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The Interactive Effect of Internal and External Factors on a Proactive Environmental Strategy and its Influence on a Firm's Performance

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ABSTRACT. While the literature on the effective management of business and natural environment interfaces is rich and growing, there are still two questions regarding which the literature has yet to reach a definitive conclusion: (1) what is the interactive effect between internal and external drivers on a proactive environmental strategy (PES)? and (2) does a PES influence firm's performance? Drawing on the resource-based view for the internal drivers' perspective and institutional and legitimacy theories for the external drivers' perspective, this study suggests that the effect of entrepreneurial orientation on a PES is moderated by the intensity of government regulations and customers' sensitivity to environmental issues. The authors also examine the relationship between the PES and a firm's performance in terms of sales and profit growth. Implications are discussed regarding the role of a PES in achieving a competitive advantage in the marketplace.

KEY WORDS: proactive environmental strategy, entrepreneurial orientation, resource-based view, legitimacy theory, institutional pressure, stakeholder theory, natural environment

Scholarly interest in the antecedents of a firm's proactive environmental strategy (hereafter PES) and in its impact on performance has been strong and is growing exponentially (e.g., Aragon-Correa and Sharma, 2003). This interest is not confined to the academic community. A recent report by Business for Social Responsibility (2007, pp. 11–35) offers several examples of firms engaging in PESs: (1) DuPont, a $27 billion chemical company with operations in 75 countries, is well regarded for achieving substantial emission reductions over the last 15 years, as well as making further commitments to reach 65% below the 1990-emission levels by 2010. The company considers internal capacity building important for cogenerating social benefit, business opportunity, and growth in the context of climate change. (2) 3M uses a companywide system called Pollution Prevention Pays (3P) that encourages employees at all levels to rethink products and processes to eliminate waste. Over the last three decades, the program has generated gains every year. (3) Bayer has an executive Corporate Sustainability Board on climate change and a working group on renewable raw materials. (4) Unilever, which finds that raw materials account for up to 10 times the company's internal emissions, gives preference to suppliers' products with lower emissions.

We define PES as a top management-supported, environmentally oriented strategy that focuses on the prevention (versus control or the reactive using of an end-of-pipe approach) of wastes, emissions, and pollution through continuous learning, total quality environmental management, risk taking, and planning (e.g., Aragon-Correa and Sharma, 2003; Hart, 1995). A PES has been predominantly viewed from an internally driven (competitive) perspective, and the term is used to describe a firm's voluntary and innovative activities of pollution prevention, which are initiated and championed by top management (e.g., Aragon-Correa and Sharma, 2003; Sharma, 2000; Sharma and Vredenburg, 1998). That is, we define a PES as a higher-order construct that is composed of two sub-dimensions: pollution-prevention and top management support of natural environmental issues. Although a PES has generally been approached from merely a pollution-prevention perspective, we deem that the inclusion of top management support, as a

top-down process, is essential because winning the support and attention of top management is critical for a PES's success. Previous researchers who have drawn on this perspective have advanced our understanding the effect of a PES on a firm's competitive advantage (Sharma and Vredenburg, 1998). Hart (1995), however, in his original article on the natural resource-based framework, has proposed that a strict, internally driven perspective to a PES is limited. Hart (1995) argues that a PES should also accommodate an external, legitimacy-based perspective because a legitimacy-based perspective to a PES does not endanger competitive advantage but, in fact, further strengthens it.

As a consequence, in this study, we test Hart's proposition accommodating these two complementary perspectives in the same research setting. More specifically, we examine the interaction effect between the internal perspective and the external perspective on a PES. For example, we respond to calls by researchers such as Oliver (1991, p. 710) who contends: ''Research on the combined effects of resource capital and institutional capital on firm's performance might be one approach.'' Based on a review of the extant literature, we argue that there is a need to incorporate both the internally driven and externally driven factors to capture fully the essence of a PES.

There has been considerable research aimed at understanding the internally driven perspective of a PES by drawing on the resource-based view (RBV) of the firm (e.g., Aragon-Correa, 1998; Sharma, 2000; Sharma and Vredenburg, 1998). We extend this framework by positing the externally driven perspective as a moderator that is expected to delineate the boundary conditions of the influence of the internally driven perspective. That is, rather than simply including the internal and external factors as direct effects on a PES, our model pursues a contingency approach that explicates the contextual conditions of the impact of an internal factor's contribution to a PES. The externally driven perspective draws on institutional theory and the legitimacy literature by incorporating the notion of corporate social performance (e.g., Hooghiemstra, 2000; Wilmshurst and Frost, 2000). Both the internal and external perspectives, we suggest, are complementary and capture the extent of a firm's social performance and responsiveness. In order to realize a true and accurate understanding of the value-generating role of a PES, there is a need to include the interactive effect of the two perspectives.

In order to summarize, this study has the following purposes. First, we develop and test a conceptual model that investigates how the externally driven perspective, drawing on institutional and legitimacy theories, moderates the effect of the internally driven perspective, which has its roots in the RBV of the firm, and its derivatives (e.g., dynamic capabilities, natural RBV, etc.) on a PES. Second, we examine the performance ramifications of a PES in terms of the sales and profit growth of a firm. If a PES can enhance the sales and profit growth of a firm, we deem then that this will be perceived in a positive light by managers who are contemplating whether to allocate more resources and budget to environmentally friendly strategies. We use data from various manufacturing firms in New Zealand, a country known for its commitment to advancing an environmental agenda.

In the sections to follow, we revisit the existing literature on the internally driven and externally driven perspectives of a PES and integrate the two streams of research into a broader model of a PES. We then develop our model and propose our hypotheses, followed by our research methods and data analysis. Finally, we discuss our study's theoretical and managerial implications.

Literature review

In accordance with the growing scholarly interest, previous researchers have discussed at length the performance implications of a PES. The proponents of a PES have, for long, provided empirical evidence that a PES is indeed positively related to a firm's efficiency and effectiveness (Russo and Fouts, 1997). There is also, however, equally convincing empirical evidence showing that a PES has no significant performance impact (Christmann, 2000). In her study, Christmann (2000) discussed some of the noticeable methodological problems that may have contributed to the inconsistent findings in the current literature. While this scholarly debate continues, it is clear that there is a lack of agreement about what the antecedents to a PES are and how they are combined to influence a PES. A careful review,

however, of Hart's (1995) original proposition reveals that two complementary perspectives of a PES exist: (1) an internally driven (or competitive) perspective (Aragon-Correa and Sharma, 2003) and (2) an externally driven (or legitimacy-based) perspective (Oliver, 1991). We now revisit the existing literature on each perspective, respectively, and subsequently integrate the two by positing an interaction between the two perspectives.

Internally driven perspective on a proactive environmental strategy

Sharma (2000, p. 683) defines a PES as "a consistent pattern of company actions taken to reduce the environmental impact of operations, not to fulfill environmental regulations or to conform to standard practices." In addition, we add top management support to such a strategy as an important dimension of a PES because we see this strategy as a process that is top-down in nature. Thus, we define a PES as a higher-order construct that consists of two first-order dimensions: pollution-prevention and top management support of natural environmental issues. Next, we explain the two sub-dimensions in greater detail.

From a pollution-prevention perspective, a proactive (or innovative) environmental strategy is a reflection of evolutionary environmental strategy models that have gone beyond the early compliance versus noncompliance categorizations. Previous researchers have approached PES from a pollution-prevention versus pollution-control perspective (e.g., Hart, 1995; Hart and Ahuja, 1996; Russo and Fouts, 1997), while others have taken a proactive versus reactive perspective (e.g., Aragon-Correa, 1998; Sharma, 2000; Sharma and Vredenburg, 1998). Nevertheless, both approaches have highlighted the same phenomenon. That is, while a PES represents a proactive (or voluntary and innovative) approach, pollution-control strategies represent a reactive (or conformance/compliance) approach. A PES aims to minimize emissions, effluents, and wastes. Central to a PES are continuous improvement methods that focus on well-defined environmental objectives rather than relying on expensive "end-pipe" capital investments to control emissions. As Hart (1995) has demonstrated, a PES provides a firm with a competitive advantage through lower costs, shorter cycle times, and a better utilization of resources and capabilities.

From a top management supportive perspective, we posit that a firm's adoption of a PES reflects top management's commitment to natural environmental issues. Key behaviors on the part of the top managers include, but are not limited to: communicating and addressing critical environmental issues; initiating environmental programs and policies; rewarding employees for environmental improvements; and contributing organizational resources to environmental initiatives (Berry and Rondinelli, 1998).

In general, top managers' strategic leadership and their support may play a critical role in shaping an organization's values and orientation toward natural environmental issues (Berry and Rondinelli, 1998). The building of strong network ties inside and outside the industry, and acquisition of more knowledge about environmental activities may increase top managers' sensitivity to environmental concerns and enable them to benchmark their firm's environmental activities with those of competitors in the marketplace (Menon and Menon, 1997). In addition, previous researchers acknowledge the role of top management as significant in predicting corporate social performance (Miles, 1987; Weaver et al., 1999). In firms that are described as "commercial and environmentally excellent," support and involvement from top management on environmental issues are common (Henriques and Sadorsky, 1999; Hunt and Auster, 1990; Roome, 1992). Banerjee (1992) argues that the commitment of top management is crucial to successful environmental management. In addition, Coddington (1993) and Hart (1995) conclude that corporate vision and strong leadership are the two key facilitators of the implementation of a corporatewide, environmental management strategy. To this end, Dechant and Altman (1994, p. 9) note that "environmental leaders inspire a shared value of the organization as environmentally sustainable, creating or maintaining green values throughout the enterprise." A good example of top management leadership and proactive involvement on environmental issues is the environmental position taken by The Body Shop and its founder Anita Roddick.

Since Hart's article first appeared in *AMR*, scholars have spent significant time and effort trying

to understand the fundamental propositions of the natural resource-based view (NRBV). Similarly, the internally driven (or competitive) perspective has received considerable attention. More recently, this perspective has been located within the ''dynamic capabilities'' approach (Aragon-Correa and Sharma, 2003). Eisenhardt and Martin (2000, p. 1107) define dynamic capabilities as ''the firm's processes that use resources – especially the processes to integrate, reconfigure, gain and release resources – to match and even create market change. Dynamic capabilities, thus, are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die.''

According to proponents of this perspective (e.g., Aragon-Correa and Sharma, 2003), a PES, from a pollution-prevention and top management supportive perspective, is consistent with the very definition of dynamic capabilities for several reasons. First, a PES shares a fundamental proposition with the NRBV in that ''to the extent [that] these practices are tacit, casually ambiguous, firm specific, socially complex, path dependent, and value adding for consumers, they may provide advantage'' (Aragon-Correa and Sharma, 2003, p. 74). In fact, the adoption of a PES results in a substantial competitive advantage due to (process-driven) cost advantages (Aragon-Correa and Sharma, 2003; Hart, 1995; Hart and Ahuja, 1996; Klassen and Whybark, 1999; Majumdar and Marcus, 2001) and (product-driven) differentiation advantages (Hart, 1995). A long-term, sustainable advantage lies in the resource configurations that managers build using a PES (Aragon-Correa and Sharma, 2003; Christmann, 2000).

Second, a PES is idiosyncratic (i.e., organization specific) due to its social complexity (Aragon-Correa and Sharma, 2003). For example, Majumdar and Marcus (2001) showed that when managers create a balance between regulatory policies and their discretion, they can enjoy entrepreneurship, creativity, and risk taking; conduct R&D; and even develop new technologies, which are all important resources for a PES. Sharma (2000) found that the managerial interpretation of the environment either as an opportunity or a threat influences the extent to which a PES is deployed. To this end, Marcus and Geffen (1998, p. 1147) came to the conclusion that ''key players are likely to interpret the conditions they face and assign meaning to the actions they take in fairly idiosyncratic ways.'' Therefore, depending on the dominant coalition's attitude and commitment to natural environmental issues, the adoption and implementation of a PES can be viewed as an opportunity to generate growth or as a threat and disruption to existing operations. Andersson and Bateman's (2000) study shows that the success of employee-championing behaviors regarding natural environmental issues depends on their alignment with top management's positive attention and actions toward these issues. Thus, we view top management's support of natural environmental issues to be idiosyncratic and organization specific because managerial vision, leadership, and focus are distinctive and socially complex.

Third, a dynamic capability approach to a PES entails a complex integration and reconfiguration of organizational, managerial, higher-order learning, and divergent stakeholder perspectives (Aragon-Correa and Sharma, 2003). To this end, a PES is consistent with the dynamic capability perspective in that a PES involves an intricate integration of pollution prevention, and managerial support and leadership. Sharma and Vredenburg (1998) have shown that competitively valuable organizational capabilities such as stakeholder integration, continuous innovation, and higher-order learning may emerge from the adoption of a PES.

Fourth, the application of a PES involves path dependency. It necessitates the integration and combination of tacit capabilities that lead to causal ambiguity and barriers to imitation. The effective formulation and execution of a PES demands the alignment of the appropriate control mechanisms with incentives eliciting organizational structures so that all employees are motivated to participate actively in the delivery of the strategy (Aragon-Correa and Sharma, 2003).

Externally driven perspective on a proactive environmental strategy

In addition to the internally driven perspective, a PES needs to take into consideration externally driven (or legitimacy-based) activities under institutional pressure because a purely internally driven approach may prove inadequate due to issues of external (social) legitimacy and reputation (Hart,

1995). Suchman (1995, p. 574) defines legitimacy as "a generalized perception or assumption that the actions of an entity are desirable." Rao et al. (2008) argue that in emerging industries, new ventures face the vexing "liability of newness" problem because they have to prove to stakeholders that they are worthy investment opportunities. We contend that when there are institutional pressures such as government regulation and consumer sensitivity to environmental issues, a firm's desire to enhance social fitness is likely to provide the boundary condition for the effectiveness of economic fitness. That is, institutional theory suggests that when there is institutional pressure from various stakeholders, improving social legitimacy in the eyes of its stakeholders can moderate the degree to which firms adopt a PES based on internal antecedents (e.g., Oliver, 1991). In fact, Oliver (1991, p. 150) posits that responding to institutional pressure "emphasizes the importance of obtaining legitimacy for purposes of demonstrating social worthiness."

A legitimacy-based view has its roots in neo-institutional theory (e.g., DiMaggio and Powell, 1983; Oliver, 1991). Legitimacy theory is widely used as a framework to explain strategic choice with regard to the environmental and social behavior of organizations (Harvey and Schaefer, 2001; Hooghiemstra, 2000). Neo-institutional theorists (e.g., DiMaggio and Powell, 1983; Oliver, 1991) posit that since a competitive strategy may foster cooperative action in the interest of social legitimacy, a competitive advantage must be created within the broader scope of social legitimacy. From a legitimacy theory perspective, attention to the public's perception of the firm and the reputation of the company will alter the internal perspective's impact on a PES (Hooghiemstra, 2000). As we outline subsequently, our prediction is that when there is greater social pressure from stakeholders such as the government and consumers, the influence of the internal perspective on a PES will be strengthened.

Because of the tacit nature of a pollution-prevention capability, an external (legitimacy-based) orientation should not jeopardize competitive advantage, but rather reinforce and differentiate the firm's position through the positive effect of a good reputation (Hart, 1995). Hence, a firm must also maintain legitimacy and build reputation through communication and transparency to invite external stakeholders' scrutiny into their operations (Hart, 1995; Suchman, 1995).

Interaction between the two perspectives

Based on the preceding literature review, we suggest that a model attempting to explain a PES should take a contingency view and capture how the externally driven perspective moderates the internally driven perspective's effect on a PES. We outline the reasons for our approach below.

First, while each perspective emphasizes a different aspect of a firm's management of the business–natural environment interface, both aim to enhance the firm's competitive advantage in the natural environmental arena. While one underscores the economic fitness approach, the other emphasizes the social fitness approach. As a consequence, the interplay between these two approaches can shed light on how a PES can be developed. Second, both perspectives are theory driven and have received attention from scholars in their respective fields of research. It is also important to note that both perspectives are designed to promote a better understanding of the influence of a PES on a firm's performance. Indeed, they are not mutually exclusive paths for firms to follow.

In summary, our review of the literature suggests that there is a shortage of studies that simultaneously model both the internal and external perspectives relating to a PES, and moreover, their interactive effects. The lack of such a contingency approach in modeling a PES leads to at least two major problems that are of concern: First, most studies have subscribed to only one perspective of a PES and have used the same term to refer to different aspects of a firm's behavior; this has produced results that are often difficult to compare and sometimes contradictory. Second, the richness of a PES is not exploited. Adopting only one perspective implies that the full range of options for a firm seeking to improve its performance may not be captured; this can lead to a partial explanation of a firm's performance and to an incomplete theory. Third, reliance on a direct effects only model can obstruct the insights that a contingency model, by offering the boundary conditions of the impact of internally driven factors on a PES, can provide.

In light of the limitations associated with the extant literature, it is important to develop a model

that can incorporate both perspectives, and more importantly, demonstrate the interactive effect of the two on a PES. It is also essential to substantiate empirically the effect of a PES on firm's performance. Our model, which we explain next, satisfies these requirements.

Proposed model and hypotheses

The theories that we draw onto construe our model, which is depicted in Figure 1, are the RBV of the firm and its derivatives (internal perspective), and institutional and legitimacy theories (external perspective). The central tenet of the RBV of the firm and its derivations (i.e., NRBV and dynamic capabilities perspective) suggest that a firm's PES and, in turn, the firm's growth and competitive advantage is determined by its idiosyncratic internal resources and capabilities (e.g., Barney, 1991; Eisenhardt and Martin, 2000; Hart, 1995; Teece et al., 1997; Wernerfelt, 1984). In our model, we examine entrepreneurial orientation as an idiosyncratic capability that is likely to explain the extent to which a firm adopts a PES.

Legitimacy and institutional theories are useful in the development of our hypotheses because both are diagnostic with regard to how firms respond with strategic choices based on the demands of the macro external environment. More specifically, we consider institutional pressures from important stakeholders, such as consumers and government, which may possess valuable tangible and intangible resources.

The effect of entrepreneurial orientation on proactive environmental strategy

Firms are not likely to pursue a PES unless their upper echelons emphasize entrepreneurial activity (i.e., innovativeness, proactiveness, risk-taking) (Covin and Slevin, 1989, 1991). Top management's receptivity regarding pollution prevention will increase when firms possess more of an entrepreneurial orientation. Aragon-Correa and Sharma (2003, p. 74) claim that "[p]roactive strategies such as pollution-prevention approaches need to be integrated into the administrative, entrepreneurial, and engineering dimensions of a firm." Indeed "enviropreneurial marketing," a term coined by Varadarajan (1992) that underscores the importance of incorporating an entrepreneurial spirit into the pursuit of an environmental marketing strategy, is consistent with a PES that promotes ecological sustainability (Menon and Menon, 1997).

When there is an entrepreneurial mindset embedded in the organization, top management is more willing to take risks, tolerate ambiguity and

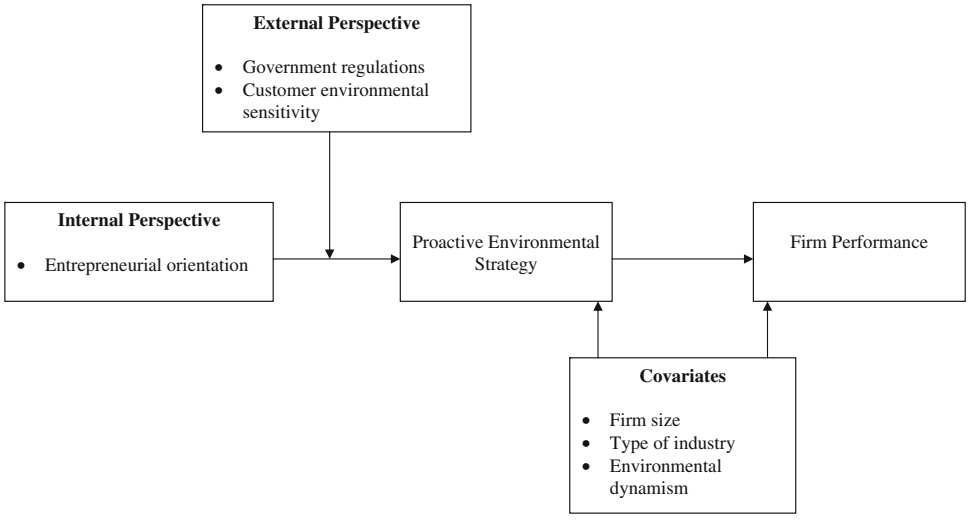

Figure 1. Conceptual model.

uncertainty, and venture into potentially high-rewarding, albeit risky, domains. Managers are more inclined to interpret new market spaces as opportunities than threats (Dutton and Jackson, 1987; Sharma, 2000). In fact, drawing on the strategic issue interpretation literature, Sharma (2000) reports that the more managers interpret environmental issues as opportunities rather than threats, the more likely they are to adopt a PES. Such bold, aggressive, and proactive attitudes are likely to transfer into the adoption and implementation of more innovative and creative products and processes that are unique and difficult to imitate (Russo and Fouts, 1997). Moreover, when there is a high entrepreneurial orientation, organizational capabilities, such as learning, continuous innovation, and experimentation, are present, which lay the foundation for the adoption of a PES. Consistent with our argument, Aragon-Correa (1998) found that prospector-type firms that invest highly in entrepreneurship, engineering, and administration are more likely to adopt a PES.

A PES entails considerable risk and uncertainty, and requires an innovative posture for it to be firmly established in an organization (Aragon-Correa, 1998; Aragon-Correa and Sharma, 2003). The proclivity of top management to support natural environmental issues is enhanced when an entrepreneurial orientation is pervasive in the organization. As a consequence, an entrepreneurial orientation with its focus on seeking new ventures, growth, and market opportunities is consistent with the development of a PES. As a result, a firm's entrepreneurial orientation is likely to promote a PES. Thus, we hypothesize the following:

H1: A firm's entrepreneurial orientation is related positively to a proactive environmental strategy.

Moderating role of intensity of government regulation

Institutional pressures are defined as social, legal, and cultural forces outside the firm that exert influence on how managers perceive the environment and eventually shape and determine strategic decisions and behaviors (e.g., DiMaggio and Powell, 1983). In a natural environmental setting, many external forces may strengthen a firm's desire to adopt a PES based on the firm's entrepreneurial orientation (Bansal and Roth, 2000). We consider two components of institutional pressure: the intensity of government regulation and consumer sensitivity to environmental issues (e.g., Kassinis and Vafeas, 2006). The intensity of government regulation and consumer sensitivity to environmental issues may further motivate firms to take proactive steps toward the adoption of a PES from entrepreneurial orientation.

According to stakeholder theory (Freeman, 1984), the strategic choices adopted by firms depend on institutional pressures and the influence of important stakeholders (Oliver, 1991). More specifically, Mitchell et al. (1997) showed that stakeholder power, legitimacy, and urgency affect a manager's attitude toward stakeholder pressures and requests. This was confirmed by Henriques and Sadorsky (1999) who affirmed that managers in environmentally proactive firms were more committed to a proactive environmental posture than those in environmentally reactive firms.

Neo-institutional theorists have proposed that firms, through proactive moves, may meet their stakeholders' expectations and enhance legitimacy, thereby obtaining access to the scarce resources needed to survive and succeed (DiMaggio and Powell, 1983). For example, Majumdar and Marcus (2001) showed that when managers achieve a balance between their discretion and governmental regulatory policies, they may enjoy entrepreneurship, be creative, conduct R & D, and even develop new technologies, all of which are important resources for the development of a PES.

Our argument is also consistent with legitimacy theory because a central tenet of this theory is a social contract that implies that a company's survival is dependent on the extent to which the company operates within the bounds and norms of the macro environment, including society, and is viewed as constructive and performing desirable actions (Brown and Deegan, 1998, p. 22). As a consequence, a company needs to demonstrate that its actions are legitimate and its behaviors resemble good corporate citizenship (e.g., Berman et al., 1999; Miles and Covin, 2000).

Taking the above into account, we posit that there is a need to examine the interaction between the RBV perspective and institutional (legitimacy)

theory. According to our conceptual framework, this would involve examining how institutional pressures such as intensity of government regulations moderate the influence of entrepreneurial orientation on a PES. More specifically, we argue that the interaction effect between entrepreneurial orientation and intensity of government regulation on a PES will be positive. This is because firms operate in a macro environment where governments control, sanction, and withhold important resources that are likely to influence a firm's adoption of a PES. When firms compete in a market where government involvement, interest, and regulations regarding environmental issues are heightened, there is an elevated expectation for top management to comply, as this is the norm, with government demands. As a consequence, in such a context, the implementation of an entrepreneurial orientation will be related positively to the adoption of a pollution-prevention strategy by top management. Thus, we offer the following interaction hypothesis.

H2: The interaction effect between entrepreneurial orientation and intensity of government regulations will be related positively to a PES.

Moderating role of consumer sensitivity to natural environmental issues

Next, we turn our attention to the moderating role of consumer sensitivity to natural environmental issues. When consumers are sensitive to and involved with natural environmental issues, they favor and react positively to firms that attempt to develop and initiate innovative and proactive methods that preserve the natural environment (e.g., Garrett, 1987; Schwepker and Cornwell, 1991). As consumer sensitivity to natural environmental issues increase, consumers come to expect firms to develop innovative ways to interact with the natural environment. As a consequence, in such a context, as firms engage in entrepreneurial activities, firms will realize more PES. When consumers exert pressure, firms are more prone to adopt a PES for a given level of entrepreneurial orientation because the adoption of a PES is consistent with the voice of consumers (Ogden and Watson, 1999). We posit that when there is fit between entrepreneurial orientation and consumer sensitivity to natural environmental issues, it is likely that a firm's entrepreneurial orientation will be related positively to a PES. Therefore, we hypothesize that:

H3: The interaction effect between entrepreneurial orientation and customers' sensitivity to environmental issues will be related positively to a PES.

Proactive environmental strategy and firm's performance

Firms that implement a PES will be more innovative, entrepreneurially oriented, technologically sophisticated, and socially conscious, which makes such organizations distinct in the eyes of customers (Porter and van der Linde, 1995). Accordingly, these organizations will be able to preempt the market from their competitors and enjoy a first mover advantage status by sending a strong signal about their commitment to the natural environment. Because such firms invest in pollution prevention as opposed to control programs, they will engage in continuous total quality environment management programs that enable them to be more cost efficient by minimizing the need to invest in expensive end-of-pipe capital intensive investments (Hart, 1995; Hart and Ahuja, 1996). In addition, because the implementation of a PES improves the image, reputation, and eventually the legitimacy of a firm, it will increase the positive view of the firm as a good corporate citizen (Menon and Menon, 1997). We contend that by implementing a PES, corporate citizenship will be enhanced, which will lead to a stronger corporate reputation (Berman et al., 1999). In fact, Rondinelli and Berry (2000) argue that corporate environmental citizenship is critical for sustainable development.

As a consequence, firms that pursue a PES will be perceived as differentiated in the eyes of customers. Through differentiation, firms with a PES will be able to create more opportunities, and hence generate greater business growth. A PES can be used to reignite, spark. or fuel firms into a new market space, thus providing the catalyst for sales and profit growth. Owing to a growing environmental consciousness

and demands from various stakeholders such as customers, interest groups, government, and the media, a PES can be expected to contribute to sales growth and profit growth. Increased sales growth will be realized as environmentally friendly products are well received. That is, implementing a PES will generate additional sales in areas that are untapped and where competition is scarce. Further, a PES will motivate firms to produce high margin products adopting cutting-edge technology which can enhance profit growth. Through a PES, firms can realize improved streams of cash flow as a PES will be able to function in a rent-generating role. Thus, we offer the following hypothesis regarding the performance impact of a PES:

H4: A proactive environmental strategy will be positively related to (a) sales growth and (b) profit growth.

Finally, we do not hypothesize a direct effect on a PES from the external perspective (i.e., intensity of government regulation and consumer sensitivity to natural environmental issues) because according to our conceptual model, the external perspective is a moderator that either strengthens or weakens the effect of entrepreneurial orientation on a PES. However, as we shall show subsequently, we include the external perspective on a PES for model specification purposes and report its effect.

Research method

Questionnaire development and measures

As stated earlier, previous studies have employed the internal (i.e., resource-based) and external (i.e., legitimacy-based) perspectives to explain the extent of a firm's implementation of PES. However, there is a lack of systematic research that investigates the interactive effect of the two perspectives. In order to fill this gap in the literature, we decided to devise a survey instrument that would enable us to test the conceptual model developed in this study. More specifically, this survey instrument was meant to test how customers' sensitivity to environmental issues and the intensity of government regulations moderate the effect of entrepreneurial orientation on a PES. The survey instrument also helped us measure the performance outcomes of a PES in terms of sales and profit growths.

The survey instrument was developed as follows: First, we contacted a random selection of 15 CEOs and/or key managers. We mailed a draft form of the survey questionnaire and asked them to identify the scale items they considered awkward and/or not applicable. They evaluated every scale item in terms of content and meaningfulness. Although we did not need to add new items, we modified some scale items based on the feedback we received. Second, we contacted four academics for their comments on the utility of the scale items. We made some revisions to the questionnaire as a result of their evaluations. It should be noted that the questionnaire was designed so that respondents were asked to recall their firms' environmental processes and efforts in general. In doing so, we aimed to maximize potential variance and avoid perceptual biases (Table I). Unless otherwise mentioned, all scales were measured with a five-point Likert scale (1 – strongly disagree, 5 – strongly agree).

In line with our conceptualization, we measured *proactive environmental strategy* as a higher-order construct of two-first-order dimensions: pollution prevention and top management support. In order to measure the scope of *pollution prevention*, we utilized the CERES Principles to develop a 10-item, five-point scale (1 – strongly disagree, 5 – strongly agree) specifically for this study. The CERES Principles (formerly known as the Valdez Principles) are a set of 10 environmental management principles developed in 1989 by a coalition of pension funds, environmental groups, and religious organizations (Coddington, 1993). Previous studies have employed the same or similar items to measure the scope of a PES (e.g., Sharma, 2000). *Top management support* measured the extent to which top management was seen to play a critical role in shaping an organization's values and orientation toward a PES. We developed a four-item, five-point scale for this study (1 – strongly disagree, 5 – strongly agree).

Entrepreneurial orientation measured the extent to which the organization's overall culture demonstrated a propensity to take calculated risks, to act in an innovative fashion, and to be proactive on natural environmental issues. Hence, we used an eight-item, five-point scale (1 – does not describe this

TABLE I

Confirmatory factor analysis

Scales and items	Factor loading	*t*-Value
Pollution prevention (α = 0.86; CR = 0.88; AVE = 0.50)		
This organization …		
Eliminates the release of any substance that may cause environmental damage	0.990[a]	–
Safeguards all natural habitats affected by the operations	0.719	5.785
Sustainably uses renewable natural resources	0.677	5.300
Conserves non-renewable natural resources (e.g. oil, natural gas)	0.704	5.327
Eliminates physical waste from the operations	0.584	5.027
Reduces physical waste through recycling	0.549	4.815
Disposes of physical waste through environmentally safe methods	0.750	5.731
Eliminates the use of products that cause environmental damage	0.617	5.232
Informs our customers of the environmental impacts of the products marketed	0.772	6.372
Corrects conditions that endanger the environment	0.736	5.612
Top management support (α = 0.78; CR = 0.80; AVE = 0.55)		
Top managers in this organization…		
Communicate that addressing environmental issues is critical	0.861[a]	–
Initiate environmental programs and policies	0.793	10.728
Reward employees for environmental improvements	0.424	5.025
Contribute organizational resources to environmental initiatives	0.813	11.023
Entrepreneurial orientation (α = 0.87; CR = 0.89; AVE = 0.53)		
This organization…		
Has a cultural emphasis on innovation and R&D	0.782[a]	–
Has a high rate of new product introductions	0.866	11.896
Has a bold, innovative product development approach	0.917	12.717
Has a proactive posture to the market	0.681	8.713
Has an aggressive posture toward competitors	0.720	5.070
Has a strong inclination for high risk, high potential return projects	0.559	6.923
Has a market environment that encourages boldness to achieve objectives	0.691	8.845
Is first to introduce new technologies and products	0.706	9.103
When faced with risk, adopts an aggressive, bold posture	0.502	6.130
Customers' environmental sensitivity (α = 0.90; CR = 0.92; AVE = 0.65)		
The release of substances into the environment	0.817[a]	–
The protection of natural habitats	0.819	11.937
The sustainable use of renewable natural resources	0.800	11.362
The conservation of nonrenewable natural resources	0.836	12.125
The elimination of physical waste	0.831	11.807
The reduction of physical waste	0.840	12.053
The environmentally safe disposal of physical waste	0.817	11.817
Purchasing environmentally safe products	0.670	8.965
Understanding the environmental impacts of the products they use or purchase	0.784	11.105
Government regulations (α = 0.86; CR = 0.88; AVE = 0.54)		
The release of substances into the environment	0.724[a]	–
The protection of natural habitats	0.710	8.045
The use of renewable natural resources	0.726	8.258
The use of nonrenewable natural resources	0.884	10.336
The elimination of physical waste	0.807	9.431
The environmentally safe disposal of physical waste	0.549	6.007

TABLE I
continued

Scales and items	Factor loading	*t*-Value
The disclosure of environmental information	0.683	7.805
The clean up of environmental accidents	0.748	8.542
Environmental dynamism (α = 0.79; CR = 0.81; AVE = 0.56)		
The operating market environment for my organization…		
Has trends that are easy/difficult to monitor	0.909[a]	–
Has stable/volatile industry volume	0.750	10.153
Has sales forecasts that are quite accurate/inaccurate	0.699	8.894
Is predictable/unpredictable	0.610	7.718

α Cronbach's alpha, *CR* composite reliability, *AVE* average variance extracted.
[a]Scale item was fixed to 1 to set the scale.

organization, 5 – definitely describes this organization) adapted from Covin and Slevin (1989) for the specific context of this study.

Institutional pressures were captured in terms of customers' sensitivity to environmental issues and the intensity of government regulations. *Customers' environmental sensitivity* measured customers' sensitivity to a series of environmental actions. In order to capture this, we developed a nine-item, five-point scale (1 – customers do not care, 5 – customers are very concerned). The items used to measure the *intensity of government regulations* were similar to those used to measure customers' environmental sensitivity. We asked respondents to evaluate the extent to which government regulations force the organization to observe environmental standards (eight-item, five-point scale where 1 – not very intensely regulated, 5 – very intensely regulated).

We measured *firm's performance* in terms of the sales growth and profit growth. Respondents were asked to indicate their firm's sales growth (1: 0–9%; 2: 10–24%; 3: 25–49%; 4: 50–74%; 5: 75–100%; 6: 100% and over) and profit growth (1: 0–9%; 2: 10–24%; 3: 25–49%; 4: 50–74%; 5: 75–100%; 6: 100% and over) during the 3 years prior to this study.

In order to avoid model misspecification, we included measures of firm's size, firm's type, and environmental dynamism to control for their effects on PES and firm's performance. *Environmental dynamism* was measured by a four-item, bi-polar scale taken from Heide and John (1990). *Firm's size* was measured by the number of full-time employees (i.e., natural logarithm). *Firm's type* was a dummy variable (1 – predominantly business-to-business companies; 0 – others).

Sample selection and data collection procedure

We purchased a list of major New Zealand manufacturing firms operating in a variety of industries from a leading market research/databank company (a total of 325 firms). Our focus on firms operating in multiple industries is designed to enhance the generalizability of our model and its findings. Consistent with Dillman's (1978) Total Design Method, the first mailing packet contained a personalized letter, a questionnaire, and a postage-paid envelope with an individually typed return-address label.[1] In addition, we offered respondents a copy of the finished report, which summarizes the research findings, to increase the response rate. Four weeks after the first mailing, we sent a follow-up letter and an additional copy of the questionnaire to non-respondents. We obtained 150 usable questionnaires for a response rate of 47%.

The distribution of the firms in terms of industry was as follows: Food, Beverage, and Tobacco (29%); Forestry and Wood Products (11%); Paper, Printing, and Publishing (11%); Textiles, Apparel, and Leather (10%); Agriculture (8%); Machinery (8%); Chemicals, Petroleum, and Plastics (7%). In addition, 69% of firms had more than 150 full-time employees and

75% were operating predominantly in the business-to-business domain.

We tested for the likelihood of nonresponse bias by using the extrapolation technique that equates late responses to nonrespondents (Armstrong and Overton, 1977). We split the total sample into two groups: those received before the second wave of mailing and those received after the second wave. We used a *t*-test to compare these groups in terms of their mean responses for each variable. The results revealed no significant differences between the two groups, thus leading us to conclude that respondents did not differ from nonrespondents.

Our major goal regarding the data collection was to ensure that the key informants were either the CEO or a person who held an equal position in the company. One of the authors made a series of phone calls and conducted further mail surveys to confirm that the questionnaires were completed by managers who were CEOs or held equal positions (Phillips, 1981).

Analyses and results

We present the data analysis in three steps: (1) measure validation, (2) a post-hoc test for common method bias, and (3) hypotheses testing.

Measure validation

As proposed by Anderson and Gerbing (1988), we estimated a (six-factor) measurement model. Confirmatory factor analysis (CFA) reveals that all factor loadings are greater than 0.40, normalized residuals are less than 2.58, and modification indices are less than 3.84. The measurement model also provides an acceptable fit to the data: [$\chi^2_{(887)}$ = 1711.9; goodness-of fit index (GFI) = 0.93; Tucker-Lewis index (TLI) = 0.94; confirmatory fit index (CFI) = 0.95; root mean squared error of approximation (RMSEA) = 0.06]. The reliability estimates [Cronbach's alpha, composite reliability, and average variance extracted (AVE)] for the different multi-item constructs are shown in Table I.

We found support for the presence of convergent validity in the scales; the factor loadings are significant in the measurement model ($t > 2.0$; Anderson and Gerbing, 1988), and the AVE estimates are equal to or higher than 0.50 (Bagozzi and Yi, 1988). In support of discriminant validity, the squared correlations between any two constructs are less than the AVE estimates of the corresponding constructs for all pairs (Fornell and Larcker, 1981). We also assessed discriminant validity by comparing the unconstrained model to the constrained model and setting the correlation between two constructs to one. For every pair of constructs, we found a significant chi-square difference, which provides evidence of discriminant validity.

As we stated earlier, we conceptualized PES as a higher-order factor of pollution prevention and top management support. We performed a second-order CFA for PES. We found that pollution prevention (loading = 0.87, R^2 = 0.87) and top management support (loading = 0.76, R^2 = 0.79) loaded significantly on the higher-order construct of PES and the construct itself indicated a good fit to the data ($\chi^2_{(76)}$ = 186.2, GFI = 0.93, TLI = 0.94, CFI = 0.95, RMSEA = 0.06). The Cronbach's alpha, composite reliability, and AVE for the higher-order construct of PES were 0.80, 0.81, and 0.63, respectively. These findings supported that PES could be operationalized as a higher-order construct of pollution prevention and top management support. In further analyses, we averaged the scores of the respective sub-constructs (i.e., pollution prevention and top management support) to obtain the measure of PES. Table II provides the means, standard deviations, and intercorrelations of the study's variables.

Testing common method bias

Owing to our reliance on self-reported data, we tested whether common method bias was a likely threat that could inflate the results of the hypotheses testing. First, we conducted Harman's single factor test in CFA (Podsakoff and Organ, 1986). The results indicated that a single-factor model did not fit the data well ($\chi^2_{(902)}$ = 3539.8, GFI = 0.39, TLI = 0.38, CFI = 0.41, RMSEA = 0.14). Second, the chi-square difference test also demonstrated a significant difference between the single-factor model and the six-factor model (i.e., the measurement model) ($\Delta\chi^2$ = 1827.9, Δdf = 15, $p < 0.001$). The evidence from both tests indicates that the six-factor model is

TABLE II

Descriptive statistics and intercorrelations

Variables	1	2	3	4	5	6	7	8	9	10
1. Firm size										
2. Type of industry	−0.05									
3. Environmental dynamism	−0.02	−0.01								
4. Top management support	0.25	0.01	−0.18							
5. Customer environmental sensitivity	0.01	0.01	0.01	0.15						
6. Government regulations	0.16	0.01	0.01	0.29	0.29					
7. Entrepreneurial orientation	0.01	0.01	−0.18	0.16	0.11	0.07				
8. Pollution prevention	0.02	−0.08	−0.13	0.44	0.31	0.26	0.28			
9. Sales growth	0.25	−0.02	−0.18	0.16	0.05	0.06	0.09	0.18		
10. Profit growth	0.28	−0.03	−0.17	0.19	0.06	0.04	0.06	0.21	0.40	
Mean	2.46	0.75	2.80	3.37	3.30	3.53	3.37	3.84	4.29	2.23
SD	0.53	0.43	0.83	0.83	0.79	0.71	0.76	0.58	1.65	1.46

$n = 150$. Correlations above 0.12 are significant at $p < 0.05$.

indeed a much better fit to the data than the single-factor model. Based on the results of this test and the discriminant test results previously discussed, we conclude that common method bias is unlikely to be a threat to our hypotheses testing.

Results

We tested our structural model by following the procedures recommended by Bollen (1989) and Hayduk (1987). We set the measurement path estimates at 1 and the error variance at the scale variance times 1 minus the reliability to account for measurement error. Since our model depicts interactions of entrepreneurial orientation with government regulations and customers' sensitivity to environmental issues, we created interaction terms by multiplying the mean-centered values of the respective variables so that the likely threat of multicollinearity is minimized (Aiken and West, 1991).

The structural model provided a perfect fit to the data ($\chi^2_{(21)} = 20.40$; GFI = 0.98; TLI = 1.00; CFI = 1.00; RMSEA = 0.01). The results of the structural model (Table III) indicate that entrepreneurial orientation is related positively and significantly to PES ($b = 0.27$; $p < 0.001$). Therefore, Hypothesis 1 is supported. We found that the interaction effect of entrepreneurial orientation and the intensity of government regulations was related positively and significantly to PES ($b = 0.25$; $p < 0.01$), thus supporting Hypothesis 2. The interaction effect of entrepreneurial orientation and customers' sensitivity to environmental issues was not related significantly to PES ($b = -0.02$; ns); therefore, Hypothesis 3 was not supported. PES is related positively and significantly to sales growth ($b = 0.32$; $p < 0.01$) and profit growth ($b = 0.31$; $p < 0.01$). These findings support Hypotheses 4a and 4b.

Turning to control variables, environmental dynamism is related negatively and significantly to sales growth ($b = -0.18$; $p < 0.05$), and firm's size is related positively and significantly to both sales growth ($b = 0.50$; $p < 0.01$) and profit growth ($b = 0.58$; $p < 0.01$).

Post-hoc analyses

We conducted three additional analyses. First, our model posits that entrepreneurial orientation, the intensity of government regulations, and customers' sensitivity to environmental issues are drivers of a PES. It is plausible that there is reverse causality between a PES and its drivers. More explicitly, a PES may affect the extent of a firm's entrepreneurial orientation, the intensity of government

TABLE III
Structural model

From	To	Estimate	Standard error	*t*-Value
Entrepreneurial orientation	PES	0.27	0.08	3.57★★★
Government regulations	PES	0.10	0.08	1.13
Customer environmental sensitivity	PES	0.29	0.08	3.83★★★
Entrepreneurial orientation × Government regulations	PES	0.25	0.11	2.69★★
Entrepreneurial orientation × Customer environmental sensitivity	PES	−0.02	0.10	−0.16
PES	Sales growth	0.32	0.12	2.72★★
PES	Profit growth	0.31	0.14	2.42★★
Control variables				
Environmental dynamism	PES	0.03	0.07	0.63
Environmental dynamism	Sales growth	−0.18	0.19	−1.96★
Environmental dynamism	Profit growth	−0.19	0.20	−1.94
Type of industry	PES	−0.21	0.14	−1.55
Type of industry	Sales growth	0.07	0.18	0.38
Type of industry	Profit growth	0.07	0.19	0.34
Firm size	PES	−0.16	0.11	−1.42
Firm size	Sales growth	0.50	0.15	2.94★★
Firm size	Profit growth	0.58	0.15	3.08★★
	R^2			
	PES	0.30		
	Sales growth	0.15		
	Profit growth	0.15		

$n = 150$.
★$p < 0.05$; ★★$p < 0.01$; ★★★$p < 0.001$.

regulations, and customers' sensitivity to environmental issues.

We acknowledge that it is difficult to rule out this alternative explanation with our cross-sectional research design. However, we perform a test of whether the model that posits entrepreneurial orientation, the intensity of government regulations, and customers' sensitivity to environmental issues to predict a PES and, in turn, firm's performance provides a better fit to the data (and, therefore, explanatory power) than the alternative model (i.e., a PES predicting entrepreneurial orientation, the intensity of government regulations, and customers' sensitivity to environmental issues and, in turn, firm's performance). We conducted a model comparison, using the structural equation modeling technique. We compared the two models based on: (1) model fit (i.e., larger values indicating better fit or more explanatory power) and (2) Akaike Information Criterion (AIC) (i.e., smaller value indicating better fit).

The results indicate the following:

Model 1: $\chi^2_{(6)} = 7.92$; GFI = 0.98; TLI = 0.99; CFI = 0.99; RMSEA = 0.07, PNFI = 0.39, AIC = 37.92
Model 2 (Alternative Model): $\chi^2_{(2)} = 68.93$; GFI = 0.89; TLI = 0.44; CFI = 0.80; RMSEA = 0.17, PNFI = 0.11; AIC = 106.93

The findings suggest that the model which posits that entrepreneurial orientation, the intensity of government regulations, and customers' sensitivity to environmental issues predict a PES and, in turn, firm's performance provides a better fit to the data (and, therefore, explanatory power) than the alternative model (i.e., a PES predicting entrepreneurial orientation, the intensity of government regulations, and customers' sensitivity to environmental issues and, in turn, firm's performance).

Second, we tested to see whether entrepreneurial orientation actually plays a mediating role in the

relationship between a PES and performance. Therefore, we followed the three-step procedure recommended by Baron and Kenny (1986). They suggest that the following conditions must be met to establish mediation. First (Step 1), the independent variable (i.e., PES) must be related significantly to the mediator (i.e., entrepreneurial orientation). Second (Step 2), a PES must be related significantly to the dependent variable (i.e., sales/profit growth). Third (Step 3), the mediator must be related significantly to the dependent variable (i.e., sales/profit growth). If these conditions all hold in the predicted direction, then the effect of a PES on sales/profit growth must be less in the third equation (when the mediator is included) than in the second (when the mediator is excluded). Full mediation holds if a PES has no effect when the mediator is controlled for (Baron and Kenny, 1986, p. 1177). The results indicate that a PES is related significantly to entrepreneurial orientation ($t = 3.81$; $p < 0.001$) (Step 1) and a PES is related significantly to sales growth ($t = 2.83$; $p < 0.01$) and profit growth ($t = 2.61$; $p < 0.01$) (Step 2). However, entrepreneurial orientation is not related significantly to sales growth ($t = 0.18$; ns) and profit growth ($t = -0.10$; ns) (Step 3). Therefore, it is concluded that entrepreneurial orientation does not play a mediating role in the relationship between a PES and performance.

Third, given that entrepreneurial orientation is not related significantly to performance, we tested to examine if the effect of entrepreneurial orientation on performance (sales/profit growth) is intensified by the presence of a PES (as a moderating variable). The results indicate that the interaction term of PES and entrepreneurial orientation is related positively and significantly to profit growth ($t = 2.05$; $p < 0.05$) but not to sales growth ($t = 1.94$; ns). Therefore, we conclude that a PES plays a moderating role in the relationship between entrepreneurial orientation and profit growth.

We elaborate on these additional findings in the next section.

Discussion

This article draws on literatures from the RBV and its derivations (e.g., the NRBV and dynamic capabilities perspective), and from institutional and legitimacy theories to conceptualize and test an integrated model by examining the interaction between the internally and externally driven perspectives on a PES. We also tested the long-debated and mixed findings in the literature regarding the relationship between a PES and firm's performance (e.g., sales and profit growth).

Although the internally and externally driven perspectives that explain a PES have developed in tandem, the approaches have been mainly independent and mutually exclusive. That is, these two perspectives on a PES, internal and external, have been researched in a parallel fashion without due attention given to the interplay between both views under a single model. As a consequence, rather than accommodating the two in a direct effects model, we explore a contingency model and argue that the intensity of government regulation and consumer sensitivity to natural environmental issues moderate the impact of entrepreneurial orientation on a PES. As a consequence, the contribution of this article lies in its investigation of the interactive effect between the internal and external perspectives on a PES. From a theoretical contribution perspective, our article examines the interplay between the RBV and institutional theory (and legitimacy theory) in shaping a PES.

Next, we discuss some of the implications of our findings. We first discuss the main effect of entrepreneurial orientation on a PES followed by how this is qualified by institutional pressures from the government and consumers. We conclude with the performance effect of a PES.

We found that a firm's entrepreneurial orientation positively affects the adoption of a PES. If a firm's environmental strategy is merely reactive as opposed to proactive, an entrepreneurial orientation may not be needed. However, a PES demands that the firm be venturesome and audacious, take on risks, and be at the forefront of innovative products and processes. Aragon-Correa (1998) also found that strategy type or posture was related to a firm's approach toward the natural environment in that prospectors were more likely to adopt a PES. Therefore, we can postulate that one of the reasons a higher entrepreneurial orientation is more likely to lead to the adoption of a PES may lie in the common organizational culture, strategic posture, and structure that both require. From a RBV perspective, when a firm

has more resources and the capability to be entrepreneurial, it is more likely to adopt a PES. Also, as shown from our post-hoc analysis, entrepreneurial orientation did not have a direct effect on firm's performance nor did it mediate the relationship between a PES and firm's performance. It was only under a PES that entrepreneurial orientation showed a positive effect on firm's performance. This suggests that a PES complements the impact of entrepreneurial orientation on firm's performance by strengthening the relationship between the two. Although not part of our formal testing, future research could examine alternative model evaluations to assess whether a PES explains data better as a mediator or as a moderator between entrepreneurial orientation and firm's performance.

Now, with regard to the outcome of the interaction hypotheses, interestingly, only intensity of government regulation and not consumer sensitivity to natural environmental issues moderated the effect of entrepreneurial orientation on a PES. As intensity of government regulation increased, the positive effect of entrepreneurial orientation on a PES became stronger. However, we did not find that intensity of government regulation had a direct effect on PES. Conversely, consumer sensitivity to natural environmental issues did not function as a moderator for the entrepreneurial orientation–PES relationship. However, we did find that consumer sensitivity to natural environmental issues had a direct and positive impact on PES.

The direct effect of consumer sensitivity to natural environmental issues on a PES is consistent with legitimacy theory and stakeholder theory in that customers are among the most important stakeholders who exert influence and pressure on how firms respond to natural environmental issues (e.g., Buysse and Verbeke, 2003). In today's business environment, customers have the will and power to have a significant effect on firm's performance by curbing and altering purchase behavior, organizing boycotts, and taking legal action to rectify irresponsible firm's behavior. From the firm's perspective, acting in a socially responsible manner can enhance the reputation and image of the firm, thereby strengthening the social legitimacy of its identity and existence in the eyes of customers. Therefore, when customer sensitivity to natural environmental issues increases, firms are more likely to adopt a PES that satisfies and resolves the concerns that customers have about natural environmental issues and strengthens firms' social fitness. The absence of a moderating effect from consumer sensitivity to natural environmental issues suggests that the effect of entrepreneurial orientation on PES is not altered as consumer sensitivity changes.

On the contrary, intensity of government regulation moderated the relationship between entrepreneurial orientation and a PES. This suggests that building a PES based on entrepreneurial orientation is effective when the intensity of government regulation elevates. That is, firms that desire to adopt a PES should find entrepreneurial orientation a useful means under high government regulation. Notwithstanding, intensity of government regulation did not have a direct positive effect on PES. Our results echo the findings of Henriques and Sadorsky (1999) who reported that not all stakeholders are equally important and that some carry more weight than others. That is, governments may be a secondary rather than primary stakeholder group in the New Zealand context. In fact, Buysse and Verbeke (2003) found that firms with a reactive environmental strategy attached significant importance to stakeholders such as domestic regulators and local public agencies (although they also found that firms with a prevention strategy attached even more importance to such groups).

One of the reasons for the null finding may reside in the nature of the New Zealand government's regulation policy regarding natural environmental issues. Because New Zealand firms, on average, are very environmentally conscious, the vast majority of the firms in our data set may not need intense government regulations to prompt a PES. Rather than relying on a bureaucratic institution such as the government to exert pressure, pressure may come from trade associations or social community groups instead. This suggests that in markets such as New Zealand where natural environmental issues have long been part of the strategic dialogue and are firmly embedded in the social fabric of the firm, the role of the watch dog that monitors and reports violations of irresponsible environmental behavior falls on the shoulders of stakeholders such as customers or even employees (Buysse and Verbeke, 2003).

Our findings also point to the importance of the role of the environmental industry life cycle as a

potential driver to a PES (e.g., Russo and Fouts, 1997). That is, in markets where the notion of a PES is well-established and accepted (i.e., in the maturity stage as opposed to the infancy or growth stage), the direct influence of the government may shrink and a shift in power and pressure to other stakeholders can occur. Conversely, in markets where the concept of a PES is still novel and not widely disseminated (i.e., an infancy or growth stage), the government is likely to play a bigger role in shaping and forming a PES.

Our results are also consistent with the study of Mitchell et al. (1997) in that in the New Zealand context, a manager's perception of the government's saliency, which they defined as the cumulative impact of power, legitimacy, and urgency, may be minimal; this explains the absence of a direct effect. Our findings also suggest that stakeholder importance and saliency may be driven not only by managers' attitudes, values, and time, but also by different cultural and social attitudes toward environmental issues (Agle et al., 1999).

Another implication of this finding relates to the concept of stakeholder integration (Rueda-Manzanares et al., 2008). As Rueda-Manzanares et al. (2008, p. 189) posit, ''stakeholder integration capability helps firms proactively detect evolving trends around preservation of the natural environment and engage stakeholders such as consumers, local communities and NGOs to generate knowledge about balancing customer utility, economic development, community welfare, financial performance and ecological conservation.'' It is noteworthy that two different stakeholders exert influence in very different ways: one as a moderator and the other as a direct effect.

From a theoretical perspective, our findings suggest that when firms have resources and capabilities that are compatible and valued by the broader society as a whole, their contribution to strategy adoption will be enhanced and appreciated. That is, the RBV can be an effective theoretical lens by which strategy adoption can be explained when resources are not incompatible with the demand of external stakeholders (e.g., consumers and government) and are legitimate from an institutional and legitimacy theory perspective.

Finally, our findings provide strong support for the returns on a PES in terms of (a) sales growth and (b) profit growth. As the importance of environmental management continues to occupy a primary position on the agenda not only in business, but also in political dialogues, the positive return on a PES is promising as such findings provide greater motivation and incentives for firms to embrace a PES and build their sustainable competitive advantage around this strategic posture. The adoption of a PES can be a catalyst for generating future growth opportunities and creating untapped market space. Our findings demonstrate the positive effect of a PES on firm's performance; however, this may be due to how PES is perceived in the New Zealand market. More research will be needed to identify whether such outcomes are indeed the case in markets where PES is less developed and prevalent.

Limitations and future research

Although we received support for all but one of our hypotheses, our study is not without limitations. Our limitations also provide motivation for future research directions. First, Owing to the nature of cross-sectional data, it is not possible to discern causality among our constructs. For example, it is conceivable that more profitable firms with slack resources may invest in a PES. Therefore, replicating and extending our study using longitudinal data should be useful in explicating the causal relationships between constructs. Second, in our model, we limited the externally driven institutional pressures to customer sensitivity and government regulation intensity. It would be worthwhile to expand the stakeholder groups to include non-government organizations (NGOs), media, and industry/trade associations. Third, a promising research area that deserves more attention in the future is an examination of the process by which a PES has a positive effect on firm's performance. Much study has been devoted to finding a positive return on a PES, but how this occurs is still not completely understood. Identifying the key mediating variables that form the bridge between a PES and firm's performance could go a long way in furthering our knowledge of this relationship. Along similar lines, clarifying when a PES will pay off in terms of growth and profitability is another area that deserves more attention as the adoption of a PES may not be a wise strategic choice under certain conditions.

Fourth, both Hart (1995) and Aragon-Correa and Sharma (2003) concede that a PES that entails a

focus on pollution prevention demands a decentralized structure. Thus, this argument could be tested to see whether higher entrepreneurial orientation is also expected to shape the structure of an organization and if it is related negatively to centralization, formalization, and departmentalization (Matsuno et al., 2002).

Last but not least, previous researchers have articulated a typology of organizational culture in terms of four types: clan, adhocracy, hierarchy, and market (Cameron and Quinn, 1999; Deshpandé et al., 1993). Future researchers may examine whether a PES is likely to flourish most in an adhocracy type of organizational culture where innovation, risk taking, adaptability, flexibility, growth, new market space, and entrepreneurship are emphasized.

Conclusion

Our study contributes to the natural environment and corporate social responsibility literature by conceptualizing and testing an integrated model of the antecedents and consequences of a PES. Our findings suggest that entrepreneurial orientation has a positive effect on a PES and that this effect is stronger as the intensity of government regulation increases. Consumer sensitivity did not have a moderating effect but had a direct effect. Furthermore, the performance effect of a PES is realized in terms of greater sales growth and profit growth. In conclusion, under the right combination of internal and external drivers, a PES can benefit sales and profit growth, which, in turn, can contribute to improved firm's performance.

Note

[1] This study has been approved by the university's ethics committee and complies with the ethical standards outlined by the 1964 Declaration of Helsinki.

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