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INSTITUTIONAL PRESSURES AND ENVIRONMENTAL STRATEGIES

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ABSTRACT

This paper suggests how institutional theory can explain enduring differences in organizational strategies. We propose that differences in how organizations distribute power across their internal corporate departments lead their facilities to prioritize different institutional pressures and thus adopt different management practices. Specifically, we argue that external constituents who interact with particularly powerful corporate departments are more likely to influence facility managers' decisions. As a result, managers of facilities that are subjected to comparable institutional pressures adopt distinct sets of management practices that appease different external constituents. Using an original survey and archival data obtained for nearly 500 facilities, we find support for these hypotheses.

Keywords: institutional theory, stakeholder influence, environmental strategy

The question of what drives organizations to adopt specific sets of management practices is central to organizational theory. The institutional perspective suggests that firms obtain legitimacy by conforming to the dominant practices within their institutional field (DiMaggio & Powell, 1983; Scott, 1992). Scholars of institutional theory have traditionally focused on how organizational strategies and practices converge through a legitimation process. In this paradigm, divergent strategies and practices exist either during a temporary pre-convergence period (e.g., Dobbin & Sutton, 1998; Edelman, 1992), or subsequently due to organizations being subjected to varying levels of institutional pressure (e.g., Lounsbury, 2001). The institutional approach highlights the interactive role that institutions play in both constraining and enabling organizational action, and is increasingly being used in strategic management research to explain strategic decisions (Ingram & Silverman, 2002). The institutional perspective, however, has barely begun to address a fundamental issue to business strategy research: why do organizations that face common isomorphic institutional pressures adopt different management practices?

Some researchers have integrated theories of institutional and organizational dynamics to explain how differences can persist even among organizations that face comparable institutional pressures. For example, Oliver (1991) combines institutional and resource dependence perspectives to predict how organizations will strategically respond to various institutional pressures. Greenwood and Hinings (1996) integrate institutional and internal organizational dynamics to explain radical change. In addition, several authors have shown empirically that organizations' responses to institutional pressures are affected by organizational characteristics including ownership structure (Goodrick & Salancik, 1996), trust and identity (Kostova & Roth, 2002), as well as board of director interlocks and geographic proximity to peer organizations (Davis & Greve, 1997). However these integrative approaches pay little attention to how the constituents of the institutional field interact with organizational actors.

In this paper we develop and test a model that links a variety of institutional pressures to organizational responses. We suggest that differences in how organizations distribute power across their internal corporate departments lead their facilities to prioritize different institutional pressures and thus adopt different management practices. We build on Hoffman (2001)'s observation that different

institutional field constituents interact with particular internal corporate departments. We argue that constituents who interact with particularly powerful corporate departments exert more influence on facility managers' decisions. This occurs because as these powerful corporate functional departments influence facility decisions, they shape facility managers' sensitivity and responses to the institutional pressures that fall within their domain.

Therefore, we argue that organizations adopt different management practices not only because they are subjected to different levels of institutional pressures as institutional theorists have long argued, but also because corporate departments sway facilities to focus on different pressures. Our focus on the role of corporate functional departments addresses the scarcity of research that analyzes the effects of institutions within organizations (Elsbach, 2002).

Strang & Soule (1998: 285) argue that institutional analyses that contrast the adoption or diffusion of distinct management practices "can provide more nuanced views of the mechanisms involved." Therefore, like Davis & Greve (1997), we test our framework by examining the adoption of two management practices. Specifically, we consider US industrial facilities' adoption of the international ISO 14001 Environmental Management System Standard and government-initiated voluntary environmental programs. Environmental management issues provide a rich empirical context for several reasons. First, a broad array of institutional constituents exerts pressure on these facilities to adopt environmental management practices. Second, organizations across different industries (Hoffman, 1999) and geographic locations (Sharma & Henriques, 2005) share a common institutional field with respect to the common issue of industrial environmental management. Third, institutional pressures are most influential on organizational practices during the period of uncertainty before these practices become institutionalized (Goodrick & Salancik, 1996), and there are several reasons to believe that ISO 14001 standard and government-initiated voluntary environmental programs are not yet institutionalized. Neither is required by law, there is a lack of consensus on their actual effectiveness, and there is significant heterogeneity among firms in their adoption (Delmas, 2002; Videras & Alberini, 2000). The research in corporate environmental strategy has made significant advances in analyzing how institutional pressures

impact the adoption of voluntary strategies beyond compliance (Bansal & Roth, 2000; Darnall & Edwards, Forthcoming; Henriques & Sadorsky, 1996; Sharma & Henriques, 2005). However, it has rarely addressed linkages between organizational and field analyses, such as the interaction between organizational factors and institutional pressures.

The paper proceeds as follows. After a brief review of institutional pressures, we develop hypotheses that describe how corporate functional departments influence their subsidiary facilities' awareness, or receptivity, to institutional pressures and how this affects the adoption of particular management practices. We then describe our sample and empirical method, and present our results. We conclude by discussing how this study advances understanding of heterogeneous management practices through the lens of institutional theory, and how it can thus make important contributions to the study of business strategy.

INSTITUTIONAL PRESSURES

The institutional perspective argues that firms are subject to institutional pressures within an institutional field. An institutional field has been defined as “those organizations that...constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products” (DiMaggio & Powell, 1983: 148). Clearly, institutional fields are complex, comprised of a vast array of constituents with their own culture and interests (Scott, 2001). While institutional fields have traditionally been defined as firms within common industries or that sell common products, institutional fields can also be formed around common issues (Hoffman, 1999).

Constituents within the market and non-market environments exert institutional pressures on firms (Baron, 1995). Firms engage with constituents in their market environment (e.g., customers, suppliers) via economic transactions, while constituents in firms' non-market environment (e.g., regulators, environmental organizations) are interested in social, political, and legal issues (Baron, 1995, 2000).

Non-market and market actors frame environmental management issues differently (Hoffman & Ventresca, 1999). For example, constituents of the market environment tend to view environmental issues primarily within the rubric of business performance, focusing on their cost and efficiency implications. On the other hand, non-market actors such as regulators and activist groups typically view environmental issues as negative externalities, and often operate via the legal system and the mass media (e.g., as a court of public opinion). These diverse constituents are also likely to disagree about the legitimacy of a management practice before it becomes institutionalized, which occurs when it takes on a rule-like status in social thought and action (Meyer & Rowan, 1977; Tolbert & Zucker, 1996). Market and non-market constituents are thus quite likely to differ both in their interpretation of industrial environmental issues and in their perceptions of which management practices constitutes legitimate responses. Focusing on an institutional field marked by a diverse set of market and non-market constituents provides a unique opportunity to analyze the web of institutional forces that shape and influence the adoption of management practices that are not yet institutionalized.

ORGANIZATIONAL PERMEABILITY TO INSTITUTIONAL PRESSURES

Hoffman (2001) described the importance of organizations' functional structure and culture in explaining heterogeneous responses to institutional pressures. Hoffman (2001: 138) notes, "the form of the response from the organization is as much a reflection of the institutional pressures that emerge from outside the organization as it is the form of organizational structure and culture that exist inside the organization." From this perspective, organizations provide multiple access points to institutional pressures. Building on this approach, we propose that organizational characteristics affect the extent to which facilities become aware of institutional pressures and, in turn, respond to them. This arises because each functional department typically engages with a different set of institutional constituents, and because corporate functional departments vary in their influence on facility decision-making.²

² Several other organizational and managerial characteristics might affect how organizations perceive and respond to institutional pressures. We discuss some of these when we conclude with ideas for future research.

Functional departments and field constituents

Organizations consist of a “mosaic of groups structured by functional tasks” (Greenwood & Hinings, 1996: 1033), such as legal departments, human resources departments, and marketing departments. Individuals within an organization’s functional departments interact with constituents of the organization’s market and non-market environments through “occupational communities”, groups of individuals across organizations that share a common set of assumptions, language, and perspectives (Schein, 1996; van Maanen & Barley, 1984). Occupational communities emerge in part due to common professional and occupational requirements (e.g., education, licensing requirements) and by ongoing contact with others in their occupation. Members of occupational communities often read common trade journals and specialized newspapers, and attend the same conferences that discuss emerging issues and appropriate solutions. As a result, “salespeople the world over, accountants, assembly line workers, and engineers share some tacit assumptions about the nature of their work regardless of who their particular employer is at any given time” (Schein, 1996: 13).

Employees in organizations’ functional departments provide vital links to members of their occupational communities within their organization’s market and non-market environments. For example, individuals within legal affairs departments typically interact with regulatory officials and lawyers from other firms, while individuals from marketing departments typically interact with consumers and rivals’ marketing departments.

More broadly, “the firm becomes a composite of core organizational responsibilities, each with its linkages to its own relevant constituency of the external environment” where employees of functional departments engage with institutional constituents through “pre-existing channels of communication traditionally employed to engage these occupational communities and interpret and act on their demands” (Hoffman, 2001: 136). These channels of communication expose members of an organization’s functional department to the issues their occupational community deems important, and to the range of solutions that are viewed as legitimate. To what extent do these issues and solutions actually reach decision-makers within these functional departments’ organizations and thus actually influence their organizations’

responses? This depends on how much influence the department has within its own organization, a topic we turn to next.

Functional departments' influence within organizations

Functional departments' exposure to institutional pressures from different sets of constituents has consequences that affect the rest of the organization. For example, by influencing decisions at their subsidiary facilities, corporate functional departments diffuse their cultural frameworks to facility-level managers. As we argue below, this in turn affects facility managers' receptivity to institutional pressures, as well as their interpretation of these pressures.

There are several ways in which corporate functional departments can influence facility managers. First, corporate functional department may grant facility managers varying degrees of decision-making autonomy. For example, these departments may retain ultimate control over some facility-level issues. In such cases, facility-level managers are required to seek their approval before they can pursue a particular course of action in these protected domains. Second, corporate training and documentation that offers guidance on how to address specific functional issues can also influence facility-level managers.

The literature has provided many rationales for why organizations differ in the relative influence various functional departments exert in decision-making. Within a company, a department's relative power and influence come from a variety of sources, including its position within the formal organizational hierarchy, its centrality within social networks and workflows, and its ability to provide scarce, critical resources (Brass, 2002; Hinings *et al*, 1974; Salancik & Pfeffer, 1974).

We believe that differences in how organizations distribute power across their functional departments lead facilities to respond differently to common institutional pressures. The extent to which departments that detect institutional pressures can convey these concerns to management depends upon how much influence these departments have on management decisions. Influential departments increase the salience of both the constituents who exert pressure within their domain as well as these constituents' issues. Because such pressures are more likely to attract the attention of managers, they are more likely to

elicit organizational responses.

In summary, we argue that the relative influence that various functional departments have on a facility's decisions affects how facility managers receive and interpret institutional pressures from various constituents, and that these differences have important implications for how the facility responds. Specifically, we posit that when a functional department is influential in its organization's decision-making, it also diffuses its cultural frame. This makes its organization more acutely aware of pressures exerted by institutional constituencies within this department's domain.

The idea that specific functional groups within organizations receive and channel institutional pressures is consistent with institutional theory that considers professions as key carriers of ideas among and across institutional fields (DiMaggio & Powell, 1983). In addition, the idea that power and influence within organizations are critical to explain the diffusion of ideas and practices within an organization is consistent with sociologists within the old institutionalism tradition (Michels, 1962; Selznick, 1949).

In this study, we focus on two departments that differ significantly both in the institutional constituents with whom they interact and in their cultural frames. We selected the Legal Affairs and Marketing departments because their interactions with constituents are particularly clearly divided between those in organization's non-market and market environments, respectively (Hoffman, 2001). Because of these differences, we hypothesize that these departments are quite likely to differ in their receptivity to (i.e., awareness of) institutional pressures.

The influence of corporate and legal affairs departments. Charged with assuring a company's legitimacy and "license to operate," Legal Affairs departments are typically the primary channel for institutional pressures from constituents in their organization's non-market environment. In the context of civil rights law, Fuller, Edelman and Matusik (2000) have argued that formal legal structures within organizations shape employees' law consciousness. In our context, the Legal Affairs department is typically involved in regulatory compliance activities and addressing inquiries and complaints from local communities, activist groups, and the media. The more influence Legal Affairs departments have on facility managers regarding environmental issues, the more they will be able to convey the importance of

such institutional pressures. Thus, managers within facilities with more influential Legal Affairs departments will be more receptive to institutional pressures exerted by constituents of their non-market environment. This influence can be exerted by direct control over decisions at the facility level or by more indirect influence through corporate-provided information and training. In contrast, organizations without an influential Legal Affairs department are more likely to result in facility managers being less aware of institutional pressures exerted by non-market actors. Thus we hypothesize:

Hypothesis 1: The more influence corporate Legal Affairs departments have on facilities' environmental issues, the more receptive facility managers will be to institutional pressures from non-market constituents.

The influence of corporate marketing departments. Marketing departments are responsible for orienting a firm's products and services to meet and anticipate customer demands. As such, they focus on identifying factors that can provide competitive differentiation, and are often acutely aware of industry trends and competitors' positioning. To the extent that customers are concerned about their suppliers' environmental management practices or performance, those in Marketing departments are often the first to know. The more influence corporate a Marketing department has on facility managers concerning environmental issues, the more it will be able to convey the importance of institutional pressures exerted by constituents in the facility's market environment, and to cast them as being important to the facility's competitiveness in the marketplace. Without an influential Marketing department, we would expect facility managers to be less aware of institutional pressures from the facility's market environment. Therefore we hypothesize that:

Hypothesis 2: The more influence corporate Marketing departments have on facilities' environmental issues, the more receptive facility managers will be to institutional pressures from market constituents.

ORGANIZATIONAL RESPONSES TO INSTITUTIONAL PRESSURES

So far, we have described how corporate departments can magnify or diminish facilities' receptivity to institutional pressures from various constituents. We now examine the outcomes of these differences in receptivity. We focus on two "voluntary environmental strategies" that purportedly seek to reduce the environmental impacts of operations beyond regulatory requirements (Sharma, 2000): adopting the ISO 14001 international environmental management standard and participating in government-initiated voluntary environmental programs. While there is a wide range of voluntary environmental strategies, we focus on ISO 14001 and government-initiated voluntary environmental programs because they are among the most commonly adopted by firms across a variety of industries in the United States (Dietz & Stern, 2002). The main difference between these practices is that governments initiate and are often involved in the implementation of voluntary governments programs, whereas governments are not directly involved in ISO 14001 (OECD, 2003).

Neither of these programs is required by law and there is no consensus about their effect on environmental performance. While these programs may be desirable either from a market or non-market perspective, they could be viewed as undesirable from the opposite perspective. In other words, because these practices are not yet institutionalized, they may be contested by some constituents of the field. Nonetheless, as Oliver (1991: 155) noted, "from an institutional perspective...the appearance rather than the fact of conformity is often presumed to be sufficient for the attainment of legitimacy." Thus adopting environmental management practices—regardless of their immediate performance implications—may be particularly effective in enhancing organization legitimacy by helping to alleviate constituents' about environmental performance. Bansal and Clelland (2004) have shown how firms can partially manage perception of their legitimacy by conveying information regarding changes in products or processes to demonstrate commitment to the environment. Studies in other domains have found that firms may engage in symbolic management as a means of responding to institutional pressure (e.g., Edelman, 1992; Westphal & Zajac, 1998).

ISO 14001

The adoption of the ISO 14001 Environmental Management System (EMS) Standard is the first environmental management practice we focus on. Issued by the International Organization for Standardization, this international standard characterizes the essential elements of an EMS and provides a framework for organizations seeking to reduce their environmental impacts beyond regulatory requirements. The standard's underlying logic is that organizations can reduce their environmental impacts if they manage environmental issues systematically, as doing so enables them to identify and focus their efforts on the particular aspects of production processes that result in the most environmental harm (Coglianese & Nash, 2001). The ISO 14001 standard requires adopting organizations to create an environmental policy, set objectives and targets, implement a program to achieve those objectives, monitor and measure the program's effectiveness, correct problems, and review the system to improve the EMS. ISO 14001 does not require any particular environmental performance level or improvement rate—other than a commitment to comply with applicable regulations—and thus environmental performance is not a criterion in the certification process.

Over 90,000 facilities around the world have adopted the ISO 14001 standard (International Organization for Standardization, 2005), largely in response to institutional pressures from market constituents. Although ISO 14001 was designed as a voluntary standard, some organizations may have adopted the standard due to their sensitivity to coercive pressure from their customers (Darnall & Edwards, Forthcoming). In particular, many automakers and large electronics firms in the United States are requiring or strongly encouraging their suppliers to adopt the standard. In addition, many firms in Asia are adopting the standard anticipating their European-based customers will require this of their suppliers. In addition, some adoption appears to be motivated by firms' vulnerability to mimetic pressure, as firms imitate the behavior of other organizations that are tied to them through networks (Guler et al. 2002; Westphal, Gulati, & Shortell 1997). In this case, organizations that perceive that a large number of their competitors have adopted ISO 14001 are more likely to adopt the standard.

While there are several reasons why facilities may respond to market-based pressures by adopting ISO 14001, there is less evidence to suggest that facilities with powerful Legal Affairs departments will adopt the standard when they are under intense pressure from non-market actors such as regulators and activists. Indeed, implementing ISO 14001 and conducting the routine audits the standard requires may uncover regulatory violations, evoking concerns of potential liability that discourages some firms from adopting (Orts & Murray, 1997; Rodgers, 1996). In a recent survey of firms in the United States, the majority of respondents noted two related factors that inhibit their adopting ISO 14001: uncertainty about regulatory agencies' potential "utilization of EMS audit information"; and "potential legal penalties from voluntary disclosure" (Delmas, 2000). The ambiguity in the law regarding the benefits of adopting ISO 14001 leaves room for environmental lawyers to provide their own interpretation of the standard's potential value. Because it is part of the mission of lawyers to be conservative to protect their clients, it is likely that they will highlight the potential drawbacks of adopting the standard. For example, the U.S. environmental law literature is replete with articles on the risks of adopting ISO 14001 for corporations (Mostek, 1998; Orts & Murray, 1997; Rodgers, 1996). Similarly, Legal Affairs departments' focus on liabilities and risk management make them especially likely to consider the risk that adopting ISO 14001 reduces the firm's ability to credibly deny environmental wrongdoing in the face of a media exposé (Lyon & Maxwell, 2005). Therefore organizations with powerful Legal Affairs departments may be less inclined to adopt ISO 14001. These organizations may be looking at environmental issues more as threats than opportunities and looking to avoid litigation (Sharma, Pablo, & Vredenburg, 1999).

Since some market actors value the ISO 14001 standard, we expect that facilities will adopt the standard in response to institutional pressure from market actors. However, because some non-market constituents contest the validity of ISO 14001, we are not hypothesizing whether facilities will be particularly likely to adopt the standard in response to pressure from non-market actors. Therefore we hypothesize that:

Hypothesis 3a: The more facility managers are receptive to institutional pressures from market constituents, the more they will adopt ISO 14001.

Government-initiated voluntary programs

Government-initiated voluntary programs represent collaborative arrangements between firms and regulators, where firms voluntarily commit to actions that may improve their environmental performance (Delmas & Terlaak, 2001). These programs are designed by policy makers to associate private benefits with the voluntary provision of public goods (Delmas & Terlaak, 2001). For example, firms may participate to gain favorable publicity, to obtain more flexibility in complying with existing regulations, or to deter the imposition of new regulations (Decker, 1998; Lyon & Maxwell, 2004; Maxwell & Decker, 1998; Segerson & Miceli, 1998).

In the last decade, we have seen an increasing use of these voluntary programs as supplements and sometimes replacements for traditional command-and-control regulation (Borkey & Leveque, 1998; Mazurek, 1998). As in the case of ISO 14001, there are some reservations about the actual effectiveness of voluntary programs (Delmas & Keller, 2005; Harrison, 1999; King & Lenox, 2000; Rivera & de Leon, 2004; Welch, Mazur, & Bretschneider, 2000). In particular, there are still concerns that “free-riding” behavior may be difficult to avoid within voluntary programs (Delmas & Keller, 2005). As such, like ISO 14001, these programs are not yet fully institutionalized.

Because of the active participation of public authorities in these programs, the literature has emphasized political and regulatory influences as motivating participation in voluntary programs (Delmas & Terlaak, 2001; Lyon & Maxwell, 2004; Short & Toffel, 2005). Unlike for ISO 14001, prior research has found little evidence that pressures from market actors such as buyers or suppliers influence the decision to participate in these programs. .

We therefore hypothesize that:

Hypothesis 3b: The more facility managers are receptive to institutional pressures from non-market constituents, the more they will adopt government-initiated voluntary environmental programs.

Figure 1 illustrates our hypotheses. This figure shows that the receptivity of facility managers to institutional pressures from market (non-market) constituents is a function both of the pressures exerted

by these actors as well as the relative influence of their Marketing (Legal Affairs) department, as described in Hypothesis 1 (2). This receptivity to different constituents will, in turn, influence the adoption of different environmental management practices. While we predict that receptivity to institutional pressures from market actors will encourage facilities to adopt ISO 14001 (Hypothesis 3a), we expect that the receptivity to such pressures from non-market actors will induce facilities to adopt government voluntary programs (Hypothesis 3b).

Insert Figure 1 about here

METHODS

Data for this study were derived from an original survey and publicly available databases. The survey gathered information about perceptions of institutional pressures, the relative influence of various corporate departments, and the management practices each facility has adopted. Additional measures of institutional pressures as well as firm and facility characteristics were obtained from existing databases.

Sample

Our sample focuses on heavily polluting industrial sectors, which we identified based on their share of toxic chemical emissions reported to the US EPA's Toxic Release Inventory (TRI) program.³ The following sectors were selected: pulp, paper and paperboard mills (SIC 26), chemical and allied products (SIC 28), petroleum refining (SIC 29), primary metals manufacturing (SIC 33), machinery manufacturing (SIC 35), electrical/electronics (SIC 36), automotive (SIC 37), and electric utilities (SIC 49).⁴ In 2001, the 11,622 facilities from these industries that reported TRI data represent 47% of the total number of facilities that reported data to TRI and 78% of the total toxic air emissions reported in the TRI program that year (US Environmental Protection Agency, 2003). To ensure we would have access to data

³ Facilities in a variety of industrial industries must annual report TRI data when they employ 10 or more individuals and manufacture, import, process, or use more than designated minimum thresholds (typically 10,000–25,000 pounds) of any of 650 toxic chemicals (US Environmental Protection Agency, 2004).

⁴ As discussed earlier, Hoffman (1999) described how institutional fields can be formed around common issues such as industrial environmental management. Because the structural equation modeling approach cannot include industry dummies, we ran several robustness tests to ensure that industry effects did not confound our results. These tests and their results are described below.

on performance trends, we restricted our sample to facilities that reported annual air emissions to the TRI program at least three times during 1996-2000. To ensure the availability of financial data, we further restricted our sample to facilities owned by publicly traded companies. These restrictions resulted in a sample of 3,160 facilities.

Survey

We conducted a mail survey to gather facility-level data on environmental management practices (EMPs) and managers' perceptions of why their facilities adopted these practices. The questionnaire inquired about the facility's environmental management practices, relations with various stakeholders, participation in voluntary environmental management programs, tracking and reporting of various environmental aspects, and sources of environmental information and pressure to improve environmental performance.

Like much of the previous survey-based literature on environmental management (e.g., Johnstone *et al.*, 2004; Klassen, 2001; Madsen & Ulhøi, 2003), we chose the respondent whom we believed would have the most information to answer the survey questions. We suspected that because facility environmental managers and environmental, health and safety (EHS) managers make environmental management decisions at the facility-level, they would be particularly well informed about the internal and external factors that influence these decisions. Interviews we conducted while pre-testing the survey instrument confirmed that these individuals were the most knowledgeable about these issues, and thus we targeted our survey toward facility-level environmental and EHS managers. The Survey Research Center (SRC) at the University of California at Santa Barbara called each facility to obtain the names of these individuals.

We pre-tested our questionnaire instrument to ensure that our questions were clearly understood and easily answerable by our respondents. We arranged for a variety of respondents to complete our draft survey, including environmental managers from twelve large companies in our sample industries, a few environmental management consultants, and several faculty members who research environmental

management issues. We then interviewed these individuals to probe their interpretation of each question and to solicit suggestions to clarify them. This process resulted in refinements to several survey questions and response anchors. Based on our pre-test, the 8-page, 32-question survey required 15-20 minutes to complete.

We sent the questionnaire⁵ to the entire sample twice in late 2003 (October 13 and November 4). The cover letter that accompanied the questionnaire provided a unique identification number that enabled respondents to complete the survey via a secure website instead of via the enclosed paper version. Shortly after each of the two distribution dates (October 23 through November 12), the SRC attempted to telephone all of these facilities to encourage them to respond, and reached 2,312 facilities (73% of the sample). In addition, postcards were sent in January 2004 to those who had not yet replied.

We received 536 responses. From our total sample of 3,160 facilities, this 17% response rate is comparable to other recent survey-based strategy research (e.g., Hoskisson *et al.*, 2004; McEvily & Chakravarthy, 2002; Slater & Olson, 2001). We tested sample representativeness in several ways. First, we ran an ANOVA analysis and found that the different industries' response rates, which ranged from 13% (Refining; Electric Utilities) to 17% (Machinery; Electrical/Electronics) to 19% (Automotive; Primary Metals), were not statistically significant ($F=0.03$). We then conducted t-tests to compare responders to non-responders along three dimensions. The two groups were statistically indistinguishable in terms of facility employment ($p=0.19$), pollution levels measured as average log pounds of toxic emissions in 2000-2001 ($p=0.41$), and the environmental harm resulting from these emissions ($p=0.80$).⁶ The results of these comparisons provide reasonable assurance that the respondents are representative of the entire sample. We tested for non-response bias by comparing early and late respondents, since late responders have been shown to be similar to non-respondents (Armstrong & Overton, 1977). We created two sets of late respondents: all those who responded after we sent the survey a second time, and the

⁵ The survey is available from the corresponding author.

⁶ We compared pollution levels using data from the US EPA's Toxic Release Inventory (TRI) and environmental harm by weighting TRI air releases during 2000 and 2001 by each chemical's toxicity weight from the US EPA's TRACI scheme, summing these weighted totals (Toffel & Marshall, 2004) and logging the result.

subset who responded only after receiving the postcard reminder several weeks later (Cantwell & Mudambi, 2005). We compared each set of late respondents to the early respondents across the 11 survey measures using a chi-squared test of independence. In both cases, the responses from early and late respondents were virtually indistinguishable. Overall, these results suggest that non-response bias is unlikely to be a serious concern.

Model

We employed a structural equation modeling (SEM) approach and estimated the model via maximum likelihood using AMOS Version 5 (Arbuckle, 1997). This method simultaneously estimates the latent variables and the relationships between them and other observable variables. Structural modeling addresses structural and measurement issues frequently found in survey-designed research and is increasingly being used in strategic management research (Capron, 1999; Shook *et al.*, 2004; Simonin, 1999).

We tested Hypotheses 1 and 2 in our structural model by estimating the extent to which corporate functional departments influence facilities' receptiveness to institutional pressures, controlling for the level of institutional pressures exerted by market and non-market constituents. Several other factors might affect corporate functional departments' influence on facilities. In particular, past levels of institutional pressure could explain the current influence of the functional departments. To control for this, we predict the level of influence of the departments with several variables from publicly available databases that go back several years before the survey was conducted. For example, we control for historical environmental compliance at the facility's corporate affiliates during 1999-2003 because non-compliance experienced during this period might affect the current influence of its Corporate and Legal Affairs department. In addition, we control for the stringency of environmental regulations of the facility's headquarters country, since this might affect how closely the Corporate and Legal Affairs department scrutinizes its facilities' environmental practices. Finally, we control for the size of the company, as this may affect the extent to which its corporate departments influence facility decisions.

To test Hypotheses 3a and 3b, we estimate the extent to which a facility's receptivity to market and non-market pressures affects its decision to adopt two distinct environmental management practices. In our structural model, we include several control variables that may also influence the adoption of these environmental management practices, including corporate size, market and non-market pressures exerted on the facility and corporation, and the facility's historical environmental compliance record.

Measures

In this section, we describe our measures for the measurement and structural models. In addition to the hypothesized relationships, we control for the observed level of market and non-market pressures to distinguish pressures actually exerted from the receptivity of facilities to these pressures.

Receptivity to non-market and market pressures. Hypotheses 1 and 2 predict the extent to which facility managers are receptive to institutional pressures from non-market and market constituents. To measure this, we asked survey respondents to indicate the extent to which various external groups influenced their facility to improve environmental performance. The list of external groups included customers, suppliers, competitors, trade associations, local community, environmental organizations, regulators/legislators, the media, shareholders, and socially responsible investment (SRI) funds. This list corresponds to external stakeholders identified by scholars in the corporate environmental strategy literature (Henriques & Sadorsky, 1999). Respondents ranked each stakeholder on a five-point scale from "no influence" (coded 0.2) to a "very strong influence" (coded 1). We conducted an exploratory principal components factor analysis to detect the underlying structure in the relationship among these variables. Missing observations were excluded listwise. The underlying variables loaded onto two factors: the first represents the *receptivity to market pressure* exerted by customers, suppliers, and competitors, while the second represents the *receptivity to non-market pressure* exerted by the local community, environmental organizations, regulators, and the media; shareholders, trade associations, and SRI funds loaded fairly evenly across both factors. These two factors explained 55.7% of the variance, with Eigenvalues of 4.25 and 1.32. We removed the three variables that loaded fairly evenly on both factors (shareholders, trade

associations, and SRI funds), and re-ran the analysis. The two resulting factors had Eigenvalues of 3.33 and 1.19 and explained 64.6% of the total variance.

Environmental management practices. The adoption of ISO 14001 is the dependent variable for Hypothesis 3a. To measure this, we asked respondents: “What is the status of the certification of ISO 14001 at your facility?” We presented the following five-point scale: “not being considered” (coded 1), “future consideration” (2), “planning to implement” (3), “currently implementing” (4), and “successfully implemented” (5). By providing intermediate values for facilities that were considering adoption or were in the midst of adoption, we obtained a more nuanced measure than a simple dichotomous response to whether or not the facility had already adopted the standard.

Participation in government-initiated voluntary programs is the dependent variable for Hypothesis 3b. To measure this, our survey asked: “What is the status of your participation in voluntary US EPA or state programs such as Energy Star, Wastewise, Environmental Performance Track, etc.?” We presented the following four-point scale: “not being considered” (coded 1), “future consideration” (2), “planning to participate” (3), and “currently participating” (4).⁷

Insert Table 1 about here

Functional department influence. We presume that within a single company, corporate departments exert varying amounts of influence on decisions in different domains. For example, one might reasonably expect corporate legal departments to typically exert more influence on contractual terms than in production decisions. Therefore, to bolster the validity of our measure, we focused this question on our domain of interest, environmental performance. Environmental performance can be enhanced through a variety of management practices about which lawyers and marketers may have strong preferences, such as compliance-oriented tasks (e.g., implementing documented policies and routine training) and tasks more visible to customers (e.g., adopting the ISO 14001 Environmental Management System Standard or various industry voluntary programs). To measure the influence of the Corporate and

⁷ In the model, we rescaled this and all other variables so they would have a maximum of 1.

Legal Affairs department and the corporate Marketing department, we asked survey respondents: “To what extent have the following corporate departments influenced your facility to improve its environmental performance?” The five point scale ranged from “no influence” (coded 0.2) to “very strong influence” (coded 1). We also provided an additional option for respondents to indicate that their corporation did not have each department, and we coded the department influence variables as “no influence” in such cases.

Non-market pressure exerted. Pressure from non-market actors (legislators, regulators, non-governmental organizations) is considered a latent variable. We constructed this latent variable using four measures obtained from publicly available databases, each of which we rescaled to a maximum value of one. First, we included the facility’s state’s Congressional members’ “National Environmental Scorecard” values published annually by the League of Conservation Voters, a measure that has been widely used for this purpose (Hamilton, 1997; Kassinis & Vafeas, 2002; Viscusi & Hamilton, 1999; Welch *et al.*, 2000). We calculated the average of the League of Conservation Voters’ 1996 scores for each state’s US Senate and House delegations to Congress. Second, we included the number of state-level environmental policy initiatives (toxic waste, recycling programs) each state has implemented (Hall & Kerr, 1991: 142), a measure recently used by Welch *et al.* (2000). Third, we employed Renew America’s 1989 assessment of how comprehensively each state’s policies have addressed 17 environmental domains (e.g., air pollution, groundwater, soil conservation) (Hall & Kerr, 1991: 146). Fourth, we included a proxy of the community’s propensity for collective action regarding environmental protection. We included the number of members of major environmental and conservation organizations in the facility’s state per thousand state residents in 2003, following an approach others have used (Maxwell, Lyon, & Hackett, 2000; Welch *et al.*, 2000; Wikle, 1995). These data were collected through a survey of 80 main environmental and conservation NGOs in 2003 (Delmas, 2004). We ran an exploratory principal components factor analysis on these four non-market measures. The four variables loaded on one factor with an Eigenvalue of 3.07, which explained 76.9% of the variance.

Market pressure exerted. Buyers motivate many companies to adopt environmental management

practices and standards (Christmann & Taylor, 2001; Henriques & Sadosky, 1996; Jiang & Bansal, 2003; King, Lenox, & Terlaak, Forthcoming). Because companies are more likely to adopt the ISO 14001 Environmental Management System standard when they face markets with more adopters of this standard (Christmann & Taylor, 2001), we measured market pressure to adopt environmental management practices by considering the extent to which the facility's buyers have adopted ISO 14001. Because individual facility-level data are not available, we constructed an industry-level measure using the following equation:

$$MPE_j = \sum_k \left(\frac{ADOPT_k}{ESTAB_k} \times \frac{SALES_{j,k}}{SALES_j} \right)$$

where MPE_j is the market pressure exerted on facilities in industry j , $ADOPT_k$ is the number of establishments in industry k that had adopted ISO 14001 (International Organization for Standardization, 2003), $ESTAB_k$ is the total number of establishments in industry k (US Census Bureau, 2003), $SALES_{j,k}$ represents the total annual sales from firms in industry j to firms in industry k , and $SALES_j$ represents the total annual sales from firms in industry j . Data for the latter two variables were obtained from the most recent detailed Economic Input-Output (EIO) tables from the Bureau of Economic Analysis (2000). In summary, market pressure exerted is a sales-weighted measure of the extent to which each industry's buying sectors have adopted ISO 14001.

Environmental regulatory compliance. Past events that have shaken the organization may also influence both how managers perceive institutional pressures and how they respond to them (Elsbach & Sutton, 1992). For example, managers in firms whose reputations have suffered from pollution accidents may be more sensitive to environmental issues than those in other companies (Prakash, 2000). Similarly, past compliance problems can lead managers to be more sensitive to pressure from regulators and take additional steps to ensure compliance, such as hiring professionals with experience implementing programs that assure compliance (Edelman, 1990).

We controlled for a facility's poor compliance history as a potential source of increased sensitivity to non-market pressure. Facility non-compliance is considered a latent construct based on three

variables: the sum of environmental compliance violations during 2002-2003, the number of formal enforcement actions during 1999-2003, and the log sum of penalties accrued during 1999-2003 (Kassinis & Vafeas, 2002; Khanna & Anton, 2002; Russo & Fouts, 1997).⁸ This information was obtained from the US Environmental Protection Agency's Integrated Data for Enforcement Analysis (IDEA) database, and we rescaled each to a maximum value of one. We conducted principal components factor analysis to confirm that these three items resulted in one factor (Eigenvalue of 2.13 that explained 71.0 % of the variance).

The level of environmental compliance of the corporation as a whole may also affect the Corporate and Legal Affairs department's influence over its subsidiaries. To measure corporate-wide environmental compliance while reducing collinearity with the facility's own compliance history, we measured the non-compliance of the facility's corporate affiliates. To construct this measure, we used the US EPA's Risk Screening and Environmental Indicators (RSEI) database⁹ to extract a list of facilities that reported the same "Parent DUNS" number (a unique identifier assigned by Dun and Bradstreet) to the EPA's Toxic Release Inventory program as the facilities in our sample. We obtained the number of formal enforcement actions and the value of penalties (which we log) for these corporate affiliates from the IDEA database, and rescaled these variables to a maximum value of one. A principal components factor analysis of these two items resulted in one factor with an Eigenvalue of 1.64, which explained 82.0 % of the variance.

Stringency of environmental regulation in the headquarters' country. Nations differ significantly in how their citizenries perceive the natural environment and in the stringency of their environmental regulations (Jamison & Baark, 1999; Perron, Vaillancourt, & Durand, 2001). These disparities lead to differing views on what company environmental actions are considered legitimate. These views can be particularly important in the country of a facility's headquarters because this often serves as a primary source of labor, capital, and media coverage. As such, corporate departments located

⁸ To avoid dropping facilities with no penalties, we added one before logging the sum of penalties.

⁹ US EPA's Risk Screening and Environmental Indicators (RSEI) is available at <http://www.epa.gov/opptintr/rsei/index.html>

in countries with more stringent environmental regulations may be more sensitive to institutional pressures to improve their environmental performance. We measure the relative stringency of environmental regulations at each facility's headquarters country using data from the World Economic Forum's 2001 Executive Opinion Survey of its members. Using a seven-point scale, responses ranged from "lax compared to most other countries" to "among the world's most stringent" (World Economic Forum, 2002).

Corporate size. We measured corporate size as log corporate revenues, which we rescaled to a maximum value of one. We obtained this information from Dun and Bradstreet, Onesource, Hoovers, and Compustat.

Figure 2 illustrates our structural model, which includes our hypothesized relationships as well as the other factors for which we control that may also influence these variables. Our model includes seven directly observed measures (indicators) depicted as rectangles and five theoretically derived concepts (latent variables or factors) depicted as ovals.

Insert Figure 2 about here

Limitations

Our measures and use of a survey to gather some of our data are not without limitations. Since several of our antecedent and consequent variables were measured using items in a questionnaire completed by a single respondent, we conducted the Harman one-factor test to assess whether common method variance is a serious issue (Podsakoff & Organ, 1986). This test involves entering all self-reported variables into a factor analysis and examining the unrotated factor solution. High common method variance is indicated by the emergence of a single factor, or by a single general factor that explains the majority of the covariance (Podsakoff & Organ, 1986). After entering all 11 self-reported items into a principal components factor analysis, the results yielded two factors with Eigenvalues greater than one, and the first factor explained only 38 percent of the variation. Since no single dominant factor accounts

for most of the variation among the self-reported variables, common method variance is unlikely to be a serious problem in the data.¹⁰

Furthermore, our analysis could be vulnerable to concerns about *ex post* rationalization: instead of perceptions of institutional pressures leading to the adoption of management practices (as we hypothesize), perhaps such practices were adopted first and then subsequently rationalized as responses to institutional pressures. While we cannot rule out the possibility that some respondents might have applied such *ex post* rationalization when completing our survey, our questionnaire made an important distinction to discourage such responses. We asked about institutional pressures to improve the facility's environmental *performance*, not to adopt environmental management practices. In addition, we believe that managers would more likely bias their responses toward autonomy and thus *underreport* external factors (such as market and non-market constituents) that influence their decisions.

Table 1 presents descriptive statistics for all observed variables employed in our analysis.¹¹

Insert Table 1 about here

RESULTS

Measurement model

The measurement model refers to the construction of latent variables from observable items. In our case, we constructed five latent variables from 16 items. We tested the measurement model by examining individual item reliability, internal consistency, and discriminant validity (see Table 2). The measurement model provided acceptable item reliability, since each of the item loadings were statistically significant ($p < 0.001$).

¹⁰ We also entered *all* the variables in our model, including those based on archival data, into a principal components factor analysis. The results yielded 6 factors with eigenvalues greater than one, and the first factor explains only 16 percent of the variation.

¹¹ Correlations among all observed variables are available from the corresponding author.

Insert Table 2 about here

We tested internal consistency for each latent construct using three methods. First, we calculated the Cronbach alpha reliability coefficient using standardized item scores (mean=0, variance=1) so that the scale and its reliability were based on the sum of standardized variables. Alpha was above the common threshold of 0.7 for every latent variable (Nunnally & Bernstein, 1994). Second, we calculated *composite reliability* (ρ_c) for each latent variable by dividing (a) the squared sum of the individual standardized loadings by (b) the sum of the variance of their error terms and the squared sum of the individual standardized loadings (Fornell & Larcker, 1981). The values calculated for each of our latent variables exceed the threshold value of 0.70 (Nunnally, 1978), which suggests that our measurement model demonstrates adequate internal consistency. Third, we calculated “average variance extracted” (ρ_{ave}). This measures the amount of variance captured by the construct in relation to the amount of variance attributable to measurement error. For each latent variable, average variance extracted is calculated as (a) the sum of the squared item standardized loadings divided by (b) the sum the variance of the error terms and the squared item standardized loadings. Convergent validity is judged to be adequate when average variance extracted is at least 0.50, which indicates that the variance captured by the construct exceeds the variance due to measurement error (Fornell & Larcker, 1981). As displayed in Table 2, the average variance extracted values are satisfactory for all constructs.

Discriminant validity refers to the extent to which measures of different constructs are distinct. Discriminant validity is deemed adequate when the variance shared between two constructs is less than the variance shared between a construct and its measures (Fornell, Tellis, & Zinkhan, 1982). The variance shared by any two constructs is obtained by squaring the correlation between the two constructs. The variance shared between a construct and its measures is the average variance extracted. Discriminant validity was assessed by comparing (a) the correlations between a given construct with all other constructs to (b) the average variance extracted for the focal construct. Table 2 shows the correlation

matrix for the constructs; the diagonal elements have been replaced by the square root of the construct's average variance extracted. Our constructs demonstrate adequate discriminant validity because these diagonal elements are greater than the off-diagonal elements in the corresponding rows and columns.

Structural model

The results of the structural model are presented in Table 3.¹²

Goodness of fit. We find that the χ^2 is statistically significant (394.8, df=204, p=0.000), which could suggest some misspecification of the model although it is well recognized that this statistic is sensitive to sample size (Arbuckle & Wothke, 1999). We consider other structural diagnostics for the overall fit of the model that are not sensitive to sample size (Bentler, 1990). The root mean squared error of approximation (RMSEA, Steiger, 1990) is an estimate of the discrepancy between the original and reproduced covariance matrices in the population. Cudeck and Browne (1983) suggested that an RMSEA of 0.05 represents a close fit and that RMSEAs of less than 0.08 represent a reasonable fit. In our model, the RMSEA of 0.044 (with a 90% confidence interval ranging from 0.037 to 0.050) is within the acceptable range. Likewise, the 0.956 incremental fit index (IFI, Bollen, 1989), the 0.944 Tucker-Lewis index (TLI, Tucker & Lewis, 1973), and the 0.955 comparative fit index (CFI, Bentler, 1990) are each above the common threshold of 0.90 that designates an acceptable fit. These structural diagnostics indicate a very good relative fit of the proposed theoretical model to the underlying data.

Insert Table 3 about here

Testing of the hypotheses. As Table 3 illustrates, the results provide significant support for the hypothesized relationships. There is a significant positive path between the influence of the corporate legal department and the receptivity to non-market pressure ($\beta = 0.15$ p < 0.001), providing support for Hypothesis 1. Likewise, the significant positive relationship between the influence of the corporate

¹² To estimate the model, we make several identifying assumptions. We assume that a facility's observed non-market pressures (which we measure at the state-level) are not directly correlated with corporate size, regulatory stringency at the headquarters country, or the compliance histories of the facility or its corporate affiliates. In addition, we assume that regulatory stringency at the headquarters country is not directly correlated with corporate size or the compliance record of the facility or its corporate affiliates.

marketing department and the receptivity to market pressure ($\beta = 0.31$; $p < 0.001$) provides support for Hypothesis 2. Based on the standardized coefficients, a one-point increase in the 5-point Likert scale of corporate legal department's influence on facility-level environmental decisions is associated with a 23% increase in the facility's receptivity of non-market pressure. A comparable increase in the corporate marketing department's influence is associated with a 34% increase in the facility's receptivity of market pressures.¹³

Our results also provide strong support for our third hypothesis. Hypothesis 3a predicted that, even after controlling for the actual pressure exerted, facilities that are receptive to pressure from their market constituents are more likely to adopt ISO 14001, which our model confirms ($\beta = 1.01$; $p < 0.001$). The standardized coefficient implies that a one standard deviation increase in receptivity to market pressure is associated with a 0.40 increase in ISO 14001 implementation status, or two points on this question's Likert scale.¹⁴ Hypothesis 3b predicted that facilities are more likely to adopt government voluntary programs when they are more receptive to pressure from non-market constituents. The coefficient on this path is positive and statistically significant ($\beta = 0.40$; $p = 0.05$). The standardized coefficient implies that a one standard deviation increase in receptivity to non-market pressure is associated with a 0.16 increase in voluntary program participation, or just over half a point on this question's Likert scale.¹⁵

We also examine the extent to which each of these environmental management practices is associated with receptivity to pressures from the "opposite" constituent. As expected, we found no evidence that participation in government voluntary programs is associated with receptivity to market

¹³ Unstandardized regression coefficients represent the amount of change in the consequent variable from a one unit change in the antecedent variable. Since the antecedent variables for both Hypotheses 1 and 2 range from 0.2 to 1 and were based on 5-point Likert scales in our survey, a one-point change in these underlying scales represents a 0.2 change in the antecedent variables. Based on our model results, a 0.2 increase in the perceived influence of the corporate legal department increases perceived non-market pressure by 0.030 ($0.2 * 0.15$), which is 23% of the latter's mean value (0.132). A 0.2 increase in the perceived influence of the corporate marketing department increases perceived market pressure by 0.062 ($0.2 * 0.31$), which is 34% of the latter's mean value (0.184).

¹⁴ This variable was coded using a 5-point Likert, which we rescaled to a maximum of 1 for used in the model. Thus one point corresponds to 0.20.

¹⁵ This variable was coded using a 4-point Likert, which we rescaled to a maximum of 1 for used in the model. Thus one point corresponds to 0.25.

pressure ($\beta = 0.22$; $p = 0.19$). Interestingly, greater receptivity to non-market pressure is associated with *less* enthusiasm for ISO 14001 ($\beta = -0.36$; $p = 0.09$), perhaps due to the potential liability issues we described earlier. Overall, these results confirm our hypotheses that companies respond to perceived institutional pressures in different ways, depending on which constituent is exerting the pressure.

Turning to the control variables, we first examine factors that might affect the influence of the corporate and legal affairs department. While firm size ($\beta = 0.34$, $p < 0.001$) and corporate affiliates' environmental non-compliance ($\beta = 0.13$, $p = 0.10$) increase the influence of the corporate and legal affairs department, we find no evidence that this department's influence is affected by non-market pressure exerted ($\beta = 0.00$, $p = 0.98$) or the stringency of environmental regulations at the headquarters country ($\beta = 0.41$, $p = 0.18$). Corporate marketing departments are more influential in larger firms ($\beta = 0.14$, $p = 0.01$) and when facilities face greater environmental pressure exerted by customers ($\beta = 0.09$, $p = 0.01$).

What else influences facilities' receptivity to institutional pressures? Facilities are more receptive to environmental pressures from non-market constituents if they possess worse compliance records ($\beta = 0.14$, $p = 0.01$) or face more non-market pressure exerted ($\beta = 0.05$, $p = 0.11$). One standard deviation increase in these antecedents increases the perception of environmental pressures from non-market constituents by 0.13 and 0.07 standard deviations, respectively. We found no evidence that the stringency of environmental regulations at the headquarters country influenced facilities' receptivity to non-market pressures. As expected, we found that the receptivity to market pressure was positively associated with the amount of market pressure exerted ($\beta = 0.12$, $p < 0.001$), where a one standard deviation increase in the latter is associated with a 0.24 standard deviation increase in the former. Taken as a whole, our results suggest that influential Legal Affairs departments appear to magnify the salience of pressures exerted by non-market constituents, and that a similar process occurs with Marketing departments and pressures exerted by market constituents. The increased salience of these pressures appears to heighten the awareness of facility managers to these issues, which subsequently increases the likelihood of an

organization response that these constituents view as legitimate.

Finally, we found that enthusiasm for adopting ISO 14001 was positively associated with facilities that are part of larger firms ($\beta = 0.31$, $p < 0.001$), and whose market constituents ($\beta = 0.20$, $p < 0.001$) and non-market constituents ($\beta = 0.17$, $p = 0.05$) exert more environmental pressure. Our finding that heterogeneity in the adoption of this management practice is partially due to organizations being subjected to different levels of pressure exerted by a common institutional constituent confirm prior research (Darnall & Edwards, Forthcoming; Edelman, 1992; Lounsbury, 2001). Interestingly, although we find that the direct effect of the pressure of non-market constituents on the adoption of ISO 14001 is positive, we find that the indirect effect of these constituents via the influence of Legal Affairs departments is negative. This could suggest that facilities with powerful Legal Affairs department may be convinced by their lawyers that ISO 14001 could be associated with liabilities, which makes facility managers less inclined to adopt the standard.

A greater propensity to participate in government voluntary programs was exhibited by facilities in larger firms ($\beta = 0.16$, $p = 0.03$), though we found no significant influence from direct institutional pressures exerted by non-market or market constituents, or by the extent to which the facility received such pressure from its market constituents.

Robustness tests. We conducted several robustness tests. First, we compared our model to several plausible alternative models (McDonald & Ho, 2002). We considered a more classic institutional model that relates the adoption of management practices to institutional pressure exerted by omitting the influence of the marketing and legal affairs departments and the receptivity to pressures from market and non-market constituencies. We also added the potential influence of the two corporate departments to the reduced model. Finally, we included the perceived influences of the market and non-market constituencies to the reduced model (but omitted the influence of the corporate departments). We compared the fit of these alternative models by assessing the significance of the change in the chi-squared values (Hoyle & Panter, 1995). Each of these alternative models yielded a chi-squared value that was

significantly lower than that of our main model ($p < 0.001$).¹⁶ These results suggest that the influence of the Marketing and Legal Affairs departments, as well as the distinction between pressures exerted and the receptivity to pressures, are key to understanding the adoption of management practices.

A second potential concern derives from heterogeneity within our sample that is not controlled for in our structural equation model. Specifically, because our sample includes facilities from several industries and structural equation modeling techniques do not allow for industry dummies, it is possible that unobserved differences between these industries may account for some of our results. To test whether our results were sensitive to unobserved industry differences, we estimated regression equations corresponding to the paths of the structural equations. We ran individual regressions for each of the four consequent variables in our hypotheses. In each regression, we included all antecedent variables from our model (i.e., direct and indirect antecedents) as well as industry dummies, and used standard errors robust to heteroscedasticity. The results of each of these regressions yielded coefficients on the hypothesized variables that were of the same sign and significance as in our original structural equation, regardless of whether we controlled for industry differences at the 2-digit or 3-digit SIC Code level. The results of a multivariate regression, which accommodates our two ultimate dependent variables (ISO 14001 adoption and voluntary program participation), also yielded coefficients of the same sign and significance as our main results. These results provide strong evidence that our results are robust to industry effects. Together, these robustness tests suggest that our results are highly robust to alternative variable measures, and the addition of industry controls.¹⁷

¹⁶ Our main model had a chi-squared value of 394.856. The three alternative nested models had chi-squared values of 147.862, 177.53, and 350.784, respectively. The difference between each of these values and the main model exceeds 10.83, the chi-squared value corresponding to one degree of freedom at $p = 0.001$.

¹⁷ Results available upon request from the authors.

DISCUSSION AND CONCLUSION

Institutional theory can help overcome important challenges in strategy research. As Ingram & Silverman (2002) noted: “given the importance of institutions for determining the success or failure of specific strategies or actors, consideration of ways to influence the creation and maintenance of favorable institutions is fundamental to any organization’s strategy.” Institutional theory has traditionally described how isomorphic institutional pressures lead to common organizational practices. In the traditions of this framework, persistent heterogeneity among various firms within the same industry might be attributed to differences in the *composition* of their institutional fields. For example, firms located in different states would face different institutional pressures, which could result in dissimilar organizational practices. Differing *levels* of institutional pressure could also lead to heterogeneous activities during any specific period, but ultimately these are purported to result in common organizational structures and practices to ensure legitimacy. As a consequence, few have employed institutional theory to understand questions of strategy, which focus on *persistent differences among organizations that share common institutional fields*. We therefore need more informed theories about how and why organizations respond differently to institutional pressures.

This paper seeks to contribute to filling this void. We have argued that beyond exposure to different levels of institutional pressures, organizational structure is key to explaining why organizations adopt heterogeneous management practices. Although our results should be interpreted with caution because of the limitations of our cross sectional empirical approach, we have shown that organizational structure is associated with facility managers’ awareness of institutional pressures. Differences in managers’ receptivity to institutional pressures emerge because organizations channel these pressures to different organizational functions such as Legal Affairs departments and Marketing departments. As these different corporate functional departments influence facility decision-making, they heighten their facilities’ awareness of pressures from different institutional constituents.

Constituents of an organization’s non-market environment (regulators, NGOs, local communities,

the media) tend to view environmental issues as negative externalities, where the facility “gets away” with imposing costs on society. In this frame, environmental management is viewed as unproductive, and a zero-sum game where field constituents and firms compete to avoid bearing these costs. This debate is typically settled by government, either via the courts or by the imposition (or not) of increased regulatory scrutiny or additional laws and regulations. Accordingly, such issues are typically addressed by organizations’ Legal Affairs departments. In this cultural frame, adopting additional environmental management practices is more likely to be viewed as avoiding sanctions from failing to meet these constituents’ expectations of legitimate organizational behavior (e.g., full legal compliance, conducting expected levels of community outreach).

In contrast, organizations view pressures exerted by their customers, suppliers, and competitors—constituents within their market environment—as business drivers. Such pressures are typically channeled through an organization’s marketing department, whose objectives are to grow market share and profits. Here, adopting “beyond compliance” environmental practices that are demanded by customers or are already implemented by competitors are more likely to be culturally framed as indicators of superior management and risk-mitigated business partners. When framed this way, adopting such management practices is more likely to be viewed as garnering rewards.

In summary, institutional pressures from different field constituents are channeled to different organizational functions, which influence how they are received by facility managers. And these differences in receptivity are critical because they in turn influence organizations’ responses in terms of adopting management practices that have yet to be institutionalized. We found that organizations that were more receptive to institutional pressure from market constituents (controlling for the amount of pressure exerted) were more likely to adopt the environmental management standard ISO 14001. On the other hand, we found that organizations that were more receptive to institutional pressure from non-market constituents (controlling for the amount of pressure exerted) were more likely to adopt government-initiated voluntary programs. We also found that these organizations were less likely to adopt ISO 14001.

We used the natural environment as our empirical setting because of the richness and the complexity of the environmental field. In this domain, we build upon empirical research that has shown that pressures from field constituents including customers, regulators, legislators, local communities, and environmental activist organizations have influenced companies to adopt environmental management practices (Baron, 2003; Carraro, Katsoulacos, & Xepapadeas, 1996; Christmann & Taylor, 2001; Delmas, 2002; Florida & Davison, 2001; Henriques & Sadosky, 1996; Khanna & Anton, 2002; Lawrence & Morell, 1995; Majumdar & Marcus, 2001; Maxwell *et al.*, 2000; Raines, 2002; Rugman & Verbeke, 1998; Sharma & Henriques, 2005; Vidovic & Khanna, 2003).¹⁸ We also build upon research studying how organizational factors influence firms' choices of environmental strategies (Bansal & Roth, 2000; Cordano & Frieze, 2000; Darnall & Edwards, Forthcoming; Sharma, 2000; Sharma & Vredenburg, 1998). However, this prior research has not focused on the interaction between institutional pressures and organizational characteristics to explain the adoption of proactive strategies. We addressed these research opportunities by hypothesizing and testing how organizational structure influences managerial receptivity and responses to various institutional pressures. Our results revealed that differences in the power of corporate departments to influence facility-level decisions lead facilities to respond differently to similar institutional pressures.

More broadly, our study contributes to strategic management research by offering a more comprehensive specification of the neo-institutional model. We account for external constituents who exert pressures on organizations and internal organizational constituents who operate within corporate departments and facilities. We explain firms' heterogeneous strategies through the interaction between these distinct sets of constituents. First, we unpack the simultaneous influence of various constituents from organizations' market and non-market environments, which is necessary for effective strategizing (Ingram & Silverman, 2002). Second, we stress the importance of the role of functional units, and the issue of power and influence within organizations in explaining strategic heterogeneity. These

¹⁸ See Delmas and Toffel (2004) for a more extensive review of this literature.

organizational characteristics were emphasized by the old institutional sociology but were omitted by the new institutional sociology. In the spirit of Greenwood and Hinings (1996), our study brings the new and old institutionalism together.

Further research is required in several areas. Although we did not include it in our model, the interaction among institutional constituents is likely to magnify or temper their influence on company practices. For example, pressure from environmental activist groups can generate media coverage that encourages the formulation of more stringent regulations. To prevent this, industry leaders can attempt to encourage laggard firms to adopt environmental practices (King & Lenox, 2000; Prakash, 2000). In addition, our cross sectional empirical approach precluded us from examining how organization's perceptions of institutional pressures might change over time. Future research can examine dynamic factors that may alter organizations' perceptions of institutional pressures, such as accumulating positive experiences engaging with particular stakeholders or the shock of being targeted by regulators, community protests, or activist campaigns.

Finally, several authors have pointed out the importance of additional organizational characteristics to explain corporate responsiveness to pressures to improve environmental performance. These include the capabilities, resources, and ownership structure of the firm (Darnall & Edwards, Forthcoming; Sharma, 2000; Sharma & Vredenburg, 1998), corporate identity and managerial discretion (Sharma, 2000), and the characteristics of individual managers (Bansal & Roth, 2000; Cordano & Frieze, 2000). Further research could leverage our empirical approach to investigate these potential influences, such as examining the extent to which managers' personal characteristics and professional experiences influence their perception of institutional pressures. For example, it seems feasible that a facility manager's nationality could imbue similar cultural-based sensitivities to those we ascribed to the influence of the headquarters country. In addition, corporate marketing and legal affairs department managers' prior experience with stakeholders when they were employed at other firms could influence their current sensitivity to institutional pressures. A richer understanding of such personal attributes would provide an important supplement to the organizational characteristics identified in this paper.

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FIGURE 1

**Institutional pressures, facility receptivity, and management practices:
Hypothesized relationships**

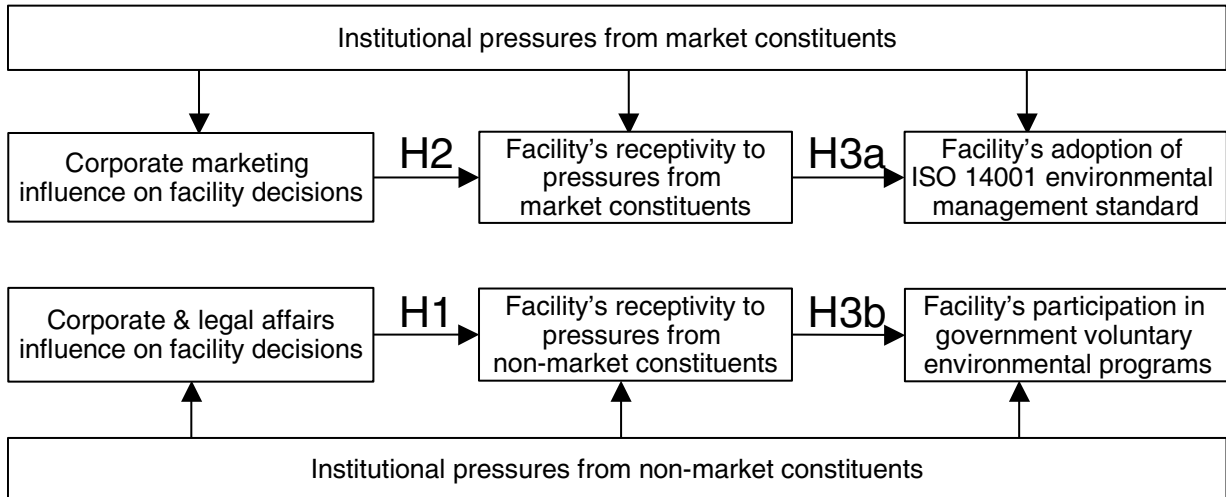
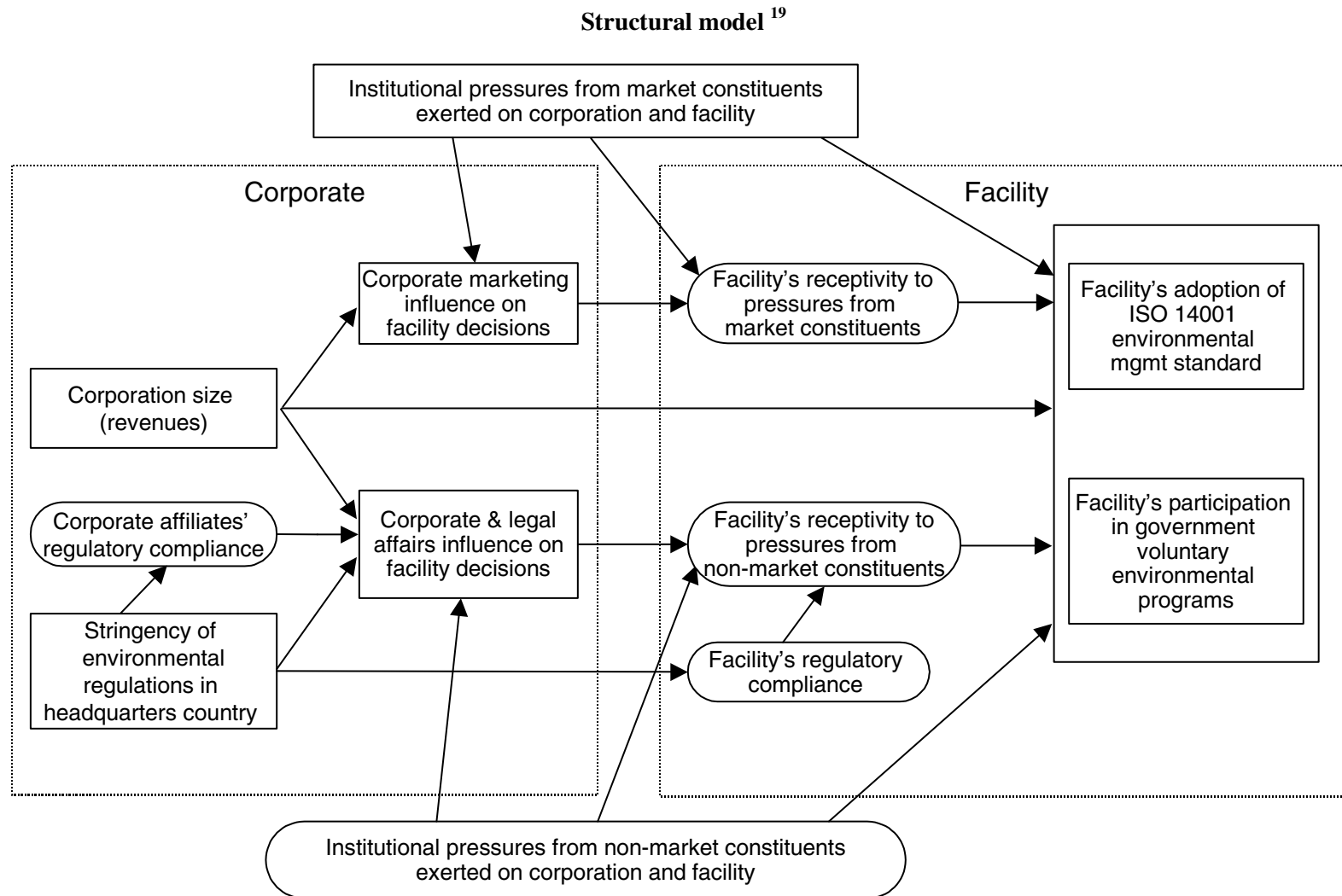


FIGURE 2



¹⁹ Observed variables are depicted as rectangles and latent variables as ovals. For clarity, correlations included the structural model are omitted from this figure, as are the items that measure the latent variables.

TABLE 1
Descriptive Statistics of Observed Variables

	Mean	S.D.	Minimum	Maximum
(η_1) ISO 14001 implementation status	0.58	0.34	0.20	1.00
(η_2) Government voluntary program participation	0.56	0.29	0.25	1.00
<i>(η_3) Receptivity to non-market pressure</i>				
→ Influence of local community	0.57	0.25	0.20	1.00
→ Influence of environmental organizations	0.44	0.22	0.20	1.00
→ Influence of media	0.40	0.21	0.20	1.00
→ Influence of regulators/legislators	0.69	0.26	0.20	1.00
<i>(η_4) Receptivity to market pressure</i>				
→ Influence of competitors	0.48	0.24	0.20	1.00
→ Influence of customers	0.59	0.27	0.20	1.00
→ Influence of suppliers	0.38	0.19	0.20	1.00
<i>(ξ_1) Facility environmental non-compliance</i>				
→ Number of formal enforcement actions	0.06	0.11	0.00	1.00
→ Log sum of penalties	0.14	0.27	0.00	1.00
→ Number of environmental compliance violations	0.13	0.19	0.00	1.00
<i>(ξ_2) Corporate environmental non-compliance</i>				
→ Log sum of penalties	0.33	0.35	0.00	1.00
→ Number of formal enforcement actions	0.08	0.16	0.00	1.00
<i>(ξ_3) Non-market pressure exerted</i>				
→ League of Conservation Voters' 1996 state scorecard rating	0.48	0.23	0.00	1.00
→ Number of state-level environmental policy initiatives	0.58	0.19	0.13	1.00
→ Renew America assessment of state's environmental policy comprehensiveness	0.67	0.18	0.34	1.00
→ State's environmental and conservation organization members per thousand residents	0.37	0.21	0.08	1.00
(ξ_4) Market pressure exerted	0.34	0.26	0.00	1.00
(ξ_5) Influence of corporate legal affairs department	0.70	0.28	0.20	1.00
(ξ_6) Influence of corporate marketing department	0.45	0.24	0.20	1.00
(ξ_7) Stringency of environmental regulations in headquarters country	0.91	0.04	0.48	1.00
(ξ_8) Corporate size	0.65	0.18	0.09	1.00

Note: 493 observations.

TABLE 2

Results of Measurement Model

<i>Latent variables</i>	Mean	Variance	Number of items	Cronbach's alpha	Composite reliability	Average variance extracted	Correlations between latent variables (square root of average variance extracted in the diagonal)					
							(η_3)	(η_4)	(ξ_1)	(ξ_2)	(ξ_3)	
(η_3) Receptivity to non-market pressure	0.13	0.01	4	0.79	0.98	0.94	0.97					
(η_4) Receptivity to market pressure	0.18	0.01	3	0.76	0.98	0.95	0.67	0.98				
(ξ_1) Facility environmental non-compliance	0.00	0.01	3	0.79	0.99	0.97	0.10	0.03	0.99			
(ξ_2) Corporate environmental non-compliance	0.00	0.02	2	0.78	0.95	0.95	0.07	0.00	0.00	0.97		
(ξ_3) Non-market pressure exerted	0.00	0.03	4	0.90	0.99	0.98	0.15	0.01	0.23	0.00	0.99	
<i>Measurement paths</i>												
						Unstandardized regression weight	Standard error	Critical ratio	Standardized regression weight			
<i>(η_3) Receptivity to non-market pressure</i>												
						1.49	0.16	9.39	0.71			
						1.41	0.15	9.42	0.76			
						1.33	0.14	9.40	0.76			
						1.00	fixed		0.46			
<i>(η_4) Receptivity to-market pressure</i>												
						1.43	0.11	13.29	0.79			
						1.49	0.12	12.28	0.71			
						1.00	fixed		0.69			
<i>(ξ_1) Facility environmental non-compliance</i>												
						1.00	fixed		0.89			
						2.13	0.14	14.99	0.80			
						1.09	0.09	12.33	0.58			
<i>(ξ_2) Corporate environmental non-compliance</i>												
						2.33	0.20	11.61	0.83			
						1.00	fixed		0.77			
<i>(ξ_3) Non-market pressure exerted</i>												
						1.00	fixed		0.63			
						1.30	0.08	16.53	0.99			
						1.13	0.06	19.14	0.91			
						1.08	0.08	14.30	0.74			

Notes: 493 observations. Cronbach's alpha calculated on standardized items (mean 0, variance 1). All items were statistically significant ($p < 0.001$) determinants of the latent variables.

TABLE 3
Structural Model Paths

Hypothesis	Antecedent variable		Consequent variable	Unstandardized regression weight	Standard error	Critical ratio	p value	Standardized regression weight
H1	(ξ_5) Influence of corporate legal affairs department	→ (η_3)	Receptivity to non-market pressure	0.15	0.02	6.20	***	0.36
	(ξ_3) Non-market pressure exerted	→ (η_3)	Receptivity to non-market pressure	0.05	0.03	1.62	0.11	0.07
	(ξ_1) Facility environmental non-compliance	→ (η_3)	Receptivity to non-market pressure	0.14	0.05	2.74	0.01	0.13
	(ξ_7) Stringency of environmental regulations in headquarters country	→ (η_3)	Receptivity to non-market pressure	0.02	0.13	0.17	0.87	0.01
H2	(ξ_6) Influence of corporate marketing department	→ (η_4)	Receptivity to market pressure	0.31	0.03	10.31	***	0.55
	(ξ_4) Market pressure exerted	→ (η_4)	Receptivity to market pressure	0.12	0.02	5.67	***	0.24
H3a	(η_3) Receptivity to non-market pressure	→ (η_2)	Voluntary program participation	0.40	0.20	1.95	0.05	0.16
	(ξ_8) Corporate size	→ (η_2)	Voluntary program participation	0.16	0.07	2.19	0.03	0.10
	(ξ_4) Market pressure exerted	→ (η_2)	Voluntary program participation	-0.01	0.06	-0.20	0.84	-0.01
	(ξ_3) Non-market pressure exerted	→ (η_2)	Voluntary program participation	0.10	0.08	1.17	0.24	0.05
	(η_4) Receptivity to market pressure	→ (η_2)	Voluntary program participation	0.22	0.19	1.17	0.24	0.10
H3b	(η_4) Receptivity to market pressure	→ (η_1)	ISO 14001 implementation status	1.01	0.22	4.59	***	0.40
	(ξ_8) Corporate size	→ (η_1)	ISO 14001 implementation status	0.31	0.07	4.29	***	0.17
	(ξ_4) Market pressure exerted	→ (η_1)	ISO 14001 implementation status	0.20	0.06	3.40	***	0.16
	(ξ_3) Non-market pressure exerted	→ (η_1)	ISO 14001 implementation status	0.17	0.09	1.99	0.05	0.08
	(η_3) Receptivity to non-market pressure	→ (η_1)	ISO 14001 implementation status	-0.36	0.22	-1.68	0.09	-0.13
<i>Additional controls</i>	(ξ_7) Stringency of environmental regulations in headquarters country	→ (ξ_5)	Influence of corporate legal affairs department	0.41	0.30	1.36	0.18	0.05
	(ξ_8) Corporate size	→ (ξ_5)	Influence of corporate legal affairs department	0.34	0.08	4.20	***	0.22
	(ξ_3) Non-market pressure exerted	→ (ξ_5)	Influence of corporate legal affairs department	0.00	0.07	0.03	0.98	0.00
	(ξ_2) Corporate environmental non-compliance	→ (ξ_5)	Influence of corporate legal affairs department	0.21	0.13	1.64	0.10	0.09
	(ξ_8) Corporate size	→ (ξ_6)	Influence of corporate marketing department	0.14	0.06	2.58	0.01	0.11
	(ξ_4) Market pressure exerted	→ (ξ_6)	Influence of corporate marketing department	0.09	0.04	2.46	0.01	0.10

Note: 493 observations. *** p<0.001