

Charging plastic bags within the demarketing: measuring the environmental attitude and environmental behaviour in Denizli: a structural equality model

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Abstract: Plastic bags have either been charged or banned in more than 60 countries around the world. Charging for plastic bags as demarketing practice in Turkey is quite new. The aim of this study is to reveal the relationship among attitude toward reducing the use of plastic bags, environmental attitude and environmental behavior within the framework of the law ratified on January 1, 2019. In order to classify consumers, two dimensions of environmental attitude; ecocentric attitude and anthropocentric attitude were used. The structural equation modeling (SEM) was also used to determine the relationships between latent variables and data analyzed based on path analysis on a sample of 406 responses from Denizli, Turkey. According to the findings of this research, there are statistically significant differences between ecocentric attitude and environmental behavior; environmental behavior and attitude toward reducing the use of plastic bags. In addition, the results revealed that in the attitude toward reducing the use of plastic bags, statistically significant differences were found based on gender, marital status and age in terms of individuals aged 30 and over.

1. Introduction

In recent years, the protection and development of public goods, particularly the environment, has been a major concern for politicians, marketers, consumers, and society (Sodhi, 2011). They strive to raise individual awareness, especially concerning consumption habits and behaviors that negatively affect the future of individuals, communities, and the environment (Alsamydai, 2015). Since the process to influence and change the behavior of consumers is not an easy process, the differentiation of consumption behaviors and habits constitutes a concern for society. Based on this concern, marketers develop new techniques and concepts to change individual consumption (Yousif, 2014).

Demarketing is not a new concept, rather it should be regarded as an integral part of general marketing. In this respect, demarketing is the marketing strategy that targeted to reduce consumption trends for a product (Cullwick, 1975). It is generally an aspect of social marketing with the philosophy of determining the consumption of a particular product and creating a healthier environment for society (Moore, 2005). In the context of social marketing, demarketing is defined as having the goal of reducing demand by preventing the use of products that puts public health at risk. Awareness, prevention, protection and prosecution can be presumed as tools of demarketing strategies used (Sodhi, 2011). Raising awareness of individuals on the issues of protecting public health and preventing environmental pollution has become necessary for non-governmental organizations, businesses, and governments.

Demarketing comprises companies that compete to use methods of meeting consumer needs and desires, and consumption patterns that negatively affect society and the environment (Yousif, 2014). For example, studies related to hazardous materials such as insufficient investments in infrastructure, water, electricity-saving, preservation of natural parks, and the restriction of cigarettes, alcohol, and sugary foods/drinks harmful to health (Gnepa, 2007; Shiu et al., 2008; Armstrong and Kern, 2011; Sodhi, 2011; Varadarajan, 2014). These studies generally aim to suppress "Demand that adversely affects health"; therefore, issues of public health and policies (Kotler, 1973, p. 48) have become important. As well as the issues of demand, which negatively affects public health and policies, protective and preventive demarketing strategies besides other demarketing strategies have been explained in the literature (Chaundhry et al., 2019).

Previous research about demarketing focused on product shortages, public services, sustainable tourism, essentially health care (Cullwick, 1975; Gallagher, 1994; Beeton and Pinge, 2003; Armstrong and Kern, 2011). A limited number of studies have considered demarketing concerning environmental behavior, attitude, and especially attitude toward reducing the use of plastic bags. This study contributes the following: Firstly, preventive demarketing is the main starting point of this study. It reveals the awareness that marketing finds a solution to social problems such as environmental pollution. As a preventative marketing strategy, paying extra for plastic bags, thereby reducing consumer demand for plastic bags, has not been researched previously. We have created hypotheses for this gap regarding the attitudes of individuals with different environmental attitudes and behavior toward the use of plastic bags. Based on multiple data sources and methods, including extensive observations in the field, we identify the attitude of individuals with an ecocentric and anthropocentric perspective towards the charging of plastic bags. Secondly, the research identifies attitudes toward implementing marketing practices, which is critical for improving environmental sustainability from a demarketing perspective. It is unclear whether shoppers forced to cease consumption of plastic bags will develop attitudes congruent with this new behavior, or whether they will be environmentally compliant. Because the majority of shoppers carry their bags with them, rather than paying the plastic bag fee. If they do not bring their own bags with them, they prefer to use 'green', that is, recyclable bags (Sharp et al., 2010). This brings the concept of sustainability with preventive demarketing practices. Finally, it empirically examines the relationship among attitude toward reducing the use of plastic bags, environmental behavior and environmental attitude within the framework of the law ratified on January 1, 2019, in Turkey.

The remainder of this paper is structured as follows. First, the state of the art is reviewed followed by evaluating the concept and type of demarketing. Next, the methodology is discussed. While discussing the methodology, environmental attitude and behavior theme are briefly explained and then the data are analyzed. Finally, the findings, discussions and conclusions are presented.

2. Development of Conceptual Framework

Demarketing is a practice that means discouraging the use of some products in times of famine. This practice is used to curb injurious consumption or de-consumption of a product. Kjaer and Hansen, 1964 coined the term demarketing with the shortage of raw materials and products. The limited production of grain, wood, fertilizer, cotton and wool, which occurred after the first oil crisis in August 1973 (Akins, 1973; Harvey and Kerin, 1977), caused an imbalance in demand. Since companies do not know what kind of marketing strategy should be applied strategically in times of famine, they proposed various perspectives on the subject (Dadzie, 1989). From these perspectives, the concept of demarketing emerged in an attempt to reduce consumption trends for a product. For the first time in the literature, Kotler and Levy, 1971 defined it as marketing activities aimed at reducing the demands of consumers from demands that trigger their

purchases. Researchers have made evolving definitions about various perspectives of demarketing to date. Based on the definition of Kotler and Levy, 1971, the researchers focused on the demarketing mix in the products in which the economy will suffer in terms of raw materials such as gas, oil, petroleum and electricity products to control excess demand during the first periods of demarketing. The reason for this focus was to keep companies in long-term prosperity during times of famine (Cravens, 1974; Cullwick, 1975; Harvey and Kerin, 1977; Deutsch and Liebermann, 1985).

Currently, demarketing is studied within social marketing such as environment, health care, tourism and natural consumption, alcohol and cigarette consumption, and plastic usage. In the light of this information, demarketing is the target of reducing unhealthy demand which is designed to turn unsustainable marketing systems into more sustainable forms (Shui et al., 2008; Little et al., 2019). For instance, water consumption is a global problem and governments inform consumers through various demarketing practices to save water. In the research carried out in the arid regions of California, educative demarketing techniques aiming to reduce water performance in consumers' homes and outdoors have been proposed. The awareness of consumers comes to the fore in the study. (Tahi Gnepa, 2007; Yousif, 2014). In order to save on electricity consumption, demarketing efforts were carried out by using management and protection strategies that included price increases in various countries. In these studies, it was found that consumption decreased at a certain rate (Seeletse, 2016).

Kotler and Levy, 1971 defined three different demarketing strategies according to their demand situation. Bradley & Blythe, 2013 extensively explained the fourth type of demarketing.

General demarketing was initially discussed as a reactive strategy that only refers to the energy crisis in 1973 and contemporary macroeconomic conditions such as inflation (Cullwick, 1975). In such cases, demand exceeds supply and unfulfilled demand is expected to harm customer satisfaction (Kotler, 1974). Therefore, the marketing mix is used to suppress demand to regulate supply (Soule and Reich, 2015). The general demarketing strategy, Kotler and Levy, 1971, is examined in three sub-categories. These are used in cases of *temporary shortage*, *chronic overpopulation* and *product elimination*. In addition, Chaundhry et al., 2019 describe "protective" and "preventive" demarketing strategies in addition to the two sub-categories. All subcategories of general demarketing are briefly described below.

Temporary product shortage is the situation of increasing the production capacity in times when the demand is underestimated. It is necessary to distribute the existing products in stock to the right places and to prevent new demand (Kotler and Levy, 1971).

Chronic over-population is a strategy developed to solve various problems in the long term as a result of high demand for unwanted demand (Cullwick, 1975).

Product elimination is applied due to the reasons such as low profitability in the goods or services of the company, decreasing sales volume, high-cost production, technological aging, and incompliance of the product with the company's mission (Avlonitis, 1985).

Protective demarketing limits demand for high natural resources such as water, gas, oil and other raw materials / products at macroeconomic level (Chaudhry et al., 2019).

Preventive demarketing is used by manufacturers, politicians, and other stakeholders to reduce the consumption of processed foods such as alcohol, tobacco, sugary foods, and beverages (Chaudhry et al., 2019).

Selective demarketing is used to deter the demands of certain customers from the companies' products. Recently, marketing researchers have begun to study selective demarketing strategies to protect the image of a particular brand. This strategy is perceived as a relatively unprofitable or undesirable situation by a particular customer class (Kotler 1973; Soule and Reich, 2015; Medway et al., 2016).

Ostensible demarketing is an effort to suppress demand to increase demand, that is based on the marketer's principle that 'people want hard-to-get products or services (Kotler and Levy, 1971). The reason for applying this strategy is to create an impression

in the consumers' minds or an incomplete product image in the market to increase the price of the product and make the product quality valuable (Alsamydai, 2015). For instance, modern brands such as Apple's new products have a limited number of stocks to increase their sales and arouse curiosity about the product (Federico-O'Murchu, 2014; Soule and Reich, 2015). The expression 'limited to stocks' makes the product attractive to consumers and increases the demand for these products.

Unintentional demarketing does not have a full definition such as American Marketing Association Dictionary, Marketing Association of Australia, New Zealand Glossary, Canadian Marketing Association and UK's Chartered Institute of Marketing (Bradley and Blythe, 2013). In a narrow sense, attempts to increase the demand for a particular product occur when it drives customers away from it (Azzam, 2019). In this context, unintentional demarketing is defined as "An unexpected drop in demand resulting from a marketing or demarketing effort" (Bradley and Blythe, 2013, p. 185).

The purpose of this strategy is not to eliminate products that are harmful to health rather it is about reducing excessive demand for health protection (Choundhry, 2019). Preventive demarketing is strategies used to reduce the consumption of products that are harmful to human and natural health, which are used by the government, manufacturers and other stakeholders. This strategy is societies that have negative effects from tobacco products, obesity which is a physically, personally, socially and economically threatening phenomenon by researchers (Moore, 2005; Alsamydai, 2015; Little et al., 2019). In the previous research, the demarketing studies of tobacco products examined the social change on people, its effects on obesity, consumer response to price changes, social effects, and policies followed by the government and other stakeholders (Lee et al., 2005; Moore, 2005; Wall, 2007; Innes et al., 2008; Kavas and Kavas, 2011). As these studies conducted in different countries indicate demarketing studies and the government have control over harmful products.

Governments have used price increases to reduce tobacco products and excessive alcohol use. A similar demarketing example concerns obesity. Many businesses have tried to reduce the use of small changes in small foods and beverages- small amounts of packaging, reducing harmful components- with demarketing measures (Shiu et al., 2009; Peer et al., 2009; Choundhry, 2019). In the same way, a lot of preventive measures have been applied to reducing the use of plastic bags. For instance, Glad Products Company, originating in the United States, introduced durable oversized ForceFlex garbage bags as a product that leads consumers to reduce plastic waste and use fewer plastic bags (Reich and Soule, 2015). Developing the idea of demarketing at the macro level is suggested as a multi-level struggle for systems without sustainability. Plastic wastes disappear from nature within 100 and 500 years, which causes environmental and social problems (Ritch et al., 2019; Little et al., 2019).

Sharp et al., 2010 stated that demarketing campaigns aimed at reducing the use of plastic bags should be supported by reduction policies such as pricing. They also found that consumers who do not use plastic bags help raise awareness of other consumers. It is also a social and cultural change that is used to raise awareness about many irrational consumption threats to public health while guiding customers' efforts to reduce their will to purchase (Seeletse, 2016). Countries such as Ireland, United States, France, Taiwan, China, India, South America, Uganda, Tanzania and Kenya are among the countries that create public awareness early in reducing the use of plastic bags (Nhamo, 2008). In Turkey, the prevention of environmental pollution, environmental awareness creation and the purpose of efficient management of resources can be charged from the date of January 1, 2019 came into force the law of the plastic bags. It is stated that the mass consisting of plastic wastes, which is named as the 'Seventh Continent' in popular science, is 3.4 million square kilometers wide and weighs 7 million tons. The main purpose of the Biennial is to raise awareness of individuals in order to create a clean world, which is the common desire of all humanity (Seventh Continent, 2019).

3. Methodology

To prevent damage to the environment, the government implemented a preventive demarketing strategy within social marketing with its legal regulation. This study aims to reveal the relationship among the attitude toward reducing the use of plastic bags, environmental behavior, and environmental attitude within the framework of the law ratified on January 1, 2019, in Turkey. Considering the literature, two dimensions of environmental attitude, ecocentric attitude (environment-centered) and anthropocentric (human-centered) attitude were used to classify consumers to measure environmental attitude. According to Kortenkamp and Moore, 2001, ecocentric and anthropocentric attitudes demonstrate people's ethical understanding of nature. The ecocentric attitude defends the view that people deserve the protection of nature with their inner values and that they value nature for its own sake. Conversely, an anthropocentric attitude argues that people are the center of the universe and that the environment should be protected because of its value in maintaining or improving the quality of life for people.

We selected and tested LISREL as the tool to combine the structural equation and factor analysis. Lisrel is based on structural equation modeling (SEM) and uses covariance structure analysis and estimates parameters in the model by attempting to reproduce the observed covariance or correlation matrix using maximum likelihood in most cases (Chau, 1997, p.315). The research hypotheses are measured by using the Lisrel Software Version 8.5

The first hypothesis is about the relationship between ecocentric attitude and environmental behavior. Individuals with an ecocentric attitude, prioritize nature and nature conservation, recycling and sustainability of the resources. They also consider plants and animals equal to humans (Dunlap and Van Liere, 1978). The research studies conducted by Thompson and Barton in 1994, Erten in 2008, Kopnina in 2013 and Kalburan in 2017 found a positive correlation between ecocentrism and environmental behavior. **H1:** Ecocentric attitude has a positive effect on environmental behavior.

Pragmatism constitutes the essence of anthropocentric attitudes (Erten, 2007). Since individuals with anthropocentric attitudes are dominated by the view that protecting nature for the benefit of humanity and quality of life passes through protecting nature. Studies have shown that an anthropocentric attitude causes environmental problems (Parker, 2007; Karakaya and Çobanoğlu, 2012). **H2:** Anthropocentric attitude has a negative effect on environmental behavior.

Reducing the use of plastic bags is an effective environmental behavior that is important both to create a sustainable world for future generations and our existing green environment (Ayalon et al., 2009). Hines et al., 1986 stated that people who feel environmentally responsible are also likely to act in an environmentally friendly manner, and Lam and Cheng, 2006 conducted a study based on avoiding buying or wanting plastic bags. **H3:** Environmental behavior has a positive effect on the attitude toward reducing the use of plastic bags. Kaiser et al., 1999 claim that attitudes about the environment are used as an explanatory variable of environmental behavior and attitudes can change behavior by 40%. The Path Model of the Research Model is in Figure 1.

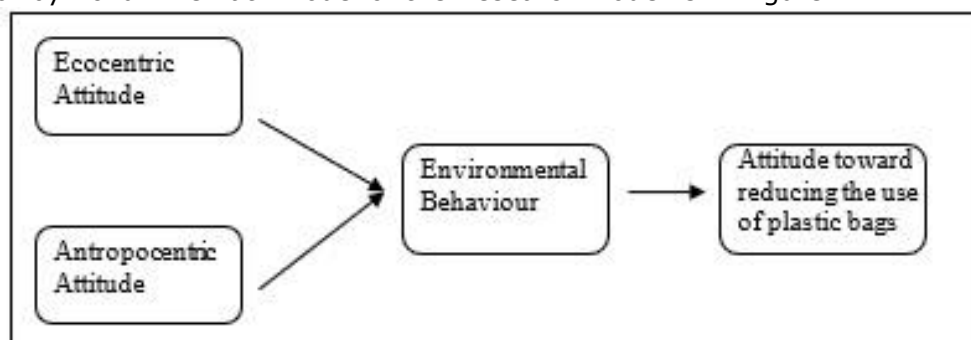


Figure 1. Path Proposition of Research Mode

3.1. Participants

The sample of the study comprises residents living in the province of Denizli in Turkey. Denizli is located in the country's Aegean Region. Denizli's center population is 554,424 compared to 2021. This population consists of 276,203 men and 278,221 women. Normally, we meet with these studies due to the various restrictions, owing to time and cost constraints, this study was conducted in Turkey's Denizli province.

Ever since the online survey technique used in the research and the warning on the platform where the questionnaire was not answered so unfit data was not obtained in the 406 surveys. Among them, 58,6 percent were female and 41,4 percent were male (n = 406). 55,2 percent of the participants are between the ages of 21-30. The majority were university graduates 66,5 percent. In the marital status, single participants 61,6 percent and married participants 38,4 percent. The income levels of the participants vary between 3001-5000 ₺ with a rate of 23,9 percent and 1001-3000 ₺ with a rate of 23,6 percent. We present demographic information of the participants of the research using the convenient sampling method (Table 1).

Table 1. Descriptive Sample Statistics

Sex	N	%
Female	238	58,6
Male	168	41,4
<i>Total</i>	<i>406</i>	<i>100</i>
Age	N	%
15-20 years	10	2,5
21-30 years	224	55,2
31-40 years	77	19
41-50 years	66	16,3
51 + years	29	7,1
<i>Total</i>	<i>406</i>	<i>100</i>
Education Level	N	%
Primary School	9	2,2
High School	55	13,5
University- Bachelor	270	66,5
University- Master & PhD	72	17,7
<i>Total</i>	<i>406</i>	<i>100</i>
Marital Status	N	%
Single	250	61,6
Married	156	38,4
<i>Total</i>	<i>406</i>	<i>100</i>
Income	N	%
0-1000 ₺	15	3,7
1001-3000 ₺	96	23,6
3001-5000 ₺	97	23,9
5001-7000 ₺	93	22,9
7001-9000 ₺	43	10,6
9001 ₺ or more	62	15,3
<i>Total</i>	<i>406</i>	<i>100</i>

N = subset of the sample; % = subset percentage of the sample

3.2. Measures

The questionnaire used in the research includes scales of ecocentric attitude, anthropocentric attitude, environmental behavior, and attitude toward reducing the use of plastic bags. "Ecocentric Attitude, Anthropocentric Attitude and Apathy towards Environment Scales" were developed by Thompson and Barton, 1994 in 33 items.

Bonnes et al., 2011, factor analysis of these scales was performed and as a result, the scales were revised as a total of 19 items. In our research, the scale with ecocentric attitude and anthropocentric attitude dimensions, which were adapted to Turkish with a 5-point Likert scale by Kalburan, 2014, was used considering the changes in environmental issues and studies in recent years.

Goldman et al., 2006 developed the environmental behavior scale as 20 question items, and then Timur and Yilmaz, 2013 examined it for Turkish adaptation, validity and reliability. Researchers observed that the environmental behavior scale has 6 categories both in the original scale and in Turkish adaptation studies. These are, (1) Resource-conserving actions with a personal financial benefit, (2) Environmentally responsible consumerism, (3) Nature-related leisure activities that reflect an interest in nature, (4) Recycling efforts, (5) Citizenship action, (6) Environmental activism.

Lam and Cheng, 2006 aim to comprise Hines et al., 1986 responsible environmental behavior model, Lam and Cheng's, 2003, integrated behavior model and Ajzen's, 1991 planner behavior theory. Based on them they evaluated three types of intentions about bag use intentions and all psychological predictors: to bring bags, to buy bags, and to measure plastic bag reuse behavior based on the literature.

3.3. Reliability Analysis

In this study, Cronbach α coefficient used to determine the correlation for each expression of the scale. Cronbach α value of the 'Ecocentric Attitude' scale was 0,826. It is generally accepted that the expressions used in the scale have item-total correlation coefficients $r \geq .40$ (Timur and Yilmaz, 2013). The anthropocentric attitude scale, "*Science and technology will eventually solve our problems with pollution, overpopulation and diminishing resources*" was not in the reliability analysis since the total correlation value of the item is below 0,40. The Cronbach α value of the 'anthropocentric attitude' scale was 0,777. In the study conducted by Kalburan, 2014 on the environmental behavior scale, 4 of the 20 question items in the scale excluded because of the item-total correlation value being below 0,40. In the environmental behavior scale, we did not include the research because 6 items comprise similar expressions. Based on this study, the research includes 10 question items in Environmental Behavior Scale. Cronbach α value of environmental behavior scale was 0,848. As a result of the analysis, the item-total correlation value of the expression "*I reuse used papers as scratch paper*" was not in the reliability analysis because the total correlation value below 0,40. Within the scope of the reliability analysis of the '*bag usage model*' scale consisting of 16 items created by Lam and Cheng (2006), we conducted an online survey study with 384 people within the scope of the pilot study and continued with 7 questions with item-total correlation value over 0,40. Cronbach α value of 7 question items was 0,850.

3.4. Measurement Model

There are 4 latent and 29 observed variables in this research model. Ecocentric attitude contain of 5 observed variables (S1, S2, S3, S4, S5), anthropocentric attitude 6 observed variables (S6, S8, S9, S10, S11, S12), environmental behavior 9 observed variables (S13, S14, S15, S17, S18, S19, S20, S21, S22), attitude toward reducing the use of plastic bags 7 observed variables (S23, S24, S25, S26, S27, S28, S29). As a result of the first analysis, correction indices were suggested by the program. The errors of the item pairs S10-S12, S18-S21 and S28-S29 suggested in the correction indices of the second part were correlated and the models were retested. All the item pairs included in the same factor in their scales and make the same measurement with similar expressions. For Example, S10 "We need to preserve resources to maintain a high quality of life" and S12 "One of the most important reasons to conserve nature is to ensure a continued high standard of living." We presented the standardized loads, t values and

R2 value and goodness of fit indices of each item determined as a result of the analysis (Table 2).

Table 2. Measurement Model

	Standardized Loads	t Values	Reliability	R ²
Ecocentric Attitude			0,82	
S1	0,79	16,08		0,62
S2	0,35	6,70		0,12
S3	0,72	15,74		0,52
S4	0,82	19,16		0,67
S5	0,79	17,90		0,62
Anthropocentric Attitude			0,78	
S6	0,47	8,61		0,22
S8	0,55	10,43		0,30
S9	0,67	13,02		0,45
S10	0,53	9,81		0,28
S11	0,69	13,45		0,48
S12	0,62	11,94		0,38
Environmental Behaviour			0,84	
S13	0,65	13,64		0,42
S14	0,62	12,84		0,38
S15	0,59	12,25		0,35
S17	0,71	15,22		0,50
S18	0,65	13,54		0,42
S19	0,47	9,29		0,22
S20	0,56	11,31		0,31
S21	0,62	13,08		0,38
S22	0,60	12,44		0,36
Attitude towards reducing the use of plastic bags			0,85	
S23	0,72	15,95		0,52
S24	0,49	9,88		0,24
S25	0,65	13,78		0,42
S26	0,73	16,20		0,53
S27	0,65	13,92		0,42
S28	0,78	17,69		0,61
S29	0,63	13,05		0,40
$\chi^2 = 672,42$ $df = 315$ $\chi^2/df = 2,13$ RMSEA= 0,053 SRMR= 0,057				

4. Results

In this study, we determined Chi-Square (χ^2) and χ^2/df , used in the confirmatory factor analysis of the model and evaluated goodness-of-fit indices such as The Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Normed Fit Index (NFI), e Comparative Fit Index (CFI), Goodness of Fit Index (GFI). Good fit of $0 \leq \chi^2/df \leq 2$ from the goodness of fit indices, $2 < \chi^2/df \leq 3$ shows the acceptable fit range (Schermelleh- Engel et al., 2003).

The results of the measurement model indicate that all observed variables have the t value sufficient to explain the latent variables. Goodness-of-fit indices results of the measurement model was sufficient ($\chi^2 = 672,42$; $df = 315$; $\chi^2/df = 2,13$). For RMSEA, a value equal to or less than 0,05 corresponds to a perfect fit, values below 0,08 to 0,10 are regarded as an acceptable fit, and a value greater than 0,10 corresponds to a bad

fit (Çelik and Yılmaz, 2016). In our analysis, we found that the RMSEA value had an acceptable fit value (RMSEA = 0,053).

The path analysis method can predict the causal relationship between the research model and hypothesis in Figure 2. As a result of the path analysis of the model, the goodness of fit indices results was found as $\chi^2 = 679,62$; $df = 317$; $\chi^2/df = 2,14$; RMSEA = 0,053; SRMR = 0,058; CFI = 0,92; NFI = 0,86; GFI = 0,89. We tested hypotheses based on parameters among latent variables. H1: Ecocentric attitude has a positive effect on environmental behavior. There is a statistically significant difference in the t value of H1. ($t = 7,27 > 1,96$). In this vein, one-unit increase in the ecocentric attitude factor was found to affect a 0,45-unit increase in the environmental behavior factor. **H1** hypothesis was confirmed. H2: Anthropocentric attitude has a negative effect on environmental behavior. When the t value of the hypothesis did not show a statistically significant difference ($t = 0,42 < 1,96$). The **H2** hypothesis was rejected. H3: Environmental behavior has a positive effect on the attitude towards reducing the use of plastic bags. There is a statistically significant difference in the t value of the H3 ($t = 9,47 > 1,96$). One-unit increase in the environmental behavior factor was found to have a 0,68-unit effect on the attitude towards reducing the use of plastic bags which indicates that the **H3** hypothesis was confirmed.

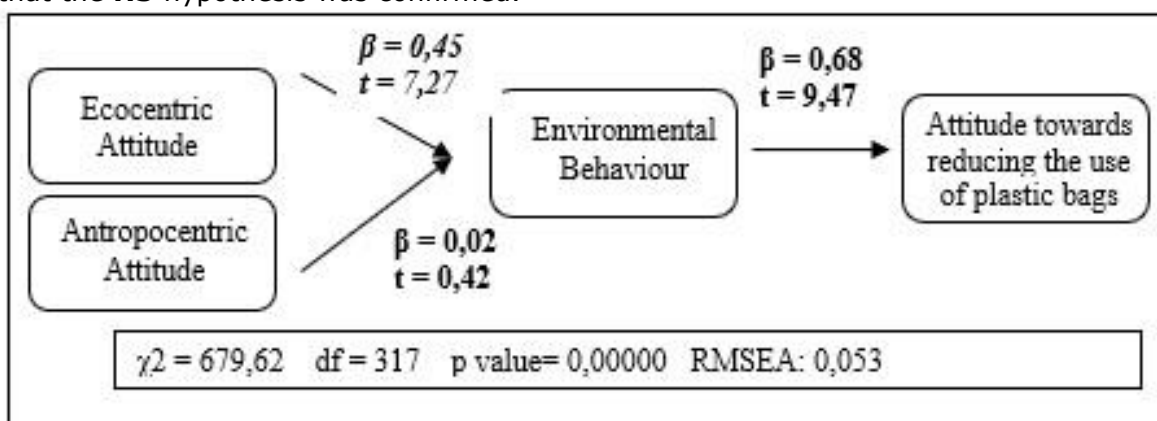


Figure 2. Path Analyses Results

In addition, demographic variables and main variables used in the research were analyzed. We obtained significant difference in the gender factor, female participants having a higher average in ecocentric attitude and attitude towards reducing the use of plastic bags ($p < 0,005$) (Table 3).

Table 3. Analysis of Differences by Gender of Participants

		Mean	Standart Deviation	p
Ecocentric Attitude	Female	4,47	0,61	0,025
	Male	4,32	0,72	
Anthropocentric Attitude	Female	3,06	0,96	0,796
	Male	2,99	0,99	
Envirenmental Behaviour	Female	3,82	0,71	0,296
	Male	3,75	0,78	
Attitude towards reducing the use of plastic bags	Female	4,37	0,67	<0,001
	Male	3,95	0,89	

According to the marital status, we found a statistically significant difference in the attitudes of married people towards ecocentric attitude, environmental behavior and attitude towards reducing the use of plastic bags ($p < 0,005$) (Table 4).

Table 4. Analysis of Differences by Marital Status of Participants

		<i>Mean</i>	<i>Standart Deviation</i>	<i>p</i>
Ecocentric Attitude	Single	4,35	0,68	0,023
	Married	4,50	0,62	
Anthropocentric Attitude	Single	3,03	1,01	0,102
	Married	3,02	0,91	
Envirenmental Behaviour	Single	3,72	0,75	0,012
	Married	3,91	0,71	
Attitude towards reducing the use of plastic bags	Single	4,11	0,85	0,001
	Married	4,33	0,69	

As the age factor did not show equal distribution, the participants were divided into two categories as under 30 and over 30 (Table 5). According to the findings, we found a statistically significant difference in the environmental behavior and attitude towards reducing the use of plastic bags of individuals over the age of 30 ($p < 0,005$).

Table 5. Analysis of Differences by Age of Participants

		<i>Mean</i>	<i>Standart Deviation</i>	<i>p</i>
Ecocentric Attitude	Under 30 years	4,36	0,68	0,109
	30 Years and over	4,47	0,63	
Anthropocentric Attitude	Under 30 years	2,99	0,99	0,322
	30 Years and over	3,08	0,94	
Envirenmental Behaviour	Under 30 years	3,66	0,71	<0,001
	30 Years and over	3,97	0,74	
Attitude towards reducing the use of plastic bags	Under 30 years	4,10	0,82	0,003
	30 Years and over	4,33	0,75	

5. Discussion

Environmental studies in the literature are generally divided into two fields. While the former examines the effects of environmental attitudes on socio-demographic variables, the latter focuses on environmental behavior. In this study, the effects of ecocentric attitude and anthropocentric attitude, which are the first two dimensions of environmental attitude, on environmental behavior were tested by the path analysis method. According to the findings, the effect of ecocentric attitude on environmental behavior supports other studies in the literature. Thompson and Barton, 1994 stated that individuals with ecocentric attitudes appear to have common sense with high environmental behavior and a high tendency towards environmental problems and the anthropocentric attitude of the participants did not affect environmental behavior. Casey and Scott, 2006 and Bonnes, 2011 found a negative impact on the environmental behavior of the anthropocentric attitude dimension in their studies. The major factor leads us to conclude the anthropocentric approach accepts the human as the center of the world, perceives the entire universe as designed for itself, and is an approach that prioritizes human interests in environmental protection.

A statistically significant difference was found between the ecocentric attitude and the attitude toward reducing the use of plastic bags in the gender factor. Casey and Scott, 2006 identified that women exhibit more environmental behavior than men. The underlying reason for this situation may be that women play a more compassionate and protective role in society. In terms of the marital status factor, the fact that married individuals have more responsibility, think about the family budget, and more importantly, the desire to leave a clean environment for their children may have caused them to be careful in using plastic bags. Laroche et al., 2001 revealed the finding that

individuals who care more about the negative effects of bad environmental conditions prefer environmentally friendly products. However, Van Liere and Dunlap, 1980 stated that young individuals show more environmental behavior than old individuals, and young individuals adopt environmentalist ideologies faster. Contrary to the literature, the findings obtained from this study revealed that individuals aged 30 and over manifest more environmental behavior and reduce the use of plastic bags. The reason for these two different results in the literature may be because of the awareness of young people or cultural differences over the years. We did not analyze it since there is no homogeneous distribution in income and education. Another finding we obtained in the study is the positive relationship between environmental behavior and the attitude of the participants to the plastic bag. In the literature, there are studies conducted to reduce the use of plastic bags, which are among the motivations for reducing plastic bags (Arı and Yılmaz, 2017; Jakovcevic et al., 2014; Sharp et al., 2010; Lam and Cheng, 2006). Policies that have been persuaded by Turkey 'regarding the plastic bag tax' is intended to determine a variety of perspectives on plastic bag taxation of individuals (Kılıçer, 2018). Since the plastic bag pricing law is new, there are few studies concerning the reduction of the use of plastic bags as demarketing practice.

According to the information and media data compiled from the Ministry of Environment and Urbanization, the use of plastic bags in Turkey decreased by 80 percent as a result of charging policy. (New York Times, 2019). The most important reason for this result is legal regulation and should be supported gaining momentum. Environmental prohibitions can affect the intent and behavior of individuals, Wan et al., 2014, it was revealed that there was a significant relationship between administrative measures related to the environment and behavioral intent. Educational institutions should pay attention to programs that will strengthen the ecocentric attitude of the consumer, non-governmental organizations should organize awareness activities, and businesses should produce social responsibility projects. The charging of plastic bags is an example of protective demarketing in the literature and it will be effective in solving many social problems. Environmental awareness campaigns within the preventive demarketing practices and social marketing activities to reduce the use of unsustainable products show that marketing science is not just a commercial activity.

This study has several limitations. First of all, data for this study were collected from only one city in Turkey; thus, it was not representative of the whole populace and limits the generalizability of the findings. Extended studies might be required to target the populace from both urban and rural areas in Turkey and other contexts. The use of self-report instruments to measure all constructs is another limitation of this study. A longitudinal approach or an experimental design may provide more accurate explanations for the observed relationships and their underlying mechanisms.

6. Conclusion

The current study examines differences tests were conducted among socio-demographic variables and the dimensions of ecocentric and anthropocentric attitudes, environmental behavior and environmental attitude toward reducing the use of plastic bags. According to the results obtained from the research, the effect of ecocentric attitude on environmental behavior supports other studies in the literature. The anthropocentric attitude dimension does not have any relationship with environmental behavior. It shows the positive effect of environmental behavior on the attitude toward reducing the use of plastic bags. Among the demographic variables, there was a statistically significant difference ecocentric attitude and plastic bag use in terms of gender. We found significant difference plastic bags use in terms of the marital status. In addition, it was indentified that individuals aged 30 and over act more environmentally and tend to reduce the use of plastic bags. However, income and educational status from socio-demographic variables were not analysed because they did not show homogeneous distribution.

In conclusion, a plastic bag charge was effective to increase cloth bags use among Turkish consumers: the monetary intervention resulted in an increase in cloth bag use that was sustained when the policy was introduced. However, more importantly, the motivational basis underlying policy support as well as cloth bag use behavior was mainly ecocentric attitude, reflecting concerns about the environment. This suggests that the financial intervention may have activated environmental motives to bring one's own shopping bags, and that some consumers support plastic bags charges that are aimed to improve environmental quality

All in all, needs a proper driving force to become an anti-plastic bags behaviorist. Social media platforms and educational institutions are an effective place for creating insane whom aware to their environment, by a variety of activity which stimulates such behaviors. The environmental behaviour and attitude of rising generation can initiate to the intention-behavior to anti-plastic bags which facilitated and emerge worldwide. Legislation simply is insufficient to solve the problem of plastic bag pollution. Therefore, the national government should encourage the use of alternative environmentally friendly materials, such as canvas bags, paper bags, and bags made from natural fibres, in collaboration with local authorities. In addition, governments, business groups, merchants, research institutes, non-governmental organisations (NGOs), youth and women's organisations should launch a variety of social media-based initiatives to increase public awareness. Furthermore, social media platforms and educational institutions might be regarded useful places for creating awareness of environmental issues in future generations. Because of this consciousness, it is possible to ensure that plastic waste is reduced or totally recycled in the future.

Future researchers who will do research on plastic bags can be recommended to increase the number of samples and conduct more comprehensive research with qualitative research methods. In addition, it can be investigated whether consumers show their plastic bag reduction behavior to avoid paying fees or to avoid the damage plastic bags cause to the environment.

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