Green marketing and Ajzen’s theory of planned behaviour: a cross-market examination

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Abstract Examines the determinants that influence consumers’ intention to buy environmentally friendly products. Ajzen’s theory of planned behaviour (TPB) provides the conceptual framework of the research and the appropriateness of the theory and is tested in two distinct market conditions (UK and Greece). Although the findings offer considerable support for the robustness of the TPB in explaining intention in both samples, there is some indication that the theory is more appropriate in well established markets that are characterised by clearly formulated behavioural patterns (i.e. the model fitting elements of the UK sample are superior to the corresponding ones obtained from the Greek sample). The results are consistent with previous research on moral behaviour.

Introduction

The last three decades have seen a progressive increase in consumer environmental consciousness, as the environment moved from a fringe, to a mainstream issue. This has been driven by a number of factors including increased media coverage, greater awareness of environmental problems, the rise of pressure group activities, stringent legislation (both national and international) and the impact of major industrial disasters on public opinion (McIntosh, 1991; Butler, 1990; Tapon and Leighton, 1991; Charter, 1992; Wagner, 1997). Consequently, consumers have become more concerned about their everyday habits and the impact that these can have on the environment (Krause, 1993).

Marketers viewed this phenomenon as offering business opportunities, and a number of organisations developed and implemented long-term, proactive environmental strategies (Pujari and Wright, 1995). At the same time companies launched environmentally friendly (EF) products many of which were clothed in confusing and misleading half truths, made false and trivial promises (Davis, 1991), with some companies exaggerating or even fabricating the environmental qualities of their products (Garfield, 1991).

Emerging evidence (Wong et al., 1996; Aspinall, 1993) suggests a curious paradox. Despite evidence to suggest that society is increasingly sympathetic towards the environment many EF products have not achieved the level of market success that would have been expected. In many consumer product categories, EF producers have achieved disappointingly low levels of market share. This is supported by the findings of recent UK surveys which indicate that, although consumers’ concern with the environment continues to
increase (albeit at a decreasing rate) their willingness to buy EF products has declined (Mintel, 1991; 1995). Thus the above are believed to support the claim that UK consumers are reluctant to change their purchasing patterns despite their expressed concern about the environment.

We use Ajzen’s (1991) theory of planned behaviour (TPB) to provide an insight into the determinants of intention within the green marketing domain. Furthermore, the stability of these determinants is examined through a cross-market examination.

Research background and theoretical framework
An account of research that links level of environmental consciousness and EF behaviour is presented first and given that the research is firmly placed within the consumer behaviour domain a brief review of the chosen behaviour model, i.e. the TPB, follows.

Environmental consciousness and EF behaviour
As a result of environmental damage caused by products, production processes and environmental disasters, environmentalism has, over the past three decades, become an important issue (Easterling et al., 1996). For consumers, the 1960s may be described as a time of “awakening”, the 1970s as a “take action” period, the 1980s as an “accountable” time, and the 1990s as a “power in the marketplace” era (Makower, 1993). During this period consumers appear to have became aware of the fact that the environment is more fragile than they once believed, and that there are limits to the use of natural resources (Krause, 1993). This, in turn, stimulated a widespread feeling that the time for corrective action has arrived (Buttel and Flynn, 1974; Lipsey, 1977; Roper Organisation, 1990; Ladd, 1990; Shabecoff, 1993).

By the end of the 1980s, increasing numbers of consumers described themselves as environmentalists (Fisher, 1990; Cross, 1990; Donaton and Fitzgerald, 1992) and a number of opinion polls indicating an expressed desire to protect the environment emerged (Carlson et al., 1993). Despite the obvious limitations of such publications (Denzin, 1989; Oskamp et al., 1991; Phillips, 1971) there is clear evidence of an upward trend in consumers’ environmental concern, with the period between 1972 and 1991 exhibiting an accelerating pattern (Roberts and Bacon, 1997). In more recent years there is evidence to suggest that a plateau has been reached (Stisser, 1994). The 1986 NOP study indicated an 8 per cent level of environmental concern while the corresponding percentages of the 1989 NOP, and the 1991 and 1993 Guardian/ICM studies were 33 per cent, 69 per cent and 71 per cent.

Heightened environmental concern has been reflected in increased intention to purchase EF products. More specifically it has been suggested that consumers with a higher level of environmental concern will be more likely to engage in EF consumer behaviour (Antil, 1984; Roberts, 1991; Sheltzer et al., 1991; Shabecoff, 1993). These claims have been supported by a number of surveys carried out between 1989 and 1990 which reported a dramatic increase in the number of consumers expressing environmental concerns and claiming to have purchased EF products (see Gerstman and Meyers Inc., 1989; Gallup, 1990; Mandese, 1991).

Nevertheless, a number of post 1990 studies have produced results that do not fully support the above. For example, the 1991 Simmons Market Research Bureau’s (SMRB) study reported low correlation between environmental concern and consumers’ willingness to change their buying
behaviour in favour of EF products. Such findings are in line with research carried out by, among others, Kleiner (1991), Schlossberg (1991), and Winski (1991), who concluded that there is little evidence to suggest that positive attitudes towards environmental issues are manifested in the form of actual purchase behaviour.

Examination of the relevant literature points towards two possible explanations:

(1) Authors such as Downs (1972), Lipsey (1977), and Corrado and Ross (1990), and a report produced by Harris and Associates (1989) suggest that during times of recession, economic issues replace environmental issues as more immediate concerns for consumers. This is believed to explain the apparent cyclical pattern in terms of consumers’ EF behaviour.

(2) The complexity of environmental concern is offered as an alternative explanation by authors such as Albrecht et al. (1982), Noe and Snow (1990), Shetzer et al. (1991), and Zimmer et al. (1994), Roberts and Bacon (1997). It is claimed that environmental concern may be more influential for some behaviours than others and/or that environmental concern itself may be multifaceted, and consequently may reflect and/or be reflected in a wide spectrum of consumer activities.

In conclusion we can say that, despite the existence of some evidence to link attitudes and EF behaviour, extant literature provides very little information regarding the determinants of intention to buy EF products. The TPB is employed in order to redress such omission.

**The theory of planned behaviour**

A variety of explanatory theories of consumer behaviour have been put forward over the years. Some derive from the social sciences: psychology, sociology, or economics. Others concentrate more on the effects of marketing variables, and stress the effects of external stimuli, such as advertising, physical product differentiation, packaging, promotion, retail availability, point of sale display, direct selling and so on (Ehrenberg and Goodhart, 1979). The major theories are highly eclectic, taking into account both personal and environmental variables (e.g. Nicosia, 1966; Howard and Sheth, 1969; Engel et al., 1995).

Although such theories provide an understanding of alternative brands or products are compared, they do not explain how such comparisons are translated into buying decisions. To account for this process and to develop a comprehensive theory of consumer behaviour, many researchers turned to social psychological research in attitude formation (Ajzen and Fishbein, 1980). A class of theories commonly referred to as expectancy-value models (e.g. Rosenberg, 1956; Fishbein, 1963) appeared to be of particular relevance because they provided a theoretical link between evaluative criteria and the concept of attitude. In addition, these models formalised the widely held view that consumers’ anticipated satisfaction with a product (and hence the purchase of that product) is determined by their beliefs that the product fulfils certain functions and that it satisfies some of their needs. Over the past 40 years expectancy-value models have developed from the original Fishbein (1963) consumer expectancy-value behaviour model to the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980), to the theory of planned behaviour (TPB) (Ajzen, 1985;1991).
The TPB forms the theoretical framework of this paper because it offers a clearly defined structure/model that allows the investigation of the influence that attitudes, personal and cultural determinants and volitional control have on consumers’ intentions to buy EF products. Furthermore, a review by East (1997) has indicated that, in recent years, the TPB has been applied to a wide variety of topics (e.g. physical activities, quitting cigarette smoking, blood donation, complaining, Internet use etc.) and that the model has provided robust estimates.

Symbolically, the TPB model is presented in Figure 1 where it is illustrated that each of the determinants of intention, i.e. attitude to behaviour (AB), subjective norm (SN) and perceived control (PBC) is, in turn, determined by underlying belief structures. These are referred to as outcome beliefs, normative beliefs and control beliefs which are related to AB, SN and PBC respectively. More specifically:

- **Attitudes to behaviour (AB):** $A_B$ is determined by the sum of the expected outcomes, and is weighted by an evaluation of the desirability of the outcome. The expectancy is measured as a likelihood ($b$) of the outcome occurring if the action is taken and the value measured as an evaluation ($e$) of the outcome when it does occur; thus the sum of the expected values ($\Sigma b_i e_i$) determines $A_B$. This analysis is part of a general theory of attitude developed by Fishbein (1963) and rests on work by Dulany (1961). A distinctive aspect of Fishbein’s approach is that the outcomes affecting AB are restricted to those that are salient, i.e. those that are easily brought to mind by respondents. Ajzen and Fishbein (1980) argue that thoughts that do not readily come to mind in an elicitation are unlikely to affect behaviour.

- **Subjective norm (SN):** The SN, like $A_B$, are also based on salient beliefs, called normative beliefs, about whether particular referents think the respondent should or should not do the action in question. Like expected values these referent influences are covered by two measures: ($n$) the likelihood that the referent holds the normative belief and ($m$), the motivation to comply with the views of the referent. Thus $\Sigma n_i m_i$ is the determinant of SN.

Subjective norm controls that behaviour that is instigated by the desire to act as others think you should act. Sometimes, socially worthy acts, e.g. recycling of paper and bottles, bring internally generated feelings of self-respect or pride, while failure to act in this way may invoke feelings of shame or self-reproach. SN is therefore, internally controlled, it does not operate through external reinforcement such as the overt congratulations or hostility of others. The different referents involved in the SN may be friends, parents, doctors, political parties, religious organisations, etc. For example, in purchasing of EF clothes washing detergent products,

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**Figure 1. Theory of planned behaviour**
consumers might be influenced by the messages of environmental pressure groups who claim that packaging and product formulations can adversely affect the environment. The SN is “subjective” because it is what the agent thinks, and a “norm”, because it is the agent’s understanding of what others think he or she should do (East, 1997).

- **Perceived behavioural control (PBC)**: PBC is also underwritten by specific beliefs, called control beliefs. Control beliefs can be measured as the product of two measures: the power (p) of a factor to assist the action and perceived access to the factor (c). Thus $\Sigma p_i c_i$ is posited to measure PBC. PBC is included in the TPB as a determinant that has both a direct effect on behaviour and an indirect effect on behaviour through intentions.

The indirect effect of PBC is based upon the assumption that PBC has motivational implications for behavioural intentions. Individuals who believe they lack the necessary resources or opportunities to perform a particular behaviour are unlikely to form strong behavioural intentions despite the fact that their attitude and SN may be favourable. Bandura *et al.* (1980) provide empirical evidence that people’s behaviour is strongly influenced by the confidence that they have in their ability to perform the behaviour. Thus, PBC is expected to contribute to the prediction of intention over and above the effects due to the other major independent variables of the model. At the same time its influence on behaviour will also be mediated by intention.

**The research setting**

It was decided to carry out parallel research in two EU countries. This was prompted by findings indicating that:

- the degree of green marketing varies considerably between countries (Lazaro, 1993), and
- demand and attitudes for green products is likely to be uneven across different market segments and cultures (Ottman, 1992a; 1992b; Peattie, 1992).

The UK and Greece were chosen as representing countries positioned close to the two extremes of public awareness and debate on green issues.

The actual research environment was timber based products and in particular dining tables and chairs. The choice reflects:

- the ongoing debate about the destruction of the tropical forest, and
- the fact that purchasing decisions for such products represent free and voluntary choice and consequently consumers are expected to be able to have reasons for their actions.

Given the issues under examination, attention was paid to the problem of social desirability, i.e. the tendency by some respondents to provide answers that they deem to be socially desirable or acceptable rather than their own feelings or responses (Crowne and Marlowe, 1964). In order to overcome such tendencies we decided not to elicit direct measures of intention but rather to infer measures of intention through utilities attached to a specific element of timber based furniture. More specifically, through conjoint analysis we obtained utility measures attached to the provision or not of information related to the actual source of the timber, i.e. whether or not the timber used to produce the specific furniture originated from sustainably.
managed forests. For the purpose of this paper furniture made out of timber from sustainably managed forests is termed “Eco Labelling”.

Aim and objectives
The main aim of the research presented here is to provide an insight into the attitude dimensionality/determinants that influence consumers’ intentions towards EF products. More specifically, the objectives of the research follow the general framework suggested by East et al. (1997) and are:

- To explore the boundary conditions of the TPB, i.e. to test its appropriateness, within a given marketing domain, i.e. green marketing.
- To examine the stability of the model and the structure of the construct relationships across different market conditions, i.e. to understand and contrast the determinants that enter into the decision making of two distinct market settings.

Methodology
The research took the form of a cross-sectional self-completion survey among UK and Greek consumers. In addition, a general section on socio-demographics was used for matching the two samples. The eventual questionnaire comprised two main sections. Section A was related to beliefs associated with measures of the TPB model, while Section B comprised the conjoint part of the research. The main methodological issues under consideration are debated below.

Constructs
The procedures employed in obtaining the beliefs that were to form the TPB part of the research and the approach followed in defining and designing the stimuli to be incorporate in the conjoint section of the study are debated below:

- Elicitation of beliefs: In accordance with Ajzen and Fishbein (1980), a pilot study was carried out to elicit the salient beliefs of the population under consideration concerning buying timber furniture carrying “Eco Labelling”. In particular a series of in-depth interviews with households were carried out (18 such interviews were carried out in the UK and 11 in Greece). During these interviews elicitation procedures, described by East (1990), were used and Table I indicates the number of statements generated for all the belief constructs except intention (for the latter see Product Attributes section). The NEWACT program was used in order to produce appropriate questioning formats for each statements (East, 1991a).

- Product attributes: As stated in the Research Setting section, conjoint analysis was employed in order to obtain utility values which in turn were used as surrogate measures of intention. In addition to the

<table>
<thead>
<tr>
<th>Determinants of intention</th>
<th>Antecedents to the determinants</th>
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<tbody>
<tr>
<td>A_b (2 statements)</td>
<td>OB (5 statements – paired measures for each statement, i.e. likelihood and value for each statement)</td>
</tr>
<tr>
<td>SN (2 statements)</td>
<td>RB (6 statements – as above)</td>
</tr>
<tr>
<td>PBC (2 statements)</td>
<td>CB (3 statements – as above)</td>
</tr>
</tbody>
</table>

Table I. Constructs of the TPB model
justifications provided above the adoption of conjoint analysis reflects our efforts to present the green aspects under examination within a realistic context, i.e. as part of an overall product offering. Conjoint analysis is a well established technique and the reader is directed to Hair et al. (1998) for a detailed explanation of the process and to Louvier (1994) for a debate of its theoretical foundations and conceptual shortcomings.

The definition and design of the experimental stimuli was an important consideration. As a result of the in-depth sessions and supported by contents analysis of the promotional material of manufacturers of dining tables and chairs the following attributes and levels were selected (Table II).

**Data collection**

The above constructs and product definitions were formulated into a self-completion questionnaire which was pre-tested with 15 respondents. This highlighted a number of defects in the survey instrument. Bohlen et al. (1993) experienced similar problems in the development of a questionnaire dealing with environmental issues, and they attribute such problems to ambiguous wording and problems with vocabulary. In order to ensure that the problems with the initial questionnaire had been addressed, the revised version was also pre-tested with ten respondents. In addition to the pre-testing, five protocol and five debriefing sessions were conducted.

Following further minor modifications, the final questionnaire was developed by utilising the Tull and Hawkins (1993) model of questionnaire

<table>
<thead>
<tr>
<th>Product attributes</th>
<th>Attribute levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price:</td>
<td>Three levels, high, mid and low:</td>
</tr>
<tr>
<td></td>
<td>UK – £1,800; £900; £300</td>
</tr>
<tr>
<td></td>
<td>Greece – Dr. 2,000,000; Dr. 1,000,000; Dr. 350,000</td>
</tr>
<tr>
<td>Species used</td>
<td>Three timber species, to represent the most commonly used ones:</td>
</tr>
<tr>
<td></td>
<td>UK – Oak; Pine; Mahogany</td>
</tr>
<tr>
<td></td>
<td>Greece – Oak; Walnut; Mahogany</td>
</tr>
<tr>
<td>Style</td>
<td>Three styles, common to both the UK and Greece – Traditional; Modern; Classic</td>
</tr>
<tr>
<td></td>
<td>In order to ensure uniformity of replies the styles were presented in the form of actual pictures which were not labelled (Loosschilder et al., 1995). As with species, differences in tastes between the two counties were accounted for.</td>
</tr>
<tr>
<td>Information (for the rest of this paper referred to as Eco Labelling)</td>
<td>Two levels, common to both UK and Greece – Material from sustainably managed forests; No information about source of materials.</td>
</tr>
<tr>
<td></td>
<td>As with style, uniformity of replies was ensured by providing the following definition to the respondents:</td>
</tr>
<tr>
<td></td>
<td>We define timber that comes from sustainably managed forests as those materials which originate from forests which are managed in a way that does not harm the ecosystem. The logging and extraction process followed does not damage the environment, the forests are not in biologically sensitive areas, the production provides employment to the local community and the materials have an internationally recognised label of approval as being environmentally friendly.</td>
</tr>
</tbody>
</table>

*Table II. Product attributes and experimental levels*
construction. The procedures were similar for both the UK and Greece and in formulating the final, common, questionnaire good practices in international research as specified by Douglas and Craig (1983) were followed.

**Conjoint analysis**

In terms of the main issues related to the application of conjoint analysis the following procedures were adopted:

- **Choosing a presentation method:** Given that a self-completion approach was followed it was decided to use the self-explicated model.

- **Survey method:** Although conjoint analysis is a reasonably complex technique for respondents to participate in there is evidence that it can reliably be carried out without personal interviews, i.e. by telephone and/or by mail (Akaah, 1991). Our experience has indicated that a carefully designed postal survey, supported by explanation of the aims of the research and access to the research team in case of queries can be employed with considerable success.

- **Measurements:** Another decision that needs to be made is whether to use rankings or ratings as a response scale. We followed Green and Srinivasan (1978) who suggested that rating data are easier to administer and are more suitable when a non face-to-face data collection technique is employed.

**Population and sampling**

The population under consideration was consumers who, at the time of the research, were actively looking into buying furniture made of timber. Sample compatibility between the two countries was safeguarded by strict adherence to comparable socio-economic classifications (Douglas and Craig, 1983). To this effect the assistance of professional recruitment agencies was sought in both countries.

The surveys were carried out in the London area of the UK and the Athens area of Greece and respectively resulted in 175 and 170 usable replies. The sample sizes do not quite fulfil the 10:1 ratio of sample size to number of parameters (Bentler and Chou, 1987) and have not reached the recommended cut-off point of 200 (Boosman, 1987; Hair et al., 1998). Nevertheless, they are close enough to the above guidelines to provide some confidence in the results. The smaller than desired samples were the result of problems associated with identification of appropriate respondents and matching the cross-cultural samples.

**Analytical approach**

As already stated, conjoint analysis was used to obtain utility values attributed to the attribute levels. The specified model was a simple additive one and with the exception of the level of price which was designated as linear less (i.e. respondents were expected, for identical products, to prefer the one with the lowest price) the levels of the other attributes were treated as being discrete. As to the analysis of the data, disaggregate analyses were carried out.

For the modelling of the TPB model structural equation analyses, Arbuckle’s (1996) EMOS program was employed. Given that this study is concerned with testing theory and making comparisons between samples the respective covariance matrices were used for estimation purposes (Joreskog and Sorbom, 1989). Furthermore, following recommendations put forward by Bagozzi (1994), estimation was based on a full model with measurement
error taken into account for the AB, SN and PBC constructs while the first-order factors (i.e. OB, RB and CB) were allowed to correlate (Figure 2).

For further debate, explanation and justification of the actual analytical approach followed, see Terry and O’Leary (1995).

Results

The measurement instrument

Given that the data collected comprised an interval scale, the properties of the data sets were examined in order to determine their suitability for the intended analysis (Bagozzi, 1994; Joreskog and Sorbom, 1989). This step was considered especially important since it was expected that respondents were likely to provide high positive scores because of the social acceptance of the issues under consideration.

Examination of the measures of skewness and kurtosis of each construct indicated that most of the values fell within the recommended lower boundary (Tabachnick and Fidell, 1996; Churchill, 1995).

Construct reliability and intercorrelations

The reliability of the reflective constructs was examined for unidimensionality. Confirmatory factor analysis was employed for those constructs that comprised more than four items, i.e. AB, SN and PBC. On the other hand, Cronbach’s alpha was computed for constructs with fewer than four items, i.e. CB, AR, SN and PBC. Finally, since intention was a single item scale (i.e. utility values) no reliability analysis was possible.

The analysis provided satisfactory solutions for all the constructs and for both populations (Table III). The reliability values obtained from the

Reflective constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Number of items</th>
<th>UK</th>
<th>Greece</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB</td>
<td>5</td>
<td>0.965</td>
<td>0.982</td>
</tr>
<tr>
<td>RB</td>
<td>6</td>
<td>0.951</td>
<td>0.914</td>
</tr>
<tr>
<td>CB</td>
<td>3</td>
<td>0.787</td>
<td>0.818</td>
</tr>
<tr>
<td>AR</td>
<td>2</td>
<td>0.847</td>
<td>0.746</td>
</tr>
<tr>
<td>SN</td>
<td>2</td>
<td>0.942</td>
<td>0.973</td>
</tr>
<tr>
<td>PBC</td>
<td>2</td>
<td>0.887</td>
<td>0.757</td>
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</table>

Table III. Construct reliability
confirmatory analysis were all above the acceptable level (Hair et al., 1998) and the same applied to the alpha values (Churchill, 1979; Nunally, 1967). Descriptive statistics of the constructs are presented in Table IV. We can see that, in terms of intention, the mean value placed on Eco Labelling was negative in the Greek sample while positive in the UK sample. Furthermore, the correlation patterns appear to be quite different, e.g. intention in the Greek sample appears to be correlated with CB and SN while in the UK sample the highest correlations are with RB, A_B and SN. Finally, the fact that none of the correlations approached the reliability values of the constructs is an indication of lack of multicollinearity in the data sets (Campbell and Fiske, 1959).

**Estimation of the TPB model**

As suggested in Hair et al. (1998) checks were performed for symptoms of an identification problem (e.g. large standard errors, high correlation among estimated coefficients etc.) and we were satisfied that identification was not a problem for both samples. The results of the analysis are presented in Table V:

- **Overall model fit**: Before examining the structural pattern of the constructs the overall fit of the proposed model needs to be assessed. Following the procedure proposed by Hair et al. (1998) three types of goodness-of-fit measures are examined.

- **Absolute fit measures**: Given the well documented sensitivity and limited usefulness of the $\chi^2$ statistic we turn to other proposed measures (see among others Joreskog and Sorbom, 1989; Steenkamp and Trijp, 1991; Bagozzi and Baumgartner, 1994). The GFI measures of the two samples (0.961 and 0.926) are both above the recommended threshold level of 0.90. On the other hand, the RMSE value obtained from the Greek sample (0.142) is above the acceptable value of 0.08 while the corresponding value of the UK sample (0.077) is within acceptable

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Intent</th>
<th>OB</th>
<th>RB</th>
<th>CB</th>
<th>A_B</th>
<th>SN</th>
<th>PBC</th>
</tr>
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<tbody>
<tr>
<td><strong>UK</strong></td>
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<tr>
<td>Intention</td>
<td>0.27</td>
<td>1.17</td>
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<td></td>
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<tr>
<td>OB</td>
<td>114.69</td>
<td>43.70</td>
<td>0.216*</td>
<td>(0.965)</td>
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<tr>
<td>RB</td>
<td>114.11</td>
<td>43.72</td>
<td>0.300**</td>
<td>0.399** (0.951)</td>
<td></td>
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<tr>
<td>CB</td>
<td>60.41</td>
<td>29.38</td>
<td>0.089</td>
<td>0.308** 0.482** (0.787)</td>
<td></td>
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<tr>
<td>A_B</td>
<td>8.88</td>
<td>3.08</td>
<td>0.269**</td>
<td>0.330** 0.223* 0.203* (0.847)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>SN</td>
<td>8.03</td>
<td>3.14</td>
<td>0.354**</td>
<td>0.255** 0.478** 0.219* 0.410** (0.942)</td>
<td></td>
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<tr>
<td>PBC</td>
<td>7.42</td>
<td>3.35</td>
<td>0.194*</td>
<td>0.039 0.232* 0.405** 0.155 0.181 (0.887)</td>
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<tr>
<td><strong>Greece</strong></td>
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<tr>
<td>Intention</td>
<td>- 0.03</td>
<td>1.18</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>OB</td>
<td>173.77</td>
<td>45.77</td>
<td>0.154</td>
<td>(0.982)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>RB</td>
<td>131.04</td>
<td>42.54</td>
<td>0.195</td>
<td>0.348** 0.914)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CB</td>
<td>13.81</td>
<td>4.88</td>
<td>0.472**</td>
<td>0.227* 0.477** (0.818)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A_B</td>
<td>18.61</td>
<td>4.26</td>
<td>0.213*</td>
<td>0.499** 0.337** 0.170 (0.746)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN</td>
<td>9.59</td>
<td>3.29</td>
<td>0.454**</td>
<td>0.256* 0.499** 0.280** 0.316** (0.973)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>7.35</td>
<td>3.58</td>
<td>0.237*</td>
<td>0.132 0.228* 0.361** 0.70 0.057 (0.757)</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Notes:** *p < 0.05; **p < 0.01

Figures in parentheses represent either Cronbach’s alpha coefficient or the GFI values obtained from the confirmatory factor analysis. For the single item construct of intention no measures are possible.

**Table IV. Descriptive statistics for aggregate measures**
Further indication of superior fit obtained from the UK sample is provided by the ECVI measure which, although it has no specified range of acceptable values, indicates that the measure from the UK sample (0.324) is lower than the corresponding measure from the Greek sample (0.503).

Incremental fit measures: Looking at the incremental fit measures (i.e., evaluation of the model against the null model) we can see that the AGFI measure of the UK sample (0.910) is above the recommended threshold of 0.90 while the corresponding measure of the Greek sample (0.896) is marginally acceptable. In terms of the TLI and NFI measures (both with recommended thresholds of 0.90) we can see that the UK sample appears to be marginally acceptable while the Greek sample has provided measures considerably below both thresholds.

Table V. Unstandardised estimates of the TPB model

<table>
<thead>
<tr>
<th>Parameter estimation</th>
<th>UK</th>
<th>T-values</th>
<th>Greece</th>
<th>T-values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regression weights</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural equations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\gamma_{11}$ (OB $\rightarrow$ A$_B$)</td>
<td>0.030</td>
<td>5.228***</td>
<td>0.031</td>
<td>5.112***</td>
</tr>
<tr>
<td>$\gamma_{22}$ (RB $\rightarrow$ SN)</td>
<td>0.032</td>
<td>6.435***</td>
<td>0.043</td>
<td>7.513***</td>
</tr>
<tr>
<td>$\gamma_{33}$ (CB $\rightarrow$ PBC)</td>
<td>0.069</td>
<td>6.353***</td>
<td>0.068</td>
<td>6.355***</td>
</tr>
<tr>
<td>$\beta_{41}$ (A$_B$ $\rightarrow$ Intention)</td>
<td>0.058</td>
<td>1.869</td>
<td>0.074</td>
<td>2.474*</td>
</tr>
<tr>
<td>$\beta_{42}$ (SN $\rightarrow$ Intention)</td>
<td>0.109</td>
<td>4.036***</td>
<td>0.046</td>
<td>1.784</td>
</tr>
<tr>
<td>$\beta_{43}$ (PBC $\rightarrow$ Intention)</td>
<td>0.045</td>
<td>1.873</td>
<td>0.074</td>
<td>3.076**</td>
</tr>
<tr>
<td><strong>Covariances</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\varphi_{21}$ (OB $\leftrightarrow$ RB)</td>
<td>455.331</td>
<td>4.516***</td>
<td>451.746</td>
<td>4.233***</td>
</tr>
<tr>
<td>$\varphi_{23}$ (OB $\leftrightarrow$ CB)</td>
<td>418.128</td>
<td>5.972***</td>
<td>343.648</td>
<td>4.664***</td>
</tr>
<tr>
<td>$\varphi_{33}$ (RB $\leftrightarrow$ CB)</td>
<td>160.959</td>
<td>3.193**</td>
<td>203.015</td>
<td>3.270**</td>
</tr>
<tr>
<td><strong>Modification indices</strong></td>
<td></td>
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<tr>
<td>SN $\rightarrow$ A$_R$</td>
<td>11.255</td>
<td>9.055</td>
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<tr>
<td>A$_B$ $\rightarrow$ SN</td>
<td>6.394</td>
<td>5.075</td>
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<tr>
<td>PBC $\rightarrow$ SN</td>
<td>4.922</td>
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<td></td>
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<tr>
<td>RB $\rightarrow$ A$_R$</td>
<td>5.218</td>
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<tr>
<td>CB $\rightarrow$ Intention</td>
<td>21.198</td>
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<tr>
<td>RB $\rightarrow$ Intention</td>
<td>9.057</td>
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<td></td>
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<tr>
<td><strong>Goodness of fit statistics</strong></td>
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<td></td>
</tr>
<tr>
<td>$\chi^2$</td>
<td>24.411</td>
<td>52.984</td>
<td></td>
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<tr>
<td>df</td>
<td>12</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>0.018</td>
<td>0.000</td>
<td></td>
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<tr>
<td>GFI</td>
<td>0.961</td>
<td>0.926</td>
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<td>RMSE</td>
<td>0.077</td>
<td>0.142</td>
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<tr>
<td>ECVI</td>
<td>0.324</td>
<td>0.503</td>
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<tr>
<td><strong>Incremental fit measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>AGFI</td>
<td>0.910</td>
<td>0.896</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TLI</td>
<td>0.896</td>
<td>0.666</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFI</td>
<td>0.894</td>
<td>0.775</td>
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</tr>
<tr>
<td><strong>Parsimonious fit measure</strong></td>
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<td></td>
<td></td>
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<tr>
<td>PGFI</td>
<td>0.412</td>
<td>0.397</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normed $\chi^2$</td>
<td>2.034</td>
<td>4.415</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNFI</td>
<td>0.511</td>
<td>0.443</td>
<td></td>
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</tr>
<tr>
<td>AIC</td>
<td>56.411</td>
<td>84.984</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: *p < 0.05; **p < 0.01; ***p < 0.001
• **Parsimonious fit indices**: Finally, we examine indices related to the issue of “over-fitting” the model. The normed $\chi^2$ measures are both within the recommended 1.0 to 5.0 range. On the other hand the difference of the two samples in terms of their respective PNFI indices is 0.068 which is inside the 0.06-0.09 range that indicates substantial model differences. Further evidence of differences is provided by the PGFI and AIC indices for which the UK sample has provided lower values than the Greek sample.

• **Structural model fit**: Examination of the estimated coefficients presented in Table V indicates that, although the basic structure of the TPB model holds true for both sample, differences are evident in terms of the significance of the coefficients. Figure 3 presents those parameters that have been found to be significant in each of the samples and also incorporates the indirect effects associated with modification indices above the suggested 3.84 value (Hair *et al*, 1998). We shall now deal with each solution separately (a 1 per cent level of significance is adopted).

UK sample: All the regression coefficients linking the antecedents and the determinants of intention have been found to be significant. This we believe provides support as to the internal validity of the TPB. In terms of the path coefficients between the determinants and intention only SN

![Diagram](https://example.com/diagram.png)

**Figure 3. Significant parameters**
was found to be significant. The centrality of SN is further highlighted by the fact that significant modification indices between this determinant and AB and PBC were detected. Finally, significant correlations between all the antecedents were found to exist.

Greek sample: The relationship between antecedents and determinants was confirmed as was the correlations between the antecedents. Although the only determinant that was significant at the 0.01 level was PBC the solution provides evidence of indirect effects between intention and CB and RB (see modification indices).

Conclusions and discussion
The research presented here was designed to investigate two main issues. First, it was the intention to test the appropriateness of the TPB within the domain of green marketing. Second, we aimed to examine the stability of the TPB and the structure of the construct relationships across two different market conditions.

Looking at the first objective the results provided considerable support in terms of the robustness of the TPB in predicting and explaining intention to buy EF products. The model provided especially good measures of fit for the UK sample (all relevant measures and indices were found to be within acceptable limits) while some model fitting elements were found to be problematic in the Greek data. Although we do not have any empirical evidence to support our arguments, we suggest that these differences in model fit reflect the relative maturity of the two countries as manifested in their respective level of public awareness and debate about environmental issues. Accepting this interpretation leads us to the tentative conclusion that the TPB may be more appropriate in established markets that are characterised by well formulated consumer perceptions and clearly defined behavioural patterns.

Turning to the second of the research objectives, i.e. the cross-market/setting stability of the determinants of intention and their corresponding underlying beliefs structures, the results provide considerable support of this proposition (all the $\gamma$ and $\phi$ coefficients were found to be significant in both samples). On the other hand, differences were found to exist in the significance of the estimated coefficients between the two samples[1]. Such findings are consistent with earlier research that has highlighted the significant impact that social influences have on the formation of behavioural intention (Lee and Green, 1991).

Looking at the UK sample, we can see that social norms (SN) dominate the solution, i.e. SN was found to be the only determinant associated with a significant direct effect on intention. These findings appear to be in line with the proponents of the situational approach (see, for example, Widaman and Little, 1985) and are consistent with the results obtained by Vallerand et al. (1992) in their research on moral behaviour. As for the Greek sample, the pattern appears to be more complicated, i.e. although perceived control (PBC) is the only determinant that is associated with a significant direct effect on intention, the modification indices indicate significant indirect effects of both referent and control beliefs. We refer to the work by Vallerand et al. (1992), Terry et al. (1993), Ajzen (1985) and Saltzer (1981) for possible explanation. These studies have indicated that generalised control beliefs can moderate the effects of intention (i.e. support for the Referent beliefs $\rightarrow$ Intention pathway) and that some individuals exhibit a
tendency to attribute control of events to internal factors (i.e. support for the Control beliefs → Intention pathway).

A finding consistent across the two samples that is worth discussion is the significant reciprocal causality between personal (attitudinal – AB) and social (normative – SN) determinants. These results are consistent with moral behaviour patterns identified by Vallerand et al. (1992) who stated that “... expectancies of obtaining valued consequences and avoiding unwanted consequences play an important role in the emission of moral behaviour”. In addition, we hypothesise that, given the uncertain nature of the subject matter, objectively derived information is not easily available and consequently both AB and SN are partly formed through the acquisition and processing of externally provided information (e.g. pressure groups): something that leads to a convergence of these two determinants.

In conclusion we can say that the TPB has been shown to represent a reliable (i.e. results exhibited both acceptable internal fit and external consistency with other findings) predictive model of intention to purchase EF products. However, we should not overlook the fact that the model has also proved useful in identifying cross-market/setting commonalities and differences. The results indicate that across the two samples behavioural attitudes are formed through the development/learning of beliefs. At the same time the cross-market differences, i.e. significance of the SN → Intention pathway in the UL sample and corresponding dominance of the PBC → Intention pathway in the Greek sample, have been highlighted. We return to issues of relative market maturity in search of an explanation. The UK is characterised by the presence of a number of high profile pressure groups (e.g. Friends of the Earth, Greenpeace etc.) and a wide variety of EF products are available. On the other hand the presence of pressure groups in Greece is marginal and very few EF products are available in specialist shops. We therefore argue that in the UK societal influences play a determinant part in forming intention to purchase EF products while personal influences are dominant in the Greek market. A final merit of the TPB relates to its ability to shed light in the formation and development of attitudes, subjective norms and perceived control, e.g. importance of shared information, indirect effect of antecedents to determinants etc.

Limitations

Although the findings presented here provide a new insight into the determinants of behavioural intention towards EF products the results may be confounded by the following issues which merit further investigation:

- No actual measure of behaviour was obtained and intentions were measured vicariously by utility values obtained through the application of conjoint measurements.
- The model fit results associated with the Greek sample are at best marginal and consequently there is some doubt as to their generalisability.
- Other determinants that are posited to have a significant impact on behaviour, e.g. personal norms (Ajzen and Fishbein, 1969; East, 1991b); and past experience (Bentler and Speckart, 1979; Bagozzi, 1981; Marsh and Matheson, 1983; Sutton et al., 1987; Ajzen and Fishbein, 1980; Ajzen, 1985) have been omitted from the study.
- Cultural factors (see for example Hofstede, 1980) and significance of consumer products in terms of cultural meaning, i.e. the notion of

Conclusion

Behavioural intention

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- Cultural factors (see for example Hofstede, 1980) and significance of consumer products in terms of cultural meaning, i.e. the notion of
cultural categories (see McCraken, 1986; Applbaum and Jordt, 1996) have not been included in the study.

Note

1. Although the strength of the hypothesised pathways was different between the UK and Greek samples, testing the equivalence of all corresponding $\gamma$ and $\eta$ coefficients indicated a marginally significant difference between the samples for only the $SN \rightarrow Intention$ pathway.

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Gallup Poll (1990), *Newsweek*, April, p. 6.


Executive summary and implications for managers and executives

“Green” products, environmentalism and individual action

“Green” marketing has been the subject of much controversy in recent years. The most significant criticism levelled at marketers by some environmentalists is that their activities are exploitative. And, by including “green” messages in marketing, the marketer is exploiting environmental concerns as well as the environment itself.

Kalafatis et al. report that “green” products have failed to achieve the market success that levels of environmental concern reported by consumers would indicate. Put simply, consumer actions – the purchase of environmentally friendly products – do not match their reported preference for such products. Several reasons might be cited for this difference including:

• Consumer mistrust of environmental claims
• Reluctance to change purchasing habits
• The effect of economic recession on purchasing behaviour
• The level of perceived price differentials between “green” and other products.

Kalafatis et al. examine whether one theory of consumer behaviour – the Theory of Planned Behaviour – provides insights into this seeming reluctance of consumers to opt for the environmentally friendly option.

Funny folk, consumers!

The theory of planned behaviour (TPB) argues that consumers’ actions relate to “...underlying belief structures”. Three areas of “belief” are involved:

1. How likely an outcome is if we take a particular action and our evaluation of that outcome
2. The desire to act as others expect us to act regardless of direct persuasion
3. Whether we perceive ourselves to have the resources or ability to perform a particular action.

These beliefs – it is argued – help determine how we behave when faced with a particular choice. And therefore statements relating to these beliefs can be used to examine why there exists a gap between reported preference for “green” products and the actual purchase of such products.

If we speculate on the basis of these three areas of belief we can put up the following thoughts as to why consumers are slow to switch to “green” products:

• The beneficial aspects of me buying a “green” product are very small. It is the collective action of many that will “save the earth”. My decision is – to all intents and purposes – so insignificant as to be irrelevant.
• Since most other people share this attitude there is little societal pressure to conform to the environmentalist message. Moreover, the “green” campaigner focuses on the effects of “faceless” industry or government rather than on the individual wastefulness of the consumer. Criticisms are levelled at our materialist culture rather than at how we, as individuals, act.
• Because we are cynical about “green” claims we do not believe that the purchase of “green” products will “make a difference”. Although the
effects of individual actions in a modern society are the most important element we cannot grasp this because governments, politicians and the “green” movement all assure us that more environmentally friendly behaviour will not affect our lifestyle.

In summary, we feel that “green is good” but believe that a better environment is predicated on actions by others.

**Becoming more “green” – will society’s attitude eventually change?**

There is an argument that the liberal, capitalist paradigm will always triumph because it is founded on human behaviour and does not seek to impose an artificial structure onto normal human society. The current position of environmentalists runs counter to this inevitable outcome since it finds fault with laissez-faire society and seeks to establish the sociological imperative of environmental responsibility.

However, if we characterise environmentalism as a moral issue rather than a political or economic concern, then it becomes compatible with liberal economics. The focus shifts to individual moral behaviour from regulatory action. The problem is that “green” issues are not seen from a moral standpoint but from a political or economic standpoint. Since collectives are essentially amoral, we can only achieve the shift in behaviour when we focus on individual morality rather than the actions of government or industry. Where individuals believe in the moral rightness of environmentalism the market will respond regardless of the decisions that governments take.

Given the gap between the purchase of “green” products and people’s support for environmentalist statements we can suggest that people’s views are characterised by the general – “we should be concerned about the environment” – rather than the specific – “I will be environmentally responsible in my behaviour”.

**“Green” products – cart or horse?**

The question of “green” products’ success (or rather lack of success) raises the question of whether product manufacturers respond to the market or lead the market. In Kalafatis et al.’s research we see the example of timber products used to illustrate “green” product marketing. Yet we don’t ask whether that existence of environmentally friendly timber products reflects a response to market demand or an attempt by manufacturers to differentiate themselves through an environmentalist message.

Furniture has been one area where the “green” message has sunk into people’s consciousness – at least in the UK. Kalafatis et al.’s suggest that this consciousness is reflected by the fact that social norms (and the desire to conform to these norms) are a significant influence on the purchase of “green” products. Under such circumstances there is pressure on manufacturers to use “green” raw materials since these are what society expects. We should note that the societal norms influence those involved in manufacturing the furniture as well as those buying.

In contrast, Greek consumers in Kalafatis et al.’s study base their actions on more personal beliefs. The pressure to act in an environmentally responsible manner is less significant. Consumers make their own decisions about “green” products uninformed by pressures from the wider society. Manufacturers selling “green” products are, we can contend, acting ahead of the market. It may well prove to be a successful strategy if we expect Greek environmentalism to follow a similar pattern to that in the UK.

(A précis of the article “Green marketing and Ajzen’s theory of planned behaviour: a cross-marketing examination”. Supplied by Marketing Consultants for MCB University Press.)
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