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5 **ORGANIZATIONAL RESPONSES TO ENVIRONMENTAL DEMANDS:**
6 **OPENING THE BLACK BOX**

7
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16 *This article combines new and old institutionalism to explain differences in organizational*
17 *strategies. We propose that differences in the influence of corporate departments lead their*
18 *facilities to prioritize different external pressures and thus adopt different management*
19 *practices. Specifically, we argue that external constituents—including customers, regulators,*
20 *legislators, local communities, and environmental activist organizations—who interact with*
21 *influential corporate departments are more likely to affect facility managers' decisions. As a*
22 *result, managers of facilities that are subjected to comparable institutional pressures adopt*
23 *distinct sets of management practices that appease different external constituents. We test our*
24 *framework in the context of the adoption of environmental management practices using an*
25 *original survey and archival data obtained for nearly 500 facilities. We find support for these*
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28 Keywords: institutional theory; stakeholder influence; environmental strategy; ISO 14001;
29 voluntary environmental programs; structural equation modeling

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1 **INTRODUCTION**

2

3 Within the field of strategic management research, the new institutional perspective has gained
4 prominence in explaining the importance of social and cultural influences on strategic decisions
5 (Ingram and Silverman, 2002). The new institutional approach suggests that firms obtain
6 legitimacy by conforming to the dominant practices within their organizational field (DiMaggio
7 and Powell, 1983; Scott, 1992). This approach, however, has barely begun to address an issue
8 fundamental to business strategy research: why do organizations that face common institutional
9 pressures adopt different management practices? In other words, how might institutional forces
10 lead to heterogeneity, rather than homogeneity, within an industry?

11 In this article, we test a model that links a variety of institutional pressures to
12 organizational responses. We build on Hoffman (2001) to argue that organizations differ in their
13 receptivity to institutional pressures from the diverse set of constituents in their external
14 environments. We maintain that organizations channel pressures from market and nonmarket
15 constituents to different functional departments, and that these functional departments, in turn,
16 influence managers' sensitivity and responses to institutional pressures. Therefore, we argue that
17 differences in organizations' adoption of management practices reflect not only different levels
18 of institutional pressures (Edelman, 1992; Lounsbury, 2001), but also differences in the influence
19 of their functional departments.

20 Our model integrates some views of what is sometimes called the 'old' institutional
21 perspective that focuses on the internal dynamics of organizational change (Michels, 1962;
22 Selznick, 1949). In this endeavor, we respond to the call from several authors for a wedding of
23 the old and new institutional perspectives (Hirsch and Lounsbury, 1997a; Perrow, 1986). But
24 most important, this integration enables us to bring new insights to the strategic management

1 literature's central debate related to the respective role of environmental forces and
2 organizational dynamics in explaining strategic choices (Greenwood and Hinings, 1996;
3 Hambrick and Finkelstein, 1995).

4 Strang and Soule (1998: 285) argue that institutional analyses that contrast the adoption
5 of distinct management practices 'can provide more nuanced views of the mechanisms involved'
6 in their diffusion. Therefore, like Davis and Greve (1997), we test our framework by examining
7 the adoption of two distinct management practices that can reduce organizations' impact on the
8 natural environment. Specifically, we consider U.S. industrial facilities' adoption of (1) the
9 international ISO 14001 Environmental Management System Standard, and (2) government-
10 initiated voluntary environmental programs. Environmental management issues in general and
11 these management practices in particular, provide a rich empirical context for several reasons.
12 First, organizations across different industries (Hoffman, 1999) and geographic locations
13 (Sharma and Henriques, 2005) share a common organizational field with respect to the common
14 issue of industrial environmental management. Second, a broad array of constituents of the
15 organizational field exerts pressure on these facilities to adopt environmental management
16 practices. This allows us to identify how the pressures from these various constituents can
17 penetrate the organization via specific corporate departments. For example, organizations tend to
18 adopt ISO 14001 and government-initiated voluntary programs to appease different stakeholders.
19 Firms often adopt the ISO 14001 standard in anticipation of or in response to customer demand
20 (Boiral, 2007; Delmas and Terlaak, 2001; Jiang and Bansal, 2003; King, Lenox, and Terlaak,
21 2005; Toffel, 2000). As a result, firms' marketing departments have a particular interest in the
22 determination of whether it would be profitable to invest the time and money required to certify
23 facilities to the ISO 14001 standard. On the other hand, government-initiated voluntary programs

1 are explicit arrangements between companies and regulators. Prior research suggests that
2 companies participate in these programs to strengthen (or maintain strong) relationships with
3 regulators (Delmas and Terlaak, 2001; Khanna, 2001; Khanna and Damon, 1999; Short and
4 Toffel, 2008; Videras and Alberini, 2000). Legal departments, because they are involved in
5 regulatory compliance activities, are most likely to be predisposed to establishing good
6 collaborative relationships with regulators.

7 We also focus on these two organizational practices because institutional pressures exert
8 the greatest influence during the period of uncertainty before practices become institutionalized
9 (Goodrick and Salancik, 1996). There are several reasons to believe that our two focal practices
10 are not yet institutionalized: neither the ISO 14001 standard nor government-initiated voluntary
11 environmental programs are required by law, there is a lack of consensus on their actual
12 effectiveness, and there is significant heterogeneity within industries regarding their adoption
13 (Bansal and Roth, 2000; Darnall and Edwards, 2006; Delmas and Terlaak, 2002; Henriques and
14 Sadorsky, 1996; Sharma and Henriques, 2005; Videras and Alberini, 2000). Indeed, government
15 voluntary environmental programs and the ISO 14001 standard are themselves institutions, sets
16 of rules and norms that might be operating as a ‘rational myth’ that spurs ‘ceremonial behavior’
17 (Boiral, 2007). Under these circumstances, regulative, normative, and cognitive factors are likely
18 to play a significant role in firms’ decisions to adopt such organizational practices (DiMaggio
19 and Powell, 1983).

20 The article proceeds as follows: after a brief review of the literature on the institutional
21 perspective, we develop hypotheses that describe how corporate functional departments
22 influence their subsidiary facilities’ awareness of, or receptivity to, market and nonmarket
23 pressures, and how this affects the adoption of particular management practices. We then

1 describe our sample and empirical method, and present our results. We conclude by discussing
2 how this study uses the lens of institutional theory to advance understanding of firms'
3 heterogeneous management practices, and how this makes important contributions to the study
4 of business strategy.

5 **LITERATURE REVIEW**

6 The new institutional perspective suggests that firms obtain legitimacy by conforming to the
7 dominant practices within their institutional fields (DiMaggio and Powell, 1983; Scott, 1992).
8 An organizational field includes 'those organizations that...constitute a recognized area of
9 institutional life: key suppliers, resource and product consumers, regulatory agencies, and other
10 organizations that produce similar services or products' (DiMaggio and Powell, 1983: 148).
11 Scholars of new institutional theory have traditionally focused on how organizational strategies
12 and practices converge through a legitimation process. In this paradigm, divergent strategies and
13 practices exist either during a temporary preconvergence period (e.g., Dobbin and Sutton, 1998;
14 Edelman, 1992), or subsequently due to organizations being subjected to varying levels of
15 institutional pressure (e.g., Lounsbury, 2001).

16 As Kraatz and Zajac (1996: 812) stated: 'neoinstitutional explanations of organization-
17 environment relations draw their power and distinctiveness largely from an explicit rejection of
18 traditional adaptation theories, and from an emphasis on institutional rather than technical
19 environments.' The new institutional approach is, indeed, often contrasted with the so-called
20 'old' institutional perspective (Michels, 1962; Selznick, 1949) that emphasizes the capacity of
21 people and organizations to construct and enact their environment and focus their attention on
22 the dynamics of intraorganizational change (Hirsch and Lounsbury, 1997a). The central issues of
23 the old institutionalism revolve around organizational influence, coalitions, and power; change

1 occurs in response to the dynamics of organizations as they struggle with different values and
2 interests (Clarke, 1994). According to DiMaggio and Powell (1991): ‘the new and old
3 institutionalisms identify different sources of constraint, with the older emphasizing the vesting
4 of interests within the organization as a result of political tradeoffs and alliances, and the new
5 stressing the relationship between stability and legitimacy and the power of common
6 understandings that are seldom explicitly articulated’ (DiMaggio and Powell 1991:12). The
7 authors also ‘suspect that something has been lost in the shift from the old to the new
8 institutionalism’ (DiMaggio and Powell, 1991: 27).

9 Several authors have advocated for a wedding of the new and old perspectives (Hirsch
10 and Lounsbury, 1997b; Perrow, 1986). For example, Hirsch and Lounsbury (1997b) argue that
11 the inability to address interests and the generative capacity of actors leads the new
12 institutionalism into higher levels of abstraction. They claim that stability, persistence, and
13 inertia are taken as givens, whereas change is viewed as an extraordinary disruption, usually
14 externally generated. They suggest that a reconciliation between these theoretical currents would
15 provide a more balanced approach to the action-structure duality (Hirsch and Lounsbury, 1997a).

16 Some researchers have begun to integrate theories of institutional and organizational
17 dynamics to explain how differences can persist even among organizations that face comparable
18 institutional pressures. For example, Oliver (1991) combines institutional and resource
19 dependence perspectives to predict how organizations will strategically respond to various
20 institutional pressures, and Greenwood and Hinings (1996) integrate institutional and internal
21 organizational dynamics to explain radical change. Thornton and Occasio (1999) explain how
22 power and politics within organizations is contingent on higher order institutional logics.
23 Fligstein (1987) specifies a model in which power within organizations shifts as a result of

1 changes in the external environment. In addition, several authors have shown empirically that
2 organizations' responses to institutional pressures are affected by organizational characteristics
3 including ownership structure (Goodrick and Salancik, 1996), trust and identity (Kostova and
4 Roth, 2002), as well as board of director interlocks and geographic proximity to peer
5 organizations (Davis and Greve, 1997). However these integrative approaches often tend to view
6 institutional forces as unified or monolithic, and pay little attention to how the constituents of the
7 organizational field interact with actors within organizations. Organizational fields are quite
8 complex. They are composed of vast arrays of constituents such as governments, activists, local
9 communities, trade associations, investors, and customers, each of which possesses its own
10 culture, interests, and conception of legitimate environmental management practices (Hoffman,
11 2001). Fligstein (1987) suggested that further research should interview organizational actors to
12 assess their views of the field and the organization, and the effects of those views on subsequent
13 organizational change.

14 Similarly, research in corporate environmental strategy has made significant advances in
15 analyzing how institutional pressures affect firms' decisions to pursue 'beyond compliance'
16 strategies (Bansal and Roth, 2000; Darnall and Edwards, 2006; Henriques and Sadorsky, 1996;
17 Sharma and Henriques, 2005). But that literature, too, has rarely addressed linkages between
18 organizational and field analyses. Thus, relationships between organizational factors and
19 institutional pressures are not yet well understood.

20 In this article, we propose to integrate the new and old institutionalism by emphasizing
21 the interaction of organizations' internal functional departments with a diverse set of constituents
22 of a firm's external environment. Hoffman (2001) described the importance of organizations'
23 functional structure and culture in explaining heterogeneous responses to institutional pressures.

1 Hoffman (2001) notes that ‘the form of organizational response is as much a reflection of the
2 institutional pressures that emerge from outside the organization as it is the form of
3 organizational structure and culture that exist inside the organization’ (Hoffman, 2001: 136–
4 137). From this perspective, organizations provide multiple access points to institutional
5 pressures. Building on this approach, we propose that organizational characteristics affect the
6 extent to which facilities become aware of and respond to institutional pressures. This occurs
7 because each functional department typically engages with a different set of institutional
8 constituents, and because corporate functional departments vary in the extent to which they have
9 influence on facility decision making.¹

10 In contrast to the old institutionalism, the new institutional perspective typically regards
11 organizations as adapting their organizational structures to respond to changes in the institutional
12 environment rather than the technical environment (Kraatz and Zajac, 1996).

13 Several scholars have argued that examining only institutional forces is not sufficient to
14 explain divergent organizational change (D’Aunno, Succi, and Alexander, 2000; Kraatz and
15 Zajac, 1996). Kraatz and Zajac (1996), investigating the effect of both the institutional and
16 technical or market environment on organizational change, found pressures from the technical
17 environment to be an important driver of organizational change. D’Aunno *et al.* (2000) argue
18 that ‘both institutional and market forces are likely to affect divergent change to varying degrees
19 in different organizational fields and, probably, in different historical periods. Moreover,
20 institutional and market forces may interact in important ways to affect organizational change,
21 and future research should aim to specify their roles more precisely’ (D’Aunno *et al.*, 2000: 700–
22 701). This speaks to the need to precisely define the external forces that pressure firms to engage

¹ 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.

1 in organizational change.

2 Our analysis builds on prior research that has combined institutional forces with market
3 forces to better understand organization-environment relations (D'Aunno *et al.*, 2000; Kraatz and
4 Zajac, 1996). Those studies compare the influence of institutional forces to that of market forces
5 concerned with profits and cost efficiency. Rather than opposing market and institutional forces,
6 we consider that institutional forces can bound and define rational arguments and approaches
7 (Fligstein, 1990). In our approach, we differentiate two main sets of constituents of the
8 organizational field, market and nonmarket constituents (Baron, 1995) and argue that both might
9 be subject to institutional forces. In doing so, we build on Hoffman's (2001) insight that buyers
10 and other market actors are constituents within an organizational field.

11 Firms engage with constituents in their market environment (e.g., customers, suppliers)
12 via economic transactions, whereas constituents in firms' nonmarket environment (e.g.,
13 regulators, environmental organizations) are interested in social, political, and legal issues
14 (Baron, 1995, 2000). Nonmarket and market actors frame environmental management issues
15 differently (Hoffman and Ventresca, 1999). For example, constituents in the market environment
16 tend to view environmental issues primarily within the rubric of business performance, focusing
17 on their cost and efficiency implications. On the other hand, nonmarket actors such as regulators
18 and activist groups, which typically view environmental issues as negative externalities, often
19 operate via the legal system and the mass media (e.g., in the court of public opinion).

20 The advantage of including both market and nonmarket constituents in our analysis is
21 that these diverse constituents are likely to disagree about the legitimacy of a management
22 practice before it becomes institutionalized, which occurs when it takes on a rule-like status in
23 social thought and action (Meyer and Rowan, 1977; Tolbert and Zucker, 1996). Market and

1 nonmarket constituents are thus quite likely to differ both in their interpretation of industrial
2 environmental issues and in their perceptions of which management practices constitute
3 legitimate responses (Hoffman, 2001). Focusing on an institutional field marked by a diverse set
4 of market and nonmarket constituents provides a unique opportunity to analyze the web of
5 institutional forces that shape and influence the adoption of management practices that are not
6 yet institutionalized.

7 Although the origins of these two sets of constituents might differ, we argue that both can
8 exert institutional pressures on firms in a context of preinstitutionalization of environmental
9 management practices. First, as mentioned earlier, the management practices we examine are not
10 yet institutionalized and there is still no empirical evidence of their technical efficiency, or their
11 actual impact on environmental performance. Regulative, normative, and cognitive factors that
12 affect adoption decisions over and above the technical efficiency of the organizational practices
13 are more likely to play a role in firms' decisions to adopt organizational practices under
14 conditions of uncertainty. This includes circumstances in which the benefits of an organizational
15 practice are poorly understood and the efficiency benefits of adoption are unclear (DiMaggio and
16 Powell, 1983). Second, as Scott (2003) argued, technical forces primarily shape 'core functions'
17 including work units and coordinating arrangements, whereas institutional forces shape more
18 'peripheral' structures such as managerial and governance systems.

19

20 **ORGANIZATIONAL PERMEABILITY TO PRESSURES FROM MARKET AND** 21 **NONMARKET CONSTITUENTS**

22

23 Organizations consist of a 'mosaic of groups structured by functional tasks' (Greenwood and
24 Hinings, 1996: 1033) such as legal, human resources, and marketing departments. Individuals
25 within an organization's functional departments interact with constituents of the organization's

1 market and nonmarket environments through ‘occupational communities,’ that is, groups of
2 individuals across organizations that share a common set of assumptions, language, and
3 perspectives (Schein, 1996; van Maanen and Barley, 1984). Occupational communities emerge
4 in part due to common professional and occupational requirements (e.g., education, licensing
5 requirements) and through ongoing contact among those within a given occupation. Members of
6 occupational communities often read common trade journals and specialized newspapers and
7 attend the same conferences at which emerging issues and appropriate solutions are discussed.
8 As a result, ‘salespeople the world over, accountants, assembly line workers, and engineers share
9 some tacit assumptions about the nature of their work regardless of who their particular employer
10 is at any given time’ (Schein, 1996: 13). For example, Rosenkopf, Metiu, and George (2001)
11 posit that interfirm relationships are enhanced by interpersonal bonds forged among mid-level
12 managers in the technical committees of professional societies, trade associations, and standards
13 bodies. They argue that these interactions expose participants to the same knowledge and issues
14 that shape their views of technological development and facilitate collaboration.

15 Employees in functional departments provide vital links to members of their occupational
16 communities within their organizations’ market and nonmarket environments. For example,
17 individuals within legal affairs departments typically interact with regulatory officials and
18 lawyers from other firms, whereas those from marketing departments typically interact with
19 consumers and rival marketing departments.

20 More broadly, ‘the firm becomes a composite of core organizational responsibilities, each
21 with its linkages to its own relevant constituency of the external environment,’ where employees
22 of functional departments engage with institutional constituents through ‘preexisting channels of
23 communication traditionally employed to engage these occupational communities and interpret

1 and act on their demands' (Hoffman, 2001: 136). These channels of communication expose
2 members of organizations' functional departments to the issues their occupational communities
3 deem important and to the range of solutions viewed as legitimate. To what extent do these
4 issues and solutions actually reach decision makers within these functional departments'
5 organizations and actually influence their organizations' responses? This depends on how much
6 influence a department has within its own organization, the topic to which we turn next.

7 **Functional departments' influence within organizations**

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

13 There are several ways in which corporate functional departments can influence facility
14 managers. They might grant facility managers varying degrees of decision-making autonomy,
15 retaining ultimate control over some facility-level issues, thereby requiring facility managers to
16 seek their approval before pursuing a particular course of action in these protected domains.
17 Corporate training and documentation that offers guidance on how to address specific functional
18 issues can also influence facility-level managers.

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

1 Pfeffer, 1974).

2 The extent to which departments that detect external pressures can convey these concerns
3 to management depends on the degree to which they can influence management decisions.
4 Influential departments increase the salience of both the constituents who exert pressure within
5 their domain as well as these constituents' issues. Because such pressures are more likely to
6 attract the attention of managers, they are more likely to elicit organizational responses.

7 In summary, we argue that the relative influence of various functional departments on
8 facilities' decisions affects how facility managers receive and interpret pressures from different
9 constituents of their external environments, and that these differences have important
10 implications for how facilities respond. Specifically, we posit that a functional department that is
11 influential in its organization's decision making also diffuses its cultural frame. This makes its
12 organization more acutely aware of pressures exerted by institutional constituencies within this
13 department's domain.

14 In this study, we focus on two departments that differ significantly in both their cultural
15 frames and the external constituents with which they interact. We selected legal affairs and
16 marketing departments because their interactions with constituents are particularly clearly
17 divided between those in organizations' nonmarket and market environments, respectively
18 (Hoffman, 2001). Because of these differences, we hypothesize that these departments are quite
19 likely to differ in their awareness of, and receptivity to, institutional pressures.

20 *The influence of corporate legal affairs departments*

21 Charged with assuring companies legitimacy and 'license to operate,' legal affairs departments
22 are typically the primary channel for pressures from constituents in their organizations'
23 nonmarket environments. In the context of civil rights law, Fuller, Edelman, and Matusik (2000)

1 have argued that formal legal structures within organizations shape employees' law
2 consciousness. In our context, the legal affairs department is typically involved in regulatory
3 compliance activities and addressing inquiries and complaints from local communities, activist
4 groups, and the media. The more influence legal affairs departments have over facility managers
5 regarding environmental issues, the more they will be able to convey the importance of such
6 institutional pressures. Thus, managers within facilities with more influential legal affairs
7 departments will be more receptive to external pressures exerted by constituents of their
8 nonmarket environments. This influence can take the form of direct control over decisions at the
9 facility level or of more indirect influence through corporate-provided information and training.
10 In contrast, in organizations without influential legal affairs departments, facility managers are
11 likely to be less aware of pressures exerted by nonmarket actors. Thus, we hypothesize:

12 *Hypothesis 1: The extent to which corporate legal affairs departments influence facilities'*
13 *environmental issues is positively associated with the receptivity of facility managers to*
14 *pressures from nonmarket constituents.*

15
16 *The influence of corporate marketing departments*

17 Marketing departments, being responsible for orienting firms' products and services to meet and
18 anticipate customer demands, focus on identifying factors that can provide competitive
19 differentiation, and are often acutely aware of industry trends and competitors' positioning.
20 Those in marketing departments are thus often the first to know of customers' concerns about
21 suppliers' environmental management practices or performance. The greater a corporate
22 marketing department's influence over facility-level environmental management decisions, the
23 more able it will be to convey the importance of pressures exerted by constituents in the facility's
24 market environment, and to cast these as important to the facility's competitiveness in the
25 marketplace. In the absence of an influential marketing department, we would expect facility

1 managers to be less aware of pressures from their respective market environments. We thus
2 hypothesize that:

3 *Hypothesis 2: The extent to which corporate marketing departments influence facilities'*
4 *environmental issues is positively associated with the receptivity of facility managers to*
5 *pressures from market constituents.*
6

7 **ORGANIZATIONAL RESPONSES TO INSTITUTIONAL PRESSURES**

8 Thus far we have described how corporate functional departments can magnify or diminish
9 facilities' receptivity to pressures from various constituents. We now examine the outcomes of
10 these differences in receptivity by focusing on two 'voluntary environmental strategies' that
11 purportedly seek to reduce the environmental impacts of operations beyond regulatory
12 requirements (Sharma, 2000), (1) adopting the ISO 14001 international environmental
13 management standard, and (2) participating in government-initiated voluntary environmental
14 programs. Although the range of voluntary environmental strategies is broad, we focus on ISO
15 14001 and government-initiated voluntary environmental programs because they are among the
16 most commonly adopted by firms across a variety of industries in the United States (Dietz and
17 Stern, 2002). The main difference between these practices is that governments initiate and are
18 often involved in the implementation of voluntary government programs, whereas governments
19 are not directly involved in ISO 14001 (Braathen, 2003).

20 Neither type of program is required by law, nor is there a consensus about either's effect
21 on environmental performance. Although these programs might be seen as desirable from either
22 a market or nonmarket perspective, they could also be viewed as undesirable from the opposite
23 perspective. In other words, because these practices are not yet institutionalized, they might be
24 contested by some constituents of the field. Nonetheless, as Oliver (1991) noted, 'from an
25 institutional perspective...the appearance rather than the fact of conformity is often presumed to

1 be sufficient for the attainment of legitimacy' (Oliver, 1991: 155). Thus, adopting environmental
2 management practices, regardless of their immediate performance implications, might be
3 particularly effective in enhancing organizational legitimacy by helping to alleviate constituents'
4 concerns about environmental performance. Bansal and Clelland (2004) have shown how firms
5 can partially manage the perception of their legitimacy by conveying information regarding
6 changes in products or processes to demonstrate commitment to the environment. Studies in
7 other domains have found that firms might engage in symbolic management as a means of
8 responding to institutional pressure (e.g., Edelman, 1992; Westphal and Zajac, 1998).

9 **ISO 14001**

10 The first environmental management practice on which we focus is the adoption of the ISO
11 14001 Environmental Management System (EMS) Standard. Issued by the International
12 Organization for Standardization, this international standard characterizes the essential elements
13 of an EMS and provides a framework for organizations seeking to reduce their environmental
14 impacts beyond regulatory requirements. The standard's underlying logic is that organizations
15 can reduce their environmental impacts if they manage environmental issues systematically, as
16 doing so enables them to identify and focus their efforts on the particular aspects of production
17 processes that result in the most environmental harm (Coglianese and Nash, 2001). The ISO
18 14001 standard requires that adopting organizations create an environmental policy, set
19 objectives and targets, implement a program to achieve those objectives, monitor and measure
20 the program's effectiveness, correct problems, and conduct reviews aimed at improving the
21 EMS. ISO 14001 does not require any particular environmental performance level or
22 improvement rate other than a commitment to comply with applicable regulations.
23 Environmental performance is thus not a criterion in the certification process.

1 More than 90,000 facilities around the world have adopted the ISO 14001 standard
2 (International Organization for Standardization, 2005), largely in response to pressures from
3 market constituents. Although ISO 14001 was designed as a voluntary standard, some
4 organizations might have adopted it due to sensitivity to coercive pressure from their customers
5 (Darnall and Edwards, 2006). In particular, many automakers and large electronics firms in the
6 United States are strongly encouraging their suppliers to adopt the standard. In addition, many
7 firms in Asia, anticipating that their European-based customers will require it of their suppliers,
8 are adopting the standard. To some degree, adoption appears to be motivated by firms'
9 vulnerability to mimetic pressure as firms imitate the behavior of other organizations tied to them
10 through networks (Guler, Guillen, and MacPherson, 2002; Westphal, Gulati, and Shortell, 1997).
11 Organizations that perceive that a large number of their competitors have adopted ISO 14001 are
12 thus more likely to adopt the standard. Since some market actors value the ISO 14001 standard,
13 we expect that facilities will adopt the standard in response to institutional pressure from market
14 actors.

15 *Hypothesis 3: The receptivity of facility managers to pressures from market constituents*
16 *is positively associated with their facilities' adoption of ISO 14001.*

17
18 Although there are several reasons facilities might respond to market-based pressures by
19 adopting ISO 14001, there is less evidence to suggest that facilities with influential legal affairs
20 departments will adopt the standard when they are under intense pressure from nonmarket actors
21 such as activists and regulators. Because ISO 14001 lacks requirements that stipulate
22 environmental procedures or even minimum levels of environmental performance, many
23 environmental nongovernmental organizations are hesitant to rely on the standard as an indicator
24 of management effort or environmental performance (Pringle, Leuteritz, and Fitzgerald, 1998;
25 Rondinelli and Vastag, 2000). Furthermore, implementing ISO 14001 and conducting the routine

1 audits required by the standard might uncover regulatory violations, evoking concern about
2 potential liability that discourages some firms from adopting (Orts and Murray, 1997; Rodgers,
3 1996). In a recent survey of firms in the United States, the majority of respondents noted two
4 related factors that inhibit their adoption of ISO 14001, (1) uncertainty about regulatory
5 agencies' potential 'utilization of EMS audit information,' and (2) 'potential legal penalties from
6 voluntary disclosure' (Delmas, 2000: 23 [Table 6]). The ambiguity in the law regarding the
7 benefits of adopting ISO 14001 leaves room for environmental lawyers to provide their own
8 interpretation of the standard's potential value. Because it is part of the mission of lawyers to act
9 conservatively to protect their clients, it is likely that they will highlight the potential drawbacks
10 of adopting the standard. For example, the U.S. environmental law literature is replete with
11 articles on the risks to corporations of adopting ISO 14001 (Mostek, 1998; Orts and Murray,
12 1997; Rodgers, 1996). Similarly, legal affairs departments' focus on liabilities and risk
13 management make them especially likely to consider the risk that adopting ISO 14001 reduces
14 firms' ability to credibly deny environmental wrongdoing in the face of a media exposé (Lyon
15 and Maxwell, 2006). Therefore organizations with influential legal affairs departments might be
16 less inclined to adopt ISO 14001. These organizations might view environmental issues more as
17 threats than opportunities, and be especially wary of litigation (Sharma, Pablo, and Vredenburg,
18 1999).

19 Because some nonmarket constituents contest the validity of ISO 14001, we hypothesize
20 that facilities might be less likely to adopt the standard in response to pressure from nonmarket
21 actors. Therefore, we hypothesize that:

22 *Hypothesis 4: The receptivity of facility managers to pressures from nonmarket*
23 *constituents is negatively associated with their facilities' adoption of ISO 14001.*

1 **Government-initiated voluntary programs**

2 Government-initiated voluntary programs are collaborative arrangements between firms and
3 regulators whereby firms voluntarily commit to actions that might improve their environmental
4 performance (Delmas and Terlaak, 2001).² These programs are designed by policy makers to
5 associate private benefits with the voluntary provision of public goods (Delmas and Terlaak,
6 2001). Examples of government-initiated programs include the Climate Challenge program
7 established by the U.S. Department of Energy to reduce CO₂ emissions in the electric utility
8 industry, or the U.S. Environmental Protection Agency's (EPA) WasteWise Program designed to
9 reduce companies' waste (Delmas and Keller, 2005; Delmas and Montes, 2007). Firms might
10 participate to gain favorable publicity or greater flexibility in complying with existing
11 regulations, or to deter the imposition of new regulations (Decker, 2005; Lyon and Maxwell,
12 2004; Maxwell and Decker, 2006; Segerson and Miceli, 1998).

13 The past decade has seen increasing use of these voluntary programs as supplements to,
14 and sometimes replacements for, traditional command-and-control regulation (Börkey and
15 Lévêque, 1998; Mazurek, 1998). As in the case of ISO 14001, some reservations have been
16 expressed about the actual effectiveness of voluntary programs (Delmas and Keller, 2005;
17 Harrison, 1998; King and Lenox, 2000; Rivera and DeLeon, 2004; Welch, Mazur, and
18 Bretschneider, 2000). In particular, there are still concerns that 'free-riding' behavior might be
19 difficult to avoid within voluntary programs (Delmas and Keller, 2005). As such, like ISO
20 14001, these programs are not yet fully institutionalized.

21 Because of the active participation of public authorities in these programs, the literature
22 has emphasized political and regulatory influences as motivating participation in these voluntary

² For additional reviews of voluntary environmental programs, see Khanna (2001) and Morgenstern and Pizer (2007).

1 programs (Delmas and Terlaak, 2001; Lyon and Maxwell, 2004; Short and Toffel, 2008). We
2 therefore hypothesize that:

3 *Hypothesis 5: The receptivity of facility managers to pressures from nonmarket*
4 *constituents is positively associated with their facilities' adoption of government-initiated*
5 *voluntary environmental programs.*

6
7 In contrast to ISO 14001, prior research has found little evidence that pressures from
8 market actors such as buyers or suppliers influence the decision to participate in government-
9 initiated voluntary environmental programs. We therefore do not hypothesize a relationship
10 between pressures from market constituents and the adoption of these programs.

11 Figure 1 illustrates our hypotheses. It shows that the receptivity of facility managers to
12 pressures from market (nonmarket) constituents is a function both of the pressures exerted by
13 these actors as well as the relative influence of their marketing (legal affairs) departments, as
14 described in Hypothesis 1 (2). This receptivity to different constituents will, in turn, influence the
15 adoption of different environmental management practices. We predict that receptivity to
16 pressures from market actors will encourage facilities to adopt ISO 14001 (Hypothesis 3), and
17 expect that receptivity to such pressures from nonmarket actors will induce facilities to resist the
18 adoption of ISO 14001 (Hypothesis 4) and adopt government voluntary programs (Hypothesis
19 5).

20 -----
21 Insert Figure 1 about here
22 -----

23 **METHODS**

24 Data for this study were derived from an original survey and publicly available databases. The
25 survey gathered information about perceptions of institutional pressures, the relative influence of
26 various corporate functional departments, and the management practices adopted by each

1 facility. Additional measures of institutional pressures as well as firm and facility characteristics
2 were obtained from existing databases.

3 **Sample**

4 Our sample focuses on heavily polluting industrial sectors, which we identified based on their
5 share of toxic chemical emissions reported to the U.S. EPA's Toxic Release Inventory (TRI)
6 program.³ The following sectors were selected: pulp, paper, and paperboard mills (SIC 26),
7 chemical and allied products (SIC 28), petroleum refining (SIC 29), primary metals
8 manufacturing (SIC 33), machinery manufacturing (SIC 35), electrical/electronics (SIC 36),
9 automotive (SIC 37), and electric utilities (SIC 49).⁴ In 2001, the 11,622 facilities from these
10 industries that reported TRI data represented 47 percent of the total number of facilities that
11 reported data to TRI and 78 percent of the total toxic air emissions reported in the TRI program
12 that year (U.S. Environmental Protection Agency, 2003). To ensure access to data on
13 performance trends, we restricted our sample to facilities that reported annual air emissions to
14 the TRI program at least three times during 1996–2000. To ensure the availability of financial
15 data, we further restricted our sample to facilities owned by publicly traded companies. These
16 restrictions resulted in a sample of 3,160 facilities.

17 **Survey**

18 We conducted a mail survey to gather facility-level data on environmental management practices
19 (EMPs) and managers' perceptions of why their facilities adopted these practices. The

³ Facilities in a variety of industrial sectors must annually report TRI data if 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 (U.S. Environmental Protection Agency, 2004).

⁴ As discussed earlier, Hoffman (1999) described how organizational 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 herein.

1 questionnaire inquired about the facility’s environmental management practices, relations with
2 various stakeholders, participation in voluntary environmental management programs, tracking
3 and reporting of various environmental aspects, and sources of environmental information and
4 pressure to improve environmental performance.

5 Like much of the previous survey-based literature on environmental management (e.g.,
6 Johnstone *et al.*, 2004; Klassen, 2001; Madsen and Ulhøi, 2003), we chose respondents we
7 believed would have the most information to answer the survey questions. We suspected that
8 because facilities’ environmental managers and environmental, health, and safety (EHS)
9 managers make environmental management decisions at the facility-level, they would be
10 particularly well informed about the internal and external factors that influence these decisions.
11 Because interviews we conducted while pretesting the survey instrument confirmed that these
12 individuals were the most knowledgeable about these issues, we targeted our survey at facility-
13 level environmental and EHS managers. The Survey Research Center (SRC) at the University of
14 California at Santa Barbara called each facility to obtain the names of these individuals.

15 We pretested our questionnaire instrument to ensure that our questions were clearly
16 understood and easily answerable by respondents. We arranged for a variety of respondents to
17 complete our draft survey. These included environmental managers from 12 large companies in
18 our sample industries, a few environmental management consultants, and several faculty
19 members who research environmental management issues. We then interviewed these
20 individuals to probe their interpretation of each question and to solicit clarifying suggestions.
21 This process resulted in refinements to several survey questions and response anchors. Based on
22 our pretest, the eight-page, 32-question survey required 15–20 minutes to complete.

23 We sent the questionnaire to the entire sample twice in late 2003 (October 13 and

1 November 4).⁵ The cover letter that accompanied the questionnaire provided a unique
2 identification number that enabled respondents to complete the survey via a secure Web site
3 instead of via the enclosed paper version. Shortly after each of the two distribution dates
4 (October 23 through November 12), the SRC attempted to telephone all of these facilities to
5 encourage them to respond. It reached 2,312 facilities (73% of the sample). Postcards were sent
6 in January 2004 to facilities that had not yet responded.

7 We received 536 responses. From our total sample of 3,160 facilities, this 17 percent
8 response rate is comparable to other recent survey-based strategy research (e.g., Hoskisson *et al.*,
9 2004; McEvily and Chakravarthy, 2002; Slater and Olson, 2001). We tested sample
10 representativeness in several ways. First, we ran an analysis of variance and found that the
11 different industries' response rates, which ranged from 13 percent (refining; electric utilities) to
12 17 percent (machinery; electrical/electronics) to 19 percent (automotive; primary metals), were
13 not statistically significant ($F=0.03$). We then conducted t-tests to compare responders to
14 nonresponders along three dimensions. The two groups were statistically indistinguishable in
15 terms of facility employment ($p=0.19$), pollution levels measured as average log pounds of toxic
16 emissions in 2000–2001 ($p=0.41$), and the environmental harm resulting from these emissions
17 ($p=0.80$).⁶ The results of these comparisons provide reasonable assurance that the respondents
18 are representative of the entire sample. We tested for nonresponse bias by comparing early and
19 late respondents, since late respondents have been shown to be similar to nonrespondents
20 (Armstrong and Overton, 1977). We created two sets of late respondents: all those who
21 responded anytime after we sent the survey a second time, and a subset of these who responded

⁵ The survey is available from the corresponding author.

⁶ We compared pollution levels using data from the U.S. 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 U.S. EPA's TRACI scheme, then summing these weighted totals (Toffel and Marshall, 2004) and logging the result.

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

6 **Model**

7 We employed a structural equation modeling (SEM) approach and estimated the model via
8 maximum likelihood using AMOS Version 5 (Arbuckle, 1997). This method simultaneously
9 estimates the latent variables and the relationships between them and other observable variables.
10 Structural modeling addresses structural and measurement issues frequently found in survey-
11 designed research, and is increasingly being used in strategic management research (Capron,
12 1999; Shook *et al.*, 2004; Simonin, 1999).

13 We tested Hypotheses 1 and 2 in our structural model by estimating the extent to which
14 corporate functional departments influence facilities' receptivity to institutional pressures,
15 controlling for the level of institutional pressures exerted by market and nonmarket constituents.
16 Several other factors might affect corporate functional departments' influence on facilities. In
17 particular, past levels of institutional pressure could explain the current influence of functional
18 departments. To control for this, we predict the level of influence of the departments using
19 several variables from publicly available databases that go back several years before the survey
20 was conducted. For example, we control for historical environmental compliance at the facility's
21 corporate affiliates during 1999–2003 because noncompliance experienced during this period
22 might affect the current influence of its corporate legal affairs department. In addition, we
23 control for the stringency of environmental regulations of the facility's headquarters country, as

1 this might affect how closely the corporate legal affairs department scrutinizes its facilities’
2 environmental practices. Finally, we control for the size of the company, as this might affect the
3 extent to which its corporate departments influence facility decisions.

4 To test Hypotheses 3–5, we estimate the extent to which a facility’s receptivity to market
5 and nonmarket pressures affects its decision to adopt two distinct environmental management
6 practices. In our structural model, we include several control variables that might also influence
7 adoption of these environmental management practices, including corporate size, market and
8 nonmarket pressures exerted on the facility and corporation, and the facility’s historical
9 environmental compliance record.

10 **Measures**

11 In this section, we describe our measures for the measurement model and the structural model. In
12 addition to the hypothesized relationships, we control for the observed level of market and
13 nonmarket pressures to distinguish pressures actually exerted from the receptivity of facilities to
14 these pressures.

15 *Receptivity to nonmarket and market pressures*

16 Hypotheses 1 and 2 predict the extent to which facility managers are receptive to pressures from
17 nonmarket and market constituents. To measure this, we asked survey respondents to indicate the
18 extent to which various external groups influenced their facilities to improve environmental
19 performance. The list of external groups included customers, suppliers, competitors, trade
20 associations, local communities, environmental organizations, regulators/legislators, the media,
21 shareholders, and socially responsible investment (SRI) funds. This list corresponds to external
22 stakeholders identified by scholars in the corporate environmental strategy literature (Henriques
23 and Sadosky, 1999). Respondents ranked each stakeholder on a five-point scale from ‘no

1 influence' (coded 0.2) to 'very strong influence' (coded 1). We conducted an exploratory
2 principal components factor analysis to detect the underlying structure in the relationships among
3 these variables. Missing observations were excluded listwise. The underlying variables loaded
4 onto two factors: the first represents the *receptivity to market pressure* exerted by customers,
5 suppliers, and competitors; the second represents the *receptivity to nonmarket pressure* exerted
6 by local communities, environmental organizations, regulators, and the media. Shareholders,
7 trade associations, and SRI funds loaded fairly evenly across both factors. These two factors
8 explained 55.7 percent of the variance, with Eigenvalues of 4.25 and 1.32. We removed the three
9 variables that loaded fairly evenly on both factors (shareholders, trade associations, and SRI
10 funds) and reran the analysis. The two resulting factors had Eigenvalues of 3.33 and 1.19 and
11 explained 64.6 percent of the total variance.

12 *Environmental management practice*

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

20 Participation in government-initiated voluntary programs is the dependent variable for
21 Hypothesis 5. To measure this, our survey asked: 'What is the status of your participation in
22 voluntary U.S. EPA or state programs such as Energy Star, WasteWise, Environmental
23 Performance Track, etc.?' We presented the following four-point scale: 'not being considered'

1 (coded 1), ‘future consideration’ (2), ‘planning to participate’ (3), and ‘currently participating’
2 (4).⁷ Table 2 provides a simplified cross-tabulation that illustrates the prevalence of the two
3 environmental management practices in our sample. We aggregate the two categorical variables
4 into facilities ‘adopting’ these practices (including ‘planning to’ or ‘currently’
5 implementing/participating) or ‘not adopting’ these practices (including ‘not being considered’
6 and ‘future consideration’). The cross-tabulation of these aggregated variables reveals significant
7 heterogeneity in our sample in the adoption of the two practices. Of our 493 respondents, 99
8 facilities (20% of the respondents) adopted both ISO 14001 and participated in one or more
9 government voluntary programs. In addition, 201 facilities (41% of the respondents) adopted
10 only ISO 14001 or participated in one or more government voluntary programs. Finally, 193
11 facilities (39% of the respondents) adopted none of these practices

12 -----
13 Insert Table 1 about here
14 -----

15
16 *Functional department influence*

17 We presume that within a single company, corporate functional departments exert varying
18 amounts of influence on decisions in different domains. For example, one might reasonably
19 expect corporate legal departments to exert more influence on contractual terms than on
20 production decisions. To bolster the validity of our measure, we focused this question on our
21 domain of interest, environmental performance. Environmental performance can be enhanced
22 through a variety of management practices about which lawyers and marketers might have strong
23 preferences such as compliance-oriented tasks (e.g., implementing documented policies and
24 routine training) and tasks more visible to customers (e.g., adopting the ISO 14001

⁷ In the model, we rescaled this and all other variables to have a maximum of one.

1 Environmental Management System standard or various industry voluntary programs). To
2 measure the influence of the corporate legal affairs department and corporate marketing
3 department, we asked survey respondents: ‘To what extent have the following corporate
4 departments influenced your facility to improve its environmental performance?’ The five-point
5 scale ranged from ‘no influence’ (coded 0.2) to ‘very strong influence’ (coded 1). We provided
6 an option for respondents to indicate that their corporation did not have either department, and
7 coded the department influence variables as ‘no influence’ in such cases.

8 *Nonmarket pressure exerted*

9 Pressure from nonmarket actors (legislators, regulators, nongovernmental organizations) is
10 considered a latent variable, which we constructed using four measures obtained from publicly
11 available databases, each of which we rescaled to a maximum value of one. First, we included
12 the facility’s state’s Congressional members’ ‘National Environmental Scorecard’ values
13 published annually by the League of Conservation Voters, a measure that has been widely used
14 for this purpose (Hamilton, 1997; Kassinis and Vafeas, 2002; Viscusi and Hamilton, 1999;
15 Welch *et al.*, 2000). We calculated the average of the League of Conservation Voters’ 1996
16 scores for each state’s U.S. Senate and House delegations to Congress. Second, we included the
17 number of state-level environmental policy initiatives (toxic waste, recycling programs) each
18 state had implemented (Hall and Kerr, 1991: 142), a measure recently used by Welch *et al.*
19 (2000). Third, we employed Renew America’s 1989 assessment of how comprehensively each
20 state’s policies have addressed 17 environmental domains (e.g., air pollution, groundwater, soil
21 conservation) (Hall and Kerr, 1991: 146). Fourth, we included a proxy for a community’s
22 propensity for collective action regarding environmental protection. Following an approach
23 others have used (Maxwell, Lyon, and Hackett, 2000; Welch *et al.*, 2000; Wikle, 1995), we

1 included the number of members of major environmental and conservation organizations in the
2 facility's state per thousand state residents in 2003. These data were collected through a survey
3 of 80 main environmental and conservation nongovernmental organizations (NGOs) in 2003.⁸
4 We ran an exploratory principal components factor analysis on these four nonmarket measures.
5 The four variables loaded on one factor with an Eigenvalue of 3.07, which explained 76.9
6 percent of the variance.

7 *Market pressure exerted*

8 Buyers motivate many companies to adopt environmental management practices and standards
9 (Christmann and Taylor, 2001; Henriques and Sadosky, 1996; Jiang and Bansal, 2003; King *et*
10 *al.*, 2005). Because companies are more likely to adopt the ISO 14001 Environmental
11 Management System standard when they face markets with more adopters of this standard
12 (Christmann and Taylor, 2001), we measured market pressure to adopt environmental
13 management practices by considering the extent to which a facility's buyers had adopted ISO
14 14001. Because individual facility-level data are not available, we constructed an industry-level
15 measure using the following equation:

16
$$MPE_j = \sum_k \left(\frac{ADOPT_k}{ESTAB_k} \times \frac{SALES_{j,k}}{SALES_j} \right)$$

17 where MPE_j is the market pressure exerted on facilities in industry j , $ADOPT_k$ is the number of
18 establishments in industry k that had adopted ISO 14001 (International Organization for
19 Standardization, 2003), $ESTAB_k$ is the total number of establishments in industry k (U.S. Census
20 Bureau, 2003), $SALES_{j,k}$ represents the total annual sales from firms in industry j to firms in
21 industry k , and $SALES_j$ represents the total annual sales from firms in industry j . Data for the

⁸ Delmas M. 2004. Survey of environmental and conservation NGO membership in the United States. Donald Bren School of Environmental Science and Management, University of California, Santa Barbara, unpublished mimeograph.

1 latter two variables were obtained from the most recent detailed Economic Input-Output (EIO)
2 tables from the Bureau of Economic Analysis (2000). In summary, market pressure exerted is a
3 sales-weighted measure of the extent to which each industry's buying sectors have adopted ISO
4 14001.

5 *Environmental regulatory compliance*

6 Past events that have shaken an organization might also influence how managers perceive and
7 respond to institutional pressures (Elsbach and Sutton, 1992). For example, managers in firms
8 whose reputations have suffered from pollution accidents might be more sensitive to
9 environmental issues than those in other companies (Prakash, 2000). Similarly, past compliance
10 problems can lead managers to be more sensitive to pressure from regulators and take additional
11 steps to ensure compliance, such as hiring professionals with experience implementing programs
12 that assure compliance (Edelman, 1990).

13 We controlled for a facility's poor compliance history as a potential source of increased
14 sensitivity to nonmarket pressure. Facility noncompliance is considered a latent construct based
15 on three variables: the sum of environmental compliance violations during 2002–2003, the
16 number of formal enforcement actions during 1999–2003, and the log sum of penalties accrued
17 during 1999–2003 (Kassinis and Vafeas, 2002; Khanna and Anton, 2002; Russo and Fouts,
18 1997).⁹ This information was obtained from the U.S. EPA's Integrated Data for Enforcement
19 Analysis (IDEA) database. We rescaled each to a maximum value of one, and conducted
20 principal components factor analysis to confirm that these three items resulted in one factor
21 (Eigenvalue of 2.13 that explained 71.0 % of the variance).

22 The level of environmental compliance of corporations as a whole might also affect

⁹ To avoid dropping facilities with no penalties, we added one before logging the sum of penalties.

1 corporate legal affairs departments' influence over their subsidiaries. To measure corporate-wide
2 environmental compliance, we measured the noncompliance of facilities' corporate affiliates. To
3 construct this measure, we extracted from the U.S. EPA's Risk Screening and Environmental
4 Indicators (RSEI) database a list of facilities that reported to the EPA's TRI program the same
5 'Parent DUNS' number (a unique identifier assigned by Dun & Bradstreet) as the facilities in our
6 sample.¹⁰ We obtained the number of formal enforcement actions and the value of penalties
7 (which we log) for these corporate affiliates from the IDEA database, and rescaled these
8 variables to a maximum value of one. A principal components factor analysis of these two items
9 resulted in one factor with an Eigenvalue of 1.64, which explained 82.0 percent of the variance.
10 *Stringency of environmental regulations in the headquarters' country*

11 Nations differ significantly in how their citizenries perceive the natural environment and in the
12 stringency of their environmental regulations (Jamison and Baark, 1999; Perron, Vaillancourt,
13 and Durand, 2001). These disparities lead to differing views of which company environmental
14 actions are considered legitimate. These views can be particularly important in the facility's
15 headquarters country because this often serves as a primary source of labor, capital, and media
16 coverage. As such, corporate departments located in countries with more stringent environmental
17 regulations might be more sensitive to institutional pressures to improve their environmental
18 performance. We measure the relative stringency of environmental regulations in each facility's
19 headquarters country using data from the World Economic Forum's 2001 Executive Opinion
20 Survey (EOS) of its members (World Economic Forum, 2002 [EOS included on CD-ROM]).
21 Using a seven-point scale, responses ranged from 'lax compared to most other countries' to
22 'among the world's most stringent' (World Economic Forum, 2002).

¹⁰ U.S. EPA's Risk Screening and Environmental Indicators (RSEI) is available at <http://www.epa.gov/opptintr/rsei/index.html>.

1 *Corporate size*

2 We measured corporate size as log corporate revenues, which we rescaled to a maximum value
3 of one. We obtained this information from Dun & Bradstreet, Onesource, Hoover's, and
4 Compustat.

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

9 -----
10 Insert Figure 2 about here
11 -----

12 **Limitations**

13 Our measures and use of a survey to gather some of our data are not without limitations. Since
14 several of our antecedent and consequent variables were measured using items in a questionnaire
15 completed by a single respondent, we conducted the Harman one-factor test to assess whether
16 common method variance is a serious issue (Podsakoff and Organ, 1986). This test involves
17 entering all self-reported variables into a factor analysis and examining the unrotated factor
18 solution. High common method variance is indicated by the emergence of a single factor, or by a
19 single general factor that explains the majority of the covariance (Podsakoff and Organ, 1986).
20 We entered all 11 self-reported items into a principal components factor analysis. The results
21 yielded two factors with Eigenvalues greater than one, the first of which explained only 38
22 percent of the variation. Because no single dominant factor accounts for most of the variation
23 among the self-reported variables, common method variance is unlikely to be a serious problem

1 in the data.¹¹

2 Table 2 presents descriptive statistics for all observed variables employed in our
3 analysis.¹²

4 -----
5 Insert Table 2 about here
6 -----
7

8 RESULTS

9 Measurement model

10 The measurement model refers to the construction of latent variables from observable items. In
11 our case, we constructed five latent variables from 16 items. We tested the measurement model
12 by examining individual item reliability, internal consistency, and discriminant validity (see
13 Table 3). The measurement model provided acceptable item reliability, all of the item loadings
14 being statistically significant ($p < 0.001$).

15
16 -----
17 Insert Table 3 about here
18 -----
19

20 We tested internal consistency for each latent construct using three methods. First, we
21 calculated the Cronbach alpha reliability coefficient using standardized item scores (mean=0,
22 variance=1) such that the scale and its reliability were based on the sum of standardized
23 variables. Alpha was above the common threshold of 0.7 for every latent variable (Nunnally and
24 Bernstein, 1994). Second, we calculated *composite reliability* (ρ_c) for each latent variable by

¹¹ We also entered *all* the variables in our model, including those based on archival data, into a principal components factor analysis. The results yielded six factors with eigenvalues greater than one, the first of which explains only 16 percent of the variation.

¹² Correlations among all observed variables are available from the corresponding author.

1 dividing (a) the squared sum of the individual standardized loadings by (b) the sum of the
2 variance of their error terms and the squared sum of the individual standardized loadings (Fornell
3 and Larcker, 1981). The values calculated for each of our latent variables exceed the threshold
4 value of 0.70 (Nunnally, 1978), which suggests that our measurement model demonstrates
5 adequate internal consistency. Third, we calculated the ‘average variance extracted’ (ρ_{ave}), which
6 measures the amount of variance captured by the construct in relation to the amount of variance
7 attributable to measurement error. For each latent variable, average variance extracted is
8 calculated as (a) the sum of the squared item standardized loadings divided by (b) the sum of the
9 variance of the error terms and the squared item standardized loadings. Convergent validity is
10 judged to be adequate when average variance extracted is at least 0.50, which indicates that the
11 variance captured by the construct exceeds the variance due to measurement error (Fornell and
12 Larcker, 1981). As displayed in Table 3, the average variance extracted values are satisfactory
13 for all constructs.

14 Discriminant validity refers to the extent to which measures of different constructs are
15 distinct. Discriminant validity is deemed adequate when the variance shared between two
16 constructs is less than the variance shared between a construct and its measures (Fornell, Tellis,
17 and Zinkhan, 1982). The variance shared by any two constructs is obtained by squaring the
18 correlation between them. The variance shared between a construct and its measures is the
19 average variance extracted. Discriminant validity was assessed by comparing (a) the correlations
20 between a given construct and all other constructs to (b) the average variance extracted for the
21 focal construct. Table 3 shows the correlation matrix for the constructs; the diagonal elements
22 have been replaced by the square root of the constructs’ average variance extracted. Our
23 constructs demonstrate adequate discriminant validity because these diagonal elements are

1 greater than the off-diagonal elements in the corresponding rows and columns.

2 **Structural model**

3 The results of the structural model are presented in Table 4.¹³

4 *Goodness of fit*

5 We find that the χ^2 is statistically significant (394.8, df=204, p=0.000), which could suggest
6 some misspecification of the model, although it is well recognized that this statistic is sensitive to
7 sample size (Arbuckle and Wothke, 1999). We consider other structural diagnostics for the
8 overall fit of the model that are not sensitive to sample size (Bentler and Bonett, 1980). The root
9 mean squared error of approximation (RMSEA) (Steiger, 1990) is an estimate of the discrepancy
10 between the original and reproduced covariance matrices in the population. Cudeck and Browne
11 (1983) suggested that an RMSEA of 0.05 represents a close fit and that RMSEAs of less than
12 0.08 represent a reasonable fit. In our model, the RMSEA of 0.044 (with a 90% confidence
13 interval ranging from 0.037 to 0.050) is within the acceptable range. Likewise, the 0.956
14 incremental fit index (IFI) (Bollen, 1989), the 0.944 Tucker-Lewis index (TLI) (Tucker and
15 Lewis, 1973), and the 0.955 comparative fit index CFI (Bentler, 1990) are all above the common
16 threshold of 0.90 that designates an acceptable fit. These structural diagnostics indicate a very
17 good relative fit of the proposed theoretical model to the underlying data.

18 -----
19 Insert Table 4 about here
20 -----

21 *Testing of the hypotheses*

22 As Table 4 illustrates, the results provide significant support for the hypothesized relationships.

¹³ To estimate the model, we make several identifying assumptions. We assume that a facility's observed nonmarket pressures (which we measure at the state level) are not directly correlated with corporate size, regulatory stringency in the country of the headquarters, or the compliance histories of the facility or its corporate affiliates. In addition, we assume that regulatory stringency in the country of the headquarters is not directly correlated with corporate size or the compliance record of the facility or its corporate affiliates.

1 There is a significant positive path between the influence of the corporate legal department and
2 receptivity to nonmarket pressure ($\beta = 0.15$ $p < 0.001$), providing support for Hypothesis 1.
3 Likewise, the significant positive relationship between the influence of the corporate marketing
4 department and receptivity to market pressure ($\beta = 0.31$; $p < 0.001$) provides support for
5 Hypothesis 2. Based on the standardized coefficients, a one-point increase in the five-point
6 Likert scale of corporate legal departments' influence on facility-level environmental decisions is
7 associated with a 23 percent increase in facilities' receptivity to nonmarket pressure. A
8 comparable increase in corporate marketing departments' influence is associated with a 34
9 percent increase in facilities' receptivity to market pressures.¹⁴

10 Our results also provide strong support for our hypotheses that predict the adoption of
11 environmental management practices. Hypothesis 3 predicted that, even after controlling for the
12 actual pressure exerted by market constituents, facilities that are more receptive to pressure from
13 their market constituents are more likely to adopt ISO 14001. Our model confirms this positive
14 relationship ($\beta = 1.01$; $p < 0.001$). The standardized coefficient implies that a one standard
15 deviation increase in receptivity to market pressure is associated with a 0.40 increase in ISO
16 14001 implementation status, or two points on the five-point Likert scale that measures ISO
17 14001 implementation.¹⁵ As predicted by Hypothesis 4, we find that greater receptivity to
18 nonmarket pressure is associated with *less* enthusiasm for ISO 14001 ($\beta = -0.36$; $p = 0.09$). A
19 one standard deviation increase in receptivity to nonmarket pressure is associated with a 0.13

¹⁴ 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 five-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 nonmarket pressure by 0.030 ($0.2 * 0.15$), which is 23 percent 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 percent of the latter's mean value (0.184).

¹⁵ The survey measured ISO 14001 implementation status on a five-point Likert scale, which we rescaled to a maximum of one for use in the model. Thus, one point on the Likert scale corresponds to 0.20.

1 decrease in ISO 14001 implementation status, or just over a half a point (0.65) on the ISO 14001
2 implementation Likert scale. Hypothesis 5 predicted that facilities that are more receptive to
3 pressure from nonmarket constituents are more likely to adopt government voluntary programs.
4 As predicted, the coefficient on this path is positive and statistically significant ($\beta = 0.40$; $p =$
5 0.05). The standardized coefficient implies that a one standard deviation increase in receptivity
6 to nonmarket pressure is associated with a 0.16 increase in government voluntary program
7 participation, or just over half a point (0.64) on the four-point Likert scale that measures
8 government voluntary program participation.¹⁶ Overall, these results confirm our hypotheses that
9 companies respond to perceived institutional pressures in different ways, depending on which
10 constituent is exerting pressure.

11 We found no evidence that participation in government voluntary programs is associated
12 with receptivity to market pressure ($\beta = 0.22$; $p = 0.19$). Turning to the control variables, we first
13 examine factors that might affect the influence of the corporate legal affairs department.
14 Although firm size ($\beta = 0.34$, $p < 0.001$) and corporate affiliates' environmental noncompliance
15 ($\beta = 0.13$, $p = 0.10$) increase the influence of the corporate legal affairs department, we find no
16 evidence that this department's influence is affected by nonmarket pressure exerted ($\beta = 0.00$, p
17 $= 0.98$) or the stringency of the headquarters country's environmental regulations ($\beta = 0.41$, $p =$
18 0.18). Corporate marketing departments are more influential in larger firms ($\beta = 0.14$, $p = 0.01$)
19 and when facilities face greater environmental pressure exerted by customers ($\beta = 0.09$, $p =$
20 0.01).

21 What else influences facilities' receptivity to institutional pressures? Facilities with poor

¹⁶ The survey measured government voluntary program implementation on a four-point Likert scale, which we rescaled to a maximum of one for use in the model. Thus, one point on the Likert scale corresponds to 0.25.

1 compliance records ($\beta = 0.14, p = 0.01$) or that face greater nonmarket pressure exerted ($\beta =$
2 $0.05, p = 0.11$) are more receptive to environmental pressures from nonmarket constituents. One
3 standard deviation increase in these antecedents increases the perception of environmental
4 pressures from nonmarket constituents by 0.13 and 0.07 standard deviations, respectively. We
5 found no evidence that the stringency of environmental regulations in the headquarters country
6 influenced facilities' receptivity to nonmarket pressures. As expected, we found receptivity to
7 market pressure to be positively associated with the amount of market pressure exerted ($\beta = 0.12,$
8 $p < 0.001$), where a one standard deviation increase in the latter is associated with a 0.24
9 standard deviation increase in the former. Taken as a whole, our results suggest that influential
10 legal affairs departments appear to magnify the salience of pressures exerted by nonmarket
11 constituents, and that a similar process occurs with marketing departments and pressures exerted
12 by market constituents. The increased salience of these pressures appears to heighten facility
13 managers' awareness of these issues, which subsequently increases the likelihood of an
14 organization response that these constituents view as legitimate.

15 Finally, we found the adoption of ISO 14001 to be positively associated with facilities
16 that are part of larger firms ($\beta = 0.31, p < 0.001$), and those on which market constituents ($\beta =$
17 $0.20, p < 0.001$) and nonmarket constituents ($\beta = 0.17, p = 0.05$) exert more environmental
18 pressure. Our finding that heterogeneity in the adoption of this management practice is partially
19 due to organizations being subjected to different levels of pressure exerted by a common
20 institutional constituent confirm prior research (Darnall and Edwards, 2006; Edelman, 1992;
21 Lounsbury, 2001).

22 Consistent with Hypothesis 4, we find that facility managers who perceive more
23 nonmarket pressure are less willing to adopt ISO 14001 ($\beta = -0.36, p = 0.09$). This could suggest

1 that facilities with influential legal affairs departments might be convinced by their lawyers that
2 ISO 14001 could be associated with liabilities, which would make facility managers less inclined
3 to adopt the standard.

4 A greater propensity to participate in government voluntary programs was exhibited by
5 facilities in larger firms ($\beta = 0.16$, $p = 0.03$), although we found no significant influence from
6 direct institutional pressures exerted by nonmarket or market constituents, or by the extent to
7 which facilities were subjected to such pressure from their market constituents.

8 *Robustness tests*

9 We conducted several robustness tests. First, we compared our model to three plausible
10 alternative models (McDonald and Ho, 2002). We developed the first alternative model to
11 accommodate potential *direct* relationships between corporate departments' influence and
12 facilities' adoption decisions. Specifically, we added two new links to our original model: (1)
13 between corporate legal influence and government voluntary program implementation, and (2)
14 between corporate marketing influence and ISO 14001. The results of this model confirm the
15 results of our original model: all hypothesized relationships remain statistically significant with
16 the predicted sign. The standardized estimates are very similar to those in our original model.
17 Following Arbuckle (2006), we compare this alternative model to our original model using the
18 Bayes Information Criterion (BIC) and Browne-Cudeck (1989) Criterion (BCC). The results
19 indicate that the original model provides a better fit.¹⁷

20 To compare our model to a more classic institutional approach, we developed a second
21 alternative model in which we omit the two receptivity variables and instead directly link

¹⁷ The original model's BIC value of 983.90 is 7.6 units lower (better) than the alternative model's (BIC of 991.5), providing 'strong evidence' that the original model is superior (Arbuckle, 2006: 333; Raftery, 1995). The small difference in BCC values (0.6) indicates that there is 'no credible evidence' that either model is superior (Arbuckle, 2006: 330; Burnham and Anderson, 1998: 128).

1 pressures from external constituents (nonmarket and market actors) and constituents of the firm
2 (corporate marketing and legal affairs departments) to the adoption of the two management
3 practices. This alternative model yields fit statistics that are substantially (and statistically
4 significantly) worse than our original model. In sum, our original model adds significant
5 explanatory power to a more classic institutional approach.

6 To test Hypotheses 1 and 2, which predicted positive associations between the influence
7 of particular corporate departments and facilities' receptivity to pressure from particular external
8 constituents, we use survey data that we gathered contemporaneously. In the original model, we
9 include paths extending from the corporate influence to the receptivity variables. To examine
10 whether our results are robust to the inclusion of the reverse paths, we developed a third
11 alternative model in which we added two new paths extending from facilities' receptivity to
12 nonmarket (market) pressures to the influence of the corporate legal affairs (marketing)
13 department. The results of this model yielded nearly identical estimates of the original
14 hypothesized relationships. In addition, neither of the two new 'reverse' paths was statistically
15 significant, and the model fit statistics declined substantially.¹⁸ Therefore, our main results are
16 robust to the inclusion of these 'reverse' paths, and the model fit statistics favor our original
17 model.

18 A second potential concern derives from heterogeneity within our sample that is not
19 controlled for in our structural equation model. Specifically, because our sample includes
20 facilities from several industries and structural equation modeling techniques do not allow for
21 industry dummies, it is possible that unobserved differences between these industries might
22 account for some of our results. To test whether our results were sensitive to unobserved industry

¹⁸ The original model's BIC is 7.7 units lower (better) than this alternative model's. The BCC values of the two models are nearly identical.

1 differences, we estimated regression equations corresponding to the paths of the structural
2 equations. We ran individual regressions for each of the four consequent variables in our
3 hypotheses. In each regression, we included all antecedent variables from our model (i.e., direct
4 and indirect antecedents) as well as industry dummies, and used standard errors robust to
5 heteroscedasticity. The results of each of these regressions yielded coefficients on the
6 hypothesized variables that were of the same sign and significance as in our original structural
7 equation, regardless of whether we controlled for industry differences at the two-digit or three-
8 digit SIC code level. The results of a multivariate regression, which accommodates our two
9 ultimate dependent variables (ISO 14001 adoption and voluntary program participation), also
10 yielded coefficients of the same sign and significance as our main results. These results provide
11 strong evidence that our results are robust to industry effects.

12 We also assessed whether our results were robust to a dichotomous (rather than a five-
13 point ordinal) approach to measuring adoption of the two environmental management practices.
14 We transformed the *ISO 14001 implementation status* and *Voluntary program participation*
15 categorical variables into dichotomous variables by recoding them as ‘1’ when a facility is
16 adopting or has adopted these practices (‘currently’ implementing/participating) and ‘0’
17 otherwise (‘not being considered,’ ‘future consideration,’ or ‘planning to implement’). We then
18 estimated the two path models described above that predict these adoption dummy variables
19 using a probit specification. The results of these probit regressions support our main results.
20 Specifically, facilities that are more receptive to market pressure are more likely to adopt ISO
21 14001, and those more receptive to nonmarket pressure are less likely to adopt ISO 14001 and
22 more likely to adopt government voluntary programs. Together, these robustness tests suggest

1 that our results are highly robust to alternative variable measures, the addition of industry
2 controls, and alternative specifications.¹⁹

3

4 **DISCUSSION AND CONCLUSION**

5 Institutional theory can help overcome important challenges in strategy research. As Ingram and
6 Silverman (2002) noted, ‘given the importance of institutions for determining the success or
7 failure of specific strategies or actors, consideration of ways to influence the creation and
8 maintenance of favorable institutions is fundamental to any organization’s strategy’ (Ingram and
9 Silverman, 2002:20) Institutional theory has traditionally described how isomorphic institutional
10 pressures lead to common organizational practices. In the tradition of this framework, persistent
11 heterogeneity among various firms within the same industry might be attributed to differences in
12 the *composition* of their organizational fields. For example, firms located in different states
13 would face different institutional pressures, which could result in dissimilar organizational
14 practices. Differing *levels* of institutional pressure could also lead to heterogeneous activities
15 during any specific period, but ultimately these are purported to result in common organizational
16 structures and practices to ensure legitimacy. As a consequence, few have employed institutional
17 theory to understand questions of strategy, which focus on *persistent differences among*
18 *organizations that share common organizational fields*. We therefore need more informed
19 theories about how and why organizations respond differently to institutional pressures.

20 This article seeks to contribute to filling this void. We have argued that beyond exposure
21 to different levels of institutional pressures, organizational structure is key to explaining why
22 organizations adopt heterogeneous management practices. Although our results should be

¹⁹ Results available upon request from the authors.

1 interpreted with caution owing to the limitations of our cross-sectional empirical approach, we
2 have shown that organizational structure is associated with facility managers' awareness of
3 institutional pressures. Differences in managers' receptivity to institutional pressures emerge
4 because organizations channel these pressures to different organizational functions, such as legal
5 affairs and marketing departments. As these different corporate functional departments influence
6 facility decision making, they heighten their facilities' awareness of pressures from different
7 institutional constituents.

8 Constituents of an organization's nonmarket environment (regulators, NGOs, local
9 communities, the media) tend to view environmental issues as negative externalities whereby
10 facilities 'get away' with imposing costs on society. In this frame, environmental management is
11 viewed as unproductive and a zero-sum game in which field constituents and firms compete to
12 avoid bearing these costs. This debate is typically settled by government, either via the courts or
13 by the imposition (or not) of increased regulatory scrutiny or additional laws and regulations.
14 Accordingly, such issues are typically addressed by organizations' legal affairs departments. In
15 this cultural frame, adopting additional environmental management practices is more likely to be
16 viewed as avoiding sanctions associated with failing to meet these constituents' expectations of
17 legitimate organizational behavior (e.g., full legal compliance, conducting expected levels of
18 community outreach).

19 In contrast, organizations view pressures exerted by their customers, suppliers, and
20 competitors—constituents within their market environment—as business drivers. Such pressures
21 are typically channeled through an organization's marketing department, the objectives of which
22 are to grow market share and profits. Here, adopting 'beyond compliance' environmental
23 practices that are demanded by customers or are already implemented by competitors are more

1 likely to be culturally framed as indicators of superior management and risk-mitigated business
2 partners. When framed this way, adopting such management practices is more likely to be
3 viewed as garnering rewards.

4 In summary, institutional pressures exerted by different field constituents are channeled
5 to different organizational functions, which influence how they are received by facility
6 managers. These differences in receptivity are critical because they, in turn, influence
7 organizations' responses in terms of adopting management practices that have yet to be
8 institutionalized. We found that organizations that were more receptive to institutional pressure
9 from market constituents (controlling for the amount of pressure exerted) were more likely to
10 adopt the environmental management standard ISO 14001, and that organizations that were more
11 receptive to institutional pressure from nonmarket constituents (controlling for the amount of
12 pressure exerted) were more likely to adopt government-initiated voluntary programs and less
13 likely to adopt ISO 14001.

14 We used the natural environment as our empirical setting because of the richness and
15 complexity of the environmental field. In this domain, we build upon empirical research that has
16 shown that pressures from field constituents including customers, regulators, legislators, local
17 communities, and environmental activist organizations have influenced companies to adopt
18 environmental management practices (Baron, 2003; Carraro, Katsoulacos, and Xepapadeas,
19 1996; Christmann and Taylor, 2001; Delmas, 2002; Florida and Davison, 2001; Henriques and
20 Sadorsky, 1996; Khanna and Anton, 2002; Lawrence and Morell, 1995; Majumdar and Marcus,
21 2001; Maxwell *et al.*, 2000; Raines, 2002; Rugman and Verbeke, 1998; Sharma and Henriques,
22 2005; Vidovic and Khanna, 2003).²⁰ We also build upon research that studies how organizational

²⁰ See Delmas and Toffel (2004) for a more extensive review of this literature.

1 factors influence firms' choices of environmental strategies (Bansal and Roth, 2000; Cordano
2 and Frieze, 2000; Darnall and Edwards, 2006; Sharma, 2000; Sharma and Vredenburg, 1998).
3 But this prior research has not focused on the interaction between institutional pressures and
4 organizational characteristics to explain the adoption of proactive strategies. We addressed these
5 research opportunities by hypothesizing and testing how organizational structure influences
6 managerial receptivity and responses to various institutional pressures. Our results revealed that
7 differences in the degree to which corporate departments influence facility-level decisions lead
8 facilities to respond differently to similar institutional pressures.

9 More broadly, our study contributes to strategic management research by offering a more
10 comprehensive specification of the neoinstitutional model. We account for external constituents
11 who exert pressures on organizations and internal organizational constituents who operate within
12 corporate departments and facilities. We explain firms' heterogeneous strategies through the
13 interaction between these distinct sets of constituents. First, we unpack the simultaneous
14 influence of various constituents from organizations' market and nonmarket environments,
15 which is necessary for effective strategizing (Ingram and Silverman, 2002). Second, we stress the
16 importance of influential functional units within organizations in explaining strategic
17 heterogeneity. These organizational characteristics were emphasized by the old institutional
18 sociology, but omitted by the new institutional sociology. In the spirit of Greenwood and Hinings
19 (1996), our study brings the new institutionalism and old institutionalism together.

20 Further research is required in several areas. Although we did not include it in our model,
21 the interaction among institutional constituents is likely to magnify or temper their influence on
22 company practices. For example, pressure from environmental activist groups can generate
23 media coverage that encourages the formulation of more stringent regulations. To prevent this,

1 industry leaders can attempt to encourage laggard firms to adopt environmental practices (King
2 and Lenox, 2000; Prakash, 2000). In addition, our cross-sectional empirical approach precluded
3 us from examining how organizations' perceptions of institutional pressures might change over
4 time. Future research can examine dynamic factors that might alter organizations' perceptions of
5 institutional pressures such as accumulating positive experiences of engaging with particular
6 stakeholders or the shock of being targeted by regulators, community protests, or activist
7 campaigns.

8 Finally, several authors have pointed out the importance of additional organizational
9 characteristics to explain corporate responsiveness to pressures to improve environmental
10 performance. These include the capabilities, resources, and ownership structure of the firm
11 (Darnall and Edwards, 2006; Sharma, 2000; Sharma and Vredenburg, 1998), corporate identity
12 and managerial discretion (Sharma, 2000), and the characteristics of individual managers (Bansal
13 and Roth, 2000; Cordano and Frieze, 2000). Further research could leverage our empirical
14 approach to investigate these potential influences, such as examining the extent to which
15 managers' personal characteristics and professional experiences influence their perception of
16 institutional pressures. For example, it seems feasible that a facility manager's nationality could
17 imbue similar cultural-based sensitivities to those we ascribed to the influence of the
18 headquarters country. In addition, corporate marketing and legal affairs department managers'
19 prior experience with stakeholders while employed at other firms could influence their current
20 sensitivity to institutional pressures. A richer understanding of such personal attributes would
21 provide an important supplement to the organizational characteristics identified in this paper.

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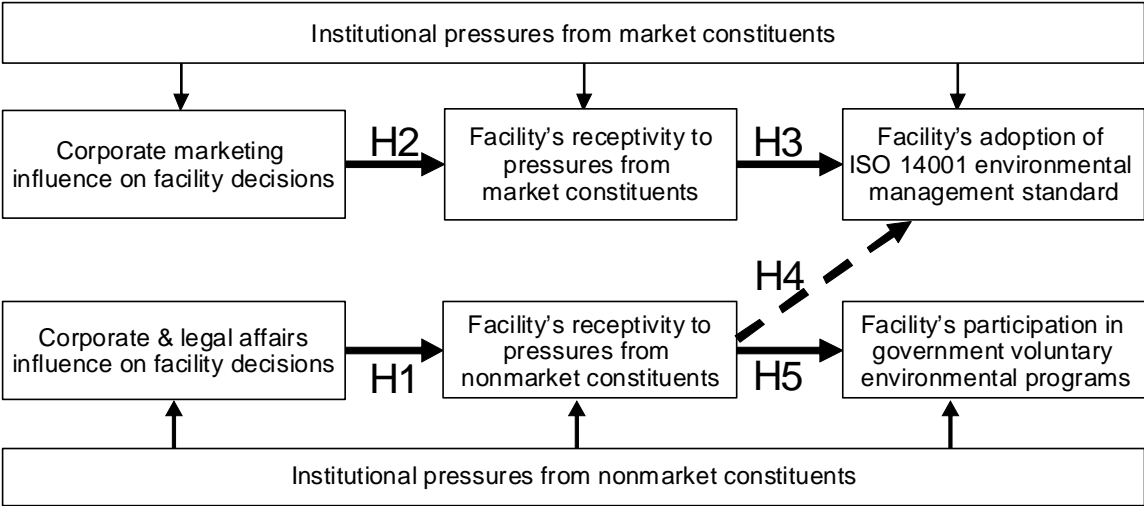


Figure 1. Institutional pressures, facility receptivity, and management practices: hypothesized relationships

Note: Thick solid lines depict hypotheses that predict positive relationships. The thick dashed line depicts the hypothesis that predicts a negative relationship.

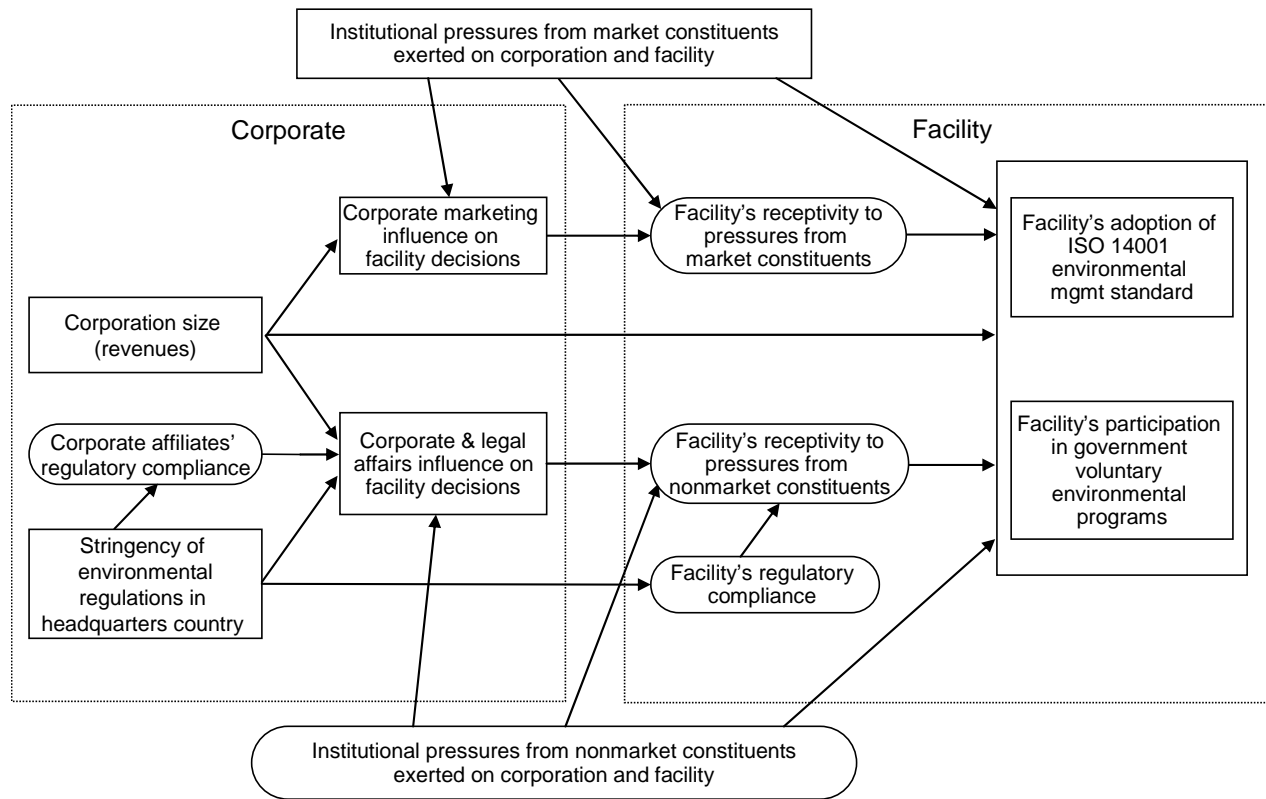


Figure 2. Structural model ²¹

²¹ Observed variables are depicted as rectangles and latent variables as ovals. For clarity, correlations included in 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
(η_3) <i>Receptivity to nonmarket 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
(η_4) <i>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
(ξ_1) <i>Facility environmental noncompliance</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
(ξ_2) <i>Corporate environmental noncompliance</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
(ξ_3) <i>Nonmarket 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. Adoption of environmental management practices in our sample

<u>Government voluntary program status</u>			
	Not adopting ^a	Adopting ^b	<i>Total</i>
<u>ISO 14001 status</u>			
Not adopting ^a	236 (48%)	54 (11%)	290 (59%)
Adopting ^c	137 (28%)	66 (13%)	203 (41%)
<i>Totals:</i>	373 (76%)	120 (24%)	493 (100%)

Notes:

- ^a Includes 'Not being considered,' 'Future consideration,' and 'Planning to participate/implement'
- ^b Includes 'Currently participating'
- ^c Includes 'Currently implementing' and 'Successfully implemented'

Table 3. 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 nonmarket 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 noncompliance	0.00	0.01	3	0.79	0.99	0.97	0.10	0.03	0.99			
(ξ_2) Corporate environmental noncompliance	0.00	0.02	2	0.78	0.95	0.95	0.07	0.00	0.00	0.97		
(ξ_3) Nonmarket 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 nonmarket pressure</i>				
→ Influence of local community	1.49	0.16	9.39	0.71
→ Influence of environmental organizations	1.41	0.15	9.42	0.76
→ Influence of media	1.33	0.14	9.40	0.76
→ Influence of regulators/legislators	1.00	fixed		0.46
<i>(η_4) Receptivity to market pressure</i>				
→ Influence of competitors	1.43	0.11	13.29	0.79
→ Influence of customers	1.49	0.12	12.28	0.71
→ Influence of suppliers	1.00	fixed		0.69
<i>(ξ_1) Facility environmental noncompliance</i>				
→ Number of formal enforcement actions	1.00	fixed		0.89
→ Log sum of penalties	2.13	0.14	14.99	0.80
→ Number of environmental compliance violations	1.09	0.09	12.33	0.58
<i>(ξ_2) Corporate environmental noncompliance</i>				
→ Log sum of penalties	2.33	0.20	11.61	0.83
→ Number of formal enforcement actions	1.00	fixed		0.77
<i>(ξ_3) Nonmarket pressure exerted</i>				
→ League of Conservation Voters' 1996 state scorecard rating	1.00	fixed		0.63
→ Number of state-level environmental policy initiatives	1.30	0.08	16.53	0.99
→ Renew America assessment of state's environmental policy comprehensiveness	1.13	0.06	19.14	0.91
→ State's environmental and conservation organization members per thousand residents	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 4. 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 nonmarket pressure	0.15	0.02	6.20	***	0.36
	(ξ_3) Nonmarket pressure exerted	→ (η_3)	Receptivity to nonmarket pressure	0.05	0.03	1.62	0.11	0.07
	(ξ_1) Facility environmental noncompliance	→ (η_3)	Receptivity to nonmarket pressure	0.14	0.05	2.74	0.01	0.13
	(ξ_7) Stringency of environmental regulations in headquarters country	→ (η_3)	Receptivity to nonmarket 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
H3	(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) Nonmarket pressure exerted	→ (η_1)	ISO 14001 implementation status	0.17	0.09	1.99	0.05	0.08
H4	(η_3) Receptivity to nonmarket pressure	→ (η_1)	ISO 14001 implementation status	-0.36	0.22	-1.68	0.09	-0.13
H5	(η_3) Receptivity to nonmarket 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) Nonmarket 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
<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) Nonmarket pressure exerted	→ (ξ_5)	Influence of corporate legal affairs department	0.00	0.07	0.03	0.98	0.00
	(ξ_2) Corporate environmental noncompliance	→ (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. *** $p < 0.001$