Effect of Environmental Sensitivity and Attitude in Ecological Food Purchasing Behavior

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Abstract: Consumers increasingly prefer ecological products since they are both healthier and help protection of the environment for future generations. Conscious consumers are prepared to switch products for ecological reasons and stop buying products from companies that cause pollution. This paper is focused on environmental attitudes as meaningful predictor of ecological behavior. Environmental sensitivity of consumers in ecological food purchasing behavior and the effect of environmental attitudes and behaviors were searched with a structural equation model (SEM) in the study. It was determined as a result of analyses that environmental sensitivity does not directly affect environmental behavior but those who developed environmental attitude display the behavior of purchasing ecological foods by exhibiting environmental behavior.

Key Words: Environmental sensitivity, environmental behavior, ecological food purchasing behavior, structural equation model.

1. Theoretical Structure

Scientists and environmental organizations have expressed their considerations about environmental pollution and global warming as a result of its negative results more loudly in recent years. Since various national and international nongovernmental organizations created powerful pressure on politicians and governors and developmental organizations.

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opment of consumer consciousness has increased in recent years, enterprises have oriented to produce ecological products named as environment friendly with the aim of preventing environment pollution and decreasing even completely removing hazardous wastes. Such enterprises started to orient packaging designs which consume lesser sources and recyclable while performing their production. Directors of enterprises must forecast demand for environment friendly products, determine environmental sensitivity of their products, develop safer, healthier products and packaging methods which pollute less, design production processes using less amount of resources, minimize hazardous wastes, manage technological risks and protect health of their staff and society. Not only industrialists and other producers but also consumers must undertake the responsibility of declining threat of environmental problems in global dimension. If consumers make more conscious preferences by purchasing ecological products, they can change the direction of productions in a way more sensitive to the environment. It is undoubted that consumers cannot develop environmental attitude and behavior so continue to create problems against the environment in societies insensitive to the environment. If consumer's sensitive and conscious towards the environment purchase ecological products among other products, it will directly affect product and production style of enterprises by ensuring ecological products to remain in the market and removal of non-ecological ones. For this reason, research of factors which orient consumers in developing ecological attitudes and behaviors is so significant. Planning and management of studies on producing and marketing ecological products will be possible through analyzing attitudes and behaviors of consumers sensitive to the environment.

Traditionally, researchers have been interested in understanding consumer behavior from three different perspectives: the first studies consumers by means of demographic and socio-economic variables, the second considers the amount of information and knowledge that people have with regard to environmental problems and issues and the third viewpoint employs psychographic variables, including values, lifestyles, personality characteristics, and attitudes. Demographic variables turned out to be of little significance and thus, researchers preferred to use psychographic and knowledge variables (Fraj and Martinez, 2007: 26, Kaiser et al., 1999a, 1999b).

2. Relevant Literature

Allport defined attitude as: A mental and neural state of readiness, which exerts a directing, influence upon the individual's response to all objects and situations with which it is related. He stated that an attitude is a disposition that influences behavior.

Later, other researchers took Allport's theory as the basis of the just mentioned classic structure: Value-Personality-Attitude-Behavior (Fraj and Martinez, 2007:27)

In "An Application on Green Product Consuming Behaviors of Green Marketing Consumers and the Effect of Culture in Consumption of Green Products" research of Keleş (2007), it was determined that consumers having a greater amount of green value display the behavior of purchasing green (nature friendly product) more. In the research of Tilikidou and Delistavrou (2006: 1), Greek consumers were found to be rather moderately engaged with these behaviors older well educated women, who hold relatively low incomes adopt the ecological activities more frequently. The ecological activities were found to be negatively correlated to environmental unconcern and materialistic values, while positively to feelings of control over political evolutions. In the research of Tilikidou and Delistavrou (2008: 61), the results indicate that consumers who engage in recycling, pro environmental post- purchasing behavior and pro environmental activities are highly educated people. In the research of Straughan and Roberts (1999: 558-575), it was determined that young people may be more sensitive to environmental considerations, women are more interested than men, education level is positively correlated with environmental attitudes and behaviors, and those living in urban areas more behave with environmental considerations compare to those living in rural areas. In the study carried out by Akgüngör vd. (1999: 80) with the name of "Forecast of Potential Demand of Consumers in Istanbul, Ankara, İzmir Cities Towards Environmental Friendly Agricultural Products", the facts that a significant part of consumers never heard about the products characterized as "ecological or organic products" but think that taste and reliability of fresh fruits and vegetables in terms of health decreased compare to the past were accepted as significant evidences about the existence of domestic market potential of ecological products. In the study "Effect of Demographical Characteristics and Individual Attitudes of Consumers in Responsible Consumer Behaviors" carried out by Babekoğlu (2000), the issues of individual attitudes of consumers towards responsible consumption, "environmental interest, restricting consumption and giving importance to their own competences" were examined. According to the results obtained in the study, it was found that the variability of education level is effective on following opinions: "behaviors beneficial for environmental protection are significant", they should be more interested-sensitive in the issue of "decreasing or restricting noise", "the government should reserve money for technological researches required for recycle of product wastes". In addition, it was reported that consumers always prefer the products which might give least amount of harm in the environment when they have the possibility of making only one selection and they do not purchase any product about which they understood the harm it will create in the environment while examining behaviors of responsible consumers. In addition to this, it was also determined that they do not prefer products containing chemical substances and not have the behavior of making sudden purchasing, they usually do tend to not purchase excessively packaged products. In the research "Consumers with Environmental Conscious" carried out by Ay and Ecevit (2005: 238), behaviors of students studying in Celal Bayar University were attempted to be analyzed with the aim of displaying behaviors of consumers with environmental conscious and correlation of demographic and psychographic characteristics. It was stated in the study that consumers activate their environmental interests with environment friendly consumer behavior. Similar evidences were obtained in the studies of Schlossberg (1991: 26), a weak relation was found between behaviors of consumers related with environmental issues and converting these behaviors into real purchasing behavior.

Ecological product attitude was not generally added in the studies held in Turkey. In the study held by Fraj and Martinez (2007), it was evidenced with the questionnaire applied in 573 individuals that environmental attitudes emerge as logical foresight of ecological behavior, a 3 dimensional approach was developed for relation structure, and they are the factors expressing emotional, conceptual and effort. As a result of this study, it was underlined that environmental attitudes are significant factors on ecological behavior.

3. The Aim of the Study

The purpose of this study will be to focus on psychographic variables and consumers' attitudes within them. It seeks to discover what attitudes best define the ecological consumer's profile and explain certain environmentally friendly behavior patterns. This paper will be structured as follows. First, there is a summary of the literature. Second, the proposed model is outlined, explaining all the variables, the method of measurement and the hypotheses. Third, sample characteristics and the analysis carried out are related. For this purpose, a SEM was offered for effects of environmental sensitivity and environmental behaviors of consumers in purchasing ecological products and appropriateness of the model was tested by taking various fitness criteria into account in the study.

3.1. Method: Structural Equation Modeling (SEM)

SEM is a multivariate method composed of factor and multiple regression analysis to estimate dependency relationships. Technically, the structural equation modeling

estimates unknown coefficients taking place in linear structural equations set. In the equation system, directly observed variables and latent variables, which are related to observed variables but not observed, usually take place. SEM assumes that there is a causal structure among the latent variables set and observed variables are the explanatory of the latent variables (Detail and proof for SEM see: Byrne, 1998; Hayduk, 1987; Joreskog and Sorbom, 2001).

Data was analyzed by means of the LISREL 8.54 Program. LISREL (LInear Structural RELationships), a statistical modeling technique, was chosen to generate a model that best fits the data. LISREL combines features of multiple regression, factor analysis, and path analysis to allow the examination of both observed and latent variables in complex relationships. LISREL provides a simultaneous estimation of the model, estimation of causal relationships among latent variables with multiple indicators, inclusion of both measurement and structural properties of theoretical models, measurement of direct and indirect effects, inclusion of measurement errors and correlation of residual, and estimation of non-recursive causation. LISREL requires the researcher to provide a base or starting point called the hypothesized model. Then, through a series of iterative modification indices, LISREL provides information that guides the researcher toward an ameliorator's empirical model. Once the model's structure or explanatory power has been maximized, the researcher has a final model. Applied to data on attitudes, perceptions, stated behavioral intentions, and actual behavior, SEM can be used to specify and test alternative causal hypotheses. It has been found that, as might be expected, causality is often mutual. The assumption that behavior is influenced by attitudes, perceptions, and behavioral intentions without feedbacks does not hold up when tested using SEM. The overall model is assessed using goodness-of-fit criteria: AGFI = Adjusted Goodness-of-Fit-Index, CFI = Comparative Fit Index, GFI = Goodness-of-Fit Index, NFI = Normed Fit Index, NNFI = Nonnormed Fit Index, RMSEA = Root Mean Square Error of Approximation, RMR = Standardized Root Mean Square Residual. NFI may not reach 1.0 even if the specified model is correct, especially in smaller samples. As NNFI is not normed, values can sometimes be outside the 0-1 range. NNFI and CFI values of .97 seem to be more realistic than the often reported cut off criterion of .95 for a good model fit. Traditionally, a GFI and AGFI of 0.90 or above and a RMSEA of 0.05 or less have been considered to indicate a good fit between the model and the data. (Byrne, 1998; Joreskog and Sorbom, 2001; Yılmaz vd., 2008:176).

3.2 Research Model and Hypothesizes

Models and scales introduced in the study were created through based on relevant studies of Fraj and Martinez (2007). However, ecological product purchasing behavior is not included in models of authors in their studies. Environmental sensitivity, environmental behavior, and ecological product attitude were dealt with as forecaster of ecological product purchasing behavior in the study. The model recommended in scope of the study was given in Figure 1.

Factors included in the structural model are as follows; A: Environmental Sensitivity; B: Environmental Attitude; C: Environmental Behavior; D: Ecological Product Attitude; E: Ecological Product Purchasing Behavior.

Following hypothesizes can be written by using the structural model given in Figure 1.

- H_1 ; Consumers having a greater degree of sensitivity about the environment have a more powerful environmental attitude.
- H_2 ; Consumers having a greater degree of sensitivity about the environment display more powerful environmental behavior.
- H_3 ; Consumers having a greater degree of sensitivity about the environment have a positive attitude towards ecological products.
- H_4 ; Environmental sensitivity positively affects ecological product purchasing behavior.
- H_5 ; Consumers developing a greater degree of environmental attitude display greater degree of environmental behavior.
- H_6 ; Environmental behavior positively affects the attitude towards ecological products.
- H_7 ; Consumers having a greater degree of environmental attitude display a greater behavior of purchasing ecological products

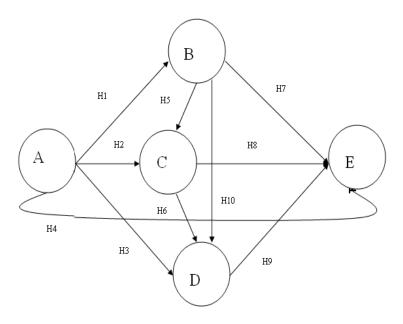


Figure 1. Structural Model recommended

 H_8 ; Environmental behavior positively affects ecological product purchasing behavior.

 H_9 ; When the positive attitude towards ecological products increases, behavior of purchasing ecological product also increases.

 H_{10} ; When environmental attitude increases, it positively affects the attitude towards ecological products.

3.3. Sampling and Data Collection Method

Sampling volume was composed of approximately 154 units when the ratio of those preferring organic products is considered as 20%, sensitivity as 0.06 and meaning level as 5% by using pilot studies held. Measurement device prepared was applied on consumers in large shopping centers in Eskişehir in March 2008.

Scales of the study were created by using the USA and Spain originated studies. However, since cultural, social, and economic structure of these countries is different from each other validity structure of them was researched again. Draft scale was applied in 56 students studying in Anadolu University, Department of Environmen-

tal Engineering on date of 24.11.2007. This was reapplied on 50 percent of students in Eskişehir Osmangazi University, Faculty of Science and Literature after some problems not understood and raised from Turkish translation. Final scale was created by using evidences obtained from pilot researches. 14 items measuring environmental sensitivity, 9 items measuring environmental attitude, 15 items measuring environmental behavior, 6 items measuring ecological product attitude and 3 items measuring ecological product purchasing behavior were included in the scale. Cronbach α values related with sizes are determined as A=0.72, B=0.63, C=0.82, D=0.89, E=0.95. Alpha values which are internal fitness coefficients take 0.70 and higher values, and this indicates that the scale is sufficient.

4. Analysis and Findings

Averages related with the factors were calculated as A=4.2, B= 3.2, C=1.94, D=4.2, E=1.79. Considering that the items were measured with 5 Likert it is understood that the highest average belongs to "sensitivity towards environment" factor. Even though consumers express that they have a great degree of sensitivity towards the environment, they could not reflect this sensitivity in environmental behavior. Environmental behavior average is 1.94. Another result is that while the positive attitude towards ecological products has a 4.2 average, ecological product purchasing behavior is 1.79.

While the items below the sensitivity of consumers towards the environment factor are examined, it is seen that the highest average is "Environmental pollution makes me anxious" (4.36) item. Then, the item of "I am afraid of the fact that continuance of environmental pollution might carry the world to an uninhabitable atmosphere" exists with 4.29 average, and they are remarkable questions of the dimension of sensitivity towards the environment. Examining the environmental attitude dimension, it is understood that S6b "I will be volunteer in paying an additional tax related with air pollution if it may decrease air pollution to a significant extent." has 2.97 average and this value is lower than the general average of B factor. This result displayed that consumers do not agree with an oral commitment for paying an additional tax to prevent air pollution even though they have a great degree of consideration about the environment. When environmental behaviors of consumers they actually display are examined, it was determined that they do not participate in environment cleaning campaigns in a sufficient extent. Moreover, it was displayed that they do not file complaint about people polluting the environment and they do not in a relationship with a nongovernmental organization (14c=1.69).

The model offered in Figure 1 was tested by using AMOS package program. The results including analysis evidences are given as an AMOS graph in Figure 2. Fitness criteria of the model (M1) in which all relations between the factor were tested were calculated as χ^2 =226,79; df=142; p=0,000, RMSEA=0,062, NFI=0,85, PNFI=0,71, CFI=0,94, FI=0,94, RFI=0,82, RMR=0,10, GFI=0,87, AGFI=0,82. Parameter estimations and hypothesis results are given in below "Table 1". Structural equation was determined as;

As it is also understood from Table 1, some causal relations were not found meaningful. When some items increasing these relations and χ^2 value are excluded from the model, the second model found (M2 model) corresponds to a perfect consistence. Newly found M2 model fitness criteria were obtained as follows; χ^2 =233,89; df=147; p=0,000; RMSEA=0,062, NFI=0,85, PNFI=0,73; CFI=0,94; IFI=0,94; RFI=0,82; RMR=0,09; GFI=0,90; AGFI=0,88. These values indicate that M2 is a better model compare to M1. When all fitness criteria are examined, it was seen that M2 takes values close to the criteria of the good model desired. When standardized parameter estimations in M2 are examined, they were calculated as; A \rightarrow B: 0,52; C \rightarrow E: 0,29; D \rightarrow E: 0,19, A \rightarrow D=0,35, B \rightarrow C=0,42. Structural equations were found as; B=0,52A (R²=0,27); C=0,42B (R²=0,17); D=0,35A (R²=0,12); E=0,29C+0,19D (R²=0,13).

When the evidences of M2 (Figure 2) were examined it was emerged that one unit of increase in environmental sensitivity will cause 0.52 increase in environmental attitude, one unit of increase in environmental attitude will cause 0,42 increase in displaying environmental behavior, one unit of increase in environmental attitude will cause 0,35 positive increase in looking in ecological products, one unit of increase in displaying environmental behavior will cause 0,29 increase in the behavior of purchasing ecological product, one unit of increase in ecological product attitude will cause 0,19 increase in behavior of purchasing ecological product. As understood from these results, displaying ecological attitudes and behaviors depends on the increase in the degree of sensitivity towards the environment.

Table 1. Parameter estimation and hypothesis results

Hypothesis	Standardized Para- meter Estimation	† values	Result	
H ₁	A→B; 0,52	3,18	Verified	
H ₂	<i>A→C</i> ; -0,02	-0,18	Not verified	
H ₃	A→D; 0,26	2,10	Verified	
H ₄	A→E; -0,17	-1,36	Not verified	
H ₅	B→ <i>C</i> ; 0,41	2,56	Verified	
H ₆	<i>C</i> →D; -0,18	-1,75	Not verified Not verified Verified	
H ₇	B→E; 0,25	1,73		
H ₈	<i>C</i> →E; 0,22	2,16		
H ₉	D→E; 0,18	1,97	Not verified	
H ₁₀	B→D; 0,21	1,46	Not verified	

B=0,52 A (R²=0,26); C=0,41B-0,02A (R²=0,17); D=0,21B-0,18C+0,26A (R²=0,15) E=0,25B+0,22C+0,18D-0,17A (R²=0,16)

5. Conclusion and Discussion

As a consequence, it was evidenced that environmental sensitivity in consumers affects environmental behavior by means of environmental attitude, namely just the consumers developing environmental attitude display environmental behavior. It was especially evidenced that consumers developing environmental attitude and reflecting this attitude in environmental behavior display purchasing behavior by looking at ecological products more positively. In short, it was determined that environmental sensitivity has a significant share in purchasing ecological products by displaying environmental behavior.

The problem that consumers do not sufficiently reflect their sensitivity towards environmental behavior even though they state that they are sufficiently sensitive towards the environment must be discussed. While the item "I think that ecological

products are cultivated in more natural conditions than other products" was responded as I agree by 16,9% of men and 14,3% of women, and responded as I completely agree by 23,4% of men and 19,5 of women. The item "I prefer purchasing ecological product in order to protect the environment" was responded as I never by 27,3% of men and 19,5% of women. The item "I prefer ecological products with contentment" was responded as I never by 46,8% of participants and I rarely by 6,5%. Even though consumers state that they are anxious about environmental pollution, it was evidenced that they do not display self-sacrifice sufficiently for decreasing environmental pollution and not sufficiently reflect their positive attitudes they develop about the environment in their behavior. It was determined that consumers do not sufficiently participate in environment cleaning campaigns, not affiliate with nongovernmental organizations related with the environment, do not want to change their life style to decrease environmental pollution and even do not file a complaint about those polluting the environment although this is the simplest action to be taken. There might be many reasons in the fact that environmental sensitivity and attitude does not reflect in behaviors even though they have a high average such as the fact that democratic culture is not sufficiently developed or internal and external motivation factors which will ensure consumers to display these behaviors are not in a sufficient level.

Development of environmental conscious and sensitivity will ensure people to live in a healthier and safer environment, and it is evaluated that this will only be possible with environment education to be developed with the aim of educating people having required and adequate characteristics.

The model recommended in the study should be improved by making various applications on them since it is a first for Turkey.

Çevresel Tutum ve Duyarlılığın Ekolojik Ürün Satınalma Davranışına Etkisi

Özet: Tüketiciler hem daha sağlıklı hem de çevreyi gelecek nesiller adına korumaya yardımcı olduğu için giderek artan bir şekilde ekolojik ürünleri tercih etmektedirler. Bilinçli tüketiciler ekolojik nedenlerle çevre kirliliğine yol açan işletmelerin ürünlerini satın almama veya ekolojik olanlarıyla değiştirme niyetindedir. Bu çalışma, ekolojik davranışların anlamlı bir tahmincisi olan çevresel tutumlara odaklanmıştır. Çalışmada tüketicilerin ekolojik gıda ürünü satın alma davranışına çevresel duyarlılık ile çevresel tutum ve davranışların etkisi bir yapısal eşitlik modeliyle (YEM) araştırılmıştır. Analizler sonucunda çevresel duyarlılığın çevresel davranışı doğrudan etki-

lemediği, ancak çevresel tutum geliştirenlerin çevresel davranış sergileyerek ekolojik gıda ürünü satın alma davranışı gösterdiği belirlenmiştir.

Anahtar Kelimeler: Çevresel duyarlılık, çevresel davranış, ekolojik ürün satın alma davranışı, yapisal esitlik modeli.

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Table 2. Averages and standard deviations of the items in the model

İtems		Std.
		Deviation
S3A The behavior of government institutions not taking measure to control environmental		0,93
pollution infuriates me.		
S6A. I become nervous and angry while thinking the environmental pollution caused by indus-		0,96
trial factories.		
S8A. Environmental pollution makes me anxious.		0,87
S9A. I worry about the effects of polluted air on me and my family.		0,85
S10A. I am afraid of the fact that continuance of environmental pollution might carry the		0,94
world to an uninhabitable atmosphere.		
S1B. I would use my car (if I had one) less to decrease environmental pollution.		1,26
S4B. I would participate in reactive actions held to protect the environment.		1,17
S6B. I will be volunteer in paying an additional tax related with air pollution if it may de-		1,24
crease air pollution to a significant extent.		
S9B. I prefer products not harming the environment even though they are more expensive		1,05
S9C. I have participated an environment cleaning campaign until now.		1,16
S10S. I have changed my life style to protect the environment.		1,22
S11C. I have filed a complaint about those polluting the environment in any institution.		1,36
S14C. I am connected with a nongovernmental organization related with the environment		1,19
(Tema (The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Pro-		
tection of Natural Habitats)etc.).		
S4D. I think ecological products are more tasteful than other products.		0,94
S5D. I think that ecological products are cultivated in more natural conditions than other		0,90
products.		
S6D. I think ecological products are healthier than other products.		0,91
S1E. I prefer purchasing ecological products to protect the environment.		1,46
S2E. I purchase ecological products with contentment.		1,63
S3E.I purchase ecological products even though they are more expensive than similar prod-		1,37
ucts.		

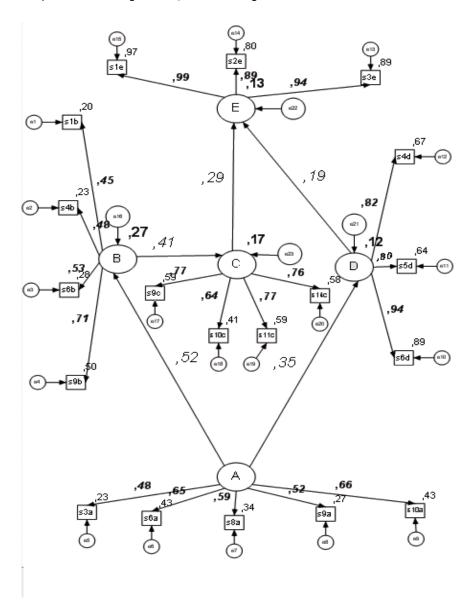


Figure 2. Model 2 AMOS solution