



# Corporate environmental market responsiveness: A model of individual and organizational drivers<sup>☆</sup>

Jaime Rivera-Camino<sup>\*</sup>

ESAN University, Lima, Peru  
Universidad Carlos III de Madrid, Spain

## ARTICLE INFO

### Article history:

Received 1 November 2009  
Received in revised form 1 October 2010  
Accepted 1 April 2011  
Available online 6 August 2011

### Keywords:

Environmental responsiveness  
Theory of planned behavior  
Managers' decision-making  
European firms  
Green marketing

## ABSTRACT

This study examines the psychological and organizational drivers of corporate environmental market responsiveness (CEMR). Drawing on the relevant literature, the study identifies several variables of potential importance in CEMR and builds on the theory of planned behavior to propose a model of hypothesized relationships among these variables. The study tests hypotheses in an empirical study using a large sample of environmental managers from eleven members of the European Environmental Agency. The research findings show that the environmental behaviors of managers are largely determined by social judgments and perceptions. The present study has implications for managers who wish to pursue an environmental market-oriented approach to business. These results also have important implications for organizational theory and the debates about whether economic or social factors determine the effects of environmental issues on competitive advantage.

© 2011 Elsevier Inc. All rights reserved.

## 1. Introduction

Environmental awareness is an increasingly important issue for both business firms and marketing academics (Gunningham, Kagan, and Thornton, 2004; Kilbourne and Beckman, 1998). However, although being greener than competitors may provide a competitive advantage in markets (Ottman, 1998; Prakash, 2002), these issues need more research from a marketing perspective than a general management perspective (Baker and Sinkula, 2005; Banerjee, 2002).

Although the general management literature recognizes the relationship between managerial motivations and corporate environmental responsiveness, only a few empirical studies focus on the influence of managerial and contextual factors on corporate environmental responsiveness (Bansal and Roth, 2000; Sharfman, Shaft, and Tihanyi, 2004). Consequently, the reasons why managers adopt environmentally sensitive policies and behaviors are uncertain (Cordano and Frieze, 2000; Winn and Angell, 2000).

Many possible personal and contextual factors suggest (Stern, 2000) that managers who adopt environmentally friendly strategies are viewable as rational decision-makers who decide to use information on performance outcomes (King and Lenox, 2001; Reinhardt, 1999) and

as being particularly responsive to social issues (Dyllick and Hockerts, 2002; Hoffman and Ventresca, 2002). Nevertheless, with few exceptions (Banerjee, Iyer, and Kashyap, 2003; Pujari, Wright, and Peattie, 2003), the literature still lacks in-depth empirical studies of the individual variables that inspire managers to adopt a green orientation (Aragon-Correa, Matias-Reche, and Senise-Barrio, 2004).

This situation probably reflects the fact that environmental marketing strategy is still an emerging area of research (Baker and Sinkula, 2005; Banerjee et al., 2003). As a consequence, most studies of environmental marketing continue to focus on consumers' choices (Jackson, 2005; Schaefer and Crane, 2005; Tanner and Wolfing Kast, 2003), whereas the motivations that prompt managers to promote environmentally friendly marketing policies are still relatively unknown (Maignan and Ferrell, 2004; Menguc and Ozanne, 2005).

The present study addresses this gap in the marketing literature by proposing and testing a model of various psychological and organizational variables of potential significance in influencing corporate environmental market responsiveness (CEMR). In particular, the model addresses the question of whether or not managers primarily approach environmental awareness from the perspective of rational decision-makers who are sensitive to performance outcomes or whether or not social pressures are more significant than performance outcomes in influencing their choice to opt for environmental marketing practices.

This study uses the theory of planned behavior (Ajzen, 1991) as a theoretical basis because it has been employed successfully in many studies linking pro-environmental attitudes and behavioral intention

<sup>☆</sup> The author thanks two anonymous referees for their helpful comments and suggestions.

<sup>\*</sup> Departamento de Economía de Empresa, Universidad Carlos III de Madrid, Calle Madrid 126-GETAPE 28903, Spain. Tel.: + 34 91 624 96 18.

E-mail addresses: [jrivera@emp.uc3m.es](mailto:jrivera@emp.uc3m.es), [jrivera@arrakis.es](mailto:jrivera@arrakis.es).

(Kaiser and Gutsche, 2003). However, this model still needs to incorporate other significant factors influencing environmental behavior including contextual factors, habits and characteristics of social dilemma situations (Bamberg and Möser, 2007).

The second section of the paper defines the concept of corporate environmental market responsiveness (CEMR), which provides a theoretical framework for the study, and proposes a model based on hypothesized relationships among significant variables. The chosen methodology involves a large-scale survey of business managers responsible for European environmental issues, which produces results that suggest theoretical and managerial implications for future research.

## 2. Literature review and theoretical framework

### 2.1. Definition of CEMR

The general management literature deals extensively with corporate environmental responsiveness in terms of corporate social performance, environmental management, and strategic issues. Although these approaches propose different definitions of corporate environmental responsiveness, most authors refer to managerial influence on corporate environmental actions with regard to manufacturing operations and technological solutions (Bansal and Roth, 2000; King and Shaver, 2001; Sharma, 2000; Theyel, 2000). In contrast, the marketing literature offers virtually no definitions of corporate environmental responsiveness from a marketing perspective. Indeed, very few studies deal with how marketing thinking and practice contribute to the development of environmentally responsible practices in organizations (Kralj and Markic, 2007; Maignan and Ferrell, 2004).

This study uses the marketing approach to responsive management suggested by Murray and Montanari (1986) to define corporate environmental market responsiveness (CEMR) as a set of corporate marketing initiatives aimed at mitigating a firm's adverse impact on the natural environment. The choice of appropriate corporate marketing initiatives requires identification of the environmental needs of markets in terms of the traditional 4Ps of the marketing mix (product, place, price, and promotion). Isolated propositions in the scanty literature on green marketing strategies support the use of these 4Ps in finding solutions to corporate environmental challenges (Banerjee et al., 2003; Kilbourne and Beckman, 1998; Rivera-Camino, 2007).

### 2.2. Theory of planned behavior

According to the propositions of Ajzen's theory of planned behavior (TPB) (Ajzen, 1991; Ajzen and Madden, 1986), three independent variables (attitudes, subjective norms, and perceived behavioral control) determine behavioral intention as the immediate antecedent to behavior. Although the TPB is not used specifically in the context of marketing management, the theory aptly explains human behavior in relation to various environmental issues, including: recycling (Boldero, 1995; Taylor and Todd, 1995), green consumerism (Kalafatis, Pollard, East, and Tsogas, 1999; Sparks and Shepherd, 1992), environmental ethics (Flannery and May, 2000), pollution reduction (Cordano and Frieze, 2000), and composting (Taylor and Todd, 1997).

Two potentially conflicting aspects of the TPB model are of particular interest in the present context of CEMR: the intention-behavior relationship and the influence of past behavior on current/future behaviors. Each of these is explored in greater detail below.

#### 2.2.1. The intention-behavior relationship

The basic assumption of the TPB (Ajzen, 1991) is that the greater the intention the greater the likelihood that a particular behavior will be

performed. Although previous research generally supports this assumption (Armitage and Conner, 2001; Sutton, 1998), the evidence shows that the intention to perform a behavior might not be enough (Powers, Koestner, and Topciu, 2005; Sheeran, 2002). People may have good intentions but fail to act on them (Orbell and Sheeran, 1998); for example, they might fail to deal effectively with self-regulatory problems during goal pursuit (Gollwitzer and Brandstätter, 1997). Ajzen (1991) also observes that behavioral intention occurs if the person actually possesses ultimate control over the behavioral performance.

In this context, several studies in the environmental literature report that declared intentions of managers often diverge from the actual environmental performance of their firms (Tilley, 2000); indeed, Petts, Herd, and O'Eocha (1998) contend that this discrepancy is so apparent that it begs further research. To understand the relationship between intentions and action in the TPB, especially the psychological processes involved (Rise, Thompson, and Verplanken, 2003), the present study proposes a model that focuses specifically on performed CEMR behavior.

#### 2.2.2. Influence of past behavior

Although several studies include past behavior in their TPB models (Leone, Perugini, and Ercolani, 1999), conceptual and empirical problems also have an effect on the model. Conceptually, if a behavior is enacted repeatedly and satisfactorily, it will become habitual, and cease to be rational and purposive (Verplanken, Aarts, Van Knippenberg, and Moonen, 1998). From an empirical stance, by the same scale for current and past behavior, the outcome becomes multi-collinearity (Rhodes and Courneya, 2003), and can distort data since cognitive inertia and/or a priming effect can appear when subjects are interviewed twice about the same (or similar) items (Markus and Zajonc, 1985).

Although past behavior is generally an accurate predictor of future behavior, the psychological mechanisms that account for this relationship remain somewhat elusive (Jaccard and Blanton, 2005). Consequently, the proposed model focuses on past experience and uses different measures for past and current behaviors (Hagger, Chatzisarantis, and Biddle, 2001; Rhodes and Courneya, 2003).

## 3. Proposed model and hypotheses

Fig. 1 shows the proposed model of corporate environmental market responsiveness (CEMR) based on the literature reviewed in the study. The hypothesized relationships among the constructs in the model are discussed below.

### 3.1. Motivational factors

In addition to the general framework of the TPB (Ajzen, 1991), the proposed model of intentional managerial processes in CEMR also accounts for other specific internal and external factors. In particular, the model includes three internal motivational factors: (1) attitude towards CEMR; (2) subjective norm; and (3) perceived control. These motivating factors are described in more detail below.

#### 3.1.1. Attitude towards CEMR

According to the theory of reasoned action, a person develops an attitude towards a given behavior based on his or her evaluation (optimistic or pessimistic) of the potential benefits associated with the performance of that behavior (Fishbein and Ajzen, 1975). With regard to the relationship between attitude and CEMR (see Fig. 1), managers with an optimistic attitude towards CEMR (that is, managers who advocate that environmentally friendly behavior provides future benefits for their organizations) are more likely to adopt proactive strategies with regard to environmental responsiveness (Sharma, 1997). Such an attitude also orients managers to

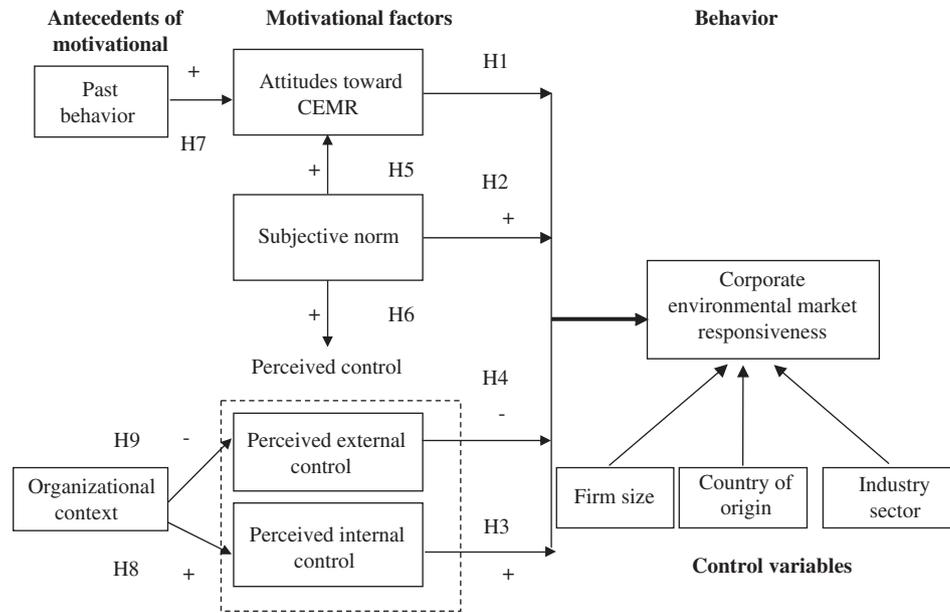


Fig. 1. Proposed model of corporate environmental market responsiveness (CEMR).

achieve differentiated leadership with regard to environmental matters (Stead and Stead, 1995), promotes new relationships with buyers and suppliers (Elkington, 1994), and guides internal organizational changes (Rothenberg, Maxwell, and Marcus, 1992). When managers perceive strategies as tools for generating corporate benefits, their commitment increases and they are likely to institute significant internal change (Noble and Mokwa, 1999). Against this background, the following hypothesis proposes for the relationship between attitude and CEMR (see Fig. 1). H1: An optimistic managerial attitude towards the potential benefits of CEMR relates positively to the level of CEMR in an organization.

### 3.1.2. Subjective norm

The subjective norm (SN) is the second motivational factor for consideration (Ajzen, 1988; Fishbein and Ajzen, 1975). SN refers to a manager's perceived social pressure to perform a particular behavior. SNs reflect the influence that particular significant referents have on an individual's performance (Ajzen, 1991). With regard to the relationship between the subjective norm and CEMR (see Fig. 1), stakeholders appear as critical drivers of corporate ecological responses (Berry and Rondinelli, 1998) and pressures from industry stakeholders can prompt managers to adopt environmental strategies (King and Lenox, 2000). Also, empirical evidence confirms that a positive relationship exists between the intensity of stakeholder pressure perceived by the manager and a firm's level of green marketing (Langerak, Peelen, and Van der Veen, 1998). In the non-corporate context, studies reveal that social norms exert an influence on pro-environmental behaviors (De Young, 1996); for example, social pressure from household family members, neighbors, and friends can influence composting behavior (Boldero, 1995). On the basis of these findings, the following hypothesis indicates the relationship between subjective norm and CEMR (see Fig. 1), H2: The perceived pressure from the main stakeholders (i.e., the subjective norm) relates positively to the level of CEMR in an organization.

### 3.1.3. Perceived control

Ajzen (1988) recognizes that many behaviors are non-volitional and even the most determined intentions might be bounded by situational control factors. According to the TPB, a person's perceived level of behavioral control will influence the intention to perform a

behavior. If individuals lack the resources required to perform a certain behavior, their intention to do so diminishes, even if the other motivational factors noted above (attitude and subjective norms) are favorable.

The level of perceived behavioral control consists of both internal and external control factors (Ajzen and Madden, 1986). The internal factors include individual dispositional elements such as the amount of information a person has, the person's skills and abilities, and the emotional commitment to a specific behavior (Ajzen, 1988). The external factors are situational circumstances outside the individual that facilitate or interfere with the performance of the behavior (Ajzen, 1988). Psychologists (Sparks, Guthrie, and Shepherd, 1997) and environmental researchers (Taylor and Todd, 1997) recognize internal and external controls, but do not agree on how to conceptualize and measure perceived behavioral control (Sparks et al., 1997).

Separate hypotheses propose a relationship between perceived control and CEMR (see Fig. 1) for the internal control factor (managers' awareness of environmental issues) and the external control factor (perceived obstacles in performing CEMR). The internal control factor pertains to earlier research on the relationship between the manager's awareness of the firm's problems and the firm's performance (Thomas, Clark, and Gioia, 1993). Studies show that awareness is a significant factor in fostering environmental concern (Ashford, 1993), and this factor motivates managers to improve their organizations' environmental performance (Starik and Rands, 1995) and to adopt pollution-prevention activities (Schmidheiny, 1992). In a similar vein, empirical findings support a relationship between the level of managerial environmental awareness and the level of a firm's green marketing (Langerak et al., 1998). This evidence leads to the following hypothesis for the relationship between internal control and CEMR (see Fig. 1). H3: Managers' awareness of environmental issues (i.e., the internal control factor) relates positively to the level of CEMR in an organization.

With respect to the external control factor (perceived obstacles to performing environmental responsiveness), several authors identify barriers to the implementation of environmental policies in different industries (Ashford, 1993; Dieleman and de Hoo, 1993; Frankwick, Ward, Hutt, and Reigen, 1994; Workman, 1993). More specifically, Dieleman and de Hoo (1993) identified five categories of obstacles to implementing waste prevention in manufacturing facilities: conceptual; organizational; technical; economic; and availability of

knowledge. Similarly, Ashford (1993) identifies seven barriers to pollution prevention in manufacturing firms: technological; financial; labor force; (regulatory; consumers; suppliers; and managerial). The following hypothesis indicates the relationship between external control and CEMR (see Fig. 1). H4: The level of perception of obstacles to performing environmental behaviors (i.e., the external control factor) relates negatively to the level of CEMR in an organization.

### 3.1.4. Relationships among motivational factors

With regard to the relationship between the subjective norm and attitudes (see Fig. 1), situational influences (such as social pressures) that are beyond the volitional control of individuals (Hines, Hungerford, and Tomera, 1986/87) affect the relationship between environmental attitude and ecological behavior. Such social pressures are similar to the subjective norm proposed in the TPB. Several studies suggest that the pressure exerted by environmental groups can influence the formation of managerial attitudes towards environmental responsiveness behavior (Anderson and Bateman, 2000; Cordano and Frieze, 2000; Sharma, 2000). The following hypothesis proposes that subjective norm and attitude are related (see Fig. 1). H5: The perceived pressure from the main stakeholders (i.e., the subjective norm) relates positively to an optimistic managerial attitude towards the potential benefits of CEMR.

With regard to the relationship between the subjective norm and perceived external control, the literature suggests that managers may perceive excessive pressure from stakeholder groups as an obstacle to environmental responsiveness action (Anderson and Bateman, 2000). The TPB explanation for this phenomenon is that such pressure is a situational issue outside the individual that determines the circumstances that interfere with the performance of the behavior (Ajzen, 1988). It is reasonable to infer then that an increase in stakeholder pressure will be perceived as a regulatory obstacle (Ashford, 1993) to performing CEMR activities.

Consequently, the following hypothesis proposes that subjective norm and perceived external control are related (see Fig. 1). H6: The perceived pressure from the main stakeholders (i.e., the subjective norm) relates positively to the level of perception of obstacles to performing environmental behaviors (i.e., the external control factor).

## 3.2. Antecedents of motivational factors

The model's proposals also include two antecedents of the motivational factors discussed above: (i) past behavior; and (ii) organizational context. The following sections discuss these factors in greater depth.

### 3.2.1. Past behavior

The theory of transfer of learning (Detterman, 1993) supports the inclusion of past (environmental) behavior as an antecedent of attitudes towards CEMR. Transfer of learning occurs when learning in one context increases (positive transfer) or diminishes (negative transfer) the skills, knowledge, and/or attitudes required for a related behavioral performance in another context (Detterman, 1993). The proposed model eliminates the non-automatic phenomenon of transfer of learning (Detterman, 1993) to avoid conceptual problems associated with past performance—that is, the problem that habit might impede rational purposive behavior in using the TPB model.

In the relationship between past behavior and attitude (see Fig. 1), prior experience of production-oriented environmental actions becomes a proxy for past behavior. The firm often implements corporate environmental responsiveness in the form of environmentally friendly production-efficiency initiatives (Stanwick and Stanwick, 1998; Theyel, 2000). Several corporate environmental typologies indicate that production actions precede environmental marketing actions (Berry and Rondinelli, 1998; Isaak, 2002; Reinhardt, 1998). The following hypothesis proposes past behavior and CEMR are related (see Fig. 1).

H7: The level of past performance of production-oriented environmental behaviors (i.e., past behavior), relates positively to the level of attitudes regarding CEMR.

### 3.2.2. Organizational context

According to the environmental literature, the organizational context (policy, corporate vision, and strategy) is both an important precursor to employee engagement in environmental activities (Hutchinson, 1996) and a significant factor in the managerial decision-making process (Russo and Fouts, 1997). The organizational context also influences managers' interpretations of environmental issues and, therefore, conditions their choice of environmental strategy (Sharma, 2000).

With regard to the relationship between organizational context and perceived control (see Fig. 1), the organizational actions developed by proactive businesses in implementing environmental ideas (Starik and Rands, 1995; Stead and Stead, 1996) define the organizational context. The present study contends that it is reasonable to suppose that organizational efforts to implement environmental ideas and behaviors will promote the internal motivation of managers to pursue CEMR. If managers view the organizational context as favorable, it is reasonable to suppose that they will be less likely to perceive obstacles to performing market environmental responsiveness. Consider the following hypotheses for the relationship between organizational context and perceived control (see Fig. 1). H8: The level of organizational context (that is, the organizational efforts to implement environmental ideas) relates positively to managers' awareness of environmental issues (i.e., the internal control factor). H9: The level of organizational context (that is, the organizational efforts to implement environmental ideas) relates negatively to managers' perception of obstacles to performing environmental behaviors (i.e., the external control factor).

## 4. Method

### 4.1. Sample

An empirical study tests the model proposals and hypothesizes. In accordance with previous studies that use the TPB in non-marketing research (Bansal and Roth, 2000; Cordano and Frieze, 2000; Flannery and May, 2000), the survey population includes managers responsible for their firm's environmental activities. These businesses are located in member countries of the European Union as well as Switzerland and Norway which are part of the European geographical area, and collaborate in the European Business Environmental Barometer research network (Austria, Belgium, France, Italy, Holland, Norway, Portugal, Spain, Sweden, Switzerland, and Germany). These countries have launched environmental programs to implement Agenda 21, the EU 6th Environmental Action Program, and the environmental objectives of the Treaty of Amsterdam. Also, all countries are members of the European Environmental Agency (EEA), which is responsible for gathering and analyzing data on the state of the environment in European countries as a basis for an effective environmental policy.

Accurate determination of the population of potential respondents for each country provides a guarantee of heterogeneity with respect to industrial sectors, organizational contexts, and external influences (such as the degree of environmental regulation in each country). The final list of contacts contains only one manager per firm for each industry sector.

The questionnaire and a cover letter were mailed to 15,000 potential respondents who are directly responsible for their firms' environmental activities; screening questions ensured that responses from other corporate personnel were eliminated. The final sample is heterogeneous in terms of industry sector (18% chemical products; 24% basic metals; 17% textiles and wood products; 20% food; 21%

others) and size of business (62% small; 20% medium; 18% large). The response rate was 23% (3253 valid completed questionnaires).

#### 4.2. Survey instrument

A draft questionnaire is provided by each of the participating countries along with an initial list of items of possible interest to the study derived from a review of the literature. Suggestions offered during interviews with environmental experts in each country fine tune the content. The final, universal version of the questionnaire, designed using a Delphi procedure, includes samples submitted by the country participants. Translation and back translation of the text is used to ensure uniformity in meaning among the languages of the participating countries. Structural equation modeling (see below), establishes scale reliability and validity.

#### 4.3. Measures

The scales for each variable described in this section measure the following model constructs:

A 7-item measure derived from several sources in the literature (Banerjee et al., 2003; Kilbourne and Beckman, 1998; Rivera-Camino, 2007) operationalizes corporate environmental market responsiveness (CEMR). Environmentally friendly activities involving (i) market research; (ii) dissemination of information on products and/or production methods; (iii) pricing; (iv) product design; (v) labeling; (vi) packaging; and (vii) product distribution are assessed. The responses are evaluated on a dichotomous scale that indicates the presence or absence of CEMR actions in each of these areas (1 = yes; 0 = no).

Competitiveness, economic benefits, and worker satisfaction derived from Taylor and Todd (1995) operationalize the construct of attitude by measuring managers' perceptions of the benefits obtained by their firms' CEMR. The responses are graded from 1 (= no influence) to 5 (= very significant influence).

The construct of past behavior is evaluated in terms of six items that measure production-oriented environmental actions undertaken by the firms during the two years prior to the study. These items, identified in preceding discussions with managers and business-management academics, refer to environmentally friendly activities such as: (i) the production process; (ii) solid waste; (iii) water use; (iv) air emissions; (v) noise; and (vi) technology use. The respondents answered 1 (= yes) or 0 (= no).

The construct of subjective norm is based on six items according to Cordano (1996), and describe the influence of social group pressure; market forces; environmental regulation; views of owners; views of unions; and views of bankers. Responses rank from 1 (= no influence) to 5 (= very significant influence).

Five items derived from the literature (Frankwick et al., 1994; Piercy and Morgan, 1994), evaluate the construct of organizational context and describe the administrative actions used to implement each firm's CEMR in terms of written environmental policy; definition of responsibilities; auditing; training programs; and publishing reports. The answers are evaluated on a scale of 0 to 2, in which 0 = no 1 = under consideration; and 2 = yes.

Following discussions with managers and business-management academics, three items are selected to evaluate the construct of perceived internal control that describes the respondents' awareness of environmental issues in terms of: (i) pollution as a social problem; (ii) market solutions; and (iii) technical solutions. The responses rank from 1 (= no influence) to 5 (= very significant influence).

Evaluation of the construct of perceived external control involves five items derived from the literature (Ashford, 1993; Dieleman and de Hoo, 1993; Frankwick et al., 1994). These items describe the obstacles to performing CEMR in terms of lack of availability of

external information; management support; skilled personnel; financial support; and organization. The responses rank from 1 (= no influence) to 5 (= very significant influence).

#### 4.4. Control variables

Several measures are used as control variables. According to Sharma (2000) and Song, Droge, Hanvanich, and Calantone (2005), analytical paths between the control variables and the dependent variable (CEMR) need to be considered. These control variables include the following dimensions.

Firm size: The size of a firm has a significant relationship to its environmental responsiveness (Stanwick and Stanwick, 1998). Larger firms are more likely to: (i) have resources available for CEMR (Bowen, 2000); be targets for social pressure (Getz, 1995); (iii) adopt a leadership role in environmental issues to maintain their social legitimacy (Bansal, 1995; Sharma and Nguan, 1999); and (iv) adopt discretionary disclosure practices (Gray, Kouhy, and Lavers, 1995). Firm size is operationalized based on the number of employees (10–250 = small; 251–500 = medium; 501+ = large).

Country of origin: In the absence of an international legal framework for environmental issues, firms must align their actions with the national regulations of the countries in which they operate (Klassen and Angell, 1998). European countries differ in their interpretation of environmental issues (Dobers, 1997; Tietenberg, 1988). Therefore, this study uses a categorical variable to indicate a firm's national location.

Industry sector: Sectors vary significantly in terms of: (i) pollution intensity (Hartman, Wheeler, and Singh, 1997); (ii) effects on surrounding communities (Dasgupta, Hettige, and Wheeler, 1997); (iii) stakeholders' influence (Fineman and Clarke, 1996); and (iv) degree of environmental regulation (Henriques and Sadorsky, 1999). Five dummy variables are used to indicate a firm's industry sector: (i) chemicals, chemical products, and man-made fibers; (ii) basic metals and manufactured metal products; (iii) textiles and wood products; (iv) food, beverage, and tobacco; or (v) others.

## 5. Analyses and results

### 5.1. Statistical analysis

The study uses LISREL structural equation modeling (SEM) software and Muthen's (1993) estimation methodology for models that measure categorical variables. Because models of this type typically violate an assumption of normality, full maximum likelihood (FML) estimation is inappropriate. The present study employs the weighted least squares (WLS) estimation, which typically leads to similar fit statistics and interpretation as FML (Muthen, 1993). The large sample size (3253) is suitable for WLS, which requires sample sizes >2000 for reliable results. A bi-serial correlation matrix is used, because the model employs variables that are measured in relation to dichotomous and interval scales.

To evaluate the measurement model and structural model, the study utilizes the following indices of model fit: (i) comparative fit index (CFI); (ii) goodness-of-fit index (GFI); (iii) incremental and relative fit index (IFI and RFI); and (iv) standardized root mean square residual (SRMR) (Hu and Bentler, 1999; Steiger, 1990). The chi-squared statistic is not used because it is problematic with large samples (Cheung and Rensvold, 2002). Following common practice, a GFI and CFI value greater than 0.90 (Tabachnick and Fidell, 1996) and an SRMR of 0.8 or less are accepted indication of an adequately specified model (Hu and Bentler, 1999).

Because control variables can cause problems in SEM analyses, the study utilizes the two-step process suggested by Jaccard and Wan (1996), which involves running a separate model that includes

**Table 1**  
Means, standard deviations and correlations.

Variables	Mean	Std. Dev.	1	2	3	4	5	6	7	8	9
1. Attitude	3.56	0.60	1.00								
2. Subjective norm	3.09	0.80	.15**	1.00							
3. Perceived Inter. control	3.38	0.49	.27**	.11**	1.00						
4. Perceived Ext. control	3.29	0.48	-.05*	.13**	-.06**	1.00					
5. Organizational context	0.86	0.73	.25**	.16**	.20**	-.05*	1.00				
6. Past behavior	0.49	0.35	.18**	.15**	.12**	-.03	.22**	1.00			
7. CEMR	0.40	0.38	.26**	.17**	.22**	-.06**	.25**	.35**	1.00		
6. Firm size	1078	138.5	.12**	.03	.06**	-.07**	.14**	.16**	.18**	1.00	
9. Industrial sector			.01	.00	.04*	-.02	.01	.00	.00	.09**	1.00
10. Country			.19**	.05**	.13**	-.12**	.10**	.28**	.23**	.14**	.00

n = 3253.  
\* p < 0.05.  
\*\* p < 0.01.

control variables in the SEM model (analogous to using a covariate variable under ANOVA). If the GFI is the same in both models, the control variable can be assumed to have no effect and can therefore be omitted from the model. Because the  $\Delta\chi^2$  is criticized as an index of difference in fit (as a consequence of its sensitivity to sample size), Cheung and Rensvold (2002) suggest that a  $\Delta CFI$  value greater than 0.01 is indicative of a significant drop in fit.

5.2. Results

5.2.1. Descriptive measures and correlations

Table 1 shows the means, standard deviations, and zero-order correlations among the variables included in the model. The evidence reveals that no multi-collinearity occurs among the independent and control variables.

**Table 2**  
CFA: Content and convergent validity, and fit statistics.

Latent variable	Coef. Stand.	t-Student	Error variance	R <sup>2</sup>	GFI	CFI	SRMR
Corporate Environmental Market Responsiveness					0.94	0.96	0.03
Ecological product design	0.91	14.95	0.17	0.83			
Eco-labeling	0.87	13.87	0.24	0.76			
Eco-packaging	0.85	13.21	0.28	0.72			
Pricing with ecological criteria	0.90	14.80	0.19	0.81			
Green-market research	0.88	13.88	0.23	0.77			
Dissemination of information	0.84	13.17	0.29	0.71			
Ecologic product distribution.	0.77	10.08	0.41	0.59			
Attitude					0.95	0.97	0.02
Enhances competitiveness	0.84	10.49	0.29	0.71			
Economic benefits	0.92	14.81	0.15	0.85			
Worker satisfaction	0.79	9.28	0.38	0.62			
Perceived Internal Control					0.97	0.99	0.01
Pollution is a critical social problem	0.88	12.21	0.23	0.77			
Market solutions to green problems	0.80	10.54	0.36	0.64			
Technical solutions are needed	0.91	17.39	0.17	0.83			
Perceived external control					0.94	0.97	0.02
Lack of external information	0.90	14.71	0.19	0.81			
Lack of management support	0.84	13.72	0.29	0.71			
Lack of skilled personnel	0.81	11.43	0.34	0.66			
Lack of financial support	0.94	15.61	0.12	0.88			
Difficult to organize	0.82	12.97	0.33	0.67			
Past behavior					0.94	0.96	0.03
Improve resource efficiency	0.78	16.71	0.39	0.61			
Green choice of suppliers	0.81	18.65	0.34	0.66			
Processes to reduce solid wastes	0.79	17.98	0.38	0.62			
Processes to reduce water use	0.80	18.22	0.36	0.64			
Reducing air emissions	0.75	13.00	0.44	0.56			
Using clean technology in processes	0.91	19.26	0.17	0.83			
Organizational context					0.96	0.98	0.02
Written environmental policy	0.85	14.68	0.28	0.72			
Green responsibilities defined	0.90	16.40	0.19	0.81			
Auditing environmental actions	0.82	14.25	0.33	0.67			
Environmental training program	0.93	16.57	0.14	0.86			
Publishing environmental report	0.79	12.43	0.38	0.62			
Subjective norm					0.93	0.97	0.03
Social-group pressures	0.80	18.22	0.36	0.64			
Market variables	0.89	18.45	0.21	0.79			
Environmental regulation	0.78	16.84	0.39	0.61			
Views of owners	0.75	15.76	0.44	0.56			
Labor unions	0.92	19.21	0.15	0.85			
Banks and insurance companies	0.91	18.80	0.17	0.83			

### 5.2.2. Validity and reliability

Correspondence analysis tests the dimensionality of the dichotomous constructs, and confirmatory factor analysis (CFA) assesses the content validity of the seven latent constructs (Jöreskog, 1993). Table 2 shows that all of the items in the structural model are significant and display an acceptable level of  $R^2$ . The results are used to create a matrix of variances and co-variances among the latent variables, and to calculate the reliability indicators and discriminant validity.

Two indices evaluate the reliability of each latent construct: rho ( $\rho$ ), which is also known as composite reliability (Bagozzi, 1980); and  $\rho_{vc}(n)$  (Fornell and Larcker, 1981). All of the constructs in the final model have at least three items with acceptable indices of rho reliability. In addition, all of Fornell and Larcker's (1981) reliability indicators surpass the minimum criteria proposed by Bagozzi and Yi (1988).

Analysis of convergent validity uses regression coefficients as Anderson and Gerbing (1988) propose. According to the coefficients in Table 2, both content validity and convergent validity are present in all seven constructs.

A comparison of each construct's variance, previously extracted using associated squared off-diagonal phi values (Table 3), determines the discriminant validity. The results in the matrix in Table 3 give strong support for discriminant validity between the constructs (Podsakoff and MacKenzie, 1994).

### 5.2.3. Testing of hypotheses

The initial model appears to be a good fit to the data, with all fit indices (GFI = 0.92; AGFI = 0.90; CFI = 0.91; IFI = 0.91; RFI = 0.87) exceeding the 0.90 threshold (Tabachnick and Fidell, 1996). The results also show that the relationships proposed in the model fit the data moderately well, with all the residuals being small (RMSR = 0.056; SRMR = 0.067,  $p = 1.00$ ).

The initial model is then compared to the separate model that includes control variables (see Table 4). The fit indices of the separate model suggest that this model explains the data better than the initial model (GFI = 0.95; IFI = 0.93; RFI = 0.89; CFI = 0.94; SRMR = 0.040).

A detailed evaluation using t-values determines the model's fit. Almost all of the estimated parameters are significantly different from zero, with t-values being equal to or greater than 2.

Table 5 provides the standardized parameters and t-values of the hypothesized relationships in the final structural model. It also summarizes the findings of hypotheses testing.

The relationship between attitude and CEMR is significant (0.52; t-value: 5.42;  $p < .01$ ). H1 (which proposes that an optimistic managerial attitude towards the potential benefits of CEMR in an organization relates positively to the level of CEMR) is thus confirmed.

The relationship between subjective norm and CEMR is also significant (0.65; t-value: 8.72;  $p < .01$ ). H2 (which proposes that the perceived pressure from the main stakeholders relates positively to the level of CEMR in an organization) is also confirmed.

The relationship between internal control and CEMR is also statistically significant (0.58; t-value: 5.76;  $p < .01$ ). H3, which proposes

**Table 4**

Results of initial CEMR model vs. model with control variables.

	GFI	IFI	RFI	CFI	$\Delta$ CFI	SRMR
Model 1: Initial CEMR model	0.92	0.91	0.87	0.91		0.067
Model 2: Model 1 plus control variables	0.95	0.93	0.89	0.94	0.03	0.040

that managers' awareness of environmental issues (i.e., the internal control factor) relates positively to the level of CEMR in an organization, is also confirmed. In contrast, the relationship between external control and CEMR is not significant (0.04; t-value: 0.02). H4, which proposes that the level of perception of obstacles to performing environmental behaviors (i.e., the external control factor) relates negatively to the level of CEMR in an organization, is not confirmed.

The relationship between subjective norm and attitude is statistically significant (0.69; t-value: 4.02;  $p < 0.05$ ). The findings confirm H5—the perceived pressure from the main stakeholders (i.e., the subjective norm) relates positively to an optimistic managerial attitude towards the potential benefits of CEMR.

The relationship between subjective norm and external control (PEC in Table 5) is statistically significant (0.25; t-value: 3.09;  $p < 0.05$ ). The findings confirm H6—the perceived pressure from the main stakeholders (i.e., the subjective norm) relates positively to the level of perception of obstacles to performing environmental behaviors (i.e., the external control factor). The relationship between past behavior and attitudes regarding CEMR is significant (0.81; t-value: 6.15;  $p < 0.01$ ). The findings confirm H7—the level of past performance of production-oriented environmental behavior relates positively to an optimistic managerial attitude to CEMR.

The relationship between organizational context and internal control (PIC in Table 5) is statistically significant (0.59; t-value: 5.36;  $p < 0.01$ ). The findings confirm H8—the level of organizational context relates positively to managers' awareness of environmental issues (i.e., the internal control factor). The relationship between organizational context and external control (PEC in Table 5) is also significant and negative ( $-0.77$ ; t-value: 8.06;  $p < 0.01$ ). The findings confirm H9—the level of organizational context relates negatively to the level of perception of obstacles to performing environmental behaviors (i.e., the external control factor).

The control variables of firm size (t-value: 4.63;  $p < 0.00$ ) and country of origin (t-value: 2.01;  $p < 0.01$ ) indicates a positive and statistically significant effect on CEMR. The addition of these variables in the separate model, generates an increase in the GFI and a  $\Delta$ CFI value greater than 0.01 (0.03). In contrast, the control variable for industry sector has no statistically significant effect on CEMR.

## 6. Conclusions, implications, and limitations

This study identifies the psychological and organizational variables that influence corporate environmental market responsiveness (CEMR), and finds out how they exert this influence. Ajzen's theory of planned behavior (TPB) (Ajzen, 1991; Ajzen and Madden, 1986) serves as a basis to propose and test a model for determining which

**Table 3**  
Discriminant validity.

	1	2	3	4	5	6	7
1. Corporate Environmental Market Responsiveness	<b>0.601</b>						
2. Perceived internal control	0.112	<b>0.542</b>					
3. Attitude	0.214	0.005	<b>0.604</b>				
4. Perceived external control	0.031	0.105	0.003	<b>0.649</b>			
5. Past behavior	0.381	0.017	0.222	0.001	<b>0.577</b>		
6. Organizational context	0.250	0.055	0.088	0.016	0.310	<b>0.783</b>	
7. Subjective norm	0.129	0.005	0.122	0.086	0.075	0.088	<b>0.716</b>

The results in the matrix in Table 3 give strong support for discriminant validity between the constructs since the variance from them exceed all off-diagonal squared phis (Podsakoff and MacKenzie, 1994).

**Table 5**  
Results of final model.

Dependent variable	Loading	t-Student	Std. Dev.	R <sup>2</sup>	Conclusions
Corporate Environmental Market Responsiveness-CEMR				0.67	
H1: Attitude influences CEMR	0.52	5.42	0.097		H1: supported
Control: Firm size influences CEMR	0.51	4.63	0.12		Significant
Control: Country effect influences CEMR	0.29	2.01	0.016		Significant
Control: Industrial sector influences CEMR	0.11	0.07			Not significant
H2: The subjective norm influences CEMR	0.65	8.72	0.063		H2: supported
H3: Internal control perceived influences CEMR	0.58	5.76	0.011		H3: supported
H4: External control perceived influences CEMR	0.04	0.02			H4: not supported
Attitude				0.60	
H5: The past behavior influences Attitude	0.81	6.15	0.021		H5: supported
H8: The subjective norm influences Attitude	0.69	4.02	0.14		H8: supported
Perceived External Control (PEC)				0.46	
H7: Organizational Context influences PEC	−0.77	−8.06	0.087		H7: supported
H9: The subjective norm influences PEC	0.25	3.09	0.060		H9: supported
Perceived Internal Control (PIC)				0.62	
H6: Organizational Context influences PIC	0.59	5.36	0.11		H6: supported

factors influence the environmental attitudes and policies of a large sample (3253) of managers employed by firms representing several industry sectors.

In general, the research findings show that managers' behavior with respect to environmental policy is largely determined by social judgments and perceptions. In addition, the results indicate that organizational context restricts managers to a somewhat narrower range of strategic options than previous studies suggest. These results have important implications for organizational theory and influence the debates about whether economic or social factors determine how environmental issues will affect competitive advantage (Oliver, 1997).

The study's findings that stakeholders have a significant influence on managerial decision-making with regard to CEMR, coincide with the institutional view of human behavior (Zukin and DiMaggio, 1990), and suggest that purposive managerial behavior is guided, but not necessarily by economic factors and/or active agency (DiMaggio and Powell, 1991; Oliver, 1991). The results also support the basic premise of institutional theory—that organizations tend to conform to the social influences that exist in their environments, and successful firms gain support and legitimacy by conforming to social pressures (Baum and Oliver, 1991; DiMaggio and Powell, 1983; Oliver, 1991).

The results also confirm the hypothesized impact of antecedents of motivational factors on managers' evaluations. In particular, past performance (in terms of environmental behavior) has a significant influence on managers' attitudes. This interpretation supports the view that past experience can have a major impact on behavior. Managers will perceive and act upon environmental pressures in accordance with the history of their firms' environmental performance (Delmas and Toffel, 2004), which challenges the opinion that habitual behavior excludes deliberate decision-making (Aarts, Verplanken, and Van Knippenberg, 1998).

From the perspective of competitive advantage, these results do not support the resource-based perspective that sustainable competitive advantage is the outcome of rational managerial choices regarding the disposition of resources. Rather, the decision-making process concerning environmental issues is conditioned by established norms, customs, and behavioral dispositions (Schlicht, 1993), which can prevent managers from recognizing the potential economic benefits of defying established customs (Denzau and North, 1994).

The study confirms the impact of the organizational context on the two types of perceived control. The findings support the institutional view that a firm's behavior is passive, habitual, unreflective, and socially defined (Oliver, 1997). From the perspective of competitive advantage, the results show that managerial decisions do not stem from a choice among unlimited possibilities determined by purely internal arrangements, but from a narrowly defined set of legitimate options determined by a firm's organizational field (Scott, 1991).

This study also has implications for general management and for environmental marketing managers in particular. Although this research does not address the relationship between CEMR and a firm's environmental performance, it does provide managers with useful information to increase a firm's ability to identify and satisfy environmental market needs better than its competitors. Because markets react to environmental initiatives, the success of these actions will depend on a firm's holistic understanding of the antecedents, drivers and components of CEMR. Thus, the study has implications for managers who wish to pursue an environmental market-oriented approach to business. Promotion of CEMR implementation is effective when addressing a range of psychological and organizational variables simultaneously. The psychological variables not only influence each other, but are also highly dependent upon the organizational context. The study shows that adequate organizational support increases the level of environmental behavior and the perception of potential benefits. The results also suggest that successful CEMR implementation requires a synchronized organizational strategy to ensure adequate investment in training, technology, compensation systems, and communications to improve managerial attitudes and the perceptions of stakeholders. Also, the positive influence of production-oriented environmental actions undertaken by the firm on attitudes toward CEMR reinforces the importance of the functional coordination to implement any competitive strategy, as suggested in the literature.

Some scales of this survey (perceived external control and organizational context) are a potential self-diagnostic tool to managers since they describe the administrative actions that firms use to implement CEMR and the organizational obstacles to performing CEMR. Thus, this study helps to identify managerial conditions necessary to encourage the implementation of CEMR within companies.

For marketers, the research confirms that a successful environmental marketing strategy requires careful management of a range of critical tasks, including decisions on products, distribution, advertising, pricing, and disposal. The general agreement of managers from different countries about these tasks indicates that environmental marketing is becoming a standard. This information is critical for managers who must cope with international competition, because the information assures them that their market strategies can maintain competitive identity, even though countries and markets vary.

An environmental marketing strategy requires not only instrumental tasks but environmental engagement at organizational and managerial levels. The adequate interconnection between purposive managerial decision making and marketing operations mitigates a firm's risk of being accused of greenwashing. Greenwashing is the misuse of the principles of environmental marketing and indicates

that markets perceive a light-weight attempt by marketing departments to seemingly care about environmental concerns. Since the research corrects the mechanical perspective of stakeholder pressures by including the organizational experience and predisposition of its managers to filter such pressures, marketers must then add an internal dimension to their traditional view of environmental marketing. This dimension requires aligning, motivating and empowering employees at all management levels to consistently address and satisfy the environmental needs of markets.

Thus, marketing managers who understand this multidimensional approach of CEMR will be better prepared to help their companies benefit from an ample environmentally approach to marketing.

This study has limitations. Although the biases of acquiescence, single informant, misspecification and aggregation are controlled by the research design, choice of data, and inference procedures; the use of self-reports implies a risk of common method variance (CMV). To reduce the potential problems resulting from CMV we have followed the four approaches recommended in the literature (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003), even if Chang, van Witteloostuijn, and Eden (2010) recognize that CMV may be tolerated in large-scale research projects involving multiple countries where an obtaining separate data source for all the countries is impossible, as this research. A challenge for future research is to find objective measures for environmental responsiveness behavior and for the organizational variables used in the model as well as the collection of key information from archival data and multiple respondents.

Despite the present study's wide range of industry sectors and the large number of respondents, future studies could consider the incorporation of a wider range of economic sectors. In addition, factors other than the individual and organizational variables used in this study could be included. Learning whether the relationships are structural or link contingently to particular business environments or the individual characteristics of particular managers would also be worthwhile.

The study achieves its objectives by providing a more complete understanding of the psychological and organizational drivers of CEMR behavior. The empirical findings support the theoretical hypotheses in the mainstream literature. The study raises several issues that have the potential to improve research on managerial decision-making and the complex relationships that exist between individual managerial decisions and the behaviors that produce good environmental results for the firm.

## References

- Aarts H, Verplanken B, Van Knippenberg A. Predicting behavior from actions in the past: repeated decision making or a matter of habit? *J Appl Soc Psychol* 1998;28:1355–74.
- Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process* 1991;50:179–211.
- Ajzen I. Attitudes, personality, and behavior. Chicago: Dorsey Press; 1988.
- Ajzen I, Madden T. Prediction of goal-directed behavior: attitudes, intentions, and perceived behavioral control. *J Exp Soc Psychol* 1986;22:453–74.
- Anderson L, Bateman T. Individual environment initiative: championing natural environmental issues in U.S. business organizations. *Acad Manage J* 2000;4(43):548–70.
- Anderson J, Gerbing D. Structural equation modeling in practice: a review and recommended two-step approach. *Psychol Bull* 1988;103:411–23.
- Aragon-Correa JA, Matias-Reche F, Senise-Barrio ME. Managerial discretion and corporate commitment to the natural environment. *J Bus Res* 2004;57(9):964–75.
- Armitage C, Conner M. Efficacy of the theory of planned behavior: a meta-analytic review. *Br J Soc Psychol* 2001;40(4):471–99.
- Ashford N. Understanding technological responses of industrial firms to environmental problems: implications for government policy. In: Schot J, Fischer K, editors. Environmental strategies for industry: international perspectives on research needs and policy implications. Washington, DC: Island Press; 1993. p. 277–310.
- Bagozzi R. Causal models in marketing. New York: Wiley; 1980.
- Bagozzi R, Yi Y. On the evaluation of structural equation models. *J Acad Mark Sci* 1988;1(16):74–94.
- Baker W, Sinkula J. Environmental marketing strategy and firm performance: effects on new product performance and market share. *J Acad Mark Sci* 2005;33(4):461–75.
- Bamberg S, Möser G. Twenty years after Hines, Hungerford, and Tomera: a new meta-analysis of psycho-social determinants of pro-environmental behavior. *J Environ Psychol* 2007;27(1):14–25.
- Banerjee S. Corporate environmentalism: the construct and its measurement. *J Bus Res* 2002;55(3):177–91.
- Banerjee S, Iyer E, Kashyap R. Corporate environmentalism: antecedents and influence of industry type. *J Mark* 2003;67(2):106–22.
- Bansal P. Why do firms go green? The case for organizational legitimacy. Templeton College/Faculty of Social Sciences. University of Oxford; 1995.
- Bansal P, Roth K. Why companies go green: a model of ecological responsiveness. *Acad Manage J* 2000;4(43):717–37.
- Baum J, Oliver C. Institutional linkages and organizational mortality. *Adm Sci Q* 1991;36:187–218.
- Berry M, Rondinelli D. Proactive corporate environmental management: a new industrial revolution. *Acad Manage Exec* 1998;2(12):1–13.
- Boldero J. The prediction of household recycling of newspapers: the role of attitudes, intentions, and situational factors. *J Appl Soc Psychol* 1995;25:440–62.
- Bowen F. Environmental visibility: a trigger of green organizational response? *Bus Strategy Environ* 2000;9(2):92–107.
- Chang S, van Witteloostuijn A, Eden L. From the Editors: common method variance in international business research. *J Int Bus Stud* 2010;41:178–84.
- Cheung G, Rensvold R. Evaluating goodness-of-fit indexes for testing measurement invariance. *Struct Equ Model* 2002;9(2):233–55.
- Cordano M. The attitudinal bases of stakeholder conflict: an examination of business-environmental stakeholders. *Acad Manage best paper proc* 1996:347–51.
- Cordano M, Frieze I. Pollution reduction preferences of U.S. environmental managers: applying Ajzen's theory of planned behavior. *Acad Manage J* 2000;4(43):627–41.
- Dasgupta S, Hettige H, Wheeler D. What improves environmental performance? Evidence from Mexican industry. Development Research Group World Bank; 1997. December.
- De Young R. Some psychological aspects of reduced consumption behavior: the role of intrinsic satisfaction and competence motivation. *Environ Behav* 1996;28:358–409.
- Delmas M, Toffel M. Stakeholders and environmental management practices: an institutional framework. *Bus Strat Environ* 2004;13:209–22.
- Denzau A, North D. Shared mental models: ideologies and institutions. *Kyklos* 1994;47(1):3–31.
- Detterman D. The case for the prosecution: transfer as an epiphenomenon. In: Detterman D, Sternberg R, editors. Transfer on trial: intelligence, cognition, and instruction. Norwood NJ: Ablex; 1993. p. 1–24.
- Dieleman H, de Hoo S. Toward a tailor-made process of pollution prevention and cleaner production: results and implications of the PRISMA project. In: Schot J, Fischer K, editors. Environmental strategies for industry: international perspectives on research needs and policy implications. Washington, DC: Island Press; 1993. p. 245–76.
- DiMaggio P, Powell W. The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. *Am Sociol Rev* 1983;48:147–60.
- DiMaggio P, Powell W. The new institutionalism in organizational analysis. Chicago: University of Chicago Press; 1991.
- Dobers P. Strategies for environmental control. A comparison between regulation and centralized control in Germany and reforms leading to decentralized control in Sweden. *Bus Strat Environ* 1997;6(1):34–45.
- Dyllick T, Hockerts K. Beyond the business case for corporate sustainability. *Bus Strat Environ* 2002;11(2):130–41.
- Elkington J. Towards the sustainable corporation: win-win-win business strategies for sustainable development. *Calif Manage Rev* 1994;2(36):90–100.
- Fineman S, Clarke K. Green stakeholders: industry interpretations and response. *J Manage Stud* 1996;33(6):715–30.
- Fishbein M, Ajzen I. Belief, attitude, intention, and behavior: an introduction to theory and research. Reading, MA: Addison-Wesley; 1975.
- Flannery B, May D. Environmental ethical decision making in the U.S. metal-finishing industry. *Acad Manage J* 2000;4(43):642–62.
- Fornell C, Larcker D. Evaluating structural equation models with unobservable variables and measurement error. *J Mark Res* 1981;18:39–50.
- Frankwick G, Ward J, Hutt M, Reigen P. Evolving patterns of organizational beliefs in the formation of strategy. *J Mark* 1994;2(58):96–110.
- Getz K. Implementing multilateral regulation—a preliminary theory and illustration. *Bus Soc* 1995;34(3):280–316.
- Gollwitzer P, Brandstätter V. Implementation intentions and effective goal pursuit. *J Pers Soc Psychol* 1997;73:186–99.
- Gray R, Kouhy R, Lavers S. Corporate social and environmental reporting: a review of the literature and a longitudinal study of UK disclosure. *Account Auditing Accountability J* 1995;8(2):47–77.
- Gunningham N, Kagan R, Thornton D. Social license and environmental protection: why businesses go beyond compliance. *Identifiers Law Soc Inq* 2004;29:307–42.
- Hagger M, Chatzisarantis N, Biddle S. The influence of self-efficacy and past behavior on the physical activity intentions of young people. *J Sports Sci* 2001;19:711–25.
- Hartman R, Wheeler D, Singh M. The cost of air pollution abatement. *Appl Econ* 1997;29(6):759–74.
- Henriques I, Sadorsky P. The relationship between environmental commitment and managerial perceptions of stakeholder importance. *Acad Manage J* 1999;1(42):87–99.
- Hines J, Hungerford H, Tomera A. Analysis and synthesis of research on responsible environmental behavior: a meta-analysis. *J Environ Educ* 1986/87;18:1–8.
- Hoffman A, Ventresca M. Organizations, policy and the natural environment: institutional and strategic perspectives, editors. Stanford, CA: Stanford University Press, 2002.

- Hu L, Bentler P. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct Equ Model* 1999;6:1–55.
- Hutchinson C. Corporate strategy and the environment. In: Welford R, Starkey R, editors. *Business and the environment*. London: Earthscan; 1996. p. 85–104.
- Isaak R. The making of the ecopreneur. *Greener Manage Int* 2002;38:81–91.
- Jaccard J, Blanton H. The origins and structure of behavior: conceptualizing behavioral criteria in attitude research. In: Albarracín D, Johnson B, Zanna M, editors. *Handbook of attitudes and attitude change*. NJ: Erlbaum; Hillsdale; 2005. p. 125–72.
- Jaccard J, Wan C. Lisrel approach to interaction effects in multiple regressions. Thousand Oaks, CA: Sage Publications; 1996.
- Jackson T. Towards a 'social psychology' of consumption. ESRC STP Fellowship (RES 3 32-27-0001). Centre for Environmental Strategy University of Surrey; 2005 [http://hiveideas.com/attachments/044\\_motivatingscfinal\\_000.pdf](http://hiveideas.com/attachments/044_motivatingscfinal_000.pdf). Available at.
- Jöreskog K. Testing structural equation models. In: Bollen K, Long J, editors. *Testing structural equation models*. Newbury Park, CA: Sage; 1993. p. 294–316.
- Kaiser F, Gutsche H. The proposition of a general version of the theory of planned behavior: predicting ecological behavior. *J Appl Soc Psychol* 2003;33(3):586–603.
- Kalafatis S, Pollard M, East R, Tsogas M. Green marketing and Ajzen's theory of planned behavior: a cross-market examination. *J Consum Mark* 1999;5(16):441–60.
- Kilbourne W, Beckman S. Review and critical assessment of research on marketing and the environment. *J Mark Manage* 1998;14:513–32.
- King A, Lenox M. Industry self-regulation without sanctions: the chemical industry's responsible care program. *Acad Manage J* 2000;43:698–716.
- King A, Lenox M. Lean and green? An empirical examination of the relationship between lean production and environmental performance. *Prod Oper Manage* 2001;10(3):244–57.
- King A, Shaver M. Are aliens green? Assessing foreign establishments environmental conduct in the United States. *Strat Manage J* 2001;22(11):1069–85.
- Klassen R, Angell L. An international comparison of environmental management in operations: the impact of manufacturing flexibility in the US and Germany. *J Oper Manage* 1998;16:177–94.
- Kralj D, Markic M. Global marketing and environmental excellence. *Int J Energy Environ* 2007;2(1):155–64.
- Langerak F, Peelen E, Van der Veer M. Exploratory results on the antecedents and consequences of green marketing. *J Market Res Soc* 1998;4(40):323–35.
- Leone L, Perugini M, Ercolani A. A comparison of three models of attitude-behavior relationships in the studying behavior domain. *Eur J Soc Psychol* 1999;29:161–89.
- Maignan I, Ferrell O. Corporate social responsibility and marketing: an integrative framework. *J Acad Mark Sci* 2004;32(1):3–19.
- Markus H, Zajonc R. The cognitive perspective in social psychology. In: Lindzey G, Aronson E, editors. *Handbook of social psychology*. New York: Random House; 1985. p. 137–229.
- Menguc B, Ozanne L. Challenges of the green imperative: a natural resource-based approach to the environmental orientation-business performance relationship. *J Bus Res* 2005;58:430–8.
- Murray K, Montanari J. Strategic management of the socially responsible firm: integrating management and marketing theory. *Acad Manage Rev* 1986;11(4):815–27.
- Muthen BO. Goodness of fit with categorical and other non normal variables. In: Bollen K, Long J, editors. *Testing structural equation models*. Newbury Park, CA: Sage; 1993. p. 205–34.
- Noble C, Mokwa M. Implementing marketing strategies: developing and testing a managerial theory. *J Mark* 1999;63:57–73.
- Oliver C. Strategic responses to institutional processes. *Acad Manage Rev* 1991;16:145–79.
- Oliver C. Sustainable competitive advantage: combining institutional and resource based views. *Strategic Manage J* 1997;18(9):697–713.
- Orbell S, Sheeran P. Inclined abstainers: a problem for predicting health behavior. *Br J Soc Psychol* 1998;37:151–65.
- Ottman J. *Green marketing: opportunity for innovation*. Lincolnwood (IL). NTC/Contemporary Books 2nd Ed.; 1998.
- Petts J, Herd A, O'Eocha M. Environmental responsiveness, individuals and organizational learning: SME experience. *J Environ Plann Manage* 1998;41:711–31.
- Piercy N, Morgan N. Mission analysis: an operational approach. *J Gen Manage* 1994;19(3):1–19.
- Podsakoff P, MacKenzie S. Organizational citizenship behaviors and sales unit effectiveness. *J Mark Res* 1994;3:351–63.
- Podsakoff P, MacKenzie S, Lee J, Podsakoff N. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *J Appl Psychol* 2003;88:879–903.
- Powers T, Koestner R, Topciu R. Implementation intentions, perfectionism, and goal progress: perhaps the road to hell is paved with good intentions. *Pers Soc Psychol Bull* 2005;31(7):902–12.
- Prakash A. Green marketing, public policy, and managerial strategies. *Bus Strategy Environ* 2002;11(5):285–97.
- Pujari D, Wright G, Peattie K. Green and competitive: influences on environmental new product development performance. *J Bus Res* 2003;56(8):657–71.
- Reinhardt F. Environmental product differentiation: implications for corporate strategy. *Calif Manage Rev* 1998;40(4):43–73.
- Reinhardt F. Bringing the environment down to earth. *Harv Bus Rev* 1999;77(4):149–57.
- Rhodes R, Courneya K. Modeling the theory of planned behavior and past behavior Psychology. *Health Med* 2003;8(1):57–69.
- Rise J, Thompson M, Verplanken B. Measuring implementation intentions in the context of the theory of planned behavior. *Scand J Psychol* 2003;44:87–95.
- Rivera-Camino J. Re-evaluating green marketing strategy: a stakeholder perspective. *Eur J Mark* 2007;41(11/12):1328–58.
- Rothenberg S, Maxwell J, Marcus A. Issues in the implementation of proactive environmental strategies. *Bus Strategy Environ* 1992;1:1–12.
- Russo M, Fouts P. A resource-based perspective on corporate environmental performance and profitability. *Acad Manage J* 1997;40:534–59.
- Schaefer A, Crane A. Addressing sustainability and consumption. *J Macromarketing* 2005;25(1):76–93.
- Schlicht E. On custom. *J Institutional Theor Econ* 1993;49(1):178–203.
- Schmidheiny S. *Changing course: a global business perspective on development and the environment*. Cambridge, MA: MIT Press; 1992.
- Scott W. Unpacking institutional arguments. In: Powell W, DiMaggio P, editors. *The new institutionalism in organizational analysis*. Chicago, IL: University of Chicago Press; 1991. p. 164–82.
- Sharfman M, Shaft T, Tihanyi L. A model of the global and institutional antecedents of high-level corporate environmental performance. *Bus Soc* 2004;43(1):6–36.
- Sharma S. A longitudinal investigation of corporate environmental responsiveness: antecedents and outcomes. *Acad Manage best paper proc* 1997:460–4.
- Sharma S. Managerial interpretations and organizational context as predictors of corporate choice of environmental strategy. *Acad Manage J* 2000;4(43):681–97.
- Sharma S, Nguan O. The biotechnology industry and strategies of biodiversity conservation: the influence of managerial interpretations and risk propensity. *Bus Strategy Environ* 1999;8:46–61.
- Sheeran P. Intention-behavior relations: a conceptual and empirical review. *Eur Rev Soc Psychol* 2002;12:1–36.
- Song M, Droge C, Hanvanich S, Calantone R. Marketing and technology resource complementarity: an analysis of their interaction effect in two environmental contexts. *Strateg Manage J* 2005;26(3):259–76.
- Sparks P, Shepherd R. Self-identity and the theory of planned behavior: assessing the role of identification with green consumerism. *Soc Psychol Q* 1992;55:388–99.
- Sparks P, Guthrie C, Shepherd R. The dimensional structure of the perceived behavioral control construct. *J Appl Soc Psychol* 1997;27:418–38.
- Stanwick P, Stanwick S. The relationship between corporate social performance, and organization size, financial performance, and environmental performance: an empirical examination. *J Bus Ethics* 1998;17:195–204.
- Starik M, Rands G. Weaving an integrated web: multilevel and multisystem perspectives of ecologically sustainable organizations. *Acad Manage Rev* 1995;20:908–35.
- Stead W, Stead J. An empirical investigation of sustainability strategy implementation in industrial organizations. In: Collins D, Starik M, editors. *Research in corporate social performance and policy*. Greenwich: JAI Press; 1995. p. 43–66.
- Stead W, Stead J. *Management for a small planet, strategic decision making and the environment*. 2nd Ed. Newbury Park CA: Sage; 1996.
- Steiger J. Structural model evaluation and modification: an interval estimation approach. *Multivariate Behav Res* 1990;25:173–80.
- Stern P. Towards a coherent theory of environmentally significant behavior. *J Soc Issues* 2000;56(3):407–24.
- Sutton S. Predicting and explaining intentions and behavior: how well are we doing? *J Appl Soc Psychol* 1998;28:1317–38.
- Tabachnick B, Fidell L. *Using multivariate statistics*. New York: Harper Collins College Publishers; 1996.
- Tanner C, Wolfing Kast S. Promoting sustainable consumption: determinants of green purchases by Swiss consumers. *Psychology and Marketing* 2003;20(10):883–902.
- Taylor S, Todd P. An integrated model of waste management. *Environ Behav* 1995;27(5):603–30.
- Taylor S, Todd P. Understanding the determinants of consumer composting behavior. *J Appl Soc Psychol* 1997;27(7):602–28.
- Theyel G. Management practices for environmental innovation and performance. *Int J Oper Prod Manage* 2000;2(20):249–66.
- Thomas J, Clark S, Gioia D. Strategic sense making and organizational performance: linkages among scanning, interpretation, action, and outcomes. *Acad Manage J* 1993;36:239–70.
- Tietenberg T. *Environmental and natural resource economics*. Glenview: Scott Foresman; 1988.
- Tilley F. Small firm environmental ethics: how deep do they go? *Bus Ethics A Eur Rev* 2000;9(1):31–41.
- Verplanken B, Aarts H, Van Knippenberg A, Moonen A. Habit versus planned behavior: a field experiment. *Br J Soc Psychol* 1998;37(1):111–28.
- Winn M, Angell L. Towards a process model of corporate greening. *Organ Stud* 2000;21(6):1119–47.
- Workman J. Marketing's limited role in new product development in one computer systems firm. *J Mark Res* 1993;30:405–21.
- Zukin S, DiMaggio P. Introduction. In: Zukin S, DiMaggio P, editors. *Structures of capital: the social organization of the economy*. Cambridge, UK: Cambridge University Press; 1990. p. 1–56.