

Stakeholder Influences on the Design of Firms' Environmental Practices

Vera Ferrón Vilchez
University of Granada
Department of Management
Economics and Business School
Campus Cartuja S/N Granada (Spain) 18071
Phone: (0034) 958.249.596
Fax: (0034) 958.246.222
Email: vferron@ugr.es

Nicole Darnall
Arizona State University
School of Public Affairs & School of Sustainability
411 N Central Avenue, Suite 400 Phoenix AZ (United States) 85004-0687
Phone: (+1) 602.496.0445
Email: ndarnall@asu.edu

Juan Alberto Aragón Correa
University of Granada
Department of Management
Economics and Business School
Campus Cartuja S/N Granada (Spain) 18071
Phone: (0034) 958.243.705
Fax: (0034) 958.246.222
Email: jaragon@ugr.es

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1. INTRODUCTION

Environmental practices (EPs) are the activities that assist firms in managing their environmental issues (Henriques & Sadorsky, 1996), and complying with and moving beyond a reactionary strategic posture about environmental concerns (Aragón-Correa & Rubio-López, 2007). Depending on their degree of implementation (Darnall et al., 2010a; Darnall & Kim, 2012; Khanna & Anton, 2002), these practices can reduce firms' impact to the natural environment because they provide a structure for managers to systematically assess (and improve) their environmental performance (Khanna & Anton, 2002; King et al., 2005). Since the mid-1990s, firms worldwide have increased their use of EPs. While there are many types of EPs (i.e., recycling programs, green supply-chain management practices, life-cycle assessment, or environmental monitoring), the general theoretical argument is the same—that stakeholders influence their adoption (Henriques & Sadorsky, 1996; Kassinis & Vafeas, 2006; Murillo-Luna et al., 2008), regardless of their form (Darnall et al., 2010a).

While prior literature assessing stakeholder influences on firms' EP adoption has typically regarded EP adoption monolithically – either organizations adopt them or not (e.g., Henriques & Sadorsky, 1996, 1999; Kassinis & Vafeas, 2006; Murillo-Luna et al., 2008; Sharma & Henriques, 2005), we suggest that differences in stakeholder influences also relate to EP design. For instance, stakeholders influence managers to make strategic decisions about whether to restrict their EPs to a limited number of environmental impacts or a more comprehensive range of environmental impacts (Darnall & Kim, 2012). Additionally, varying degrees of stakeholder

influences may relate to whether or not managers design their EPs so that they are visible to external stakeholders (by way of certification or the release of public environmental reports) (Bowen, 2000). Variations in EP design may subsequently affect how EPs may improve the natural environment (Hawn & Ioannou, 2016; Kassinis & Vafeas, 2006; Sharma & Henriques, 2005), and thus enhance strategic business value (Darnall et al., 2010a; Ferrón-Vilchez & Darnall, 2016; Hawn & Ioannou, 2016). However, as yet, management literature has not developed a framework that considers how stakeholders are related to the design of firms' EPs.

We examine these issues by utilizing multinomial regression techniques for a sample of 1,761 manufacturing firms operating in seven countries. Our findings offer two important contributions to theory and practice. First, our results extend stakeholder theory and previous analyses of how stakeholders influence firms' decision to adopt different environmental practices (e.g. Henriques & Sadorsky, 1996, 1999; Kassinis & Vafeas, 2006; Murillo-Luna et al., 2008; Sharma & Henriques, 2005). We offer robust empirical evidence that stakeholders' influence extends beyond the dichotomous EP adoption decision, and related also to the design of the EPs they adopt. We show that influences from different types (and combinations) of stakeholders are related strongly to variations in firms' EP design, and especially EP comprehensiveness and visibility. Second, we respond to recent calls for more nuanced applications of stakeholder theory when analyzing the firm strategy (e.g., Bridoux & Stoelhorst, 2014; Devinney, 2013). To do so, we develop a novel classification framework that characterizes the ways in which stakeholders influence firms' strategic decisions about EP design. We describe how variations in EP comprehensiveness and visibility lead to four types of strategic approaches—*movers and shakers*, *backroom operators*, *wannabes*, and *passivists*. The framework also informs recent

discussions (e.g. Bowen & Aragon-Correa, 2014; Lyon & Maxwell, 2011; Lyon & Montgomery, 2015) about corporate “greenwashing” and symbolic behavior by identifying which firms are more likely to engage in these sorts of activities. Finally, our results offer evidence to managers about how stakeholder influences extend beyond the EP adoption decision to the critical design features of their EPs. By attending to these influences, firms may increase the strategic value of their EPs to their organization.

2. STAKEHOLDER THEORY AND FIRMS' EP ADOPTION

Stakeholders are “any group or individual who can affect or is affected by the achievement of an organization’s objectives” (Freeman, 1984:46). Stakeholder theory asks which of these groups of individuals deserve managers’ attention and which do not (Mitchell et al., 1997). Managers are the critical focal point within this discussion because their perceptions determine which stakeholders—internal and external— merit consideration over others (Donaldson & Preston, 1995; Fineman & Clarke, 1996).

Internal stakeholders have a direct economic stake in the organization (Donaldson & Preston, 1995) and operate inside the firm’s physical boundaries. They include management and non-management employees, and are critical to the success or failure of any firm strategy (Freeman, 1984). These stakeholders also have a vested interest in maintaining normal operations and avoiding shutdowns (Donaldson & Preston, 1995) that can arise from environmental accidents. Similarly, internal stakeholders are often concerned with how environmental concerns may affect their job security (Fineman & Clarke, 1996), and whether designing an EP in a particular way can save their company money or enhance corporate reputation.

By contrast, external stakeholders include a range of individuals and groups who operate outside the firm's physical boundaries. They include three general groups: societal stakeholders, regulatory stakeholders, and value chain stakeholders. Societal stakeholders consist of public interest groups, such as environmental and community organizations and professional associations (Etzion, 2007). Managers are increasingly attending to pressures from societal stakeholders because of their capacity to influence broader social perceptions of the firm's standing within the community (Freeman, 1984). These stakeholders rely on mass media, public protests or campaigns, strikes, and other calls for civic engagement to influence firms' environmental strategy (Henriques & Sadosky, 1999). Unlike internal stakeholders who actively participate in the daily operations of the firm, firms typically keep societal stakeholders at arm's length (Phillips & Caldwell, 2005) and limit access to information about the firm's internal routines and procedures.

Regulatory stakeholders are another type of external stakeholder, and consist of government agents who are tasked with legislating or implementing environmental policies. They typically influence firms by way of mandating adherence to environmental regulations. Firms that fail to comply with these regulatory provisions can incur legal action, penalties, and fines (Henriques & Sadosky, 1996). Because their primary goal is environmental improvement, regulatory stakeholders pressure firms to design robust EPs since doing so would benefit society more broadly (Fiorino, 2006).

Finally, value chain stakeholders consist of suppliers, corporate buyers, and household consumers (Freeman, 1984). Suppliers can communicate their satisfaction or dissatisfaction with the firm's environmental performance by ceasing deliveries of necessary materials and

pressuring upstream buyers to switch to more environmentally friendly substitutes (Airike et al., 2016; Henriques & Sadosky, 1999) in order to avoid inheriting environmental risk (Klassen & Whybark, 1999). Similarly, corporate buyers and household consumers can register their preferences by purchasing products or services that originate from environmentally conscious producers (Henriques & Sadosky, 1999; Maniatis, 2016) and blacklisting products and services with poor EPs (Goh & Balaji, 2016; Maniatis, 2016). However, value chain stakeholders, like societal stakeholders, typically lack access to information about whether or not a firm's EP is designed to reduce environmental impacts unless the firm makes this information visible externally.

3. DESIGN OF FIRMS' ENVIRONMENTAL PRACTICES

In characterizing the overall influence of stakeholders on firms' EPs, previous literature has considered distinctions between internal versus external stakeholders and market versus non-market stakeholders, while others assess all relevant stakeholders without drawing distinctions among them (e.g., Henriques and Sadosky, 1999; Buysse and Verbeke, 2003; Murillo-Luna et al., 2008). In each of these instances, the stakeholder literature has assumed a homogeneous vision of stakeholder influences and their relationship with EPs in that each stakeholder group is typically associated with the dichotomous managerial adoption decision—to adopt or not (e.g., Henriques & Sadosky, 1999; Murillo-Luna et al., 2008). However, some scholars (e.g., Freeman et al., 2010) have begun to ask for a more detailed attention to the complexity of stakeholder interests and the relationship of these interests with variations in firm strategy. We suggest that this sort of complexity extends to how stakeholder influences are related to variations in the design of a given EP. We focus on two design features: comprehensiveness and visibility.

3.1 EP Comprehensiveness

A comprehensive EP is designed to address the full range of impacts that the firm's EP has on the natural environment (Darnall & Kim, 2012; Khanna & Anton, 2002). By contrast, firms that design a less comprehensive EP limit their assessments to only one or a few environmental impacts, despite the fact that they could consider others (Darnall & Kim, 2012). Variations in the comprehensiveness of similar EPs highlight the fact the typical approach of asking firms whether they have adopted a particular type of EP fails to account for design comprehensiveness (Darnall et al., 2010a). Rather, firms strategically decide whether or not to leverage their EPs to address a greater range of environmental impacts.

Take the case of environmental monitoring. Environmental monitoring is an EP used to measure a firm's environmental impacts, assess its environmental trends (Tam et al., 2006), and evaluate any variations over time. Environmental monitoring involves collecting standardized data for internal assessments and benchmarking (Jasch, 2000; Phillips & Caldwell, 2005). These activities provide managers with a rationale for setting and assessing environmental goals (National Research Council, 1990), making environmental management changes, and identifying areas for improvement (Tam et al., 2006).

Variations in comprehensiveness of environmental monitoring exist even though the overall objective of monitoring is to help improve environmental performance. For instance, some managers may choose to monitor their firm's end-of-pipe wastewater effluents, but not monitor its impacts to solid waste, air pollution and global pollutants. This monitoring strategy is considered less comprehensive than a comparable facility that monitors its impacts to water, solid waste, and air emissions. Variations in monitoring comprehensiveness also exist among

firms that undertake environmental monitoring as part of the certification expectation of an environmental management system (EMS) standard (e.g., ISO 14001 and EMAS). Flexibility within these EMS standards allows firms to decide whether to track all of their environmental impacts or a portion of them.

3.2 EP visibility

Visible EPs are designed in a way that they are readily observable to stakeholders (Bowen, 2000) who are both internal and external to the firm. Visibility usually increases as stakeholders are involved during EP design. Since internal stakeholders generally design a firm's EP and take the lead in implementing it, an EP tends to be more visible to these stakeholders, even if consultants assist with EP design. Visibility can also come by way of conscious actions on the part of the firm to make its EPs more observable externally. For instance, some firms may participate in voluntary environmental programs sponsored by government or independent third parties that promote member firms' environmental action (Darnall et al., 2010b). By conveying information about their otherwise unobservable management practices, these firms signal information to external stakeholders that they are improving their production processes (Melnik et al., 2003) and decreasing pollution emissions (Russo, 2002). Visibility also increases the transparency, reputation and legitimacy of a firm's EP because it creates a mechanism for external stakeholders to more strongly scrutinize the firm's EP (Delmas, 2001; Perrault & Clark, 2016).

By contrast, an EP that lacks visibility is not readily observable externally (Khanna & Anton, 2002) because the firm avoids communicating information about it, even if the EP is comprehensive in its approach to reduce environmental harms. There are several reasons why a

firm may seek this strategic option, one of which relates to the firm's preference to avoid unnecessary scrutiny of its EP because implementation may fail or the firm may worry that its environmental improvements may not be sufficient. Additionally, firms may seek to avoid expenses associated with making an EP visible. For instance, related to obtaining external certification, firms accrue costs due to employee training, documentation, contracting with environmental consultants, and audits, among other requirements (Curkovic & Sroufe, 2011).

Related to the case of environmental monitoring, external stakeholders typically are not directly involved in the continual data collection and evaluation process (King et al., 2005) associated with this EP. As such, environmental monitoring practices are generally less observable to them unless the firm undertakes actions to make them visible. One way of doing so is for firms to adopt environmental monitoring as part of a certified EMS, such as ISO 14001 or EMAS. By virtue of obtaining certification, these practices become more visible externally in that external stakeholders have knowledge that a firm is undertaking environmental monitoring that is audited by an independent third party. In other instances, firms might make their environmental monitoring practices visible by way of publicly reporting the outcomes of their monitoring assessments.

In spite of the increased transparency that comes with EP visibility, some scholars have questioned whether visible EPs are associated with real improvements to the natural environment (e.g., Aravind & Christmann, 2011; Christmann & Taylor, 2006; King et al., 2005; Russo, 2009). This view is borne from concerns that some firms may be eager to "greenwash" (Bowen 2014) and make an EP visible to external stakeholders, thus reducing stakeholder pressures, while failing to actually reduce their environmental risks (Delmas & Keller, 2005). For instance, firms

that adopt environmental monitoring as part of their certified EMS may fail to (or only modestly) improve their environmental performance. In other instances, firms may improve performance for only a limited range of environmental impacts when other improvements could be made (Darnall & Kim, 2012). Both situations can occur because most certified EMSs do not require third-party auditors to publicly release the results of their environmental audits. As such, many external stakeholders are limited in their ability to determine whether or not a firm's environmental monitoring is indeed comprehensive (Aragón-Correa & Rubio-López, 2007). Rather, firm managers chose whether to make their environmental audit information publicly accessible, and few actually do because the majority of companies consider knowledge about their environmental audits to be confidential business information (Backer, 2013). So while there is certainty that firms with a certified EMS undertake some form of routine monitoring, because of the institutional design of these certification standards, there is likely to be significant variation in the comprehensiveness of firms' monitoring practices.

4. STAKEHOLDERS' PRESSURES AND THE DESIGN OF ENVIRONMENTAL PRACTICES

In an effort to clarify existing literature discussing the complex relationship between stakeholder influences and firms' EP design, we consider comprehensiveness and visibility together. We suggest that combined, these design features characterize a typology of four types of firm strategies—*passivists*, *wannabes*, *backroom operators*, and *movers and shakers* (see Figure 1). While each feature of our novel framework might be delimited along a continuum, the four categories offer important clarity for our theoretical arguments suggesting that variations in stakeholder interests influence the design of an EP.

--INSERT FIGURE 1 ABOUT HERE--

Passivists are firms that focus on designing less comprehensive EPs. These firms do not make their EPs visible to external stakeholders in that they do not utilize external certification schemes. *Wannabes* are similar to *passivists* in that they manage a narrower array of environmental impacts, despite the fact that they could address others. However, what makes *wannabes* differ from *passivists* is that *wannabes* seek external visibility for their EPs, even if their approach is not comprehensive. *Backroom operators* differ from *passivists* and *wannabes* in that they adopt EPs that are comprehensive in their goal of reducing a broad array of environmental impacts. These firms also have a greater likelihood of reducing their overall environmental risk (Godfrey et al., 2009). However, like *passivists*, *backroom operators* are not motivated to make their EPs visible. Indeed, these firms actively limit public access to internal data about firms' environmental performance (Delmas, 2000; Lyon & Maxwell, 2011). Finally, *movers and shakers* are firms that adopt EPs that are comprehensive in their ability to address a wider range of environmental impacts and are visible to external stakeholders.

In considering the extent to which stakeholders influence firms to select one EP structure over another, we use *passivists* as a point of comparison. In particular, firms that perceive having stronger influences from internal and societal stakeholders (but not other stakeholders) are more likely to adopt a *wannabe* strategy over a *passivist* strategy. Our rationale relates to the seemingly incongruent management approach of *wannabes*—that they make an EP visible even though their EP design is not comprehensive. In the presence of societal stakeholder pressures, a firm's internal stakeholders may pressure firm managers to pursue the intangible positive reputational benefits that may come with having a heightened environmental profile (Bowen, 2014; Perrault & Clark, 2016). Since firms often struggle to adopt comprehensive but difficult-

to-implement EPs (e.g., González-Benito & González-Benito, 2008; Jiang & Bansal, 2003), and EP adoption can be costly, firms have an incentive to satisfy pressures from societal stakeholders by creating the appearance of being “green.” These firms signal that they are aggressive about managing their environmental activities when in fact they are only moderately so (e.g., Aragón-Correa & Rubio-López, 2007). In such situations, firms produce symbolic signals—by way of certification and disclosure in public environmental reports—that increase societal recognition for their otherwise modest EP (Arena et al., 2015; Aravind & Chirstmann, 2011; Phillips & Caldwell, 2005). Since firms typically keep societal stakeholders at arm’s length (Phillips & Caldwell, 2005), these stakeholders often lack access to information about the specific risks associated with a firm’s various manufacturing practices (Bowen, 2014). This situation thus creates opportunities for firms to address these stakeholder pressures by adopting a *wannabe* strategy.

However, because internal stakeholders typically have significant knowledge about the firm’s ongoing operations (Zutshi & Sohal, 2004), and access related to information about the organization’s environmental risk, when other stakeholder pressures are present, firms with significant pressures from internal stakeholders are more likely to adopt another EP structure.

Regulatory stakeholders typically have (or could gain) access to information about a firm’s environmental risk because of their role as environmental regulators. They also often have a stronger understanding of the environmental and public health risks associated with pollution (Wilén & Homans, 1998) and thus would likely be critical of a firm’s *wannabe* strategy. For these reasons, firms that pursue a *wannabe* strategy are no more likely than *passivists* to feel influenced by regulatory pressures.

Hypothesis 1: Managers who perceive having greater internal and societal stakeholder pressures are more likely to pursue a *wannabe* EP adoption strategy as compared to a *passivist* EP adoption strategy.

Like *wannabes*, firms that decide to undertake *backroom operator* strategy—by designing an EP that is comprehensive (but not visible)—are likely to have stronger influence from societal and internal stakeholders than *passivists*. However, these pressures are coupled with influences from regulatory stakeholders who typically have greater access to environmental information and knowledge about the risk associated with a firm's operational activities (Kassinis & Vafeas, 2006; Wilen & Homans, 1998). Regulatory stakeholders therefore are expected to see through a *wannabe* strategy. In response, firms with greater pressures from regulatory stakeholders are expected to act by reducing their environmental risks and liabilities (e.g., Kassinis & Vafeas, 2006; Sharma & Henriques, 2005) and designing an EP that is more comprehensive. In doing so, *backroom operators* are also more likely to satisfy societal stakeholders' concerns for greater environmental protection. While these firms are in a position to make their EPs visible externally, they choose not to, in part because there is less perceived need given that regulatory stakeholders have access to environmental information than do other stakeholders. While societal stakeholders might not have access to the same information, by virtue of reducing their environmental risk, *backroom operators* perceive that they are satisfying these stakeholders' needs. In the presence of stronger pressures from societal stakeholders, these firms would likely need to design an EP that is more visible.

Related to value chain stakeholders, we anticipate that firms that pursue a *backroom operator strategy* are no more likely to have greater pressures these stakeholders than *passivists* because

value chain stakeholders who are concerned about environmental matters often require the firms they source from to obtain external certification of their environmental activities and agree to on-site visits to verify the rigor of their environmental programs (Arimura et al., 2011). Undertaking a *backroom operator* strategy therefore would not satisfy these stakeholders' concerns.

Hypothesis 2: Managers who perceive having greater internal, societal, and regulatory stakeholder pressures are more likely to pursue a *backroom operator* EP adoption strategy as compared to a *passivist* EP adoption strategy.

Environmental visibility comes at a cost, and firms tend not pursue it unless they perceive some strategic value (Jiang & Bansal, 2003). In arriving at the managerial decision to pursue a *mover and shaker* strategy, firms are more likely to feel pressures from a broader array of stakeholders than all other firms, and also endure greater overall pressures from internal, social and regulatory stakeholders. Like *wannabes*, firms that undertake a *mover and shaker* strategy are more likely to perceive pressure from societal stakeholders and believe that satisfying these stakeholder concerns can lead to reputational benefits (Emerson et al., 2009). However, like *backroom operators*, these firms are also more likely to be influenced by regulatory stakeholders who place value on the comprehensiveness of a firm's EP and have greater access to environmental risk information. What differentiates *movers and shakers* from *backroom operators* is that they are also more likely to feel pressure from value chain stakeholders.

Firms that perceive having greater pressures from value chain stakeholders are concerned about consumers and corporate buyers increasingly registering their environmental preferences by purchasing products that originate from "green" firms (Henriques & Sadosky, 1999; Maniatis, 2016). These pressures also originate from concerns about inheriting environmental

risks that arise from contractual relationships with suppliers (Phillips & Caldwell, 2005). These buyers recognize that visible practices are not necessarily comprehensive, and therefore require firms that they do business with to agree to on-site audits to verify the rigor of their environmental programs and require that their suppliers design an EP that is comprehensive (Arimura et al., 2011). Additionally, corporate buyers are increasingly requiring firms that they do business with to obtain external certification of their environmental activities (Arimura et al. 2011). As a consequence, firms that perceive having greater pressures from value chain stakeholders are more likely to adopt a *mover and shaker* strategy over any other sort of EP adoption strategy.

Hypothesis 3: Managers who perceive having greater internal, societal, regulatory, and value chain stakeholder pressures are more likely to pursue a *mover and shaker* EP adoption strategy as compared to a *passivist* EP adoption strategy.

Hypothesis 4: Managers who pursue a *mover and shaker* EP adoption strategy perceive having greater stakeholder pressures than those experienced by *backroom operators*.

5. RESEARCH METHODS

5.1 Data

The data for this study were obtained from a survey developed by the Organization for Economic Co-Operation and Development (OECD) Environment Directorate in collaboration with academic researchers. The survey was sent in 2003 to publicly and privately owned firms and facilities (each of which had at least 50 employees) from manufacturing industries in Canada, France, Germany, Hungary, Japan, Norway, and the United States. A total of 4,195

organizations responded to the survey, leading to a response rate of 24.7%, which is similar to prior studies about firms' EPs (e.g., Delmas & Keller, 2005; Melnyk et al., 2003).

Since our research was pertinent to stakeholder influences on firm-level decisions, we only included responses that related to firm-level EP design decisions. We made this distinction by drawing on data from one OECD question that asked managers, "How many different production facilities does your firm have?" We included only those cases in which managers answered "1 facility" to this question. After accounting for this issue, our final sample was 1,761 firms, which is well above the 575 responses needed to estimate proportions with a 99% confidence interval.

Common method bias (CMB) relates to respondents' affective states and the tendency to respond in a socially desirable way (Podsakoff et al., 2003). Two kinds of remedies exist for CMB: procedural remedies, which occur during research design, and statistical remedies, which occur after data collection (Chang et al., 2010; Podsakoff et al., 2003). Related to the procedural remedies, the OECD incorporated several survey techniques to control for CMB, such as psychological and methodological separation of measurement (Podsakoff et al., 2003), and the use of six cover stories that explained the focus of each specific part of the survey in an effort to physically separate variables of interest. It also used varied question response formats (e.g., yes/no questions, Likert scales, open-ended questions, and semantic differential scales) to engage respondents to a greater degree (Chang et al., 2010; Podsakoff et al., 2003) and avoided item ambiguity by pre-testing the survey in France, Canada, and Japan before it was translated into each country's official language and re-translated to validate the accuracy of the original translation. As a final procedural remedy, the survey protected respondent anonymity in order to

reduce respondents' apprehension about the social acceptability of their responses, thus increasing confidence in the quality of the data (Podsakoff et al., 2003).

Related to statistical remedies that assess CMB, we examined the OECD data using Harman's single factor test (Podsakoff & Organ, 1986). This procedure involves a factor analysis of all the data, and if a single factor emerges accounting for the majority of the covariation between the dependent and independent variables then CMB is a concern (Podsakoff & Organ, 1986). The results of our factor analysis led to 14 factors, of which the first unrotated factor accounted for only 14.93% of the total explained variance, suggesting that CMB was less of a concern. However, as an additional precaution, we also relied on a partial correlation procedure (Podsakoff et al., 2003). This procedure controls for CMB by partialling its effects out of the predictor and criterion variables via the inclusion of a marker variable (Lindell & Whitney, 2001). By partialling out the average correlation between the marker variable and the other variables included in the study, we can control for the possible contaminating effect of CMB (Podsakoff et al., 2003). We included facility age as our marker variable. Correlations between the marker variable and other variables had an average correlation of .048, and considered "small" by accepted standards (e.g., Cohen, 1988). Using multinomial logistic regression, we then compared the goodness of fit of our preferred model (McFadden $R^2 = 0.45$) to one that incorporated our marker variable (McFadden $R^2 = 0.46$). These values did not differ statistically, which further increases our confidence that the CMB is less of a concern.

The OECD examined non-response bias by evaluating the general distribution of its survey respondents. The OECD assessed industry representation and firm size of the survey respondents relative to the distribution of firms in the broader population, and found no statistically

significant differences for Canada, France, Germany, Hungary, Japan, and Norway (Johnstone et al., 2007). The United States was an exception in that the data show that respondents within a couple of U.S. industries were slightly over- or under-represented (Darnall et al., 2010b). Using U.S. Census data, we weighted the U.S. portion of the sample to reflect industry representation.

5.2 Dependent variable

Related to comprehensiveness, we elected to focus on environmental monitoring, which is an EP premised on the idea that organizations manage what they measure. Environmental monitoring became popularized in the early 1980s with the development of quality management principles. Deming's (1986) continuous improvement model advocated the "plan, do, check, act" approach towards developing high quality goods, products, services, or information. Environmental monitoring serves as an important foundation towards firms' exceeding regulatory expectations because, in order to proactively manage their environmental impacts, firms must first monitor their environmental activities. Consequently, monitoring is widely recognized as an important EP that helps prevent and reduce a firm's the negative environmental impacts.

Related to visibility, firms have the option of making their EPs particularly visible by way of certification, as well as by the disclosure of public environmental reports. Certification conveys information to external stakeholders about a firm's latent EPs. Nevertheless, several studies (e.g., Arena et al., 2015; Aravind & Christmann, 2011; King et al., 2005) have argued that some firms commonly use environmental certification and environmental reporting to satisfy stakeholders' demands even if these firms fail to design their EPs comprehensively.

We formed the dependent variable using the four categories that comprise our classification of firms' EPs: *passivists*, *wannabes*, *backroom operators*, and *movers and shakers*. To create this categorical variable, we first assessed the comprehensiveness of each firm's environmental monitoring. We drew on data from one OECD question that asked managers, "Which of the following environmental performance measures does your firm regularly monitor?" Firm managers were asked about the routine monitoring of (1) the use of natural resources (energy, water, etc.), (2) solid waste generation, (3) wastewater effluent, (4) local or regional air pollution, and (5) global pollutants. Respondents reported "yes" or "no" to each item. By summing these responses, the maximum number of environmental impacts that firms within our sample could monitor was 5. The mean reported monitoring for firms within our sample was 2.80. We thus coded firms that reported monitoring between 3 to 5 environmental impacts as "1" to denote that they had designed their environmental monitoring comprehensively, else firms were coded "0".

To account for visibility, we drew on two questions in the OECD survey. The first asked whether the firm had acquired either ISO 14001 or EMAS certification. Respondents that reported "yes" were coded "1", else "0". We also drew on a question in the OECD survey that asked whether firms had developed an environmental report that was released publicly. Respondents that reported "yes" were coded "1", else "0". We summed these responses, so the maximum visibility value of firms within our sample was 2. Firms that reported affirmatively for both actions were coded "1" to denote that they had adopted an EP with more visibility, else firms were coded "0".

By considering the comprehensiveness and visibility of firm's environmental monitoring together, we coded *passivists* as firms that lacked significant comprehensiveness and visibility

for their EP (0,0). *Wannabes* were coded to be firms that did not design a comprehensive environmental approach, but established visibility for their practices (0,1). *Backroom operators* were firms that designed a comprehensive but less visible approach (1,0), and *movers and shakers* were represented as firms that designed a comprehensive and visible approach (1,1)¹.

To examine the sensitivity of our coding, we also coded our monitoring variable such that facilities that reported monitoring 4 or 5 environmental impacts were coded as “1”, else “0”. This second approach offers a stricter interpretation of facilities that have designed a comprehensive environmental monitoring program. The recoding also necessarily changes the number of firms that are categorized as being *wannabes*, *backroom operators*, and *movers and shakers*. Table 1 shows the sample size and descriptive statistics for each category of our dependent variable.

--INSERT TABLE 1 ABOUT HERE--

5.3 Explanatory variables

We measured managers' perceived stakeholder influences by relying on the OECD survey question that asked, “How important do you consider the influence of specific stakeholder groups on the EPs of your firm?” Firm managers reported on the perceived influence of the following stakeholder groups: household consumers, commercial buyers, suppliers, management employees, non-management employees, corporate headquarters, environmental groups, community organizations, labor unions, and industry or trade associations. Using a three-point Likert scale, respondents indicated whether these influences were “not important,” “moderately important,” or “very important”.

¹ We explored empirically the independence of our measures of comprehensiveness and visibility by running a Chi-Square test of independence and a Spearman correlation. The significance value of both measures was less than 0.1, indicating a statistically significant association. However, the correlation was 0.227, thus failing to cross the threshold of a medium size effect, and indicating that it is substantively less relevant (Cohen, 1988). The authors thank an anonymous reviewer for suggesting that we explore this potential concern.

Responses to this question were entered into principal component analysis using varimax rotation with Kaiser normalization. Three distinct factors emerged representing internal stakeholders (headquarters, management employees, and non-management employees), societal stakeholders (environmental groups, community organizations, labor unions, and industry or trade associations), and value chain stakeholders (household consumers, commercial buyers, and suppliers), as shown in Table 2. Cronbach's alphas were above Nunnally's (1978) recommended value of 0.70 for each factor. Following the thresholds established by Hair et al. (2009), our indicators appeared reliable, with standardized factor loadings above 0.5 ($p < .05$).

--INSERT TABLE 2 ABOUT HERE--

Since our stakeholder measures are formative, we utilized three procedures suggested by Cenfetelli and Bassellier (2009) to assess their validity. First, we ruled out the presence of multicollinearity among our formative indicators by assessing their variance inflation factors (VIF). Acceptable VIF values range from 3.33 (Diamantopoulos & Sigauw, 2006) to 10.00 (Hair et al., 1998), with lower values being better. In our case, the highest VIF was 2.16, suggesting that multicollinearity was not a concern (see Table 2). We also considered the partialized (i.e., relative contribution) indicator weights as well as the zero-order (i.e., absolute contribution) bivariate loadings between the indicators and their associated formatively measured constructs (Cenfetelli & Bassellier, 2009). The results of our assessments indicate that all weights and loadings were in the expected direction (positive), of reasonable size, and statistically significant ($p < .001$). Combined, these findings offer some confidence about the robustness of our constructs.

To measure the influence of regulatory stakeholders, we relied on OECD survey data that asked firm managers, "How many times has your firm been inspected by public environmental

authorities (central, state/province, and municipal governments) in the last three years?” While this measure is not completely objective, it is subject to managers’ perceptions of inspection frequency (Darnall et al., 2010a), and this perception is likely to influence the implementation of one type of firm strategy over another.

5.4 Control variables

Since the OECD data were for a diverse set of organizations operating within multiple manufacturing sectors and countries, it was important to control for potential heterogeneities. We controlled for export orientation since the more export oriented the organization, the higher the benefits it may accrue from its more visible actions to protect the environment (Martín-Tapia et al., 2010). It was addressed by relying on an OECD item that asked managers, “What best characterizes the scope of your firm’s market?” Respondent could answer “local” (1), “national” (2), and “regional” or “global” (3). The reference category was “local”.

Organizations operating in a competitive market are more likely to adopt EPs in order to be recognized as being environment-friendly. We relied on an OECD survey question that asked managers, “With how many other firms did your firm compete on the market for its most commercially important product within the past three years?” Respondents answered “less than 5” (1), “among 5 and 10” (2), and “greater than 10” (3). The reference category was “less than 5”.

Related to firm size, we controlled for the number of employees within each firm. Dummy variables were included to address industry effects (the non-metallic minerals and metals industry was the reference category) and country effects (the U.S. was the reference category). Table 3 contains descriptive statistics and correlations for each of our variables.

--INSERT TABLE 3 ABOUT HERE--

5.5 Empirical approach

To empirically examine our research hypotheses, we relied on multinomial logistic regression analysis. This technique is especially suitable for our purposes given our 4-category dependent variable. Multinomial logistic regression examines jointly all categories of the dependent variable, and uses one of the categories as reference to allow for comparisons among other categories of the dependent variable (Hair et al., 1998). *Passivists* were our reference category. Reported coefficients therefore represent the estimated differences between this category and the other dependent variable categories. We report exponential betas for each of our estimations for easier interpretability of our results. The interpretation of the multinomial logit is that for a one-unit change in their perceived stakeholder pressure, firms are more (or less) likely to pursue a *wannabe* (or *backroom operator* or *mover and shaker*) strategy in comparison to *passivists*, holding constant other variables in the model.

RESULTS

The results of our multinomial logistic regression analysis are summarized in Table 4. Our findings show that the regression model was statistically significant at $p < .001$, as noted by the log likelihood statistic (870.49). Additionally, the McFadden R-squared statistic was 0.45, suggesting that the model had a good fit and was consistent with previous studies using applied multinomial logistic regression in the context of firms' EPs (e.g., González-Benito & González-Benito, 2008).

--INSERT TABLE 4 ABOUT HERE--

Our results indicate that societal stakeholder pressures were associated with firms that pursued a *wannabe* strategy over a *passivist* strategy. Firm managers that reported having high perceived

pressures from societal stakeholders were 824% (9.24 - 1.00, $p < .05$) more likely to pursue a *wannabe* strategy over a *passivist* strategy. However, pressures from internal stakeholders did not differ statistically from *passivists*. These findings offer partial support to Hypothesis 1, which states: managers who perceive having greater internal and societal stakeholder pressures are more likely to pursue a *wannabe* EP adoption strategy as compared to a *passivist* EP adoption strategy.

Firms that had greater pressures from internal stakeholders were 64% (1.64 - 1.00, $p < .01$) more likely to pursue a *backroom operator* strategy over a *passivist* strategy. Additionally, firms that reported having greater perceived influences from societal stakeholders were 36% (1.36 - 1.00, $p < .05$) more likely to pursue a *backroom operator* strategy over a *passivist* strategy. *Backroom operators* were 10% (1.10 - 1.00, $p < .05$) more likely than *passivists* to perceive having greater pressures from regulatory stakeholders, and no more likely than *passivists* to have stronger perceived pressures from value chain stakeholders. Taken together, these findings offer evidence in support of Hypothesis 2, which states that: managers who perceive having greater internal, societal, and regulatory stakeholder pressures are more likely to pursue a *backroom operator* EP adoption strategy as compared to a *passivist* EP adoption strategy.

In examining how *movers and shakers* differ from *passivists*, as expected, firms that reported having greater perceived influences from internal, societal, regulatory, and value chain stakeholders had a greater probability of pursuing a *mover and shaker* strategy. More specifically, firms that had greater pressures from internal stakeholders were 205% (3.05 - 1.00, $p < .01$) more likely to pursue a *mover and shaker* strategy over a *passivist* strategy. Similarly, firms reporting having greater perceived influences from societal stakeholders were 49% (1.49 -

1.00, $p < .05$) more likely to pursue a *mover and shaker* strategy over a *passivist* strategy. *Movers and shakers* were also 7% (1.07 - 1.00, $p < .05$) more likely than *passivists* to perceive having greater pressures from regulatory stakeholders. Finally, compared to *passivists*, firms that perceived having greater influences from value chain stakeholders were 35% (1.35 - 1.00, $p < .10$) more likely to adopt a *mover and shaker* EP strategy, as compared to *passivists*. These findings offer evidence in support of Hypothesis 3: managers who perceive having greater internal, societal, regulatory, and value chain stakeholder pressures are more likely to pursue a *mover and shaker* EP adoption strategy as compared to a *passivist* EP adoption strategy.

For our last comparison, we examined differences between *movers and shakers* and *backroom operators*, compared to *passivists*. Overall, we found that pressures from internal, societal, and value chain stakeholders were greater for *movers and shakers*. The influence of internal stakeholders was 205% (3.05 - 1.00) greater for *mover and shakers* than *passivists*, whereas pressures for internal stakeholders were 64% (1.64 - 1.00) greater for *backroom operators* than *passivists*. Compared to *passivists*, influence of internal stakeholders therefore was 141% (205% - 64%) greater for *movers and shakers* than *backroom operators*. Similarly, the influence of societal stakeholders was 49% (1.49 - 1.00, $p < .05$) greater for *mover and shakers* than *passivists*, whereas societal stakeholders were 36% (1.36 - 1.00, $p < .05$) greater for *backroom operators* than *passivists*. Compared to *passivists*, influence of internal stakeholders therefore was 13% (49% - 36%) greater for *movers and shakers*' than *backroom operators*. While there was little practical difference (-3%) between the influence of regulatory stakeholders for *mover and shakers* as compared to *backroom operators* (1.07 - 1.10), value chain stakeholders had a 20% greater influence for *movers and shakers* than *backroom operators* (1.35 - 1.15). Combined,

these findings offer evidence in support of Hypothesis 4, which states that: managers who pursue a *mover and shaker* EP adoption strategy perceive having greater stakeholder pressures than those experienced by *backroom operators*.

The results of our stricter model (also shown in Table 4) indicate that across the three EP adoption categories—*wannabes*, *backroom operators*, and *movers and shakers*—and four stakeholder categories, 10 of our 12 estimates remained consistent in terms of sign and statistical significance. These findings offer additional support for the strength of our relationships of interest.

6. DISCUSSION

Our results offer robust evidence that variations in stakeholder pressures are related to differences in managerial decisions about the design of their EPs, especially as they relate to variations in comprehensiveness and visibility. These variations, we suggest, characterize four types of EP strategies: *movers and shakers*, *backroom operators*, *wannabes*, and *passivists*.

Compared to *passivists*, we show that greater pressures from societal stakeholders are associated all other EP adoption strategies. In instances where managers endure significant pressures from societal stakeholders (and no other stakeholders), firms are more likely to pursue a *wannabe* strategy that lacks comprehensiveness, but is visible externally. Compared to more comprehensive EPs (Darnall & Kim, 2012; Darnall et al., 2010a), this strategic approach is less likely to reduce environmental risks (Bowen, 2014; Delmas & Keller, 2005) because it is largely symbolic (Aravind & Christmann, 2011; King et al., 2005). Firms most likely pursue this strategy seek to legitimize their EPs by obtaining support from their social environment without committing to real environmental improvements (Aravind & Christmann, 2011; Christmann &

Taylor, 2006). In this case, *wannabes* are attempting to appeal to societal stakeholders, who typically lack access to information about the risks associated with a firm's various manufacturing practices (Bowen, 2014). By selectively disclosing positive information about their environmental activities, these firms create an overly positive corporate image (Lyon and Maxwell, 2011), and the appearance of greenwashing (Bowen & Aragon-Correa, 2014; Ramus & Montiel, 2005).

By contrast, managers' perceived pressures from internal, societal, and regulatory stakeholders appear to influence them to design an EP that is comprehensive, as is the case for *backroom operators* and *movers and shakers*. We suggest that this is because internal stakeholders generally have significant knowledge about the firm's ongoing operations (Zutshi & Sohal, 2004), and how to mitigate its environmental risk. Similarly, regulatory stakeholders have (or could gain) access to information about a firm's environmental risk that would otherwise expose a *wannabe* strategy. In the presence of these stakeholder pressures, firms are more likely to design EPs that are more comprehensive and have greater potential to reduce environmental harms.

Compared to *backroom operators*, *movers and shakers* have greater overall stakeholder pressures from internal, societal and value chain stakeholders. In responding to these pressures, *movers and shakers* appear to design EPs that are more comprehensive, thus improving managers' internal information (Lyon & Maxwell, 2011), but also increases opportunities for improving environmental performance. By virtue of making their environmental information available to external stakeholders, these firms are addressing their greater pressures from

external stakeholders, with the promise of obtaining broader external credibility (Emerson et al., 2009).

7. CONCLUSION

This study addresses the concern that while prior literature has emphasized that stakeholders influence a firm's decision to adopt EPs, little is known about how stakeholders influence the design features of firms' EPs. We offer two important theoretical contributions to the previous literature on stakeholders as it relates to firms' management strategies.

First, the results of our research present strong evidence that stakeholders' influence, and combinations of pressures from different stakeholder groups, extends well beyond EP adoption decisions to decisions about EP design, and specifically their comprehensiveness and visibility. As such, the scope of stakeholders' influence during EP adoption appears more far reaching than previously considered in that stakeholders are related strongly to choices about the design features of EPs, and especially their comprehensiveness and visibility. An understanding of these critical distinctions would have gone unnoticed if we were to have focused simply on how stakeholders relate to firms' decision of whether or not to adopt an EP.

Second, this research offers a much needed extension to existing stakeholder literature assessing the relationship between stakeholders' influence and the EP adoption decision (e.g. Henriques & Sadowsky, 1996, 1999; Kassinis & Vafeas, 2006; Murillo-Luna et al., 2008; Sharma & Henriques, 2005). It develops a novel classification framework that is the first articulation of the ways in which stakeholders influence firms' EP design. We describe how variations in the design features of EPs (and especially their comprehensiveness and visibility) lead to four types of strategic approaches—*movers and shakers*, *backroom operators*, *wannabes*, and *passivists*.

This framework responds to a growing concern that more nuanced studies are needed that examine the connection between stakeholder theory and firm strategy (e.g., Bridoux & Stoelhorst, 2014; Devinney, 2013). Our research offers important insight about the complex relationship between firms' stakeholders and their environmental strategy. It also contributes to ongoing discussions about corporate greenwashing (Bowen & Aragon-Correa, 2014; Lyon & Maxwell, 2011; Lyon & Montgomery, 2015; Ramus & Montiel, 2005) and symbolic behavior (Aravind & Christmann, 2011; Christmann & Taylor, 2006). Our findings suggest that firms may be most prone to these deceptive behaviors when they perceive having greater pressure from societal stakeholders (who typically lack access to information about a firm's environmental risks (Bowen, 2014)), and no perceived pressure from internal, regulatory or value chain stakeholders. These findings offer critical evidence about the nuanced relationship between firms' strategic responses and different types of stakeholder interests.

7.1 Managerial Implications

While researchers (e.g., Murillo-Luna et al., 2008; Sharma & Henriques, 2005) suggest that managers should embrace the principle that stakeholders prefer that companies adopt environmentally friendly business practices, translating this principle into an actionable EP often poses significant challenge (Jiang & Bansal, 2003; Ramus & Montiel, 2005). In general terms, our results highlight that managers might make an explicit or implicit decision regarding the stakeholders' environmental priorities that they want to satisfy. Our research suggests that managers who perceive strong pressure from all stakeholders might be persuaded do so by developing a *mover and shaker* strategy. If these managers skimp on either design features—comprehensiveness or visibility—they may not be able to satisfy their stakeholders' concerns,

which could affect their firms' overall external legitimacy. As such, they develop EPs that are more robust in their monitoring approach and offer a mechanism for stakeholders to determine whether or not these EPs exist.

By contrast, managers who seek to satisfy only societal stakeholders appear more inclined to adopt a *wannabe* strategy. However, this strategic approach is quite risky. Since environmental monitoring is critical towards obtaining environmental improvements (Darnall & Kim, 2012), *wannabes* may be less likely to improve the natural environment. If so, these managers run the risk of their firms could be labeled greenwashers (Lyon & Maxwell, 2011; Lyon & Montgomery, 2015; Ramus & Montiel, 2005) if they cannot back up their environmental positions with credible information about their improved environmental performance.

Additionally, for managers who are considering implementing an EP, our results offer evidence that stakeholder influences tend to extend beyond the adoption decision and are often related to the critical design features of these EPs. Paying attention to these influences may help firms address their stakeholder preferences more appropriately, while increasing strategic value to their organization.

7.2 Limitations and Future Research

Our research is bounded by our sample, which includes cross-sectional data for facilities with 50 or more employees that completed the OECD survey, and so the results of our study do not extend to time-variant relationships or smaller firms. Future research would benefit from examining how stakeholder influences are associated with the design features of firms' EPs over time and smaller firms. Doing so would discern whether stakeholder pressures are related similarly to the visibility and comprehensiveness of their EPs. While cross-sectional studies of

this sort are data intensive, our hope is that the results of this study offer justification for undertaking them.

Further, prospective research could extend this study by examining how other stakeholders, such as potential employees, media, etc., might relate to the design of firms' EPs. For instance, potential employees may be particularly salient as there is an increasing trend for recent graduates to assess their potential employers' environmental reputation when choosing a job. Similarly, prior media coverage often shapes firms' environmental strategy (Govindan et al., 2014) or even the influence of sub-suppliers (Grimm et al., 2016). While data limitations prevented us from considering these issues, they may be relevant factors to consider moving forward.

Moreover, even though the OECD dataset consists of an international sample, our study is limited in its ability to determine whether stakeholder influences on firms' EPs are associated with cultural differences among countries and over time. For instance, Matten and Moon (2008) suggest that international firms are shifting their CSR practices such that they are more explicit and less implicit. What remains uncertain is whether shifts towards more explicit EPs adoption is more closely aligned with *wannabes* approach or a *mover and shaker* approach. Drawing on the results of this study, we might expect that variations in stakeholder pressures may relate to firms pursuing more explicit EP adoption. However, future research would benefit from analyzing these relationships further using cross-country and cultural perception data.

Another important issue to consider is that some EPs may be more visible for different types of stakeholders. For instance, ISO 14001 certification may be more visible and relevant to value chain stakeholders than public environmental reports, whereas public reports may be more

relevant to regulatory stakeholders than ISO 14001 certification. Examining these sorts of questions would offer interesting perspective on the link between stakeholder pressures and the design features of firms' EPs. Similarly, one factor that may potentially shift *wannabes* towards becoming *mover and shakers* is that in 2015 the ISO 14001 standard was revised in a way that places more emphasis on improving environmental performance (ISO, 2015). The revised standard also encourages firms to consider stakeholders concerns during in the implementation of the standard (ISO, 2015). It remains to be seen whether these revisions encourage *wannabes* to undertake a more comprehensive approach to reducing their environmental risks, thus reducing concerns about their potential greenwashing. However, future research should consider this issue.

Finally, this study examines how different stakeholder influences are related to firms' selection of a *passivist* EP adoption strategy over a *wannabe*, *backroom operator*, or *mover and shaker* strategy. What would be interesting to know is how firms' selections of these strategies might lead to variations in product development and pricing, in addition to differences in firms' cost levels, competitive market position, or even why managers elect to decertify their EPs (Heras et al., 2016). Since firms that design more robust EPs are likely to enhance their strategic advantage by way of increased operational efficiencies (e.g., González-Benito & González-Benito, 2008; Darnall et al., 2010a) and innovative practices, it is possible that firms that pursue either a *backroom operator* or a *mover and shaker* strategy may accrue greater financial advantages than *passivists* and *wannabes*. However, future research should consider these issues more formally, and this study offers a theoretical framework for doing so.

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Figure 1. Classification of design of firms' environmental practices

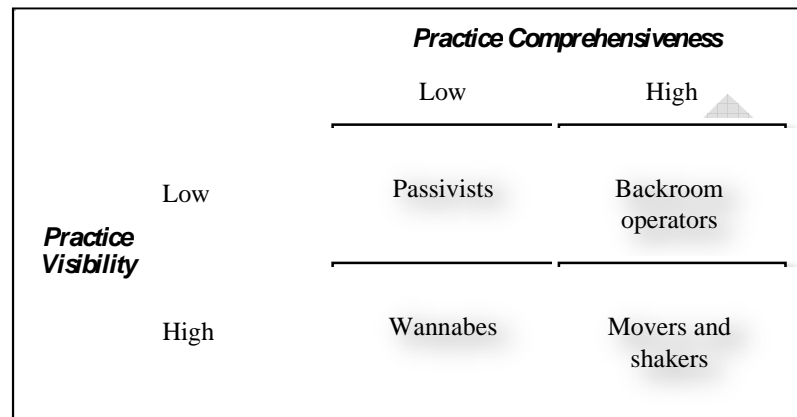


Table 1. Descriptive statistics for the design features of firms' environmental practices

Categories	Frequency (n)	Frequency (%)	Mean (S.D.) Comprehensiveness ^a	Min./Max. Comprehensiveness	Mean (S.D.) Visibility ^a	Min./Max. Visibility
<i>Passivists</i>	661	37.54%	1.24 (.81)	0/2	.13 (.33)	0/1
<i>Wannabes</i>	13	0.74%	2 (0)	0/2	2 (0)	2
<i>Backroom Operators</i>	908	51.56%	3.69 (.76)	3/5	.36 (.48)	0/1
<i>Movers and Shakers</i>	179	10.16%	4.07 (.76)	3/5	2 (0)	2
Total	1,761	100.00%	2.80 (1.44)	0/5	.46 (.71)	0/2

^a Standard Deviations are shown in parentheses

Table 2. Factor analysis, VIFs, weights and loadings of perceived stakeholder influences

Stakeholders	Factor Loadings ^a			VIF ^b	Indicator Weight ^c			Bivariate Loading ^d		
	Internal Stakeholders	Societal Stakeholders	Value Chain Stakeholders		Internal Stakeholders	Societal Stakeholders	Value Chain Stakeholders	Internal Stakeholders	Societal Stakeholders	Value Chain Stakeholders
Corporate headquarters	.71	.05	.24	1.25	.32***			.65***		
Management employees	.84	.30	.13	2.16	.44***			.90***		
Non-management employees	.79	.36	.15	2.09	.45***			.89***		
Environmental groups	.15	.76	.24	1.71		.32***			.78***	
Neighborhood/community groups	.20	.64	.33	1.48		.38***			.76***	
Labor unions	.25	.78	.05	1.62		.35***			.74***	
Industry/trade associations	.17	.77	.19	1.72		.28***			.75***	
Household consumers	.04	.23	.77	1.45			.29***			.68***
Commercial buyers	.18	.10	.82	1.65			.43***			.81***
Suppliers of good/services	.22	.25	.66	1.43			.54***			.84***

^a Loadings stronger than ± 0.50 are bolded. Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization; ^b Variance Inflation Factor; ^c Relative contribution of each item to construct; ^d Absolute contribution of each item to construct; *** $p < .01$

Table 3. Descriptive Statistics and Correlations

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 Internal stakeholders	1																			
2 Societal stakeholders	.000	1																		
3 Value chain stakeholders	.000	.000	1																	
4 Regulatory stakeholders	.163**	.133**	.072	1																
5 Market Scope	.136**	.010	-.034	.094**	1															
6 Competitors	-.051	-.099*	.126**	.034	.003	1														
7 Size	.161**	.160**	.165**	.228**	.180**	-.009	1													
8 Food, beverage, textiles	-.082*	.011	.025	.018	-.148**	.089**	-.039	1												
9 Pulp, paper, print	-.032	.033	-.032	-.025	-.052*	.063**	-.030	-.111**	1											
10 Petroleum, chem., rubber	.002	-.030	-.043	.012	-.137**	.074**	-.001	-.141**	-.078**	1										
11 Non metallic and metals	-.014	.014	.029	.075**	.041	-.046	-.013	-.207**	-.115**	-.146**	1									
12 Machinery, media equip.	.094*	.001	-.006	.016	.010	-.017	-.033	-.240**	-.133**	-.169**	-.248**	1								
13 Transportation equip.	.009	-.030	.008	-.088**	.191**	-.098**	.090**	-.282**	-.156**	-.198**	-.291**	-.338**	1							
14 USA	.034	.163**	.027	.144**	.029	-.013	.036	-.042	-.004	-.057*	.040	.088**	-.064**	1						
15 Germany	.114**	-.259**	-.035	.121**	.251**	.173**	-.011	-.033	-.036	.041	-.015	.033	.005	-.136**	1					
16 Hungary	.001	.044	.173**	.028	.132**	-.041	.103**	.068**	.032	-.034	.012	-.081**	.016	-.079**	-.242**	1				
17 Japan	-.236**	-.002	.118**	-.123**	-.388**	-.037	-.059*	.005	-.108**	-.001	-.029	-.007	.087**	-.160**	-.488**	-.285**	1			
18 Norway	-.016	.080*	-.157**	-.069**	.033	-.071**	-.052*	-.010	.099**	.003	-.028	-.002	-.018	-.057*	-.172**	-.101**	-.203**	1		
19 France	.120**	.103**	-.125**	-.068**	.043	-.094**	.021	.030	.007	.026	.042	-.002	-.078**	-.054*	-.165**	-.097**	-.195**	-.069**	1	
20 Canada	.082*	.151**	-.058	-.010	.024	-.019	.002	-.027	.153**	-.013	.025	-.008	-.061**	-.047	-.142**	-.083**	-.168**	-.059*	-.057*	1
Min	-2.321	-1.878	-2.032	0	1	1	50	0	0	0	0	0	0	0	0	0	0	0	0	0
Max	2.404	3.143	2.582	55	3	3	4000	1	1	1	1	1	1	1	1	1	1	1	1	1
Mean	.000	.000	.000	3.17	2.75	2.14	187.19	.167	.058	.090	.176	.223	.284	.04	.29	.12	.37	.07	.06	.05
Standard deviation	0.998	0.998	0.998	5.432	1.038	.800	254.25	.373	.234	.287	.380	.416	.451	.202	.455	.329	.482	.250	.241	.211

** p < .01; * p < .05; n=1,761

Table 4. Multinomial logistic regressions predicting comprehensiveness and visibility^a

Variables	Firm Strategy ^b					
	Wannabe (H1)		Backroom Operator (H2)		Movers and Shakers (H3)	
	Baseline Model	Stricter Model	Baseline Model	Stricter Model	Baseline Model	Stricter Model
<i>Explanatory variables</i>						
Internal stakeholders	5.88	2.53***	1.64***	1.35**	3.05***	2.52***
Societal stakeholders	9.24**	1.66**	1.36**	1.33**	1.49**	1.36*
Regulatory stakeholders	.76	.97	1.10**	1.12***	1.07*	1.09**
Value chain stakeholders	.94	1.31	1.15	1.34**	1.35*	1.39*
<i>Control variables</i>						
Size	.48	1.00	2.28***	2.08***	3.20***	2.93***
National Scope	1.15E+24	2.09E+16	7.71E-007***	7.874E-007***	2.92E+26***	2.734E+28***
International Scope	14.08	.30	1.39	.93	.46	.48
Among 5-10 competitors	3.27E-006	.21	1.05	1.17	.70	.88
More than 10 competitors	2.28E-007	.07**	.87	.85	.51	.82
Food, beverage, textiles	3.534	2.37	.91	.98	.87	.71
Pulp, paper, print	8.99E-007	2.35	.81	.90	1.08	.61
Petroleum, chem., rubber	1.17E-005	.56	.76	1.35	.71	1.40
Machinery, media equip.	9.96E-006	1.25	.59	1.01	1.07	1.87
Transportation equipment	.00	1.10	2.26**	1.71	2.12	1.60
Germany	2.55E-005	7.032E-007	6.00	6.33**	6.79E-007***	4.42E-007***
Hungary	5.45	2.518E-006	7.44*	9.95***	7.26E-007***	3.40E-007***
Japan	3.31E-005	1.11E-006	5.43	2.20	3.79E-007***	7.97E-008***
Norway	1.54E-005	1.905E-007	5.24	3.39*	1.66E-007***	6.47E-008***
France	3.32		11.38**	5.63**	1.03E-005***	2.23E-006***
Canada	9989.11	6.06	25.68*	10.65**	1.46E-005	2.70E-006
N	1,761	1,761				
-2loglikelihood	870.49***	911.24***				
R2 McFadden	.45	.42				

^a Statistical relationships were estimated using multinomial logistic regression. Reference category is *passivists*. Exponentiated betas are provided. "Local" is the reference market scope dummy. "Less than 5 competitors" is the reference market concentration dummy. "Nonmetallic minerals and metals" is the reference sector dummy, and the U.S. is the reference country dummy.

^b The baseline models code firms that reported monitoring between 3 to 5 environmental impacts. The stricter models reflect a recoding of our monitoring variable such that firms that reported monitoring 4 or 5 environmental impacts were coded as "1", else "0".

*** p < .01; ** p < .05; * p < .10