From corporate governance to sustainability outcomes: the key role of operations management

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Abstract

Purpose – This article studies the role played by sustainability operations management (OM) practices in the relationship between governance and environmental and social performance adopting the lenses of the upper echelons theory and the resource-based view. In particular, the authors study three main relationships: (1) the impact of governance on the implementation of sustainability OM practices, (2) the impact of sustainability OM practices on sustainability performance and (3) the mediating role of sustainability OM practices in the relationship between governance and sustainability performance.

Design/methodology/approach – To test this study's research model, the authors retrieved secondary data of 430 firms from the United Stated (US) and Europe and analyzed it using partial least squares (PLS)-based structural equation modeling (SEM).

Findings – This study's results suggest that sustainability OM practices are needed to achieve higher social and environmental performance outcomes from governance, highlighting the key role of the OM department in the achievement of a sustainability strategy.

Originality/value – This paper adopts the environmental, social, governance (ESG) neglected focus and aims to provide a better understanding of and reveal the interrelationship between governance and sustainability OM practices (i.e. environmental and social).

Keywords Sustainability practices, Environmental, Social, Governance, Upper echelons theory, Resource-based view

Paper type Research paper

Introduction

Environmental, social and governance (ESG) issues have become urgent priorities that have pushed corporate boards into defining sustainability actions and strategies (Deloitte, 2013; Eccles *et al.*, 2020; Chams and García-Blandon, 2019a). However, targeting sustainability goals is not always easy; in fact, companies fail to implement their sustainability strategies. For instance, Disney failed to implement their sustainability paper sourcing policy and Walmart did not meet their objective of achieving 100% of its energy from renewable sources (Ward, 2014). To implement their sustainability agenda, governance bodies rely on the work

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of their functional departments (Chams and García-Blandon, 2019b; Gomes Teixeira and Canciglieri, 2019). In that sense, the operations management (OM) functional area, which encompasses all those activities and processes needed to transform inputs into services and products, plays a key role in the achievement of sustainability since when companies optimize their operations, better environmental and social outcomes can be achieved at the corporate level (Mueller *et al.*, 2020). Unfortunately, the intersection between corporate level and the adoption of sustainability practices (for the remaining of the paper we will refer to them as OM sustainability practices) has been underexplored. To explore this relationship, this paper adopts the ESG focus.

The term ESG has been recently used in the sustainability literature to refer to the non-financial factors that firms need to consider in the pursuit of sustainability as it allows capturing not only traditional measures of sustainability (i.e. environmental, social) but also governance factors (Antolín-López *et al.*, 2016). Governance refers to how a company is led and managed to balance the interest of not only stakeholders such as customers and management executives but also the community. This implies considering aspects such as how leadership's incentives are aligned to stakeholder expectations, what internal controls exist to promote transparency and accountability and how it deals with the use of ethical governance practices such as the implementation of codes of conducts and the avoidance of corruption and bribery among others (Husted and de Sousa Filho, 2017).

Traditionally, the OM sustainability literature has mainly focused on studying the performance implications of environmental and social OM practices with a special bias towards the environmental dimension (e.g. Klassen, 2001; Zhu and Sarkis, 2006; Montabon *et al.*, 2007; Blome *et al.*, 2014; Tajbakhsh and Hassini, 2015; Vörösmarty and Dobos, 2020). Thus, less research addresses the social and governance elements as well as their interrelationship (Rajeev *et al.*, 2017; Kisperska-Moron, 2018). The study of the social dimension of sustainability is a necessity as firms need to operate in a responsible manner by taking care of their employees' well-being (Kleindorfer *et al.*, 2005). Regarding the governance element, to address the risks and opportunities derived from numerous grand challenges such as climate change, corruption or access to health and education, it is necessary to embody sustainability into governance boards (Paine, 2014). The OM literature has studied the impact of the commitment of top managers in the implementation of OM sustainability practices (e.g. Zhu and Sarkis, 2006; Ageron *et al.*, 2012; Blome *et al.*, 2014; Upadhaya *et al.*, 2017); however, these papers do not capture all dimensions of the governance element of ESG, as they do not consider additional factors such as corruption, tax transparency and/or board diversity. The paper aims to study how governance is related to both the social and environmental elements in the OM area. More specifically we aim to answer the following research question:

RQ1. What is the role of environmental and social OM practices in the relationship between governance and sustainability performance?

Answering the abovementioned research question is important for the following reasons. First, the paper aims to provide a better understanding of and reveal the interrelationship between governance and sustainability OM practices (i.e. environmental and social). More specifically, the adoption of the ESG focus will allow us to capture the key role that sustainability OM practices (i.e. environmental (E) and social (S) elements) play in the effective implementation of a sustainability strategy outlined by corporate governing bodies. Several scholars have called for more research that studies the interrelationship of the three ESG elements (Brandao, 2009; King, 2011) since focusing on a single element provides a partial view of the phenomena and could result in omitting relevant ethical and moral aspects relative to the sustainability concept (Richardson, 2009). In addition, several papers highlight the needed connection between corporate strategy and sustainability OM initiatives (Klassen, 2001; Ageron *et al.*, 2012) for an effective implementation and deployment of sustainability strategies. In terms of practical

implications, we expect to show firms the relevant role that sustainability OM practices play as serving the firm's strategic role for sustainability performance. In other words, to face grand challenges and avoid public scandals, companies incorporating sustainability into their governance priorities must also notice the importance of OM practices.

The remaining of the paper is structured as follows. First, a literature review which includes also the definition of main variables as well as the development of hypotheses is provided. Then, the methodology employed is described. In the following section, data analysis and results are provided. Finally, main results are discussed and conclusions, limitations and further directions for research are presented.

Theoretical background

ESG focus

Sustainability is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their needs" (WECD, p. 8). In this paper, the concept of sustainability is operationalized through the ESG focus. The ESG focus refers to three key factors in the pursuit of sustainability, namely environmental, social and governance (Manescu, 2011; Galbreath, 2013; Ortas *et al.*, 2015). In the last years, there has been an increase in the awareness of ESG concerns at the corporate level (Ortas *et al.*, 2015; Chams and García-Blandon, 2019a). That is, firms do not only consider environmental and social factors when dealing with sustainability but also governance. In that sense, the ESG focus has been adopted recently by firms as an emerging part of their competitive strategies (Manescu, 2011; Galbreath, 2013; Fu and Su, 2020).

The environmental factor is often related to the footprint that company activities leave on the natural environment (OECD, 2001). More specifically, it refers to using environmental management systems as well as policies to improve energy use and reduce environmental waste (Montabon *et al.*, 2007; Husted and de Sousa-Filho, 2017). The social factor includes both internal (e.g. workers) and external (e.g. local community) groups (Pullman *et al.*, 2009) and is thus concerned about the well-being of both employees and extended communities (Gimenez *et al.*, 2012). This paper follows the approach of Pagell and Gobeli (2009) and adopts an internal focus considering social practices as those practices that protect employees with the aim of improving their work conditions, ambience and well-being (Gualandris *et al.*, 2014). Finally, governance is mainly concerned with how the board is structured and how it operates. In other words, it specifically deals with the use of ethical corporate governance practices such as tax transparency, board diversity, the implementation of codes of conducts and the avoidance of corruption and bribery among others (Husted and de Sousa Filho, 2017).

Sustainability OM is defined as those practices and actions that make a company achieve business processes that lead to higher sustainability outcomes (Seuring and Müller, 2008). Examples of these practices are the setting of policies oriented towards the protection of employees and/or the use of environmental management systems (e.g. Pagell and Gobeli, 2009; Golini *et al.*, 2017). The sustainability OM literature has mainly focused on studying performance implications of practices such as environmental and social ones (e.g. Montabon *et al.*, 2007; Gualandris *et al.*, 2014; Magon *et al.*, 2018); with a higher number of papers focusing on the green element (Uecker-Mercado and Walker, 2012) and hence justifying the need to further explore the social and governance ones.

In a recent literature review, Magon *et al.* (2018) suggested that both environmental and social OM practices could serve as mediating variables in the relationship between some antecedents (e.g. institutional pressure, top management support and commitment) and sustainability performance. This shows that social and environmental OM practices (e.g. implementing an environmental management system; employees' training and rewards) seem to be the path that serves to translate objectives, support and/or pressures into environmental and/or social performance improvements (e.g. reduction of emissions).

However, this mediating role of sustainability OM practices has been scantily explored (Magon *et al.*, 2018). To shed light on the literature that suggests that the three elements of the ESG focus are interrelated we will consider in the paper that environmental (E) and social (S) OM practices are key (mediating) elements in achieving the sustainability performance results desired by the governance body (G).

Hypotheses development

To achieve our research objectives and answer our research question we rely on the central and main arguments of the upper echelons theory and the resource-based view (RBV). On the one hand, the upper echelons theory, developed by Hambrick and Mason (1984) predicts organizational outcomes or choices based on the characteristics of the top-level management team. The theory provides response to the question of why firms act as they do. The basic logic of the upper echelons theory is that executives make choices on the basis of their personalized construals of the situations they face (Hambrik, 2007). These cognitive frames are determined by their experiences, values and personalities. Although in the original upper echelons theory executives' demographics and characteristics were used as a proxy of their experiences, values and personalized construals, in this paper we consider not only board diversity but also executives' processes related with business ethics and corporate governance. This is in line with further developments of the upper echelons theory as described by Hambrik (2007) (see for example, Eisenhardt and Bourgeois, 1988; Simons *et al.*, 1999; Cho and Hambrick, 2006).

The upper echelons theory has been already used in sustainability related literature (e.g. Chin *et al.*, 2013) and helps us in linking governance with environmental and social OM practices. The upper echelons theory assumes that the characteristics that define firm's governance will influence the firm's actions (Hambrick and Mason, 1984). Therefore, it helps us to predict that governance policies related with (1) board diversity, management and compensation, and (2) business ethics practices (e.g. codes of conduct, policies on bribery and corruption, tax transparency and CSR reporting) will result in actions or choices that are in line with sustainability principles such as the implementation of environmentally and socially oriented practices.

To understand the interrelation that exists between sustainability OM practices and the different elements of sustainability performance we adopt the lenses of the RBV. The RBV states that firms achieve performance improvements by effectively employing their resources (Penrose, 1959; Barney, 1991). More specifically, resources and capabilities that are described as being valuable, rare and difficult to copy are expected to be a relevant source of a firm's competitive advantage (Wernerfelt, 1984; Barney, 1991). In the field of sustainability OM, Pullman *et al.* (2009) describe OM sustainability practices as a critical basis for competitive advantage. The natural RBV, developed by Hart (1995), extends the RBV to include environmental aspects. In that sense, the authors suggest that firms can gain competitive advantage depending on the relationship they develop with the natural element of sustainability. Recent papers that have included the sustainability social element in their studies, have also adopted the lenses of the RBV (e.g. Gimenez *et al.*, 2012). In the development of hypotheses, the specific theoretical arguments from each of the presented theories will be extended.

Governance and sustainability OM practices

In the strategy literature, where governance has been extensively used in comparison to the OM literature, the concept has been described as an antecedent for the incorporation of social and environmental concerns in managers' decision-making processes (Gill, 2008; Costa-Lourenço *et al.*, 2012; Jain and Jamali, 2016). Governance elements such as board structures (Capezio *et al.*, 2011) and/or top managers and executives' background and experience (Finkelstein and Hambrick, 1990; Borghesi *et al.*, 2014) capture managers' tendency to be committed to sustainability-oriented initiatives (de Villiers *et al.*, 2011). In other words, the

values that guide board members' decisions (e.g. sustainability policies and codes of conducts, corruption and bribery prevention, tax transparency) affect organizational behaviors and outcomes of managers by increasing their human and social capital (Berry and Rondinelli, 1998; Sharma, 2000), which pushes towards the adoption of sustainability-oriented practices. In fact, as mentioned by Kisperska-Moron (2018) the governance body of a firm supports the creation of sustainability operations. For example, recent empirical evidence suggests that governance plays a vital role in transitioning to more environmentally friendly energies (Alsaleh *et al.*, 2021; Alsaleh and Abdul-Rahim, 2021).

The upper echelons theory predicts that executives and directors (seating in corporate boards) inject their personal preferences as well as experiences and values in corporate policies (e.g. sustainability strategies) (Chin *et al.*, 2013). Following the logics of the upper echelons theory, we expect governance boards characterized by high diversity, and/or high commitment to ethical values (through the implementation of different business ethics practices, such as codes of conduct, policies on bribery and corruption, tax transparency and CSR reporting) will stimulate the implementation of sustainability OM practices. On one hand this type of governance bodies will stimulate the implementation of environmental policies and environmental management systems. On the other hand, these governance boards will encourage the implementation of social policies that aim to eliminate discrimination at the workplace and facilitate collective bargaining agreements. In that sense, based on the scant empirical evidence about the relationship between governance and sustainability OM practices and the theoretical arguments of the upper echelons theory the next hypotheses are derived:

H1. Governance positively relates to social OM practices.

H2. Governance positively relates to environmental OM practices.

Sustainability OM practices and performance

The sustainability OM literature has empirically shown the positive effect between environmental practices and environmental performance (e.g. Rao, 2002; Zhu *et al.*, 2005; Nawrocka and Parker, 2009; Longoni *et al.*, 2014; Li *et al.*, 2017; Mungai *et al.*, 2020). Following previous literature on the sustainability OM field, to elaborate on the link between sustainability practices and performance we will adopt the lenses of the natural (RBV) developed by Hart (1995) RBV (e.g. Flammer and Kacperczyk, 2015; Journeault, 2016; Wong *et al.*, 2012).

The RBV suggests that variance in a firm's performance can be explained by the effective use of its resources (Penrose, 1959; Barney, 1991). These resources include "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc., controlled by a firm" (Barney, 1991, p. 101). Hart (1995) extended this view to also include the natural environment. In that sense, he defended that competitive advantage could also be achieved by developing a portfolio of environmental and social competences, which were classified by Buysse and Verbeke (2003) in a work that extends the applicability of the Natural RBV.

Firms implement environmental policies or environmental management systems that specify issues such as, for instance, the materials that can/cannot be used (e.g. toxic and/or hazardous materials), the amount/sources of energy employed for the manufacturing and delivery process of products and services and the waste management requirements. Following the classification of natural competences developed by Buysse and Verbeke (2003), these practices can be considered conventional and procedural competences that build competitive advantage through the engagement and commitment with the environment. In addition, the implementation of environmental practices can result in better working conditions for employees, as for instance the manipulation of toxic materials is reduced thus positively affecting employees' health and working conditions and improving the firm's social reputation (de Giovanni, 2012; Gimenez *et al.*, 2012). Therefore, based on the Natural RBV and empirical evidence we can conclude that environmental OM practices lead to a

competitive advantage that results in higher performance and enhanced efficiencies (Hollos *et al.*, 2012) in the form of environmental and social performance improvements. Thus, we hypothesize:

H3. Environmental OM practices positively relate to (a) environmental performance and (b) social performance.

Regarding the impact of social OM practices on social performance, Gimenez *et al.* (2012) found that the implementation of social practices related to employees' working conditions as well as to the context in which these workers develop their daily tasks improves their overall well-being. This helps employees to better identify with their company and reduce turnover rates. In line with this argument we expect that social practices positively influence social performance. Practices that protect employees, guarantee a safe and stable working ambience, eliminate discrimination and facilitate collective bargaining agreements improve the perception employees have about the firm resulting in lower absenteeism levels and hence lower turnover rates. Second, regarding the impact of social practices on environmental, those papers that have anecdotally looked at it have found a positive influence of social practices on environmental performance (i.e. Florida, 1996; Gimenez *et al.*, 2012; Marshall *et al.*, 2015). Overall, these papers argue that implementing practices that are concerned with employees' well-being results in environmentally-desirable behaviors that help to improve environmental performance. We argue that implementing social OM practices that care about employees' working conditions and their protection lead to more satisfied employees who are willing to leave a positive footprint on the environment (Zukin and Szeltner, 2012). To conclude, these social practices can be classified as human competences (Buysse and Verbeke, 2003) and thus following the argument of the RBV, the relationship developed with workers, based on the implementation of practices that aim to improve their well-being, can become both a valuable and an inimitable resource which is difficult to copy by competitors which at the same time results in a competitive advantage for firms enhancing efficiencies not only at the business performance level but also at the environmental and social performance levels. In that sense, we hypothesize:

H4. Social OM practices positively relate to (a) social performance and (b) environmental performance.

The mediating role of sustainability OM practices in the governance-sustainability performance relationship

In addition to the previous hypotheses, a mediating role of the OM practices (i.e. social and environmental) in the governance-sustainability performance relationship can be hypothesized. The rationale for this mediating effect is the following: the existence of a governance structure that incorporates sustainability aspects such as board diversity or ethical issues will lead to higher sustainability performance (both in environmental and social terms) if sustainability OM practices are implemented. The pressure received by corporate boards and governing bodies to implement sustainability-oriented strategies pushes functional departments such as OM departments to develop new missions and implement actions to fulfill these new sustainability goals (Chams and García-Blandón, 2019a). Several papers highlight the needed connection between corporate strategy and sustainability OM initiatives (Klassen, 2001; Ageron *et al.*, 2012) for an effective implementation and deployment of sustainability strategies. Actions taken in the OM area related to sustainability are needed to accomplish the strategic sustainability board goals. This is in line with the described strategic relevance of the OM area in the pursuit of sustainability (Longoni *et al.*, 2014). Based on these arguments, we hypothesize that both social and environmental OM practices are needed to obtain a positive influence from governance on sustainability performance. The definition of sustainability strategies at the corporate level that do not result in firms

implementing sustainability OM practices cannot translate into sustainability performance improvements. Following these arguments, we posit the following mediating effect:

H5. Environmental OM practices mediate the relationship between governance and (a) environmental performance and (b) social performance.

H6. Social OM practices mediate the relationship between governance and (a) social performance and (b) environmental performance.

Figure 1 illustrates the hypotheses.

Methodology

Sample and data

In our study we use a sample that is composed of US and European companies drawn from the Sustainalytics database. The Sustainalytics database collects structured information about sustainability activities grouped on three areas: ESG. These areas are divided in seven subareas related to the most important stakeholders: business ethics, corporate governance, public policy, employees, contractors and supply chain, customer, society and community, philanthropy, operations, and products and services. All the subareas are analyzed by local research partners according to different lens as public information, strategy and policies, management systems, and results and measurement. Following a consistent methodology, Sustainalytics provides a total of 65–80 indicators per firm and calculates both a score for each ESG element as well as a final ESG rating for each company. A raw score between 0 (worst) and 100 (best) is calculated by the sum of the weights of the different indicators. The Sustainalytics database also includes information about incidents or controversies of firms to their different stakeholders, reducing the company's score and ranking. It is valued by investors and customers that are influenced by the firm's bad practices and their effects. The Sustainalytics database has been used in several prior researches (Wolf, 2014; Antolín-López *et al.*, 2016; Husted and de Sousa-Filho, 2017; Wang and Sarkis, 2017; Getacher-Engida, 2018; Dyck *et al.*, 2019; Tamayo-Torres *et al.*, 2019), establishing its reliability and acceptance in the literature as a tool for measuring firms' sustainability.

To obtain descriptive information on the firms analyzed, we crossed the data from Sustainalytics with those from Compustat database for North American and European firms. Compustat database collects financial and market information from publicly traded companies in more than 80 countries, representing over 90% of the world's market capitalization. The Compustat database has been used in previous researches (McWilliams and Siegel, 2001; Luo and Bhattacharya, 2006; Doh *et al.*, 2010; Surroca *et al.*, 2010).

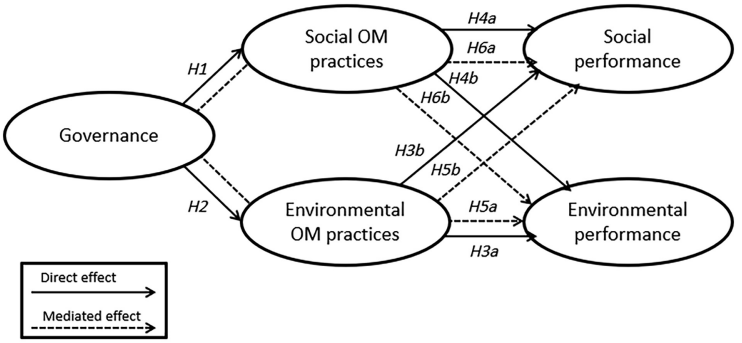


Figure 1.
Research model

We initially chose 500 firms from Sustainalytics through random sampling. We were unable to select more companies, due to budget limits. Crossing these 500 firms with Compustat reduced the sample to 430 due to missing data. The final sample was thus composed of 430 firms from different industries, facilitating the generalizability of results. According to previous research that analyze multiple countries and regions (Ho *et al.*, 2012; Pagell *et al.*, 2005), our firms come from US and Europe, two important economical regions with cultural market similarities (Chen-Lung *et al.*, 2013) and higher levels of CSR in comparison to Asian firms (Ho *et al.*, 2012). We have two observations per company (one for 2008 and one for 2010) yielding a total of 860 observations that were treated independently for the analyses. The detailed descriptives of the sample are shown in Table 1.

Measures

Governance. Following previous literature, we measure governance by the Sustainalytics aggregate index (e.g. Antolín-López *et al.*, 2016; Husted and de Sousa-Filho, 2017). It provides information about issues related to corruption and bribery, tax transparency, conduct codes, sustainability reporting and disclosure, shareholder protection, compensation of managers, board diversity, board and audit committee independence, and political contributions that are grouped in three dimensions –business ethics, corporate governance and public policy. Table 2 provides the complete list of items and dimensions used by Sustainalytics to measure governance. After evaluating these items and dimensions for each firm (with a range from 0 to 100), Sustainalytics estimates a global score of governance. In our analysis, we have used this global governance index.

Sustainability OM practices. To measure sustainability in OM practices, we disaggregate them into two categories, social and environmental. For that, we use indicators from the Sustainalytics database for each category that are based on Global Reporting Initiative (GRI) standards.

In this paper, we adopt the approach followed by Pagell and Gobeli (2009) and Longoni and Cagliano (2015), and understand social OM practices as those internal practices oriented

	n	%		*n*	%
Sector			*Country*		
Consumer Discretionary	64	14.88%	Germany	9	2.10%
Consumer Staples	30	6.98%	Italy	14	3.25%
Energy	27	6.28%	United Kingdom	71	16.51%
Financials	93	21.63%	Spain	23	5.35%
Health Care	38	8.84%	Switzerland	32	7.44%
Industrials	71	16.51%	Sweden	17	3.95%
Information Technology	42	9.78%	The Netherlands	15	3.49%
Materials	27	6.28%	Other European countries*	19	4.42%
Telecommunication Services	15	3.49%	Total Europe	200	46.51%
Utilities	23	5.35%	Total us	230	53.49%
Total	430	100%	Total	430	100%
			Note(s): *Austria, France, Greece, Ireland, Norway and Portugal		
Number of employees			*Annual revenues*		
Less or equal than 5.000	92	21.39%	Less or equal than 2.5 M€	101	23.49%
Between 5.001 and 10.000	77	17.90%	Between 2.5 M€ and 5M€	85	19.77%
Between 10.001 and 20.000	62	14.42%	Between 5M€ and 10M€	71	16.51%
Between 20.001 and 50.000	96	22.36%	Between 10M€ and 20M€	68	15.81%
More than 50.000	103	23.95%	Between 20M€ and 50M€	68	15.81%
Total	430	100%	More than 50M€	37	8.60%
			Total	430	100%

Table 1.
Sample descriptive

Governance
G.1. Business Ethics
G.1.1. Policy on Bribery and Corruption
G.1.2. Whistleblower Programmes
G.1.3. Signatory to UN Global Compact
G.1.4. Tax Transparency
G.1.5. Business Ethics Related Controversies or Incidents
G.2. Corporate Governance
G.2.1. CSR Reporting Quality
G.2.2. External Verification of CSR Reporting
G.2.3. Disclosure of Directors' Remuneration
G.2.4. Disclosure of Directors' Biographies
G.2.5. Oversight of ESG Issues
G.2.6. Executive Compensation Tied to ESG Performance
G.2.7. Board Diversity
G.2.8. Separation of Board Chair and CEO Roles
G.2.9. Board Independence
G.2.10. Audit Committee Independence
G.2.11. Non-Audit Fees Relative to Audit Fees
G.2.12. Compensation Committee Independence
G.2.13. Governance Related Controversies or Incidents
G.3. Public Policy
G.3.1. Policy on Political Involvement and Contributions
G.3.2. Total Value of Political Contributions
G.3.3. Public Policy Related Controversies or Incidents

Table 2.
Governance measures

towards the protection of employees' well-being, discarding other externally oriented social practices such as philanthropic activities, monitoring suppliers or avoiding controversies with society. Thus, in this research, social OM practices were measured by the rating of two indicators: (1) Formal Policy on the elimination of discrimination, that collects if the company has or not a strong policy on the eradicating of discrimination at work; and (2), the proportion of workers that are protected by collective bargaining agreements, that measures the level of company's commitment with the employee capacity to negotiate in collective agreements.

We measure environmental OM practices through two indicators: Formal Environmental Policy and Environmental Management System. Formal Environmental Policy shows whether there is a policy within the firm that considers environmental issues when making decisions in the purchasing context. Environmental Management System shows if the firm has an Environmental Management Systems in place as well as its level of implementation. The scores range from 0 to 100.

Sustainability performance. We measure sustainability performance by analyzing two elements, social and environmental performance. In line with our measurement of social OM practices, we will measure social sustainability performance focusing on the individual level (i.e. employee well-being). In this research, we measure social performance by using two indicators provided by the Sustainalytics database to capture improvements on employee well-being and firm's reputation. First, the employee turnover rate, that provides information about the company's employee turnover rate. Employee turnover has been traditionally linked to employee satisfaction (Porter and Steers, 1973), thus helping to understand improvements in employee well-being. Second, the top employer recognition, which informs if the company has been recognized by its workers in a top employer list, provides also a picture of employee satisfaction and firm's reputation.

Environmental performance is measured based on the following Sustainalytics disaggregate indicators: (1) Carbon Intensity that measures if the company's amount of

carbon (in terms of weight) emitted per unit of energy consumed is below, above or similar to the industry average; (2) Percentage of primary energy use from renewables that shows the company's renewable energy consumption; and (3) Environmental operations controversies that captures whether companies are involved in environmental controversies or incidents related to issues as ground, water and air pollution, as well as to waste. Again, these environmental and social performance indicators are based on GRI standards.

Measurement model validation. The methodology used to analyze our data and test our research model was PLS-based SEM. The software employed was Smart PLS 3 software. Satisfactory use of PLS in scholarly research is growing continually also in the OM field (e.g. Maestrini *et al.*, 2018).

The differences with the traditional covariance-based SEM methods, which use estimations methods such as maximum likelihood or weighted least squares (EQS, Amos or Lisrel software), are highlighted in the following lines. First, PLS-SEM is based on the variances of the variables analyzed. It performs non-parametric SEM with interdependent ordinary least squares (OLS), enabling minimization of residual variances (Chin, 1998). Second, PLS allows obtaining more accurate results when evaluating complex models than do covariance-based SEM techniques (Ajamieh *et al.*, 2016). Third, PLS does not require data to follow a multivariate normal distribution (Chin *et al.*, 2003). And finally, it is a fully recognized SEM approach appropriate for testing exact model fit in both confirmatory and explanatory research (Benitez *et al.*, 2020). Particularly, several reasons justify the use of PLS-SEM in our study. First, PLS is recommended for predictive studies of endogenous external variables (Peng and Lai, 2012). Our study tackles a problem that has not been studied before and that requires exploration of numerous relationships and behaviors, particularly issues related to the connection between governance, OM and environmental and social issues. Second, as mentioned above, as the technique is nonparametric, the variables studied are not subject to the constraints of normal distribution required by other estimation techniques based on maximum likelihood estimators (Peng and Lai, 2012; Sancha *et al.*, 2016). The normality tests performed in our data show that the indicators in our study do not meet the assumptions for a normal distribution, making the use of PLS-SEM advisable (Mardia Skewness χ^2 = 2435.527***; Mardia Kurtosis χ^2 = 173.002***; Henze–Zirkler $\chi^2$39338.630***; Doornik–Hansen χ^2 = 5560.245***). Finally, the constructs employed in our model are formative, for reasons we will explain later. Covariance-based SEM methods create identification difficulties when estimating models with formative constructs, but PLS-SEM avoids these difficulties by using OLS (Braojos-Gomez *et al.*, 2015; Peng and Lai, 2012). Additional minor reasons for choosing PLS-SEM over other estimation techniques are simultaneous estimation of independent equations and complexity of the model (Peng and Lai, 2012). To determine the required sample size, we need to identify the model most complex relationship, which is the one with the higher number of independent variables that influence a dependent variable (Peng and Lai, 2012; Sancha *et al.*, 2016). In our case, the dependent variables social performance and environmental performance are influenced by six variables, requiring a sample size of a least 60 observations to make estimations with a minimum statistical power of 80%, a significance level of 1% and with the possibility of estimating R^2 values from 0.10 and higher. Sample sizes over 60 observations increase the statistical power of the estimation (860 observations in our model) (Hair *et al.*, 2016).

The constructs in our study are formative. The following circumstances recommend using formative constructs (Petter *et al.*, 2007; Braojos-Gomez *et al.*, 2015): (1) changing items in the construct will result in a different construct; (2) items are not interchangeable; and (3) co-variation between items is not present. The items used for our variables fulfill these conditions, making it advisable to use formative constructs. Table 3 presents the main statistics of the constructs analyzed.

Variable	Mean	SD	Min	Max	1	2	3	4	5	6
(1) Governance	62.30	10.01	34.30	94.40	1					
(2) OM Social practices	29.90	24.46	0.00	100.00	0.452	1				
(3) OM Environmental practices	40.34	29.69	0.00	100.00	0.417	0.514	1			
(4) Social performance	13.61	22.01	0.00	100.00	0.233	0.334	0.321	1		
(5) Environmental performance	39.21	21.60	0.00	100.00	0.307	0.355	0.394	0.220	1	

Note(s): Governance values range between 34.30 and 94.40 since it is an aggregate index made up of multiple items (see Table 2). Although each item separately ranges between 0 and 100, the aggregate index does not, since it is highly unlikely that a company has a value equal to 0 or 100 in all the multiple items that make up governance. On the contrary, the rest of the variables (social and environmental practices and performance) do oscillate between 0 and 100, since they are made up of only two or three items, in which there are companies that have 0 or 100 in all of them

Table 3.
Descriptive statistics

Prior to estimating the model, we must perform a validation process for the measurement model. Validating the formative constructs requires a process different than that used for the reflective constructs (Andreev *et al.*, 2009; Peng and Lai, 2012; Braojos-Gomez *et al.*, 2015). First, we must ensure the constructs' content validity. This is done by indicating that Sustainalytics and Compustat are well-known and widely-used databases. In addition, we confirm that the indicators used fit well with their corresponding variable. Two managers and two academics who were experts in the field of sustainability confirmed satisfactory fit. Thus, content validity was ensured through a rigorous qualitative approach and evaluations of the construct's validity by our expert panel (Hair *et al.*, 2016).

Second, we observed internal consistency of the measurement model through construct reliability. In this procedure, we first analyzed the multi-collinearity of the formative items using the variance inflation factors (VIFs). In general, the threshold for VIF values is a set at 10; values below 10 show no multi-collinearity issues (Petter *et al.*, 2007). Diamantopoulos and Siguaw (2006), however, propose a limit of values no higher than 3.3. Table 4 shows that all VIFs ranged from 1.013 to 1.796, enabling us to confirm that multi-collinearity is not an issue in our study. Next, to observe indicator validity, we evaluated each indicator's contribution to the formative construct by observing that the item's weight was significant, its sign was consistent with the literature and its magnitude was not lower than 0.10 (Andreev *et al.*, 2009). Table 4 shows that all indicators fulfill the conditions necessary for composing the formative constructs.

Finally, to test construct validity, we observed discriminant validity, convergent validity, and external or nomological validity. The correlation values between variables (see Table 3)

Formative construct	Item	Weights	VIFs
OM Social practices	Formal policy on the elimination of discrimination	0.848^{***}	1.093
	Employees covered by collective bargaining agreements	0.338^{***}	1.093
OM Environmental practices	Formal environmental policy	0.5977^{***}	1.332
	Environmental management system	0.558^{***}	1.332
Social Performance	Employee turnover rate	0.727^{***}	1.013
	Top employer recognition	0.611^{***}	1.013
Environmental Performance	Carbon Intensity	0.737^{***}	1.262
	Primary energy use from renewables	0.330^{***}	1.486
	Environmental operations controversies	0.533^{***}	1.796

Note(s): $^{***}p < 0.000$; $^{**}p < 0.01$; $p < 0.05$

Table 4.
Formative constructs

are below the threshold of 0.71, showing adequate discriminant validity (Andreev *et al.*, 2009). Next, although convergent validity is not included in most studies of formative constructs, we follow the common principles proposed by Andreev *et al.* (2009) for convergent validity. Thus, our items are theoretically interrelated, having maintained only those with a significant effect. Finally, external validity is observed through the nomological validity, which is confirmed through the later supported relationships established in our hypotheses (Andreev *et al.*, 2009).

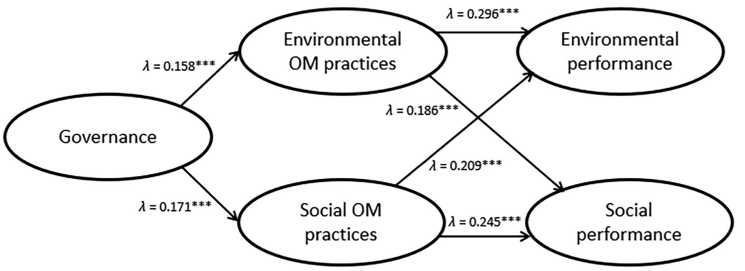
For all of these estimations, PLS generally uses a bootstrapping technique with a recommended minimum of 200 subsamples. Following previous studies (Chin, 1998; Braojos-Gomez *et al.*, 2015), however, we ran a bootstrap analysis with 500 subsamples to reduce the effect of random sampling errors coming from the bootstrap technique (Peng and Lai, 2012).

Results

Structural model

To test our research model, we employed PLS algorithm estimation recommended for formative constructs, instead of the consistent PLS algorithm estimation, only recommended for reflective constructs (Dijkstra and Henseler, 2015). PLS algorithm estimation includes three steps. First, the iterative PLS algorithm estimates the weights to create scores for each construct. Second, because construct scores contain measurement errors, PLS corrects for attenuation in correlations between latent variables. Last, PLS determines the model parameters including weights, loadings and path coefficients (Benitez *et al.*, 2020). Figure 2 presents the analysis results. First, we note that governance is positively and significantly related to both sustainability OM practices (Social: $\lambda = 0.171$; t-value = 4.634***; Environmental: $\lambda = 0.158$; t-value = 4.230***). This finding provides support for H1 and H2, which hypothesized a direct and positive effect between governance and environmental and social OM practices. Second, there is a positive and significant relationship between environmental OM practices and both measures of performance (Environmental performance: $\lambda = 0.296$; t-value = 7.107***; Social performance: $\lambda = 0.186$; t-value = 4.389***), supporting H3a and H3b, which hypothesized a direct and positive effect between environmental OM practices and environmental and social performance. The relationships between social OM practices and social performance ($\lambda = 0.245$; t-value = 5.717***) and environmental performance ($\lambda = 0.209$; t-value = 5.470***) are also positive and significant, supporting H4a and H4b.

Next, we analyze the mediating effect of sustainability OM practices (social and environmental) on the relationship between governance and the two measures of performance. The results obtained show significant relationships between governance and



Note(s): $p < 0.05$; **$p < 0.01$; ***$p < 0.000$

Figure 2.
Direct effects results

the two sustainability OM practices, and between the two practices and both measures of performance (H1–H4). The results also show that the direct effect of governance on the two measures of performance are not significant (Social performance: $\lambda = 0.032$, t-value = 0.871; Environmental performance: $\lambda = 0.040$, t-value = 1.277). These results point for a potential full mediating effect of sustainability OM practices in the governance – performance relationship. To check if the mediating effect is significant, we analyzed the indirect specific effects reported in PLS. The results are reported in Table 5 and confirm the mediating effect of both sustainability OM practices in the relationship of governance with social and environmental performances (H5 and H6) as all indirect paths are statistically significant. These results suggest that to achieve better environmental and social performance as a result of governance, environmental and social OM practices need to be implemented; governance *per se* does not contribute to better sustainability results.

The proposed model includes three control variables: firm size (log of the number of employees), continent of origin (0 for firms located in the US and 1 for firms located in Europe) and industry (1 for manufacturing firms and 0 for service firms). The estimation analyzed the influence of these three control variables on the two measures of performance (social and environmental). As to the influence of firm size, neither the relationship to social performance ($\lambda = 0.038$, t-value = 1.237) nor the relationship to environmental performance ($\lambda = 0.008$, t-value = 0.269) was significant. The relationships of continent of origin to both social and environmental performance were also not significant ($\lambda = -0.042$, t-value = 1.351; $\lambda = 0.020$, t-value = 0.637 respectively). Finally, both relationships were not significant for industry activity (Social performance: $\lambda = -0.014$, t-value = 0.425; Environmental performance: $\lambda = -0.019$, t-value = 0.599).

Finally, we checked the explanatory power of our model by looking at the path coefficient significance and the R^2 values. All path coefficients are significant, ranging from 0.158 to 0.296. A value around 0.20 is considered as statistically significant. Therefore, these coefficients add to the importance of the model's explanatory power. If we examine the relationship of the dependent variables to the R^2 values, in our model the former explains 14.8% of the variance in social performance ($R^2 = 0.148$) and 20.3% of the variance in environmental performance ($R^2 = 0.203$). Finally, we run tests for the goodness of fit for the structural model using the standardized root mean squared residual (SRMR). The resulting SRMR equals 0.040, which is beyond the recommended value (0.08) (Henseler *et al.*, 2014), suggesting good fit of the structural model [1].

Discussion

The results obtained emphasize three main points that guide this discussion: (1) the relationship between governance and sustainability OM practices; (2) the impact of sustainability OM practices on both the environmental and social performance and (3) the key (mediating) role played by sustainability OM practices in the effectiveness of governance.

	Indirect effect (IE)	Standard error	T-statistic	p-value
Governance to environmental performance				
Through OM environmental practices	0.0552	0.014	3.9583	<0.0001
Through OM social practices	0.1505	0.025	6.0073	<0.0001
Governance to social performance				
Through OM environmental practices	0.0587	0.015	4.0253	<0.0001
Through OM social practices	0.1537	0.026	6.0243	<0.0001

Table 5.
Indirect effects

The relationship between governance and sustainability OM practices

Our research has explored the potential synergies and relationships between the different ESG elements as suggested by recent literature (Antolín-Lopez *et al.*, 2016). Literature in the strategy field highlighted the relevant role of governance as an antecedent of sustainability initiatives (e.g. Berrone and Gomez-Mejia, 2009; Jain and Jamali, 2016). Our results are in line with this literature and empirically show that the influence that governance has on sustainability can also be extended to the specific field of OM. In particular, governance influences the adoption of sustainability OM practices such as environmental management systems (in case of the environmental sustainability practices) and/or practices oriented towards the improvement of employees' well-being (in case of the social sustainability practices). Thus, emphasizing the key initiator role that governance bodies have in relation to the implementation of sustainability (Berrone and Gomez-Mejia, 2009).

Previous studies in the OM field already emphasized the relevant role of top management's commitment (e.g. Zhu and Sarkis, 2006; Reuter *et al.*, 2010) in the implementation of sustainability OM practices. Our paper contributes to extend these results by showing that not only top management commitment but corporate governance, influences the implementation of sustainability OM practices. Having a governance structure characterized by high levels of transparency, board diversity, board independence and sustainability orientation, among others, influences the sustainably oriented practices adopted by OM managers. More specifically, this type of governance will stimulate the adoption of environmental management systems and the implementation of policies that aim to eliminate discrimination at the workplace and facilitate collective bargaining agreements.

The impact of sustainability OM practices on environmental and social performance

Our results show that environmental practices such as the implementation of environmental management systems result in better environmental performance levels (i.e. lower environmental controversies and better usage of resources). While these results are in line with a vast amount of previous papers in the sustainability OM literature (e.g. Rao, 2002; Zhu *et al.*, 2005; Longoni *et al.*, 2014); we provide additional insights on the different relationships related to the social factor of sustainability. Our results show that environmental practices do not only contribute to higher environmental performance levels but also to social ones. In other words, by implementing environmental OM practices firms are able to improve their employee's well-being and labor conditions.

The implementation of social OM practices improves both the environmental and social performance of firms. That is, the implementation of social practices related to work and safety issues help to improve their working conditions. In addition, we also found a positive relationship between social OM practices and environmental performance. That is, the implementation of practices aimed at protecting employees might make workers aware of potentially damaging environmental practices reducing its use and improving environmental performance levels. These results contribute to the scarce literature that has explored the interrelation between social and environmental dimensions, showing that the implementation of social and/or environmental practices can lead to improvements in different dimensions of sustainability.

The role played by sustainability OM practices in the effectiveness of governance

This paper emphasizes the important role played by OM in the achievement of a sustainability strategy defined at the corporate governance level. In this section we aim to discuss the mediating role played by OM sustainability practices in the relationship between governance and sustainability performance. As mentioned by Hayes and Wheelwright (1984), functional areas (e.g. OM) are necessary in the effective deployment of a business

strategy (e.g. sustainability strategy). Our results show that although firm's governance bodies are aligned towards sustainability; the effectiveness of a sustainability strategy requires the implementation of sustainability OM practices (i.e. environmental and/or social). In other words, a governance sustainability-oriented strategy will result in higher environmental and/or social performance only if sustainability OM practices are implemented, thus highlighting its mediating role. Therefore, the implementation of sustainability in the organization cannot be reduced to aspects of governance. It is necessary to accompany them with practices aiming at protecting employee's well-being or an environmental formal policy. Our results strengthen thus the idea that there is a need to complement the corporate level defined sustainability strategy with a sustainability OM strategy to maximize its efficiency (Wolf, 2011). These results thus emphasize that OM does hold an ideal position to contribute to improve the sustainability arena (Longoni *et al.*, 2014).

Besides from the already mentioned contributions to research; we believe the study has some managerial implications. First, it is important that those in charge of outlining sustainability strategies are aware of the role of sustainability OM practices. To overcome the numerous grand challenges faced by firms such as climate change and/or corruption, it is necessary to embody sustainability into governance boards (Paine, 2014) and combine it with the implementation of sustainability OM practices. That is, governance structures that are aligned to sustainability will result in higher sustainability performance outcomes if the company has implemented sustainability OM practices. Therefore, it is important that actions taken by governance bodies are communicated to functional areas such as OM to further deploy the sustainability strategy. Second, at corporate governance level, according to the team preferences, firms could incorporate diversity to the governance structures and establish sustainability as a core value or firm's managerial incentive mechanisms (Berrone and Gomez-Mejia, 2009) to motivate executive management to design and implement appropriate environmental and social strategies and actions. Third, OM managers should recognize that efforts in implementing environmental OM practices pay off not only in terms of environmental performance but social performance. The same case applies for social OM practices; these practices will allow companies to obtain improvements not only on social performance but environmental performance. Executives have to understand the importance of OM sustainability practices to achieve improvements on sustainability performance, as emission reductions, or worker's well-being. Finally, there are also some implications for policy makers. They should design and establish policies that (1) stimulate more diversity in governance boards and (2) require the implementation of business ethics practices such as anti-corruption policies and more increased transparency. These policies will facilitate the existence of governance structures that will favor the implementation of (1) formal environmental policies and environmental management systems and (2) collective bargaining agreements and policies that aim to eliminate discrimination and improve employee well-being.

Conclusion

This study confirms that governance has expanded the focus beyond merely dealing with agency conflicts to include social and environmental concerns (Elkington, 2006). Our contributions are summarized in the following lines. First, we show that governance influences the adoption of sustainability OM practices (i.e. social and environmental). At the same time, we also emphasize that sustainability OM practices (i.e. environmental and social) are necessary to guarantee environmental and/or social performance improvements from these governance efforts. Our paper has contributed to the recent call to address sustainability research considering the social and governance elements as well as their interrelationship (Rajeev *et al.*, 2017; Kisperska-Moron, 2018). The main contribution of this

study can be summarized as follows: a governance sustainability-oriented strategy will result in higher environmental and/or social performance only if sustainability OM practices are implemented. Therefore, we can conclude that sustainability-oriented strategies at the corporate level need to be accompanied by a proper implementation of sustainability OM practices.

Limitations and further research lines

In this study there are a number of limitations that are highlighted in the following lines. First, the paper has centered its focus on the key role of the OM department in achieving sustainability outcomes. As mentioned by Chams and García-Blandon (2019b), to implement their sustainability agenda, firms rely on the work of their functional departments. We suggest that other departments, such as marketing or finance, also play a role in the effective deployment of a sustainability strategy. We suggest further research to explore the synergies between the different functional areas of the firm in this sustainability effort. Second, in our paper, we have been able to understand the relationship between governance and the environmental and social elements of sustainability OM practices. We have measured governance as an aggregated index. Further research should understand the role played by specific governance elements as well as the specific social and environmental aspects that received a higher influence from governance. Third, the social practices measured in this manuscript capture only the workers' dimension. Further research should complement the measurement of these practices including also the impact on the community. Fourth, available data are limited to 430 large firms, and consequently, it is important to mention that the findings of the study are relevant for this type of corporations. The governance, environmental and social elements in small and medium-sized enterprises (SMEs) might play different roles and relevance. Finally, only two observations per firm do not allow performing reliable longitudinal analyzes. Future studies including more observations over time – data panel – can analyze further the causality between variables. Additional future research lines are related to current challenges and include incorporating the concept of employees' well-being aspects such as homeworking and COVID-19 protection measures; the study of the effect of implementing circular economy's principles into the business strategy and processes; and the analysis of sustainability management decision-making at corporate and managerial levels in order to achieve Sustainable Development Goals (SDGs) by implementing environmental and social measures into the policies, objectives, processes, organizational structure and monitoring.

Note

1. To increase the content validity of our research, Appendix collects an alternative extended model that includes more items to measure each variable. This model also supports our hypotheses but shows an SRMS (0.12) value slightly above the recommended threshold (0.08).

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Appendix

Extended model

This extended model includes more indicators to measure observed variables than those used in the original model. As observed below, similarly to the original model, results for this extended model also support our hypotheses. The validation requirements are also fulfilled. However, the goodness of fit for the extended model using the standardized root mean squared residual (SRMR), equals 0.12, which is slightly above the recommended value (0.08) (Henseler *et al.*, 2014), showing less explanatory power than the original model (SRMS = 0.04).

Extended measurement model

Construct	Indicators	Original model	Extended model
Social OM practices	Formal Policy on the Elimination of Discrimination	X	X
	Percentage of Employees Covered by Collective Bargaining Agreements	X	X
	Policy on Freedom of Association		X
	Programs to Increase Workforce Diversity		X
Environmental OM practices	Formal Environmental Policy	X	X
	Environmental Management System	X	X
	External Certification of EMS		X
	Programs and Targets to Increase Renewable Energy Use		X
Social performance	The company's employee turnover rate is high	X	X
	Top Employer Recognition	X	X
	Employee Related Controversies or Incidents		X
Environmental performance	Carbon Intensity	X	X
	% Primary Energy Use from Renewables	X	X
	Operations Related Controversies or Incidents	X	X
	Carbon Intensity Trend		X

(*continued*)

Results of the extended model		
Hypothesis 1. Governance → Social OM practices	$\lambda = 0.027$***, t-value = 5.71	Confirmed
Hypothesis 2. Governance → Environmental OM practices	$\lambda = 0.029$***, t-value = 4.35	Confirmed
Hypothesis 3a. Environmental OM practices → Environmental performance	$\lambda = 0.019$***, t-value = 5.60	Confirmed
Hypothesis 3b. Environmental Om practices → Social performance	$\lambda = 0.020$***, t-value = 6.83	Confirmed
Hypothesis 4a. Social OM practices → Social performance	$\lambda = 0.056$***, t-value = 19.37	Confirmed
Hypothesis 4b. Social OM practices → Environmental performance	$\lambda = 0.055$***, t-value = 16.73	Confirmed

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