

The Relationship between Perceived Consumer Effectiveness and Environmental Attitudes of University Students

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Abstract

The main aim of the study is to determine how perceived consumer effectiveness (PCE) affects environmental attitudes of university students. A questionnaire was distributed at two universities in Istanbul and results indicate that PCE has a significant effect on environmental attitudes, reflecting that students with high PCE generate more positive attitudes toward environmentally conscious living and less affected from inconvenience of being environmentally friendly.

Keywords: Environmental attitude, perceived consumer effectiveness, university students

1. Introduction

The environment has been a topic of global interest and the perspective towards environmental issues has changed considerably in recent decades. The growing concern about environmental problems has its roots in facts such as consumption of unhealthy products, pollution and global warming all threatening life on earth and its sustainability. The implications of environmental problems are multilayered, affecting countries without boundaries in a global system of interdependencies. Today it is not just governments that focus on a healthier environment. A deeper look at this issue reveals that there are further reasons pushing marketers to create an environmental concern: the opportunities or the competitive advantages and pressures and corporate social responsibilities (Upadhyaya & Shukla, 2011). At the core of all these movements is the active citizen with an environmentally conscious mindset and behavior.

Environmentally conscious behavior refers to acting in a way that helps to protect environment such as buying and consuming products with minimum negative impact on earth and on people. (Mainieri et al.,1997). The propensity to

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environmentally conscious behavior can come from different market segments (Peattie, 1992) and in the literature evaluated from different perspectives such as demographics (e.g. Schlegelmilch et al., 1994), personality measure (e.g. Balderjahn, 1988; Kinnear et al., 1974) and environmental attitude (Schwepker and Cornwell, 1991). In this study environmental attitudes and perceived consumer effectiveness are focal points.

1.1. Environmental Attitudes

Attitudes represent what consumers like and dislike (Blackwell et al., 2006) and constitute the basics in predicting consumers' willingness to pay for green purchases (Chyong et al., 2006), especially for environmental protection focused ones (Tanner and Kast, 2003). Environmental attitudes reflect "the collection of beliefs, affect, and behavioral intentions a person holds towards environmentally related activities, issues" (Schultz et al., 2007), or as the "psychological tendency expressed by evaluating perceptions or beliefs about natural environment, including factors affecting its quality, with some degree of favor or disfavor" (Milfont, 2007). In their research Forleo et al., (2001), found that the most influencing parts of environmental attitudes are the inconvenience of being environmentally friendly; i.e. how inconvenient it is perceived for the individual to behave in an ecologically conscious manner (Laroche et al., 2001) and the perception about environmentally conscious living. They were found to be significant indicators to develop an environmentally friendly behavior. The higher the inconvenience, the less likely they are to recycle (McCarty and Shrum, 1994). Thus, in this study environmental attitudes composed of two subdimensions; attitude towards environmentally conscious living and inconvenience of being environmentally friendly.

1.2. Personality Factors and the Positioning of Perceived Consumer Effectiveness

The literature on environmental studies PCE either positioned under the title of personality factors or separately as an indicator of personality. PCE was first described by Kinnear et al. (1974) as a measure of an individual belief that he or she can have an effect on environmental issues and was named as locus of control in some studies such as Schwepker and Cornwell (1991). Among the top 10 predictors of environmentally conscious behavior, PCE was found to be the best to predict ecological attitude (Kinnear et al., 1974) and resulted in ecologically conscious consumption and ecological responsible consumption patterns such as energy saving and purchase of non-polluting products (Tan,2011). Also people with higher PCE have proven to be more environmentally concerned (Kim and Choi,2005).

Hypothesis generated according to reviewed literature are presented below:

H₁: PCE has significant and positive effect on environmental attitude

H_{1a}: PCE has significant and positive effect on attitude toward environmentally conscious living.

H_{1b}: PCE has significant and positive effect on inconvenience of being environmentally friendly.

2. Methodology

This research is a cross-sectional quantitative study that aims to analyze data with a descriptive approach. The primary data collection method was chosen to be email connections and self administered face to face interviews with students from various disciplines of two universities in Istanbul. The data collection instrument was a questionnaire. The first part focused on measuring the PCE with 5 statements and the second part on environmental attitudes with 13 statements by a 6 point likelihood interval scale (Never-Seldom-Sometimes-Often-Mostly-Always). The third part focused on 5 demographic questions. From the 300 questionnaires were distributed during the course hours, 280 were returned. A link to a web site to have access to the questionnaire was developed and sent to 200 students via email; only 80 of them responded. Hence, from a total of 500 questionnaires distributed, 360 of them were returned, with a response rate of 72%. Since 40 of these questionnaires were detected to be incomplete, they were excluded from analysis.

3. Understanding the effect of PCE on environmental attitudes

The demographic characteristics of the sample, the university students, reflect that they present a wide age bracket with 18 to 42 years, with the median of 23. For the gender distribution results indicate a breakdown of 67 % being female, 33 % being male. The education level of respondents was searched for three levels: PhD, graduate (master) and undergraduate. Accordingly, 80 % are pursuing a bachelors' degree, 12 % a master's degree and 8 % are focusing on their PhD studies. The income level of the respondents is grouped in three categories. Among the 320 respondents nearly 45% have a monthly income of 1000 TL and below (435 Euro), followed by about 44% within 1001-2000 TL range (435 – 870 Euro), the third group constituting 11% of the sample stated to have an income above 2000 TL (above 870 Euro). The exchange rate being 1 Euro = 2.3 TL.

An explanatory factor analysis is implemented as to detect the factor structure of the variables. To detect the reliability of scales, Cronbach's Alpha coefficients are computed for each variable. General criteria to evaluate Cronbach's Alpha coefficients is that when $\alpha \leq 0.70$, the scale is reliable (Sipahi, Yurtkoru & Çinko, 2006), but in some studies coefficients $\alpha \leq 0.60$ is also accepted as reliable (Özdamar, 1999; Akgül & Çevik, 2005).

Table 1. Statements of the study

Factors and Scales	Factor	Factor	Factor
PCE: Perceived Consumer Effectiveness (Cronbach α:0,864)	1	2	3
PCE2 I think I can help solve natural resource problem by conserving water and energy.	,697		
PCE3 I think I can protect the environment by preferring products that are friendly to the environment.	,653		
PCE1 I believe each person's behavior can have a positive effect on environment and society.	,629		
PCE4 I believe there is so much that I can do about the environment	,563		
ATECL: Attitude Towards Environmentally Conscious Living (Cronbach α:0,801)			
ATECL1 When I buy products, I consider how my use of them will affect the environment and other consumers		,731	
ATECL2 I think people should prefer environmentally friendly products.		,693	
ATECL5 using environmentally friendly products should be a life style.		,609	
ATECL 4 I think environmental problems have direct effect on my daily life		,605	
IBEF: Inconvenience of Being Environmentally Friendly (Cronbach α:0,670)			
IBEF5 I use paper cups even if they are harmful for the environment.			,773
IBEF1 A Keeping separate piles of garbage for recycling is too much trouble.			,673
IBEF2 Trying to control pollution is much more trouble than it is worth.			,518

As reflected in Table 1, the Cronbach's Alpha coefficient for "PCE" (α : 0.864) and the Cronbach's Alpha coefficient for "attitude towards environmentally conscious living" (α : 0.801) are found to be highly reliable. Also, Cronbach's Alpha coefficient for "inconvenience of being environmentally friendly" (α : 0.670) is found to be reliable. Among 5 statements related to PCE one of them related to warning other people about pollution and among 13 statements for environmental attitudes 6 had also covered the effect of pollution, energy saving, excessive packaging but these did not load in the factor analysis and

3.1. Analyzing the Impact of PCE on Environmental Attitudes

Objective of the study is to understand the effect PCE on the environmental attitudes. The environmental attitudes included two subdimensions; attitude towards environmentally conscious living and inconvenience of being environmentally friendly. Analysis conducted to understand the defect of PCE on environmental attitudes. "Regression analysis" is used as a tool to understand relationship between variables.

According to results significant and positive relationship is found between PCE and environmental attitudes (for both subdimensions). The detailed explanations and tables are presented below for the results.

3.1.1. The Relationship between Perceived Consumer Effectiveness and Attitude toward Environmentally Conscious Living

In the regression analysis, the relationship between perceived consumer effectiveness and attitude toward environmentally conscious living is analyzed. The results display that regression model is statistically significant (F : 195,454; $p=0,000<0,05$) and as it is assumed in hypothesis H_{1a} , perceived consumer effectiveness significantly and positively effects attitude toward environmentally conscious living ($\beta=0,617$; $p=0,000<0,05$). If perceived consumer effectiveness of students is high, attitude toward environmentally conscious living of them will also be high. According to these results, perceived consumer effectiveness explains the 0,379 of change in attitude toward environmentally conscious living (Adjusted $R^2=0,379$) and H_{1a} predicting perceived consumer effectiveness has significant and positive effect on attitude toward environmentally conscious living is also supported. The results of analysis are presented in Table 2.

Table 2
Relationship between PCE and Attitude toward Environmentally Conscious Living

Model Summary ^b						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	,617 ^a	,381	,379	,79360		
a. Predictors: (Constant), PCE						
b. Dependent Variable: AttitudeEnvConscLiving						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	,929	,224		4,145	,000
	PCE	,627	,045	,617	13,981	,000

Students with high levels of PCE reflect more positive attitude regarding environmentally conscious living compared to those with low PCE levels.

3.1.2. *The Relationship between Perceived Consumer Effectiveness and Inconvenience of Being Environmentally Friendly*

Second regression analysis investigating the effect of perceived consumer effectiveness on inconvenience of being environmentally friendly demonstrates that regression model is statistically significant (F: 100,944; $p=0,000<0,05$), and as it is predicted, perceived consumer effectiveness significantly and positively effects inconvenience of being environmentally friendly ($\beta=0,491$; $p=0,000<0,05$). It means if perceived consumer effectiveness increases, inconvenience of being environmentally friendly also increases. It is also found that perceived consumer effectiveness explains the 0,239 of change in inconvenience of being environmentally friendly (Adjusted $R^2= 0,239$). According to these results, H_{1b} predicting perceived consumer effectiveness has significant and positive effect on inconvenience of being environmentally friendly is supported. The results of analysis are presented in Table 3.

Table 3
Relationship between PCE and Inconvenience of being Environmentally Friendly

Model Summary ^b						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	,491 ^a	,241	,239	,90004		
a. Predictors: (Constant), PCE						
b. Dependent Variable: Inconvenience of being environmentally friendly						
Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,200	,254		8,659	,000
	PCE	,511	,051	,491	10,047	,000
a. Dependent Variable: Inconvenience of being environmentally friendly						

Students with high levels of PCE reflect more affected less from the inconvenience of being environmentally friendly compared to those with low PCE levels. Because they believe their actions can generate positive results and their behaviors can change something they do not perceive inconvenience as an obstacle.

4. Conclusion

The Turkish sample of this study reflects that students with high level of PCE tend to generate more positive environmental attitudes than those with low levels of PCE. It might be because they have a belief that even little actions have potential to make big differences, thus they can prevent environmental problems by generating positive environmental attitudes and transferring them into environmental behavior. Another perspective might be generated about students with high level of PCE, because they believe that they have a control over things happening in the world, they do not perceive the inconvenience of being environmentally friendly as an obstacle and they persist on their positive perspective.

In today's world every day we, the 21st century people, are faced with a brand new environmental problem that has an effect on our daily life. These environmental problems negatively affect us, the nature and the balance of the world. This study started with the belief that even small steps can produce big changes, and with the aim to develop an understanding of how PCE (belief that a person has that his/her actions has power to change something) affect environmental attitudes. The results indicate that the more a person believes the effectiveness of his/her behaviors the more he/she generates positive environmental attitudes. The results of the current study focused on PCE and environmental

attitudes supports the findings of Leonidou, Leonidou and Kvasova, (2010) and Laroche et al. (2002).

In conclusion further research should be conducted to understand if these positive environmental attitudes triggered by PCE turn into environmentally conscious behaviors. Factors such as environmentally conscious behavior are to be measured to link the real environmental impact of a household on the sustainability of the world. Gatersleben et al. (2002) further claim that people should be educated about the environmental consequences of their behavior. Also Kim & Choi (2005) suggest that it is important to increase consumer awareness of environmental issues and enhance the perceived efficacy of their contribution to improving them. As the owner of the future, students should be informed about the environmental issues sufficiently to prevent its severe effects on our life. Thus, environmental courses can be added to curriculum, and attitudes of students towards environment should be shaped in early ages by improving their environmental knowledge to help them make their decisions in a more conscious way. This may be possible by organizing educational events about environmental problems and encouraging young people behaving towards the benefits of the society seems necessary.

References

- Akgül, A., Çevik, O. (2005). İstatistiksel Analiz Teknikleri: SPSS’te İşletme Yönetimi Uygulamaları, Emek Ofset, Ankara.
- Balderjahn, I. (1988). Personality Variables and Environmental Attitudes as Predictors of Ecologically Responsible Consumption Patterns. *Journal of Business Research*. 17, 51-6.
- Chyong, H.T, Phang, G, Hasan, H. and Buncha, M.R. (2006). Going green: A Study of Consumers' Willingness to Pay for Green Products in Kota Kinabalu. *International Journal of Business and Society*. 7(2), 40-54.
- Forleo,G., Laroche,M., Bergeron, J., (2001) "Targeting consumers who are willing to pay more for environmentally friendly products", *Journal of Consumer Marketing*, Vol. 18 Iss: 6, pp.503 – 520.
- Kilbourne, W. and Pickett, G. (2008). How materialism affects environmental beliefs, concern, and environmentally responsible behavior. *Journal of Business Research*. 61, 885-893.
- Kim, Y. and S. Choi, (2003). Antecedents of pro-environmental behaviors: An examination of cultural values, self-efficacy, and environmental attitudes." Paper presented at the annual meeting of the International Communication Association.
- Kim, Y. and S.M. Choi, 2005. Antecedents of green purchase behavior: An examination of collectivism, environmental concern and PCE. *Advances in Consumer Research*. 32: 592-59.
- Kim, Y., and Choi, S.M. (2005). Antecedents of Green Purchase Behavior: An Examination of Collectivism, Environmental Concern and PCE. *Advances in Consumer Research*. 32, 592-59
- Kinnear, T., Taylor, J. and Ahmed, S. (1974). Ecologically Concerned Consumers: Who Are They. *Journal of Marketing*. 38 (April). 20-24.
- Laroche, M., Bergero, J., & Barbarot-Forleo, G. (2001). Targeting Consumers Who are Willing to Pay More for Environmentally Friendly Products. *Journal of Consumer Market*. 18, 503-520.
- Leonidou, L.C., Leonidou, C.N. and Kvasova, O. (2010). Antecedents and outcomes of consumer eco-friendly attitudes and behavior. *Journal of Marketing Management*. 26 (13-14), 1319-1344.
- Mainieri, T., Barnett, E. G., Valdero, T. R., Unipan, J. B., & Oskamp, S. (1997). Green Buying: The Influence of Environmental Concern on Consumer Behavior. *The Journal of Social Psychology*, 137 (2), 189-204.
- Milfont, T. L., Sibley, C. G., & Duckitt, J. (2007). Testing the moderating role of the components of norm activation on the relationship between values and environmental behavior.
- Özdemir, O., Yıldız, A., Ocaktan, E. and Sarışen, Ö. (2004). Tıp Fakültesi Öğrencilerinin Çevre Sorunları Konusundaki Farkındalık ve Duyarlılıkları.. A.Ü. Tıp Fak. Mecmuası.. 3, 117- 127.

Peattie, K., Wright, K., Pujari, D. (1992), Green and competitive: Influences on environmental new product development performance, *Journal of Business Research*, Volume 56, Issue 8, August 2003, Pages 657–671

Schlegelmilch, B.B., Bohlen, G.M. and Diamantopoulos, A. (1996). The link between green purchasing decisions and measures of environmental consciousness. *European Journal of Marketing*. 30 (5), 35-55.

Schultz, P. W., & Zelezny, L. (1999). Values as predictors of environmental attitudes: Evidence for consistency across 14 countries. *Journal of Environmental Psychology*. 19, 255-265.

Schultz, P.W., Nolan, J.M., Cialdini, R.B., Goldstein, N.J. & Griskevicius, V. (2007). The Constructive, Destructive, and Reconstructive Power of Social Norms. *Psychological Science*. 18 (5), 429-434.

Schwepker, C.H. and Cornwell, T.B. (1991). An examination of ecologically concerned consumers and their intention to purchase ecologically packaged products. *Journal of Public Policy and Marketing*. 10, 77-101.

Sipahi, B. Yurtkoru, S. and Çinko, M. (2006). *Sosyal Bilimlerde SPSS'le Veri Analizi*. İstanbul: Beta Yayın Dağıtım A.Ş

Tan, B. C. (2011). The roles of knowledge, threat, and PCE on green purchase behavior. *International Journal of Business and Management*, 6(12), p14.

Tanner, C. and Kast, S.W. (2003). Promoting sustainable consumption: Determinants of green purchases by Swiss consumers. *Psychology & Marketing*. 20 (10), 883-902.

Upadhyaya, A. & Shukla, R. (2011). Environmental Concerns and Influences on Green Consumers: An Empirical Study. *International Journal of Marketing Management IJMM*, 1 (2), 1-9, Retrieved January 7, 2013 from <http://www.jmijtm.com/papers/1299092743Document7.pdf>

Worcester R.(1993). *Public and elite attitudes to environmental issues*. London: MORI.