

# Attitudes of Passengers Towards Green Airlines

## Yolcuların Yeşil Havayollarına Yönelik Tutumları

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*Abstract: In recent years, it has been seen that airlines have given importance to environmentalist applications during their service process. Finding out the passenger attitudes toward these activities is important for airlines in order to shape their green marketing activities. Studies related to the passenger attitudes towards green airlines are relatively limited in national literature. Therefore, in this study, general environment awareness and attitudes of the passengers towards green airlines were examined. In this study, a survey was conducted with Turkish passengers in different airports of Turkey. Questionnaires including 5-point Likert scale organized as "strongly disagree (=1)" to "strongly agree (=5)" were applied to the passengers. Also, respondents' demographic and flight information as; gender, age, education level, average monthly income, flight type, flight purpose, flight frequency and the reason for selecting the airline were asked. T-test, ANOVA and Regression analysis were applied to analyze the data. According to the analysis result, the environmental awareness of women and elder passengers is higher than the others. Moreover, passengers in the high-income group are more likely to have positive attitudes towards green airline operations. In addition, there is a relationship between the passengers' environmental consciousness and their attitudes towards green airlines. At the end of the study, some suggestions to airlines to be more successful in their environmentalist activities have been made.*

*Keywords: Green Marketing, Airline Transportation, Green Airlines, Environmental Consciousness, Eco-friendly Services.*

*Öz: Son yıllarda, havayollarının hizmet süreçlerinde çevreci uygulamalara önem verdiği görülmektedir. Havayollarının bu faaliyetlerine yönelik yolcu tutumlarının bilinmesi, bu işletmelerin yeşil pazarlama faaliyetlerine yön verebilmesi için önemlidir. Ulusal literatürde yolcuların yeşil havayollarına yönelik tutumu ile ilgili çalışmalar nispeten azdır. Bu nedenle bu çalışmada, yolcuların genel çevre bilinci ve yeşil havayollarına yönelik tutumu incelenmiştir. Bu çalışmada, Türkiye'deki farklı havalimanlarındaki Türk yolculara anket uygulanmıştır. Yolculara, "Kesinlikle katılmıyorum (=1)" .... "Kesinlikle katılıyorum (=5)" şeklinde 5'li Likert ölçeğinde hazırlanan anket uygulanmıştır. Katılımcılara ayrıca, cinsiyet, yaş, eğitim düzeyi, ortalama aylık gelir, uçuş tipi, uçuş amacı, uçuş sıklığı ve havayolu tercih nedenini kapsayan demografik ve uçuş bilgileri sorulmuştur. Verileri test etmek için, T-test, ANOVA ve Regresyon analizleri uygulanmıştır. Analiz sonucuna göre, kadınların ve ileri yaş grubunda yer alan kişilerin çevre bilinci, diğerlerine göre daha fazladır. Ayrıca, yüksek gelir grubunda yer alan yolcuların, yeşil havayollarına yönelik tutumları daha olumludur. Bunun yanı sıra yolcuların çevre bilinci ile yeşil havayolu işletmelerine yönelik tutumları arasında ilişki vardır. Çalışmanın sonunda, havayollarının çevreci faaliyetlerinde daha başarılı olabilmeleri için bazı önerilerde bulunulmuştur.*

*Anahtar Sözcükler: Yeşil Pazarlama, Havayolu Taşımacılığı, Yeşil Havayolu, Çevre Bilinci, Çevre Dostu Hizmetler.*

## 1. Introduction

Parallel to the increase of the population in the world, along with industrialization, urbanization, technological revolution and increase of consumption, destruction and depletion of the scarce natural resources gained momentum (Chen 2010, 307; Aslan and Çınar 2015, 171; Carfora et al. 2017, 92). Because of the pressures of media and non-governmental organizations, the existence of national and international legislation and ecological disasters, the environmental consciousness of customers have increased more since the 1970s (Akehurst et al. 2012, 973). Therefore if the problems related to the environment cannot be managed well, the whole ecosystem and the people can be adversely affected. (Arief and Kurriwati 2017, 43).

The environment is important not only for people but also for companies. Because the environment is an economic resource for companies. Therefore, environmental damage is very significant for companies as well. The environmental problems have started to attract the attention of both the customers and the companies (Han and Kim 2010, 659; Özkaya 2010, 247; Bhatia and Jain 2013, 1; Cho et al. 2013, 1052). Customers who are aware of serious environmental problems have been more conscious of environment and preferred companies that produce eco-friendly products / services (Han et al. 2009, 519). In this context, companies should take into account these preferences of customers and make new regulations to gain competitive advantage (Banyte et al. 2010, 550).

According to Çabuk et al. (2003), consumer preferences are of utmost importance in the solution of environmental problems. In addition, companies should also produce solutions for more environmentalist and sustainable practices within the context of contemporary management practices and social responsibility activities (Emgin and Türk 2004; Aslan and Çınar 2015, 171). Today's companies have changed their marketing activities (Çabuk et al. 2008, 86) by producing products / services which are sensitive to social issues, high-quality and eco-friendly (Erbaşlar 2012, 95) in order to make more profits (Chang 2011, 361; Huang and Kung 2011, 1405; Atay and Dilek 2013, 204; Avcılar and Açar 2017, 971). This sensitivity of producers and consumers towards the environment has formed the basis of green marketing practices.

The environmentalist approach has directly affected actors in the aviation sector as well as in all sectors. According to Sagevik (2009); air transportation is the source of carbon dioxide and greenhouse gas emissions and is one of the most important causes of global climate change. Research has shown that air transportation creates for 3-8% of total greenhouse gas emissions in Europe. Surveys reveal that 2% of this ratio is originated from aviation in the world, and that by 2050, the ratio will reach 5% ([www.airlinehaber.com](http://www.airlinehaber.com)). Thus, the air passengers may demand that the airline companies act ecologically. Airline operators will not only have to take technical and economic measures to become a green airline, but they will also need to know the attitudes of the passengers to the environment (Chen et al. 2011, 78). In this context, the aim of this study is to scrutinize the passengers' general environment awareness and their attitudes towards green airlines.

## 2. Conceptual Background

### 2.1. Green Marketing

The concept of green marketing started to be discussed in the 1960s, but the concept became widespread in the 1980s (Akehurst et al. 2012, 974). Green marketing was first mentioned and defined in the American Marketing Association's 1975 seminar on "Ecological Marketing". According to this definition; "Ecological marketing is the study of the positive and negative aspects of marketing activities on pollution, energy depletion and non-energy resource depletion" (Çabuk et al. 2008, 86; Erbaşlar 2012, 95; Davari and Strutton 2014, 565).

Green marketing consists of all activities designed to generate and facilitate any exchanges intended to satisfy human needs or wants, such that the satisfaction of these needs and wants occurs, with minimal detrimental impact on the natural environment (Polonsky 1994, 2). Green marketing can also be defined as showing an environmentally sensitive approach to meet customers' needs and desires (Varinli 2008, 31). According to Çabuk et al. (2008, 87), green marketing is the activities that include the production, pricing, distribution, promotion and after-use of eco-friendly products / services that meet the needs and desires of the customers while reaching the objectives of the business. According to another definition, it is the process of satisfying the needs of the customer and the society sustainably and profitably (Emgin and Türk 2004). According to Ay and Ecevit (2005, 239), by adopting a green marketing culture, companies will be able to achieve their goals, gain competitive advantage, utilize resources efficiently and achieve cost advantages through recycling. According to Bhatia and Jain (2013, 2), green marketing is a popular promotional strategy because of the increase in the level of consciousness of consumers. According to Chen and Chang (2012, 503), green marketing activities are the development, differentiation, pricing and promotion of products / services to meet the demands and needs of consumers without harming the environment. Green marketing activities may also be used to promote eco-friendly consumption patterns and to create new lifestyles (El Dief and Font 2011, 158).

Overall, companies may obtain a positive corporate image utilising from green opportunities and comply with environmental trends (Chen and Chang 2012, 503; Yan and Yazdanifard 2014, 33). For example, Fraj et al's study (2011, 339) has shown that green marketing strategies help to reduce costs and obtain profitable and new markets (Suki et al. 2016, 263). In addition, employee satisfaction and loyalty are higher in companies that can successfully adapt environmental activities to all units (Moser 2015, 167).

### 2.2. Green Marketing in Aviation

Demand for air transport has been rising rapidly in the world and also in Turkey. This increase is expected to continue in the coming years. According to the International Air Transport Association (IATA), demand for air transport increased by 6.1% in April 2018 compared to the previous year (IATA 2018a). The number of passengers traveling by air in 2035 will reach 7.2 billion globally (IATA 2018b). In addition, air transport is among the key elements for globalization and the development of the modern world. Air transportation, the systematic activities of the actors in the sector and the points on the earth are connected to each other 24 hours a day, 7 days a week. It also creates 63 million jobs globally and creates a global Gross Domestic Products of \$ 2.7 trillion. (ATAG 2016).

Despite all of these advantages, air transportation has caused a great deal of environmental degradation such as fuel consumption, noise, air pollution and waste (Becken 2002, 114; Lynes and Dredge 2006, 117; Mair 2011, 215; Birgelen et al. 2011, 125; Alcock et al. 2017, 136). The total carbon dioxide (CO<sub>2</sub>) emissions on Earth has been resulted from electricity and heat production (42%), transportation (26 %), industry (19 %), construction (6 %) and the other sectors (7%). When the proportions of total carbon emissions in the transportation sector are examined, 57% is due to highway, 15% sea, 11% air, 5% rail and 11% other transportation activities (THY 2016). This situation has further increased the importance of environmental activities in air transportation (Mayer et al. 2012, 179). In this context, aviation operators are under pressure politically and legally to be eco-friendlier (Hagmann et al. 2015, 37). Moreover, in order to reduce the emissions from air transport, passenger behavior change (Davison et al. 2014, 13), technological change and market change should be ensured (Baumeister and Onkila 2017, 1368).

The European Union Emissions Trading Scheme (EU ETS) has introduced additional taxes to reduce the carbon emissions of airlines operating or landing at the airports of EU member states. The aim of this system is to reduce CO<sub>2</sub> emissions from airline operations to below 5% by 2020 (Hagmann et al. 2015, 37-38). However, this practice has been challenged by low-cost airlines (Kıvılcım 2012, 2-3). The International Civil Aviation Organization (ICAO) also works to improve the environmental performance of the aviation industry. Therefore, ICAO has developed some standards,

policies and materials (ICAO 2018) to reduce the number of people affected by aircraft noise, the negative effects of aviation emissions on local air quality and the global climate. Besides, producing new generation aircrafts (lighter, greener and produce less noise) , using hydrogen fuel and encouraging utilizing fast trains for close distances are some of the precautions (Cebeci 2003; Gössling and Peeters 2007, 402). Moreover, airline companies reflect the Environmental Management Systems in the corporate culture in order to be eco-friendlier (Chen et al. 2011, 79). In Turkey, The General Directorate of Civil Aviation has developed the "Green Airport / Green Company" project to systematically reduce and / or eliminate damages caused by the institutions / organizations operating in the airports and businesses (SHGM 2018).

The environmental damage caused by the transport sector is now very high and therefore it is very important to understand the behavioral attitudes of consumers (Davison et al. 2014, 13). Today, many airline businesses offer carbon offset schemes to reduce passengers' carbon footprints (Chen 2013, 17). However, global participation rate to this project is quite low. British Airways is the first airline to offer its volunteer carbon footprint reduction project to its passengers. In 2010, when the project was implemented, the participation rate of passengers was only 0.3%. Virgin Air, a US-based airline, charged its passengers for in-flight entertainment systems and transferred the revenue to the voluntary carbon footprint reduction project (Kim et al. 2016, 25).

However, the research shows that the price of airline tickets will increase by 1.4% at least for one year due to measures to reduce emission levels (Kıslakçı 2011). According to Kelly et al. (2007, 379), although passengers are willing to pay an extra price, provided that their income is used to solve environmental problems, many passengers do not consider giving up on air travel to reduce environmental damage (Mayer et al. 2012, 180).

There are some studies in international literature related to green airline operators. According to study by Chen et al. (2011, 78), the environmental knowledge of Taiwanese passengers is medium-high and their attitudes towards the environment are generally positive. In addition, their environmental knowledge, attitudes and behaviors vary according to age, gender, and education. According to the same study, although passengers often show environmentally friendly behavior, they do not give up air travel. Mayer et al. (2012, 179) conducted a survey to find out how the airline's environmentalist image was perceived by passengers and their environmental expectations from the airlines. According to the results of the study, in general, there was no difference between the environmental images of the low-cost airline companies and full-service airline companies. According to the passengers, the most effective way to reduce environmental damage is the use of eco-friendly aircraft. Lu and Shon (2012) examined the intentions of the passengers to pay more for the carbon offsetting projects of the airlines. The results of the survey show that passengers are willing to pay if they are informed about the issue. According to the study by Hagmann et al. (2015, 37), while making reservations, passengers are willing to pay extra to reduce environmental damage, considering the airline's environmentalist image, but it appears that this intention is not as high as the intention to pay extra for seat pitch.

Chen's study (2013, 17) to determine the factors that affect the intention of passengers to participate in carbon offset plans has shown that personal norms and positive anticipated emotions have a positive effect on desires. Desires have a positive and significant influence on intentions to participate in carbon offset schemes. According to Alcock et al (2017, 136), in the event that passengers do not prefer the airline voluntarily for leisure and recreational flights, greenhouse gas emissions from airlines may be reduced. But as a result of the authors' work, it was observed that passengers' being eco-friendly did not affect their intention to give up their flight. A similar result was also determined by Wu et al (2018, 1438).

However, when the national literature is examined, it is seen that only Korul (2004) works on the environmental activities of aviation industries in the field of social sciences. Korul (2004, 99) studied the environmental management system in order to ensure that environmental pollution caused by airports can be controlled and sustainable development can be achieved. On the other hand, in the tourism sector, which is closely related to aviation industry, there are studies on environmental activities. For instance, Atay and Dilek (2013, 203) examined the green marketing practices of enterprises operating in the tourism and hospitality sectors and the green marketing activities of Ibis hotels as case studies. Korkmaz and Atay (2016, 176) have found that green marketing practices increase the corporate reputation of hotel companies and provide competitive advantage to businesses, while competitive advantage affects the market performance and financial performance of enterprises positively.

### **2.3. Green consumer profile**

According to Akehurst et al (2012, 975), the green consumer is the one who prefers to buy products that are at least or no harm to the environment, dispose of the products that he thinks are risky in terms of environment and health, tries to consume less energy and not to buy the packaged products. In other words, green consumers are aware of the limited environmental resources, the cost of the use of these scarce resources, and the environmental impact of misuse. These consumers believe that they do less harm to the environment by this way (Boztepe 2012, 9).

The increase of individual and institutional interest in this subject has led the researchers to give their attention to this topic. Akehurst et al (2012, 972) reveals that, rather than the socio-demographic characteristics of consumers, the psychographic characteristics (perceived consumer effectiveness and altruism) explain their ecologically conscious behavior. If consumers are ecologically conscious, their intention to buy green products is also increasing. Green marketing activities of enterprises can also affect the purchasing intentions of consumers positively (Chen and Chang 2012, 503). Similarly, high environmental concerns of individuals may result in a tendency to buy eco-friendly products / services (Han et al. 2009, 520-521; Lin and Huang 2012, 11). Another research has shown that 90% of consumers

have a positive attitude towards companies that are sensitive to environmental issues (Han et al. 2011, 345). According to a study conducted in the tourism industry, customers of hotels and restaurants with an environmentalist image are willing to pay more for these hotels and restaurants voluntarily. They also intend to visit these places again (Lita et al. 2014, 261). However, in Landry et al's study (2018, 18), learned helplessness has been found to hinder pro-environmental behaviors. In other words, individuals are worried about environmental problems and express that they are pro-environment. But, only a minority of them have willingness to take environmental measures (Olson 2013, 171).

However, according to Drozdenko et al (2011, 107), the characteristics of consumers are one of the important factors in shaping attitudes and behaviors towards green products. The demographic profile of green consumers can help not only the enterprises but also the environmental organizations and government agencies to develop positioning and marketing mix strategies (Zhao et al. 2014, 144). In this respect, the relationship between demographic characteristics and environmentalist attitudes of consumers has been frequently studied in the literature.

The first demographic variable frequently studied in the literature is gender. There are studies indicating that environmental consciousness does not show a significant difference according to gender (e.g. Chen and Chai 2010). But in other studies, female consumers are generally more environmentalist than men and women are more likely to prefer green products (Straughan and Robberts 1999; Tikka et al. 2000; Çabuk et al. 2008; Han et al. 2009; Han et al. 2011; Chen et al. 2011; Akehurst et al. 2012; Boztepe 2012; Smith and Brower 2012; Onurlubaş et al. 2017). Gender may be important in aviation sector too. So, the following hypotheses were developed;

**H1a:** *Passengers' environmental consciousness has a significant difference according to their gender.*

**H2a:** *Passengers' attitudes towards green airlines have a significant difference according to their gender.*

Whether the environmental awareness of consumers varies according to age is one of the most frequently researched topics in different fields. According to researches conducted by different authors at different times, it's concluded that environmental awareness varies according to age groups; young consumers are more eco-friendly compared to consumers in the middle and older age groups (Çabuk et al. 2008; Han et al. 2011; Boztepe 2012; Onurlubaş et al. 2017). From this viewpoint;

**H1b:** *Passengers' environmental consciousness has a significant difference according to their age.*

**H2b:** *Passengers' attitudes towards green airlines have a significant difference according to their age.*

Environmental products can be sold at higher prices than traditional products, or consumers can perceive that environmental products are more expensive, so, it may be stated that individuals with high environmental consciousness have high income level (Awad 2011, 56). Similar results have been found in the literature by different authors (Çabuk et al. 2008; Han et al. 2011; Akehurst et al. 2012; Boztepe 2012; Carrete et al. 2012; Onurlubaş et al. 2017). In the aviation industry, as mentioned earlier, there are airlines that can charge extra money for each flight to reduce the carbon footprint of passengers. It is known that passengers who accept to pay this fee voluntarily have high income level (Alcock et al. 2017, 138). From this point another hypotheses are;

**H1c:** *Passengers' environmental consciousness has a significant difference according to their income.*

**H2c:** *Passengers' attitudes towards green airlines have a significant difference according to their income.*

Another important variable that was searched in previous studies is educational level of consumers. Accordingly, there is a positive correlation between the educational level of consumers and environmental awareness. In other words, as the education levels of consumers increase, they may be more conscious about the environment (Han et al. 2011; Akehurst et al. 2012; Boztepe 2012; Carrete et al. 2012). In the light of this information;

**H1d:** *Passengers' environmental consciousness has a significant difference according to their education level.*

**H2d:** *Passengers' attitudes towards green airlines have a significant difference according to their education level.*

### **2.3.1. Relationship between environmental consciousness and consumer attitudes**

According to the study of Özgüven Tayfun and Öçlü (2016, 185); most of the participants pointed out that they do not pay attention whether the product is eco-friendly or not. Besides, they do not prefer eco-products because these products don't meet their needs. Also they try to buy healthy products and get the information about eco-friendly products through advertising. In another study, it was found that there was no relationship between consumers' environmental consciousness and attitudes towards green products (Chen and Chai 2010, 27). However, according to Han et al (2011, 347), attitude is an important indicator in environmental consciousness. In previous researches, the consumers who are environmentally conscious have positive attitudes towards environmental enterprises and have generally higher intentions to buy their products and services (Kalafatis et al. 1999; Han et al. 2010; Jansson et al. 2011; Han et al. 2011; Boztepe 2012).

Aslan and Çınar (2015, 169) conducted a survey to determine the attitudes of university students towards the environment and their tendency to use eco-friendly products. According to the research; university students were not informed about green marketing activities and they were hesitant about buying green products. Similarly, Türkmen et al. (2013, 238) conducted a survey to measure the impact of environmental sensitivity levels on students' purchasing behavior. They found that students were aware of their environmental responsibilities and prefer buying less harmful and recyclable items while purchasing the product. In another study, it is concluded that there is a relation between consumers' environmental sensitivities and purchasing behaviors. Moreover, consumers with high environmental sensitivity have a higher level of environmental purchasing behavior (Çabuk and Nakıboğlu 2003, 39). Korkmaz et al. (2017, 40) found that the tendency to be influenced by the others and social influence have a positive impact on the students' purchasing behavior of green products. In Onurlubaş et al. (2017, 282)'s research, it was seen that 80% of

consumers prefer green products in shopping and there is a significant relationship between green product purchasing behavior and demographic factors such as gender, income, age and marital status. Baran et al. (2017, 1) concluded that perceived green risk, perceived green quality, green brand image, and green trust have an impact on the green brand value. It was also inferred that the perceived green trust has a full mediating role in the effect of green risk and the green brand image on green brand value, while green quality has a partial mediating role. Therefore, another hypothesis;

**H3:** *There is a significant relationship between passengers' environmental consciousness and their attitudes towards green airlines.*

The proposed research model can be seen in Figure 1.

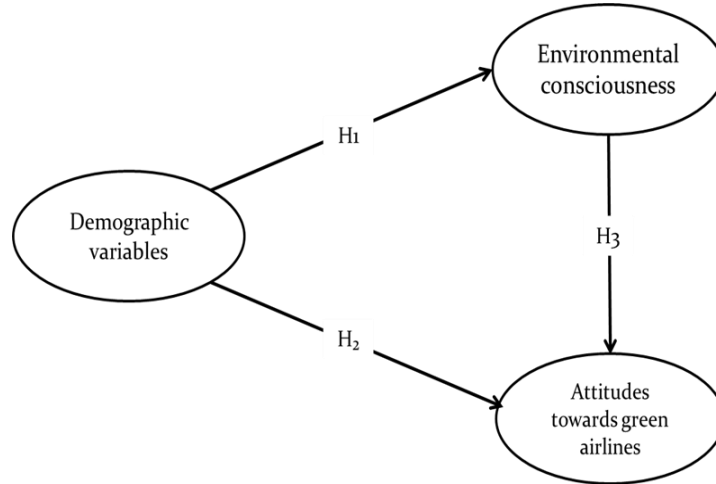


Figure 1. Research Model

### 3. Methodology

#### 3.1. Measures of the Constructs

The survey method, one of the quantitative methods, was used in the study. The survey questionnaire consisted of three sections. The first section was designed to obtain each respondent's environmental consciousness developed by Karaca (2013) and Cliffe (2014). The second section includes attitudes of passengers towards green airlines developed by Köksal (2011) and Lu and Shon (2012) and were adapted to our study. The demographic and flight information of the respondents such as gender, age, education level, average monthly income, airline decision, flight type, flight purpose, flight frequency, the reason for selecting this airline were asked. Questionnaires were applied including 5-point Likert scale organized as "strongly disagree (=1)" to "strongly agree (=5)".

#### 3.2. Data Collection and Sample Design

The universe of the study consists of passengers who prefer the airline in their travels. 210 million people have preferred the airline in Turkey in 2018, according to data of the Directorate General of Civil Aviation ([www.web.shgm.gov.tr](http://www.web.shgm.gov.tr)). However, convenience sampling method, one ne of the non-probability sampling, has been used due to the high number of populations, lack of access to the sampling frame and due to time constraints.

Sample number was found to be 384 as a result of the calculation with a confidence interval of 95% and error margin of 5% ([www.macorr.com](http://www.macorr.com)). 400 forms were applied to the participants face-to-face, taking into account the possibility of incomplete and inaccurate filling of the questionnaires. A survey was conducted with Turkish passengers in different airports of Turkey, but 346 valid questionnaires were analyzed.

#### 3.3. Data Analysis

In this study, frequency distributions and mean values are given using descriptive statistics analysis. In addition, T-test and One-Way ANOVA analyzes were used to test whether environmental consciousness and attitudes towards green airlines changed according to demographic variables. Moreover, regression analysis was performed to explain the relationship between the independent variable (environmental consciousness) and the dependent variable (attitudes towards green airlines).

In order to measure whether the responses of the passengers to the questionnaires were consistent, reliability analysis was performed for the variables (environmental consciousness and attitudes towards green airlines). In this context, the cronbach alpha reliability scores of the scales were found as  $\alpha=0.92$  for environmental consciousness,  $\alpha=0.96$  for attitudes towards. From this point of view, it is seen that the questions and the answers given to the questions are consistent ( $\alpha>0.70$ ).

## 4. Results

### 4.1. General Information about Passengers

The demographic characteristics of the respondents were as follows (Table 1); 55 percent of them were male and 45 percent were female. The great majority of the respondents were aged between 20 and 29 years old (73 percent), had a university degree or higher educational level (88 percent) and domestic passengers (86 percent) as flight type. Respondents' average monthly income was mostly ranged between 1600–3000 TL (63 percent). Most of the respondents had a flight for vacation purposes (39 percent) and visited friends/relatives (VFR) (28 percent) and their flight frequency was once a quarter. Price was found as the most important reason for selecting airlines (68 percent) compared to other factors as experience (22 percent), advertising (2 percent), recommendation (3 percent) and environmental activities (5 percent).

Table 1. Demographic Characteristics

		N	%
<i>Gender</i>	Female	156	45.00
	Male	190	55.00
<i>Age</i>	19 and below	9	3.00
	20 – 29	245	71.00
	30 – 39	39	11.00
	40 – 49	26	8.00
	50 – 59	9	2.00
	60 and above	18	5.00
<i>Education</i>	Primary education	13	4.00
	High school	30	9.00
	University degree and above	303	87.00
<i>Average Monthly Income</i>	1600 TL and below	33	9.00
	1601 – 2000 TL	75	22.00
	2001 – 3000 TL	75	22.00
	3001 – 4000 TL	69	20.00
	4001 TL and above	94	27.00
<i>Flight Purpose</i>	Business	57	16.00
	VFR	95	28.00
	Vacation	136	39.00
	Education	58	17.00
<i>Flight Type</i>	Domestic	297	86.00
	International	49	14.00
<i>Flight Frequency</i>	A few times a month	24	7.00
	Once a month	34	10.00
	Once a quarter	122	35.00
	Once every six months	78	23.00
	Once a year	88	25.00
<i>The Reason for Selecting This Airline</i>	Price	236	68.00
	Past experience	75	22.00
	Advertising	6	2.00
	Recommendation	11	3.00
	Environmental activities	18	5.00

Table 2. Attitudes of Passengers towards Eco-Friendly Products

		N	%
<i>Have you ever bought any eco-friendly product?</i>	Yes	272	79.00
	No	74	21.00
<i>Why did you buy any eco-friendly product?</i>	Quality	39	11.00
	Design and color	3	1.00
	Protect the environment	113	33.00
	Health	95	28.00
	Brand	8	2.00
	Others	14	4.00
<i>Have you satisfied with eco-friendly product you bought?</i>	Not use	74	21.00
	Yes	244	71.00
	No	3	1.00

	Partially	25	7.00
	Not use	74	21.00
<i>Why did not you use any eco-friendly product?</i>	Expensive	28	8.00
	Poor quality	2	1.00
	No different than other product/service	11	3.00
	No eco-friendly product/service	19	5.00
	Others	14	4.00
	Use	272	79.00

When Table 2 was examined, 79% (272 people) of the passengers had previously purchased eco-friendly products/services and 21% (74 people) did not purchase. 113 respondents (33 %) said they bought eco-friendly products/services in order to protect the environment, 95 (28%) health and 39 (11%) quality. 71% of them said that they were happy with using these products. 74 respondents did not buy any eco-friendly products/services before. The reasons were listed as follows: expensive (8%), not eco-friendly (5%), considering no difference from other products/services (3%), low-quality (1%), and other reasons (4%).

#### 4.2. T-test and ANOVA Results

T-test was conducted to test the passenger's environmental awareness by gender. As seen in Table 3, passengers' environmental consciousness has a significant difference according to their gender [t (344) = 3.349, p = 0.000 < 0.05]. H1a was supported. The environmental consciousness of the male passengers is 3.59, while the environmental consciousness of the female passengers is 3.82. From this viewpoint, female passengers' environmental consciousness is relatively higher than male passengers.

Table 3. T- Test Results of Passengers' Environmental Consciousness According to the Gender

Gender	N	$\bar{X}$	S	df	t	sig.
Female	156	3.8219	.62652	344	3.349	.001
Male	190	3.5913	.64608			

ANOVA was conducted to test whether the environmental awareness of passengers showed a meaningful difference by age. Prior to the ANOVA test, the ages of the passengers were listed in three main groups. Accordingly, young passengers aged 29 years or younger, middle age passengers aged 30-59 years, passengers aged 60 years and older are included in the elder group. According to ANOVA results, passengers' environmental consciousness has a significant difference according to their age [F (2, 343)= 8.821, p = 0.00 < 0.05]. H1b was supported (Table 4).

Table 4. ANOVA Results of Passengers' Environmental Consciousness According to the Age

	Sum of Squares	df	Mean Square	F	sig.	Significant difference
Between Groups	7.059	2	3.529	8.821	.000	1 <sup>st</sup> group – 3 <sup>rd</sup> group 2 <sup>nd</sup> group – 3 <sup>rd</sup> group
Within Groups	137.230	343	.400			
Total	144.289	345				
1 <sup>st</sup> Group: Young Age (29 age and below) 2 <sup>nd</sup> Group: Middle Age (30-59 age) 3 <sup>rd</sup> Group: Elder Age (60 age and above)						

According to Scheffe test results; there is a significant difference between young group (3.61) and middle age group (3.89) with elder age group (4.05). Young passengers' environmental consciousness level has the lowest value.

One-Way ANOVA test was applied in order to test that environmental consciousness did not show a significant difference according to the income level of the passengers. The average monthly income of the passengers was listed in three groups. Accordingly, income groups are as follows: low income (lower than TL 1.600), middle-income (between TL 1.601 and TL 4.000), and high-income (higher than TL 4001 TL). As a result of the ANOVA test applied after the grouping process, environmental consciousness was not differentiated according to income groups and H1c was not supported [F (2, 343) = 2.559, p = 0.079 > 0.05].

Similarly, One-Way ANOVA test was used to test whether environmental consciousness varies significantly according to the educational level of the passengers. According to the results of the analysis, H1d is not supported because environmental consciousness did not show a significant difference according to the education level of the passengers (primary, high school, university and above) [F (2, 343) = 1.387, p = 0.251 > 0.05].

According to the T-test results, the attitudes of passengers to green airlines do not differ according to gender. Hence, H2a was not supported [t (344) = 1.322, p = 0.187 < 0.05].

According to the new age groups [1st Group: Young Age (29 age and below) 2nd Group: Middle Age (30-59 age) 3rd Group: Elder Age (60 age and above)] established in the study, One-Way ANOVA test was used to test whether the attitudes of the passengers towards the green airline companies varied. The results of the analysis showed that there was no significant difference in attitude according to the age of the passengers [F (2, 343) = 0.967, p = 0.381 > 0.05]. Therefore, H2b is not supported.

Within the scope of the research, the average monthly income of the passengers was listed in three groups. Accordingly, income groups are as follows: low income (lower than TL 1.600), middle-income (between TL 1.601 and TL 4.000), and high-income (higher than TL 4001 as high-income. After grouping, ANOVA was conducted to determine whether the attitudes of passengers to green airline operations differ according to income groups. Passengers' attitudes towards green airlines have a significant difference according to their income [F (2, 343) = 9.138, p = 0.000 < 0.05]. H2c was supported (Table 5).

Table 5. ANOVA Results of Passengers' Attitudes towards Green Airlines According to Income

	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>	<i>Significant difference</i>
<i>Between Groups</i>	17.067	2	8.533	9.138	.000	1 <sup>st</sup> group – 3 <sup>rd</sup> group 2 <sup>nd</sup> group – 3 <sup>rd</sup> group
<i>Within Groups</i>	320.306	343	.934			
<i>Total</i>	337.372	345				
1 <sup>st</sup> Group: Low income level (1600 TL and below) 2 <sup>nd</sup> Group: Middle income level (1601-4000 TL) 3 <sup>rd</sup> Group: High income level (4001 TL and above )						

According to Scheffe test results; there is a significant difference between low-income level passengers (3.78) and middle-income level passengers (4.06) with high-income level passengers (4.49). High income level passengers' attitudes towards green airlines have the highest value.

One-Way ANOVA test was used to determine whether the attitudes of the passengers towards the green airline companies varied according to their level of education. However, according to the results of the analysis, it's been seen that H2d hypothesis was not supported [F (2, 343) = 0.967, p = 0.381 > 0.05].

Finally, a regression analysis was conducted to determine the relationship between passengers' environmental consciousness and their attitudes towards green airlines and the results were presented in Table 6.

Table 6. Regression Results about Passengers' Environmental Consciousness\* Their Attitudes towards Green Airlines

<i>Model</i>	<i>Standardized Coefficient (β)</i>	<i>t-value</i>	<i>p</i>
<i>Dependent Variable: Passengers' Attitudes towards Green Airlines</i>			
<i>Constant</i>	-	1.788	0.000
<i>Environmental Consciousness</i>	0.661	16.358	
R = 0.661; F-value = 267.587; df = 1, 344; R <sup>2</sup> = 0.438; Sig. = 0.000			

With respect to the results of the regression analysis, it was determined that there was a significant relationship between passengers' environmental consciousness and their attitudes towards green airlines. So H3 hypothesis is supported. According to the analysis, environmental consciousness is a significant indicator of the passengers' attitudes towards green airlines [R = 0.661, R<sup>2</sup> = 0.438, F (1, 344) = 267.587, p < 0.05]. It was concluded that 44% of total variance for passengers' attitudes towards green airlines was explained with passengers' environmental consciousness.

The environmental consciousness of passengers and their attitudes to green airlines were examined with descriptive statistics and the results were presented in Table 7.

Table 7. Means of Measures

	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>Mean</i>	<i>Std. Deviation</i>
<i>Environmental consciousness</i>	346	1.00	5.00	3.9653	.64671
<i>Attitude towards green airlines</i>	346	1.00	5.00	4.1522	.98888

Passengers' general environmental awareness and attitudes towards green airlines were gathered around the value of "4", which corresponded to the phrase "I agree" (Environmental consciousness: 3.96 and Attitude towards green airlines: 4.15). From this point, it may be concluded that the environmental consciousness of the passengers is relatively high and the attitudes toward the green airlines is also positive.



## 5. Discussion and Conclusion

Although increasing environmental consciousness enables individuals to take some steps to make some changes in their lifestyles, but it's not sufficient yet (Cherian and Jacob 2012, 117). Because it's not easy to change their habits. In spite of the intentions to purchase green products emerge as a result of habits, there may be problems for them in transforming it into behavior (Jansson et al. 2010, 358). Especially in the aviation industry, this poses a greater problem. Therefore, the aim of this study is to examine general environmental consciousness and attitudes of the passengers towards green airlines.

According to study results, most of the passengers (79 %) in the survey bought eco-friendly products to protect the environment. They are satisfied with the eco-friendly products they used. % 21 of passengers did not use eco-friendly products. The price is the most important reason for not using or purchasing eco-friendly products. Thus, if the price of eco-friendly products decreases, the number of passengers using these products may increase. The other reasons are passengers think that the product/service is not eco-friendly and there is no difference from other product/service. Therefore, the airlines should inform their passengers that the services they provide are less harmful to the environment and recycling is used.

It was found that the most important factor that participants took into account during booking was the price. Only 5 % of passengers preferred an airline because of their environmentalist practices. However, according to Haggmann et al (2015), passengers mostly give importance to the airline's environmental image during their reservations. So, if the green airlines provide their services to the passengers with suitable prices, the number of passengers who prefer these companies may be increased.

According to research results, female passengers' environmental consciousness is relatively higher than male passengers. This result has been consistent with many studies in the literature (Çabuk et al. (2008), Tikka et al. (2000), Chen et al. (2011) and Onurlubaş et al. (2017). However, no significant difference was determined between gender and individuals' environmental attitude in Chen and Chai 's study (2010). This is thought to be due to the fact that the target group in Chen and Chai's (2010) study is different from the target group in our study. In this context, to increase the environmental consciousness of male passengers, airline companies may benefit from some celebrities (famous sportsmen, film stars...etc.) whom they consider to be role models in promotional activities. These celebrities may appear in the advertisements on T.V., on the internet, on billboards, at the airport, during the flight, and etc.

When the studies in the literature have been examined, it has seen that there is a negative relationship between age and environmental consciousness. In other words, as the person gets older, her/his environmental consciousness may decrease (Straughan and Robberts 1999; Diamantopoulos et al. 2003; Çabuk et al. 2008; Han et al. 2011 and Onurlubaş et al. 2017). Contrary to previous studies, in our study it has found that young passengers' environmental consciousness is lower than the other age groups. The elder age group has the highest environmental consciousness. This result is consistent with Chen et al. (2011)'s study. The reason of these results may be searching on the same target groups (airline passengers). Another reason is in Turkey, the passengers in the older age groups have greater financial power compared to the people in younger age groups. This power can be used to purchase eco-friendly products. In order to raise their environmental consciousness, the airlines may utilize some educational programs, videos, games and promotional campaigns by web sites and social media channels. These activities should include all age groups of passengers.

High income level passengers' attitudes towards green airlines is the highest. This result is consistent with the previous studies made in different sectors (Çabuk et al. 2008; Han et al. 2011; Onurlubaş et al. 2017). Price is an important indicator of the attitudes and preferences of passengers towards the airline (Borin et al. 2003, 118). So passengers may be expected to have high income levels to travel with green airlines. In this context, green airlines should provide their services in fair prices in order to serve to the whole income group passengers. The results of the study showed that participants' environmental consciousness has no differences according to education and average monthly income. Similar to the study by Chen et al. (2011), there is no difference between gender, among the level of education and the age groups of the passengers according to attitudes toward green airlines.

In addition, it's concluded that there was relationship between the environmental consciousness of the passengers and their attitudes towards green airlines. This result is similar with the result of Çabuk and Nakıboğlu (2003) and Türkmen et al (2013)' studies. Although it is preferred that environmentally conscious passengers' attitudes towards green airlines should be more positive, it is not enough. Passengers who have a positive attitude towards green airlines are also expected to have the desire to purchase the services offered by these airlines. Therefore, airlines as well as governmental/non-governmental organizations, media and other institutions and organizations (i.e. airports, ground services operators) in the aviation sector should carry out consciousness and incentive activities to encourage passengers to buy green airlines services.

All institutions and organizations mentioned in this context may prepare a joint long-term action plan and take the necessary steps to implement this plan. In this context, airports and ground service operators may develop energy and environmental management systems and include them in their business processes. In particular, these enterprises may reduce the amount of water spent per passenger and the chemicals to clean water sources. It is also important to implement waste management policies, including the recycling and disposal of wastes such as paper, plastic and glass. These companies can thus minimize their damage to water, soil and air, and become eco-friendly airports / ground service operators. Finally, both airlines and airports should manage the noise generated by aviation operations in

accordance with national and international standards. In addition, airline companies, as part of their action plan, may inform their passengers with different channels (workshop, seminar, public spot) and encourage them to harm less to the environment with different volunteer activities such as carbon footprint reduction program (Juwaheer et al. 2012, 36; Chen 2013, 21). Thus, the airlines that successfully carry out these activities will be able to create an environmentalist image and the passengers' intention to buy green airline services may be positively affected.

It is extremely important for the airlines to know the profiles and attitudes of environmentalist passengers, in order to define their target market and develop market segmentation strategies within the scope of green marketing activities (Han et al. 2011, 345-346; Akehurst et al. 2012, 973). In this study, clues has been given regarding the profile of Turkish passengers and their attitudes towards the green airlines. Thus, present and potential airlines who want to operate in this industry may use this information to re-create their marketing activities. The price has been determined as a very important factor for passengers' attitudes towards green airlines in this study. In this context, airlines may shape their environmental activities by considering price sensitivity of the passengers. In addition, considering that the environmental consciousness positively affects the attitudes towards green airlines, airlines should make innovations in their services based on the eco-passengers' needs and expectations.

Finally, as the future research, some other factors (psychological, cultural etc...) that effect the environmental consciousness of the passengers should be examined in order to increase the environmentalist attitudes and their preferences towards green airlines. This study results will be shared with all the actors in aviation industry (airline operators, airport administrations, ground handling services, and public institutions). Thus, this will be able to provide the aviation industry to have successful operations in the long run by being more eco-friendly and sustainable.

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