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Managerial drivers of corporate environmental responsiveness in developing countries: A systematic literature review

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ABSTRACT

Research on micro-foundations of corporate environmental responsiveness (CER) has been accelerating rapidly in recent years. The aim of this multidisciplinary review of 103 studies was to analyze and integrate the current literature on managerial drivers of CER in developing countries. In these studies, we discern three levels of analysis board of directors (BOD), chief executive officer (CEO), and top management team (TMT). We analyzed the studies in terms of research designs and variables used. The reported findings were sketched as well. In an effort to synthesize the past studies for future research purposes, we crafted from the reviewed studies a multilevel, evidence-based framework, based on three categories of upper echelons' characteristics (socio-demographic, psychological, and social influences), along with mediating and moderating factors. The review reveals also substantial knowledge gaps, methodological issues, and inconsistent findings in the current literature at the different levels of analysis. Hence, we propose a detailed agenda for future research; we plea for more multilevel and cross-cultural CER studies with more focus on combining different psychological characteristics and interaction dynamics among strategic leaders in different top-managerial roles.

1. Introduction

Economic growth often comes at the cost of the natural environment, resulting in problems such as climate change, pollution, or even direct destruction of natural resources (Hawken, 1993; Ioannou and Hawn, 2019). Therefore, a change in economic paradigms, from mere economic expansion to sustainable development, was proposed (e.g., Dyllick and Hockerts, 2002). Some firms have actually begun to (proactively) develop new policies and transform their operations, processes, and products to mitigate environmental harm but others have taken a more resisting stance by defensive lobbying and following the minimum regulatory standards (González-Benito and González-Benito, 2006; Potrich et al., 2019). As to why firms respond differently to sustainability issues has become an academic research question, not only in the Western world, but also increasingly in developing countries (Bansal and Roth, 2000; Jamali and Karam, 2018).

Top management behavior is a crucial determinant of corporate environmental responsiveness (CER) (Dou et al., 2018; Gandhi

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et al., 2018; Papagiannakis and Lioukas, 2012, 2018). Top managers have the power to initiate change and direct resources towards sustainability initiatives (González-Benito and González-Benito, 2006; Papagiannakis and Lioukas, 2012). Based on the upper echelon theory, a firm's strategic choices can reflect the values and cognitions of its CEO and top management team (Carpenter et al., 2004; Hambrick and Mason, 1984). Accordingly, the degree to which a firm implements environmental practices is influenced primarily by these managers' values and mental models (Basu and Palazzo, 2008; Gröschl et al., 2019; Papagiannakis and Lioukas, 2012).

Most studies on why firms respond to environmental issues have been focusing on organizational-level factors (e.g., Russo and Harrison, 2005; Symeou et al., 2019), or on external influences such as stakeholders' pressures and the institutional environment (e.g., Darnall et al., 2010; Dögl and Behnam, 2015; Phan and Baird, 2015). There is a growing stream of literature on the role of top managers in their organizations' inclination to engage in environmentally friendly practices (Cho et al., 2019; Hao et al., 2019; Zou et al., 2019). However, their varying roles have not been fully explored or theorized yet (Bansal and Gao, 2006; Ioannou and Hawn, 2019; Papagiannakis and Lioukas, 2012). More attention on individual (micro-level) factors, such as managers' behaviors, is needed (Aguinis and Glavas, 2012; Bansal and Gao, 2006; Frynas and Yamahaki, 2016).

Extant research on the individual drivers of corporate environmental sustainability is dispersed across multiple disciplines, including organizational behavior (OB), environmental psychology, human resource management (HRM), and social psychology, which can cause confusion and fragmentation (Aguinis and Glavas, 2012; Gond et al., 2017). By drivers, we mean the "factors that operate as predictors of, motives for, or forces that trigger corporate environmental responsiveness, either reactively or proactively" (Gond et al., 2017, p. 228). The aim of this multidisciplinary review is to analyze and integrate the literature on top-managerial characteristics driving CER in developing countries, and to highlight the research gaps and avenues for future research. Its guiding question is: "What are the top managers' characteristics driving CER in developing countries?". Besides a summary of representative studies, a critical assessment is offered of the knowledge attained so far. We define CER as "a set of corporate initiatives aimed at mitigating a firm's impact on the natural environment" (Bansal and Roth, 2000, p. 717).

Our review of CER studies in developing countries has three reasons. First, most systematic literature reviews about environmental sustainability focus on developed countries (Jamali and Karam, 2018) which have strong institutions that pressure companies to implement environment-friendly practices (Kim et al., 2013). In contrast, most developing countries are characterized by less effective governments, inefficient markets, and weak civil society, whereupon companies' irresponsible behaviors, in many cases, can go unpunished (Amaeshi et al., 2016). Corporate responsibility research is increasingly recognizing the importance of contextual factors (Fassin et al., 2015; Jamali and Karam, 2018; Matten and Moon, 2008). Hence, several strong arguments warn against adopting universal frameworks and recommendations given the vastly different contexts (Shahab et al., 2020). Second, corporate sustainability in developing countries is often seen as ineffective and seldom goes beyond philanthropy (Jamali and Neville, 2011). The deep involvement of many developing countries in the global production chain, such as China and Vietnam, makes their poorer environmental practices more concerning (Adomako et al., 2021). Yet, there is a growing interest among companies in developing countries in environmental sustainability (Adomako et al., 2021; WEF, 2011). For practical purposes, it is therefore crucial to synthesize the available evidence on managerial characteristics that drive these firms' environmentally sustainable behavior in such relatively weak institutional contexts. Third, most research on the upper echelons of firms occurs in Western countries, especially the United States (Abatecola and Cristofaro, 2020). Given that most developing countries have high power distance (Minkov, 2013), senior managers are more likely to have even greater power and control over the organization's decisions than elsewhere (Hofstede, 2001). Thus, we chose to direct our attention to the most influential actors at the apex of organizations in developing countries, thereby aiming to contribute also to the upper echelon theory.

This review seeks to enrich research on CER drivers in three main ways. First, it consolidates the literature on three top management levels: BODs, CEOs, and TMTs, originating from various fields such as HRM, OB, and environmental studies. Second, it integrates the scholarly findings on top-management drivers of corporate sustainable behavior in developing countries, along with mediating and moderating factors that influence CER. Our resulting multilevel framework incorporates three streams of research on the upper echelons' characteristics: 1) socio-demographic characteristics, 2) psychological characteristics, and 3) social influences. Third, it highlights the knowledge gaps or imbalances in this corpus and provides an ambitious agenda for future research. Methodological issues and opportunities in this field are also identified.

The paper is structured as follows. Section 2 describes the scope and method of this review. Section 3 depicts the results of the reported empirical studies. The last section offers concrete suggestions to enrich new research, based on our critical analysis of the current state-of-the-art.

2. Scope and method of the study

To provide a comprehensive review of top managers' characteristics driving CER in developing countries, we adopted Wolfswinkel et al.'s (2013) approach as it offers a clear framework, in five steps: define, search, select, analyze, and present.

2.1. Define

First, we defined what is meant by "top management" and "developing countries". Top management encompasses the organizations' top leaders whose decisions and actions have a direct impact on its business (Bao et al., 2014; Carpenter et al., 2004; Jaw and Lin, 2009). Many studies focused on the role of top management *teams*, defining it as the group of top executives who have a direct influence on a firm's strategy (Jaw and Lin, 2009; Nielsen, 2010). Some studies included CEOs, senior vice presidents, and board of directors as part of a firm's top management (Bao et al., 2014; Carpenter et al., 2004; Patzelt et al., 2008). In line with Hambrick and

Mason's (1984) recommendation to study all the top decision-makers of an organization to explain strategic leadership better, this review focuses on the role of the CEO, top management team, and board of directors in driving the environmental responses of their organizations. According to UNDESA (2020), the economic conditions of each country can be classified as: developed economies, economies in transition, and developing economies; the last two categories apply to our review, covering 143 countries in Africa, Asia, Europe, Latin America, and the Caribbean.

Second, systematic searches were made in Web of Science and Scopus databases using carefully selected keywords (Table 1). Both databases were chosen because they are widely used in scientific research, cover journals from various fields, and offer advanced search capabilities (ElAlfy et al., 2020; Potrich et al., 2019). Two additional databases (PsycINFO and Business Source Elite (EBSCO)) were perused as well. A comprehensive list of search terms was compiled based on this study's keywords (i.e., top management, developing countries, environmental practices) to ensure that the search was sufficiently wide and comprehensive. Synonyms for the key terms were extracted from related articles, including prior reviews (Table 1).

2.2. Search

The database search, limited to journal articles, was conducted in August 2020. However, no restrictions regarding the year of publication were imposed. For practical reasons, only English language articles were included. The search yielded 2128 articles after removing the duplicates (Fig. 1).

2.3. Selection

The following selection criteria were determined. To be incorporated in the review, an article had to focus on: (1) pro-environmental practices and/or interventions within firms in developing countries; (2) top-managerial factors as determinants of pro-environmental practices and/or interventions; (3) a scholarly examination of these factors, rather than merely mentioning them; (4) the entire top management or specific members of the TMT (e.g., chief marketing manager). An article was excluded if it: (1) did not focus on an enterprise or profit-sector type of organizational context (e.g., public agencies or nonprofit organizations); (2) examined students, experts or other actors as proxies for top managers, or did not clearly specify who were the respondents; (3) focused only on general or structural characteristics of the top management (e.g., size of the BOD, number of meetings) and did not take the demographic and/or behavioral characteristics of the TMT or BOD into consideration; (4) was a literature review, meta-analysis, essay, conceptual paper or included reinterpretations of earlier published data.

All the 2128 retrieved articles were independently screened by two researchers to reduce bias and ensure consistency. They applied the above-mentioned inclusion/exclusion criteria to the titles, abstracts, and keywords of the articles. Differences between the researchers were resolved through discussion; in some cases, a third researcher was consulted. The inter-coder reliability was 97 percent, which represents a high-level of consistency between the reviewers (Landis and Koch, 1977). This first selection phase yielded 262 relevant articles, after which their full texts were retrieved for further assessment. During the full-text assessment process, 187 articles were excluded, leaving 76 articles for the data analysis. To enrich the sample, an extended search was conducted in February and March 2021 in Google Scholar. Also, additional literature was found through backward citation tracking and hand-searching. This resulted in the addition of 27 articles, bringing the final sample to 103 articles.

2.4. Data analysis and synthesis

We summarized the key information of each full-text article, such as author(s) and year of publication, type of study (quantitative, qualitative, mixed methods), factor(s) examined, journal, and environmental practices pursued. To analyze the content of each article, a coding scheme corresponding to the review's scope was constructed. It was developed deductively, drawing on a list of codes from prior literature (Kantabutra, 2019). This approach is particularly relevant here as it is theory-driven and the guiding theoretical frameworks can be converted to codes (Linneberg and Korsgaard, 2019). Our review's coding scheme was mainly based on Bromiley and Rau's (2016) model of upper echelons' characteristics. Articles were read in-depth and any findings or concepts that reflected a common characteristic were marked. The data were synthesized into higher-order groups and categories. Within each group, the

Table 1

Utilized search terms.

| | |
|------------------------------|--|
| Search date | August 13, 2020 |
| Environmental Responsiveness | Environmental management, Environmental practices, Environmental strategy, Environmental performance, Environment responsiveness, Environmental behavior, Environmental sustainability, Environmental responsibility, Pro-environmental behavior, Pro-environmental practices, Pro-environmental performance, Ecological management, Ecological practices, Ecological strategy, Ecological performance, Ecological sustainability, Ecological responsibility, Green business, Green management, Green practices, Green organization, Green company, Green firm, Greening, ISO 14000, Waste management, Energy management, Pollution management |
| Developing countries | AND Developing countr*, Developing nation, Developing world, Developing econom*, Developing market, Emerging countr*, Emerging nation, Emerging world, Emerging econom*, Emerging market, Transitional econom* |
| Top management | AND Top management team, CEO, Chief executive officer, TMT, Upper echelon*, Top manag*, Senior manag*, Board, Leader, Owner, Manager, Executive |
| Restrictions | AND Limit to (Document type, "article") AND (Source type, "journal") AND (Language, "English") |

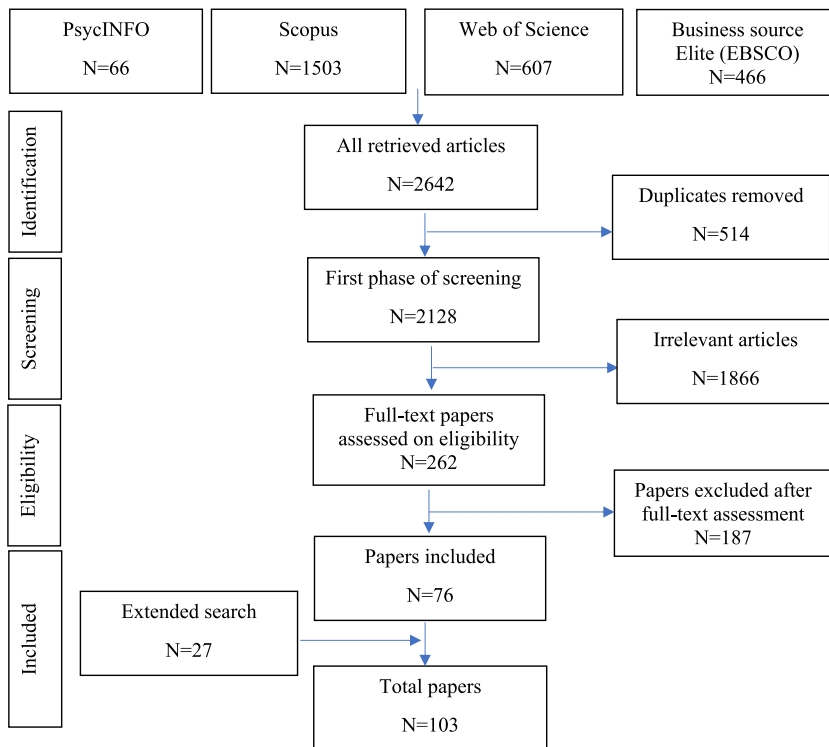


Fig. 1. Diagram of the search process.

subgroups were labeled and ranked based on the number of articles from which they had been extracted.

An integrated theoretical framework was established spanning three sets of studies on firms’ upper echelons and environmental sustainability. The first set examined how the observable or socio-demographic characteristics of senior managers, such as age, education, or gender (in)directly influenced corporate environmental responsiveness. The second set, going beyond the observable characteristics, opened the “black box” of upper echelons as it focused on top managers’ underlying psychological characteristics (e.g., personality, mental models) affecting the firm’s strategic decisions regarding environmental issues. The third set was concerned with senior managers’ interactions and relationships with others, inside or outside the firm and how such interactions affected the firms’ strategic responses towards environmental issues, including CEO power, CEO or board of directors’ social ties, and TMT interactions.

3. Results

We start out with a descriptive review of the 103 articles, followed by a detailed analysis of their content.

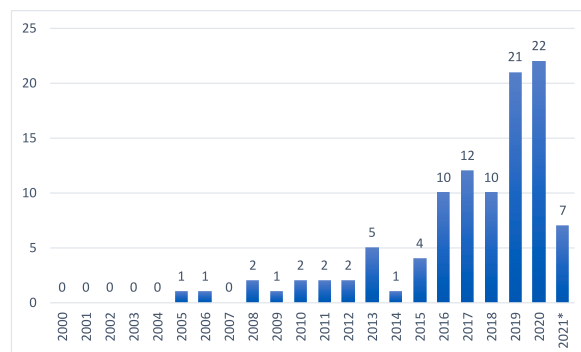


Fig. 2. Number of publications in the field per year.

3.1. Descriptive review

The articles were dispersed over 67 journals. Most of them were published by Sustainability (N = 11), followed by Business Strategy and the Environment (N = 7), and Journal of Business Ethics (N = 6). For a full list of articles per journal, see [Supp. M., Table 1](#). Interestingly, nearly 45% of the articles were published in the period 2019–2021 ([Fig. 2](#)).

[Fig. 3](#) summarizes the key aspects of the designs of the articles in this review. Geographically, most studies were carried out in East Asia (64%), where nearly 35% of the studies were from China and 15.5% from Malaysia. Then, 10.7% were from the Middle East, 8.7% from Africa and South Asia each, 3.9% from Latin American countries, and 3.9% covered multiple regions (see [Supp. M., Table 2](#)).

As [Fig. 3](#) shows, 57 of the 103 (i.e., 55%) articles focused on the influence of top management’s demographic characteristics, 34 on the psychological characteristics, and 12 on the social influences. Regarding the level of analysis, there were slightly more studies on the BOD level (33) and TMT level (32) than about CEOs (29). Only 9 of the articles addressed more than one level. Most articles on the BOD level focused on demographics, while most articles on TMTs and CEOs focused on psychological influences ([Table 2](#)).

In 91% of the articles, the authors used a quantitative approach; 6% had employed qualitative methods whereas only 3% had applied mixed methods. Noteworthy is that, among the articles, 19% examined moderators; 8% mediators; and 6% both mediating and moderating factors ([Fig. 3](#)). Regarding measuring CER, most articles (approximately 75%) relied on self-reports (i.e., surveys, interviews, or firm-based reports), and only 6% on multiple sources. Of the 103 (49.5%) studies, 51 were longitudinal. Nearly half of these longitudinal studies looked at the BOD level, and 41 of the 51 (80%) longitudinal studies focused on demographic characteristics.

The reviewed studies employed a wide range of control variables, as outlined in [Supp. M. Table 3](#). Firm size emerged as the most frequently utilized variable (N = 64). Furthermore, firm profitability, age, leverage, growth rate, ownership type, and ownership concentration are also prominently used, underscoring the pivotal role of organizational context in shaping responses to environmental concerns. Researchers also paid significant attention to governance factors (e.g., CEO duality, number of independent directors), external influences (e.g., regional development), and temporal aspects.

3.2. Content of the articles

In the below, an overview is offered of the types of study content in our corpus of 103 articles. [Table 2](#) indicates three major types of characteristics (i.e., demographic, psychological, and social influences) among the three types of actors (i.e., BOD, CEO, TMT). We structured our depiction of the results along those lines. Moreover, we added a multilevel column to [Table 2](#) which is discussed at the end of this section. We will present each category of characteristics separately and highlight the interactions among them insofar as it is being studied.

| | | | | | | | | |
|--|-----------------------|--|-----------------------|----------------------|--------------------|------------------|----------------------|---------------------|
| Sample by region | East Asia 66 | | | Middle East 11 | South Asia 9 | Africa 9 | Latin America 4 | Multi regions 4 |
| Examined characteristics | Socio-demographic 57 | | | Psychological 34 | | | Social influences 12 | |
| Levels of analysis | BOD 33 | | TMT 32 | | CEO 29 | | Multilevel 9 | |
| Research type | Quantitative 94 | | | | | | Qualitative 6 | Mixed methods 3 |
| Use of mediators and/or moderators | None 69 | | | Moderators only 20 | | Mediators only 8 | Both 6 | |
| Research method | Firm-based reports 41 | | Surveys/interviews 36 | | Rating agencies 13 | Databases 7 | Multi-sources 6 | |
| Time horizon | Cross-sectional 52 | | | Longitudinal 51 | | | | |
| Longitudinal studies by levels of analysis | Cross-sectional 52 | | | BOD 26 | | TMT 9 | CEO 8 | Multilevel 8 |
| Longitudinal studies by examined characteristics | Cross-sectional 52 | | | Socio-demographic 41 | | | Psychological 1 | Social influences 9 |

Fig. 3. Key features of the studies’ research designs (n = 103).

Table 2
Examined type of characteristics of the three actors in the articles.

| Type of characteristics | Type of actors | | | | |
|-------------------------|----------------|-----------|-----------|------------|------------|
| | BOD | CEO/Owner | TMT | Multilevel | Total |
| Socio-demographic | 30 | 11 | 10 | 6 | 57 |
| Psychological | 0 | 13 | 21 | 0 | 34 |
| Social influences | 3 | 5 | 1 | 3 | 12 |
| Total | 33 | 29 | 32 | 9 | 103 |

3.2.1. Socio-demographic characteristics

3.2.1.1. At the BOD level. Most studies on the demographic characteristics of the BOD focused on the effect of gender diversity on corporate environmental responsiveness. Other factors such as age, education, and experience received much less scholarly attention (Supp. M., Table 4). The results show little evidence of the influence of women on the board in promoting environmental sustainability. This might be due to the small presence of women on the boards of the studied companies (Agyemang et al., 2020; Fernandes et al., 2019; Kouloukoui et al., 2020). Based on the critical mass theory, when the number of women on the board is one or two, they often become tokens in the group. However, when the number of women directors reaches a certain threshold (usually three according to several studies), women will be able to express themselves more strongly and offer new perspectives, like environmental concerns (Birindelli et al., 2019; Wei et al., 2017). So far, few studies have examined this critical mass effect on CER. Gong et al. (2021), using a sample of listed firms in China from 2010 to 2016, found that firms with at least three women directors on the board tended to improve their corporate environmental actions' quality and speed.

A few studies examined the relationships between the financial incentives of the BOD and CER. For example, Agyemang et al. (2020) used data from 34 Chinese mining companies over a period of 19 years. They found that a BOD's annual remuneration had a positive relationship with environmental disclosure, while shareholding board members negatively affected the level of environmental disclosure. Neither the level of education nor the kind of academic major had a significant influence on CER in any of the studies (Elmagrhi et al., 2018; Fernandes et al., 2019). The results regarding the influence of the directors' professional experiences and age on CER were mixed (see Supp. M., Table 5). Elmagrhi et al. (2018), for example, found that a female director's age was positively associated with corporate environmental performance. However, from a sample of 152 Brazilian companies, Fernandes et al. (2019) found that companies disclosed more environmental information with an increase in the directors' average age until 60, after which the disclosure decreased.

Two studies addressed the role of family members in family-owned firms. Huang et al. (2016) found a negative relationship between a BOD with members from the controlling family in Taiwanese firms and green product innovation. One study by Meng et al. (2013) examined the influence of different reasons associated with the departure of a chairman on environmental information disclosure along with the types of chairman successors. Only one study examined the influence of religious diversity: Latif et al. (2020) found that having Muslim board members could positively affect the extent of environmental disclosure in Malaysian firms.

3.2.1.2. At the CEO level. Most research in this category focused on the influence of the CEO's education and experiences, such as level of education and kind of academic major, foreign exposure, and functional background (Supp. M., Table 4). For example, using the data from 2854 listed firms in China from 2010 to 2017, Shahab et al. (2020) found that CEOs with a research background, or who had previously worked or studied abroad, were positively associated with environmental performance. Overall, the results show that the higher the CEOs' level of education, the more likely they will engage in environmentally friendly practices (Cho et al., 2019; Rivera and De Leon, 2005). A few studies examined the impact of CEO age on CER; for example, Shahab et al. (2020) showed that young CEOs tend to take fewer environmental and sustainable actions compared to their older counterparts.

Three studies examined the link between CEO tenure and CER. Cho et al. (2019), for example, found that CEO tenure had a positive association with corporate environmental performance in textile and apparel companies in Korea. A couple of studies tested the influence of a CEO's nationality/ethnicity on CER. Contrary to expectations, Rivera and De Leon (2005) found that, irrespective of whether the CEOs were from industrialized or developing countries, there was no association with a firm's participation in voluntary environmental programs or environmental performance.

Two papers examined the influence of CEO religious beliefs on CER, both in China; Liao et al. (2019) tested whether the CEO's affiliation to an Eastern or Western belief system would affect their firms' environmental innovation, using the CEO's political ties as a moderator. Yao and Zhang (2020) showed that firms with religious entrepreneurs who were older, males or adhered to an Asian religion, such as Buddhism and Taoism, had a higher environmental performance. One study examined the influence of family dominance on CER in Korean firms; Terlaak et al. (2018) found that family CEOs moderated the relationship between family ownership and environmental performance disclosure.

3.2.1.3. At the TMT level. Research on TMT characteristics focused mainly on financial incentives (Supp. M., Table 4). All the studies found executives' remuneration had a positive effect on CER. For example, in a study of listed firms in China, Zou et al. (2015) showed that top executives' equity was negatively associated with corporate environmental performance, whereas cash pay had a positive association. These relationships were stronger in highly competitive industries. From the agency perspective, when top executives hold

significant equity, they tend to cut environmental expenditure in favor of profit maximization when they encounter tough market competition.

A few studies examined the influence of top managers' age, education, and prior work experience on CER. [Hao et al. \(2019\)](#), for example, examined the impact of returnee executives (who had studied or worked abroad or worked in a multinational company), and their effects on the green innovation performance of Chinese manufacturing enterprises, including the moderating effects of environmental regulation and managerial ties. Two studies examined the effect of top managers' gender on CER and, interestingly, no effect was found ([supp. Mat., table 5](#)). We found one study, by [Mensah and Blankson \(2013\)](#), that considered the influence of managers' nationality, religion, and marital status on the environmental performance of hotels in Ghana. None of these factors were associated with the hotels' environmental performance.

3.2.2. Psychological characteristics

3.2.2.1. *At the BOD level.* In our corpus, not a single study had examined any of the variables in this category.

3.2.2.2. *At the CEO level.* Psychological studies of CEOs and CER were not dominated by one factor. However, the CEO's personal and religious values received more attention than other factors ([Supp. M., Table 4](#)). For example, with data from 1300 firms in eight countries in Latin America, [Vives \(2006\)](#) found that having religious values related to engaging in environmental practices. Yet, [Wahga et al. \(2018\)](#) established that both economic motives (competitiveness gains) and the owner-managers' environmental (not religious) values are fundamental drivers for SMEs to adopt environmental practices in Pakistan.

A few articles focused on the owners' knowledge and awareness as CER drivers. [Demuijnck and Ngnodjom \(2013\)](#) conducted 18 in-depth interviews with owner-managers in Cameroon and found a lack of awareness of any responsibility for the natural environment. Three studies examined the CEOs' leadership styles. [Nor-Aishah et al. \(2020\)](#), for example, established that entrepreneurial leadership was positively related to environmental and social performance in the Malaysian SMEs.

[Chege and Wang \(2020\)](#) found that Kenyan CEOs with a sense of moral obligation towards the environment, and who experienced a positive emotional response after the implementation of sustainable practices, were more likely to engage in environmental practices. One study by [Moyeen and West \(2014\)](#) showed that the examined CEOs in large Bangladeshi enterprises perceived environmental responsibility as the least important aspect of corporate social responsibility (CSR).

[Chan and Ma \(2016\)](#) used data from 414 exporting Chinese firms to examine the CEOs' beliefs and the firms' proactive environmental strategies, moderated by the local ecological infrastructure. One study by [Tounés et al. \(2019\)](#) used the theory of planned behavior to explore the link between perceived behavior control, subjective norms, and the environmentally friendly intentions of Tunisian owner-managers of textile-clothing SMEs. Using the same sample, [Tounés et al. \(2020\)](#) found a positive relationship between the entrepreneurial orientations of owner-managers (measured by innovativeness, proactiveness, and risk-taking) and their environmental intentions.

3.2.2.3. *At the TMT level.* Research on this level focused mainly on moral and instrumental motives for CER. Moral motives are higher-order ([Aguilera et al., 2007](#)) and care-based ([Rupp and Mallory, 2015](#)), reflecting the need for meaningfulness ([Aguilera et al., 2007](#)). Researchers examined the influence of several moral motives for CER, such as ascription of responsibility ([Asadi et al., 2019](#); [Liu et al., 2019](#)), personal norms ([Asadi et al., 2019](#)), concerns for the environment ([Zhang et al., 2015](#)), and environmental values ([El Dief and Font, 2010, 2012](#)). Instrumental motives are self-driven ([Rupp and Mallory, 2015](#)), stemming from economic rationality and an interest in exerting control ([Aguilera et al., 2007](#)). As instrumental drivers for CER, studies mainly focused on the role of top management compensation and ownership (section 3.2.1) whereas the agency theorists focused on CEO power motives as predictors of CER (section 3.2.3). Researchers also examined the role of economic incentives such as perceived benefits and costs ([Chen et al., 2020](#)), perceived competitive advantage and cost saving ([Asadi et al., 2019](#)), and risk-reduction or business-case motivations ([Lo et al., 2010](#)).

Regarding managerial cognition, the perceptions of senior managers towards environmental responsibility were explored ([Supp. M., Table 4](#)). [Asadi et al. \(2019\)](#) looked into managerial interpretations of green information technology adoption intentions in Malaysian manufacturing firms. [Cao and Quazi \(2017\)](#) explored how corporate environmental strategy evolves with managerial cognition of "guanxi" using a multi-case study of four Chinese companies. Some studies examined the effect of senior managers' personality traits, focusing mostly on their consideration of future consequences (e.g., [Gholami et al., 2013](#)). All studies found that such considerations have a positive effect on CER.

In terms of the influence of senior managers' awareness and knowledge, [Peng and Liu \(2016\)](#) found that senior Chinese managers environmental risk awareness and environmental cost-benefit awareness was positively associated with their firms' eco-innovations. A few studies examined the influence of perceived behavioral control and subjective norms ([Supp. M., Table 4](#)). [Liu et al. \(2019\)](#), for example, investigated how environmental managers' role breadth self-efficacy affected pollution reduction behavior in Chinese manufacturing firms. One study by [Singh et al. \(2020\)](#) examined the influence of senior managers' 'green transformational leadership' on environmental performance in 669 manufacturing SMEs in the United Arab of Emirates. One study, by [Ling \(2019\)](#), examined the cultural values of Chinese senior managers and environmental protection practices in companies in Taiwan, Malaysia, and Singapore. The findings revealed that collectivism and uncertainty avoidance was related to environmental protection, but not masculinity, power distance, and a Confucian culture.

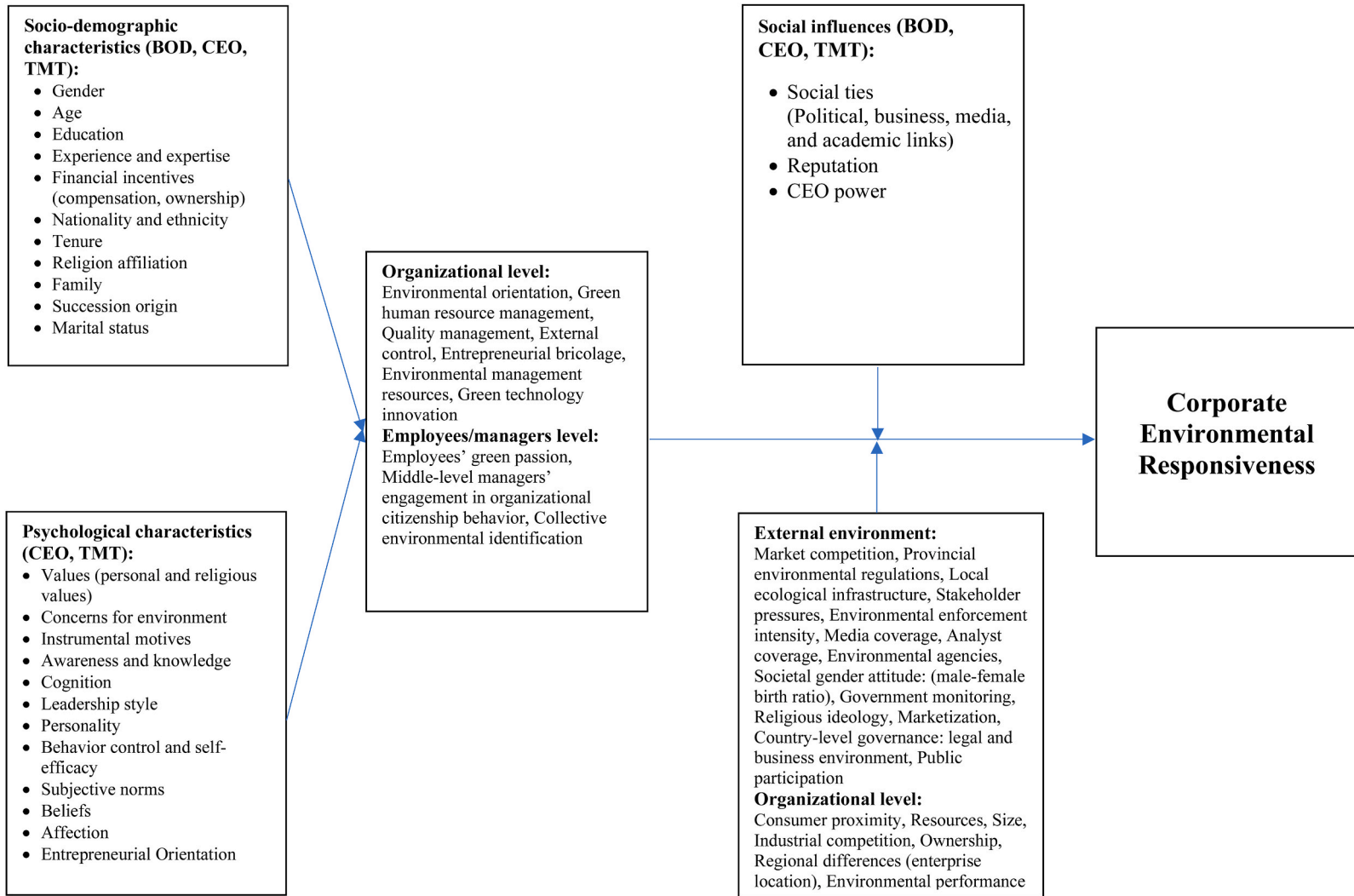


Fig. 4. Summary of the examined top-managerial drivers of corporate environmental responsiveness in developing countries.

3.2.3. Social influences

3.2.3.1. At the BOD level. All the studies in this realm were quite recent and linked board members' external network ties to CER, especially board members' political connections. Wang et al. (2018), for example, found that having a politically connected chairman was positively related to the firm's green investment. The degree of marketization and redundancy of resources had a negative moderating effect.

3.2.3.2. At the CEO level. Few studies were concerned with the CEOs interactions with others and their effects on CER. Most of these studies focused on CEO's political connections (Supp. M., Table 4). Except for Tran and Pham (2020), all the results showed a positive association between the CEOs' political connections and CER (e.g., Huang et al., 2021; Zhang et al., 2019). One study by Konadu et al. (2020) examined the link between CEOs' reputations and firms' environmental innovation through quality management among 217 manufacturing firms in Ghana.

3.2.3.3. At the TMT level. None of the reviewed articles examined the influence of intra-TMT processes on CER and only two dealt with TMT's social connections. Cheng et al. (2017) found no association between the senior managers' political connections and environmental information disclosure in private, heavily polluting, Chinese companies.

Only a few studies considered how external institutional pressures can affect senior managers' psychological characteristics, such as environmental concerns (Zhang et al., 2015) or perceived behavioral controls (Chen et al., 2020) which, in turn, may affect strategic decisions regarding environmental issues.

3.2.4. Multilevel studies

Few studies examined the characteristics of more than one level of corporate actors ($N = 9$). Most of them focused on the demographic characteristics of the upper echelons, with a complete absence of studies on psychological factors (Table 2). Moreover, only 4 of the 103 studies examined the interactions between the actors at different levels. For example, in a study of the banks in the Middle East and Africa, Birindelli et al. (2019) found that only in the presence of female CEOs, a positive impact on environmental performance was found when the share of female directors exceeded 30%. Yu et al. (2021) explored how different governance arrangements could affect a firm's environmental performance; having an owning family-based board chairman and an outside CEO resulted in the highest environmental performance.

Only three studies focused on social influences. Using data from 362 listed firms in China from 2011 to 2013, Zou et al. (2019) found that board members who were mainly linked to political organizations or media outlets and universities showed a higher level of environmental responsibility, while those with strong links to business peers were negatively associated with environmental responsibility. CEO power weakened the effect of those board business ties.

4. Critical assessment and future research

In the above, we offered a review of the empirical studies on top managers' characteristics linked to CER in developing countries. The key findings are integrated in Fig. 4. It includes the characteristics of three main groups of senior managers as predictors of CER, along with organizational, environmental, and employee-level mediating and moderating factors. During our review process, several knowledge gaps and methodological issues emerged. In the below, we discuss them, along with avenues for future research.

Our analysis reveals contradictory, inconsistent, and incomplete findings regarding the relationship between various top managerial characteristics and CER. This may be due to the specific sampling conditions. Also, it could be attributed to variations in the definition and operationalization of the variables used. To get a better understanding of the drivers and mechanisms which are more likely to bring about CER, more studies are needed to validate the applicability and generalizability of prior findings across industries, organizations, and other contextual factors. It is also imperative for future research to include more mediators and moderators, besides the commonly used factors such as environmental regulations and market competition. Key mediators, such as relational dynamics within the TMT, and the CEO-TMT interface, were largely neglected in the literature. Instead, the articles focused on contextual factors that moderate the relationship between senior managers' characteristics and CER (see Fig. 3). We encourage researchers to uncover how and where these moderating factors operate with respect to the mediating processes that link senior managers' characteristics to CER (Neely et al., 2020).

Other than the need for more use of theories in this field, we saw that studies on the interplay of top executives' characteristics are remarkably scarce. Most likely, managers' choices are the products of a myriad of interactions between various attributes rather than of an isolated individual characteristic. Focusing field research on isolated characteristics may lead to contradictory results and a distorted picture of the complex relationship between executives' characteristics and CER (Bromiley and Rau, 2016; Samimi et al., 2020). Thus, future, more theory-driven research needs to examine how many various factors interact and shape the ways in which managers respond to environmental issues. Configurational methods, such as qualitative comparative analysis, can be used to investigate the integrative effects of diverse executive attributes embedded in various contextual factors (Crilly, 2013).

Nearly half of the articles in this review focused on top management demographic characteristics and CER, with gender, education, and experience being the most studied factors. Upper echelon scholars have been advised to open new frontiers and explore the influence of socio-demographic characteristics, such as strategic leaders' military experience and political orientation (e.g., Gupta et al., 2019). Moreover, given the economic importance of family businesses in developing economies (Burkart et al., 2003), a greater focus

on the role of the family on CER seems essential. Board composition and owner involvement in managing family firms might affect the ability and willingness to engage in environment-friendly practices (Chrisman et al., 2015). Further work is needed to understand better how different configurations of family firm control affect CER; with changes in family governance simple philanthropic initiatives may evolve into solid environmentally sustainable practices.

We also need to dig deeper into the psychological mechanisms of the top management members. The values and cognitions of senior managers remain the core of Hambrick and Mason's (1984) model of what shapes corporate decisions (Carpenter et al., 2004). Given the methodological convenience, most of the past studies depended on demographic rather than the harder-to-measure psychological variables, which has sparked several methodological concerns. Priem et al. (1999) criticized demography-based research for its limited explanatory power and failure to capture the underlying mechanisms precisely, which leads to inconsistent and uninterpretable findings. Our overview, with its great number of independent variables, may even be illustrative of Priem et al.'s (1999) critique. Recent developments in research methods and measures provide new opportunities (Samimi et al., 2020), such as on the personality traits of top managers. Validated psychometric assessment tools (e.g., the five-factor model and core self-evaluation) can be used to examine senior managers' personalities and CER in developing countries. Due to the difficulty in getting direct access to top managers for survey or quasi-experimental study purposes, researchers must use novel approaches to capture the leaders' behavioral patterns, such as linguistic analysis of CEO's speeches (Hrazdil et al., 2021). Others may use video-metric approaches (e.g., Gupta et al., 2019; Petrenko et al., 2016). Such novel approaches may also curb social desirability biases inherent in the field's preponderant survey studies (Gupta et al., 2019).

Our review shows that the role of emotions, such as guilt and shame or affective dispositions has been largely neglected. Research on the relationship between individual emotions and corporate responsible behavior is generally scarce (Gond et al., 2017). We need to understand how a senior manager's emotions may shape the firm's strategic responses to environmental issues. Another line of future research is to investigate more thoroughly how senior managers' cultural and religiously-inspired value constellations affect CER. Although managerial cognition in our sample has received very little attention, the stream of research addressing the role of managerial cognition (Gröschl et al., 2019; Wong et al., 2011) and sensemaking with regard to sustainability issues (Hahn et al., 2014) is growing. Hockerts (2015), for example, explored the dimensions of the business-case frames that managers use to make sense of their investments in corporate sustainability activities in large European companies. It would be fascinating to explore in greater detail how senior managers in developing countries frame and make sense of environmental issues and how different that is from comparable managers in developed countries. Scholarly examination of the effect of a CEO's cognitive style and ambivalence as well as a TMT's cognitive diversity on CER would be useful. Also, as to how individual, team, organizational, and institutional factors co-shape managers' cognitive structures and processes pertaining to CER is a relevant unaddressed question thus far. Cognitive mapping techniques could be gainfully used in this line of research (Kaplan, 2011) as well as those approaches used to examine personality, such as linguistic, video-based and/or historiometric analyses. Moreover, new technologies, including portable electroencephalograms and mobile health trackers, offer massive opportunities for uncovering the foundations of senior managers' cognition (Neely et al., 2020).

Given that strategic decision-making is a social process that involves interactions between the strategic leaders (i.e., CEO, TMT, and BOD) in which their attributes, aspirations, and activities come into contact and influence one another (Georgakakis et al., 2019; Simsek et al., 2018; Walls et al., 2021), strategic leaders' interfaces represent another area of research that requires more attention. Studying the behavior of leaders in isolation offers an incomplete interpretation of the actual complex decision-making processes they are involved in (Heyden et al., 2017). Researchers across management subfields have begun to consider the influence of strategic leaders' interfaces on strategic decision processes and firm outcomes.¹ For example, Simsek (2007) tested a serial mediation model of the effect of CEO tenure on performance via its influence on TMT risk-taking propensity and the firm's pursuit of entrepreneurial initiatives. Future research should start to examine such interactions between strategic leaders in developing countries and their effects on firms' responses to environmental issues. When doing so, we encourage focusing beyond the interactions between leaders' demographic characteristics by also examining the behavioral and relational aspects of the strategic leaders' interfaces.

Executives' interactions with customers or employees can significantly impact firm outcomes (Neely et al., 2020). It is essential for researchers to devote more attention to investigating how stakeholders affect executives' decision processes regarding environmental issues. Social media platforms represent enormous data sources for researchers to study some of such interactions.

In terms of the methods used, most of the reviewed studies (i.e., over 90%) tended to use quantitative, single-level designs focusing on one aspect of the top managers' attributes, such as demographic, psychological, or social. There is a need for more multilevel research to improve our understanding of how the interactions between individual, team, organizational, and institutional level factors affect CER. More qualitative and mixed methods studies will provide us with a deeper understanding of the underlying mechanisms influencing CER. Qualitative research can provide a richer understanding not just for the individuals' meanings and interpretations, but also how and why those interpretations were developed. For example, instead of searching for statistical correlations between religious beliefs and CER, researchers should conduct qualitative inductive research on the personal religious values that may have stimulated the managers to engage in environmentally-friendly activities. Clearly, there is a need to study variables that are hard to quantify, such as managers' cognitive frames. Furthermore, combining both quantitative and qualitative approaches neutralize the weaknesses of each single approach which allows for more valid inferences. Making use of novel methodologies, such as video-coding of meetings (Hoogeboom and Wilderom, 2019), will be crucial as well as address the identified knowledge gaps.

Measuring CER by itself is challenging (Escrig-Olmedo et al., 2017). As shown in Fig. 3, most of the articles in our review relied on

¹ For reviews of extant strategic leaders' interface research, see Georgakakis et al. (2019), Bromiley and Rau (2016), and Simsek et al. (2018).

the firms' own reports or surveys, and interviews with managers as the source of information on CER. New research would need more reliable and independent monitoring options such as independent sustainability rating agencies that provide validation of the information provided by a firm's own sustainability reports. However, researchers should be cautious when using such data, as different raters use different assessment criteria which can lead to inconsistency (Chatterji et al., 2016). More generally, using multiple sources is fruitful to offset the possible bias of a single source. Furthermore, given that most of the longitudinal studies are at the BOD level, and focus mainly on demographic characteristics (see Fig. 3), there is a need for more CEO and TMT level longitudinal studies which should focus more on their interrelated psychological characteristics and social influences. For example, how do (senior) managers' cognitions and views on environmental issues evolve and affect their firm's environmental performance over time. Also, developing countries should not be treated as one block as they include numerous countries and ethnic groups with different cultures. Therefore, cross-cultural studies are needed to explore how cultural differences can lead to variations in how managers think, feel, and act regarding environmental issues, also compared to Western managers, for instance in multinational firms.

4.1. Level-specific future research recommendations

4.1.1. At the BOD level

Most of the reviewed studies focused on the easily observable characteristics of the BOD while only a few focused on the BOD's external social ties. There is a lack of research on the underlying psychological characteristics of the BOD that influence CER. Future research must adopt a behavioral approach to uncover the socio-psychological aspects as well as the interactive boardroom dynamics that shape the BOD response to environmental issues in developing countries. Even though gender diversity received extensive attention, future research needs to consider the influence of other factors, such as experiential board diversity, which may affect the firms' environmental outcomes. Most studies of this level, i.e., 90% of the articles, used corporate environmental disclosure as a measure of CER. However, the *quality* of the used environmental disclosure measures has not received a lot of attention so far. Furthermore, due to the multidimensionality of CER, one could use additional measures, such as environmental innovation, to examine the influence of BOD characteristics on CER. Finally, future research needs to pay more attention to the dynamics between BODs and CEOs in shaping CER.

4.1.2. At the CEO level

Although several studies have begun to examine the influence of CEO characteristics on CER in developing countries, the effects of many observable characteristics are still largely ignored, such as the influence of CEO succession. Hambrick and Mason (1984) proposed that CEOs who come from outside the organization tend to make more changes than those who are brought from within. Scholars could examine to what extent CEO succession has an impact on CER. They would also need to take into consideration how the interaction of CEO succession and other factors, such as power distribution, affect CER. Quigley and Hambrick (2012), for example, showed that if a prior CEO remains on the board, it will restrict the new CEO's discretion, reducing his or her ability to make changes or achieve higher performance levels. Surprisingly, we did not find a study that focused on the relationship between CEO remuneration and CER. According to Geletkanycz and Sanders (2012), compensation is a "mechanism that alternatively amplifies or mutes the effects of executive attributes" (p. 520). Future research must not only examine the influence of CEO remuneration, but also CEO-TMT pay disparity as it is considered an indication of CEO hubris, which was shown to have a significant effect on organizational outcomes, including CSR (e.g., Hart et al., 2015).

Despite the substantial growth of research on CEO personality traits over the past decade (Bromiley and Rau, 2016), none of the studies in our sample examined the influence of either negative (e.g., narcissism) or positive (e.g., humility) CEO personality traits on CER in a developing country context. We also need more studies on how CEO leadership style may drive CER.

4.1.3. At the TMT level

More research is needed on the influence of TMT heterogeneity on CER and the teams' situational contexts (Nielsen and Nielsen, 2013). Diverse teams can be beneficial for handling complex tasks that require multiple perspectives and competencies (Samimi et al., 2020). However, TMT heterogeneity can also lead to conflict and divisions among the team members (Ndofor et al., 2015; Samimi et al., 2020). Studying (intra-)team processes or interaction dynamics in relation to CER would therefore be intriguing; also, they may account for inconsistent findings that readily observable TMT attributes leave unexplained.

5. Limitations, implications and concluding remarks

While this review has many contributions to the research on CER drivers, it is not free of limitations. First, the research includes articles published in English only, which may hide high-quality research published in other languages. Second, this study only covers empirical research, potentially excluding novel theoretical insights regarding managerial drivers of CER; indeed, they seem missing in this area. Third, we focused solely on journal articles; thus, it has no full coverage of the studies on top managerial characteristics driving CER in developing countries. Therefore, we encourage readers to bring to the fore key empirical and theoretical insights that may have been missed due to our in- and exclusion criteria that principally do yield a robust representation.

For companies aiming to incorporate (more) environmental sustainability into their core strategies, few important practical implications can be derived. While conclusive results are not yet available for all the examined factors, this study's findings can already inform executive recruitment and selection professionals. Identifying the characteristics of managers who excel in promoting environmental sustainability can enable companies to actively seek out individuals possessing these desired qualities. Much more

(academic) understanding of how these characteristics are associated with higher environmental performance will undoubtedly guide such leadership-scouting effort. Companies can also seek to foster these qualities in their appointed managers, through training, coaching and other developmental actions or programs. Given heightened attention for corporate environmental performance, governmental actors may also consider to invest in such training programs to help managers excel in behaviors showing sustainability leadership. Moreover, policymakers can develop regulatory guidelines so that more companies have to hire professionals with (specific) sustainability-related qualities of skills. For example, they could require managers to complete sustainability training or demand corporate boards to have, hire, subsidize and/or report sustainability expertise.

Recently, scholars from various disciplines have shown an increased interest in the individual drivers of corporate environmental sustainability. Given the distinctive institutional context of developing countries, this review focuses on top-level managerial characteristics driving CER in those types of countries. We integrate the extant empirical studies into a comprehensive framework, revealing many knowledge gaps, methodological issues, and other challenges of this field. To tackle them, we plea for more multilevel and cross-cultural (ideally longitudinal) studies with a focus on the psychological characteristics and interactions between corporate leaders, while exploring promising mediators and moderators. Also, employing novel and mixed methods is crucial to make progress in this field and to avert more irreversible environmental harm by companies located in large and often neglected parts of our planet.

Credit author statement

Nahla H. E. Ahmed: Conceptualization, Methodology, Investigation, Data curation, Analysis, Writing - Original Draft, Visualization; Arnold H. Enklaar: Conceptualization, Methodology, Analysis, Writing- Review & Editing, Supervision; Celeste P. M. Wilderom: Conceptualization, Methodology, Writing- Review & Editing, Visualization, Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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Appendix A. Supplementary data

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References

- Abatecola, G., Cristofaro, M., 2020. Hambrick and Mason's "Upper Echelons theory": evolution and open avenues. *J. Manag. Hist.* 26, 116–136. <https://doi.org/10.1108/JMH-02-2018-0016>.
- Adomako, S., Ning, E., Adu-Ameyaw, E., 2021. Proactive environmental strategy and firm performance at the bottom of the pyramid. *Bus. Strat. Environ.* 30, 422–431. <https://doi.org/10.1002/bse.2629>.
- Aguilera, R.V., Rupp, D.E., Williams, C.A., Ganapathi, J., 2007. Putting the s back in corporate social responsibility: a multilevel theory of social change in organizations. *Acad. Manag. Rev.* 32, 836–863. <https://doi.org/10.5465/amr.2007.25275678>.
- Aguinis, H., Glavas, A., 2012. What we know and don't know about corporate social responsibility: a review and research agenda. *J. Manag.* 38, 932–968. <https://doi.org/10.1177/0149206311436079>.
- Agyemang, A.O., Yusheng, K., Ayamba, E.C., Twum, A.K., Chengpeng, Z., Shaibu, A., 2020. Impact of board characteristics on environmental disclosures for listed mining companies in China. *Environ. Sci. Pollut. Res.* 27, 21188–21201. <https://doi.org/10.1007/s11356-020-08599-2>.
- Amaeshi, K., Adegbite, E., Rajwani, T., 2016. Corporate social responsibility in challenging and non-enabling institutional contexts: do institutional voids matter? *J. Bus. Ethics* 134, 135–153. <https://doi.org/10.1007/s10551-014-2420-4>.
- Asadi, S., Nilashi, M., Safaei, M., Abdullah, R., Saeed, F., Yadegaridehkordi, E., Samad, S., 2019. Investigating factors influencing decision-makers' intention to adopt Green IT in Malaysian manufacturing industry. *Resour. Conserv. Recycl.* 148, 36–54. <https://doi.org/10.1016/j.resconrec.2019.04.028>.
- Bansal, P., Gao, J., 2006. Building the future by looking to the past: examining research published on organizations and environment. *Organ. Environ.* 19, 458–478. <https://doi.org/10.1177/1086026606294957>.
- Bansal, P., Roth, K., 2000. Why companies go green: a model of ecological responsiveness. *Acad. Manag. J.* 43, 717–736. <https://doi.org/10.2307/1556363>.
- Bao, S., Fainshmidt, S., Nair, A., Vracheva, V., 2014. Women in upper echelons of management, tenure and legal risk. *Br. J. Manag.* 25, 388–405. <https://doi.org/10.1111/j.1467-8551.2012.00847.x>.
- Basu, K., Palazzo, G., 2008. Corporate social responsibility: a process model of sensemaking. *Acad. Manag. Rev.* 33, 122–136. <https://doi.org/10.5465/amr.2008.27745504>.
- Birindelli, G., Iannuzzi, A.P., Savioli, M., 2019. The impact of women leaders on environmental performance: evidence on gender diversity in banks. *Corp. Soc. Responsib. Environ. Manag.* 26, 1485–1499. <https://doi.org/10.1002/csr.1762>.

- Bromiley, P., Rau, D., 2016. Social, behavioral, and cognitive influences on upper echelons during strategy process: a literature review. *J. Manag.* 42, 174–202. <https://doi.org/10.1177/0149206315617240>.
- Burkart, M., Panunzi, F., Shleifer, A., 2003. Family firms. *J. Finance* 58, 2167–2202. <https://doi.org/10.1111/1540-6261.00601>.
- Cao, X.W., Quazi, A., 2017. Does an institutional factor influence corporate environmental strategy? Looking through the Guanxi lens. *Sustain. Account. Manag. Pol. J.* 8, 94–112. <https://doi.org/10.1108/sampj-08-2015-0075>.
- Carpenter, M.A., Geletkancz, M.A., Sanders, W.G., 2004. Upper echelons research revisited: antecedents, elements, and consequences of top management team composition. *J. Manag.* 30, 749–778. <https://doi.org/10.1016/j.jm.2004.06.001>.
- Chan, R., Ma, K., 2016. Environmental orientation of exporting SMEs from an emerging economy: its antecedents and consequences. *Manag. Int. Rev.* 56, 597–632. <https://doi.org/10.1007/s11575-016-0280-0>.
- Chatterji, A.K., Durand, R., Levine, D.I., Touboul, S., 2016. Do ratings of firms converge? Implications for managers, investors and strategy researchers. *Strat. Manag. J.* 37, 1597–1614. <https://doi.org/10.1002/smj.2407>.
- Chege, S.M., Wang, D.P., 2020. The influence of technology innovation on SME performance through environmental sustainability practices in Kenya. *Technol. Soc.* 60, 101210. <https://doi.org/10.1016/j.techsoc.2019.101210>.
- Chen, X., Weerathunga, P.R., Nurunnabi, M., Kulathunga, K.M.M.C.B., Samarathunga, W.H.M.S., 2020. Influences of behavioral intention to engage in environmental accounting practices for corporate sustainability: managerial perspectives from a developing country. *Sustain. Times* 12, 5266. <https://doi.org/10.3390/su12135266>.
- Cheng, Z., Wang, F., Keung, C., Bai, Y., 2017. Will corporate political connection influence the environmental information disclosure level? Based on the panel data of A-shares from listed companies in Shanghai stock market. *J. Bus. Ethics* 143, 209–221. <https://doi.org/10.1007/s10551-015-2776-0>.
- Cho, C.K., Cho, T.S., Lee, J., 2019. Managerial attributes, consumer proximity, and corporate environmental performance. *Corp. Soc. Responsib. Environ. Manag.* 26, 159–169. <https://doi.org/10.1002/csr.1668>.
- Chrisman, J.J., Chua, J.H., De Massis, A., Frattini, F., Wright, M., 2015. The ability and willingness paradox in family firm innovation. *J. Prod. Innovat. Manag.* 32, 310–318. <https://doi.org/10.1111/jpim.12207>.
- Crilly, D., 2013. Corporate social responsibility: a multilevel explanation of why managers do good. In: Fiss, P.C., Cambre, B., Marx, A. (Eds.), *Configurational Theory and Methods in Organizational Research* (Research in the Sociology of Organizations, vol. 38). Emerald Group Publishing Limited, pp. 181–204. [https://doi.org/10.1108/S0733-558X\(2013\)0000038012](https://doi.org/10.1108/S0733-558X(2013)0000038012).
- Darnall, N., Henriques, I., Sadorsky, P., 2010. Adopting proactive environmental strategy: the influence of stakeholders and firm size. *J. Manag. Stud.* 47, 1072–1094. <https://doi.org/10.1111/j.1467-6486.2009.00873.x>.
- Demuijnck, G., Ngodjom, H., 2013. Responsibility and informal CSR in formal Cameroonian SMEs. *J. Bus. Ethics* 112, 653–665. <https://doi.org/10.1007/s10551-012-1564-3>.
- Dögl, C., Behnam, M., 2015. Environmentally sustainable development through stakeholder engagement in developed and emerging countries. *Bus. Strat. Environ.* 24, 583–600. <https://doi.org/10.1002/bse.1839>.
- Dou, Y., Zhu, Q., Sarkis, J., 2018. Green multi-tier supply chain management: an enabler investigation. *J. Purch. Supply Manag.* 24, 95–107. <https://doi.org/10.1016/j.pursup.2017.07.001>.
- Dyllick, T., Hockerts, K., 2002. Beyond the business case for corporate sustainability. *Corp. Environ. Responsib.* 11, 130–141. <https://doi.org/10.4324/9781315259277-7>.
- El Dief, M., Font, X., 2012. Determinants of environmental management in the Red Sea hotels: personal and organizational values and contextual variables. *J. Hospit. Tourism Res.* 36, 115–137. <https://doi.org/10.1177/1096348010388657>.
- El Dief, M., Font, X., 2010. The determinants of hotels' marketing managers' green marketing behaviour. *J. Sustain. Tourism* 18, 157–174. <https://doi.org/10.1080/09669580903464232>.
- ElAlfy, A., Palaschuk, N., El-Bassiouny, D., Wilson, J., Weber, O., 2020. Scoping the evolution of corporate social responsibility (CSR) research in the sustainable development goals (SDGs) era. *Sustain. Times* 12, 5544. <https://doi.org/10.3390/su12145544>.
- Elmagrhi, M.H., Ntim, C.G., Elamer, A.A., Zhang, Q., 2018. A study of environmental policies and regulations, governance structures, and environmental performance: the role of female directors. *Bus. Strat. Environ.* 28, 206–220. <https://doi.org/10.1002/bse.2250>.
- Escrib-Olmedo, E., Muñoz-Torres, M.J., Fernández-Izquierdo, M.A., Rivera-Lirio, J.M., 2017. Measuring corporate environmental performance: a methodology for sustainable development. *Bus. Strat. Environ.* 26, 142–162. <https://doi.org/10.1002/bse.1904>.
- Fassin, Y., Werner, A., Van Rossem, A., Signori, S., Garriga, E., von Weltzien Hoivik, H., Schlierer, H.J., 2015. CSR and related terms in SME owner-managers' mental models in six European countries: national context matters. *J. Bus. Ethics* 128, 433–456. <https://doi.org/10.1007/s10551-014-2098-7>.
- Fernandes, S.M., Bornia, A.C., Nakamura, L.R., 2019. The influence of boards of directors on environmental disclosure. *Manag. Decis.* 57, 2358–2382. <https://doi.org/10.1108/MD-11-2017-1084>.
- Frynas, J.G., Yamahaki, C., 2016. Corporate social responsibility: review and roadmap of theoretical perspectives. *Bus. Ethics Eur. Rev.* 25, 258–285. <https://doi.org/10.1111/beer.12115>.
- Gandhi, N.S., Thanki, S.J., Thakkar, J.J., 2018. Ranking of drivers for integrated lean-green manufacturing for Indian manufacturing SMEs. *J. Clean. Prod.* 171, 675–689. <https://doi.org/10.1016/j.jclepro.2017.10.041>.
- Geletkanycz, M.A., Sanders, W.G., 2012. New directions on compensation and upper echelons. *Corp. Govern. Int. Rev.* 20, 519–525. <https://doi.org/10.1111/corg.12005>.
- Georgakakis, D., Heyden, M.L.M., Oehmichen, J.D.R., Ekanayake, U.I.K., 2019. Four decades of CEO-TMT interface research: a review inspired by role theory. *Leader. Q.* 101354. <https://doi.org/10.1016/j.leaqua.2019.101354>.
- Gholami, R., Sulaiman, A.B., Ramayah, T., Molla, A., 2013. Senior managers' perception on green information systems (IS) adoption and environmental performance: results from a field survey. *Inf. Manag.* 50, 431–438. <https://doi.org/10.1016/j.im.2013.01.004>.
- Gond, J.P., El Akremi, A., Svaen, V., Babu, N., 2017. The psychological microfoundations of corporate social responsibility: a person-centric systematic review. *J. Organ. Behav.* 38, 225–246. <https://doi.org/10.1002/job.2170>.
- Gong, M., Zhang, Z., Jia, M., Walls, J.L., 2021. Does having a critical mass of women on the board result in more corporate environmental actions? Evidence from China. *Group Organ. Manag.* 46, 1106–1144. <https://doi.org/10.1177/1059601121998892>.
- González-Benito, J., González-Benito, Ó., 2006. A review of determinant factors of environmental proactivity. *Bus. Strat. Environ.* 15, 87–102. <https://doi.org/10.1002/bse.450>.
- Gröschl, S., Gabaldón, P., Hahn, T., 2019. The co-evolution of leaders' cognitive complexity and corporate sustainability: the case of the CEO of Puma. *J. Bus. Ethics* 155, 741–762. <https://doi.org/10.1007/s10551-017-3508-4>.
- Gupta, A., Nadkarni, S., Mariam, M., 2019. Dispositional sources of managerial discretion: CEO ideology, CEO personality, and firm strategies. *Adm. Sci. Q.* 64, 855–893. <https://doi.org/10.1177/0001839218793128>.
- Hahn, T., Preuss, L., Pinkse, J., Figge, F., 2014. Cognitive frames in corporate sustainability: managerial sensemaking with paradoxical and business case frames. *Acad. Manag. Rev.* 39, 463–487. <https://doi.org/10.5465/amr.2012.0341>.
- Hambrick, D.C., Mason, P.A., 1984. Upper echelons: the organization as a reflection of its top managers. *Acad. Manag. Rev.* 9, 193–206. <https://doi.org/10.5465/amr.1984.4277628>.
- Hao, Y., Fan, C., Long, Y., Pan, J., 2019. The role of returnee executives in improving green innovation performance of Chinese manufacturing enterprises: implications for sustainable development strategy. *Bus. Strat. Environ.* 28, 804–818. <https://doi.org/10.1002/bse.2282>.
- Hart, T.A., David, P., Shao, F., Fox, C.J., Westermann-Behaylo, M., 2015. An examination of the impact of executive compensation disparity on corporate social performance. *Strat. Organ.* 13, 200–223. <https://doi.org/10.1177/1476127015585103>.
- Hawken, P., 1993. *The Ecology of Commerce: A Declaration of Sustainability*. Harper Business, New York, NY.

- Heyden, M.L.M., Reimer, M., Van Doorn, S., 2017. Innovating beyond the horizon: CEO career horizon, top management composition, and R&D intensity. *Hum. Resour. Manag.* 56, 205–224. <https://doi.org/10.1002/hrm.21730>.
- Hockerts, K., 2015. A cognitive perspective on the business case for corporate sustainability. *Bus. Strat. Environ.* 24, 102–122. <https://doi.org/10.1002/bse.1813>.
- Hofstede, G., 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations*. SAGE Publications, Thousand Oaks, CA.
- Hoogbeem, M.A.M.G., Wilderom, C.P.M., 2019. Advancing the transformational-transactional model of effective leadership: integrating two classic leadership models with a video-based method. *J. Leader. Stud.* 13, 23–46. <https://doi.org/10.1002/jls.21655>.
- Hrazdil, K., Mahmoudian, F., Nazari, J.A., 2021. Executive personality and sustainability: do extraverted chief executive officers improve corporate social responsibility? *Corp. Soc. Responsib. Environ. Manag.* 28, 1564–1578. <https://doi.org/10.1002/csr.2116>.
- Huang, M., Li, M., Liao, Z., 2021. Do politically connected CEOs promote Chinese listed industrial firms' green innovation? The mediating role of external governance environments. *J. Clean. Prod.* 278, 123634. <https://doi.org/10.1016/j.jclepro.2020.123634>.
- Huang, Y.C., Yang, M.L., Wong, Y.J., 2016. The effect of internal factors and family influence on firms' adoption of green product innovation. *Manag. Res. Rev.* 39, 1167–1198. <https://doi.org/10.1108/MRR-02-2015-0031>.
- Ioannou, I., Hawn, O., 2019. Redefining the strategy field in the age of sustainability. In: McWilliams, A., Rupp, D.E., Siegel, D.S., Stahl, G.K., Waldman, D.A. (Eds.), *Oxford Handbook of Corporate Social Responsibility: Psychological and Organizational Perspectives*. Oxford University Press, pp. 513–540. <https://doi.org/10.1093/oxfordhb/9780198802280.013.22>.
- Jamali, D., Karam, C., 2018. Corporate social responsibility in developing countries as an emerging field of study. *Int. J. Manag. Rev.* 20, 32–61. <https://doi.org/10.1111/ijmr.12112>.
- Jamali, D., Neville, B., 2011. Convergence versus divergence of CSR in developing countries: an embedded multi-layered institutional lens. *J. Bus. Ethics* 102, 599–621. <https://doi.org/10.1007/s10551-011-0830-0>.
- Jaw, Y.L., Lin, W.T., 2009. Corporate elite characteristics and firm's internationalization: CEO-level and TMT-level roles. *Int. J. Hum. Resour. Manag.* 20, 220–233. <https://doi.org/10.1080/09585190802528797>.
- Kantabutra, S., 2019. Achieving corporate sustainability: toward a practical theory. *Sustain. Times* 11, 4155. <https://doi.org/10.3390/su11154155>.
- Kaplan, S., 2011. Research in cognition and strategy: reflections on two decades of progress and a look to the future. *J. Manag. Stud.* 48, 665–695. <https://doi.org/10.1111/j.1467-6486.2010.00983.x>.
- Kim, C.H., Amaeshi, K., Harris, S., Suh, C.J., 2013. CSR and the national institutional context: the case of South Korea. *J. Bus. Res.* 66, 2581–2591. <https://doi.org/10.1016/j.jbusres.2012.05.015>.
- Konadu, R., Owusu-Agyei, S., Lartey, T.A., Danso, A., Adomako, S., Amankwah-Amoah, J., 2020. CEOs' reputation, quality management and environmental innovation: the roles of stakeholder pressure and resource commitment. *Bus. Strat. Environ.* 29, 2310–2323. <https://doi.org/10.1002/bse.2504>.
- Kouloukoui, D., Marinho, M.M.O., Gomes, S.M.S., de Jong, P., Kiperstok, A., Torres, E.A., 2020. The impact of the board of directors on business climate change management: case of Brazilian companies. *Mitig. Adapt. Strategies Glob. Change* 25, 127–147. <https://doi.org/10.1007/s11027-019-09864-7>.
- Landis, J.R., Koch, G.G., 1977. The measurement of observer agreement for categorical data. *Biometrics* 33, 159–174. <https://doi.org/10.2307/2529310>.
- Latif, R.A., Yahya, N.H., Mohd, K.N.T., Kamardin, H., Ariffin, A.H.M., 2020. The influence of board diversity on environmental disclosures and sustainability performance in Malaysia. *Int. J. Energy Econ. Pol.* 10, 287–296. <https://doi.org/10.32479/ijeeep.9508>.
- Liao, Z., Dong, J., Weng, C., Shen, C., 2019. CEOs' religious beliefs and the environmental innovation of private enterprises: the moderating role of political ties. *Corp. Soc. Responsib. Environ. Manag.* 26, 972–980. <https://doi.org/10.1002/csr.1737>.
- Ling, Y.H., 2019. Cultural and contextual influences on corporate social responsibility: a comparative study in three Asian countries. *Cross Cult. Strateg. Manag.* 26, 290–310. <https://doi.org/10.1108/CCSM-02-2018-0024>.
- Linneberg, M.S., Korsgaard, S., 2019. Coding qualitative data: a synthesis guiding the novice. *Qual. Res. J.* 19, 259–270. <https://doi.org/10.1108/QRJ-12-2018-0012>.
- Liu, T., Liang, D., Zhang, Y., Song, Y., Xing, X., 2019. The antecedent and performance of environmental managers' proactive pollution reduction behavior in Chinese manufacturing firms: insight from the proactive behavior theory. *J. Environ. Manag.* 242, 327–342. <https://doi.org/10.1016/j.jenvman.2019.04.050>.
- Lo, C.W.H., Fryxell, G.E., Tang, S.Y., 2010. Stakeholder pressures from perceived environmental impacts and the effect on corporate environmental management programmes in China. *Environ. Polit.* 19, 888–909. <https://doi.org/10.1080/09644016.2010.518680>.
- Matten, D., Moon, J., 2008. "Implicit" and "explicit" CSR: a conceptual framework for a comparative understanding of corporate social responsibility. *Acad. Manag. Rev.* 33, 404–424. <https://doi.org/10.5465/amr.2008.31193458>.
- Meng, X.H., Zeng, S.X., Tam, C.M., Xu, X.D., 2013. Whether top executives' turnover influences environmental responsibility: from the perspective of environmental information disclosure. *J. Bus. Ethics* 114, 341–353. <https://doi.org/10.1007/s10551-012-1351-1>.
- Mensah, I., Blankson, E.J., 2013. Determinants of hotels' environmental performance: evidence from the hotel industry in Accra, Ghana. *J. Sustain. Tourism* 21, 1212–1231. <https://doi.org/10.1080/09669582.2013.776058>.
- Minkov, M., 2013. *Cross-Cultural Analysis: the Science and Art of Comparing the World's Modern Societies and Their Cultures*. SAGE Publications, Thousand Oaks, CA.
- Moyeen, A., West, B., 2014. Promoting CSR to foster sustainable development: attitudes and perceptions of managers in a developing country. *Asia-Pac. J. Bus. Adm.* 6, 97–115. <https://doi.org/10.1108/APJBA-05-2013-0036>.
- Ndofo, H.A., Sirmon, D.G., He, X., 2015. Utilizing the firm's resources: how TMT heterogeneity and resulting faultlines affect TMT tasks. *Strat. Manag. J.* 36, 1656–1674. <https://doi.org/10.1002/smj.2304>.
- Neely, B.H., Lovelace, J.B., Cowen, A.P., Hiller, N.J., 2020. Metacritiques of Upper Echelons theory: verdicts and recommendations for future research. *J. Manag.* <https://doi.org/10.1177/0149206320908640>.
- Nielsen, B.B., Nielsen, S., 2013. Top management team nationality diversity and firm performance: a multilevel study. *Strat. Manag. J.* 34, 373–382. <https://doi.org/10.1002/smj.2021>.
- Nielsen, S., 2010. Top management team diversity: a review of theories and methodologies. *Int. J. Manag. Rev.* 12, 301–316. <https://doi.org/10.1111/j.1468-2370.2009.00263.x>.
- Nor-Aishah, H., Ahmad, N.H., Thurasamy, R., 2020. Entrepreneurial leadership and sustainable performance of manufacturing SMEs in Malaysia: the contingent role of entrepreneurial bricolage. *Sustain. Times* 12, 3100. <https://doi.org/10.3390/SU12083100>.
- Papagiannakis, G., Lioukas, S., 2018. Corporate environmental management: individual-level drivers and the moderating role of charismatic leadership. *Eur. Manag. Rev.* 15, 475–489. <https://doi.org/10.1111/emre.12134>.
- Papagiannakis, G., Lioukas, S., 2012. Values, attitudes and perceptions of managers as predictors of corporate environmental responsiveness. *J. Environ. Manag.* 100, 41–51. <https://doi.org/10.1016/j.jenvman.2012.01.023>.
- Patzelt, H., Zu Knyphausen-Aufseß, D., Nikol, P., 2008. Top management teams, business models, and performance of biotechnology ventures: an upper echelon perspective. *Br. J. Manag.* 19, 205–221. <https://doi.org/10.1111/j.1467-8551.2007.00552.x>.
- Peng, X., Liu, Y., 2016. Behind eco-innovation: managerial environmental awareness and external resource acquisition. *J. Clean. Prod.* 139, 347–360. <https://doi.org/10.1016/j.jclepro.2016.08.051>.
- Petrenko, O.V., Aime, F., Ridge, J., Hill, A., 2016. Corporate social responsibility or CEO narcissism? CSR motivations and organizational performance. *Strat. Manag. J.* 37, 262–279. <https://doi.org/10.1002/smj.2348>.
- Phan, T.N., Baird, K., 2015. The comprehensiveness of environmental management systems: the influence of institutional pressures and the impact on environmental performance. *J. Environ. Manag.* 160, 45–56. <https://doi.org/10.1016/j.jenvman.2015.06.006>.
- Potrich, L., Cortimiglia, M.N., de Medeiros, J.F., 2019. A systematic literature review on firm-level proactive environmental management. *J. Environ. Manag.* 243, 273–286. <https://doi.org/10.1016/j.jenvman.2019.04.110>.
- Priem, R.L., Lyon, D.W., Dess, G.G., 1999. Inherent limitations of demographic proxies in top management team heterogeneity research. *J. Manag.* 25, 935–953. <https://doi.org/10.1177/014920639902500607>.

- Quigley, T.J., Hambrick, D.C., 2012. When the former ceo stays on as board chair: effects on successor discretion, strategic change, and performance. *Strat. Manag. J.* 33, 834–859. <https://doi.org/10.1002/smj.1945>.
- Rivera, J., De Leon, P., 2005. Chief executive officers and voluntary environmental performance: Costa Rica's certification for sustainable tourism. *Pol. Sci.* 38, 107–127. <https://doi.org/10.1007/s11077-005-6590-x>.
- Rupp, D.E., Mallory, D.B., 2015. Corporate social responsibility: psychological, person-centric, and progressing. *Annu. Rev. Organ. Psychol. Organ. Behav.* 2, 211–236. <https://doi.org/10.1146/annurev-orgpsych-032414-111505>.
- Russo, M.V., Harrison, N.S., 2005. Organizational design and environmental performance: clues from the electronics industry. *Acad. Manag. J.* 48, 582–593. <https://doi.org/10.5465/AMJ.2005.17843939>.
- Samimi, M., Cortes, A.F., Anderson, M.H., Herrmann, P., 2020. What is strategic leadership? Developing a framework for future research. *Leader. Q.* 101353 <https://doi.org/10.1016/j.leaqua.2019.101353>.
- Shahab, Y., Ntim, C.G., Chen, Y., Ullah, F., Li, H.X., Ye, Z., 2020. Chief executive officer attributes, sustainable performance, environmental performance, and environmental reporting: new insights from upper echelons perspective. *Bus. Strat. Environ.* 29, 1–16. <https://doi.org/10.1002/bse.2345>.
- Simsek, Z., 2007. CEO tenure and organizational performance: an intervening model. *Strat. Manag. J.* 28, 653–662. <https://doi.org/10.1002/smj.599>.
- Simsek, Z., Heavey, C., Fox, B.C., 2018. Interfaces of strategic leaders: a conceptual framework, review, and research agenda. *J. Manag.* 44, 280–324. <https://doi.org/10.1177/0149206317739108>.
- Singh, S.K., Giudice, M., Del, Chierici, R., Graziano, D., 2020. Green innovation and environmental performance: the role of green transformational leadership and green human resource management. *Technol. Forecast. Soc. Change* 150, 119762. <https://doi.org/10.1016/j.techfore.2019.119762>.
- Symeou, P.C., Zygliopoulos, S., Gardberg, N.A., 2019. Corporate environmental performance: revisiting the role of organizational slack. *J. Bus. Res.* 96, 169–182. <https://doi.org/10.1016/j.jbusres.2018.11.019>.
- Terlaak, A., Kim, S., Roh, T., 2018. Not good, not bad: the effect of family control on environmental performance disclosure by business group firms. *J. Bus. Ethics* 153, 977–996. <https://doi.org/10.1007/s10551-018-3911-5>.
- Tounès, A., Tormikoski, E.T., Gribaa, F., 2019. The formation of environmentally friendly intentions of SME owner-managers in an emerging country: the case of Tunisian's textile-clothing industry. *Organ. Environ.* 32, 528–554. <https://doi.org/10.1177/1086026618764267>.
- Tounès, A., Tormikoski, E.T., Gribaa, F., 2020. The environmental intention of owner-managers: the role of entrepreneurial orientation in Tunisian industry. *J. Enterprising Cult.* 28, 1–29. <https://doi.org/10.1142/S0218495820500016>.
- Tran, N.M., Pham, B.N.T., 2020. The influence of CEO characteristics on corporate environmental performance of SMEs: evidence from Vietnamese SMEs. *Manag. Sci. Lett.* 10, 1671–1682. <https://doi.org/10.5267/j.msl.2020.1.013>.
- United Nations Department of Economic and Social Affairs (UNDESA), 2020. *World Economic Situation Prospects*. United Nations, New York.
- Vives, A., 2006. Social and environmental responsibility in small and medium enterprises in Latin America. *J. Corp. Citizsh.* 21, 39–50.
- Wahga, A.I., Blundel, R., Schaefer, A., 2018. Understanding the drivers of sustainable entrepreneurial practices in Pakistan's leather industry: a multi-level approach. *Int. J. Entrepreneurial Behav. Res.* 24, 382–407. <https://doi.org/10.1108/ijeb-11-2015-0263>.
- Walls, J.L., Salaiz, A., Chiu, S.C., 2021. Wanted: heroic leaders to drive the transition to “business beyond usual.”. *Strat. Organ.* 19, 494–512. <https://doi.org/10.1177/1476127020973379>.
- Wang, K., Zhang, H.M., Tsai, S.B., Wu, L.D., Xue, K.K., Fan, H.J., Zhou, J., Chen, Q., 2018. Does a board chairman's political connection affect green investment?—From a sustainable perspective. *Sustain. Times* 10, 1–14. <https://doi.org/10.3390/su10030582>.
- Wei, F., Ding, B., Kong, Y., 2017. Female directors and corporate social responsibility: evidence from the environmental investment of Chinese listed companies. *Sustain. Times* 9, 2292. <https://doi.org/10.3390/su9122292>.
- Wolfswinkel, J.F., Furtmueller, E., Wilderom, C.P.M., 2013. Using grounded theory as a method for rigorously reviewing literature. *Eur. J. Inf. Syst.* 22, 45–55. <https://doi.org/10.1057/ejis.2011.51>.
- Wong, E.M., Ormiston, M.E., Tetlock, P.E., 2011. The effects of top management team integrative complexity and decentralized decision making on corporate social performance. *Acad. Manag. J.* 54, 1207–1228. <https://doi.org/10.5465/amj.2008.0762>.
- World Economic Forum (WEF), 2011. *Redefining the Future of Growth : the New Sustainability Champions*.
- Yao, S., Zhang, W., 2020. Is private entrepreneurs' religiosity conducive to environmental investment? Evidence from China. *Sustain. Times* 12, 1–17. <https://doi.org/10.3390/su12041467>.
- Yu, B., Zeng, S., Chen, H., Meng, X., Tam, C., 2021. Doing more and doing better are two different entities: different patterns of family control and environmental performance. *Bus. Strat. Environ.* 30, 1–20. <https://doi.org/10.1002/bse.2605>.
- Zhang, B., Wang, Z., Lai, K. hung, 2015. Mediating effect of managers' environmental concern: bridge between external pressures and firms' practices of energy conservation in China. *J. Environ. Psychol.* 43, 203–215. <https://doi.org/10.1016/j.jenvp.2015.07.002>.
- Zhang, L., Ye, F., Yang, L., Zhou, G., 2019. Impact of political connections on corporate environmental performance: from a green development perspective. *Sustain. Times* 11, 1317. <https://doi.org/10.3390/su11051317>.
- Zou, H.L., Xie, X.M., Qi, G.Y., Yang, M.Y., 2019. The heterogeneous relationship between board social ties and corporate environmental responsibility in an emerging economy. *Bus. Strat. Environ.* 28, 40–52. <https://doi.org/10.1002/bse.2180>.
- Zou, H.L., Zeng, S.X., Lin, H., Xie, X.M., 2015. Top executives' compensation, industrial competition, and corporate environmental performance: evidence from China. *Manag. Decis.* 53, 2036–2059. <https://doi.org/10.1108/MD-08-2014-0515>.