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## **Abstract**

**Purpose:** This study explores how sustainability drivers interact with national culture to explain the adoption of buyer-supplier environmental sustainability practices.

**Design:** Drawing on Institutional Theory, this study proposes three sets of hypotheses focused on the role of key cultural dimensions: uncertainty avoidance, power distance, and institutional collectivism. It employs a sample of 284 manufacturing plants across three industries and 14 countries to test these hypotheses, using regression analysis.

**Findings:** Findings suggest that national culture matters in the adoption of buyer-supplier environmental practices; however, its effect is contingent upon the particular combination of cultural dimensions and drivers analyzed.

**Originality:** This study enhances the understanding of the drivers behind buyer-supplier environmental practices by offering a novel examination of their interaction with national culture. This helps explain the heterogeneity in environmental sustainability adoption across countries.

**Implications:** Researchers and practitioners are cautioned against a universalistic perspective on drivers, as their impact can differ based on the buyer's national context, leading to varying adoption of buyer-supplier environmental practices.

**Keywords:** Sustainability drivers; Buyer-supplier environmental practices; Sustainable supply chain management; National culture; Institutional pressures

**Paper type:** Research paper

## **1. Introduction**

Companies are recognizing the need for sustainability beyond their boundaries through sustainable supply chain management (SSCM) practices (Gong *et al.*, 2019). Yet, ensuring sustainability in global supply chains (SCs) remains challenging (Koberg and Longoni, 2019), prompting increased scholarly attention in SSCM literature (Wang *et al.*, 2023). Recent research highlights difficulties in adopting sustainability practices among various SC actors, thus primarily focusing on *buyer-supplier relationships* (Allenbacher and Berg, 2023), specifically on how buyers balance assessment and collaboration practices with suppliers (Koberg and Longoni, 2019).

To understand SSCM practices adoption, research focused on '*sustainability drivers*', i.e., factors motivating a company to adopt SSCM. Although there is general consensus on the importance of various factors, both external and internal to a company, their relative importance is debated. For example, Danese *et al.* (2019) found external pressures, like regulatory requirements, to be crucial in shaping SSCM. Conversely, Agarwal *et al.* (2018) found internal factors, like cost-savings, to be pivotal. One leading explanation for these mixed results lies in the different SSCM practices considered, like focusing solely on supplier assessment versus analyzing both assessment and collaboration (Danese *et al.*, 2019). This study investigates buyer-supplier practices related to *environmental sustainability*, given their high practical relevance (Khurshid *et al.*, 2021). It includes both *assessment* and *collaboration* practices as they are strictly connected; decisions regarding supplier sustainability in terms of monitoring and collaboration are typically concerted (Koberg and Longoni, 2019; Danese *et al.*, 2018), and its combination is essential for superior sustainability performance (Allenbacher and Berg, 2023).

Additionally, this study responds to the call to consider the influence of informal socio-cultural institutions on sustainability adoption (Wang *et al.*, 2023). Recent research suggests that factors driving sustainability are shaped by the company's context, including *national culture (NC)* (Horak *et al.*, 2018), a factor particularly important in buyer-supplier relationships (Gupta and Gupta, 2019). The impact of NC on sustainability is likely not direct (Miska *et al.*, 2018). Instead, it interacts with other contextual factors and is channeled through norming and conforming effects of the firms' institutional environment (Caprar and Neville, 2012). Accordingly, we consider NC as a moderator; it interplays with the sustainability drivers by strengthening or weakening the effect of institutional pressures to adopt buyer-supplier environmental practices.

This study addresses the research question: *How does national culture (NC) influence the impact of sustainability drivers on the adoption of buyer-supplier environmental practices?* Drawing on Institutional Theory (DiMaggio and Powell, 1983), we develop hypotheses on how various sustainability drivers, internal and external to a buyer, interact with NC dimensions to influence buyer-supplier environmental practices adoption. These are tested using data from 284 plants across three industries and 14 countries, employing regression analysis. Findings support the impact of NC, suggesting

variation in its influence depending on the specific combination of cultural dimensions and drivers analyzed.

This study provides important contributions. It enhances the understanding of the drivers behind buyer-supplier environmental practices by offering a novel examination of their interaction with NC, an aspect largely overlooked in prior research (Calza *et al.*, 2016; Song *et al.*, 2018). Coercive, normative, and mimetic pressures from different drivers can be strengthened or weakened by certain cultural dimensions. Our cross-national study helps explain why seemingly effective pressures result in different levels of practice adoption (Dubey *et al.*, 2019; Dai *et al.*, 2021). More generally, it contributes to the SSCM literature (e.g., Baz *et al.*, 2022) by providing evidence on the influence of NC, underscoring the limitations of a one-size-fit-all approach in best practice adoption.

The paper continues as follows: literature review; hypotheses development; methodology; data analysis and results; discussion; conclusions.

## **2. Literature Review**

Buyer-supplier environmental practices encompass assessment methods by which buyers evaluate their suppliers based on environmental criteria, and collaboration practices, including supplier training in environmental management and joint projects like co-designing products to reduce environmental impact (Tachizawa *et al.*, 2015). The wide adoption of these practices in recent years can be attributed to institutional pressures, as outlined by the Institutional Theory (DiMaggio and Powell, 1983). According to this theory, pressures can include coercive pressures from formal regulations and informal demands from customer or managers; normative pressures stemming from shared beliefs, knowledge, or backgrounds from external and internal sources (Marculetiu *et al.*, 2023); and mimetic pressures resulting from uncertainties, prompting imitation among companies (Agarwal *et al.*, 2018). Previous studies have shown that external and internal institutional pressures significantly influence companies to adopt sustainability practices (Walker *et al.*, 2008; Danese *et al.*, 2019). These pressures drive organizations to align their strategies, practices, and performance (Roy and Goll, 2014). In essence, different institutional pressures lead buyers to adopt environmental practices with suppliers, aiming for conformity, alignment with societal expectations, and competitiveness within their institutional context.

## 2.1 Key drivers of buyer-supplier environmental practice implementation

- *Government regulatory pressures:* This formal mechanism of coercive pressure stems from powerful entities, like governmental agencies or regional/international regulators, that shape behavior by establishing laws, standards, regulations, and procedures (Esfahbodi *et al.*, 2017). Government-enforced regulations mandate companies to allocate resources to maintain their own legitimacy and extend these efforts to their suppliers via collaboration (Yen, 2018) and assessment, ensuring suppliers compliance and performance (Tachizawa *et al.*, 2015).
- *Customer pressures:* Customers rely on market power to exert coercive pressure (Wang *et al.*, 2018) by setting environmental standards or demanding environmental-friendly products (Dai *et al.*, 2021). Moreover, by embodying normative pressures through their values and expectations, customers motivate companies to extend their environmental initiatives across the SC (Gong *et al.*, 2019). By setting specific environmental requirements, customers prompt buyers to engage in assessment and collaboration with suppliers (Danese *et al.*, 2019).
- *Managers:* The active involvement of top *managers* is pivotal for implementing environmentally-focused strategies. Their involvement facilitates the allocation of necessary resources and incentives for successfully implementing SSCM (Dai *et al.*, 2021). Through professionalization or affiliation with a professional network, managers exert normative pressures (Dubey *et al.*, 2019) and mimic successful companies' environmental actions (Agarwal *et al.*, 2018). Committed managers foster collaboration (Yen, 2018) and supportive environmental practices with suppliers (Dubey *et al.*, 2019).
- *Employees:* Employees are pivotal in adopting environmental sustainability practices (Walker *et al.*, 2008). Their expertise prompts companies and suppliers to adhere to environmental norms and address issues according to industry standards (DiMaggio and Powell, 1983). Motivated employees are essential for SSCM, promoting an environmental-friendly culture and facilitating its external diffusion across SCs (Longoni *et al.*, 2018).
- *Owners/shareholders:* Owners and shareholders pressure companies to adopt environmental practices due to environmental awareness and potential improved

performance (Walker *et al.*, 2008; Marculetiu *et al.*, 2023). Cost-saving reasons incentivize companies to introduce environmental improvements enhancing efficiency (Wang *et al.*, 2018). Environmental practices such as the exchange of materials/resources/by-products between buyer and supplier provide opportunities for operational efficiency and align with owners' expectations for cost-reduction (Sellitto and Murakami, 2018).

## *2.2 Buyer-supplier environmental practice implementation: the influence of national culture*

Institutional Theory underscores the homogenizing pressures pushing organizations towards conformity, yet explains why, despite these common pressures, organizations often differ in the way they implement practices. Variance in global diffusion of practices is often due to the interplay between institutional pressures and NC. Defined as a set of values characterizing a specific nation (Hofstede, 1980), NC helps explaining diverse organizational behavior across countries, including differences in SC management strategies (Gupta and Gupta, 2019). Following Institutional Theory, NC and institutions are interrelated concepts (Horak *et al.*, 2018). NC, as a socio-cultural factor, is embedded within the institutional environment (Tata and Prasad, 2015) and affects a firm's political, social, economic, and legal spheres (Hofstede, 1980). NC shapes stakeholders' values and attitudes towards environmental issues, such as natural resources consumption (Husted, 2005). Hence, it is expected that NC interacts with the key drivers, affecting the environmental sustainability behaviors of companies (Chwialkowska *et al.*, 2020). As a result, companies may respond differently to the institutional pressures concerning sustainability, depending on the prevailing cultural values of the respective nation in which they operate (Horak *et al.*, 2018).

Models like Hofstede's (Hofstede, 1980) and GLOBE (House *et al.*, 2004) have been extensively used to study NC (Miska *et al.*, 2018). Three cultural dimensions are consistent across both models (Boscari *et al.*, 2018) and have been posited to influence sustainability adoption (Horak *et al.*, 2018; Miska *et al.*, 2018):

- *uncertainty avoidance* (UVD): “the extent to which a society... relies on social norms, rules, and procedures to alleviate unpredictability of future events” (House *et al.*, 2004; p.30).

- *power distance* (PDI): “the degree to which members of a collective expect power to be equally distributed” (House *et al.*, 2004; p.30).
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- *institutional collectivism* (ISC): “the degree to which... societal institutional practices encourage and reward collective distribution of resources and collective action” (House *et al.*, 2004; p.30).

### 3. Hypothesis development

#### 3.1 Uncertainty Avoidance

In high UVI cultures, characterized by an inherent discomfort with ambiguity and uncertainty, companies are profoundly influenced by *government regulations*, *customer expectations* and *shareholder demand*, as they offer a predictable framework for companies to operate within (House *et al.*, 2004). These well-defined rules, norms and demands minimize outcome unpredictability (House *et al.*, 2004) – crucial for risk-taking activities such as sustainable-focused buyer-supplier practices (Kumar and Rahman, 2015). In UVI cultures, these pressures are perceived as more pronounced because they provide a roadmap to mitigate uncertainty and risks along the SC (Wang *et al.*, 2021). Consequently, companies are driven to establish formalized supply relationships that emphasize clear rules (Miska *et al.*, 2018) and to promote buyer-supplier collaboration (Yen, 2018).

In contrast, companies operating in high UVI cultures perceive pressures from *managers* and *employees* as less urgent. They exhibit a greater reluctance to embrace sustainability practices. This reluctance stems from the anticipation of significant changes, the need for extensive training, and rigorous monitoring of existing processes (Tata and Prasad, 2015). Implementing these changes can increase costs (Song *et al.*, 2018), jeopardizing the short-term return on sustainability investments (Horak *et al.*, 2018). Consequently, high UVI cultures hinder managerial and employees’ intention to incorporate sustainability in their buyer-supplier relationship, often limiting their focus to demanding ISO certifications and adopting monitoring-based approaches (Orcos *et al.*, 2018).

*H1: The moderation effect of UVI on the relationship between sustainability drivers and adoption of buyer-supplier environmental practices is:*

- *Positive for Government regulatory pressures, Customer pressures and Owners/Shareholders*
- *Negative for Managers and Employees*

### *3.2 Power distance*

In high PDI cultures, where there is an unequal power distribution and a clear hierarchy, power assumes a distinctive role (House *et al.*, 2004). It ensures “social order, fosters relational harmony, and maintains stability” for authoritative figures like the *government*, *customers*, or *owners* (Miska *et al.*, 2018). The perceived coercive pressures from these actors are intensified, allowing them to exert greater influence on organizations to adopt environmental practices (Horak *et al.*, 2018). In such scenario, “formal rules and guidelines” have greater importance as controlling tools used by superiors to define expectations on ethical and behavioral codes. This includes relations with stakeholders, compliance procedures, and legal items (Vitolla *et al.*, 2021). Within this cultural context, companies often sense amplified normative pressures from customers to conform to their requirements through environmental conduct (Song *et al.*, 2018). Likewise, high PDI cultures tend to enhance pressures from *owners/shareholders* and *managers*, urging companies to adhere to the rules and regulations affecting SC activities. These heightened pressures strengthen companies’ sense of obligation towards key stakeholders and society, driving them to pursue corporate sustainability practices (Miska *et al.*, 2018). Furthermore, environmental sustainability may act as a tool to safeguard authority over suppliers (Song *et al.*, 2018), motivating them to implement supplier-focused sustainability practices (Husted, 2005).

However, from an *employees’* standpoint, the loyalty and respect for authority, coupled with a limited latitude to challenge assumptions (Horak *et al.*, 2018) – characteristic of high PDI cultures (House *et al.*, 2004) – can hamper workers’ ability to pressure companies on the adoption of environmental practices. In such scenario, employee voices tend to be subdued (Lin *et al.*, 2019). As a result, employees might find themselves powerless in altering company decisions or flagging potential issues to

superiors without drawing scrutiny (Gupta and Gupta, 2019). This can lead to missed opportunities to fully realize the potential of SSCM.

*H2: The moderation effect of PDI on the relationship between sustainability drivers and adoption of buyer-supplier environmental practices is:*

- *Positive for Government regulatory pressures, Customer pressures, Managers, and Owners/Shareholders.*
- *Negative for Employees.*

### *3.3 Institutional collectivism*

Sustainability is viewed as a collective concern and societal goal (Calza *et al.*, 2016). In high ISC cultures, where the emphasis is on what benefits the society as a whole (House *et al.*, 2004), pressures to adopt SSCM practices are likely heightened. In such environments, companies might perceive increased coercive pressures from *governmental regulations* that aim to align governmental policies with societal norms (Song *et al.*, 2018; Horak *et al.*, 2018). To achieve legitimacy, companies often prioritize environmental directives set by governments ( Roy and Goll, 2014; Tata and Prasad, 2015).

Conversely, pressures from *customers* for environmental sustainability are often seen as less pressing. This perception arises because commercial-based socialization and professionalism, regarded as sources of normative pressure, tend to resonate more with individualist cultures than collectivist ones (Azadegan *et al.*, 2018; Horak *et al.*, 2018). Pressures from *managers* for adopting buyer-supplier environmental practices necessitate a degree of individual freedom and voluntarily actions to be effective (Husted, 2005). Such effectiveness is limited in high ISC contexts, leading companies to primarily focus on adhering to environmental management standards (Orcos and Palomas, 2019) rather than adopting a more proactive approach including collaboration with suppliers (Wang *et al.*, 2023). In high ISC societies, where collective goals prevail over individual *employee* objectives (House *et al.*, 2004), the drive from employees to implement SSCM practices is lessened. This is because SSCM practices may not always align with the prevailing institutional priorities (Calza *et al.*, 2016). Similarly, *shareholders* might be less effective in incentivizing SSCM if its implementation is perceived to disrupt company harmony by provoking conflicting viewpoints.

*H3: The moderation effect of ISC on the relationship between sustainability drivers and adoption of buyer-supplier environmental practices is:*

- *Positive for Government regulatory pressures*
- *Negative for Customer, Managers, Employees and Owners/Shareholders.*

## **4. Methodology**

### *4.1 Sample and data collection*

The sample used in this study is a part of the research efforts for the fourth HPM project, which was conducted by 15 international research teams across the world between 2013 and 2016. The HPM is a large-scale, multi-country and multi-industry project that was designed to analyze the operations of manufacturing plants and their impact on plant performance (Wang *et al.*, 2018). The HPM project developed a set of 12 questionnaires, each related to a specific topic of plant operations (e.g. upstream/downstream SC management, plant management) (Danese *et al.*, 2019). Experts reviewed the questionnaires, and the survey was pre-tested in several plants. Each questionnaire (except the accounting section) was submitted to and answered by two different informants to reduce the risk of non-response bias and common-method bias (Podsakoff *et al.*, 2003). Examples of respondents of the sustainability questionnaire are the Environmental Affairs Director and the Environmental Affairs Manager. The sample for this study encompasses 284 manufacturing plants from 14 countries (Table I).

**Insert Table I here.**

### *4.2 Measures*

To measure buyer-supplier environmental practices (i.e., dependent variable), this study used a multi-item Likert scale that combines items related to assessment and collaboration initiatives (Wang *et al.*, 2018), here indicated as ESP. Specifically, respondents were asked to answer the following question related to environmental practices: “Please indicate the degree to which your plant is engaged in the following initiatives/practices”. In relation to sustainability drivers, (i.e., independent variables) this study followed Danese *et al.* (2019) and used five multi-item Likert scales to measure the following constructs: managers (D\_Mngr), employee (D\_Empl), owner/shareholder (D\_Shldr), customer (D\_Cstm), and government regulatory pressures (D\_Rgln). To measure these

constructs, respondents were requested to complete the following statement: “My plant’s involvement in environmental initiatives has been motivated by...”. Table II reports the items used to measure our dependent and independent variables. Data on the three *cultural dimensions* has been retrieved from the GLOBE study (House et al., 2004). Furthermore, we controlled for company-level factors, including plant size (Size), measured by employee count, which is found to positively influence the adoption of buyer-supplier environmental practices (Miska *et al.*, 2018) and industry (Ind1, Ind2), as it affects such adoption (Danese *et al.*, 2019). At national-level, we controlled for national wealth in terms of gross domestic product per capita (GDP per Capita), and national levels of pollution in terms of metric tons of greenhouse gas emission per capita (GHG per Capita), found relevant in terms of adoption of buyer-supplier environmental practices (Azadegan *et al.*, 2018).

## **5. Data Analysis and Results**

### *5.1 Exploratory factor analysis (EFA)*

First, all the items used in the analysis were checked for normality and standardized to mitigate issues of multicollinearity (Cohen *et al.*, 2003). With missing values of independent variables below 10%, they were addressed by replacing with the item average. EFA was subsequently used to determine the latent variables and associated items. Incorporating all items into principal component analysis (unrotated solution), Harman’s single factor test indicated that the total variance explained by a single factor was 0.4101, confirming that common method variance is not a significant concern in this study (Podsakoff *et al.*, 2003). The sample’s adequacy was tested through the Kaiser–Meyer–Olkin (KMO) (=0.9214) and Bartlett’s tests of sphericity (chi-square=591.007,  $p < 0.001$ ), indicating that the dataset is suitable for data-reduction techniques. EFA reports eight factors with eigenvalues above 1 (see Table II). As Table II presents, all Cronbach’s Alphas exceed 0.85, reflecting the high reliability of our measures. Moreover, all item loadings are above 0.70 on their respective factors (except for one item which has a loading of 0.6472), and all item cross-loadings are below 0.30 with other factors (with only one item having a cross-loading of 0.355). This suggests the validity of our measures. All items were retained in measuring our variables to ensure content validity, given that no redundancy or weak indicators were identified in our measurement model.

**Insert Table II here.**

## 5.2 Results

A multiple regression analysis was conducted to test the hypotheses. The analysis was preliminarily performed by using a metric known as the variance inflation factor (VIF) as well as by plotting the residual versus predicted values to ensure no violation of multicollinearity and homoscedasticity. All the VIF values were below the cut-off of 5 (Cohen *et al.*, 2003), with 1.79 as the greatest value, thereby showing that multicollinearity was not a problem in this study. Further, the examination of scatterplots of residuals indicated that our regression output was also free from homoscedasticity.

Estimation results can be observed in Tables III. Model 1 captures the isolated effect of control variables on buyer-supplier environmental practices. Subsequent models (model 2 and model 3a to 3c) capture the individual effect of drivers as well as the effect of interaction with NC dimensions on buyer-supplier environmental practices.

**Insert Table III here.**

Results related to the direct effects of the key drivers on the adoption of buyer-supplier environmental practices reveals that customer pressures, managers and employees have statistically significant effects, unlike Government regulatory pressures and Owners/Shareholders. Concerning NC direct effects, results indicate that PDI shows a statistically positive effect, while ISC has a statistically negative effect and UVI has no statistically significant effect. Regarding the control variables, the results reveal a significant relationship for firm size ( $\beta = 0.223$ ,  $p < 0.01$ ) and country GDP per capita ( $\beta = -0.169$ ,  $p < 0.05$ ) indicating that the adoption of environmental practices with suppliers requires firm-level resources.

Hypothesis testing shows that UVI positively moderates the effect of owners/shareholders on the adoption of buyer-supplier environmental practices ( $\beta = 0.118$ ,  $p < 0.05$ ), providing partial support for H1. Regarding PDI, no moderation effect is observed, leading to rejecting H2. ISC negatively moderate the effect of customer pressures on the adoption of buyer-supplier environmental practices ( $\beta = -0.134$ ,  $p < 0.05$ ), providing partial support for H3.

## 6. Discussion

This study delves into understanding the impact of sustainability drivers on the adoption of buyer-supplier environmental practices. First, our findings show significant direct impacts of *customer pressures* and the role of *managers* and *employees*, corroborating conclusions from prior research on the relevance of both external and internal drivers (e.g., Danese *et al.*, 2019). However, we did not find significant direct impacts of *government regulatory pressures* and *owners/stakeholders*.

Drawing on the Institutional Theory, we argued for the interplay between the sustainability drivers and NC in determining the adoption of buyer-supplier environmental practices. For *owners/stakeholders*, we found that their impact is moderated by the cultural dimension UVI. In line with our hypothesis, in cultures with high UVI, owners/shareholder-driven pressures play a vital role in promoting environmental practices with suppliers as they provide a roadmap to mitigate uncertainty and potential risks (Wang *et al.*, 2021). More precisely, this strategic approach is driven by the need to address environmental risk avoidance pressures originating from owners/shareholders, ultimately aiming to maximize short-term shareholder profits (Salehi and Arianpoor, 2021).

Moreover, we found that the cultural dimension of ISC negatively moderates the effect of *customer pressures*, which is consistent with our expectations and the findings of Song *et al.* (2018). This suggests that in collectivist cultures (high ISC), the emphasis on organizational goals and prioritizing short-term economic objectives may weaken the influence of customer on environmental goals. Therefore, the impact of these pressures may be mitigated in collectivistic cultures, where economic objectives tend to take precedence over sustainability goals (Agarwal *et al.*, 2018). Stakeholder pressures, particularly those from customers, can act as a catalyst for sustainability adoption if managers prioritize them and incorporate them into their strategies, policies, and SC management approaches (Dubey *et al.*, 2019). However, customer pressures alone tend to resonate more with individualist cultures rather than collectivist ones (Azadegan *et al.*, 2018; Horak *et al.*, 2018). This moderation impact is in addition to a direct negative impact of ISC on buyer-supplier environmental practices.

Finally, we did not find support for the moderation impact of the cultural dimension of PDI. Our results suggest that, while PDI culture has a positive direct influence on the adoption of buyer-supplier environmental practices, the interaction between PDI and the sustainability drivers is not significantly affecting practice adoption. The level of PDI does not affect the influence of the driving forces on environmental

practices, but it affects the level of adoption of buyer-supplier environmental practices, with higher overall adoption in countries with high PDI.

These findings answer our research question, indicating that NC matters in the adoption of buyer-supplier environmental practices, but its role is multifaceted, varying based on the specific combination of cultural dimensions and drivers analyzed. As a result, heterogeneity in the adoption of environmental sustainability across countries is expected. The results suggest that the sustainability drivers work differently within each cultural context, shedding new light on the challenges of extending environmental sustainability beyond a company's boundaries in global SCs.

## **7. Conclusions**

### *7.1 Theoretical contributions*

This study bridges two streams in the SSCM literature: a well-established stream on sustainability drivers investigating factors pushing or motivating companies to adopt SSCM (e.g., Danese *et al.*, 2019; Dai *et al.*, 2021), and an emerging stream exploring the impact of NC on SSCM (Baz and Iddik, 2020). Research on sustainability drivers had yielded mixed results regarding their relative importance. Our findings provide further evidence of the importance of both external and internal drivers. Interestingly, by bridging the two above-mentioned streams, we enhance the understanding of sustainability drivers' impacts by showing that certain factors, such as owner/stakeholder pressures, may not have a direct impact, but they become influential in specific contexts, such as in high UVI cultures. Moreover, other drivers like customer pressures may be less relevant in high ISC cultures. The moderation effects vary depending on the type of sustainability drivers and specific cultural dimension considered. Overall, our study shows that, although companies across the world can be driven by similar factors, the extent of adoption of buyer-supplier environmental practices differs due to NC. This aligns with predictions of Institutional Theory and help explain heterogeneity in SSCM observed in practices.

In relation to research exploring the impact of NC on SSCM, our study deepens the understanding of NC's role. Our findings show that NC can exert a direct influence on the adoption of buyer-supplier environmental practices. Nevertheless, this is not its only effect. Some dimensions, such as ISC, can have both direct and moderating impacts.

Whereas other dimensions, like UVI, might not have a direct impact but can moderate the impact of sustainability drivers on the adoption of buyer-supplier environmental practices. Thus, our findings highlight the importance for scholars to not overlook these moderating effects, an aspect that has not been adequately explored in the SSCM literature (Baz and Iddik, 2020). These insights can inform the adoption of other managerial practices, which nevertheless need future investigation. Results challenge a “universalistic perspective” common to many studies in the operations literature (Gupta and Gupta, 2019), which assumes that as nations develop, they will adopt work behaviors common to industrialized countries, leading to a convergence in practice adoption (Naor et al., 2010). Instead, in line with Institutional Theory, our findings suggest that companies in different countries perceive pressures differently due to deep-rooted cultural forces, leading to varied extents of practice adoption.

### *7.2 Implications*

This study has implications for managers and policy makers, in addition to academia. For managers, this study highlights the need to account for cultural variations when formulating strategies for promoting environmental practices with suppliers. We show that NC can influence the impact of sustainability drivers, making them stronger or weaker. Specifically, this study reveals that external pressures, like those from *customers*, are pivotal for the adoption of buyer-supplier environmental practices, but their influence can vary significantly based on cultural context. In high ISC cultures, customer pressures have a weaker influence because the contrasting reactions that the adoption of environmental practices with suppliers can trigger are perceived as harming established collective harmony. Conversely, in low ISC cultures, customers urging companies to adopt SSCM have a higher impact. Additionally, this study offers a valuable lesson for *owners and shareholders*. They can play a crucial role in high UVI cultures. Actions such as integrating environmental criteria into executive compensations can significantly encourage companies to engage in sustainability initiatives (Flammer *et al.*, 2019). Together, these findings emphasize the need for managers to take a nuanced approach, considering the multifaceted interplay between internal and external institutional pressures, and their interaction with NC. This approach ensures the effective promotion of SSCM practices, tailored to the specific cultural and institutional context.

For policymakers, this study highlights that their government pressures may be less effective compared to other drivers when it comes to buyer-supplier environmental

practices. This effect remains consistent regardless of the NC. Therefore, policymakers should rely on additional measures, such as education, to make companies aware of the importance of extending sustainability beyond their organization.

### *7.3 Limitations and future research*

This study presents limitations that open avenues for future research. Firstly, our examination of sustainability has been focused on the environmental dimension. Future research opportunities lie in investigating social sustainability. A second limitation concerns the countries included in the HPM project. Future studies can investigate whether our results hold when considering companies in other GLOBE cultural clusters, such as Sub-Saharan Africa. Lastly, it would be beneficial to validate or expand our findings using different data sources, such as sustainability reports (e.g., Arianpoor et al., 2023) that provides further details on a company's sustainability practices or audit reports (Arianpoor and Farzaneh, 2023), which avoid risk of greenwashing from self-reported information.

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**Tables:**

Country	HPM dataset (fourth round)			No. of Sample plants	Control Variables	
	Electronics	Mechanical	Transportation Equipment		GDP per Capita (USD) <sup>1</sup>	GHG per Capita (Metric tons of CO <sub>2</sub> ) <sup>1</sup>
Austria	1	6	1	8	42600	9.15
Brazil	3	7	11	21	11700	5.03
China	10	14	4	28	9100	8.49
Spain	7	6	10	23	30100	6.57
Finland	6	6	5	17	35800	11.69
Germany	6	12	8	26	38700	11
Israel	16	2	0	18	33900	11.46
Italy	7	17	5	29	29800	7.05
Japan	6	7	9	22	35900	10.55
Korea	8	5	13	26	31900	13.43
Sweden	4	4	1	9	40300	5.29
Switzerland	2	0	1	3	44900	6.34
Taiwan	19	10	1	30	38400	9.74
UK	4	5	4	13	36600	8.45
USA	3	5	3	11	51700	19.9
Total	102	106	76	284		

**Note:** <sup>1</sup>values of the World Bank in 2013

**Table I.** Sample distribution per industry and country, and related variables at country level (Source: Authors estimation)



Variables	Item No.	Description	Cronbach's Alpha	Proportion of variance	Factor Loadings					
					ESP	D_Mngr	D_Empl	D_Shldr	D_Rgln	D_Cstm
ESP			0.874	0.615						
	ESP01	Encouraging suppliers to improve the environmental performance of their processes			<b>0.853</b>	-0.086	0.086	-0.007	0.027	0.008
	ESP02	Requesting that your suppliers sign a code of environmental conduct			<b>0.709</b>	0.219	-0.147	0.057	-0.118	0.225
	ESP03	Incorporating environmental consideration in evaluating and selecting suppliers			<b>0.776</b>	0.355	-0.157	-0.047	-0.070	0.165
	ESP04	Providing design specification to suppliers in line with environmental requirements			<b>0.736</b>	0.209	-0.188	0.017	0.017	-0.110
	ESP05	Co-development with suppliers to reduce the environmental impact of the product			<b>0.813</b>	-0.194	0.187	0.029	0.003	0.037
	ESP06	Involvement of suppliers in re-design of internal processes			<b>0.809</b>	-0.210	0.094	-0.027	0.081	-0.039
D_Mngr			0.898	0.765						
	DRV01	The examples top management provides			-0.044	<b>0.898</b>	0.165	0.004	0.084	-0.126
	DRV02	Requirements made by senior management			-0.089	<b>0.874</b>	0.072	0.000	-0.025	0.103
	DRV03	Top-down initiatives			0.003	<b>0.867</b>	0.067	-0.060	-0.087	0.015
	DRV04	Top management's commitment to environmental responsibility			0.026	<b>0.860</b>	0.017	-0.002	0.202	-0.048
D_Empl			0.935	0.725						
	DRV05	Employee initiatives			0.071	0.156	<b>0.815</b>	-0.024	-0.144	0.087
	DRV06	Championing efforts by individual employees or small groups of employees			0.100	0.076	<b>0.839</b>	0.037	-0.142	0.071
	DRV07	Employee problem-solving teams			0.085	0.142	<b>0.822</b>	0.091	-0.069	-0.073
	DRV08	The morals of individual employees			-0.110	0.041	<b>0.861</b>	-0.030	-0.005	-0.008
	DRV09	The personal desires of employees to do what is right			-0.054	-0.029	<b>0.877</b>	0.006	0.021	0.084
	DRV10	A personal sense of obligation among employees			-0.022	0.042	<b>0.885</b>	-0.022	0.090	-0.036
	DRV11	The underlying values of employees			-0.002	-0.081	<b>0.859</b>	-0.026	0.105	-0.023
D_Shldr			0.876	0.738						
	DRV12	The belief that we could reduce costs and help the environment at the same time			0.175	0.240	0.094	<b>0.647</b>	0.098	-0.105
	DRV13	The desire to be more cost competitive			-0.107	-0.014	0.006	<b>0.905</b>	0.010	0.141
	DRV14	The need to reduce costs			0.027	-0.024	-0.054	<b>0.936</b>	0.010	-0.034
	DRV15	The desire for cost savings			0.053	-0.055	0.041	<b>0.915</b>	-0.045	-0.079
D_Rgln			0.858	0.716						
	DRV16	Current government legislation			-0.011	-0.018	0.025	0.010	<b>0.865</b>	0.011
	DRV17	The threat of future government legislation			0.218	-0.011	0.124	-0.156	<b>0.742</b>	-0.068
	DRV18	Industry or government regulation			-0.010	0.068	-0.065	0.031	<b>0.894</b>	0.063
	DRV19	Regulations dealing with the environment			-0.082	0.046	-0.100	0.065	<b>0.876</b>	0.090
D_Cstm			0.932	0.833						
	DRV20	Programs that our customers have in place			0.074	0.094	-0.015	-0.135	0.002	<b>0.844</b>
	DRV21	Customers who seek environmentally responsible suppliers			0.009	-0.021	-0.047	0.019	0.014	<b>0.925</b>
	DRV22	Increased awareness of environmental issues among our customers			0.007	-0.044	0.048	0.034	0.057	<b>0.943</b>
	DRV23	Customers who believe that environmental protection is important			-0.046	-0.059	0.110	0.062	0.047	<b>0.935</b>

**Table II.** Constructs, items description and Exploratory Factor Analysis (EFA) results (Source: Authors estimation using Stata 16)

Variables:	model 1	model 2	model 3a	model 3b	model 3c
Control variables:					
Size	0.223***	0.099***	0.102***	0.062*	0.108***
Ind1	0.023	-0.002	-0.014	-0.086	0.066
Ind2	-0.093	-0.119	-0.124	-0.191*	0.082
GDP per Capita	-0.169**	-0.116**	-0.072	-0.078	0.005
GHG per Capita	-0.017	-0.006	-0.009	-0.042	-0.085
Sustainability Drivers					
D_Rgln		-0.017	0.004	-0.024	-0.002
D_Cstm		<b>0.337***</b>	<b>0.314***</b>	<b>0.318***</b>	<b>0.355***</b>
D_Mngr		<b>0.210***</b>	<b>0.198***</b>	<b>0.166***</b>	<b>0.178***</b>
D_Empl		<b>0.173**</b>	<b>0.175**</b>	<b>0.212***</b>	<b>0.169**</b>
D_Shldr		0.084	0.085	0.080	0.084
Cultural Dimensions:					
UVI			0.071		
PDI				<b>0.140***</b>	
ISC					<b>-0.123**</b>
Moderation Effect:					
UVI*D_Rgln			-0.022		
UVI*D_Cstm			-0.107		
UVI*D_Mngr			-0.034		
UVI*D_Empl			0.012		
UVI*D_Shldr			<b>0.118**</b>		
PDI*D_Rgln				-0.107	
PDI*D_Cstm				0.056	
PDI*D_Mngr				-0.033	
PDI*D_Empl				0.110	
PDI*D_Shldr				0.005	
ISC*D_Rgln					0.042
ISC*D_Cstm					<b>-0.134**</b>
ISC*D_Mngr					-0.038
ISC*D_Empl					-0.046
ISC*D_Shldr					0.070
No. Observation	284	284	284	284	284
F	4.37	22.28	18.13	17.42	15.01
Prob	0.0008	0.0000	0.0000	0.0000	0.0000
R-Squared	0.0818	0.4616	0.4771	0.4894	0.4974

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

**Table III.** Multiple Regression Analysis results (Source: Authors estimation using Stata 16)