

Full Length Research Paper

Analyzing the effects of consumers' demographic characteristics on the preferences of fresh fruit and vegetables supply chains

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Consumer purchasing habits are affected by various demographic, socio-economic and socio-cultural factors along with the product, price, distribution channel, and advertisement. Diversified and alternative supply chains offer so many advantages to consumers in agricultural product markets. Consumers prefer different outlets for agricultural products because of their personal differences that are formed by the effects of demographic, socio-economic and socio-cultural factors. The impacts of consumer demographic variables on their preference for fresh fruit and vegetables have been insufficiently studied in local literature. Therefore, it has been determined in this research for a deep evaluation. Target population was the consumer's residing in the city central of Antalya. The effects of demographic characteristics on preferences of outlets in fresh fruit and vegetables supply chains were tested by using the chi-square test. The results indicated that consumer age and marital status had no significant correlation with the preferences. On the other hand, the test results showed that gender, education, income and female employment status did have a significant correlation with the preference for outlets in fresh fruit and vegetables supply chains.

Key words: Fresh fruit and vegetables, supply chains, consumer preferences, chi-square analysis.

INTRODUCTION

Improvements on the socio-economic and social-cultural structure of the society create a path for new marketing opportunities. For example, rapid economic growth, increasing urbanization and accelerated integration into the world economy have led to a surge in the number of supermarkets and hyper markets across Turkey. At the same time, common use of technological innovations and applications along with the effects of globalization has an impact on consumers' behaviors and their life styles (Erdal, 2001). In parallel with these developments, the concepts of products are renewed and consumer expectations undergo a change. As a result of shifted consumer expectations, presentation and location of goods and services become more important. According

to the emerging different consumer needs, new and modern outlets such as hypermarkets and supermarkets are introduced in the marketing systems.

Fresh fruit and vegetable production is important for the country. Also its population depends on several factors, such as health benefits, nutritional values and contributions for the overall economy. For this reason, new initiatives are on the agenda for fresh fruit and vegetable production and distribution are in the domestic market. Outlets in fresh fruit and vegetables supply chains consisted of traditional sales points such as farmers market, greengrocers, and street hawkers until 1990. Modern outlets such as national and international supermarkets and hypermarkets got involved in fresh fruit and vegetables supply chains after 1990. Currently, new legal arrangements are introduced by the government: Because developments in the consumer market are closely followed by developments in production and

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distribution sectors. It is important to gather data from consumer markets in order to make a point of marketing policies and strategies, and to use resources effectively.

The socio-economic and technological developments not only reveal new consumer preferences and demand patterns, but also increase the alternatives for where and how will the consumers purchase. Alternative outlets for agricultural products along with increased consciousness of consumers have been studied and the factors affecting consumer preferences have been introduced by these studies.

In the literature, the articles evaluating factors affecting preferences of staple agricultural products from super/hypermarkets are dominant. We found some international and national researchers who evaluated the relationship between consumers' demographic properties and their purchasing habits. One study looked at the physical condition of the markets as well as social, psychological, and economical status of consumers who prefer supermarket and hypermarkets. The researchers concluded that physical conditions of supermarkets decreased in parallel with the education level of the consumers.

In a different study, the supermarket and hypermarket preference reasons of consumers who live in developed countries were reviewed. This study found that the dominant factors affecting consumers while they are choosing hypermarkets and supermarkets for shopping were the price subsequent by product quality and the atmosphere in the super/hypermarkets (Hortman et al., 1990). Another study showed that working women were an important cluster of consumers who did not have much time to supply their shopping needs (Bayraktar, 1995).

It was shown that the increasing employment rate of women, product differentiations, and the increase on per capita income and the commercials on mass media had a significant impact on variations in consumer preferences. In addition, the tendency of market globalization and alterations in consumer behaviors created a new type of demand in agricultural marketing (Albayrak, 2000). New products in the agricultural market causing a change in women's purchasing habits were observed by several studies (Ersoy, 1993).

Also, in a further study about the relation between purchasing decisions of a family and women's employment status were evaluated (Nakip et al., 1999). A relationship between shopping from supermarkets and the income level was also found in Ozkan study (2001). When the shopping behaviors of families which were immigrated to cities from villages were evaluated, it was found that 50% of those families prefer farmers markets, 13.8% of them prefer hypermarkets, and the rest of them prefer grocery stores (Ersoy, 1999).

Price and quality are the most important factors affecting fresh fruit and vegetables purchase. Moreover, consumers pay attention to the quality and safety of

vegetables and fruits more than its appearance (Gunden et al., 2008). Fruit and vegetables marketing techniques have been observed as an upward trend in the studies conducted to developed countries (Ayieko et al., 2003; Vizone, 2006; Neven et al., 2005; Neven and Reardon, 2006; Mergenthaler et al., 2007). The share of super/hypermarkets in fruit marketing is 60% in France, 50% in England, 47% in Germany and 38% in Spain. Meanwhile the share of super/hypermarkets in vegetable marketing is 56, 50, 46.8 and 28.9%, respectively for those countries (Anonymous, 1997).

The importance of fruits and vegetables on a healthy diet has been known for quite some time. In this regard, the consumption rate of fruit and vegetables should be analyzed and its importance should be emphasized by researchers. The rise of consumer awareness may force changes for outlets in fresh fruit and vegetables supply chains. There are many studies which evaluate the effectiveness of alternative outlets and their relationships with demographic parameters in agricultural markets. In agricultural marketing not only product concepts but also outlets are in a continuous development. The development of agricultural marketing has significant impacts on consumer habits. There are not many national or international studies analyzing the effects of consumer demographic characteristics on the preference of outlets in fresh fruit and vegetables supply chains. For this reason, in this study it was determined to evaluate the effects of consumers' demographic characteristics on their preference for outlets in fresh fruit and vegetables supply chains.

In the whole of the study it was tried to define the consumer profile of both of super /hypermarkets, farmers/wet markets, groceries, and general stores-markets. In fact, this study mainly focused on the retail stage of the supply chains. So, the identification of the target groups and the sales level of the outlets in fresh fruit and vegetables supply chains were examined.

MATERIALS AND METHODS

The population statistics that related to the subject were collected from the Turkish Statistical Institute (TUIK). The data about consumers' demographic properties and preferences of the outlets in fresh fruit and vegetables supply chains were collected by face to face questionnaire. The consumer data constituting the material of the research are from 2007. The population in this study is the households living in the center of Antalya. The reason for choosing households as a population is that fresh fruit and vegetables purchasing is performed by a member of households. It was not possible to collect data for all members of household, so simple sampling method was used in the study.

Ungrouping simple one step random probability sampling method based on main cluster ratios was used for determining the sample size of the research. If there was no information available about the properties or the variances of a population in a consumer research, simple random sampling method is used (Kocet al., 1995; Gul et al., 2003). The following formula was used to calculate the sample size. The size of the sample was determined as 300 at 95% significant

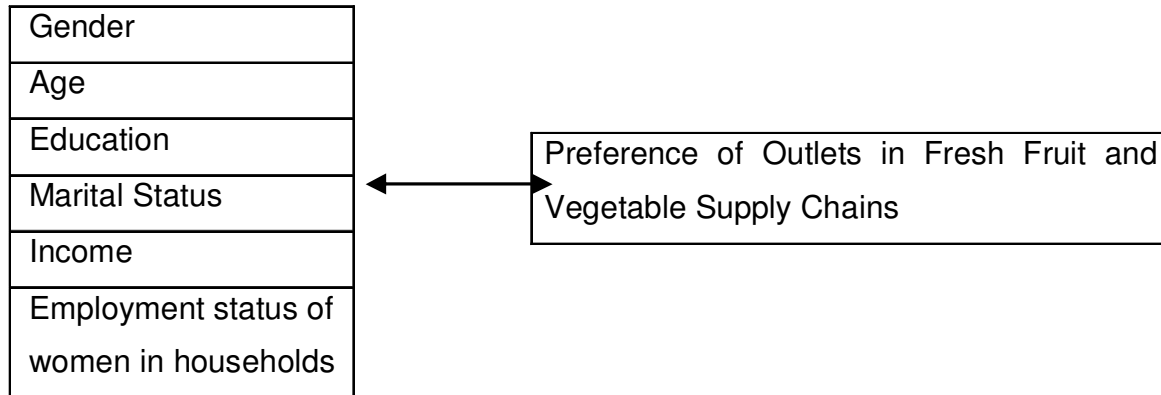


Figure 1. Research model.

level and 5% margin of error (Collins, 1986):

$$n = \frac{Z^2 [1 + (0.02) * (b - 1)] * P * Q}{(S)^2}$$

The sampling size was determined according to the district population. After determining the size of the sample, the districts in the city of Antalya were divided into four regions; most developed, medium developed, less developed, undeveloped, according to socio-economic development levels. Methods of the data collection included questionnaires and face to face interviews. Households were randomly selected from each street and apartment complex. The information collected by questionnaire was divided into two groups. The aim of the first group of questions was to get information about respondents' age, gender, marital status, level of education, employment status and level of income. The second group of questions aimed to get information about the preference of outlets in fresh fruit and vegetables supply chains (super/hypermarkets, groceries, farmer markets, wet markets, general stores).

SPSS 15.0 was used for evaluating the data. Chi-square test and descriptive statistics were used to analyze the data. The advantage of chi-square test is roughly estimation of confidence; it accepts weaker, less accurate data. It can be used in a wide variety of research such as determining compliance test. The classified data based on two or more parameters were used to determine the degree of relationships between those parameters (Kurtulus, 1998).

In this study, descriptive statistics was used as shown in Figure 1. In this study, the hypotheses that have no relationship between demographic parameters and the preference of fruit and vegetables supply chains were tested. Another hypothesis was developed for each demographic parameter, such as gender, age, marital status, level of education and level of income and employment status for women in households.

H₁: There is a significant relationship between gender and preference of outlets in fresh fruit and vegetables supply chains.

H₂: There is a significant relationship between age and preference of outlets in fresh fruit and vegetables supply chains.

H₃: There is a significant relationship between marital status and preference of outlets in fresh fruit and vegetables supply chains.

H₄: There is a significant relationship between level of education

and preference of outlets in fresh fruit and vegetables supply chains.

H₅: There is a significant relationship between level of income and preference of outlets in fresh fruit and vegetables supply chains.

H₆: There is a significant relationship between employment status for women in households and preference of outlets in fresh fruit and vegetables supply chains.

RESULTS AND DISCUSSION

Today, the focal point of consumer preferences has been turned to socio- psychological area from physiological area. The most important parameters affecting demand, brand name and point of sale of a product are often derived from consumers. The demographic and the socio-economic properties of consumers are listed in Table 1. The consumer data were classified in terms of gender, age, marital status, level of education, level of income and employment status for women in households. The data were used for testing hypotheses were presented earlier. The number of male is well balanced with the number of female among respondents. In terms of age groups, 19.1% of respondents are in the age group of 18 to 25 years, 34.9% are in the age group of 26 to 35 years and 33.9% are in the age group of 36 to 50 years. The remaining 12.1% are older than 51 years old.

The data shows that the nearly 23.8% of the respondents are graduates from primary school. About 14.3% of the respondents are graduates from secondary school, the majority of them (33.7%) reported that they had high school education, and 28.2% are graduates from university. A majority of the respondents (70.6%) reported that they were married, 25.3% were single, and 4.1% were divorced/widowed. The rate of employed woman in the households was determined to be 38.7%.

The study also analyzed the income range of the respondents. The income level of respondents was mostly ranged from 430 to 1288 dollars. The respondents

Table 1. The socio-economic and the demographic characteristics of the consumers.

Demographic properties	Total	
	Number	Percentage
Gender		
Man	151	50.3
Woman	149	49.7
Total	300	100.0
Age group		
18-25	57	19.1
26-35	104	34.9
36-50	101	33.9
51+	36	12.1
Total	298	100.0
Level of education		
Primary school	70	23.8
Secondary school	42	14.3
High school	99	33.7
University	83	28.2
Total	294	100.0
Marital status		
Single	74	25.3
Married	207	70.6
Divorced-Widowed	12	4.1
Total	300	100.0
Employment status of women in households		
Yes	110	38.7
No	174	61.3
Total	284	100.0
Level of income (Dollar /per month)		
<430	13	4.4
431-858	66	22.2
859-1288	77	25.9
1289-1718	58	19.5
1719-2147	56	18.9
2147+	27	9.1
Total	297	100.0

*The exchange rate of December 2007 was used (1 Dollar = 1.1639 TL).

whose income was less than 430 dollars were 4.4%. The remaining 9.1% had an income of more than 2147 dollars.

Major outlets of agricultural products in the Turkish fresh fruit and vegetables marketing consist of traditional outlets such as farmers markets/wet markets, general stores, groceries modern outlets such as super/hypermarkets. Use of supermarkets for some products

categories were observed in some developing countries (Goldman, 1982; Othman, 1990). Consumers may regularly purchase perishable agricultural products in traditional outlets, while buying processed and packed foods in supermarkets. Consumers shop from both modern and traditional outlets but consistently purchase different items at different store formats (Goldman et al., 2002). In this study, it was primarily attempted to

Table 2. The level of preference for outlets in fresh fruit and vegetables supply chains.

The type of outlets	The level of preference (n)				Total
	1	2	3	4	
Super/hypermarkets	34	113	26	10	183
Farmers/wet markets	252	30	8	-	290
Groceries	12	52	36	18	118
General stores-markets	2	19	26	31	78
*Σ	300	214	96	59	669
The level of preference (%)					
Super/hypermarkets	18.6	61.7	14.2	5.5	27.4
Farmers markets	86.9	10.3	2.8	-	43.3
Groceries	10.2	44.1	30.5	15.3	17.6
General stores-markets	2.6	24.4	33.3	39.7	11.7
*Σ	44.8	32.0	14.4	8.8	100.0

*Sum of the variables.

Table 3. Relationship between gender and preference of outlets in fresh fruit and vegetables supply chains (H_1).

Gender	Preference of outlets (%)				Pearson chi-square	**SD	P-value	ACCEPT(ED)
	Super/hypermarkets	Farmers/wet market	Grocery	*Σ				
Female	10.1	89.3	0.7	100.0	11.521	2	0.003	ACCEPTED
Male	12.6	78.8	8.6	100.0				

Probability value < 0 .05; *sum of the variables; **standard deviation.

determine what percentage of consumers would prefer, which outlet format in the Turkish fresh fruit and vegetables market. It was assumed that consumer might prefer one or more outlets for their fresh fruit and vegetables purchase. The level of preference for outlets in fresh fruit and vegetables supply chains were evaluated (Table 2). According to the research findings, if the first preference of respondents ($n = 300$) is taken into consideration, 84% of respondents purchase their fresh fruit and vegetables from farmers/wet markets, 11.3% from super/hypermarkets, 4% from groceries, and 0.7% from general stores and small markets, respectively. If consumers in the households ($n = 669$) prefer more than one outlets for fresh fruit and vegetables, preference ratio for farmers/wet markets was 43.3%. 27.4, 17.6 and 11.7% preferred super/hypermarkets, groceries and general stores/small markets, respectively.

It was found that 86.9% of respondents preferred farmers/wet markets as a first, 10.3% as a second and 2.8% as a third option when they purchased fresh fruit and vegetables. The data showed that 18.6% of respondents preferred super/hypermarkets as an outlet for agricultural products for their first, 61.7% of them for their second, 14.3% of them for their third and 5.5% of them for their fourth choice. According to the data collected, the prior preference of the respondents for fresh fruit and vegetables supply chains are farmers/wet

market, super/hypermarket, groceries and general stores/markets respectively.

According to respondents preference distribution, 44.8% of households preferred only one type of outlet, 32% preferred two types of outlets, 14.4% preferred three types of outlets and 8.8% preferred four types of outlets for fresh fruit and vegetables purchase. Many measured or unmeasured parameters influencing the preference of outlets can be considered. In this study, the relationship between respondents' outlet preferences and their demographic characteristics were tested by chi-square analyses in ceteris paribus conditions.

“ H_1 : There is a significant relationship between gender and preference of outlets in fresh fruit and vegetables supply chains”

It was found out that P was smaller than 0.05, therefore H_1 was accepted. It can be said that there was a significant relationship between gender and preference of outlets in fresh fruit and vegetables supply chains. The number of males who prefer supermarket and groceries are more than the number of females among respondents: On the other hand, the numbers of females among respondents who prefer farmers/wet markets are more than the numbers of males (Table 3).

Table 4. Relationship between age and preference of outlets in fresh fruit and vegetables supply chains (H₂).

Age groups	Preference of outlets (%)				*Σ	Pearson chi-square	**SD	P-value	ACCEPT(ED)
	Super/hypermarkets	Farmers/wet markets	Grocery						
18-25	15.8	78.9	5.3	100.0					
26-35	11.5	82.7	5.8	100.0					
36-50	6.9	88.1	5.0	100.0	6.006	6	0.423	ACCEPTED	
51+	16.7	83.3	-	100.0					

Probability value < 0 .05; *sum of the variables; **standard deviation.

Table 5. Relationship between marital status and preference of outlets in fresh fruit and vegetables supply chains (H₃).

Marital Status	Preference of outlets (%)				*Σ	Pearson chi-square	**SD	P-value	ACCEPT(ED)
	Super/hypermarkets	Farmers/wet markets	Grocery						
Single	14.9	79.7	5.4	100.0					
Married	9.2	86.0	4.8	100.0					
Divorced/ Widowed	33.3	66.7	-	100.0	7.931	4	0.094	ACCEPTED	

Probability value < 0 .05; *sum of the variables; **standard deviation.

Table 6. Relationship between level of education and preference of outlets in fresh fruit and vegetables supply chains (H₄).

Level of education	Preference of outlets (%)				*Σ	Pearson chi-square	**SD	P-value	ACCEPT(ED)
	Super/hypermarkets	Farmers/wet markets	Grocery						
Primary school	3.6	96.5	-	100.0					
Secondary school	3.6	92.9	3.6	100.0					
High School	4.9	90.1	5.0	100.0	22.595	6	0.001	ACCEPTED	
University	20.4	73.7	5.8	100.0					

Probability value < 0 .05; *sum of the variables; **standard deviation.

“H₂: There is a significant relationship between age and preference of outlets in fresh fruit and vegetables supply chains“

P was greater than 0.05, therefore H₂ was denied. It was concluded that consumer age had no impact on preference of outlets in fresh fruit and vegetables supply chains (Table 4).

“H₃: There is a significant relationship between marital status and preference of outlets in fresh fruit and vegetables supply chains“

It was determined that P was greater than 0.05 and therefore, H₃ was denied and it was concluded that

marital status had no impact on preference of outlets in fresh fruit and vegetables supply chains (Table 5).

“H₄: There is a significant relationship between level of education and preference of outlets in fresh fruit and vegetables supply chains“

It was determined that P was smaller than 0.05 and therefore, H₄ was accepted. It was concluded that there was a significant relationship between level of education and preference of fresh fruit and vegetables supply chains. The preferences of super/hypermarkets were directly related with the level of education. The tendency for preferring super/hypermarkets increased when the level of education increased (Table 6).

Table 7. Relationship between level of income and preference of outlets in fresh fruit and vegetables supply chains (H₅).

Level of Income (Dollars)	Preference of outlets (%)				Pearson chi-square	**SD	P-value	ACCEPT(ED)
	Super/hypermarkets	Farmers market/wet markets	Grocery	*Σ				
<430	7.7	84.6	7.7	100.0				
431-858	1.5	93.9	4.5	100.0				
859-1288	9.1	85.7	5.2	100.0				
1289-1718	15.5	81.0	3.4	100.0	18.610	10	0.045	ACCEPTED
1719-2147	14.3	82.1	3.6	100.0				
2147+	29.6	63.0	7.4	100.0				

Probability value < 0 .05; *sum of the variables; **standard deviation. *The exchange rate of December 2007 was used (1 Dollar = 1.1639 TL).

Table 8. Relationship between employment status for women in households and preferences of outlets in fresh fruit and vegetables supply chains (H₆).

Employment status for women in households	Preference of outlets (%)				Pearson chi-square	**SD	P-value	ACCEPT(ED)
	Super/hypermarkets	Farmers market/wet markets	Grocery	*Σ				
Employed woman	16.4	78.2	5.5	100.0				
Unemployed woman (Housewife)	8.0	88.5	3.4	100.0	5.630	2	0.040	ACCEPT

Probability value < 0 .05; *Sum of the variables ; **Standard deviation.

“H₅: There is a significant relationship between level of income and preference of outlets in fresh fruit and vegetables supply chains

It was determined that P was smaller than 0.05 and therefore, H₅ was accepted. It was concluded that there was a significant relationship between level of income and preference of outlets in fresh fruit and vegetables supply chains. The preferences of super/hypermarkets were directly related to level of income. The tendency for preferring super/hypermarkets increased as the level of income increased (Table 7).

“H₆: There is a significant relationship between employment status for women in households and preference of outlets in fresh fruit and vegetables supply chains

Chi-square test showed that P was smaller than 0.05 and therefore, H₆ was accepted. It was concluded that there was a significant relationship between employment status for women in households and preference of fresh fruit and vegetables supply chains. The ratio of working women who preferred super/hypermarkets and grocery stores was higher than the ratio of not working women. Data showed that not working women usually preferred farmers markets for their purchase (Table 8).

Conclusion

Fresh fruits and vegetables are perishable by nature and difficult to store and transport. This situation requires us to evaluate the management of supply and distribution channels carefully. Consumers demand fresh fruit and vegetables with nutritional value under healthy and hygienic conditions. Product quality has an important role in the consumer's purchasing decision. As the level of education and increasing life quality, the outlets in fresh fruit and vegetables supply chains are gradually gaining importance. Also, demographic characteristics of people play an important role for determining where fresh fruit and vegetables are purchased from.

Findings of the research showed a significant relationship between gender and preference of outlets in fresh fruit and vegetables supply chains. In other words, males and females prefer different chains for purchasing fresh fruit and vegetables. Therefore, when outlets are designed for fresh fruit and vegetables, gender must be taken into consideration in order for effective marketing strategies. There is a statistically significant relationship between the level of education and consumer preference. For this reason, also the demographic parameters which are related with purchasing habits should be taken into consideration. The study further showed that there is a significant relationship between level of income and fresh fruit and vegetables outlets. As consumer income

fluctuates, the tendency of preferring supply chains show variations. Accordingly, when regions for supply chains are determined, consumer income level in a region should be considered. There was a significant relationship between the employment status of Woman and preference of outlets in fresh fruit and vegetables supply chains. The increment of female population in the work force affects and changes the preferences and habits of the households. Working women have less time and more economical freedom. For this reason, they prefer shopping at super/hypermarkets because they are widely distributed and easily accessible.

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