



# Re-examining green purchase behaviour and the green consumer profile: new evidences

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## Abstract

**Purpose** – This paper aims to re-examine the determinants of ecologically conscious consumer behaviour (ECCB) by analysing the green consumer profile (socio-demographic and psychographic variables), building on the work of Straughan and Roberts. Moreover, the study explores the determinants of effective green purchase behaviour (GPB) considering ECCB and green purchase intention (GPI) previously evaluated.

**Design/methodology/approach** – The authors conducted a quantitative study based on an online survey. Data collection was implemented in two different phases: in the first phase ECCB, GPI and profiling variables were measured. One month later, the same respondents evaluated their effective GPB. Through path analysis the effects of ECCB and GPI on GPB were measured.

**Findings** – The results show that psychographic variables, with emphasis on perceived consumer effectiveness (PCE) and altruism, are more relevant than socio-demographics in explaining ECCB. The consumers with higher ECCB have shown higher green purchase intention (GPI). ECCB has a positive impact on GPB, higher than GPI, which in turn mediates that relationship.

**Research limitations/implications** – The research results may lack generalizability. Therefore, researchers are encouraged to test the proposed propositions further.

**Practical implications** – The paper provides evidence that whenever ecological consciousness is high, the gap between GPI and GPB is less evident, which provides clear evidence that an understanding of green consumer profiles and behaviour can enable organizations to respond better to new management challenges.

**Originality/value** – This paper provides a comprehensive understanding about the green consumer profile and behaviour, including the effect of GPI on GPB, and which contribute to the coordination of future marketing strategies to target this segment.

**Keywords** Green marketing, Green consumer profile, Green consumer behaviour, Ecological consciousness, Green purchase intention, Green purchase behaviour, Demographics, Psychographics

**Paper type** Research paper



## 1. Introduction

The ongoing technological and industrial revolution has had an impact on the quality of life, especially on environmental preservation. Issues such as global warming, acid rain, deforestation, fossil fuels depletion, ozone layer reduction, air and water pollution, among others, are on the current political and economic agenda and have widespread public support.

Environmental awareness had its first peak around 1970, but quickly “slowed down” due to numerous legislative initiatives aimed at correcting problems such as the emission of toxic gases into the atmosphere. In the late 1980s, attending to numerous environmental disasters, the issue of environmental awareness was clearly in evidence (Titterington *et al.*, 1996). The 1990s were considered the “decade of the environment” or “the Earth decade” and it was during these years (and indeed up to the present day) that social and environmental concerns have become more relevant (Prothero, 1996) and has led to a progressive increase in environmental awareness by consumers (Kalafatis *et al.*, 1999). McIntosh (1991) lists several factors that enabled this situation: media coverage of the phenomenon; increasing awareness of environmental problems; emergence of activities led by pressure groups such as NGOs; the existence of national and international legislation; and the impact of major ecological disasters on public opinion. Consequently, consumers have become more concerned with their daily purchasing habits and the impact these might have on the environment (Krause, 1993).

This increased environmental awareness has had consequences for consumer behaviour, namely on green purchase intention. More specifically, it is suggested that consumers with a high level of environmental awareness are more likely to have an environmentally friendly behaviour (Sheltzer *et al.*, 1991). However, some years later, some authors argue that although many consumers claim they care about the environment, their buying behaviour does not always reflect this preoccupation (Kalafatis *et al.*, 1999; Gardyn, 2003). Green buying behaviour has consequently been evaluated differently by authors. Some authors use measures that are more general and indicate a predisposition to environmentally conscious behaviour (e.g. ECCB, Straughan and Roberts, 1999). Others attempt to provide a more objective measure of effective green purchase behaviour (GPB) (see for example, Chan, 2001). The study of the relation between the ecologically conscious behaviour orientation (ECCB) and the effective GPB could help to better understand green consumer behaviour.

From the management point of view, recent studies show that environmental management has a positive impact on financial performance, which implies a commitment to green management (Molina-Azorin *et al.*, 2009; Huang and Kung, 2011). Moreover, several firms have adopted green marketing strategies, and exploring environmental attributes as a source of competitive advantage (Chen and Chai, 2010). This is the reason why it is very important to understand green consumer profiles and behaviour so that firms can develop new targeting and segmentation strategies (D’Souza *et al.*, 2007).

The research objective of this study is twofold:

- (1) To re-examine the determinants of ecologically green consumer behaviour (ECCB) by analysing the green consumer profile (socio-demographic and psychographic variables).
- (2) To explore the determinants of effective green purchase behaviour (GPB) considering ECCB and green purchase intention (GPI) as previously expressed. In this empirical research, we build on the work of Straughan and Roberts (1999) and Chan (2001) to develop our research model.

After the introduction the literature review is focused on green marketing, green consumer profile and green consumer behaviour, leading to the research hypotheses. The methodology is described, as well as the research results, and the academic and

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managerial implications are discussed. This study ends with the limitations and future research suggestions.

## 2. Literature review and hypotheses

### 2.1 *Green marketing evolution*

Although the green marketing concept began to be discussed in the 1960s, it was in the late 1980s and early 1990s that the concept begins to be formalized and generalized. The American Marketing Association held the first workshop on the topic in 1974. In this workshop, green marketing was defined as the study of positive and negative aspects of pollution and depletion of energy sources (Kinnear and Taylor, 1973).

According to Polonsky (1994), green marketing consists of all planned activities to generate and facilitate exchanges in order to satisfy human needs and desires with the least impact possible on the environment. This statement adds an important dimension: a more humanistic marketing concept that includes ecological and social components and one based on minimization of environmental damage. Crane (2000) argues for the existence of a relation between morality and green marketing, because the environment implies some ethical questions that marketing has to contend with.

Peattie and Charter (2003) defined green marketing as the holistic management process responsible for identifying, anticipating and satisfying customer needs and society in a profitable and sustainable perspective. Soonthonsmai (2007) adds to the definition that firms which are concerned about the environment should develop green products/services with the aim of achieving consumers' and society's satisfaction. Indeed, several authors advocate that green marketing incorporates a broad range of activities, from the R&D, design, manufacturing process, and packaging to advertising. According to Peattie and Charter (2003), marketers should not only look for internal processes of the production, but also for the impact of production and consumption in the quality of life and development of a sustainable society. The same authors suggested that for the success of green marketing it is necessary to add to the four traditional Ps of marketing, the four "Ss": customer Satisfaction, product Safety, Social acceptability and Sustainability of the products.

Ottman (1993) believes that the emergence of green marketing is a result of the finding that companies are being evaluated not only based on the product/service performance, but also on their social and environmental responsibility. Green marketing appears as a supporting tool for monitoring, seeking and fulfilling consumer needs and desires in a context of environmental responsibility.

Therefore, since green marketing is considered by many authors to be one of the major trends in modern business (McDaniel and Rylander, 1993; Pujari and Wright, 1996; Kassaye, 2001), and it is important to understand to what extent the emergence of this concept is affecting consumer preferences.

### 2.2 *Green consumer profiling*

In recent decades, when the environment has become more important, consumers began to seek more environmentally friendly alternatives instead of their traditional purchases. Evidences of this change in buying behaviour can be found in several studies. For instance, in July 1989, a survey of MORI (Market and Opinion Research International) showed that the proportion of customers who chose products based on environmental performance, increased from 19 to 42 per cent in less than one year

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(Elkington, 1989). In 1992 a study by Nielsen revealed that four in five consumers have expressed their environmental concerns through their purchasing behaviour (Marketing, 1992). More recently, The National Geographic and GlobeScan published the results of the Greendex third edition (2010), a study which evaluates the sustainability of international consumerism. This study, which includes a survey of 17,000 consumers from 17 different countries (Brazil, Mexico, Argentina, the USA, Canada, Spain, France, The UK, Germany, Sweden, Hungary, Russia, South Korea, China, India, Japan and Australia) reveals that consumers are very concerned about the environment and this has an impact on their daily consumer preferences.

Ecologically conscious consumers are defined as individuals who seek to consume only products that cause the least – or do not exercise any – impact on the environment (Roberts, 1996). According to Hailes (2007), a green consumer is one who associates the act of purchasing or consuming products with the possibility of acting in accordance with environmental preservation. The green consumer knows that by refusing to purchase products that are harmful to the environment, she/he is contributing to environmental preservation. Therefore, according to this author, green consumers avoid purchasing products that they perceive as risky to health, harm the environment during production, use or final disposal, consume much energy, have excessive packaging, and contain ingredients coming from threatened habitats or species.

To evaluate this ecologically conscious behaviour Roberts (1996) developed the ECCB scale, also used in Straughan and Roberts (1999), which considered a wide variety of behaviours.

*2.2.1 Socio-demographic characterization.* Berkowitz and Lutterman (1968) and Anderson and Cunningham (1972), were pioneers in studying the profile of green consumers. Anderson and Cunningham (1972) characterized them as individuals that not only intend to satisfy their personal needs, but also are concerned about the welfare of society and the environment, belonging to a socio-economic class above the average and professional occupations of recognition and status. They profiled the typical green consumer as female, 40 years old, with a high level of education and socio-economic status above average.

Other studies have also shown that women tend to be more environmentally conscious than men (Banerjee and McKeage, 1994). However, Reizenstein *et al.* (1974) found that only men were more willing to pay more to control air pollution and Balderjahn (1998) stated that the relation between attitudes and use of environmentally conscious products was more intense in men than in women.

For the present study the following socio-demographic variables will be taken into the analysis: sex, age, income, literacy.

Age. This variable was investigated by many authors and many of them argue that young people are likely to be more sensitive to green marketing issues. Nevertheless, over the last two decades, several studies identified the green consumer as being older than average (Sandahl and Robertson, 1989; Roberts, 1996; D'Souza *et al.*, 2007).

The relation between age and other variables were also explored by other authors. However, results are contradictory. Some found non-significant relations between age and green behaviour (McEvoy, 1972; Kinnear *et al.*, 1974; Straughan and Roberts, 1999) while others have found significant and positive relations (Sandahl and Robertson, 1989).

Sex. Several authors investigated the impact of gender on green consumer behaviour (McEvoy, 1972; Brooker, 1976; Van Liere and Dunlap, 1981; Sandahl and Robertson, 1989; Stern *et al.*, 1993; MacDonald and Hara, 1994; Roberts, 1995, 1996; Roberts and Bacon, 1997; Straughan and Roberts, 1999). Despite the fact that many of these researchers argue that women are more likely to act in a more environmentally aware manner than men in terms of green consumption, final results are not conclusive.

Income. According to Awad (2011), income was always perceived to have a positive relation to green consumer behaviour due to the general assumption that most green products have higher prices than conventional ones. Many authors took this variable into their analyses, nevertheless the results are not convincing (Kassarjian, 1971; Anderson and Cunningham, 1972; McEvoy, 1972; Kinnear *et al.*, 1974; Van Liere and Dunlap, 1981; Sandahl and Robertson, 1989; Zimmer *et al.*, 1994; Roberts, 1995, 1996; Roberts and Bacon, 1997).

Literacy. The vast majority of studies that include literacy level have found a positive relationship with green consumer behaviour (McEvoy, 1972; Van Liere and Dunlap, 1981; Aaker and Bagozzi, 1982; Schwartz and Miller, 1991; Roberts, 1996; Zimmer *et al.*, 1994). Consumers with higher education are more sensitive to the cause and tend to act in accordance. On the other hand, Sandahl and Robertson (1989) and Straughan and Roberts (1999) observed that education did not have a positive relation with green consumer behaviour.

Thus, we predict the following:

- H1.* The socio-demographic variables (of sex, age, literacy and income) are relevant in explaining ECCB.

*2.2.2 Psychographic characterization.* Despite the identification of the green consumer profile through the social, economic and demographic characteristics, several authors argue that psychographic variables provide more relevant insights into green consumer behaviour (Kassarjian, 1971; Anderson and Cunningham, 1972; Banerjee and McKeage, 1994; Chan, 1999; Awad, 2011). Straughan and Roberts (1999) studied the following psychographic variables that are also the subject of this paper: altruism, perceived consumer effectiveness (PCE), environmental concern (EC), and liberalism.

Altruism. Altruism, as the concern about the welfare of society and others, was analysed by Stern *et al.* (1993). Altruism plays an important role in political activism, but sometimes is not conclusive if there is direct cost involved. Straughan and Robert's (1999) examine this variable and a positive correlation with green consumer behaviour was found.

Perceived consumer behaviour (PCE). PCE is defined as the consumer's perception of the extent to which their actions can make a difference in solving environmental problems (Ellen *et al.*, 1991), for instance, in purchasing green products, recycling, subscribing to e-invoices, among others. According to Moisander (2007), consumers will act proactively if they feel their actions are effective for environment preservation. PCE has been included in several studies and is assumed to be an important predictor of ECCB, surpassing all other socio-demographic and psychographic variables (Kinnear *et al.*, 1974; Balderjahn, 1998; Ellen *et al.*, 1991; Berger and Corbin, 1992; Roberts, 1996; Roberts and Bacon, 1997; Straughan and Roberts, 1999; Awad, 2011).

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Environmental concern. Environmental concern (EC) is commonly defined as the individual's awareness of the environmental problems and their willingness to be part of the problem solution (Dunlap and Jones, 2002; Chan and Lau, 2000). Several authors correlated EC with environmental friendly behaviour (Kinneer *et al.*, 1974; Van Liere and Dunlap, 1981; Roberts and Bacon, 1997; Straughan and Roberts, 1999). According to Maloney *et al.* (1975), EC is related to the emotions and knowledge level as well as to a readiness to change behaviour. Bang *et al.* (2000) and Kim and Choi (2005) point out that consumers that are more concerned about the environment are more willing to purchase green products than those who are less concerned.

Liberalism. Liberalism is understood as left-leaning political ideologies. Some studies have shown some evidence that individuals with liberal political orientations are more likely to commit with the green movement, in contrast to those with more conservative political views. Roberts (1996) supports the relevance of liberalism. However, in Straughan and Roberts (1999), liberalism is not significant to explain ECCB.

Thus, we predict the following:

*H2.* The psychographic variables (perceived consumer effectiveness, altruism, environmental concern and altruism) are relevant in explaining the ECCB.

Straughan and Roberts (1999) argue that the demographics were much used in early studies to define the profile of the green consumer, but, nowadays, the theme is already on a more mature phase and the psychographic characteristics explain better the nature and behaviour of green consumers.

Thus, we predict the following:

*H3.* The psychographic variables are more relevant than socio-demographic in explaining the ECCB.

### *2.3 Green consumer behaviour*

Whenever there is a purchase decision, there is the potential that the final resolution can contribute to a more or less sustainable pattern of consumption. All purchasing actions have ethical, resource, waste and community impact consequences. According to Young *et al.* (2010), when consumers choose to adopt a sustainable lifestyle, their decision-making process becomes increasingly complex. The author mentions that there is an "attitude-behaviour gap" or "values-action gap", because although 30 per cent of consumers report that they are very concerned about environmental issues, it is not necessarily translated to their purchase habits.

This incongruence between environmental concern and purchase behaviour was also explored by several authors and has become a barrier to green consumption as well as to marketers (Mintel, 1995; Wong *et al.*, 1996; Crane, 2000). According to Follows and Jobber (2000) and Moisander (2007) the decision to acquire an alternative to a particular product (green or not) requires a deliberate and conscious knowledge of its consequences. In other words, the purchase intention results from an evaluation of the exchange between the individual and environmental consequences.

Imkamp (2000) presents the results from two studies conducted in 1989 and 1998 and verifies that there is change in consumer behaviour patterns, especially concerning the seeking information process about the green attributes of the products by the



consumer. In the first study, conducted in 1989, the results were below expectations. Consumers were not interested in the subject and were proven to have no interest in the ecological quality of products. This study was replicated in 1998, in order to check on the progress of the phenomenon and to verify if there was an increase in the importance of ecological product's attributes. The conclusions were that consumers perceived risks in buying green products and are more concerned with the production and distribution and not just the use of a product, as found in the past. In other words, consumers are not only concerned about the ecological quality of the product (Imkamp, 2000) but also about the environmental consequences associated with its purchase (Follows and Jobber, 2000). These authors argued that the intention to purchase green products is the result of a trade-off between the environmental issues and the individual consequences of a particular purchase. Therefore, a strong weight of individual consequences may explain why some consumers with high environmental concern do not purchase accordingly.

Schlegelmilch *et al.* (1996) state that green consumers are individuals that understand the consequences of their actions and their environmental knowledge can explain their green buying behaviour. Straughan and Roberts (1999) argue that consumer behaviour will vary depending on the individual level of environmental knowledge.

According to Biel and Dahlstrand (2005), Wheale and Hinton (2007), Sener and Hazer (2008) consumer behaviour is also influenced by considerations about the brand, culture, demographic characteristics, finance, habits, lack of information, lifestyles, personalities or ethical factors.

Chan (2001) investigated the determinants of green products purchased by Chinese consumers, and more specifically the relationship between GPI and GPB, and found that despite an existing knowledge and sharing of ecological values, GPI does not necessarily lead to green purchasing behaviour. GPI refers to the readiness expressed by the consumer to act for the benefit of the environment (Chan, 1999). GPB reflects the effective purchase of green products undertaken by consumers that act according to their convictions. These consumers are the ones who avoid using plastic bags and prefer to use an eco-bag when they go shopping, who buy natural detergents, who purchase goods with biodegradable packaging and who refuse to buy products from certain brands that harm the environment, among others (Schwartz and Miller, 1991; Minton and Rose, 1997). In general, while some studies demonstrated that there is a significant relation between GPI and GPB (Chan and Yam, 1995), others show that the gap persists (Wong *et al.*, 1996; Crane, 2000; Chan, 2001).

Thus, we predict the following:

*H4.* Consumers with higher ECCB have a higher GPI.

*H5.* There is a positive relationship between GPI and GPB.

The ECCB (Roberts, 1996; Straughan and Roberts, 1999) reflects a consumer "behavioural orientation". Given its nature, it seems more adequate to evaluate the predisposition to engage in ecologically conscious behaviour than to measure effective green purchase behaviour. The frequency, amount or volume of green purchases are not assessed as happens with GPB (Chan, 2001). In this sense, we expect that a previously expressed general orientation for ecologically conscious behaviour (ECCB) has a positive impact on a latter effective GPB.

Thus, we predict the following:

*H6.1* There is a direct and positive relationship between ECCB and effective GPB.

*H6.2* GPI mediates the relationship between ECCB and GPB.

A model of the determinants of ECCB and its impact on GPI and GPB is depicted in Figure 1.

### 3. Methodology

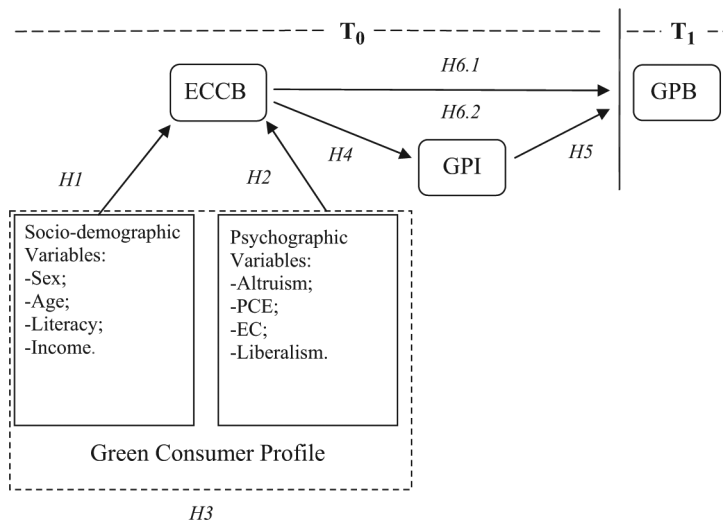
#### 3.1 Data collection and survey instrument

We have developed a quantitative study to test the relationships in the proposed model.

The target population of this research is composed of individuals living in Portugal, of both sexes, aged over 18 years.

The data collection occurred at two different stages through an online survey. In the first phase, we have first, designed a questionnaire to evaluate the ECCB and to profile the green consumer; this is an adaptation of the one constructed by Straughan and Roberts (1999), and second, to measure GPI (Chan, 2001). Respondents were asked permission for a second contact. The second phase happened one month after the first phase. The same respondents evaluated their GPB (Chan, 2001) during this month, with a focus on the frequency, amount spent and quantity of green products bought during that period.

We obtained a convenience sample of 186 respondents: 62.9 per cent were females and 37.1 per cent were males; Over 51.1 per cent of the respondents were equal to or below 30 years old and 34.8 per cent were between the age of 31 and 40, with the remaining 14.1 per cent being above 40 years old. The majority of the respondents' net month income ranged between €500.00 and €1,500.00. Over 59.1 per cent of the respondents were undergraduates, and 30.1 per cent were graduates and post-graduates.



**Figure 1.**  
Research model



### 3.2 Measures

**3.2.1 Ecologically conscious consumer behaviour.** The ECCB (Straughan and Roberts, 1999) was measured by 30-items in a Likert-format, anchored by “Always True” (5) and “Never True” (1) and calculated as a sum of the responses to the 30-items scale (with appropriate items reverse scored). The ECCB’s reliability is very good: Cronbach’s alpha coefficient was 0.928 (DeVellis, 1991).

**3.2.2 Socio-demographic measures.** Four key demographic variables were investigated as independent measures: age, sex, income and education.

**3.2.3 Psychographic measures.** Four psychographic variables were included in the present study: altruism, PCE, EC and liberalism, adapted from Straughan and Roberts (1999). Each of the key psychographic variables was measured by individual items in a Likert-format, anchored by “Always True” (5) and “Never True” (1). Altruism was measured by six items, PCE, by four items, EC, by five items, and Liberalism, by six items. For each psychographic variable we computed an index as a sum of its items. The reliability of each measure is analysed: The Cronbach’s alpha coefficient of altruism was 0.792; for PCE was 0.729, deleting one item; for EC was 0.545, deleting one item; and for liberalism was 0.672. The measures’ reliability are quite good, with only one exception: EC shows a poor score (DeVellis, 1991).

**3.2.4 Green purchase intention.** Three statements were used to measure respondents’ intention to buy green products (GPI), which were formulated in a seven-point scale (1 – very unlikely, 7 – very likely), following Chan (2001). The reliability is very good: Cronbach’s alpha coefficient was 0.940 (DeVellis, 1991).

**3.2.5 Green purchase behaviour.** Three behavioural indicators were used based on the study of Chan (2001): the frequency of green products purchased in the last month, measured on a seven-point scale (1 – never; 7 – at every opportunity); the amount spent on green products in the last month, measured on a seven-point scale (1 – never, 7 – lots of money); and the total number of green products purchased in the last month. The reliability is very good: Cronbach’s alpha coefficient was 0.892 (DeVellis, 1991).

## 4. Results

In order to test *H1*, a multiple linear regression was used with ECCB as the dependent variable and socio-demographic variables (age, sex, income, education) as predictors. The assumptions of the multiple linear regression were analysed and confirmed. The model explains 2.2 per cent ( $R^2$ ) of the total variance and is not significant,  $F(4, 169) = 0.934, p = 0.445$  (see Table I).

**Table I.**  
Regression coefficients  
(*H1*)

	Regression coefficient	Beta	Sig.
(Constant)	117.931		0.000
Age	0.152	0.083	0.385
Income	-1.433	-0.101	0.322
Literacy	-1.684	-0.067	0.410
Sex	-2.147	-0.061	0.439

*H1* is rejected, which means that the socio-demographic variables are not relevant in explaining the ECCB.

To study and test the hypothesis *H2*, another linear regression model was developed; we included the psychographic variables (Altruism, Liberalism, EC, and PCE) as predictors of the ECCB variable. The assumptions of the multiple linear regression were analysed and confirmed. The regression model explains 16.1 per cent ( $R^2$ ) of the total variance and is significant,  $F(4, 181) = 8.662, p = 0.000$ . The only variables that explain the variance of the ECCB are altruism and PCE, both significant for  $p < 0.05$  (see Table II). There are partial support for *H2*.

*H3* was tested, including the socio-demographic and psychographic variables, through a step-wise linear regression, again using the variable ECCB as the dependent variable (see Table III). In the first step, the model is significant,  $F(1, 172) = 26.341, p = 0.000$ , and explains 13.3 per cent ( $R^2$ ) of the total variance. The altruism is assumed as the variable with greater predictive power  $\beta = 0.364, p = 0.000$ . In the second and last step, the model,  $F(2, 171) = 15.610, p = 0.000$ , besides altruism, included also PCE as a significant predictor ( $\beta = 0.156, p = 0.038$ ) of ECCB. The explanatory power of the model is 15.4 per cent ( $R^2$ ).

*H3* was validated since psychographic variables are more relevant than the socio-demographic variables in explaining ecological conscious consumer behaviour.

The simultaneous test of complex relations between dependent and independent variables, with direct and indirect effects, and mediated variables, could not be easily modelled with standard regression. The hypotheses *H4, H5, H6.1* and *H6.2* represent such situation.

Structural equation modelling allows us to analyse complex interrelations between variables, namely through Path Analysis. Therefore, we have estimated a path model (Arbuckle, 2010: AMOS 19.0), that has embodied the full research model, revealing a very good fit (Chi-square = 25.017,  $p = 0.07$ , Chi-square/df = 1.564, CFI = 0.980, NFI = 0.951, RMSEA = 0.055) in accordance to Baumgartner and Homburg (1996).

	Regression coefficient	Beta	Sig
(Constant)	39.145		0.002
Altruism	1.249	0.253	0.005
Liberalism	0.464	0.086	0.262
EC	0.021	0.003	0.970
PCE	1.918	0.176	0.021

**Table II.**  
Regression coefficients  
(*H2*)

Model		Regression coefficient	Beta	<i>t</i>	Sig.
1	(Constant)	63.618		7.130	0.000
	Altruism	1.796	0.364	5.132	0.000
2	(Constant)	46.780		3.911	0.000
	Altruism	1.545	0.313	4.210	0.000
	PCE	1.699	0.156	2.089	0.038

**Table III.**  
Regression coefficients  
(*H3*)

This model (see Table IV) confirmed the previous results: PCE and altruism are the only significant predictors of ECCB.

ECCB has a direct, positive and significant effect on GPI ( $\beta = 0.684, p = 0.000$ ), corroborating prior evidence that the consumers with higher ECCB have a higher GPI. ECCB explains ( $R^2$ ) 47 per cent of GPI. Additionally, when comparing (student's *t*-test for independent samples) GPI of the consumers characterized according to the ECCB level (average: 70-109 ECCB score, versus high: 110-150 ECCB score) it was found to be a statistically significant difference ( $t_{(180)} = -8.392, p = 0.000$ ). The individuals that are more environmentally conscious have higher GPI than those with average ECCB (16.30 versus 11.74 GPI mean). The *H4* is not rejected.

There are direct, positive and significant effects of GPI ( $\beta = 0.201, p < 0.1$ ) and ECCB ( $\beta = 0.432, p < 0.05$ ) on GPB. These two predictors explain ( $R^2$ ) 35 per cent of GPB. Thus, *H5* and *H6.1* could not be rejected. We note that ECCB has a stronger impact than GPI on GPB.

To study the role of GPI as mediator variable in the ECCB-GPB relationship we compute the indirect effect ( $ab = \text{GPI} < - \text{ECCB} * \text{GPB} < - \text{GPI}$ ) between ECCB and GPB ( $ab = 0.032$ ), and we examine its significance through the Sobel test, according to the work of Baron and Kenny (1986) which is considered the most prevalent approach (Wu and Zumbo, 2008). The Sobel test result is  $t = 1.839$  and  $p = 0.066$ , therefore *ab* is significant at  $p < 0.1$ : a low and significant mediator effect exists through GPI. The *H6.2* is not rejected.

## 5. Discussion and implications

The results allow us to conclude that the demographic variables analysed (sex, age, education and income) are not relevant in explaining ecological conscious consumer behaviour.

In turn, the psychographic variables are demonstrated to be more effective in characterizing the ecologically conscious consumer behaviour. This finding is in agreement with what would be expected, since previous studies had shown this trend, including the research carried out by Roberts (1996) and Straughan and Roberts (1999). Psychographic variables seem to be more effective than the socio-demographics in order to characterize the ecological conscious consumer.

Of the psychographic variables analysed, PCE and altruism were the only ones of significance in explaining ECCB. The PCE (as the belief that each of one's actions as

Variables	Estimate	Standardized estimate	Sig.
ECCB ← Income	-1.343	-0.094	0.312
ECCB ← Literacy	-0.893	-0.038	0.591
ECCB ← Age	0.237	0.129	0.141
ECCB ← Sex	-2.226	-0.064	0.362
ECCB ← PCE	2.129	0.196	0.010
ECCB ← EC	0.254	0.041	0.648
ECCB ← Altruism	1.148	0.232	0.009
ECCB ← Liberalism	0.267	0.049	0.525
GPI ← ECCB	0.177	0.684	0.000
GPB ← GPI	0.179	0.201	0.061
GPB ← ECCB	0.100	0.432	0.000

**Table IV.**  
Path analysis estimates

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individuals has an important role on preserving environment) is a driving force for ECCB. Altruism, as the concern about the welfare of the society and others, is essential in explaining this behaviour. It could be surprising that EC would not be significant in explaining ECCB. This could mean that it is more relevant for consumers to believe in the effectiveness of their actions as individuals in preserving the environment than merely have concern for the environment. However, the non-significant EC effect may be due to its low reliability, and thus we could not be conclusive about this. Unlike the study of Straughan and Roberts (1999), liberalism is not a significant predictor of ECCB.

These findings are particularly important for managers and marketers. More than purely building marketing strategies and campaigns focused on environmental concerns, it is necessary to introduce a clear dimension of action in them, because there is evidence that it is important from the consumer perspective to understand the real impact that their actions have on environmental preservation.

Regarding the relation between ECCB and GPI, the higher the level of ECCB is, the higher GPI appears to be, which means that the more environmentally conscious consumer has a greater propensity to purchase products which are more environmentally friendly.

Although previous studies, specially Chan's (2001), argued that despite the consumer expressing a high level of GPI it did not affect their GPB, our research has illustrated that there is some mismatch between GPI and the actual purchase of green products (GPB) as some others authors have found (e.g. Chan and Yam, 1995). This finding may be revealing that green consumer behaviour has entered into another phase, where there exists a greater conformity between green consumer thoughts and their actions.

In a temporally-sequenced analysis, we confirm that a previous ecological consumer "behavioural orientation" (ECCB) has a positive impact on a later effective GPB, which is stronger than the GPI effect. Therefore, the consumers that already admitted some kind of ecological behaviour tend to have higher effective GPB than those who expressed an intention to do so. Managers must implement a marketing strategy that offers to these consumers an appealing green solution: the consumer must perceive its effectiveness in protecting the environment and that offer should awaken a positive attitude on behalf of the others, in a way that the consumer feels compelled to buy. This contributes to developing an ecological behavioural orientation which in turn materializes in a green purchase.

## 6. Conclusions

The emergence and proliferation of the environment preservation need has had repercussions in the markets, specifically in relation to consumer behaviour. It is increasingly important to understand this change as a challenge for management in general and for marketing in particular.

This research contributes to the knowledge about green consumer behaviour. Our investigation shows clear evidences that psychographic variables are more relevant in explaining ECCB than socio-demographics. The results reinforce the role of PCE and altruism on ECCB, and given support to the attitude-behaviour link. The theoretical contribution of this study goes further, since it considers ECCB and GPI as antecedents

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of GPB – a previous ECCB has a higher positive effect than GPI on a later effective GPB.

With this knowledge, managers could develop the right positioning strategies and an adequate marketing programme after evaluating the attractiveness of the identified green segments. In addition to the regular benefits, environmental and social benefits must be present in order to motivate the consumer to buy.

Green marketing also requires green management and it implies a rethinking of all marketing strategies from a new perspective – including not only the economic and financial impact of the decisions on the marketing planning process and activities but also the social and ecological components.

This study provides some evidences that there is a new era coming, on which there is a better match between what consumers believe and their actual behaviour. For marketers it has released the challenge for a proactive approach in a creative way, with particular focus on product communications. More than to educate and advise consumers of the environmental problem, the focus of the communications should be on the environmental features, advantages and benefits associated with the product and its real impact on ecological preservation.

### **7. Limitations and suggestions for future research**

In this investigation there are some limitations to take into account, namely the use of a convenience sample which limits the potential of the conclusions; the extension of the questionnaire that might discourage some respondents' participation, and the utilization of self-reported measures to evaluate the variables of interest.

Several topics for future research development are presented: more detailed characterization of the green consumer profiling, for making a correct segmentation of consumers in order to develop green product offerings regarding their real needs. It would be interesting to evaluate the influence of ecological consciousness in all buying process stages, from the early step of recognizing the problem, seeking information, evaluation of possible solutions, through decision purchase and ending in behaviour after the purchase; to explore the green consumption barriers, and also it would be useful to have a qualitative approach to further develop this theme, for example, considering focus group and depth-interviews with consumers and experts in the area.

### **References**

- Aaker, D.A. and Bagozzi, R.P. (1982), "Attitudes toward public policy alternatives to reduce air pollution", *Journal of Marketing*, Vol. 1, pp. 85-94.
- Anderson, W.T. and Cunningham, W. (1972), "The socially conscious consumer", *Journal of Marketing*, Vol. 36, pp. 23-31.
- Arbuckle, J.L. (2010), *Amos Version 19.0*, IBM SPSS, Chicago, IL.
- Awad, T.A. (2011), "Environmental segmentation alternatives: buyers' profiles and implications", *Journal of Islamic Marketing*, Vol. 2 No. 1, pp. 55-73.
- Balderjahn, I. (1998), "Personality variables and environmental attitudes as predictors of ecologically responsible consumption patterns", *Journal of Business Research*, Vol. 17 No. 1, pp. 51-6.
- Banerjee, B. and McKeage, K. (1994), "How green is my value: exploring the relationship between environmentalism and materialism", *Advances in Consumer Research*, Vol. 22, pp. 257-61.

- 
- Bang, H., Ellinger, A.E., Hadjimarcou, J. and Traichal, P.A. (2000), "Consumer concern, knowledge, belief, and attitude toward renewable energy: an application of the reasoned action theory", *Psychology and Marketing*, Vol. 17, pp. 6-26.
- Baron, R.M. and Kenny, D.A. (1986), "The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-82.
- Baumgartner, H. and Homburg, C. (1996), "Applications of structural equation modeling in marketing and consumer research: a review", *International Journal of Research in Marketing*, Vol. 13, pp. 139-61.
- Berger, I.E. and Corbin, R.M. (1992), "Perceived consumer effectiveness and faith in others as moderators of environmentally responsible behaviors", *Journal of Public Policy and Marketing*, Vol. 11, pp. 79-89.
- Berkowitz, L. and Lutterman, K.G. (1968), "The traditional socially responsible personality", *Public Opinion Quarterly*, Vol. 22, pp. 256-61.
- Biel, A. and Dahlstrand, U. (2005), "Values and habits: a dual-process model", in Krarup, S. and Russell, C.S. (Eds), *Environment, Information and Consumer Behaviour*, Edward Elgar, Cheltenham, pp. 33-50.
- Brooker, G. (1976), "The self-actualizing socially conscious consumer", *Journal of Consumer Research*, Vol. 3, pp. 107-12.
- Chan, K. (1999), "Market segmentation of green consumers in Hong Kong", *Journal of International Consumer Marketing*, Vol. 12 No. 2, pp. 7-24.
- Chan, R. (2001), "Determinants of Chinese consumers' green purchase behaviour", *Psychology and Marketing*, Vol. 18 No. 4, pp. 389-413.
- Chan, R. and Lau, L. (2000), "Antecedents of green purchases: a survey in China", *Journal of Consumer Marketing*, Vol. 17 No. 4, pp. 338-57.
- Chan, R.Y.K. and Yam, E. (1995), "Green movement in a newly industrializing area: a survey on the attitudes and behavior of the Hong Kong citizens", *Journal of Community and Applied Social Psychology*, Vol. 5 No. 1, pp. 273-84.
- Chen, T. and Chai, L. (2010), "Attitude towards the environment and green products: consumers' perspective", *Management Science and Engineering*, Vol. 4 No. 2, pp. 27-39.
- Crane, A. (2000), "Marketing and the natural environment: what role for morality?", *Journal of Macromarketing*, Vol. 20 No. 2, pp. 144-54.
- DeVellis, R.F. (1991), *Scale Development*, Sage Publications, Thousand Oaks, CA.
- D'Souza, C., Taghian, M. and Khosla, R. (2007), "Examination of environmental beliefs and its impact on the influence of price, quality and demographic characteristics with respect to green purchase intention", *Journal of Targeting, Measurement and Analysis for Marketing*, Vol. 15 No. 2, pp. 69-78.
- Dunlap, R.E. and Jones, R.E. (2002), "Environmental concern: conceptual and measurement issues", in Dunlap, R.E. and Michelson, W. (Eds), *Handbook of Environmental Sociology*, Greenwood Press, Westport, CT, pp. 482-524.
- Elkington, J. (1989), "Why it pays to be green", *Weekend Financial Times*, Vol. 14, October, p. 13.
- Ellen, P.S., Wiener, J.L. and Cobb-Walgreen, C. (1991), "The role of perceived consumer effectiveness in motivating environmentally conscious behaviors", *Journal of Public Policy & Marketing*, Vol. 10, Fall, pp. 102-17.
- Follows, S. and Jobber, D. (2000), "Environmentally responsible purchase behaviour: a test of consumer model", *European Journal of Marketing*, Vol. 34, pp. 723-46.



- 
- Gardyn, R. (2003), "Eco-friend or foe?", *American Demographics*, Vol. 25 No. 8, p. 12.
- Greendex (2010), available at <http://environment.nationalgeographic.com/environment/greendex> (accessed December 9, 2011).
- Hailes, J. (2007), *The New Green Consumer Guide*, Simon and Schuster, London.
- Huang, C. and Kung, F. (2011), "Environmental consciousness and intellectual capital management", *Management Decision*, Vol. 49 No. 9, pp. 1405-25.
- Imkamp, H. (2000), "The interest of consumers in ecological product information is growing – evidence from two German surveys", *Journal of Consumer Policy*, Vol. 23 No. 2, pp. 193-202.
- Kalafatis, S.P., Pollard, M., East, R. and Tsogas, M.H. (1999), "Green marketing and Ajzen's theory of planned behaviour: a cross-market examination", *Journal of Consumer Marketing*, Vol. 16 No. 5, pp. 441-60.
- Kassarjian, H.H. (1971), "Incorporating ecology into marketing strategy: the case of air pollution", *Journal of Marketing*, Vol. 35 No. 7, pp. 61-5.
- Kassaye, W. (2001), "Green dilemma", *Marketing Intelligence & Planning*, Vol. 19 No. 6, pp. 444-55.
- Kim, Y. and Choi, S.M. (2005), "Antecedents of green purchase behavior: an examination of collectivism, environmental concern, and perceived consumer effectiveness", *Advances in Consumer Research*, Vol. 32, pp. 592-9.
- Kinney, T. and Taylor, J. (1973), "The effect of ecological concern on brand perception", *Journal of Marketing Research*, Vol. 10, May, pp. 191-7.
- Kinney, T., Taylor, J. and Ahmed, S. (1974), "Ecologically concerned consumers: who are they?", *Journal of Marketing*, Vol. 38, pp. 20-4.
- Krause, D. (1993), "Environmental consciousness: an empirical study", *Journal of Environment and Behaviour*, Vol. 25 No. 1, pp. 126-42.
- McDaniel, S.W. and Rylander, D.H. (1993), "Strategic green marketing", *Journal of Consumer Marketing*, Vol. 10 No. 3, pp. 4-10.
- McEvoy, J. III (1972), "The American concern with the environment", in Burch, W.B. Jr, Check, C.H. and Taylor, L. (Eds), *Social Behaviour, Natural Resources and the Environment*, Harper and Row, New York, NY.
- McIntosh, A. (1991), "The impact of environmental issues on marketing and politics in the 1990s", *Journal of the Market Research Society*, Vol. 33 No. 3, pp. 205-17.
- MacDonald, W.L. and Hara, N. (1994), "Gender differences in environmental concern among college students", *Sex Roles*, Vol. 33 Nos 5/6, pp. 369-74.
- Maloney, M., Ward, M. and Braucht, N. (1975), "Psychology in action: a revised scale for the measurement of ecological attitudes and knowledge", *American Psychologist*, Vol. 30, pp. 787-90.
- Marketing (1992), "How green is the UK consumer when shopping?", *Marketing*, November 26, p. 16.
- Mintel (1995), *The Second Green Consumer Report*, Mintel, London.
- Minton, A.P. and Rose, R.L. (1997), "The effects of environmental concern on environmentally friendly consumer behavior: an exploratory study", *Journal of Business Research*, Vol. 40, pp. 37-48.
- Moisander, J. (2007), "Motivational complexity of green consumerism", *International Journal of Consumer Studies*, Vol. 31 No. 4, pp. 404-16.

- 
- Molina-Azorín, J., Claver-Cortés, E., López-Gamero, M. and Tari, J. (2009), "Green management and financial performance: a literature review", *Management Decision*, Vol. 47 No. 7, pp. 1080-100.
- Ottman, J.A. (1993), *Green Marketing: Challenges and Opportunities for the New Marketing Age*, NTC Business Books, New York, NY.
- Peattie, K. and Charter, M. (2003), "Green marketing", in Baker, M. (Ed.), *The Marketing Book*, 5th ed., Butterworth-Heinemann, Oxford.
- Polonsky, M.J. (1994), "An introduction to green marketing", *Electronic Green Journal*, Vol. 1 No. 11, pp. 24-9.
- Prothero, A. (1996), "Environmental decision-making: research issues in the cosmetics and toiletries industry", *Marketing Intelligence & Planning*, Vol. 14 No. 2, pp. 19-25.
- Pujari, D. and Wright, G. (1996), "Developing environmentally-conscious product strategy: a qualitative study of selected companies in Britain and Germany", *Marketing Intelligence & Planning*, Vol. 14 No. 1, pp. 19-28.
- Reizenstein, R.C., Hills, G.E. and Philpot, J.W. (1974), "Willingness to pay for control of air pollution: a demographic analysis", in Curhan, R.C. (Ed.), *1974 Combined Proceedings*, American Marketing Association, Chicago, IL, pp. 323-8.
- Roberts, J.A. (1995), "Profiling levels of socially responsible consumer behaviour: a cluster analytic approach and its implications for marketing", *Journal of Marketing Theory and Practice*, Fall, pp. 97-117.
- Roberts, J.A. (1996), "Green consumers in the 1990s: profile and implications for advertising", *Journal of Business Research*, Vol. 36 No. 3, pp. 217-32.
- Roberts, J.A. and Bacon, D.R. (1997), "Exploring the subtle relationships between environmental concern and ecologically conscious consumer behaviour", *Journal of Business Research*, Vol. 40 No. 1, pp. 79-89.
- Sandahl, D.M. and Robertson, R. (1989), "Social determinants of environmental concern: specification and test of the model", *Environment and Behaviour*, Vol. 21 No. 1, pp. 57-81.
- Schlegelmilch, B., Bohlen, G.M. and Diamantopoulos, A. (1996), "The link between green purchasing decisions and measures of environmental consciousness", *European Journal of Marketing*, Vol. 30, pp. 35-55.
- Schwartz, J. and Miller, T. (1991), "The earth's best friends", *American Demographics*, Vol. 13, pp. 26-35.
- Sener, A. and Hazer, O. (2008), "Values and sustainable consumption behaviour of women: a Turkish sample", *Sustainable Development*, Vol. 16 No. 5, pp. 291-300.
- Sheltzer, L., Stackman, R.W. and Moore, L.F. (1991), "Business – environment attitudes and the new environmental paradigm", *Journal of Environmental Education*, Vol. 22 No. 4, pp. 14-21.
- Soonthonsmai, V. (2007), "Environmental or green marketing as global competitive edge: concept, synthesis, and implication", *EABR (Business) and ETLC (Teaching) Conference Proceedings, Venice*.
- Stern, P., Ditz, T. and Guagnano, G.A. (1993), "Value orientations, gender and environmental concern", *Journal of Social Issues*, Vol. 50 No. 3, pp. 65-7.
- Straughan, R.D. and Roberts, J.A. (1999), "Environmental segmentation alternatives: a look at green consumer behaviour in the new millennium", *Journal of Consumer Marketing*, Vol. 16 No. 6, pp. 558-75.

- Titterton, A.J., Davies, C.A. and Cochcrane, A.C. (1996), "Forty shades of green: a classification of green consumerism in Northern Ireland", *Journal of Euromarketing*, Vol. 43 No. 1, pp. 43-63.
- Van Liere, K. and Dunlap, R. (1981), "The social bases of environmental concern: a review of hypotheses, explanations, and empirical evidence", *Public Opinion Quarterly*, Vol. 44 No. 2, pp. 181-97.
- Wheale, P. and Hinton, D. (2007), "Ethical consumers in search of markets", *Business Strategy and the Environment*, Vol. 16, pp. 302-15.
- Wong, V., Turner, V. and Stoneman, P. (1996), "Marketing strategies and market prospects for environmentally friendly consumer products", *British Journal of Management*, Vol. 7 No. 3, pp. 263-81.
- Wu, A.D. and Zumbo, B.D. (2008), "Understanding and using mediators and moderators", *Social Indicators Research*, Vol. 87 No. 3, pp. 367-92.
- Young, W., Hwang, K., McDonald, S. and Oates, C. (2010), "Sustainable consumption: green consumer behaviour when purchasing products", *Sustainable Development*, Vol. 18, pp. 20-31.
- Zimmer, M.R., Stafford, T.F. and Stafford, M.R. (1994), "Green issues: dimensions of environmental concern", *Journal of Business Research*, Vol. 30 No. 1, pp. 63-74.

#### Further reading

- Chan, T.S. (1996), "Concerns for environmental issues and consumer purchase preferences: a two country study", *Journal of International Marketing*, Vol. 9, January, pp. 43-55.
- Henion, K.E. (1972), "The effect of ecologically relevant information on detergent sales", *Journal of Marketing Research*, Vol. 9 No. 2, pp. 10-14.
- Menon, A. and Menon, A. (1997), "Enviropreneurial marketing strategy: the emergence of corporate environmentalism as market strategy", *Journal of Marketing*, Vol. 61, pp. 51-67.

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