

## **Pro-environmental Purchasing Behavior: the Inhibiting Influence of the Materialistic Values**

**Irene Tilikidou**, BA, MA, PhD.

Associate Professor,

Department of Marketing, TEI of Thessaloniki

Mailing Address: TEI of Thessaloniki,

P.O. Box 14561, 541 01 Thessaloniki

Phone No: +302310 791 244

Fax No: +302310 791 180

[etilik@mkt.teithe.gr](mailto:etilik@mkt.teithe.gr)

**Antonia Delistavrou**, BA, MSc.

Lecturer,

Department of Marketing, TEI of Thessaloniki

Mailing Address: TEI of Thessaloniki,

P.O. Box 14561, 541 01 Thessaloniki

Phone No: +302310 791 244

Fax No: +302310 791 180

[adelis@mkt.teithe.gr](mailto:adelis@mkt.teithe.gr)

## **Pro-environmental Purchasing Behavior: the Inhibiting Influence of the Materialistic Values**

### **Abstract**

This paper presents the results of a research that examined the Pro-environmental Purchasing Behavior (PPB) and its relationships with consumers' demographics, attitudes, namely Environmental Unconcern and personality variables, namely Materialism and Spheres of Control. K-means clustering indicated three groups of consumers that were named lower, average and higher engagement in PPB. It was found that consumers in the third cluster are mostly women, between 35 and 44 years old, graduates with average incomes. It was also indicated that consumers who hold higher level of locus of control over politics, lower levels of environmental unconcern and mainly lower levels of materialistic values are those who are more likely to enhance PPB.

### **Keywords**

Sustainable Development, Pro-environmental Purchasing Behavior, Materialism

# **Pro-environmental Purchasing Behavior: the Inhibiting Influence of the Materialistic Values**

## **INTRODUCTION**

Is the marketing discipline capable of playing its own role to the desired, although difficult, goal of sustainable economic development? (Van Dam and Apeldoorn, 1996). The ecologically related research has never been in the mainstream of the marketing academic community (Schlegelmilch et al. 1996). However, during the last three decades many authors suggested that public policy and business should become more environmentally sensitive and socially responsible to respond to the people's increasing environmental concerns (Kinnear et al. 1974; Antil and Bennett 1979; Balderjahn 1988; Pickett et al. 1993; Schultz et al. 1995; Schlegelmilch et al. 1996; Roberts and Bacon 1997). From a macro marketing perspective, there have been eminent implications in the literature towards an urgently needed pro-environmental societal shift (Kilbourne and Beckmann 1998).

The importance and urgency for environmental protection has been globally acknowledged lately. The Nobel Prize for Peace for the year 2004 was awarded to Wangari Maatai from Kenya for her work to protect the environment. On the other hand, among other environmentally dangerous episodes, the Kyoto Protocol remains unsigned by Japan, India and the States.

With reference to the marketing academic community key questions regarding consumers' behavior remain unanswered (Straughan and Roberts 1999). It can be reasonably

assumed that no firm would undertake the risk and the trouble to adopt and implement an ecological strategy unless it is forced by regulations or convinced that there is a profitable segment of *Ecologically Conscious Consumers* (ECCs) in the market. At the same time, no matter how much the consumers are ecologically concerned, it is questionable if anyone is going to engage in ecological consumer behavior of any type, unless satisfying alternative choices are being offered in the market (Litvan 1995). There is some evidence that 30 to 40 percent of the environmental degradation has been brought about by the consumption activities of private households (Grunert and Grunert 1993). Empirical research could be partially useful to better understand the *Ecologically Conscious Consumer Behavior* (ECCB) (Roberts 1996; Tilikidou, 2001). Additionally it is noted that the environmental protection can not be achieved solely by the development of the green markets. Even the green markets may very well increase consumption (Kilbourne et al. 1997), while there is a need of reducing the overall consumption to reduce the overall environmental damages.

In late nineties ecologically oriented consumer research was introduced in Greece. Tilikidou (2001) investigated three types of ECCB, namely Pro-environmental Purchasing Behavior, Pro-environmental Post-purchasing (Recycling) Behavior and Pro-environmental Activities, their inter-relationships and the impact of demographics and attitudes upon them. Fotopoulos and Krystallis (2002) offered more insights with regard to the organic market. Later, it was found that materialistic values influence negatively a set of Pro-environmental Post-purchasing Behaviors (Tilikidou and Delistavrou 2004).

Following research suggestions of the above mentioned studies, this study aimed to fill in some of the gaps in the knowledge relevant to ECCB. Focus is on the first type of ECCB, namely Pro-environmental Purchasing Behavior. It is acknowledged that the self-reported surveys

provide limited measurement accuracy of the actual behavior per se (Ajzen and Fishbein 1977). Combinations though of qualitative and quantitative methods in consumer research might add valuable knowledge concerning consumers' choices in their everyday life. Our intention is to suggest that Pro-environmental Purchasing Behavior includes preference of alternative, eco-friendly products as well as aspects of reducing the overall consumption. An effort has been made to investigate what consumers are used to do when buying products and how frequently their purchases are environmentally friendly. The examination also includes the impact of demographics, environmental attitudes and personality variables upon Pro-environmental Purchasing Behavior.

## **RELATED LITERATURE AND THEORETICAL FRAMEWORK**

Previous research in other countries (Table 1) doubted the existence of common demographical characteristics able to describe consumers that enhance various types of ecological behaviors (Balderjhan 1988; Pickett et al. 1993; Roberts 1996). In contrast, evidence from Greece confirmed that education and income are common, positive discriminators of all the ECCB types (Tilikidou 2001, 200).

With regard to attitudes, positive relationships, usually moderate, were reported between attitudes and self-reported purchasing behavior (Table 1). It has many times been indicated that there is a gap between what people think and what people do (Peattie 1995, 154; Shrum et al. 1996). In the ecologically related research, it is only natural to estimate socially desirable high levels of concern and agreement to the necessity of environmental protection (Thørgensen, 1996). With relevance to self-reported behavior though, the relevant scores are never high.

McCarty and Shrum (2001) made the comment that when a consumer acts pro-environmentally the cost for the individual is immediate, while the benefit is at best long-term or even not visible.

It was also observed that most of the scales, which have been used to measure attitudes so far, were designed to estimate positive 'pro-environmental concern' scores (e.g. Bohlen 1993; Tilikidou 2001, 246). In this study we thought that we had better focus on the negative attitudes in order to better understand how they inhibit pro-environmental behavior. This direction might hopefully help in capturing true beliefs that in overall express indifference, disinterest, recklessness about environmental issues. Thus, we named our attitudinal scale 'Environmental Unconcern'. In addition, previous suggestions regarding the consistency to the 'level of specificity' between attitudes and behavior (Ajzen and Fishbein 1977) have also been reflected to this study. Specifically oriented attitudes are considered to be more capable to predict specific pro-environmental behaviors than general social or general environmental attitudes are (Shrum et al. 1994; Ölander and Thørgensen 1995; Martin and Simintiras 1995). 'Environmental Unconcern' was constructed to mirror negative attitudes concerning eco-friendly products and consumption than general environmental issues.

With regard to the psychographic profile of ECCs, a number of personality variables have been used to explain the ecological buying (Table 1). Ebreo and Vinning (2001) claimed that although the personality variables do not usually draw much attention, the possibility exists that they might influence behavior. McCarty and Shrum (2001) suggested that very fundamental beliefs, e.g. value orientations, influence people's both pro-environmental attitudes and behaviors. Values, being enduring beliefs, abstract in nature and not object or situation specific (Rokeach 1973, p. 5) differ from attitudes and may impact behavior incrementally beyond the influence accounted for by specific attitudes.

In this study we chose to focus on materialistic values and examine whether they influence pro-environmental purchasing choices, in the same way they were found to influence post-purchasing behaviors (Tilikidou and Delistavrou 2004). Theoretical suggestions have been made that people who share materialistic values feel happiness when they possess things so they buy more and more to maintain and increase feelings of happiness (Richins 1987, 352; Belk 1995). Thus, they are constantly motivated to over-consume. Over-consumption is considered to be one of the main reasons for the environmental degradation (Peatie 1995, 24). So, materialism is by nature hostile to the sustainable development. In addition it has been previously suggested that there is a significant political dimension involved in the sustainable consumption process (Kilbourne et al. 1997). It has also been proposed that basic beliefs about human's relationships with their political environment may impact their pro-environmental decisions (McCarty and Shrum 2001). Following these suggestions, the theoretical framework of this study incorporated an additional dimension, namely people's perceptions about their control over politics and consequently the impact of these beliefs upon pro-environmental purchasing behavior.

Thus, the theoretical framework of this study is based on the assumption that Ecologically Conscious Consumers are expected to buy less, consume less, choose environmentally less harmful products, incorporate environmental criteria in their purchasing behavior. It is assumed that 'theoretically' these people cannot be 'materialists' (Tilikidou and Delistavrou 2004). They are also expected to feel powerful enough to influence by their own actions global and national evolutions towards environmental protection policies (McCarty and Shrum 2001).

INSERT TABLE 1

## **OBJECTIVES**

The theoretical framework and the literature review guided the formulation of the following research objectives:

- To investigate to what extent Greek consumers are engaged in Pro-environmental Purchasing Behavior and the impact of selected demographics upon this behavior.
- To examine the relationship between Pro-environmental Purchasing Behavior and Environmental Unconcern.
- To expand previous research (which indicated a negative relationship of post-purchasing behavior with materialistic values) by examining the influence of materialistic values and locus of control upon Pro-environmental Purchasing Behavior.

## **METHODOLOGY**

A survey was conducted in the urban area of Thessaloniki. The sampling method was a combination of the two-stage area sampling and the systematic method (Tull and Hawkins 1993, 544; Zikmund 1991, 471). For the sample size the N.S.S.G. formula was used. The data collection resulted in 419 usable questionnaires.

The questionnaire contained 77 variables in total. The dependent variable was the Pro-environmental Purchasing Behavior (PPB) of 23 items (Cronbach's alpha =0.9322). The attitudinal measure of Environmental Unconcern (EU) contained 18 items (a=0.8570). These two constructs were developed by the utilization of both qualitative and quantitative techniques that followed the suggestions of Churchill (1979), Spector (1992) and Robinson et al. (1991). The



initial measures and the relevant suggestions of Tilikidou's (2001) study were used as a basis. Literature search, focus groups, in-depth interviews were used in order to enrich the item pool. Specific effort was taken to differentiate the concept of behavior from the one of attitudes. The PPB scale contains items that ask how frequently consumers make environmental friendly purchases, while the EU is consisted of items that capture consumers' negative beliefs, opinions, thoughts, etc. A pre-testing survey, item-to-total correlations and alpha-if-item deleted techniques were used to refine the measures until the above mentioned values of internal consistency were achieved.

The scale of *Materialism* comprised of 21 items in total, 5 adopted from Richins (1987) and 16 adopted from Belk (1995), providing an alpha of 0.7658. The decision to merge and refine these two constructs was taken due to the following reasons: a) each one involves items slightly but importantly different from the other (Churchill 1979) that complementally provide a more integrated construct b) the merged scale after refinement has been previously used by Tilikidou and Delistavrou (2004) in the same geographical area and provided satisfactory evidence of validation.

For the locus of control examination the *Sociopolitical Control Scale* of Spheres of Control (Paulhus 1983) was used. The scale is comprised of 10 items. The scale examines "the consumers' perceptions about their own ability to affect and control the national and global sociopolitical evolutions" (Robinson et al. 1991, 428). Paulhus (1983) reported a Cronbach's alpha of 0.81, while in the present study alpha was found to be 0.7335.

Pro-environmental Purchasing Behavior was measured on a 7-point frequency scale, from 1=Never to 7=Always. Environmental Unconcern, Materialism and Sociopolitical Control Scale were measured on 7-point Likert scales from 1=Absolutely Disagree to 7=Absolutely

Agree. Age, gender, education, income and occupation were measured on the N.S.S.G scales, which were grouped when necessary in some statistical techniques.

## **RESULTS**

The demographics of the sample were compared to the relevant variables of the Greek population through chi-square analysis and no significant differences were found. Pro-environmental Purchasing Behavior takes theoretical values from 23 to 161, provided a Mean of 84.4411 (St.D. = 24.7185) indicating a rather low level of adoption. Environmental Unconcern takes theoretical values from 18 to 126, with a Mean of 64.1086 (St.D. =16.8203) indicated low negative attitudes toward environmental protection and pro-environmental purchasing (see Appendix). Materialism takes theoretical values from 21 to 147, with a Mean of 72.7066 (St.D. =14.5398) indicated rather low materialistic values. Sociopolitical Control Scale takes theoretical values from 10 to 70, a Mean of 38.1060 (St.D. =8.8322) indicating a moderate level of locus of control.

### **Analysis**

Pearson's parametric correlation was employed and indicated that there are statistically significant ( $p < 0.001$ ) negative, moderate relationships between Pro-environmental Purchasing Behavior (PPB) and Environmental Unconcern (EU) ( $r = -0.473$ ) as well as between PPB and Materialism (M) ( $r = -0.313$ ), while there is a statistically significant ( $p < 0.001$ ), positive and moderate relationships between PPB and Sociopolitical Control Scale (SCS) ( $r = 0.319$ ).

Multiple regression analysis (stepwise method) revealed that the interaction between all the three independent variables can explain 26.8% of the variance in PPB. The resulting equation is:

$$\text{PPB} = 9.331 - 0.355 \text{ EU} + 0.180 \text{ SCS} - 0.143 \text{ M} \quad (\text{Adjusted R square}=0.268)$$

### **Clustering Pro-environmental Purchasing Behavior**

In an effort to gain a deeper understanding of the influence of the attitudinal and the personality variables upon the consumers' PPB, cluster analysis was employed. *K-Means cluster analysis* was initially utilized as it classifies cases into relatively homogeneous groups, indicating distinct for each group degree of involvement in the behavior under examination (Malhotra 1999, p. 610). The behavioral items of PPB were entered in the analysis and a three clusters' solution was found appropriate for interpretation (Table 2). Cluster 1 contains 143 cases (34.14%) grouping consumers who scored lower than their counterparts in all behavioral items. Cluster 2 contains 155 cases (36.99%) grouping consumers who obtained scores higher than those in the first cluster but considerably lower than those in the next cluster. Cluster 3 contains 101 cases (24.10%) grouping consumers who obtained the highest scores in all cases (4.77% of the cases were excluded after iteration). The three clusters indicate relatively *lower*, *average* and *higher* degree of involvement in PPB.

Consumers in Cluster 3 almost always avoid over-consumption of plastic bags (A22), water and energy (A20, 21) and prefer recycled, recyclable and reusable products (A17, 18, 19). Most of times they try to reduce their overall consumption (A23), find eco-label products (A04) and acquire information about the environmental consequences of products (A03). They buy eco-friendly detergents especially if there is no price or efficacy difference with the conventional

products (A01, 02, 06, 07) and when they are fully convinced that the detergents are indeed friendly to the environment (A08). They prefer recycled paper products most of times they buy stationary or home use paper products (A09, 10) even if they are less beautiful and somewhat more expensive than the conventional products (A11, 12). They most of the times prefer to buy organic fruits and vegetables (A05) and relatively less frequently pasta and wine (A13, 14). Half of the times they make a purchase they prefer eco-friendly toiletry and clothing (A15, 16).

#### INSERT TABLE 2

Pearson's correlation analysis was applied separately in each cluster between Pro-environmental Purchasing Behavior and each one of Environmental Unconcern, Materialism and Sociopolitical Control Scale (Table 3). The third Cluster is the most interesting one as it groups the pro-environmental purchasers. In this Cluster the coefficients are different than those of the whole sample. It is observed that PPB is correlated - statistically significantly ( $p < 0.001$ ) negatively and moderately to M ( $r = -0.375$ ) and EU ( $r = -0.331$ ), while the influence of SCS ( $r = 0.243$ ) is weak and in the third place, in terms of strength.

#### INSERT TABLE 3

Multiple regression analysis was then employed and applied separately to each cluster with regard to PPB versus EU, M and SCS. Focusing in Cluster 3 (higher involvement in PPB) we obtained the following resulting equation:

$$PPB = 130.528 - 0.373M \quad (\text{Adjusted R square} = 0.125)$$

It is observed that the only included variable is Materialism, which is able to explain 12.5% of the variance in PPB.

In addition, *hierarchical clustering* was employed in an effort to gain a deeper understanding of the associations among all items of PPB and all items of the measure of Materialism (see Appendix). Focus was placed upon Materialism as it was found to be the only predictor of PPB in Cluster 3 (higher involvement in PPB). Hierarchical cluster analysis groups variables, not cases (Sudman and Blair 1998, p. 558) in relatively homogeneous groups (Malhotra 1999, p. 610). The analysis was applied in the cases of K-means Cluster 3 and resulted in a two clusters solution (Figure 1). Although no obvious sense of the grouping is visible, it seems that there are shuttle associations among certain aspects of behavior and certain aspects of values. It is observed that in Cluster A the behavioral items referring to reduction of consumption (A23), preference for eco-friendly detergents (A06, 07, 08), willingness to pay for eco-friendly (A01, 02, 03) and eco-label products (A04), organic fruits and vegetables (A05), recyclable and reusable products and packaging (A17, 18, 19, 22) as well as conservation of water and energy (A20, 21) are joint together with those items of Materialism that express a loose bound with possessions (M04, 13, 15, 17, 18, 19) and an unwillingness to buy material things (M01, 02, 03). In Cluster B items concerning recycled paper products (A09, 10, 11, 12) and organic wine, pasta, clothing and toiletry (A13, 14, 15, 16) are joint together with those items of Materialism that express lack of covetousness (M05, 10, 12, 20, 21) as well as generosity (M06, 07, 08, 09, 11, 14, 16). The grouping of the variables in the two hierarchical clusters needs further discussion.

INSERT FIGURE 1

### **The Demographics of PPB**

Furthermore, an effort was made to examine the demographics into each one of the three K-means clusters in PPB. The categorical variable Cluster Membership was created. The chi-

square test was applied between Cluster Membership and each one of the demographic variables (Table 4). The results indicated that statistically significant relationships exist between Cluster Membership and gender ( $p < 0.1$ ), age ( $p < 0.05$ ), education ( $p < 0.05$ ), and income ( $p < 0.05$ ).

INSERT TABLE 4

## **DISCUSSION**

Results revealed that the most adopted types of PPB by the Greeks consumers are those that concern conservation and reuse of products. One can never be sure whether these behaviors are driven by a conscious decision to help the environmental protection or they are motivated by traditional conservatism or by financial motives. The results also confirmed previous findings in the same geographical area (Tilikidou 2001, 205) indicating that Greeks are more willing to choose eco-friendly products (detergents, recycled paper products, organics etc) if they are not significantly different in price and efficacy. Particularly in the case of organics, the findings indicated a moderate frequency of purchasing behavior which comes in line with previous results provided by Fotopoulos and Krystallis (2002).

Further, the findings of this study expanded to an extent the knowledge regarding the factors that influence pro-environmental behaviors in this geographical area. With regard to attitudes, the approach of examining Environmental Unconcern instead of positive attitudes added some knowledge of people's negative insights that inhibit environmentally friendly choices. With regard to materialism the findings of this study expanded previous research, which indicated a negative influence of the materialistic values upon post-purchasing behaviors

(Tilikidou and Delistavrou 2004). Also, for the first time in Greece evidence was found with respect to the influence of locus of control upon pro-environmental purchasing behavior.

K-Means clustering seems similar to Fotopoulos's and Krystallis's (2002) approach, which indicated three level of 'awareness in buying organics' and expands that knowledge by incorporating the examination of more aspects of PPB.

The results also indicated that although specific attitudes are capable of affecting behavior, values can provide further evidence of influence on behavior obtained by Materialism and Sociopolitical Control Scale. It is observed that in the case of consumers more involved in PPB, Materialism was revealed to be the only predictor variable. It can be argued that the statistically significant findings of this research are not impressive as the multiple regression indicated that less than 15% of the variance in PPB can be explained by Materialism. However, regression results are not usually very high in consumer research. It can not be argued by any means that a clear picture of the fundamental beliefs – that guide consumers to act pro-environmentally – is revealed. For example there is much to be more deeply understood as to the information gained by the two clusters of the hierarchical clustering. No obvious sense of the grouping of certain behaviors and certain aspects of materialism is evident. Both K-means and hierarchical clustering though, provided evidence that value orientation is indeed a promising path to follow in an effort to better understand what is behind pro-environmental behaviors, besides attitudes and demographics.

It has to be noted that all the above mentioned points should be understood valid enough with reference to the Greek cultural and social environment. Due to this reason, direct comparisons with previous research results were avoided. Moreover, comparisons could be argued as being inappropriate given the discrepancies in studies' methodological designs.

## CONCLUSIONS

This research examined a self-reported set of pro-environmental purchasing behaviors that contribute to the sustainable development. Evidence was found that Greek consumers are mostly used to conserve energy and water, buy reusable and recyclable products and containers, while they choose to buy eco-friendly detergents and paper products if these are competitive in terms of price and efficacy. They seem less involved in buying organics, more often fruits and vegetables than pasta, wine, toiletry and clothing. It is underlined that consumers only occasionally try to reduce their overall consumption.

K-Means cluster analysis revealed three clusters indicating lower, average and higher involvement in PPB. Focusing on the third cluster demographical analysis indicated that consumers reporting a higher involvement in PPB are mostly women, between 35 and 44 years old, graduates with average incomes (Table 4). With regard to attitudes it was found that the more unconcerned with environmental protection consumers are, the less they make environmentally friendly purchasing choices. In Cluster 3 correlation indicated that Materialism, Environmental Unconcern and Sociopolitical Control Scale (in declining order) affect PPB. Multiple regression revealed that only Materialism can predict PPB. Thus, it was concluded that consumers who hold higher level of locus of control over politics, lower levels of environmental unconcern and mainly lower levels of materialistic values are those who are more likely to enhance PPB.

This study was not able to overcome the social desirability problem that is evident in every self-reported survey in ecologically related research. However, some clear evidence was



found that people who do not derive much satisfaction and happiness by material goods are more likely to act in favor of the environmental protection by engaging in pro-environmental purchasing behaviors. It is also well understood that these consumers are a minority in the Greek society, which like every other Western European community is characterized by the tendency to over-consume (final consumption expenditure was almost doubled between 1995 and 2003, N.S.S.G 2004). Eco-friendly products alone cannot formulate a dependable solution. These products are not many, not easily available, and not always competitive to the conventional products in terms of price and efficacy. Greek business interested in alternative ecological offerings may find in the results of this study valuable insights regarding an optimum marketing mix of their products and services. They should incorporate in their strategies creative campaigns to target the highly involved consumers taking into consideration their characteristics and preferences. Besides expanding the green market, responsible policies should consider and acknowledge the need to reduce the overall over-consumption in the society. Governmental, non-governmental and non-profit organizations should aim at increasing not only consumers' attitudes but their non-materialistic and anti-materialistic values too. Future research could consider investigating the potential effect of the materialistic values upon all the types of ECCB. Moreover, the grouping of the variables in the clusters of hierarchical clustering needs further qualitative investigation to understand more deeply how (anti)materialistic values inhibit pro-environmental behaviors and what insights motivate people to over-consume.

## TABLES & FIGURES

**Table 1: Previous research results between Pro-environmental Purchasing Behavior and demographic, attitudinal & personality variables**

<i>Age</i>	<b>Positive</b>	Balderjahn, 1988; Scott and Willits, 1994; Roberts, 1996
	<b>Negative</b>	Buttel, 1979
<i>Education</i>	<b>Positive</b>	Buttel and Flinn, 1976; Balderjahn, 1988; Arcury, 1990; Scott and Willits, 1994; Roberts, 1996, Tilikidou, 2001
<i>Income</i>	<b>Positive</b>	Webster, 1975; Balderjahn, 1988; Arcury, 1990; Scott and Willits, 1994; Tilikidou, 2001
	<b>Negative</b>	Roberts, 1996
<i>Gender</i>	<b>Women</b>	Webster, 1975; Roberts, 1996
	<b>Men</b>	Arcury, 1990; Scott and Willits, 1994
<i>Attitudes</i>	<b>Positive</b>	Crosby et al., 1981; Antil, 1984; Balderjahn, 1988; Scott and Willits, 1994; Schlegelmilch et al., 1996; Roberts, 1996; Minton and Rose, 1997
<i>Alienation</i>	<b>Negative</b>	Anderson and Cunningham, 1972; Crosby et al., 1981; Balderjahn, 1988
<i>Dogmatism</i>	<b>Negative</b>	Anderson and Cunningham, 1972
<i>Locus of Control</i>	<b>Positive</b>	Henion and Wilson, 1976; Balderjahn, 1988
<i>Understanding</i>	<b>Positive</b>	by Kinnear et al., 1974
<i>Dominance</i>	<b>Positive</b>	Webster, 1975
<i>Tolerance</i>	<b>Positive</b>	Webster, 1975

**Table 2: K-means results**

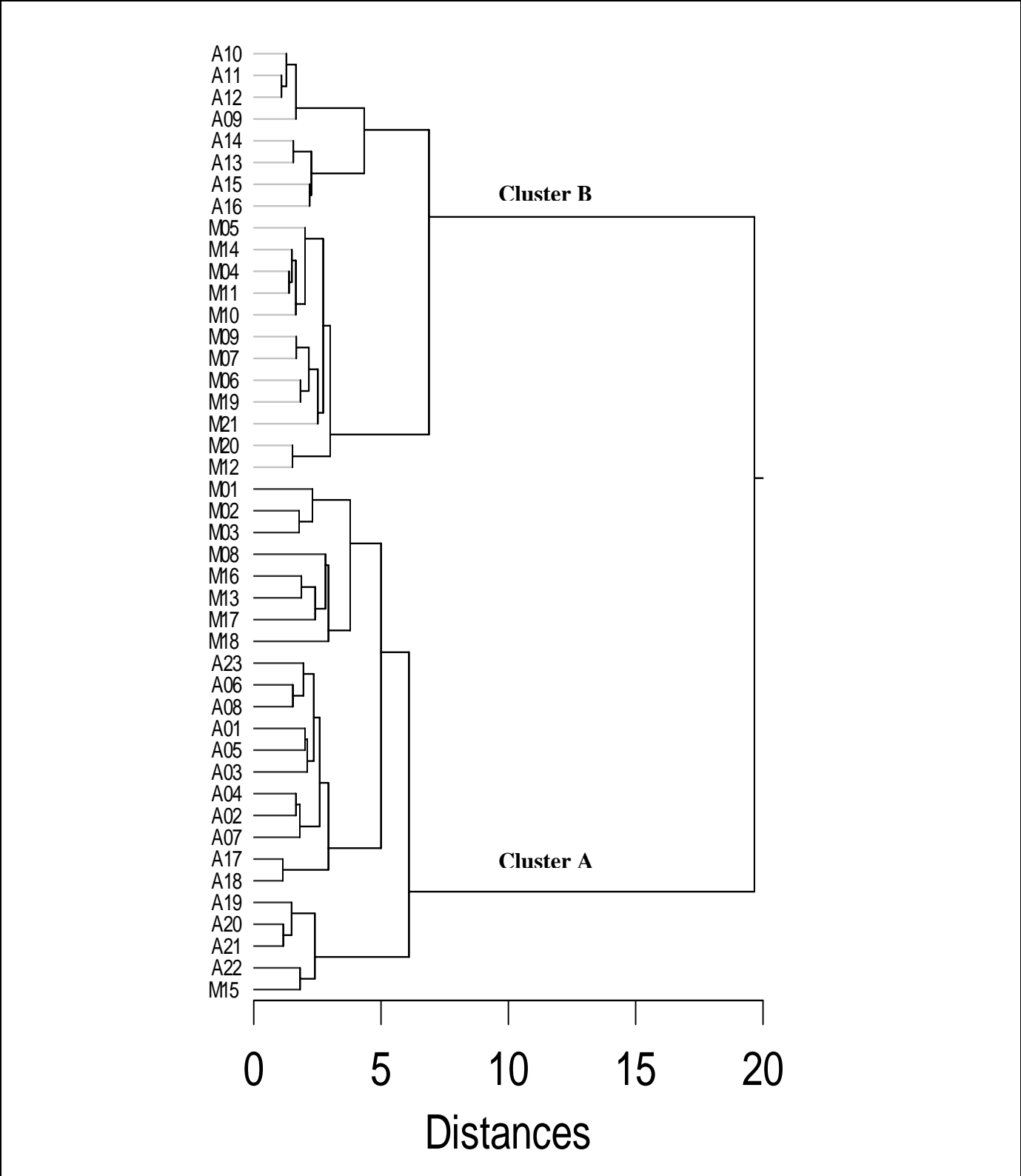
Items	Cluster 1 143 Cases (34.14%)		Cluster 2 155 Cases (36.99%)		Cluster 3 101 Cases (24.10%)	
	<i>Mean</i>	<i>Std. Dev.</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Mean</i>	<i>Std. Dev.</i>
A01 I choose the environmentally friendly alternative of a product, if there is no significant price difference	3.1259	1.5376	4.3935	1.4616	5.6337	0.9871
A02 I choose the environmentally friendly alternative of a product, if there is one, regardless of price	2.5105	1.3420	3.0774	1.2355	4.7624	1.0213
A03 I am interested in asking about the environmental consequences of a product before buying it	2.5734	1.2809	3.4258	1.6824	4.9505	1.3295
A04 I try to find eco-label products	2.2378	1.1442	2.7935	1.3275	5.0396	1.2643
A05 I prefer to buy organic fruits and vegetables	2.6294	1.6040	3.4710	1.6487	5.1287	1.2301
A06 I prefer environmentally friendly detergents, even if they are more expensive	2.3287	1.3310	3.0903	1.4875	5.0891	1.0780
A07 I prefer to buy environmentally friendly detergents, even if they are not equally effective	1.6853	0.9745	2.3097	1.3171	4.0297	1.3524
A08 I would change my usual detergent brand for another, more friendly to the environment	2.7972	1.4991	3.6710	1.5123	5.4752	1.1798
A09 I prefer to buy recycled paper stationary	2.2517	1.2586	3.6903	1.5356	5.0495	1.4309
A10 I prefer recycled toilet paper, tissues	2.0350	1.1285	3.8710	1.6064	5.3861	1.2081
A11 I choose the recycled paper products, although they are not as white	1.9161	1.1352	3.6258	1.6870	5.1386	1.3041
A12 I prefer the recycled paper products, even if they are more expensive	1.8671	1.0087	2.8710	1.5235	4.7327	1.1653
A13 I prefer organic wine	2.1049	1.4178	2.5742	1.5993	4.1782	1.6211
A14 I prefer organic pasta	1.8951	1.3306	2.5613	1.4146	4.7030	1.3751
A15 I prefer organic clothing	1.9161	1.4511	2.2065	1.3708	3.8515	1.6756
A16 I buy ecological toiletry	1.7692	1.0986	2.5226	1.5133	4.1584	1.7131
A17 I buy recyclable products	2.8601	1.3033	4.6000	1.1316	5.5347	1.0056
A18 I buy products in recyclable packages	3.1329	1.5755	4.9677	1.2557	5.4851	1.1799
A19 I buy products in reusable containers	3.7762	1.7010	5.4000	1.2618	5.6337	1.3618
A20 I try to use less water	3.8811	1.6888	5.4903	1.2503	5.5743	1.3217
A21 I try to use less energy	4.2308	1.4665	5.6645	1.2182	5.6535	1.2364
A22 I carry my own bags so that I don't get plastic bags from the supermarket	4.6154	1.6864	5.6323	1.4097	6.2475	1.0140
A23 I reduce overall consumption	2.9231	1.6954	3.1677	1.4586	5.1287	1.3089

**Table 3: Pearson's Correlation between Pro-environmental Purchasing Behavior and Environmental Unconcern, Materialism & Sociopolitical Control Scale in all clusters**

		<i>Pro-environmental Purchasing Behavior</i>			
		<i>Whole sample</i>	<i>Cluster 1</i>	<i>Cluster2</i>	<i>Cluster 3</i>
<i>Environmental Unconcern</i>	r	-0.473	-0.275	-0.361	-0.331
	p	0.000	0.001	0.000	0.006
<i>Sociopolitical Control Scale</i>	r	0.319	0.118	0.296	0.243
	p	0.000	0.169	0.000	0.041
<i>Materialism</i>	r	-0.313	0.065	-0.335	-0.375
	p	0.000	0.461	0.000	0.002

**Table 4: Chi square between cluster membership and demographics (% within each Cluster)**

<i>Cluster Membership with</i>	<b>Cluster 1</b>	<b>Cluster 2</b>	<b>Cluster 3</b>	<b>Whole sample</b>
<b><i>Gender</i></b>	<i>Value (x<sup>2</sup>): 5.884 df: 2 Sig.: 0.058</i>			
Man	55.2	50.3	39.6	49.4
Woman	44.8	49.7	60.4	50.6
Total	100.0	100.0	100.0	100.0
<b><i>Age</i></b>	<i>Value (x<sup>2</sup>): 22.823 df: 12 Sig.: 0.029</i>			
15-24 years old	32.2	23.2	16.8	24.8
25-34 years old	28.0	19.4	21.8	23.1
35-44 years old	13.3	24.5	27.7	21.3
45-54 years old	13.3	17.4	15.8	15.5
55-64 years old	6.3	6.5	7.9	6.8
65-74 years old	7.0	5.2	7.9	6.5
More than 75 years old		3.9	2.0	2.0
Total	100.0	100.0	100.0	100.0
<b><i>Education</i></b>	<i>Value (x<sup>2</sup>): 21.353 df: 10 Sig.: 0.019</i>			
No primary school	2.1	0.6	1.0	1.3
Primary school	7.0	11.0	4.0	7.8
High school	44.1	40.0	34.7	40.1
Student	24.5	21.3	14.9	20.8
Graduate	20.3	22.6	38.6	25.8
Post-graduate	2.1	4.5	6.9	4.3
Total	100.0	100.0	100.0	100.0
<b><i>Income</i></b>	<i>Value (x<sup>2</sup>): 10.886 df: 4 Sig.: 0.028</i>			
< 10,000 Euros	23.3	27.6	28.6	26.3
10,001 – 25,000 Euros	45.1	55.9	54.1	51.6
> 25,000 Euros	31.6	16.6	17.3	22.1
Total	100.0	100.0	100.0	100.0
<b><i>Occupation</i></b>	<i>Value (x<sup>2</sup>): 4.771 df: 8 Sig.: 0.782</i>			



**Figure 1: Hierarchical Cluster Dendrogram**

## REFERENCES

- Ajzen, I., and Fishbein, M. 1977. Attitude – Behavior Relations: A Theoretical Evaluation and Review of Empirical Research. *Psychological Bulletin* 84: 888-918.
- Anderson, T. W., Jr., and Cunningham, W. H. 1972. The Socially Conscious Consumer. *Journal of Marketing* 36(3): 23-31.
- Antil, J. H 1984. Socially Responsible Consumers: Profile and Implications for Public Policy. *Journal of Macromarketing*, 4(2):18-39.
- and Bennett, D. 1979. Construction and Validation of a Scale to Measure Socially Responsible Consumption Behavior. In: *The Conserver Society*, edited by K. E. II Henion, and T. C. Kinnear, 51-68. Chicago IL.: American Marketing Association.
- Arcury, T. A. 1990. Environmental Attitude and Environmental Knowledge. *Human Organisation* 49(4): 300-04.
- Balderjahn, I. 1988. Personality Variables and Environmental Attitudes as Predictors of Ecologically Responsible Consumption Patterns. *Journal of Business Research* 17: 51-56.
- Belk, R. W. (1996), “Hyperreality and Globalization: Culture in the Age of Ronald McDonald”, *Journal of International Consumer Marketing* 8(3):23-37 .
- Bohlen, G. M., Diamantopoulos, A., and Schlegelmilch, B. B. 1993. Consumer Perceptions of the Environmental Impact of an Industrial Service. *Marketing Intelligence and Planning* 11(1): 37-48.
- Buttel, F. H. 1979. Age and Environmental Concern. A Multivariate Analysis. *Youth & Society* 10(3): 237-56.
- and Flinn, W. L. 1976. Environmental Politics: The Structuring of Partisan and Ideological Cleavages in Mass Environmental Attitudes. *Sociological Quarterly* (17): 477-90.
- Churchill, G. A., Jr. 1979. A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research* 16: 64-73.
- Crosby, L. A., Gill, J. D., and Taylor, J. R. 1981. Consumer/Voter Behavior in the Passage of the Michigan Container Law. *Journal of Marketing* (45): 19-32.
- Ebreo, A. and Vining, J. 2001. How Similar Are Recycling and Waste Reduction? Future Orientation and Reasons for Reducing Waste as Predictors of Self-Reported Behavior.

*Environment and Behavior* 33 (3): 424 – 48.

Fotopoulos, C. and Krystallis, A. 2002. Purchasing Motives and Profile of the Greek Organic Consumer: A countrywide survey. *British Food Journal* 104(9): 730-65.

Ger, G. and Belk, R. W. 1996. Cross-cultural Differences in Materialism. *Journal of Economic Psychology* 17: 55 – 77.

Grunert, S. C. and Grunert, K. G. 1993. What's green about green consumers besides their environmental concern? *Proceedings of the 22<sup>nd</sup> Annual Conference of the European Marketing Academy*, Barcelona, Spain, May, 2: 1611-13.

Henion, K. E. II, and Wilson, W. H. 1976. The Ecologically Concerned Consumer and Locus of Control. In: *Ecological Marketing* edited by K. E. II Henion, and T. C. Kinnear, 131-144. Austin, TX.: American Marketing Association.

Hines, J. M., Hungerford, H. R., and Tomera, A. N. 1987. Analysis and Synthesis of Research on Responsible Behavior: A Meta-Analysis. *Journal of Environmental Education* 18: 1-8.

Kilbourne, W. E., and Beckmann, S. C. 1998. Review and Critical Assessment of Research on Marketing and the Environment. *Journal of Marketing Management* 14: 513-532.

-----, McDonagh, P. and Prothero, A. 1997. Sustainable Development and the Quality of Life: A Macromarketing Challenge to the Dominant Social Paradigm. *Journal of Macromarketing*, 17(2): 4-24.

Kinnear, T. C., Taylor, J. R., and Ahmed, S. A. 1974. Ecologically Concerned Consumers: Who are they? *Journal of Marketing* 38(2): 20-24.

Litvan, L. M. 1995. Going "Green" in the '90s. *Nation's Business* 83(2): 30-2.

Malhotra, N. K. 1999. *Marketing Research: An Applied Orientation*. Third edition, New Jersey, Englewood Cliffs: Prentice Hall, Inc.

Martin, B., and Simintiras, A. C. 1995. The Impact of Green Product Lines on the Environment: Does What They Know Affect How They Feel? *Marketing Intelligence & Planning* 3(4): 16-23.

McCarty, J. A. and Shrum, L. J. 2001. The Influence of Individualism, Collectivism, and Locus of Control on Environmental Beliefs and Behavior. *Journal of Public Policy & Marketing* 20(1): 93-104.

National Statistical Service of Greece (N.S.S.G.) 2004. Final Consumption Expenditure of Households. In *National Accounts*. National Statistical Service of Greece [cited 21 December [2004]. Available from [www.statistics.gr](http://www.statistics.gr)

- Ölander, F., and Thøgersen, J. 1995. Understanding of Consumer Behaviour as a Prerequisite of Environmental Protection. *Journal of Consumer Policy* 18: 345-85.
- Paulhus, D. 1983. Sphere-specific Measures of Perceived Control. *Journal of Personality and Social Psychology* 44: 1253-65. In: *Measures of Personality and Social Psychological Attitudes*, edited by J. P. Robinson, D. R. Shaver, and L. S. Wrightsman, 1991. Academic Press.
- Peattie, K. 1995. *Environmental Marketing Management*. London: Pitman Publishing.
- Pickett, G. M., Kangun, N., and Grove, S. J. 1993. Is There a General Conserving Consumer? A Public Policy Concern. *Journal of Public Policy & Marketing* 12(2): 234-43.
- Richins, M. L. 1987. Media, Materialism, and Human Happiness In: *Advances in Consumer Research* edited by M. Wallendorf and P. Anderson, 14: 352 – 56. Provo, UT: Association for Consumer Research.
- Roberts, J. A. 1996. Green Consumers in the 1990s: Profile and Implications for Advertising. *Journal of Business Research* 36: 217-31.
- and Bacon, D. R. 1997. Exploring the Subtle Relationships between Environmental Concern and Ecologically Conscious Consumer Behavior. *Journal of Business Research* 40: 79-89.
- Robinson, J. P., Shaver, D. R., and Wrightsman, L. S. 1991. *Measures of Personality and Social Psychological Attitudes*. Academic Press.
- Rokeach, M. 1973. *The Nature of Human Values*. New York: The Free Press.
- 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., Oskamp, S., and Mainieri, T. 1995. Who Recycles and When? A Review of Personal and Situational Factors. *Journal of Environmental Psychology* (15): 105-21.
- Scott, D., and Willits, F. K. 1994. Environmental Attitudes and Behavior. A Pennsylvania Survey. *Environment and Behavior* 26(2): 239-60.
- Shrum, L. J., Lowrey, T. M., and McCarty, J. A. 1994. Recycling as a Marketing Problem: A Framework for Strategy Development. *Psychology and Marketing* 11( 4): 393-416.
- , ----- and ----- 1996. Using Marketing and Advertising Principles to Encourage Pro-Environmental Behaviors. In: *Marketing and Consumer Research in the Public Interest*, edited by R. P. Hill: Sage Publications Inc.



- Spector, P. R. 1992. Summated Rating Scale Construction: An Introduction. In: *Quantitative Applications in the Social Sciences, series no. 07-082*, edited by M. S. Lewis-Beck. Newbury Park, California: Sage Publications, Inc.
- Straughan, R. D. and Roberts, J. A. 1999. Environmental segmentation alternatives: a look at green consumer behavior in the new millennium. *Journal of Consumer Marketing* 16(6): 558-75.
- Sudman, S., and Blair, E. 1998. *Marketing Research: A Problem Solving Approach*. New York: McGraw-Hill, Inc.
- Thørgensen, J. 1996. Recycling and Morality: A Critical Review of the Literature. *Environment and Behavior* 28: 536-58.
- Tilikidou, I. 2001. Ecologically Conscious Consumer Behaviour. Ph.D. diss., University of Sunderland, UK.
- and Delistavrou, A. 2001. Utilization of Selected Demographics and Psychographics in Recycling Behavior Understanding: A Focus on Materialism, *International Greener Management Journal*, 34: 75-93.
- and ----- 2004. The Influence of the Materialistic Values on Consumers' Pro-Environmental Post-Purchase Behavior. In: *Marketing Theory and Applications, Proceedings of the 2004 American Marketing Association Winter Educators' Conference*, edited by W. L. Cron., and G. S. Low, 15: 42-49. Chicago IL.: American Marketing Association.
- Tull, D. S. and Hawkins, D. I. 1993. *Marketing Research*. Sixth edition, New York, McMillan.
- Van Dam, Y. K., and Apeldoorn, A. C. 1996. Sustainable Marketing. *Journal of Macromarketing*, Fall: 45-56.
- Zikmund, W. G. (1991). *Exploring Marketing Research*. Fourth edition, Orlando, The Dryden Press
- Webster, F. E., Jr. 1975. Determining the Characteristics of the Socially Conscious Consumer. *Journal of Consumer Research* (2):188-96.

## Appendix

### Environmental Unconcern measure

E01: To be honest I don't feel that environmental problems affect my personal, every day life

E02: There are other problems that bother me more than environmental destruction does E03:

Personally, I am not ready to pay from my pocket to protect the environment E04: My personal

responsibility is to leave to my children belongings, not a clean environment E05: Governments

and international organizations, not me, should take the necessary measures to protect the

environment E06: I have never been seriously concerned about issues such as ground water and

sea pollution E07: I don't believe that the environment would be protected if we used less water,

electricity and oil E08: I don't think that I have anything to do with the destruction of animals or

plants E09: The environmental policies of the main political parties is not the main issue I

consider when deciding how to vote E10: I do not think we should sacrifice economic

development just to protect the environment E11: More money to the environmental protection

means less money for jobs E12: It is not consumption to be blamed for the environmental

destruction E13: The benefits of modern consumer products are more important than the

pollution which results from their production and use E14: It is hard to find ecological products

E15: I believe ecological products are more expensive E16: Most ecological products are less

beautiful E17: Most ecological products are of lower quality E18: I think that the so called

ecological products is another advertisement trick

### Materialism measure

M01: I would like to be rich enough to buy anything I want M02: I'd be happier if I could afford

to buy more things M03: It sometimes bothers me quite a bit that I can't afford to buy all the

things I want M04: People place too much emphasis on material things \* M05: It's really true

that money can buy happiness M06: I enjoy donating things for charity\* M07: I enjoy sharing what I have\* M08: I do not enjoy donating things to the needy M09: I don't like to lend things, even to good friends M10: When friends do better than me in competition it usually makes me feel happy for them\* M11: I enjoy having people I like stay in my home\* M12: When friends have things I cannot afford it bothers me M13: I worry about people taking my possessions M14: I don't mind giving rides to those who don't have a car\* M15: I get very upset if something is stolen from me, even if it has little monetary value M16: I don't like to have anyone in my home when I'm not there M17: I don't get particularly upset when I lose things\* M18: I am less likely than most people to lock things up\* M19: If I have to choose between buying something for myself versus for someone I love, I would prefer buying for myself M20: I am bothered when I see people who buy anything they want M21: There are certain people I would like to trade places with

\* Reverse coded items