The impact of stakeholders' influence strategies on environmental performance: A moderated mediation model

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Abstract

The present study examines the association between stakeholders' influence strategies and environmental performance, within a natural-resource-based view framework. Using survey data from a cross-country and cross-industry setting of 170 firms, we tested a moderated mediation model with bootstrapping methods, assessing the mediating role of firms' proactive environmental strategies and the moderating role of organisational learning capabilities. Results revealed that firms' proactive environmental strategies acted as a mediator between stakeholders' influence strategies and environmental performance only when employees' usage influence strategies was the independent variable. Specifically, proactive environmental strategies mediated the indirect effect when learning capabilities were high but not when they were low. Our findings demonstrate that environmental strategies and learning capabilities are key mechanisms in explaining how employees might advance the corporate greening agenda and ultimately impact firms' environmental performance.

Key words: environmental performance; learning capabilities; moderated mediation; perceived uncertainty; proactive environmental strategies; stakeholders' influence

Introduction

Among all the potential antecedents of firms' environmental proactivity, stakeholders' pressures stand as the central determinant factor (González-Benito and González-Benito, 2006). Stakeholders are defined as "any group or individual who can affect or is affected by the achievement of the organisation's objectives" (Freeman, 1984, p. 46), and thus have been considered to strongly affect the development of environmental management capabilities (Buysse and Verbeke, 2003).

Particularly within the natural-resource-based view (NRBV) of the firm (Hart, 1995), a stakeholder integration capability is a key resource that companies may use to foster their environmental strategies, and subsequently achieve competitive advantages and better environmental performance. In this context, some studies have contributed substantially to our understanding of stakeholders' influences on the adoption of proactive environmental strategies (e.g. Aragón-Correa et al., 2008; Darnall et al., 2010; Rueda-Manzanares et al., 2008; Sharma and Henriques, 2005). However, none of them has considered environmental performance as a dependent variable. On the other hand, studies that have focused on the impact of stakeholders' pressures on environmental performance (e.g. Kassinis and Vafeas, 2006; Kock et al., forthcoming) did not account for the mediating role of environmental strategies.

In this paper we intend to address this gap, by simultaneously looking at the direct effect of stakeholders' influence on firms' environmental strategies, and at the indirect effect of this influence on environmental performance. As performance outcomes may be conditional on the intensity of organisational learning capabilities displayed by firms (Baker and Sinkula, 1999), we also aim at testing these capabilities as moderators. Furthermore, we aim at looking at different types of influence strategies adopted by various stakeholders. Depending

on the type of influence strategy adopted by different groups of stakeholders, relations with firms may be either collaborative or confrontational (Sharma and Henriques, 2005), thus producing divergent outcomes.

Theory development

Stakeholders' influence strategies and proactive environmental strategies

Different types of stakeholders may use various influence strategies to further firms' environmental practices and environmental performance. These influence strategies vary mainly as a function of the resource dependence (Pfeffer and Salancik, 1978) between firms and stakeholders, according to Frooman's (1999) typology. In scenarios of low interdependence or stakeholder power, stakeholders as environmental NGOs and local communities (Sharma and Henriques, 2005) may choose withholding strategies to influence the firm. In scenarios of firm power or high interdependence, stakeholders as customers and employees may opt for usage strategies. Specifically, withholding strategies are rather confrontational (e.g. local community protests), in that they may determine "whether the firm gets the resource it needs", and usage strategies are rather collaborative (e.g. employee suggestions), in that they may determine "whether the firm can use the resources in the way it wants" (Frooman, 1999, p. 196). Thus, failing to perceive and manage these strategies may lead firms to risk their reputation and legitimacy, and miss valuable opportunities of developing green competencies (Buysse and Verbeke, 2003; Delmas, 2001).

Within the NRBV framework, the capability of managing stakeholders' influence strategies, often termed stakeholder integration (Hart, 1995; Sharma and Vredenburg, 1998), is a *sine qua non* of proactive environmental management (Aragón-Correa et al., 2008; Darnall et al., 2010; Delmas and Toffel, 2008; González-Benito and González-Benito, 2006;

Rueda-Manzanares et al., 2008; Sharma and Henriques, 2005). Therefore, managers act as mediators of stakeholders' influence (Fineman and Clarke, 1996), and examining managerial perceptions of such influence is critical to understand which stakeholders and which strategies can contribute to environmental advances (Banerjee, 2001; Henriques and Sadorsky, 1999).

Most important, if stakeholders' influences are a central determinant of proactive environmental strategies, they might indirectly contribute to improvements in firms' environmental performance. As previous research has shown, the level of integration of environmental issues into firms' strategic planning processes, or the adoption of environmental strategies, is a strong predictor of positive environmental performance (Anton et al., 2004; Chan, 2005; Judge and Douglas, 1998).

Hypothesis 1: The perceived impact of stakeholders' influence strategies will be positively associated with a firm's proactive environmental strategies.

Hypothesis 2: A firm's proactive environmental strategies will be positively associated with its environmental performance.

Hypothesis 3: A firm's proactive environmental strategies will mediate the relationship between its stakeholders' influence strategies and its environmental performance.

Organisational learning capabilities

Organisational learning is an essential process for strategic renewal (Crossan et al., 1999), and related capabilities fundamentally feed four processes, also known as the 4Is (Crossan et al., 1999): intuiting and interpreting (individual level), integrating (group level),

and institutionalising (organisational level). From an organisational level perspective, the orientation of the firm towards these processes could be essentially captured in three synergistic capabilities: commitment to learning, shared vision, and absorptive capacity.

A commitment to learning capability "influences whether an organisation is likely to promote a learning culture" (Sinkula et al., 1997, p. 309), thus opening spaces to individuals' intuiting and interpreting processes. Advancing in the organisational learning steps, collective action would follow through integrating processes, thus requiring "shared understanding by members of the group" (Crossan et al., 1999, p. 528), or a shared vision capability (Aragón-Correa et al., 2008; Hart, 1995).

However, "continued investment in individual and even group learning may be counterproductive if the organisation does not have the capacity to absorb or utilise it" (Crossan et al. 1999, p. 535). Thus, developing a capability of absorptive capacity, defined as "a set of organisational routines and strategic processes by which firms acquire, assimilate, transform, and exploit knowledge for purpose of value creation" (Zahra and George, 2002, p. 198) is of particular importance to organisational learning (Sun and Anderson, 2010). In this sense, a capability of absorptive capacity would not only culminate in the institutionalising stage of the organisational learning ladder, as well as integrate all 4Is, enabling feedback and feed-forward (Crossan et al., 1999) learning processes through stages. Usually linked to competitive advantage and innovation outcomes, as research and development (R&D) intensity (Wang and Ahmed, 2007), absorptive capacity only recently has been associated to corporate greening in some studies (Pinkse et al., 2010; Wolf and Primmer, 2006).

Previous research has evidenced the positive relationship between organisational learning capabilities and proactive environmental strategies (Aragón-Correa et al., 2008; Zhu et al., 2008), as well as their moderating role on the relationship between strategy and performance

indicators (Baker and Sinkula, 1999). Consistently, such moderation may as well be applied to the environmental management realm.

Hypothesis 4a: The greater a firm's learning capabilities, the stronger the positive effect between its proactive environmental strategies and its environmental performance.

Hypothesis 4b: Learning capabilities will moderate the positive and indirect effect of stakeholders' influence strategies on a firm's environmental performance. Specifically, a firm's proactive environmental strategies will mediate the indirect effect when learning capabilities are high but not when they are low.

Method

Participants and procedures

We tested our hypotheses using an online survey directed at CSR, environmental, and sustainability managers and directors. We targeted key respondents in these corporate positions because they are directly involved in the adoption of environmental strategies and in efforts to enhance environmental performance in general (Winn and Angell, 2000).

The study population was drawn from a global directory of corporate non-financial reporting (CorporateRegister.com). In April 2009, the directory contained reports from 5216 firms in a wide range of countries and industries. We proceeded to scan 4216 corporate reports spanning from 2006-2009 for managers and directors email addresses, eliminating those industries that were irrelevant for the purpose of our study, such as government, NGOs and consultancy firms. Considering all available addresses, our target population consisted of 1577 firms, which were contacted between June-October 2009. After sending 3 reminders for

potential participants, we obtained 196 answers and a response rate of 12.4%. Incomplete and irrelevant answers were deleted, and 170 firms accounted for our final data set. Sample characteristics are described in Table 1.

Table 1. Sample Characteristics	
Average Work Experience in the Field (N = 165)	9.98 (SD [a] = 9.32) years
Average Job Tenure (N = 163)	12 (SD [a] = 10.02) years
Size (N = 169)	
Large (> 1000 employees)	129 (76.3%)
Medium (250 – 1000 employees)	22 (13%)
Small (< 250 employees)	18 (10.7%)
Industry (N = 170)	
Financials	33 (19.4%)
Industrials	32 (18.8%)
Utilities	26 (15.3%)
Consumer Services	18 (10.6%)
Basic Materials	17 (10%)
Consumer Goods	17 (10%)
Telecommunications	8 (4.7%)
Health Care	7 (4.1%)
Oil & Gas	6 (3.5%)
Technology	6 (3.5%)
Country Development Level (N = 170)	
Advanced Economies	132 (77.6%)
Emerging and Developing Economies	38 (22.4%)
Continent N = 170	
Europe	108 (63.5%)
Latin America	24 (14.1%)
Asia	17 (10%)
Northern America	10 (5.9%)
Oceania	7 (4.1%)
Africa	4 (2.4%)

[a] Standard Deviation

Measures[1]

Stakeholders' Influence Strategies (SIS). We assessed SIS by using Sharma and Henrique's (2005) withholding (9 items) and usage (8 items) influence strategies scales. We asked respondents to rate to what extent these influences were important in shaping their firms' environmental practices (from 1= No impact to 7 = Complete influence). Exploratory principal component analysis with varimax rotation revealed that items formed three factors

[1] Survey items and exploratory factor analyses results are available upon request.

with eigenvalues over 1: withholding SIS (9 items, α = .938), customers' usage SIS (3 items, α = .907), and employees' usage SIS (3 items, α = .807).

Proactive Environmental Strategies (PES). We measured the degree of implementation of PES in sampled firms by using 10 items from Aragón-Correa (1998) scale, complemented by 2 additional items introduced by Martín-Tapia et al. (2008) and Rueda-Manzanares et al. (2008). Respondents were asked to rate the development of 12 environmental management practices in their organisations (from 0 = We have not addressed this issue at all and have no plans to do so in the near future to 7 = We are the leaders on this in our sector). Exploratory principal component analysis with varimax rotation showed that items formed three factors. However, the factor structure was unclear, as 3 items had loadings over .500 in more than 1 factor. For this reason, we measured PES as the arithmetical mean of the scores on the 10 items (α = .890), as in Aragón-Correa et al. (2004).

Environmental Performance. Environmental performance was measured with a 5-item scale (α = .884) drawn proposed by Hubbard (2009). Managers and directors were asked to rate whether their firms' current performance (2008/2009) on each indicator was better or worse than prior performance (2006/2007), using 7-point Likert scales (from 1 = Much worse to 7 = Much better). Although our original intention was to use corporate reports to assess environmental performance indicators, the heterogeneity of our sample implied significant industry differences in accounting conventions (Powell, 1995), and thus reports differed substantially in content. Nevertheless, the use of subjective perceptions of managers and directors to measure firm performance is widely accepted in the strategy and ONE literatures (e.g. Aragón-Correa et al., 2008; Branzei et al., 2004; Clemens, 2006; Chan, 2005; Judge and Douglas, 1998; Sharma and Vredenburg, 1998).

Organisational Learning Capabilities. We gauged organisational learning capabilities by using respondents' ratings of 5 items from Szulanski's absorptive capacity (1996) scale (α =

.918), 4 items of Baker and Sinkula's (1999) commitment to learning scale (α = .867), and 3 items from Aragón-Correa and colleagues' (2008) shared vision scale (α = .813). Respondents were asked to rate their extent of agreement with statements concerning their firms' organisational learning capabilities (from 1 = Strongly disagree to 7 = Strongly agree). Exploratory principal component analysis with promax rotation showed that items formed three highly correlated factors (correlations ranging from .491 to .541). In order to reduce the potential threat of multicollinearity, we then measured organisational learning capabilities as the arithmetical mean of the scores on the 12 items (α = .911).

Control variables. Profitable firms are more likely to invest in environmental management improvements that might impact environmental performance (Ambec and Lanoie, 2008; Bansal, 2005). Therefore, we controlled for financial performance by using Judge and Douglas' (1998) 4-item scale (α = .896). Considering the cross-industry nature of our sample, respondents were asked to rate their organisations' performance in four categories relative to other firms in their specific industries. Additionally, we used dummy-coded variables to control for industry effects, size measured as the number of employees according to three categories (see table 1), and country development level (cf. Raines and Prakash, 2005).

Results

In table 2 we present the correlations and descriptive statistics for all continuous variables. An examination of the correlations revealed that all the three SIS variables were positively related to PES, but only employees' usage SIS results were significant (r = .36, p < .01). Therefore, employees' usage SIS was the only independent variable in our mediation

model, and the remaining SIS were kept as covariates. Results also indicated that PES was positively related to environmental performance ($r = .35$, $p < .01$).

Table 2. Correlations and Descriptive Statistics[a]

	1	2	3	4	5	6	7
1. Withholding SIS	–						
2. Customers' Usage SIS	.526**	–					
3. Employees' Usage SIS	.097	.321**	–				
4. PES	.064	.064	.365**	–			
5. Learning Capabilities	.033	.073	.453**	.428**	–		
6. Environmental Performance	.051	.200**	.333**	.350**	.315**	–	
7. Financial Performance	.021	.083	.198**	.143	.249**	.369**	–
Mean	4.59	4.90	4.99	4.82	5.91	5.15	4.78
Standard Deviation	1.64	1.47	1.07	1.22	0.74	0.84	1.06

** p < 0.01, * p < 0.05

[a] N = 170

We conducted our analyses in two interlinked steps. First, we tested hypotheses 1-3, estimating a simple mediation model. Second, we introduced the hypothesised interaction and assessed the existence of a conditional indirect effect (hypotheses 4a and 4b). In both steps, we adopted analytical techniques proposed in Preacher and Hayes (2008) and Preacher et al. (2007) using corresponding SPSS macros.

Tests of Mediation

In table 3 we present the results for hypotheses 1-3. In support of Hypothesis 1, the perceived impact of employees' usage SIS was positively associated with firms' PES, as indicated by a significant unstandardised regression coefficient ($B = .43$, $t = 4.72$, $p < .001$). Also, in support of Hypothesis 2, the positive relationship between firms' PES and environmental performance, controlling for employees' usage SIS, was supported ($B = .15$, $t = 3.09$, $p < .01$). And finally, employees' usage SIS were found to have a positive indirect effect on environmental performance (.07), in support of Hypothesis 3. Bootstrapping tests demonstrated that PES mediated the relationship, with a 95% BCCI around the indirect effect not containing zero (.02, .12). Thus, Hypotheses 1–3 received support. Specifically,

hypotheses 1 and 3 were confirmed when employees' usage SIS was the independent variable.

Table 3. Regression Results for Simple Mediation

Variable	***B***	***SE***	***t***	***p***
Environmental performance regressed on employees' usage SIS	.17	.06	3.04	.003
PES regressed on employees' usage SIS	.43	.09	4.72	.000
Environmental performance regressed on PES, controlling for employees' usage SIS	.15	.05	3.09	.002
Environmental performance regressed on employees' usage SIS, controlling for PES	.11	.06	1.82	.071
Withholding SIS	-.05	.04	-1.20	.232
Costumers' usage SIS	.07	.05	1.44	.151
Financial performance	.28	.06	4.78	.000
Country development level	.12	.14	.89	.375
Industry				
Basic Materials	.33	.21	1.56	.121
Consumer Goods	.42	.22	1.95	.053
Consumer Services	.37	.21	1.76	.081
Health Care	.04	.30	.14	.892
Industrials	.44	.18	2.45	.015
Technology	1.10	.34	3.26	.001
Telecommunications	.00	.29	.00	.996
Utilities	-.06	.19	-.33	.739
Oil & Gas	.64	.32	2.01	.046
Size				
Small (< 250 employees)	.03	.19	.16	.874
Medium (250 – 1000 employees)	-.13	.17	-.76	.449
Model summary for environmental performance model	***R^2***	**Adj. *R^2***	***F***	***p***
	.37	.30	5.32	.000
Bootstrap results for indirect effect	***M***	***SE***	**LL 95% BCCI**	**UL 95% BCCI**
Effect	.07	.03	.02	.12

Note. N = 170. Unstandardised regression coefficients are reported. Bootstrap sample size = 5000. LL = lower limit; BCCI = bias-corrected confidence interval; UL = upper limit. Omitted dummy variables are 'Advanced Economies' (Country development level), 'Financials' (Industry), and 'Large (> 1000 employees)' (Size).

Tests of Moderated Mediation

Prior to hypotheses testing, all measures were mean-centred (Aiken and West, 1991). In regard to hypothesis 4a, we predicted that the positive relationship between firms' PES and their environmental performance would be stronger for firms high on learning capabilities than for firms low on learning capabilities. Results (see table 4) indicated that the interaction term between PES and learning capabilities on environmental performance was significant (B = 0.16, t = 2.83, $p < .05$). To further inspect this interaction, we performed simple slopes analyses (Aiken and West, 1991; Hayes and Matthes, 2009), which are plotted in figure 2.

We evaluated the effects of PES on environmental performance for low (one standard deviation below the mean), medium (mean), and high (one standard deviation above the mean) levels of organisational learning capabilities. Supporting hypothesis 4a, the regression slope was stronger for higher (b = .24, t = 3.67, p < .001) and medium (b = .12, t = 2.43, p < .05) levels of organisational learning capabilities, in comparison to lower levels (b = .01, t = .14, p = *ns*).

Table 4. Regression Results for Conditional Indirect Effect

Predictor	***B***	***SE***	***t***	***p***
	PES			
Constant	-2.90	.61	-4.71	.000
Employees' usage SIS	.40	.08	4.70	.000
Financial performance	.09	.09	.98	.327
Country development level	.17	.22	.77	.444
Industry				
Basic Materials	.34	.34	1.00	.316
Consumer Goods	.54	.35	1.55	.123
Consumer Services	.31	.34	.92	.356
Health Care	.68	.48	1.44	.152
Industrials	.47	.28	1.66	.099
Technology	.85	.54	1.58	.117
Telecommunications	.94	.45	2.06	.041
Utilities	.73	.30	2.41	.017
Oil & Gas	.58	.51	1.15	.252
Size				
Small (< 250 employees)	.15	.30	.50	.617
Medium (250 – 1000 employees)	-.37	.27	-1.39	.166
	Environmental performance			
Constant	2.96	.42	7.11	.000
Employees' usage SIS	.11	.06	1.93	.055
PES	.12	.05	2.43	.016
Organisational learning capabilities (OLC)	.20	.09	2.20	.030
PES X OLC	.16	.05	2.83	.005
Financial performance	.26	.06	4.60	.000
Country development level	.13	.14	.95	.342
Industry				
Basic Materials	.43	.21	2.06	.041
Consumer Goods	.49	.21	2.33	.021
Consumer Services	.47	.21	2.29	.023
Health Care	.18	.29	.60	.548
Industrials	.44	.17	2.56	.011
Technology	1.15	.33	3.50	.001
Telecommunications	.11	.28	.38	.702
Utilities	-.09	.18	-.48	.628
Oil & Gas	.76	.31	2.44	.016
Size				
Small (< 250 employees)	.08	.18	.43	.671
Medium (250 – 1000 employees)	-.16	.16	-.98	.326

Model summary for environmental performance model	R^2	**Adj.** R^2	***F***	***p***	ΔR^2	***F***	***p***
	.40	.34	6.06	.000	.03	8.03	.005

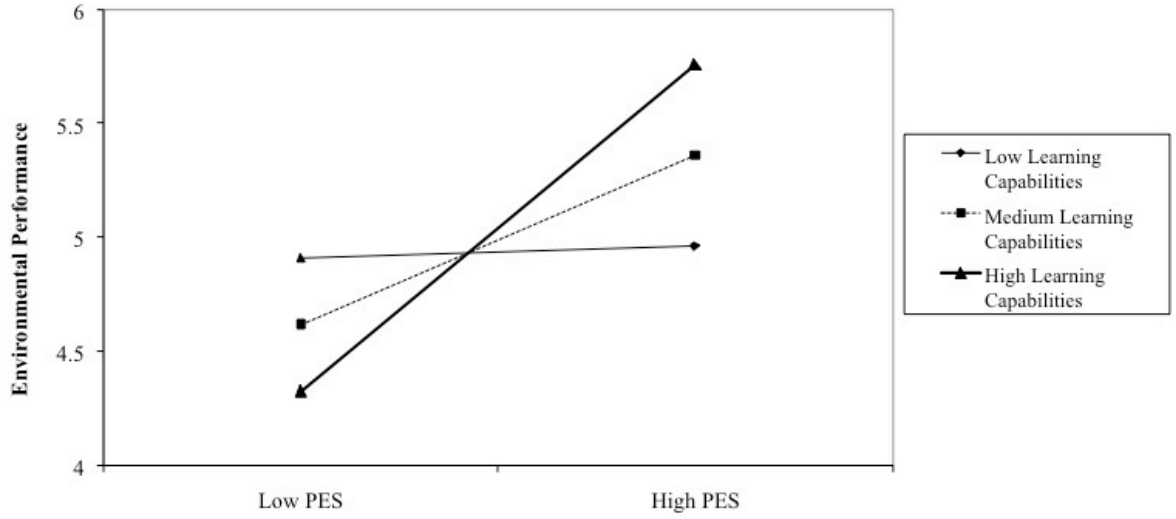
Table 4. Regression Results for Conditional Indirect Effect (continued)

Conditional indirect effect at OLC = *M* ± 1 *SD*								
Organisational learning capabilities	**Indirect effect**	***SE***	***z***	***p***	**LL 95% BCCI**		**UL 95% BCCI**	
- 1 *SD* (-.74)	.02	.03	.94	.349	-.02		.08	
M (0)	.06	.02	2.47	.013	.02		.12	
+1 *SD* (.74)	.10	.03	2.83	.005	.04		.18	

Note. N = 170. Unstandardised regression coefficients are reported. Bootstrap sample size = 5000.

Finally, in order to assess hypothesis 4b, we examined the conditional indirect effect of employees' usage SIS on environmental performance through PES at three values of organisational learning capabilities (see table 4): the mean (0), one standard deviation above the mean (.74), and one standard deviation below the mean (– .74). Bootstrapping tests confirmed conditional indirect effects with 95% BCCI around the indirect effect not containing zero for moderator values at the mean (.02, .12), and at 1 standard deviation above the mean (.04, .18). Thus, Hypothesis 4b was supported, such that the indirect and positive effect of employees' usage SIS on environmental performance through PES was observed when levels of organisational learning capabilities were moderate to high, but not when learning capabilities were low.

Figure 2. Organisational Learning Capabilities as a Moderator of the Relationship Between Proactive Environmental Strategies and Environmental Performance.



Discussion

Within the context of our research, withholding SIS (carried out by environmental groups and local communities), customers' usage SIS, and employees' usage SIS were all positively related to PES. However, only the latter variable displayed a statistically significant correlation with PES, being thus used in hypotheses testing. Our results demonstrating the indirect impact of employees' usage SIS on firms' environmental performance through PES are consistent with those reported by Buysse and Verbeke (2003), who found that the linkage between environmental strategy and stakeholder management was only significant to primary internal stakeholders. A possible explanation for that may be that employees, as insiders, can more easily match their discourse with that of their industries (Fineman and Clarke, 1996), thus eliciting incremental changes. Nonetheless, the conclusion should not be that withholding and costumers' usage SIS are unimportant to firms' PES, but rather that "the importance of engaging stakeholders for developing a proactive environmental strategy is context dependent" (Rueda-Manzanares et al., 2008, p. 185). Using a diverse context as that of our sample, we cannot discard the relevance that withholding and customers' usage SIS may hold in particular contexts and in relation to more specific PES and subsequent environmental performance.

The moderation hypothesised in our research model concerned the role of organisational learning capabilities in strengthening the direct relationship between PES and environmental performance, and the indirect relationship between SIS and environmental performance. In both cases, our results supported hypotheses, consistently with past research testing the moderating role of learning capabilities on the relationship between strategy and performance (Baker and Sinkula, 1999). Specifically in the latter case, the hypothesis was only supported for employees' usage SIS, which again was the only type of SIS that displayed a statistically

significant correlation with the learning capabilities construct. This may suggest that, for the sampled firms, these learning capabilities were not facilitating the integration of other types of influence strategies stemming from external stakeholders, either because of managers' misperceptions or the existence of silo cultures. Nonetheless, our finding that the indirect impact of employees' usage SIS on environmental performance is conditional on medium to high levels of learning capabilities highlights the importance of learning oriented-cultures in enabling bottom-up influences.

Conclusion

The findings from our study highlight the salience (Mitchell et al., 1997) of employees across countries and sectors, in comparison to other stakeholders groups (customers, environmental groups, and local communities in our case). Specifically, we demonstrate that firms' PES and organisational learning capabilities are key mechanisms in explaining how employees might advance the corporate greening agenda and ultimately impact firms' environmental performance.

Theoretical Implications

Our results contribute to NRBV theory in several ways. Most important, we simultaneously look at the direct effect of stakeholders' influence on firms' environmental strategies and at the indirect effect of this influence on environmental performance, covering a gap previously unaccounted in empirical NRBV research. In doing that, we address the three central points of the NRBV causal chain, which consists of key resources leading to the development of strategic capabilities that subsequently impact performance. As regards stakeholders' influences as a key resource, Aragón-Correa et al. (2008) tested this causal

chain having financial performance as an outcome variable. To our knowledge, our study is the first to test similar relationships having environmental performance as an outcome variable. In this sense, our paper shifts from the 'pay to be green' to the 'how to be green' question, suggesting that the NRBV may successfully respond to reiterating calls for studies investigating how companies become more responsible, sustainable or green through their structures and processes (de Bakker et al. 2005; Bowen 2007; Peloza and Yachnin 2008; Wood 2010).

Although the impact of stakeholders on environmental strategies is a frequent topic in ONE research, the differentiation among different types of stakeholders and their different influence strategies is relatively new (e.g. Darnall et al., 2010; Sharma and Henriques, 2005). In this regard, we contribute to current theory by identifying a category of SIS that is consistently salient and relevant to shaping more general PES (and consequently improving environmental performance) across various industries and countries.

Furthermore, we provide a new perspective on the role of organisational learning capabilities in the corporate greening process. Specifically, we examined organisational learning capabilities as moderators of the NRBV causal chain, rather than including them as antecedents. In doing that, we highlight that strong organisational learning capabilities not only contribute to strategic renewal themselves, but also intensify the benefits reaped from the capability of perceiving and managing SIS, in our case employees' usage SIS.

Managerial Implications

For managers, our results pinpoint that employees are critical to environmental management success across different industries and countries. Moreover, this influence is strengthened in firms that display high organisational learning capabilities.

These findings highlight the importance of investing in applied training and development

of employees, and of cultivating a culture of learning and easy flow of information among hierarchical levels. Employees might act in the interstices of their job descriptions, or adopting an intrapreneurial stance towards the intended change-making process (Brenneke and Spitzeck, 2010), as determined by diverse individual characteristics and organisational contexts. In order to leverage these influences, and thus strategically engage employees to improve environmental performance, middle and top-level managers play a critical role not only enabling bottom-up communication, but also supporting employees' efforts throughout the many different levels and departments of the firm.

Limitations and Future Directions

Three major limitations characterise our study. First, the cross-sectional nature of our data only allows us to establish associations among researched variables, as causality cannot be inferred. Second, by applying our study in a cross-industry setting, we had to sacrifice industry-specific measures for generalisability, thus possibly excluding interesting aspects that would add to the understanding of SIS' impact on environmental performance in certain contexts. Third, due to data limitations, we could not assess whether the CSR, environmental, and sustainability managers sampled had effectively decision-making power, what might affect their perceptions regarding measured variables (Darnall et al., 2010).

As regards future research, the questions herein explored offer a number of potential extensions. In terms of methods, future studies could shed more light on the dynamics of the relationships between SIS and environmental performance adopting industry and country-specific qualitative case studies (see e.g. Jiang and Bansal, 2003), as well as longitudinal data collection. This type of design would allow researchers to define in detail the environmental strategy profiles of sampled firms and the stakeholder groups involved (Buysse and Verbeke, 2003), as well as changes across time. As regards quantitative methods, multi-level studies

could deepen our understanding of the role of organisational learning capabilities in the NRBV causal chain at the individual, group, and organisational levels, clarifying the links among stakeholders' influences, environmental strategies, and environmental performance. In terms of theory, we envisage the extension of our moderated mediation model in two fronts. First, future studies could investigate how different SIS connect with managers' values and motivations for pushing forward corporate greening (Fineman and Clarke, 1996; González-Benito and González-Benito, 2010), and how corporate governance mechanisms shape these relationships (Kock et al., forthcoming). Second, we would particularly encourage a deeper understanding of employees' SIS as NRBV unfolds. Within-group stakeholders' influences are also heterogeneous (Kassinis and Vafeas, 2006), and thus different types of employees may affect the deployment of PES and the enhancement of environmental performance differently (see e.g. Rothenberg, 2003).

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