well. In addition, because of violations they had selected these places and methods (Table 7).

Attitudes towards AOP attributes: The result showed that flavor and safety were the most important AOP attributes (according to Jolly, 2001; The Packer, 2001; Demeritt, 2002; Wolf, 2002; Cunningham, 2002) but price was the priority number 6 (the result opposite with the results of Grunert and Kristensen, 1995; Mathisson and Schooling, 1994; Roddy *et al.*, 1996). These results confirmed that health matters when consumers were buying agricultural products (Table 8).

Factor analysis of effective factors on AOP development:

Factor analysis was utilized to summarize the variables of the research to a smaller quantity and to determine the effect of each one of the factors to confine the effective factors on AOP development. The implemented computations revealed that the internal coherence of the data was appropriate (KMO = 0.91 for extension experts and KMO = 0.86 for consumers) and Bartlett's statistical data was at 0.01 level significant. According to Kaiser Criteria, from the viewpoints of both extension experts and consumers, there were 4 factors that their Eigen values were extracted more than 1 (Table 9). The research variables were categorized into 4 factors using Varimax Rotation Method.

Table 5: Knowledge about fertilizers, pesticides and chemical materials

	Extension experts		Consumers	
	f	%	f	Valid %
Low	27	9.3	68	16.5
Medium	77	26.6	149	36
High	180	64	187	47.5
No response	9	-	3	

Table 6: Ranking of appropriate channel for AOP

	Extension experts			Consumers		
	f	CV	rank	f	CV	rank
TV and Radio	275	0.093	1	401	0.123	1
Friends and internal contact	273	0.240	2	394	0.296	3
Poster and tracts	278	0.248	3	389	0.289	2
Workshop	275	0.289	4	391	0.34	5
Magazine	274	0.297	5	392	0.312	4
Internet	275	0.308	6	388	0.361	6
Newspaper	278	0.475	7	396	0.428	7

Table 7: Ranking of appropriate method and place for AOP supplying

	Extension experts			consumers			
	f	CV	rank	f	CV	rank	
appropriate methods	labeled	259	0.17	1	372	0.21	1
	packaging	282	0.21	2	395	0.232	2
	Open packages	277	0.41	3	392	0.417	3
appropriate places	Identified special markets	283	0.24	1	403	0.263	1
	Beside conventional products	279	0.30	2	399	0.338	3
	Farmers markets	275	0.31	3	395	0.294	2
	Chain stores	280	0.74	4	402	0.685	4

Table 8: Attitude Comparative consumers and extension experts on AOP Attributes

AOP Attributes	Extension experts	Consumers			Very important	neutral	unimportant
	Very important	neutral	unimportant	Very important			
Flavor	13.88	0.4	0.02	13.86	0.38	0	
Safety	13.4	0.5	0.05	13.72	0.45	0	
Availability	12.15	1.88	0.271	12.64	1.36	0.24	
Appearance	11.11	3.87	0.242	11.13	2.98	0.24	
Color	10.25	3.85	0.142	10.71	3.43	0.18	
Price	9.37	4.66	0.242	10.34	3.7	0.26	
Size	6.97	6.96	0.528	7.81	6.08	0.34	
Total	77.47	18.36	1.5	80.21	18.38	1.26	

Table 9. Effective factors in the AOP development

Percent	Eigen value	Extension experts	percent	Eigen value	Consumers	Row
22.36	4.7	educational-supportive	23.54	2.59	Educational	1
16.26	3.41	informing	19.48	2.18	Supportive	2
10.74	2.25	Monitoring	15.34	1.68	Monitoring	3
9.81	2.06	Infrastructure development	11.03	1.21	Economical	4
59.17			59.39			Total percent

Table 10: Willingness to pay more money for AOP development

WTP	Consumers		Extension experts	
	F	%	F	Appropriate percent
Low (10>)	76	23.3	50	17.3
Medium (10-30)	135	41.4	114	39.4
High (30-50)	60	18.4	62	21.5
Very high (50<)	12	4	63	21.8
	Mean = 26.16	SD = 18.9	Mean = 27.07	SD = 16.19

Factor 1-23.54% of the total variance explained, comprising the following three variables as important effective factors. This factor was named education. Loadings ranged from 0.74-0.84. But from view point of extension experts 22.36% of the total variance explained, was named educational-supportive.

Factor 2-19.48% of the total variance explained. This factor was named supportive. Loadings range from 0.62-0.75. But from the view points of extension experts 16.26% of the total variance explained, was named informing.

Factor 3-15.34% of the total variance explained. This factor was named monitoring. Loadings range from 0.83-0.87. In addition, from view point of extension experts 10.74% of the total variance explained, was named monitoring.

Factor 4-11.03% of the total variance explained. This factor was named economical. Loadings range from 0.80-0.88. But from view point of extension experts 9.81% of the total variance explained, was named infrastructure development.

In addition, as could be seen in Table 8 almost effective factors were similar and showed that extension experts and consumers were in agreement and these results were emphasized as important factors affecting AOP development.

Level of Willingness to pay more money: Although the previous research results showed that the major obstacle to the purchase of organic products was price differences (Grunert and Kristensen, 1995; Jolly, 1991; Mathisson and Schooling, 1994; Roddy *et al.*, 1996; Tregear *et al.*, 1994), but the results showed that 41.4% of consumers were demonstrated intermediate (10-30) positive attitudes towards to pay money for AOP and only 4% of them had tendency to pay over 50% more money than conventional products prices. But consumers had tendency to pay in average 26% more

money. In addition, extension experts believed that appropriate extra price for AOP were 27% in average (Table 10).

Correlation between attitude and literate level: There was high correlation between literate level and attitude toward AOP. The correlation coefficient was 0.451, correlation was significant at the 0.01 level (2-tailed) also the result showed that between literate level and attitude toward AOP were correlation significant at the 0.01 level.

Attitude and income: The result showed that between group with different income and Attitude weren't relation significant, this result opposite with finding of (Grunert and Kristensen, 1995; Jolly, 1991; Mathisson and Schollin, 1994; Roddy *et al.*, 1996; Tregear *et al.*, 1994).

Nationality: There was high correlation between nationality and attitude toward AOP, correlation was significant at the 0.01 level (2-tailed) also the result showed that between nation and WTP more money for AOP were significant correlation at the 0.01 level. But between extensions experts with different attitudes and different nation's correlation were not significant. (In spite of were present the results but bias present, we decide not to show).

Gender, attitude and WTP: Chi-square analysis showed that there were differences in gender and WTP more money for AOP. The correlation coefficient was significant at 0.01 level (2-tailed) but between persons who were marital status or not with WTP wasn't significant. In addition to, Chi-square analysis showed that there were differences in gender and attitude toward AOP, The correlation coefficient was significant at 0.01 levels (2-tailed).

Provinces, attitude and WTP: The result showed that were different in consumer attitudes toward AOP in different states, the correlation coefficient was significant at 0.01 level (2-tailed) but no different in states and WTP more money for AOP. Also weren't correlation significant among extension experts.

CONCLUSIONS

Iran consumers were not well informed about agricultural organic food, almost half of them even have medium knowledge toward agricultural organic food, those who had heard of AOP could not tell clearly what AOP was. Consumers were not very familiar with the supply of ecologically-grown products in the market. Some consumers were not satisfied with the supply of products especially AOP because they weren't WTP more money for AOP. Iranian consumers consider organically grown products as very healthy, of good quality and tasty. However, these products were perceived as rather expensive.

Educational activities such as organized presentations on AOP should be held at agriculture products fairs and open markets where the majority of the customers lack such knowledge. Consumers were not very familiar with the supply of organic products in the market and other places. Hence, promotional activities on AOP are of great importance to Iran's consumers. Visible displays especially in TV and in the supplying place as well as promotion through media should be used more often.

Consumers were both interested in food related issues and concerned about government policy and regulations concerning AOP, feeling that society should have more control over production and processing. Pesticide and other chemical materials residues were the highest rated concern for agricultural products (AP) safety, with a majority of consumers believing that AP quality and safety should be improved to avoid jeopardizing the future health of society. Safety and flavor and availability were the three key factors that influenced consumer purchasing decisions, and were considered to be more important than price.

The results revealed that the most important method was special label and the most important place was identified special markets, this might be one of the factors in the AOP development. Also from view point of consumers and extension experts' educational factors were the first factor in AOP development.

There were differences between those with and those without university education with respect to the AOP. On the bases of these results, related workshops

and training courses should be carried out for consumers.

Overall, because of disadvantage of chemical materials the rate of diffusion of AOP is day to day increasingly, therefore must have been much research in this basis.

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