Factors Affecting Green Purchasing Behavior: A Study of Turkish Consumers

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Abstract
It is very important to protect our environment while satisfying the needs of consumers with an ever-increasing variety of products and services. In order to guarantee a sustainable economic growth and protect the environment, many consumers and producers realized the importance of environmentally sensitive marketing efforts. In order to realize the potential benefits of green marketing efforts, it is important to understand which factors affect the consumers' purchasing behavior of green products. In this study, based on data collected from a sample of 410 consumers living in the city of Gaziantep in Turkey, we studied factors affecting the consumers' green purchasing behavior. As a result of t tests, ANOVA and multiple regression analysis performed, we found that the factors, environmentalism, behaving economically and knowledge have all significant and positive effects on green purchasing behavior. Also, green purchasing behavior of consumers change based on their age group and income level. On the other hand, gender doesn't have a significant effect on green purchasing behavior.
Keywords: Green Marketing, Green Purchasing Behavior, Consumer

Introduction
In parallel to globalization and the rapid growth in the world's population, the number and variety of products produced have increased substantially. In order to meet the increasing demand of consumers, today firms produce a substantial variety of products at an accelerating rate which causes natural resources to be depleted and environmental problems to emerge. With the widespread dissemination of alarming reports about environmental problems in mass media like television and internet, many people started to realize such problems caused mostly by current manufacturing and marketing practices, and a new class of consumers, namely green consumers, started forming. Companies realizing the demands of these green consumers began to produce and market green products. In addition to

consumer demand, government policies and actions of non-governmental organizations also play a role in the spread of green marketing.

Green marketing is environmentally sensitive marketing. The purpose of green marketing is to minimize the amount of harm given to environment while performing different stages of marketing mix, using less energy and recycling of the resources used. Since green marketing is very important for a sustainable economic growth and for the future of our planet, it is important to study factors affecting the consumers' preference of green products. In this study, deriving from related literature several factors affecting the consumers' purchasing behavior of green products are investigated.

Literature Review

Green marketing is first defined in a workshop held by American Marketing Association in 1975. In this workshop, the concept of ecological marketing is developed and defined as the study of effects of marketing on natural environment like pollution and depletion of energy and other resources (Çabuk et al., 2008). Green marketing helps improve the quality of consumers' lives while improving the natural ecosystem (Delafrooz et al., 2014).

With the realization of the importance of green marketing concept, scholars started researching different problems on the subject. One of the important issues in this respect is consumers' purchasing behavior of green products. Researchers investigated several factors that may be related to green purchasing behavior. Demographic characteristics such as gender, income level and education level are commonly investigated factors. In addition to demographic attributes of consumers, researchers studied the impact of variables like consumers' awareness, features of green products, perceptions of consumers about green marketing efforts and green promotion activities. In studying these factors related to green purchasing behavior, researches contacted different consumer types to collect data. In this respect, students and households are generally preferred as respondents. Some studies also gathered data from businesses in green marketing and green purchasing behavior studies. We will mention some of these studies and their findings in this part of the paper.

A study by Irawan and Darmayanti (2012) investigated the factors influencing university students' green purchasing behavior in Jakarta. In this study, the authors collected data from 200 students using a questionnaire. As a result of the study, they found that environmental concern, perceived seriousness of environmental problems, and perceived environmental responsibility are significant factors affecting green purchasing behavior. They also found that gender is not a significant factor in predicting green purchasing behavior.

Another study on university students was done by Aslan and Çınar (2015) in Turkey. Based on data collected from 400 university students, the researchers concluded that university students are not very knowledgeable about green marketing concept and they are somewhat confused about purchasing green products.

Another study of Turkish university students related to green purchasing behavior is done by (Hussein and Cankül, 2010). Using data collected from 225 university students, this study found that even though most of the students are concerned about the destruction of the environment, their purchasing and product usage behavior don't reflect these concerns.

In their study for revealing environmental awareness of university students and factors affecting making purchasing decisions, Hello and Al Momani (2014) collected data from 383 students at King AbdulAziz University at Jeddah. They found a relationship between gender and green marketing awareness. On the other hand, they didn't find a relationship between

age, income and green marketing awareness. Also, students showed a positive attitude towards buying green products.

A study of general consumers was done by (Çabuk et al., 2008). In this study, researchers collected data from 600 consumers in a shopping mall. The researchers studied the relationship between several demographic characteristics of consumers and their green purchasing behavior. They found a relationship between gender, education level, marital status, income and green purchasing behavior. The results of this study show that consumers who are women, married, younger, educated and who have higher income buy green products more compared to other groups.

Another study conducted in Turkey tried to show the effects of environmental consciousness on purchasing behaviors. The study conducted by Aracıoğlu and Tatlıdil (2009) is based on data collected from 360 consumers. The study showed that consumers are knowledgeable about protecting the environment and recycling and they prefer green products when they need to make a choice between two products. They also found a relationship between some demographic attributes and purchasing behavior.

Bhatia and Jain (2013) conducted a study for understanding consumers' perceptions of green marketing practices and their preferences of green products in India. At the end of the study, they found that green values, awareness about green products, perception about marketing companies in terms of their seriousness about green marketing have significant impacts on consumers' persuasion and preference of green products.

Another study conducted in India by Saini (2013) found that price and quality of the products are more important for customers than environmental responsibility. The author recommends that companies should increase their communication with the customers about going green.

The study conducted in Iran by Bagheri (2014) aimed to show the impact of green marketing on consumer behavior. For this study, the data collected came from sport shops in East Azerbaijan province of Iran. The researcher found significant relationships between green product features, green promotion, green pricing and green distribution and consumer's green behavior. The researcher also found that some demographic attributes of the consumers have moderating effects on these relationships.

Sheikh et al (2014) have studied how consumers make green purchasing decision and how their behaviors are toward green products. They collected data from 200 consumers. The researchers found that there are strong relationships between green marketing, price, quality and consumers' green behavior. On the other hand, the relationships between brand, gender and consumer green behavior are very weak.

Using a cluster sample of 384 consumers, Delafrooz et al (2014) studied the influence of green marketing tools, such as eco-label, eco-brand and environmental advertisement. The results of this study show that environmental advertisement is the most important factor affecting consumer purchasing behavior while eco-brand is the least important factor.

In India, Laddha and Malviya (2015) conducted another study in order to understand green buying behavior of consumers. They studied factors like pro-environmental concerns, knowledge of environmental issues, awareness of eco-friendly products, and the education level of consumers. Based on data from a sample of 150 consumers, the researchers found that there is a growing concern about environment and there is an increasing trend towards green products.

In a recent study by Tejpal (2016), the costumers' perspective about green products and green initiatives by organizations are investigated. The researcher studied the subject with respect

to demographic characteristics of the customers. As a result, it was concluded that green marketing efforts should be customized according to the demographics of customers such as age, income and gender.

Method and Data Collection
Based on the literature review, the following hypotheses will be tested in this study.
H1: There is a relationship between environmentalism and green purchasing behavior.
H2: There is a relationship between behaving economically and green purchasing behavior.
H3: There is a relationship between knowledge and green purchasing behavior.
H4: There is a relationship between demographic attributes of the consumer and green purchasing behavior.
H4a: The green purchasing behavior of female and male consumers are different.
H4b: The green purchasing behavior of single and married consumers are different.
H4c: The green purchasing behavior of consumers at different age groups are different.
In order to test the hypotheses developed, we collected data from a sample of 410 consumers located in the city of Gaziantep, Turkey. The respondents are selected using convenience sampling technique. We developed a questionnaire to collect the data. The scales used in the questionnaire are adapted from Karaca (2013) which she has developed using similar scales found in the related literature. The questionnaire is conducted by face-to-face method.

Analyses
In this part, we will present the findings of the study based on the statistical analyses performed on the collected data.

Demographic profile of the respondents
The information about demographic attributes of the respondents is given in Table 1.

Table 1
Demographic profile of the respondents

Gender	N	%	Marital Status	N	%
Female	219	53.4	Married	238	58.0
Male	191	46.6	Single	172	42.0
Total	**410**	**100**	**Total**	**410**	**100**
Age	**N**	**%**	**Occupation**	**N**	**%**
18-25	150	36.6	Public sector employee	148	36.1
26-35	111	27.1	Private sector employee	47	11.5
36-45	107	26.1	Freelance worker	11	2.7
46-55	33	8.0	Housewife	47	11.5
56-65	5	1.2	Student	135	32.9
65 and over	4	1.0	Retired	7	1.7
Total	**410**	**100**	Other	18	4.4
			Total	**410**	**100**
Education	**N**	**%**	**Income level**	**N**	**%**
Basic literacy	9	2.2	0-1300 TL	185	45.1
Primary School	29	9.5	1301-2000 TL	33	8.0
High School	115	28.0	2001-3000 TL	103	25.1
Vocational School	43	10.5	3001-4000 TL	59	14.4
Undergraduate degree	179	43.7	4001-5000 TL	22	5.4
Graduate degree	25	6.1	5001 TL and higher	8	2.0
Total	**410**	**100**	**Total**	**410**	**100**

As can be seen from Table 1, 53.4% of the respondents are female and 46.6% are male. In terms of marital status, there are more married consumers (58%) compared to single consumers (42%). The majority of the respondents are young people, 63.7 % of them are at age of 35 or below. Considering their education level, generally our sample consists of educated consumers, most of them having a university degree or currently attending a university program. Most of the respondents are working in public sector as employees (36.1%). The second largest group are students (32.9%). Since there are many students in our sample, the income level of the respondents is generally low. Most of the respondents have a monthly income of 0-1300 Turkish Liras (TL) (45.1%). The consumers who have a monthly income greater than 5000 TL is only 2 percent.

Factor and Reliability Analyses
In order to show construct validity and reliability of the measures, exploratory factor analysis and reliability tests are performed on the scales used.

Before performing factor analysis on the data, the suitability of the data for the factor analysis is tested. For this purpose, Kaiser-Meyer-Olkin (KMO) value is calculated and Bartlett's sphericity test is performed. KMO value is 0.886 and Bartlett's test is significant (Chi-Square=3822.838, d.f.=276, $p<0.001$). These results show that the data is suitable for factor analysis. Therefore, an exploratory factor analysis is performed on the variables. The principal components method is used for factor extraction. As a result, the variables are loaded into four factors. These four factors explain 51.96 % of variance of the variables in the analysis. The questions and their corresponding factors are shown in Table 2. In order to increase the readability and interpretation of the result, varimax rotation with Kaiser normalization is used during factor analysis. Also, only factor loadings greater than 0.40 are shown in the table.

Table 2
Factor Analysis

Items	Environmentalism	Behaving Economically	Knowledge	Green Purchasing Behavior
1. Environmental issues are important for me.	0.609			
2. When buying a product, I consider how it will affect my environment and other consumers.	0.575			
3. I would describe myself as environmentally responsible person.	0.710			
4. I believe that I can protect my environment by purchasing environmentally friendly products.	0.703			
5. When buying products, I always prefer products which will pollute environment less.	0.599			
6. When I have a chance to choose between two products, I always prefer the product which is less harmful to other people and the environment.	0.515			
7. I don't buy products which have a potential to harm the environment.	0.439			
8. I don't buy products of those firms which are environmentally irresponsible.	0.526			

9. I have a big interest in organic, ecological and natural products.	0.602		
10. I try to convince my family members and my friends not to buy products which are harmful to the environment.	0.486		
1. I try to use electrical home appliances during low consumption hours.		0.722	
2. I try to reduce the amount of electricity I use.		0.764	
3. I prefer energy efficient light bulbs at home.		0.780	
4. The brand of home appliances I buy consume less energy compared to other brands.		0.707	
5. Whenever possible, I buy products packaged in reusable cases.		0.453	
1. I can understand whether a product is environmentally friendly from the symbols on it.			0.766
2. I can understand whether a product is environmentally friendly from the information about the content of that product.			0.837
3. I like to recycle disposable things and make new uses of them.			0.388
1. If I learn that the packaging of a product I bought is harmful to the environment, I stop buying that product			0.593
2. If I learn that the manufacturing process of a product I bought is			0.616

harming the environment, I stop buying that product.	
3. The advertisements of environmentally friendly products affect my purchasing behavior.	0.788
4. Environmental issues / problems reported in the media affect my purchasing behavior.	0.743
5. When choosing between two similar products, I prefer environmentally friendly one.	0.593
6. I prefer products manufactured from recycled materials	0.445

In order to show the reliability of the scales, Cronbach's alpha scores are calculated. The reliability scores are shown in Table 3. From the table, it can be seen that scales have satisfactory reliability.

Table 3
Reliability Scores

Factors	Number of Items	Mean	Std. Deviation	Cronbach's alpha
Environmentalism	10	3.9669	0.60812	0.853
Behaving Economically	5	4.0234	0.74979	0.792
Knowledge	3	3.7220	0.74092	0.687
Green Purchasing Behavior	6	3.9381	0.64502	0.803

After showing reliability and construct validity of scales, we took the average scores of the items for each construct. The remaining analyses are performed using these average construct values.

T Tests and ANOVA Tests
In order to compare consumers for their green purchasing behavior based on their demographic attributes, two independent samples t tests and an ANOVA test are performed. The results of the analyses are shown in Table 4, 5, 6 and 7.

Table 4

T Tests

Variable	Values	n	Mean	t	d.f.	p
Gender	Female	191	3.9937	-1.633	408	0.103
	Male	219	3.8896			
Marital Status	Single	172	3.7702	4.591	408	0.000
	Married	238	4.0595			

The first comparison of the consumer's green purchasing behavior is done based on gender. The results of the t test show that there is no significant difference between females and males. Then a similar comparison is done based on the marital status of the consumers. In this t test, a statistically significant difference is found between single and married consumers. From the table, it is seen that married people are showing more green purchasing behavior compared to single consumers.

To test whether there is a statistically significant difference between different age groups in terms of green purchasing behavior, a one-way ANOVA test is performed. The age groups compared are 18-25, 26-35 and 36 and older. The descriptive statistics for each age group are shown in Table 5.

Table 5

Descriptive statistics for green purchasing behavior of different age groups

Age group	N	Mean	Std. Deviation	Std. Error
18-25	150	3.7053	0.64021	0.05227
26-35	111	3.9865	0.62850	0.05965
36 and above	149	4.1365	0.58927	0.04828
Total	410	3.9381	0.64502	0.03186

Before doing ANOVA test, we checked the data for homogeneity of the variances assumption of ANOVA. We did a Levene test. The test was not statistically significant (Levene statistic=0.044, df1=2, df2=407, p=0.957) showing that the homogeneity of variances assumption is met. So, we performed an ANOVA test on our data. The results of ANOVA are shown in Table 6.

Table 6

ANOVA: Age groups - Green Purchasing Behavior

	Sum of Squares	d.f.	Mean Square	F	p
Between Groups	14.250	2	7.125	18.599	0.000
Within Groups	155.915	407	0.383		
Total	170.165	409			

As it is seen from Table 6, there is a significant difference among consumers at different ages in terms of green purchasing behavior. In order to understand which age groups are different a Tukey post-hoc test is performed. The results of the Tukey test are shown in Table 7. These results show that green purchasing behavior of 18-25 age group is statistically different from both 26-35 age group and 36 and above age group. On the other hand, 26-35 age group and 36 and above age group are not statistically different in terms of green purchasing behavior.

From the mean values of green purchasing behavior, it is seen that as age increases green purchasing behavior also increase. But this difference is statistically significant only between consumers of 18-25 age and consumers who are older.

Table 7
Tukey Test: Age Groups - Green Purchasing Behavior

Age Group (1)	Age Group (2)	Mean Difference (1) – (2)	Std. Error	p
18-25	26-35	-0.28115	0.07749	0.001
18-25	36 and above	-0.43113	0.07159	0.000
26-35	36 and above	-0.14998	0.07760	0.131

Regression Analysis

In addition to above analyses, we performed a multivariate linear regression analyses for testing the effects of environmentalism, behaving economically and knowledge variables on green purchasing behavior. Before starting regression analysis, we did some assumptions checking. Multiple regression analysis assumes that there are not multicollinearity among independent variables. In order to show the lack of multicollinearity problem, we calculated tolerance and Variance Inflation Factor (VIF) values. The results are shown in Table 8. The values show that there is not a multicollinearity problem in our data set. Another assumption of the regression analysis is that there is no autocorrelation in residuals. We checked the level of auto-correlation in residuals by calculating Durbin-Watson value. This value is found to be 1.995 which is very close to 2. This shows that auto-correlation is not a problem in our data. So, we proceeded to do regression analysis.

The regression model is significant (F=92.201, df1=3, df2=406, p<0.001). The independent variables (environmentalism, behaving economically and knowledge) explain 40.5% of the variability of green purchasing behavior (R2=0.405). All the three independent variables positive and statistically significant effects on green purchasing behavior. From the standardized regression coefficients, it can be concluded that environmentalism is the most important factor affecting green purchasing behavior.

Table 8
Regression Analysis

Variables	b	Std. Error	Std. Beta	t	p	Tolerance	VIF
(Constant)	1.048	0.176		5.950	0.000		
Environmentalism	0.475	0.051	0.448	9.267	0.000	0.626	1.597
Behaving Economically	0.119	0.040	0.139	2.964	0.003	0.667	1.499
Knowledge	0.141	0.039	0.162	3.565	0.000	0.713	1.403

Discussion

Green marketing is very important for the future of our planet and a sustainable economy. In green marketing concept, the aim is to transform all the marketing mix activities in such a way that the environment is protected while satisfying consumer needs. In a world of increasing production and consumption, if environmental issues are not taken seriously and if our limited resources are not used efficiently, it seems that we will face several major problems

in the near future. Therefore, it is important to study issues related to green marketing and many researchers started to investigate problems related to green marketing. One of the important research areas in green marketing field is consumers' green purchasing behavior. If the consumers don't prefer green products, companies will find little incentive to produce them. Therefore, it is important to identify factors related to green purchasing behavior.

In this study, we investigated several factors that may be related to green purchasing behavior. In this regard, we firstly looked at the consumers' demographic attributes and green purchasing behavior. We found no significant relationship between gender of consumers and green purchasing behavior. In the literature, there are conflicting findings about gender and green purchasing behavior. In some studies (e.g. Tejpal, 2016), no relationship is found between gender and green purchasing behavior and in some others (e.g. Aracıoğlu & Tatlıdil, 2009; Çabuk et al., 2008) researchers found some relationship. Therefore, it will be useful to investigate this issue in more detail in future studies. We also analyzed the relationship between marital status and green purchasing behavior. In our study, we found that married people show more green purchasing behavior compared to single consumers. This finding is similar to that of (Çabuk et al., 2008; Kükrer, 2012). Another demographic attribute that we analyzed is the age of the consumers. We found a relationship between age and green purchasing behavior. As the age of consumers increase, their green purchasing behavior also increase. Since younger people are generally single rather than married compared to older people, this finding shows that young and single people are showing less green purchasing behavior compared to married and older people. Therefore, it would be useful to aim this consumer segment in green marketing activities.

In addition to consumer demographics, three other variables are investigated to understand their effect on green purchasing behavior. The first factor is environmentalism and it has a positive effect on green purchasing behavior. Environmentalism is also found to be the most important factor affecting green purchasing behavior. This finding shows that as consumers get more sensitive to environmental issues, they prefer to buy green products more. From this finding we can deduce the importance of education about environmental issues and thereby raising the awareness of the people on the importance of the subject. Government and non-government organizations and businesses should take active roles in increasing such an awareness and help people in becoming more considerate in protecting the environment. The second factor which is also positively related to green purchasing behavior is knowledge about green products. In order to make green choices from a plethora of products, customers should be able to discriminate between green and non-green products. Therefore, they should understand symbols and related information about green products. Again schools, government and organizations can help a lot in this respect. Finally, the third factor which is positively related to green purchasing behavior is behaving economically. People who are more inclined to saving rather than wasting seem to prefer energy efficient products. Using less energy means using less resources and polluting the environment less. It also contributes people's budgets.

This study which is conducted using a sample of Turkish consumers have some limitations. Firstly, the research is conducted in only one city using a convenience sample. Therefore, the findings cannot be generalized to all Turkish consumers. Also, there are other variables mentioned in the marketing literature that may affect consumers' purchasing behavior which are not included in this study. In future studies, this study may be replicated using different samples and adding other variables to the research model may help to understand green purchasing concept better.

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