

Proposition of a Typology of Tunisian Consumers Based on their Ecologically Conscious Behavior

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Abstract

The environmental movement led companies to consider ecology as a strategic decisional criterion. Concerns have started to be integrated in the study and practice of management and marketing. The object of this research is to propose a typology of Tunisian consumers in terms of their ecologically conscious behavior. More specifically, this work describes the identified groups based on socio-demographic variables (such as gender, age, income, socio-professional category and religiosity) and on the psychographic variable perceived consumer effectiveness. To this end, we conducted a questionnaire survey next to 200 consumers. The empirical results show the existence of four consumer profiles which are the convinced, aware, mitigated and resistant which led us to produce some useful recommendations for marketing managers wishing to be positioned on the ecological axis.

Keywords: ecologically conscious consumer behavior, perceived consumer effectiveness, socio-demographic variables, typology.

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Introduction

During the last decades, ecology has become a social priority in which various actors share responsibilities (producers, consumers, citizens, government).

Environmentalist movements drive the companies to consider ecology as a strategic decisional criterion. Such concerns started to be involved in the study and practice of

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management and marketing. Within the scope of marketing research, this movement is called « Ecological Marketing» or « green marketing».

Green marketing covers all the areas that could generate and facilitate any type of exchange aiming at satisfying human desires and needs in such a way that the latter's satisfaction takes place with a minimum negative impact on the natural environment (Stanton and Futrel, 1987).

Thus the term « green » is associated to the environment or to ecology and refers to problems linked to the air, water and earth. The term « green » is mainly used to describe consumers with ecological sensitivity (Hackett and *al.*, 1991).

At the level of the literature, concerns on ecology were treated through various approaches. Some studies explored the consumption schemes with ecological responsibility such as knowledge of ecological products (Cronwell and Schwepker, 1995; Balderjahn, 1988) as well as the purchasing motivations of an ecological product (Kréziak, 1995). Others were interested in the conceptualization and operationalization of concerns for the environment (Giannelloni, 1998). Other studies were interested in the description of the profiles of individuals who are concerned with ecology through the examination of socio-demographic and psychographic characteristics of the respondents (Pickett et al., 1993; Kréziak and Valette-Florence, 1997). Our research is inscribed within the framework of the last approach. In fact, several studies tried to describe the green consumer (Scott and Willits, 1994; Martin and Simintiras, 1995; Shrum and *al.*, 1995; Awad, 2011); however, to this day, there is no commonly accepted profile hence the need for the present research which tries to propose a typology of consumers in terms of their ecologically conscious behaviors (ECCB: Ecologically Conscious Consumer Behavior). The description of the identified groups will be done in addition to the socio-demographic variables (such as gender, age, income, socio-professional category or SPC and religiosity) and the psychographic variable « Perceived Consumer Effectiveness ». This will help propose useful recommendations to marketing managers hoping to position themselves in the ecological axis.

Theoretical Framework

Environmental Concern (EC)

There have been various definitions of environmental concern proposed in the literature. These definitions depend on the complex and unstable nature of the term (Chan and Lau, 2004).

Maloney and Ward (1973) conceptualize environmental concern as being the totality of knowledge about ecology, the degree of affection towards ecology and the level of verbal commitment « ecological intention » and of concrete commitment « ecological behavior» to ecological problems. Crosby and *al.* (1981) define environmental concern as an extremely protective attitude towards the environment. To Chan and Lau (2004), EC is synonymous to attitude towards the environment.

Studies on concern for the environment dealt with several levels of analyses. Some studies focused on the evaluation of specific behavior such as recycling, green consumption, and energy conservation. (Arbuthnot, 1977; Pickett and *al.*, 1993). Others dealt with the evaluation of general behavior (Antil, 1984; Roberts, 1996a and b). Therefore, there is no ground to compare the conducted studies. In fact, comparing two studies can only be done if they are about the same level of analysis.

The analysis of the literature shows the links between environmental concern and some ecological behaviors (Roberts, 1996; Chan and Lau, 2000).

For instance, Bamberg (2003) shows that the degree of environmental concern has a direct and strong influence on behavior in terms of recycling and energy saving, choice to purchase environmentally friendly products or even in the way people travel.

Bang and *al.* (2000) stipulate that consumers who are more concerned with environmental issues are more ready to pay higher prices for renewable energy than those who are less concerned.

Kim and Choi (2005) highlight that it is more probable that people who are more concerned about environmental issues buy environmentally friendly products than those who have less concerns in this respect.

The literature review on environmental concern indicates that researchers have not managed to explain the social bases of an ecological behavior whence the necessity to establish the profile of ecological consumers.

Profile of the ecological consumer

Ecological marketing literature tried to identify the characteristics of the profiles of individuals who are concerned with ecology. The first attempts date back to the 1960s when Berkowitz and Lutterman (1968) studied the profile of socially responsible consumers. In fact, a socially responsible consumer is « *a consumer who takes into account the public consequences of his/her private consumption and who tries to use his/her purchasing power to introduce change in society* » (Webster, 1975).

Starting from the 1990s (called « earth decade »), interest in ecology was considerable on the academic level. Research then focused on the description of the consumer starting from his/her ecological behavior. The works of Roberts (1996a) highlighted the concept of « ECCB: Ecologically Conscious Consumer Behavior ». Roberts indicated that the consumer is considered as environmentally concerned if he/she buys products and services that have a positive impact or that have less negative impacts on the environment.

In order to better describe green consumers, several studies tried to define their characteristics. The results of the studies were contradictory in the way some found significant results and others found insignificant results (Do Paço and Raposo, 2009).

The literature review shows that the socio-demographic variables help frame the profile of the green consumer. In fact, these variables offer an easy tool for announcers to segment the market (Anderson and *al.*, 1974; Samdahl and Robertson, 1989; Roberts,

1996 a and b; Jain and Kaur, 2006; D'Souza and *al.*, 2007). Among the socio-demographic variables that were object of ecological behavior study we find : age (Van Liere and Dunlap, 1981 ; Pickett and *al.*, 1993), gender (Baldassare and Katz 1992, Brooker, 1976), income (Anderson and *al.* 1974 ; Antil 1984 ; Van Liere and Dunlap, 1981), education (Webster, 1975 ; Kinnear and *al.*, 1974), place of residence (Zimmer and *al.*, 1994 ; Schwartz and Miller, 1991), household size, density of the population (Antil 1984) and economic and social status (Antil,1984 ; Vining and Ebreo, 1990).

In addition to the socio-demographic variables, psychographic variables better explain and predict ecological behavior (Straughan and Roberts, 1999). Among the psychographic variables having been the object of study on ecological behavior, we find: political or ideological orientation (Hine and Gifford, 1991; Roberts, 1996a), perceived consumer effectiveness (PCE) (Fraj and Martinez 2006), alienation (Anderson, Henion and Cox, 1974), center or perimeter of control (Dolich and *al.*, 1981) and socialization (Webster, 1975).

Thus, D'Souza and *al.* (2007) describe the green consumer as a young educated well-off citizen. Schwepker and Cornwell (1991) describe the green consumer as one with a high income and higher education diploma.

To Webster (1975), the green consumer is a dominant, tolerant and responsible person. He/she is also a person who is highly persuaded that he/she can reduce pollution problems and takes into consideration the ecological impact of his purchases (Kim and Choi, 2005; Lee and Holden, 1999). This is what we call « perceived consumer effectiveness ». To Arbuthnot (1977), this consumer is rather a person with a liberal political ideology. Anderson, Henion and Cox (1974) define the green consumer as one with a more alienated and cosmopolitan personality, less conservative and dogmatic.

However, these few profiles cannot establish a particular ecologically conscious consumer profile and therefore confirm the inexistence of a commonly accepted one (Shrum and *al.*, 1995; Tilikidou and Zotos, 1999). The proposition of an ecologically conscious consumer typology becomes then necessary. This is what we will demonstrate within the scope of our empirical study.

Methodology

Our study aims to identify a typology of consumers in terms of their ecologically conscious behaviour. To this end, we conducted a questionnaire survey and the data were collected through the administration of questionnaires via face to face interviewer next to 200 consumers. Our sample was selected using the convenience method. However, we have tried to have a structure of age and gender that is similar to the Tunisian population structure. You will find the characteristics of our sample in **appendix 2**.

Regarding the choice of measuring instruments, we have selected Roberts' scales (1996a). The first evaluates ecologically conscious consumer behaviour and is composed of items reflecting the degree of commitment of the consumer who only buys products that are less harmful to the environment. The author reports a Cronbach alpha of 0.96.

This scale was also used by Awad (2011) in the context of ecologically conscious consumer segmentation.

The second scale allows measuring the perceived consumer efficiency (PCE) which is composed of four statements that reflect consumers' attitudes to environmental concerns and their estimation that their actions and purchases can make a change (**see appendix 1**). These various measures were graded from 1 (completely disagree) to 5 (completely agree).

The survey's data were treated using SPSS 18 and AMOS 18 softwares. In fact, we have adopted an exploratory factorial analysis in order to verify the unidimensionality of each of the theoretical constructs and to test their reliability at a later stage. Then, we have determined the results of the confirmatory analysis in the hope of verifying the reliability and validity of the constructs based on Fornell and Larcker's methodology (1981).

Finally, we classified the dynamic multitudes in order to elaborate a typology of consumers in terms of their ecologically conscious behavior. The obtained consumer segments are described by socio-demographic variables (such as age, gender, place of residence, religiosity, PCS and income) and by the psychographic variable « perceived consumer effectiveness ».

Analysis and interpretation of results

Analysis of ecologically conscious consumer behavior (ECCB)

Exploratory and confirmatory analyses present and specify the measurement of ecologically conscious consumer behavior. We have conducted an exploratory analysis (PCA) in order to be reassured on the unidimensionality of the scale's reliability. In fact, table 1 shows the results of the principal components analysis as well as the internal coherence.

This analysis produced 2 axes that explained the ECCB. Consequently, the scale is bidimensional. Axis 1 is called « ecologically conscious purchasing behavior » and axis 2 is called « energy preservation and recycling behavior ».

Table 1 Principal Component Analysis

Items	Quality of representation	Components after varimax rotation	
		Ecologically conscious purchasing behavior	Energy preservation and recycling behavior
ECCB3	0,561	-	0,645
ECCB5	0,617	0,779	-
ECCB7	0,662	0,814	-
ECCB8	0,553	0,743	-
ECCB9	0,641	-	0,724
ECCB10	0,696	0,659	-
ECCB11	0,678	-	0,820
ECCB12	0,719	0,842	-
ECCB13	0,576	-	0,676
ECCB14	0,625	0,766	-
ECCB15	0,715	0,803	-
ECCB16	0,572	0,542	-
ECCB21	0,864	0,890	-
Cronbach Alpha		0,907	0,70
K.M.O (Kaiser-Meyer-Olkin) = 0,774		Bartlett's sphericity test = 0,000	
Variance explained in %= 62,134%			

Table 1 indicates a satisfying KMO value justifying the presence of a factorial solution for both dimensions. Bartlett's sphericity test is significant to a threshold of 5%. Besides, the quality of items' representation is good for the items retained except for ECCB1, ECCB2, ECCB4, ECCB6, ECCB17, ECCB18, ECCB19, ECCB20, and ECCB22 that were eliminated.

Table 1 equally shows that the Cronbach Alpha coefficients (α) are reliable at the exploratory level for the dimensions « ecologically conscious purchasing behavior » and « energy preservation and recycling behavior ».

Then the confirmatory analysis allows us to verify the reliability and validity of the obtained dimensions (Table 2). Therefore, we have opted for the Fornell and Larcker procedure (1981) in order to calculate the convergent validity and the discriminant validity of the constructs.

Table 2 Reliability and Validity of Scale

Dimensions	Reliability (Rho of Jöreskog)	Convergent validity	Discriminant validity
Ecologically conscious purchasing behavior	0,86	0,76	0,76 > 0,21 0,66 > 0,21
Energy preservation and recycling behavior	0,92	0,66	

As shown by table 2, Jöreskog's Rhô indicated satisfying values exceeding the minimum threshold of 0.7. The Rhô of the convergent validity is superior to the minimum prescribed threshold of 0.5 for each of the obtained dimensions. The discriminant validity was verified as the extracted mean variance is superior to the square of the correlation between the latent variables. We can then conclude that the obtained dimensions are reliable and valid.

Table 3 shows that the measuring model of the ECCB presents a good adjustment.

Table 3 Adjustment Model

Indication	Chi-square / ddl	GFI	AGFI	RMR	RMSEA	NFI	CFI
Value	1,773	0,911	0,944	0,069	0,074	0,938	0,925

Analysis of the perceived consumer effectiveness (PCE)

We conducted an exploratory analysis (PCA) in order to ensure the unidimensionality and the reliability of the scale.

Table 4 Principal Component Analysis

Items	Quality of representation	Components
EPC1	0,820	0,906
EPC2	0,542	0,646
EPC3	0,544	0,662
EPC4	0,884	0,940
K.M.O (Kaiser-Meyer-Olkin) = 0,658		Bartlett's sphericity test = 0,000
Variance explained in % = 64%		
Cronbach Alpha = 0,803		

Table 4 indicates a satisfying KMO value justifying the presence of a factorial solution. Bartlett's sphericity test is significant to a threshold of 5%. The quality of representation is good as all the perceived consumer effectiveness measurement indicators have a value that is superior to the minimum threshold of 0.5. The percentage of the explained variance drives us to retain only one component.

Table 4 shows that the Cronbach Alpha coefficient (α) is reliable at the exploratory level.

Using a confirmatory analysis (FCA) validates the measurement model and ensures the reliability and validity based on Fornell and Larcker procedure (1981).

Table 5 shows that the measurement model presents a good adjustment by referring to the obtained values of absolute, incremental and parcimonious indices.

Table 5 Adjustment Model

Indication	Chi-square / ddl	GFI	AGFI	RMR	RMSEA	NFI	CFI
Value	2,914	0,989	0,976	0,029	0,068	0,987	0,991

Table 6 below determines the values of Jöreskog's $Rh\hat{o}$, $Rh\hat{o}$ of the convergent validity as well as the discriminant validity. These indicators evaluate reliability and validity of the obtained dimensions of the measurement model.

Table 6 Reliability and Validity of Scale

Scale	Reliability (Rho of Jöreskog)	Convergent validity	Discriminant validity
EPC	0,77	0,82	0,82 > 0,21

By reading table 6, we conclude that the value of Jöreskog's $Rh\hat{o}$ is superior to 0.7 for the measurement model. Equally, the $Rh\hat{o}$ of the convergent validity is superior to the minimum threshold of 0.5. Finally, we note that the discriminant validity is ensured as the extracted mean variance is superior to the square of the correlation between the latent variables. We can therefore judge that the scale is reliable and valid at the confirmatory level.

Identification and specification of consumers' profiles in terms of their ecologically conscious behavior.

We classified the dynamic multitudes in order to identify the consumers' profiles in terms of their ecologically conscious behavior. We obtained 4 different groups of consumers in terms of the ECCB and perceived consumer effectiveness. The centers of classes were established at the level of the second iteration. The ANOVA table (see **appendix 3**) shows that the segmentation criteria are discriminant and produce this typology. The allotment of observations in groups is presented in table 7 as follows:

Table 7 The final centers of classes obtained

Items	Classes			
	1	2	3	4
ECCB5	3,50	4,00	2,81	1,91
ECCB7	2,00	3,50	1,48	1,62
ECCB8	4,33	2,59	1,19	1,56
ECCB10	2,00	2,66	2,24	1,43
ECCB12	2,00	3,94	1,81	1,60
ECCB14	2,00	3,47	1,24	1,67
ECCB15	5,00	3,38	1,38	1,86
ECCB16	5,00	2,91	3,38	1,85
ECCB21	4,00	3,66	1,24	1,93
ECCB3	5,00	4,13	2,00	2,35
ECCB9	3,83	4,47	1,81	2,88
ECCB11	5,00	3,41	1,10	3,26

Items	Classes			
ECCB13	2,67	4,19	1,81	3,57
EPC1	3,67	4,34	2,05	3,86
EPC2	2,00	2,53	1,57	1,87
EPC3	3,83	3,66	2,90	3,48
EPC4	4,00	4,34	2,19	3,89
Size	6	32	21	141
Percentage	3%	16%	10,5%	70,5%

Table 7 shows that the obtained class 1 constitutes 3% of our sample. It is characterized by both « an ecologically conscious purchasing behavior » and « an energy saving and recycling behavior » that are significantly high. This group of individuals is almost convinced that it can reduce the problems of pollution and pretends taking into consideration the ecological impact of their purchases. These are the « aware » customers.

The second obtained class constitutes 16% of our sample. It is characterized by a high « ECCB » and by a high « energy saving and recycling behavior». This group of individuals is particularly persuaded that it can reduce pollution related problems and takes into consideration the ecological impact that his purchases could have. We here speak of the « convinced » customers.

The 3rd obtained class constitutes 10.5% of our sample. This group of individuals is persuaded that it could reduce pollution problems. However, when there is a need to buy an ecological product, this group shows a weak conscious behavior as opposed to a relatively average energy saving and recycling behavior. It is the case of the « mitigated » customers.

The fourth obtained class constitutes the most important section of our sample. It is composed of 70,5% of observations and is characterized by a weak ecologically conscious behavior with a weak energy saving and recycling behavior. This group of individuals is weakly persuaded that it can reduce pollution problems. These are the « resistant » customers.

Furthermore, it is worth specifying that all the obtained classes are based on the personal variables of the sample. The conducted Chi-square tests (**see appendix 4**) help study the variation of the obtained classes based on gender, age, level of instruction, CSP, monthly income, religiosity, place of residence and civil status. The results are significant for all the variables at a risk of 5%. The examination of the table in appendix 4 shows that the socio-demographic profile of the various classes is as follows:

Class 1 (the aware) is exclusively composed of young, single female student, aged 20 to 34, religious with a monthly income of less than 400 dinars and living in a rural environment.

Class 2 (the convinced) is essentially composed of married or single women (either students or housewives) the majority of whom are aged between 20 and 34 years old with a higher education, mostly religious with a monthly income of less than 400 dinars and living in a rural environment.

Class 3 (the mitigated) is majoritarily composed of women between 45 to 59 years old, most of whom are non-religious, married, with a secondary school education and an average monthly income of 400 dinars.

Class 4 (the resistant) is composed mostly of men, aged 35 years old and more, working as managers and in highly intellectual professions with a monthly income of more than 800 dinars, most of whom are married, with a higher education and are non-religious.

Discussion and conclusion

This study aims to propose a typology of Tunisian consumers based on their ecologically conscious behavior. It is more specifically a description of the identified groups in terms of socio-demographic variables (such as gender, age, income, socio-professional category and religiosity) and the psychographic variable « perceived consumer effectiveness ».

The empirical results show the existence of four consumer profiles which are « the convinced », the « aware », the « mitigated » and the « resistant ». In fact, the « convinced » who only represent 3% of the examined sample, show ecologically conscious consumers based on their purchases and statements. In fact, they try to buy the least environmentally harmful products. They try to choose the products that save energy and those with reusable packaging. They are highly persuaded that they can reduce pollution problems and take into consideration the ecological impact of their purchases.

The « aware » behave similarly to the « convinced » but to a lesser extent. They represent 16% of the studied sample.

The « mitigated » are concerned by the environment, they state that they can reduce pollution problems and take into consideration the ecological impact of their purchases. However, when there is need to act, they do not take into consideration the impact of their purchases on the environment and do not make any efforts to select energy saving and recyclable products. They represent 10.5% of observations.

Finally, the «resistant», constitute the bigger part of our sample, i.e. 70.5% of observations. They are not concerned by the environment and do not even think about it. They think that their individual behavior has little impact on the environment and that others (distributors, public authorities, companies) have to deal with this issue. When they make their purchasing, they do not take into consideration the potential damage that some products can cause mainly in terms of energy saving and recycling.

These results converge with some works on a significant relation between the perceived consumer effectiveness and ecological behavior (Barr 2007; Oreg and Katz-Gerro 2006; Awad 2011).

Studying the results equally shows that it is rather young women aged from 20 to 34, religious with a higher education and living in a rural area who are the most concerned by the environment. Specifically in this category the « convinced » represent a higher level of concern, followed by the « aware ».

On the other hand, the results equally show that married, non-religious 35 year-old individuals are those who are the least sensitive to the environment. From this angle, we find the « mitigated » who have very few concerns about the environment. Then, there are the resistant customers who show no interest in the ecological problem.

These results confirm the works of Roberts (1996a) who demonstrated the role of socio-demographic variables in describing the consumer who is concerned about the environment.

Our research particularly allowed us to demonstrate the role of socio-demographic variables and that of the psychographic variable « perceived consumer effectiveness » in explaining ecological behavior.

From a managerial point of view, this study could help companies who aim at positioning themselves on the ecological axis through the adaptation of their marketing strategies in terms of the segments they aim to target. This research offers managers pertinent criteria to use in order to succeed their strategies.

Nevertheless, this study is limited in terms of the size of the sample. In fact, to increase the size of the sample would cautiously better generalize the results. In spite of this limitation, our research can be considered a doorway for future research.

Actually, it would be more interesting to integrate other psychographic variables that were excluded from our study such as liberalism, concern for the environment as well as cultural variables such as long-term orientation. These variables would better describe the profile of the ecologically conscious consumer.

References

Antil, J. H. (1984). Socially responsible consumers: profile and implications for public policy. *Journal of Macromarketing*, 4(Fall), 18-39.

Arbuthnot, J. (1977). The roles of attitudinal and personality variables in the prediction of environmental behavior and knowledge. *Environment and Behavior*, 9(3), 217-32.

Awad, T. A. (2011). Environmental segmentation alternatives: buyers' profiles and implications. *Journal of Islamic Marketing*, 2(1), 55-73.

Baldassare, M. & Katz, C. (1992). The personal treat of environmental problems as predictor of environmental practices. *Environment and Behavior*, 24(5), 602-616.

Bamberg, S. (2003). How does environmental concern influence specific environmentally related behaviors? A new answer to an old question. *Journal of Environmental Psychology*, 23(1), 21-32.

Bang, H., Ellinger, A.E., Hadjimarcou, J., & Traichal, P. A. (2000). Consumer concern, knowledge, belief, and attitude toward renewable energy: An application of the reasoned action theory. *Psychology and Marketing*, 17(1), 6-26.

Baldjerhan, I. (1988). Personality variables and environmental attitudes as predictors of ecologically responsible consumption patterns. *Journal of Business Research*, 17(1), 51-56.

Barr, S. (2007). Factors influencing environmental attitudes and behaviors. *Environment and Behavior*, 39(4), 435-473.

Berkowitz, L. & Lutterman, K. (1968). The traditional socially responsible personality. *Public Opinion Quarterly*, 32(Summer), 169-85.

Brooker, G. (1976). The self-actualizing socially conscious consumer. *Journal of Consumer Research*, 3(September), 107-12.

Chan, R. Y. K., & Lau, L. B. Y. (2000). Antecedents of green purchases: A survey in China. *Journal of Consumer Marketing*, 17(4), 338-57.

Chan, R. Y. K., & Lau, L. B. Y. (2004). The effectiveness of environmental claims among Chinese consumers: Influences of claim type, country disposition and ecocentric orientation. *Journal of Marketing Management*, 20(3), 273-319.

Cornwell, T. B., & Schwepker, C. (1995). Ecologically concerned consumers and their product purchases, in Polonski M.J. and Mintu-Wimsatt A.T. (eds.) *Environmental Marketing, Strategies, Practice, Theory and Research*, Binghamton, N.Y.: The Haworth Press, Inc, 119-153.

Crosby, L. A., Gill, J. D., & Taylor, J. R. (1981). Consumer-voter behavior in the passage of the Michigan container law. *Journal of Marketing*, 45(2), 19-32.

Dolich, J., Tucker, L. & Wilson, D. (1981). Profiling environmentally responsible consumer citizen. *Journal of the Academy of Marketing Science*, 9(4), 454-477.

Do Paço, A., & Raposo, M. (2009). Green segmentation: an application to the Portuguese consumer market. *Marketing Intelligence & Planning*, 27(3), 264-379.

D'Souza, C., Taghian, M., Lamb, P., & Peretiatkos, R. (2007). Green decisions: demographics and consumer understanding of environmental labels. *International Journal of Consumer Studies*, 31(4), 371-376.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equations models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39- 50.

Fraj, E., & Martinez, E. (2006). Influence of personality on ecological consumer behavior. *Journal of consumer Behavior*, 5(3), 167-181.

Giannelloni, J. L. (1998). Les comportements liés à la protection de l'environnement et leurs déterminants : Un état des Recherches en Marketing. *Recherche et Application en Marketing*, 13(2), 49-72.

Hackett, P., & Florence Susan, J. (1991). The Facet Theoretical Analysis of Green Values: The Development of a Structural Model of Consumer and individual Environmental Concern Values, Workshop on Value and Lifestyle Research in Marketing, EIASM, Brussels, October, 14-15.

Hine, D. W., & Gifford, R. (1991). Fear appeals, individual differences, and environmental concern. *The Journal of Environmental Education*, 23(1), 36-41.

Jain, S., & Kaur, G. (2006). Role of socio-demographics in segmenting and profiling green consumers: an exploratory study of consumers in India. *Journal of International Consumer Marketing*, 18(3), 107-117.

Kim, Y., & Choi, S. M. (2005). Antecedents of green purchase behavior: An examination of collectivism, environmental concern, and perceived consumer effectiveness. *Advances in Consumer Research*, 32, 592-599.

Kinnear, T., Taylor, J., & Ahmed, S. (1974). Ecologically concerned consumers: who are they? *Journal of Marketing*, 38(2), 20-24.

Kréziak, D. (1995). Comportement des consommateurs et environnement : une approche exploratoire. *Actes de l'AFM, Reims*, 1109-1135.

Kréziak, D., & Valette-Florence, P. (1997). Les objectifs poursuivis par le consommateur écologiquement responsable : une nouvelle approche. *Actes du 13^e congrès de L'Association Française Marketing, Toulouse*, 135-162.

Lee, J. A., & Holden, S. J. S. (1999). Understanding the determinants of environmentally conscious behavior. *Psychology & Marketing*, 16(5), 373-392.

Martin, B., & Simintiras, A. C. (1995). The Impact of Green Product Lines on the Environment: Does What They Know Affect How They Feel?. *Marketing Intelligence & Planning*, 13(4), 16-23.

Maloney, M. P., & Ward, M. P. (1973). Ecology: let's hear from the people: an objective scale for the measurement of ecological attitudes and knowledge. *American Psychologist*, 7(July), 583-586.

Oreg, S., & Katz-Gerro, T. (2006). Predicting proenvironmental behavior cross-nationally: Values, the theory of planned behavior and value-belief-norm theory. *Environment and Behavior*, 38(4), 462-483.

Pickett, G. M., Kangun, N., & Grove, S. J. (1993). Is There a General Conserving Consumer? A Public Policy Concern. *Journal of Public Policy & Marketing*, 12(2), Fall, 234-243.

Roberts, J. A. (1996a). Green Consumers in 1990s: Profile and Implication for Advertising. *Journal of Business Research*, 36(3), 217-231.

- Roberts, J. A. (1996b). Will the real socially responsible consumer please step forward?. *Business Horizons*, 39(1), January-February, 79-83.
- Samdahl, D. M. & Robertson, R. (1989). Social determinants of environmental concern: specification and test of the model. *Environment and Behavior*, 21(1), January, 57-81
- Schwartz, J., & Miller, T. (1991). The earth's best friends, *American Demographics*, 13(2), 26-35.
- Schwepkar, C. H., & Cornwell, T. B. (1991). An examination of ecologically concerned consumers and their intentions to purchase ecologically-packaged products. *Journal of Public Policy and Marketing*, 10(2), 77-101.
- Scott, D., & Willits, F. K. (1994). Environmental attitudes and behavior. A Pennsylvania Survey, *Environment and Behavior*, 26(2), March, 239-260.
- Shrum, L. J., Lowrey, T. M., & McCarty, J. A. (1995). Applying Social and Traditional Marketing Principles to the Reduction of Household Waste. *American Behavioral Scientist*, 38(4), 646-657.
- Stanton, W., & Futrell, C. (1987). *Fundamentals of Marketing*, 8th edition, New York: McGraw-Hill Book Company.
- Straughan, R. D., & Roberts, J. A. (1999). Environmental segmentation alternatives: a look at green consumer behavior in the new millennium. *Journal of Consumer Marketing*, 16(6), 558-575.
- Tilikidou, I., & Zotos, Y. (1999). Ecological Consumer Behaviour: Review and Suggestions for Future Research. *MEDIT*, 10(1), 14-21.
- Van Liere, K., & Dunlap, R. (1981). The social bases of environmental concern: a review of hypotheses, explanations, and empirical evidence. *Public Opinion Quarterly*, 44(2), 181-97.
- Vining, J., & Ebreo, A. (1992). Predicting recycling behavior from global and specific environmental attitudes and changes in recycling opportunities. *Journal of Applied Social Psychology*, 22(20), 1580-1607.
- Webster, F. (1975). Determining the characteristics of socially conscious consumer. *Journal of Consumer Research*, 2(3), 188-196.
- Zimmer, M. R., Stafford, T.F. & Stafford, M.R. (1994). Green issues: dimensions of environmental concern. *Journal of Business Research*, 30(1), 63-74.

Appendix

Appendix 1 Measurement scales adopted in research

▪ *Measure of ecologically conscious consumer behavior (ECCB) (Roberts, 1996)*

ECCB 1: To save energy, I drive my car as little as possible

ECCB 2: I normally make a conscious effort to limit my use of products that are made of or use scarce resources

ECCB 3: I try to buy energy efficient household appliances

ECCB 4: I will not buy products, which have excessive packaging

ECCB 5: When there is a choice, I always choose that product which contributes to the least amount of pollution

ECCB 6: I have tried very hard to reduce the amount of electricity I use

ECCB 7: I understand the potential damage to the environment that some products can cause; I do not purchase these products

ECCB 8: I have switched products for ecological reasons

ECCB 9: I have purchased a household appliance because it uses less electricity than other brands

ECCB 10: I have convinced members of my family or friends not to buy some products, which are harmful to the environment

ECCB 11: I have replaced light bulbs in my home with those of smaller wattage so that I will conserve on the electricity I use

ECCB 12: I have purchased products because they cause less pollution

ECCB 13: Whenever possible, I buy products packaged in reusable containers

ECCB 14: When I purchase products, I always make a conscious effort to buy those products that are low in pollutants

ECCB 15: When I have a choice between two equal products, I always purchase the one, which is less harmful to other people and the environment

ECCB 16: I will not buy a product if the company that sells it is ecologically irresponsible

ECCB 17: I have purchased light bulbs that were more expensive but saved energy

ECCB 18: I try only to buy products that can be recycled

ECCB 19: To reduce our reliance on oil, I drive my car as little as possible

ECCB 20: I usually purchase the lowest priced product, regardless of its impact on society

ECCB 21: I do not buy household products that harm the environment

ECCB 22: I buy high efficiency light bulbs to save energy

▪ *Measure of perceived effectiveness of the consumer (Roberts 1996)*

EPC1: It is worthless for the individual consumer to do anything about pollution

EPC2: When I buy products, I try to consider how my use of them will affect the environment and other consumers

EPC3: Since one person cannot have any effect upon pollution and natural resource problems, it does not make any difference what I do

EPC4: Each consumer's behaviour can have a positive effect on society by purchasing products sold by socially responsible companies

Appendix 2 Sample characteristic

Gender	Percentage
Male	47,5
Female	52,5
Age	Percentage
20 -34	46,0
35-44	27,5
45-59	10,0
60 and over	16,5
Education level	Percentage
Primary	13,0
Secondary	14,0
University	73,0
CSP	Percentage
Unemployed	4,5
Retired	11,5
Liberal profession	9,0
Employee	9,0
Managers and in highly intellectual professions	30,0
Student	26,0
Housewife	10,0
Monthly income (Unit : DT)	Percentage
Less than 400	37,5
400-800	24,0
800 -1200	7,0
1200 -1600	11,5
More than 1600	20,0
Religiosity	Percentage
Religious	40,5
Non-religious	59,5
Place of residence	Percentage
Urban environment	78,5
Rural environment	21,5
Civil status	Percentage
Single	36,5
Married	58,0
Divorced	5,5

Appendix 3 Results of the classification of dynamic multitude

ANOVA						
	Class		Error		F	Significance
	Mean squares	ddl	Mean squares	ddl		
ECB3	41,250	3	,897	196	45,998	,000
ECB5	41,954	3	,876	196	47,887	,000
ECB7	32,135	3	,440	196	72,969	,000
ECB8	24,797	3	,464	196	53,394	,000
ECB9	34,836	3	,842	196	41,384	,000
ECB10	15,460	3	,446	196	34,631	,000
ECB11	37,587	3	1,331	196	28,246	,000
ECB12	47,703	3	,402	196	118,543	,000
ECB13	26,513	3	,949	196	27,930	,000
ECB14	31,701	3	,606	196	52,314	,000
ECB15	40,393	3	,712	196	56,706	,000
ECB16	36,111	3	,692	196	52,217	,000
ECB21	39,025	3	,349	196	111,959	,000
EPC1	24,604	3	,983	196	25,030	,000
EPC2	4,948	3	,610	196	8,112	,000
EPC3	2,871	3	1,271	196	2,259	,083
EPC4	21,705	3	,830	196	26,156	,000

Appendix 4 Specification of classes obtained based on personal variables

Gender:

Chi-square tests			
	Value	ddl	Asymptotic significance (bilateral)
Pearson chi-square	16,048 ^a	3	,001
Likelihood ratio	18,588	3	,000
Linear association by linear	15,230	1	,000
Number of valid observations	200		

a. 2 cells (25.0%) have theoretical size less than 5. The minimum theoretical size is 2.85.

Cross table Gender * Class assignment (dynamic clusters)					
Size					
	Class assignment (dynamic clusters)				Total
	1	2	3	4	
Gender Male	0	9	7	79	95
Gender Female	6	23	14	62	105
Total	6	32	21	141	200

Age:

Chi-square tests			
	Value	ddl	Asymptotic significance (bilateral)
Pearson chi-square	82,514 ^a	9	,000
Likelihood ratio	86,754	9	,000
Linear association by linear	,341	1	,560
Number of valid observations	200		

a. 7 cells (43.8%) have theoretical size less than 5. The minimum theoretical size is .60.

Cross table Age * Class assignment (dynamic clusters)

Size

		Classe d'affectation (nuées dynamiques)				Total
		1	2	3	4	
Age	20 - 34	6	24	3	59	92
	35 -44	0	0	0	55	55
	45 - 59	0	0	10	10	20
	60 and over	0	8	8	17	33
Total		6	32	21	141	200

Education level:

Chi-square tests

	Value	ddl	Asymptotic significance (bilateral)
Pearson chi-square	68,615 ^a	6	,000
Likelihood ratio	63,476	6	,000
Linear association by linear	4,892	1	,027
Number of valid observations	200		

a. 7 cells (58.3%) have theoretical size less than 5. The minimum theoretical size is.78.

Cross table Education level * Class assignment (dynamic clusters)

Size

		Class assignment (dynamic clusters)				Total
		1	2	3	4	
Education level	Primary	0	0	4	22	26
	Secondary	0	0	14	14	28
	University	6	32	3	105	146
Total		6	32	21	141	200

CSP:

Chi-square tests

	Value	ddl	Asymptotic significance (bilateral)
Pearson chi-square	116,679 ^a	18	,000
Likelihood ratio	129,521	18	,000
Linear association by linear	13,742	1	,000
Number of valid observations	200		

a. 17 cells (60.7%) have theoretical size less than 5. The minimum theoretical size is .27.

Cross table CSP * Class assignment (dynamic clusters)

Size		Class assignment (dynamic clusters)				Total
		1	2	3	4	
CSP	Unemployed	0	0	0	9	9
	Retired	0	8	0	15	23
	Liberal profession	0	0	6	12	18
	Employee	0	0	4	14	18
	Managers and in highly intellectual professions	0	0	0	60	60
	Student	6	14	3	29	52
	Housewife	0	10	8	2	20
Total		6	32	21	141	200

Monthly income:

Chi-square tests

	Value	ddl	Asymptotic significance (bilateral)
Pearson chi-square	36,419 ^a	12	,000
Likelihood ratio	49,808	12	,000
Linear association by linear	13,032	1	,000
Number of valid observations	200		

a. 10 cells (50.0%) have theoretical size less than 5. The minimum theoretical size is .42.

Cross table Monthly income * Class assignment (dynamic clusters)

Size

		Class assignment (dynamic clusters)				Total
		1	2	3	4	
Monthly income	Less than 400	6	18	11	40	75
	400 - 800	0	6	8	34	48
	800 - 1200	0	0	2	12	14
	1200 - 1600	0	0	0	23	23
	More than 1600	0	8	0	32	40
Total		6	32	21	141	200

Religiosity:

Chi-square tests

	Value	ddl	Asymptotic significance (bilateral)
Pearson chi-square	29,667 ^a	3	,000
Likelihood ratio	39,059	3	,000
Linear association by linear	7,302	1	,007
Number of valid observations	200		

a. 2 cells (25.0%) have theoretical size less than 5. The minimum theoretical size is 2.43.

Cross table Religiosity * Class assignment (dynamic clusters)

Size

		Class assignment (dynamic clusters)				Total
		1	2	3	4	
Religiosity	Religious	6	20	0	55	81
	Non-religious	0	12	21	86	119
Total		6	32	21	141	200

Place of residence:

Chi-square tests

	Value	ddl	Asymptotic significance (bilateral)
Pearson chi-square	14,997 ^a	3	,002
Likelihood ratio	22,792	3	,000
Linear association by linear	14,410	1	,000
Number of valid observations	200		

a. 3 cells (37.5%) have theoretical size less than 5. The minimum theoretical size is 1.29.

Cross table Place of residence * Class assignment (dynamic clusters)

Size

		Class assignment (dynamic clusters)				Total
		1	2	3	4	
Place of residence	Urban environment	6	32	18	101	157
	Rural environment	0	0	3	40	43
Total		6	32	21	141	200

Civil status:

Chi-square tests

	Value	ddl	Asymptotic significance (bilateral)
Pearson chi-square	20,890 ^a	6	,002
Likelihood ratio	25,778	6	,000
Linear association by linear	5,969	1	,015
Number of valid observations	200		

- a. 5 cells (41.7%) have theoretical size less than 5.
- b. The minimum theoretical size is .33.

Cross table Civil status * Class assignment (dynamic clusters)

Size

		Class assignments (dynamic clusters)				Total
		1	2	3	4	
Civil status	Single	6	14	3	50	73
	Married	0	18	18	80	116
	Divorced	0	0	0	11	11
Total		6	32	21	141	200