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Stakeholder pressures and sustainability practices in manufacturing: Consideration of the economic development context

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Abstract

In the context of global concern for the environment and considering the observation that very few manufacturing companies have taken a more proactive position on sustainability, it has been suggested that the stakeholder approach can contribute to the study of sustainability management. Hence, this paper analyzes the relationship between a set of individual stakeholders pressures (STP) from different groups and the adoption and implementation of some specific sets of sustainability practices (SP) in manufacturing: internal and external monitoring and external collaborative. It also contributes to the open debate around the "monolithic" versus differentiated reaction to perceived STP, showing that companies respond selectively to the different stakeholder groups. Finally, this research also considers the possible influence of different country development contexts (developed vs. emerging countries), which may be very informative in the context of the growing globalization of operations. Using a large, worldwide, multicountry, and multi-informant sample of manufacturing plants from three industry sectors located in 15 emerging and developed countries, this study shows that the different stakeholders play different roles in the adoption and implementation of different sustainability practices, thus contributing to the open debate around a suitable balance of stakeholder pressures. This research further contributes to the debate around the *convergence* and *divergence* perspectives by supporting the "universal" adoption of sustainability practices (convergence perspective) as no statistical differences are found in stakeholder pressures in different country development contexts.

KEYWORDS
convergence perspective, country development, emerging countries, HPM project, stakeholders, sustainability practices

1 | INTRODUCTION

In the context of growing worldwide concern for sustainability, regions and countries around the world have adopted different strategies and policies designed to mitigate environmental and health issues (Jaurneault et al., 2021). As a result, the ever-increasing concern for sustainability issues is urging firms to adopt sustainable operations in production and logistics processes (Dai et al., 2021).

In manufacturing, industry contributes more than a third of global emissions and is responsible for 38% of energy consumption (Institute Energy Agency [IEA], 2018). Hence, sustainability policies and environmental standards applied to production processes have become extremely important and global (Liu et al., 2019; Orcos et al., 2018). Evidence shows that many organizations have gone beyond regulatory compliance by adopting different sustainability practices in response to heightened pressures to be more sustainable. In addition, environmental and social sustainability issues are becoming more important in managerial decisions (Fratocchi & Di Stefano, 2019) such as the back shoring from low-cost countries of many manufacturing companies, for example (Orzes & Sarkis, 2019).

Sustainability practices (hereafter SP) are used by organizations to prevent their actions from being harmful to the environment, society, and stakeholders, while at the same time remaining economically viable (Nagariya et al., 2021). In fact, these three aspects (environmental protection, social equity, and economic viability) should be borne in mind when designing and developing SP, which can be *internal* (when developed internally within the company's boundaries) or *external* (when developed with the company's partners) (Macchion et al., 2018).

The literature in the field has analyzed the factors that drive sustainability management in manufacturing. Evidence suggests the existence of different internal and external pressures to adopt sustainability practices (see Gouda & Saranga, 2020) that underpin the different approaches to sustainability adopted by manufacturing companies (Wang et al., 2018). It has been suggested that different stakeholder groups can influence the sustainability practices adopted by companies by exerting pressure on them (Busse, 2016). Freeman (1984) defined the concept of "stakeholder" (hereafter ST) as including any individual or group "who can affect the firm's performance or who is affected by the achievement of the organization's objectives" (p. 46). Accordingly, organizations should consider the expectations and claims of a range of stakeholders (Sarkis et al., 2010; Surroca et al., 2013) that can demand and motivate companies to adopt and implement sustainability practices. In this line, Sajjad et al. (2020) highlight the importance of a balance between divergent pressures for sustainability and call for more research linking sustainability management and stakeholders (STs) in different countries and industry sectors. Some authors advise that the ST relationships for sustainability could be improved if ST sustainability interests were reinforced and if mutual sustainability interests (based on ST interests) were created (Hörisch et al., 2014).

However, there is no consensus on how companies respond to these ST group pressures. On the one hand, for some authors (Sharma & Henriques, 2005; Ferrón Vilchez et al., 2017), organizations decide which sustainability practices should be implemented in response to the pressures that they believe to come from the most important ST groups. In this case, it should also be considered that the interests behind stakeholder pressures for sustainability might differ or even be conflicting (Kotler & Maon, 2016). On the other hand, other researchers consider the reaction to pressures from ST groups to be rather "monolithic," suggesting that companies interpret pressure from any of the ST groups as pressure from all ST groups (Murillo-Luna et al., 2008; Wijethilake & Lama, 2019).

Although the topic of stakeholder influence on sustainability is not new (e.g., Boiral et al., 2019; Sharma & Henriques, 2005), more research has been called for as the responsibility for sustainability is increasing. It is not confined to internal operations; instead, companies are increasingly taking responsibility for the sustainability of their activities with their external partners.

Considering the abovementioned calls for further research and the lack of consensus on the effect of stakeholder pressures on sustainability in manufacturing, the present paper addresses the following research questions to contribute to the field:

RQ1: How do different individual stakeholder pressures (hereafter STP) affect the adoption and implementation of sustainability practices?

RQ2: How do companies respond to the different STP (differentiated reactions vs. a monolithic reaction to STP)?

RQ3: Does the country development context influence the effect of STP and the adoption and implementation of sustainability practices?Regarding RQ1, by complementing previous studies (e.g., Ferrón Vilchez et al., 2017; Murillo-Luna et al., 2008), the present research advances the understanding of the sustainability approach in manufacturing by analyzing how the pressures of different individual stakeholders influence the adoption and implementation of sustainability initiatives in manufacturing plants. With respect to sustainability practices, the previous studies on the topic differ in the number and kinds of practices that are considered in their analysis. Although the present paper initially uses an aggregate sustainability index to give an aggregate view of sustainability practice adoption, it advances knowledge on STP impact by (a) distinguishing between different internal and external sustainability practices, including environmental and social SP, and considering collaborative and monitoring practices with suppliers (Gimenez & Tachizawa, 2012) and (b) considering how the individual pressures of different stakeholders influence the adoption and implementation of sustainability practices. This is important as different stakeholder groups may influence the adoption of different practices differently, for example, customer and top management pressures are essential for collaboration, while shareholder pressures are important for monitoring (Danese et al., 2019). Although most sustainability practices in our study are environmental, social practices are also considered. This is why, in line with other authors (Ahmadi-Gh & Bello-Pintado, 2022; Danese et al., 2019), the denomination of sustainability practices has been retained for the set. Therefore, this research evaluates the sustainability proactivity of manufacturing plants through the adoption and implementation of a wide set of SP

associated with the pressures of different groups of individual stakeholders.

Regarding RQ2, this research aims to shed new light on the debate around the way that companies respond to the different STP when adopting and implementing SP, with either differentiated reactions to different STP or a "monolithic" reaction to any and all perceived STP (Buysse & Verbeke, 2003; Ferrón Vilchez et al., 2017). This RQ is interesting since two types of behavior are possible to address STP. If managers perceive that STP from different stakeholders are different, they may respond by designing and adopting different sustainability practices. However, in some other cases, when a high correlation of environmental demands exists across stakeholder groups, a firm could respond to all of these "monolithically" by responding to any of them (Murillo-Luna et al., 2008).

Finally, RQ3 intends to contribute to the literature by investigating whether the country development context is an influential factor in the topic under study. In the context of increasing globalization, the adoption of sustainable practices at the company level has become a global concern that plays a strategic role in competitiveness (Villena & Gioia, 2018). Given industry's high contribution to global emissions, the increasingly important role played by emerging countries in the world economy, and the contradiction between environmental protection and economic development in such countries, investigating country influence has come to be seen as a major research goal. Shedding new light on this matter is especially important as the debate about the *divergence* versus *convergence perspective* is still open (Naor et al., 2008, 2010; Rungtusanatham et al., 2005). While the former argues that contextual variables such as the country context influence the adoption/implementation of business practices (Ralston et al., 1997), the *convergence perspective* (Ralston et al., 1997) states that when countries develop, their work behavior gradually conforms to that of developed countries and their organizational systems become aligned (Cole, 1973).

Despite the influence of the country or region being a possible important contextual factor in management research (e.g., Boscari et al., 2018; Naor et al., 2010), it is still considered an underresearched area (Machuca et al., 2020). As regards to sustainability practices, awareness of the importance of potential differences between countries is growing (Miras-Rodriguez et al., 2018), and in line with the *convergence* hypothesis, company practices in developing countries, including sustainability practice adoption, can increasingly be influenced by companies in developed countries (Zhu & Liu, 2010). However, research on this topic, and in particular on the possible similar or different effects of stakeholder pressures on the adoption and implementation of SP in different economic development contexts, is still at an early stage, and contributing to this topic is one of the main objectives of this research.

Finally, it is worth stressing that the mentioned analyses are performed using a large, worldwide, multicountry, and multi-informant sample of manufacturing plants located in 15 emerging and developed countries and concentrate on three industry sectors. Both single-plant companies operating in a single country and multiplant companies operating in different countries are included. This allows us to obtain new reliable evidence that provides a broad picture of the researched phenomena represented by RQ1 and RQ2 while simultaneously contributing to filling a gap in an underresearched area with RQ3: the analysis of the possible influence of the country development context with new empirical evidence as to whether this context influences the effects of stakeholder pressure on the adoption and implementation of sustainability practices in manufacturing. Ordinary least squares multiple regression models were used to test our research hypotheses.

The paper is organized as follows. The following section draws on stakeholder theory and the difference between emerging and developed countries to develop some theoretical reasoning on the determinants of sustainability adoption. Three groups of hypotheses are proposed for empirical testing. The empirical section presents the sample of plants, data collection, descriptive statistics, and the analyses performed to test the hypotheses. Lastly, the results are discussed and theoretical and managerial implications are reported.

2 | THEORETICAL BACKGROUND AND HYPOTHESES

The relevance of the role of stakeholders on the adoption and implementation of SP was highlighted in Section 1, and a number of firms have recognized the need to proactively boost their sustainability practices to meet their stakeholders' demands (Boiral et al., 2019). As a result, managers are responsible for complying with stakeholders' requirements, not only with shareholders' welfare (Álvarez-Gil et al., 2007; Laplume et al., 2008, Parmar et al., 2010). Involving stakeholders in identifying, understanding, and responding to sustainability issues enables organizations to achieve their goals (Dal Maso et al., 2017). However, stakeholders might have different and even conflicting interests, which is a paramount factor for sustainability management (Hörisch et al., 2014).

Literature in the field has paid attention to the study of the drivers of sustainability practice adoption in manufacturing (e.g., Danese et al., 2019; Foerstl et al., 2015; Gimenez & Tachizawa, 2012; Marin-Garcia et al., 2018, Zhang & Zhu, 2019). However, little attention has been devoted to the analysis of manufacturing firms' sustainability activities from the perspective of the stakeholder theory.

In their study of the Canadian forest industry, Sharma and Henriques (2005) suggested that, given focal firms' resource dependency on their stakeholders, the pressures exerted by different stakeholders could determine the adoption of different sustainability practices. Sarkis et al. (2010) considered stakeholder theory and the resource-based view (Barney, 1986) in their analysis of the adoption of sustainability practices in the Spanish automotive industry. Their results suggest the existence of a differential effect of stakeholders in the specific context under study.

Using a sample of 240 small and family-owned firms from the region of Aragon (Spain), Murillo-Luna et al. (2008) showed that there is a high correlation of environmental demands across stakeholder

groups, so when a firm responds to one of these demands, it is really responding to all of them. Using a scale of proactive environmental behavior, said authors provided evidence of the positive effect of STP on environmental proactivity.

Distinguishing between different sustainability practices and using qualitative data from 17 Brazilian companies, Bulgacov et al. (2015) found empirical support for the idea that sustainability practices have a strong relationship with stakeholder interest, regardless of their level of implementation. From a different point of view, De Gooyert et al. (2017) highlighted the challenge of achieving a balance between the interests of various stakeholders as they are not aligned with one another, but this is a necessary condition for creating value sustainably and ethically and advancing in the knowledge of sustainability management.

Focusing on two groups of environmental practices (internal monitoring of environmental performance measures [such as comprehensiveness], environmental certifications [ISO 14001 or EMAS], and environmental reporting [such as visibility]) in a sample of 1761 firms in seven developed countries, Ferrón Vilchez et al. (2017) built four categories of firm environmental strategies: passivists, wannabes, backroom operators, and movers and shakers. Their results demonstrate that managers' designs of environmental practices vary depending on their perception of stakeholder pressures.

Using information from 29 senior managers in 23 New Zealand-based companies, Sajjad et al. (2020) analyzed the factors that affect the implementation of sustainable supply chain management practices. They concluded that customers, management commitment and values, reputation, and benefits are determinants of their adoption.

2.1 | The influence of stakeholder pressures on the adoption and implementation of sustainability practices

The literature in the field has classified stakeholders in different ways: according to the type of relationship—primary and secondary STs (see Buysse & Verbeke, 2003), according to their attributes of power, legitimacy, and urgency (Mitchell et al., 1997), or according to the organization membership in internal or external ST (Freeman, 1984).

We have opted to use the classification of external and internal stakeholders due to its conceptual interest for this research. *Internal stakeholders* are those with some type of direct relationship with the firm, while *external stakeholders* do have not a direct relationship but are affected in some way by the company's actions. Given the aim of this research and the analyses to be performed, the different groups of stakeholders have been considered individually (although conceptually allocated to one or other of the two mentioned ST groups). This may offer a better understanding of their potential individual effects on the adoption of different sets of sustainability practices (e.g., internal and external monitoring and external collaborative). As such, the analyses in this work can better contribute to shedding new light on the mentioned open debate around the effect of "single versus multiple group" stakeholder pressures on sustainability practices (Ferrón Vilchez et al., 2017; Murillo-Luna et al., 2008). Also, this paper adopts a wider perspective by examining the influence of government and regulations, consumers, NGOs, and customers as *external stakeholders*, as well as owners-shareholders, employees, and managers as major internal stakeholders (Huang & Kung, 2010). These are the stakeholder groups considered in the High Performance Manufacturing (HPM) project, from which the questionnaires used in this research have been taken (see Sections 3.1 and 3.2).

Regarding external stakeholders, *Customers* are considered to be the stakeholders with the greatest impact on a company's adoption of sustainability practices (Lee & Klassen, 2008). Nowadays, customers are provided with more product-related environmental information (Liu et al., 2012, 2019). Environmentally aware customers positively value green products supplied by companies with a good environmental reputation (Buysse & Verbeke, 2003) and are willing to pay extra for such products (Gouda & Saranga, 2020). As a result, suppliers are incentivized to adopt sustainability practices to achieve market performance and satisfy customer demands. At a business-to-business level, customers demand that suppliers have certain environmental certifications such as ISO 14000, for example (Delmas & Montiel, 2008; Hyatt & Berente, 2017). Recently, Gong et al. (2019) demonstrated that customer pressures are essential to motivate firms to develop their sustainability capability and to disseminate sustainability to their supply chain partners via the adoption of different SP. As a result, customer pressures are expected to positively affect the adoption and implementation of both internal and external sustainability practices (hereafter AISP).

Government and Regulations possess several mechanisms to apply pressure on firms to engage in environmental protection (Kassinis & Vafeas, 2006; Linton et al., 2007). Many industries have to contend with high regulatory pressure from the introduction of emission standards and environmental initiatives (Seroka-Stolka & Fijorek, 2020). Others such as the renewable energy sector would not even exist without the influence of regulations to compel their adoption. Regulatory initiatives are typically associated with coercive pressures (Zhu & Sarkis, 2004). The threat of penalties, punishments, or legal action pressures companies into complying with legal statements by adopting internal sustainability practices to generate reductions in pollution, resource consumption, and waste in manufacturing (Esfahbodi et al., 2017) and the adoption of eco-design practices (Zailani et al., 2012). In addition, regulations put pressure on corporations by demanding the elaboration of corporate responsibility reports that indicate the adoption of both internal and external sustainability practices (Lozano, 2015). Therefore, government and regulatory pressures are expected to be positively related to AISP, although some authors (Tachizawa et al., 2015) have stated that coercive pressures could negatively affect supplier sustainability collaboration.

Other external stakeholders are the community and *NGOs* (Hoffman, 2000), which put pressure on companies through the influence of public opinion (Damert et al., 2020). They very actively denounce any failure to care for the environment (Hoffman, 2000)

and are capable of mobilizing public opinion around sustainability practices (Sarkis et al., 2010). NGOs play the important role of informing customers (Kauppi & Hannibal, 2017), for example, by detecting and reporting unsustainable practices (Gualandris et al., 2015). Hence, NGO pressures are expected to positively influence AISP.

Regarding internal stakeholders, the literature has paid the greatest attention to *owners-shareholders*, *employees*, and *managers*. *Shareholders* are important for a company's survival, profitability, and growth (Buysse & Verbeke, 2003), which makes them important for firms (Gabzdylova et al., 2009). The literature proposes contrasting interpretations of shareholder influence on sustainability practices. On the one hand, shareholders may press for short-term efficiency and cost reductions, thus acting as a barrier to the adoption of sustainability actions whose effects are not immediately observed (Miras-Rodriguez et al., 2018). However, recently, Flammer et al. (2019) have shown how corporate social responsibility criteria in executive compensation can help companies to overcome these barriers. On the other hand, they may support sustainability practices that seek to enhance the firm's reputation and competitive position (Sarkis et al., 2010). For example, internal activities designed to control pollution, waste control and reduction, and social work–life balance strategies would be aligned with the targets of cost reduction and shareholder profitability. Poor sustainability performance could result in monetary losses if a company is found liable for environmental damage (Buysse & Verbeke, 2003). A poor environmental reputation may cause higher financial support costs due to the risk triggered by the company's activities (Henriques & Sadorsky, 1996). In this sense, nowadays, it is becoming increasingly evident to shareholders in many sectors that sustainability is one of the keys to improving company value (Nguyen & Adomako, 2022). Thus, most of the literature supports a positive influence of shareholders on AISP.

Managers are important internal stakeholders for sustainability. Top management is responsible for the implementation of the resources and systems required to obtain the desired results (Daily & Huang, 2001). Top management commitment is a determinant of the elimination of organizational barriers and a critical factor in the successful implementation of both internal and external green initiatives (Kitsis & Chen, 2021). Manager support and leadership are crucial for handling the entire organization's commitment to environmental issues (Buysse & Verbeke, 2003). They are an essential driver of investment allocation in green practices (Hervani et al., 2005). Managers who perceive sustainability as an ethical issue have a more proactive approach to adopting sustainability-oriented practices and opening up a dialog with the relevant stakeholders (Talbot et al., 2021). In this regard, the implementation of environmental practices is not possible without the management's commitment to environmentally friendly behavior (Bhanot et al., 2017). Support from top management facilitates the process of enforcing organizational actions and directing sustainability actions (Powell & Colyvas, 2008). Conversely, a lack of top management support leads to greater resistance to the adoption of green practices in the organization, so top management support is vital for environmental practices to succeed (Sarkis et al., 2010). Thus, AISP need to be positively influenced by managers.

Finally, *employees* are a major stakeholder group. They can affect or be affected by the achievement of an organization's objectives (Freeman et al., 2010). Evidence shows that employee pressures positively affect the adoption of proactive strategies (Danese et al., 2019; Seroka-Stolka & Fijorek, 2020), in particular, internal STP (Krause et al., 2021; Waxin et al., 2019). According to Hart (1995), developing sustainability-related employee skills through the adoption of training and education is a determinant of a firm's competitiveness since employees are often the initiators and recipients of an organization's proactive environmental activities (Buysse & Verbeke, 2003; Daily & Huang, 2001). It could, therefore, be stated that employee pressures are positively related to AISP.

Thus, based on the above literature in general, it can be assumed that there is a positive relationship between pressures from each of these stakeholders and AISP. However, the STP–SP link still requires further research. For example, some survey-based papers failed to find any significant relationship (Danese et al., 2019). Linked to this, an interesting debate exists as to whether pressure from different stakeholders can lead to the adoption of different environmental management practices (Ferrón Vilchez et al., 2017; Murillo-Luna et al., 2008), which would explain the reason for the significant or nonsignificant effects found depending on the pressures considered. In the literature, one argument supporting this view is that the influence of STP changes at different stages of the maturity of SP implementation and from internal to external monitoring and collaborative practices (Gimenez & Tachizawa, 2012). Danese et al. (2019) found that pressure from shareholders for cost reductions loses some of its relative importance as a driver when companies implement more advanced sustainability practices (e.g., external collaborative practices), compared with pressures from top management and customers, which are crucial in this case. For this reason, distinguishing between different STP is an important contribution to this debate, as is the distinction between their different effects on the implementation and adoption of sustainability practices (divided into internal and external monitoring and external collaborative practices). Thus, we propose to test the following group of hypotheses to shed some light on these topics:

H1. There is a positive relationship between

a. customer pressures;
b. government pressures;
c. activist group (NGO) pressures;
d. owner-shareholder pressures;
e. employee pressures; and
f. manager pressures

and the adoption and implementation of different sustainability practices in manufacturing (internal and external monitoring and external collaborative).

2.2 | Influence of the country development context: Emerging versus developed countries

It is assumed here that, following globalization, stakeholders can exert pressure for the adoption of sustainability practices in different countries, whether they are developed or emerging. In general, this is supported by the literature on sustainability, even though studies empirically and systematically investigating differences between developed and emerging countries on this topic are still limited in number and fragmented. Some recent works in the sustainability field analyze the achievement of the 2030 Sustainable Development Goals (SDGs) in different regions (Claro & Esteves, 2020; Degai & Petrov, 2021). Although they do not provide a systemic and comprehensive analysis of the influence of different stakeholders on sustainability practices, they draw attention to the importance for sustainability adoption of considering their role in a country's transformation.

Among the stakeholders considered, many studies mention the influence of government and policymakers across different nations and in developing countries (Jayanti & Gowda, 2014) as a fundamental driver in both developed and emerging countries in general. Miras-Rodriguez et al. (2018) analyzed a wide set of stakeholders as potential drivers of sustainability practices (e.g., regulations, customers, top management, and employees) when focusing on a comparison between rule-based and relation-based countries. They only found a significant difference regarding the importance of top management pressure, which is particularly relevant for the latter (i.e., Taiwan, Vietnam, and China), although its significance decreases when the level of development of sustainability practices increases.

Some other papers analyzed the Brazilian industrial context (e.g., Claro & Esteves, 2020; Lourenço & Branco, 2013). Claro and Esteves (2020) showed that the internal and external factors motivating Brazilian firms to pursue Sustainable Development Goals include internal stakeholders such as owners, investors, donors, leaders, and workforce and external stakeholders such as NGOs. Many industrial reports instead focus on the issue of the green transition in China and how the new regulations could favor this transition and the achievement of precise performance targets (https://www.undp.org/china).

Overall, although scant, the literature on sustainability practices and stakeholder pressures in developed and emerging countries seems to support the *convergence perspective* (Ralston et al., 1997), which states that the increase in the transfer of technology and organizational systems produced by globalization leads to similar company behaviors in different countries regardless of their national cultures (Dore, 1973; Form, 1979). In general, intense globalization means that industrial companies in emerging countries operate alongside others in developed countries, with which they cooperate or/and compete. This implies that the effects of national culture would be reduced and management practices could be applied universally (Von Glinow et al., 2002).

However, while the importance of the broad use of SP is widely recognized in developed countries, for some authors, this strategic view still seems to be unclear in emerging countries (Bai & Chang, 2015). In other words, while it is mostly agreed that ST pressures have a positive influence on the adoption and implementation of SP in developed countries, this effect is still open to question in emerging countries (as would be the case if the convergence perspective were applied). Therefore, the issue of whether the influences of different stakeholder pressures on the adoption and implementation of sustainability practices are affected (divergence perspective) or not (convergence perspective) by the country development context remains open, despite the importance of the topic as to date, only a small number of studies exist on the effect of stakeholder pressure on sustainability practices across nations. Hence, further research is required to confirm the convergence perspective or gain new insights. Hence, the present study proposes the following groups of hypotheses for further testing the convergence perspective in the sustainability field.

On the one hand, we first test whether the positive relationships mentioned in H1 exist in both developed and emerging countries as proposed by the convergence perspective.

H2. There is a positive relationship between

a. customer pressures;
b. government pressures;
c. activist group (NGO) pressures;
d. owners-shareholder pressures;
e. employee pressures; and
f. manager pressures

and the adoption and implementation of different sustainability practices in manufacturing (internal and external monitoring and external collaborative) in different country development contexts (emerging and developed countries).

Confirmation of H2 would indicate that the influence of the STP on the different SP is positive in both contexts, which would give support to the convergence perspective. However, it is important to dig deeper into this issue as, even in this case (a positive influence), the effects of the different STP pressures on the adoption and implementation of SP could be similar (following the convergence perspective) or different, so this must also be analyzed to gain further insights. The aim of the H3 group of hypotheses is to test this issue, and following the convergence perspective and complementing H2, H3 is formulated as

H3. The effects of

a. customer pressures;
b. government pressures;
c. activist group (NGO) pressures;
d. owner-shareholder pressures;
e. employee pressures; and
f. manager pressures

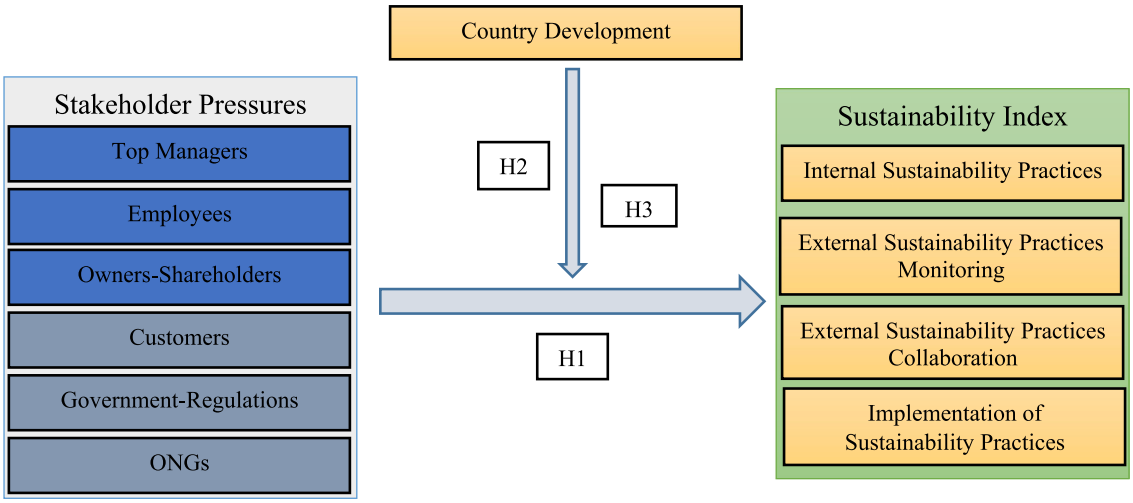

FIGURE 1 Structural model proposed: Hypothesis statements

on the adoption and implementation of different sustainability practices in manufacturing (internal and external monitoring and external collaborative) are similar in different country development contexts (emerging and developed countries) (Figure 1).

3 | METHODOLOGY

3.1 | Sample and data collection

The sample and the database in this research are taken from the last round of the High Performance Manufacturing (HPM) project, which is part of the World Class Manufacturing Project, initially launched by Schroeder and Flynn in 1991 (see Schroeder & Flynn, 2001). The sample includes plants from 15 countries across Europe, America, and Asia: nine in developed countries (Austria, Finland, Germany, Italy, Japan, Spain, Sweden, United Kingdom, United States, and Switzerland) and six in emerging countries (Brazil, China, Israel, South Korea, Taiwan, and Vietnam). Country classification into these two groups is both in line with the purpose of this research and also provides a sufficiently large sample size. This classification is in line with the United Nations (2019) report and other authors such as Geng et al. (2017), Katiyar et al. (2018), Danese et al. (2019), and Machuca et al. (2020). The classification is also confirmed by the Logistics Performance Index (LPI) developed by the World Bank (2018). The global selection of countries improves the generalizability of the results, which is more restricted when the sample is obtained at a national or regional level.

The unit of analysis is the plant. OM studies suggest that this unit of analysis provides a better understanding of the contribution that manufacturing makes to companies gaining a competitive advantage (Naor et al., 2010). Plants in a single country all belong to different corporations and may be owned locally or be local plants owned by international companies. They include both single-plant companies operating in a single geographic context and multiplant companies operating in other geographic contexts. A stratified design was used to randomly select plants (with at least 100 employees) in three industries (machinery, electronics, and automotive components) in each country. Additionally, about half of the plants in each country were randomly selected from lists of companies with a "world-class reputation" by leaders in the literature or by industry experts. This ensured that high-performing plants were well-represented in the sample. The other half of the plants were randomly selected from lists of more standard companies in each country. The aim was to obtain a balance of the two types of plants. An ~65% response rate ensured that nonresponse bias was limited and yielded a final sample of 330 plants in the 15 different countries that took part in the latest round of the HPM project (completed in 2017). The mentioned sectors were selected as they widely share practices relevant to the study of global supply chains, operate in different competitive environments, have numerous plants worldwide, and face intense global competition (Garrido-Vega et al., 2015; Morita et al., 2018).

The HPM international project questionnaires (based on a deep literature review) have been regularly updated and developed (Schroeder & Flynn, 2001) over different rounds to finally arrive at those for the latest round. These have been reviewed by a panel of experts to guarantee content validity, and pilot tests have been conducted to analyze their reliability, validity, and internal consistency. The reliability, validity, and internal consistency of the HPM international project's scales have been tested with prescriptive analyses (Cua et al., 2002; Marin-Garcia et al., 2018; Sakakibara et al., 1997).

Each local HPM team was responsible for contacting companies, identifying the contact person within each plant (who selected the key informants/respondents), and data collection. The contact person in each plant was provided with a set of 12 questionnaires specific to different management areas for distribution to the key respondents in each function (to wit: plant management, production control,

TABLE 1 Sample distribution by sector and country (developed and emerging)

Country	Industry			Total
	Electronics	Machinery	Automotive components	
Developed				
Austria/Switzerland	3	6	2	11
Finland	6	6	5	17
Germany	6	13	9	28
Italy	7	17	5	29
Japan	6	7	9	22
Spain	8	7	10	25
Sweden	4	4	1	9
United Kingdom	4	5	4	13
EE.UU.	5	7	3	15
Total developed	*49*	*72*	*48*	*169*
Emerging				
Brazil	5	7	12	24
China	10	17	3	30
Israel	21	5	–	26
South Korea	8	5	13	26
Taiwan	19	10	1	30
Vietnam	10	7	8	25
Total emerging	*73*	*51*	*37*	*161*
Total	**122**	**123**	**85**	**330**

accounting, process engineering, quality, environmental affairs, supply chain management, human resources management, information system management, product development, and supervision). The local HPM team provided support to respondents who had any questions during data collection, requested plant respondents when needed, and checked that the questionnaires were completed in full.

Multiple measurement scales were included in two different questionnaires to triangulate information. This provides greater reliability by minimizing the variability caused by differences between individuals. Thus, individual bias was prevented by surveying a cross-section of the plants (Sakakibara et al., 1997). In addition, the scale items and questions were combined in different ways in the questionnaires to prevent respondent bias. The questionnaires in each functional area were completed by two managers (except for the "accounting" questionnaire, which was administered to only one respondent). Therefore, each plant submitted 23 questionnaires to different informants. The specific set of questionnaires devoted to sustainability scales (see Table 2) was sent to Environmental Affairs managers, and their responses were used in this research. Requesting two respondents per management function in each plant to fill in a questionnaire elicits answers with fewer random errors and helps to prevent common method bias (CMB) (Danese et al., 2019). Harman's single-factor test was also performed to detect any potential CMB issues and showed that the total variance explained by the first factor is 40.43%, which is below the threshold of 50% recommended in the literature (Podsakoff et al., 2012). This indicated that CMB is not a real concern.

Table 1 reports the data distribution for this sample of 330 plants (161 from emerging countries and 169 from developed countries) by industry sector and country.

3.2 | Measures and statistical analyses

Most scales and items in the questionnaires had previously been used and validated in multiple OM studies, and any new scales were properly validated with prescriptive reliability, validity, and internal consistency analyses (see Table 2). The HPM questionnaire set with questions related to environmental affairs has been taken into consideration in this study. Regarding sustainability practices, respondents were requested to indicate the degree to which their respective plants have implemented the different SP (see Table 2), both internal (ISP) and external (ESP). All the items were measured on a 5-point Likert scale. ISP refers to a firm's evaluation of the efficiency of its own processes, not only through prevention and controlling practices but also through environmental improvement through a reduction in environmental accidents and the disposal of excess materials or equipment (Montabon et al., 2007). ESP consider collaborative practices (ESPc), which include interorganizational collaborative practices between focal firms and their suppliers (Danese et al., 2019; Vachon & Klassen, 2006), and monitoring (ESPm), which refers to supplier assessment practices imposed by focal firms (Danese et al., 2019; Vachon & Klassen, 2006). A further construct focuses on SP implementation (hereafter IMP). All scales were treated as reflective. The

TABLE 2 Descriptive statistics and analyses

Constructs	Sustainability practices[a]	Mean	Std. dev.	Factor loadings	Rho_c	Cronbach alpha	AVE
ISP—Internal sustainability practices: Degree to which the plant is engaged in the following internal initiatives		**3.926**	**0.617**		**0.909**	**.896**	**0.554**
S-Int01-Water efficiency		3.646	0.897	0.674			
S-Int02-Reducing waste in internal processes (e.g., improving yield or efficiency)		3.990	0.730	0.713			
S-Int03-Improving the workforce environment (e.g., indoor air quality)		4.033	0.733	0.726			
S-Int04-Pollution prevention (eliminating emissions or waste)		4.044	0.773	0.828			
S-Int05-Pollution control (scrubbing and waste treatment)		4.109	0.919	0.696			
S-Int06-Decreasing the likelihood or impact of an environmental accident		3.900	0.808	0.812			
S-Int07-Compliance with an industry-wide code of conduct		3.897	0.888	0.753			
S-Int08-Environmental improvements in the disposition of your organizations scrap or excess material (reuse, recycling, etc.)		4.025	0.757	0.743			
S-Int09-Environmental improvements in the disposition of your organizations' equipment		3.655	0.863	0.738			
ESPc—External sustainability practices collaboration: Degree to which the plant is engaged in the following external initiatives		**3.067**	**0.927**		**0.911**	**.868**	**0.721**
S-ExtC01-Encouraging suppliers to improve the environmental performance of their processes		3.176	1.034	0.873			
S-ExtC02-Providing design specification to suppliers in line with environmental requirements (e.g., green purchasing and black list of raw materials)		3.073	1.015	0.763			
S-ExtC03-Codevelopment with suppliers to reduce the environmental impact of the product (e.g., eco-design, green packaging, and recyclability)		3.060	0.981	0.868			
S-ExtC04-Involvement of suppliers in the redesign of internal processes (e.g., remanufacturing and reduction of by-products)		2.889	0.998	0.886			
ESPm—External sustainability practices monitoring: Degree to which the plant is engaged in the following external monitoring initiatives/practices		**3.006**	**1.077**		**0.877**	**.741**	**0.607**
S-ExtM01-Visiting suppliers' plants or ensuring that they are not using sweatshop labor		3.023	1.186	0.804			
S-ExtM02-Ensuring that suppliers comply with child labor laws		3.239	1.387	0.858			
S-ExtM03-Using a third party to monitor working conditions at supplier facilities		2.311	1.175	0.766			
S-ExtM04-Requesting that your suppliers sign a code of environmental conduct		2.967	1.278	0.770			
SImpl—Implementation of sustainability practices: Degree to which the plant has implemented sustainability practices		**3.767**	**0.841**		**0.890**	**.869**	**0.618**
SImpl01-Implementation of a certified environmental management system such as ISO 14000		4.099	1.314	0.717			
SImpl02-Implementation of internal environmental management procedures (e.g., environmental training program, internal environmental audit, and newsletter)		4.071	1.065	0.827			
SImpl03-Use of cleaner technologies in the production process (e.g., abatement equipment) to reduce pollution emissions and/or resource use		3.794	0.966	0.828			
SImpl04-Environmentally friendly product design		3.564	1.054	0.809			
SImpl05-Use of environmentally friendly raw materials		3.528	0.982	0.744			
Constructs	Stakeholder[b]						
	Plants involvement in environmental initiatives has been motivated by the following:						
TP—Top managers		**3.733**			**0.935**	**.807**	**0.907**

(Continues)

TABLE 2 (Continued)

Constructs Sustainability practices[a]	Mean	Std. dev.	Factor loadings	Rho_c	Cronbach alpha	AVE
TP01-The examples top management provides	3.647	0.919	0.908			
TP02-Requirements made by senior management	3.729	0.918	0.890			
TP03-Top-down initiatives	3.589	0.956	0.879			
TP04-Top managements' commitment to environmental responsibility	3.960	0.878	0.861			
CS—Customers	**3.615**	**0.920**		**0.954**	**.935**	**0.838**
CS01-Programs that our customers have in place	3.451	1.030	0.851			
CS02-Customers who seek environmentally responsible suppliers	3.644	1.028	0.929			
CS03-Increased awareness of environmental issues among our customers	3.718	0.989	0.945			
CS04-Customers who believe that environmental protection is important	3.639	0.985	0.934			
EMP—Employees	**3.385**	**0.808**		**0.952**	**.940**	**0.739**
EMP 01-Employee initiatives	3.310	0.926	0.826			
EMP 02-Championing efforts by individual employees or small groups of employees	3.200	1.008	0.842			
EMP03-Employee problem-solving teams	3.256	1.023	0.828			
EMP04-The morals of individual employees	3.382	0.883	0.891			
EMP05-The personal desires of employees to do what is right	3.516	0.867	0.861			
EMP06-A personal sense of obligation among employees	3.524	0.890	0.891			
EMP07-The underlying values of employees	3.559	0.935	0.876			
GOV—Government and regulations	**3.991**	**0.727**			**.861**	**0.721**
GOV01-Current government legislation	4.252	0.780	0.863			
GOV02-The threat of future government legislation	3.673	0.993	0.750			
GOV03-Industry or government regulation	3.946	0.892	0.896			
GOV04-Regulations dealing with the environment	4.093	0.799	0.878			
SHR—Shareholders/owners	**3.910**	**0.779**		**0.911**	**.878**	**0.741**
SHR01-The belief that we could reduce costs and help the environment at the same time	3.812	0.905	0.668			
SHR02-The desire to be more cost competitive	3.920	0.895	0.899			
SHR03-The need to reduce costs	3.957	0.907	0.935			
SHR04-The desire for cost savings	3.950	0.944	0.914			
NGO—Activist groups	**2.533**	**1.211**		**1.000**	**1.000**	**1.000**
NGO-Actions by activist groups	2.533	1.211	1.000			
Control						
Size (number of employees)	828					
Developed countries (dummy)	0.512					
Industry dummy—Automotive	0.368					
Industry dummy—Machinery	0.373					
Industry dummy—Electronics	0.277					

[a]*Source*: Carter (2004), Montabon et al. (2007), Zhu and Sarkis (2004), Klassen and Vachon (2003), Rao and Holt (2005), and Vachon and Klassen (2008).
[b]*Source*: Carter and Jennings (2004).

exploratory factor analysis shows unidimensionality since the items of each scale dimension loaded on a single factor and constructs have adequate reliability as the Cronbach Alpha is above .7 in all cases. Composite reliability (CR) is above 0.5, and all the AVEs are above 0.6 except one (ISP), whose value (AVE = 0.544) was considered adequate (see Table 2). Furthermore, confirmatory factor analysis presented acceptable fit values (RMSEA: 0.077; SRMR: 0.063; χ^2: 450.702 [$p = .0000$]; CFI [0.900] and TLI: 0.900) (Hair et al., 1995). No error correlations or cross-loading problems were detected. Additive indexes were created for each scale.

Descriptive statistics show that ISP are widely adopted in manufacturing plants, 3.926 on average in the sample. While ESPm

TABLE 3 Estimation results

	Sustainability index	Internal sustainability practices	External sustainability practices-collaboration	External sustainability practices-monitoring	Implementation of sustainability practices
Constant	−0.156	0.488	−0.126	−0.311	−0.584
Top management	0.231***	0.298***	0.091	0.236**	0.305***
Employees	0.211***	0.079	0.287***	0.281***	0.202***
Shareholders	0.022	0.000	0.010	0.022	0.054
Customers	0.238***	0.144***	0.269***	0.311***	0.228***
Government and regulations	0.038	0.104	0.036	−0.055	0.065
NGOs	0.001	−0.044	0.046	0.006	0.001
Control variables					
Development	0.247	0.100	0.233	0.280	0.422***
Size	0.124**	0.129***	0.144**	0.084	0.133**
Industry 1 (electronics)	−0.005	−0.014	−0.180	0.210	−0.056
Industry 2 (machinery)	−0.051	0.036	0.145	0.067	−0.190**
N	300	300	300	300	300
R^2	.642***	.534***	.495***	.423***	.601***

Note: OLS error robust. Dependent variable: Sustainability index. Sustainability practices.
$p < 0.95$.*$p < 0.99$.

achieve an average value of 3.006, the average value for ESPc is 3.067. No differences are observed in the adoption of monitoring (ESPm) versus collaborative (ESPc) sustainability practices. Results show that levels of sustainability practice (IMP) implementation are quite high, 3.767 on average. For an aggregate view of sustainability practice adoption, an additive index of sustainability (Sustainability Index [SI hereafter]) was created as the arithmetic mean value of the different subcategories (Diewert, 2005): both internal and external practices and sustainability implementation for the adoption and implementation of practices/initiatives, with an average value of 3.442 for the full sample.

Regarding stakeholders, the questionnaire included six multi-item constructs related to both internal and external stakeholders (Scherettle et al., 2014): Top Managers, Employees, and Shareholders as internal and Customers, Government, and NGOs as external (see Table 2 for item descriptions). These stakeholders are usually considered in the related literature (e.g., Miras-Rodriguez et al., 2018; Yu & Choi, 2016). All the items were measured on a 5-point Likert scale; apart from NGO pressures (average 2.567), stakeholder pressure in all other cases (STP) is above 3.000: *Top Management* (3.733), *Customers* (3.615), *Government and Regulations* (3.991), and *Shareholders* (3.910) present the highest levels of pressure for the adoption of sustainability practices.

Ordinary least squares multiple regression (OLSMR) models were estimated to test the hypotheses proposed for the analysis of the relationship between stakeholder pressures and manufacturing plants' adoption and implementation of sustainability practices. The regressions were estimated with robust standard errors to avoid nonnormality and heteroscedasticity problems in the residuals (Hayes & Cai, 2007). In addition, potential multicollinearity was checked with a full collinearity test based on variance inflation factors (VIFs) with 3.3 as the established threshold (Roberts & Thatcher, 2009). This allowed us to reject the existence of any issues with vertical and lateral multicollinearity (all VIFs were below 3.3). This result also indicated that there was no CMB problem (Kock & Lynn, 2012) and thus backed up the results found with the Harman test mentioned in Section 3.1.

Plant industry and size (the industry to which the sample plant belongs and the number of people employed by the sample plant, respectively, labeled *Industry* and *Size*) were considered as control variables. The analysis proposed to distinguish between developed and emerging countries (51.2% of the plants operate in developed countries). The models used to analyze the possible influence of the development level of the country where a plant operates included the following as independent variables: the different STP, the dummy variable that captures the level of country development, and the interaction term between each STP and the level of country development, which captures the moderating effect that the level of development could determine. The variables were centered to prevent any multicollinearity issues.

TABLE 4 Estimation results

	Sustainability index	Internal sustainability practices	External sustainability practices-collaboration	External sustainability practices-monitoring	Implementation of sustainability practices
Constant	2.264***	2.772***	2.580***	2.650***	2.6423***
Top management	0.206**	0.308***	0.033	0.195	0.295***
Employees	0.140	0.016	0.264***	0.193	0.130
Shareholders	0.112	0.049	0.103	0.217	0.068
Customers	0.259***	0.207***	0.212**	0.300**	0.320***
Government and regulations	0.029	0.096	0.051	−0.078	0.050
NGOs	−0.024	−0.040	0.027	−0.058	−0.028
Development	0.268**	0.102	0.249	0.305	0.447***
Top management * development	0.042	−0.018	0.102	0.070	0.004
Employees * development	0.136	0.175	0.055	0.169	0.130
Shareholders * development	−0.158	−0.097	−0.142	−0.340**	−0.034
Customers * development	−0.050	−0.111	−0.088	−0.134	−0.167
Government/ regulation * development	0.016	0.006	−0.037	0.035	0.054
NGOs * development	0.065	−0.003	0.045	0.134	0.079
Control variables					
Size	0.124***	0.125***	0.146***	0.086	0.130***
Industry 1 (electronics)	0.007	−0.030	−0.150	0.242	−0.058
Industry 2 (machinery)	−0.053	0.017	−0.126	0.006	−0.200**
N	300	300	300	300	300
R^2	0.642***	0.544**	0.523***	0.438***	0.682***

Note: OLS error robust. Dependent variable: Sustainability index. Sustainability practices. Moderation effects of development.
p < 0.90.*p < 0.95.***p < 0.99.

4 | RESULTS

The first column of Table 3 shows the estimation results of the ordinary least squares multiple regression (OLSMR) for the effects of STP on the Sustainability Index (SI). Pressures from *top management*, *employees*, *and customers* can be observed to be positive and highly significantly related to SI. Although also positive, *Shareholders*, *Government and Regulations*, and *NGOs* do not exhibit a statistically significant effect on SP.

An individual examination of the results for each SP and IMP (see following columns in Table 3) shows that in the case of *internal pressures*, top management support is positively and significantly linked to ISP, ESPm, and IMP, while employee pressure is linked to ESPc, ESPm, and IMP. In relation to *external pressures*, customer pressure is positively and significantly linked to all internal and external sustainability practices and IMP. Hence, it can be concluded that H1 is partially confirmed.

Regarding H2, Table 3 also includes the dummy variable "development," which controls for the adoption and implementation of SP associated with the level of country development. The values of this variable are observed to be nonsignificant for all of the SP (although they are significant for IMP). Hence, it can be stated that, except for IMP, the results commented on in the previous paragraphs are not influenced by the development context and that H2 is, therefore, partially confirmed.

The above results can be considered to be in line with the convergence perspective. However, it is important to dig deeper into this issue as, even in this case (partially confirmed positive influence in both development contexts), the effects of the different STP pressures on the adoption and implementation of SP could be similar (reinforcing the convergence perspective) or different (contradicting the convergence perspective), so this should be also analyzed to gain some new insights. Therefore, a further model was tested to analyze whether the links between STP and sustainability practices (ISP, ESPc, and ESPm) and their implementation (IMP) were influenced by the development level of the country where the plant operated (see Table 4). In this model, the moderating effect of the country's level of development is captured by an interaction term between each STP and the dummy *development*. This term will allow to test H3, that is, whether the individual effect of each STP on the adoption and implementation of different sustainability practices is similar (or not) in different country development contexts. A

nonsignificant value in the interaction terms (measuring the differences between the regression coefficients in developed vs. emerging countries) would indicate that the effects of the pressures of the corresponding stakeholders on the adoption and implementation of the sustainability practices in manufacturing are not statistically different in the two different country development contexts under analysis (emerging vs. developed countries). This result would support H3 and would, therefore, support the convergence perspective.

The evidence in Table 4 again confirms the individual positive significant effects of *top management*, *employees*, and *customers* on the adoption and implementation of a set of SP. Again, while the values for the variable development are not significant for the different SP, they are for implementation. These results reinforce those obtained with the previous model and once again partially confirm H2 (in this case, the sustainability index [aggregate of the set of SP and IMP] also seems to be influenced by the country development context, probably due to a greater influence of IMP on the set).

Regarding the interaction effect between STP and the level of development, the estimation results (Table 4, rows 9 to 14) do not show any statistical significance except in one of the interaction effects (shareholder * development with ESP-Monitoring). With this minor exception, results indicate that the effects of STP on the adoption and implementation of sustainability practices in manufacturing plants operating in developed countries cannot be considered to be different from the corresponding practices in emerging countries. Therefore, this seems to confirm H3, which is in line with the *convergence hypothesis*. By way of example (see Table 4), Top Management has a positive and significant individual effect on SI in emerging countries ($B_{TM} = 0.206^{**}$), while the effect in the specific context of developed countries is ($B_{TM+}\ B_{TM*Development} = 0.206^{**} + 0.042$ [nonsignificant]). A chi-square test confirms no differences between coefficients estimated for Top Management in either estimation (model 1, Table 3, and model 2, Table 4). Similar results are obtained for the main and interaction effects of the other stakeholder pressures (see Table 4). As previously stated, the only exception is for shareholder pressure on ESP-monitoring practices with suppliers, which seems to indicate that this type of shareholder pressure negatively affects the adoption of monitoring practices in a developed context.

In sum, estimations in Table 4 reinforce support for the existence of significant positive effects of different stakeholders (customers, top management, and employees) on sustainability practice adoption and implementation in manufacturing plants (H1 partially confirmed) and that this is true for different economic development contexts (H2 partially confirmed).

Finally, the analysis of the interaction effects (with the exception of shareholder pressures on ESPm) shows that it is not possible to state that the effects of Stakeholder pressures on the implementation and adoption of SP differ in different development contexts, which suggests that there is convergence in the interest of influencing stakeholders in different development contexts (thus supporting H3 and the convergence perspective).

5 | DISCUSSION, CONCLUSIONS, AND LIMITATIONS

This study analyzes the *effect of perceived individual stakeholder pressures on the adoption and implementation of different sustainability practices*, including environmental and social practices. In addition, this study considers the possible *influence of different country development contexts*, in particular, developed versus emerging countries. The results of the analysis described in the theoretical section confirm that the sustainability actions developed by manufacturing companies are partly driven by pressures from different stakeholders. It should be stressed that the findings show that different stakeholders play different roles in the adoption and implementation of practices, which is a contribution to the open debate around a suitable balance of stakeholder pressures. The results for our sample confirm that all stakeholders positively impact the adoption and implementation of sustainability practices, although the results were not significant in all cases. In this sense, the evidence shows that *the most important stakeholders for the adoption and implementation of SP are Top Management and Employees as internal ST and Customers as external ST*, all of whom present the highest influence in the Sustainability Index (SI). In line with various authors, the results of this research support other related findings that state that Top Management commitment and leadership are key factors in the adoption and implementation of different sustainability practices (e.g., Sarkis et al., 2010), along with a proactive Employee attitude (Buysse & Verbeke, 2003; Daily & Huang, 2001). This result may indicate that, in general terms, it is the stakeholders that are closer to the company's day-to-day work who exert pressure for sustainability. In the same line, manufacturing plants do not experience any significant pressure from owners, who, in many cases, are more distant from daily operations. Regarding external stakeholders, the results show that Customers play a key role in pressuring plants to have a proactive approach to sustainability, which is in line with previous research (Gong et al., 2019; Lee & Klassen, 2008).

Further insights are found through a disaggregated analysis of the results. *Top Management* pressures are observed to be a determinant of the adoption of internal practices and their implementation and also of monitoring of external partners, which is in line with findings in other works (e.g., Daily & Huang, 2001); Kitsis & Chen, 2021). Also in line with previous research, *employee pressures* are seen to positively affect the adoption of proactive strategies (Danese et al., 2019; Seroka-Stolka & Fijorek, 2020). In the present case, customers seem to be a determinant of the implementation of practices and also to play an important role in the adoption of external practices. In relation to *Customers*, considered by various authors to be the stakeholders that most press for sustainability (Lee & Klassen, 2008), the results of this research confirm their crucial role in the adoption and implementation of SP, as their influence is significant for both internal and external SP and their implementation.

However, in our case, the positive effect of other stakeholders has not been significant. This is not surprising since, as suggested in the theoretical section of this study, while the influence of stakeholder pressures is expected to be positively associated with SP,

previous survey-based studies have found mixed results (Danese et al., 2019). One explanation for the nonsignificant effect of these stakeholder groups found in previous studies is that a stakeholder can influence a specific SP but no other. For example, in the literature, there is no consensual opinion on the influence of *shareholder* pressure on AISP. Our case seems to support those who seek to slow down AISP, possibly in a quest for short-term efficiency (Miras-Rodriguez et al., 2018). In our sample, the same is true for *Government and Regulations*. Despite a stream of literature supporting their positive role, our results seem to be more in line with the authors who argue that coercive pressures could negatively affect AISP in some way (Tachizawa et al., 2015). Finally, despite the increase in public actions by NGOs to drive AISP, the positive effect of their pressure is not significant in this case. Moreover, it is interesting to note that these stakeholder groups are not found to be significantly related to any SP in the present study. This result appears to be counterintuitive but it is relevant and, so, deserves further research as it suggests that these stakeholder pressures may not always determine the adoption and implementation of SP. For example, Sancha et al. (2015) maintain that *Government and Regulations* are more related to a short-term reactive sustainability strategy.

Another aspect that it is interesting to highlight is that the present research's consideration of the effect of individual STP on AISP not only allows us to shed new light on the knowledge about the relationships between STP and AISP but also contributes to the open *debate around the "monolithic"* versus *differentiated reaction to perceived STP* to which RQ2 refers. Our findings show that manufacturing companies design different strategies to respond to different stakeholder groups with the adoption and implementation of different practices, which, as some researchers (Danese et al., 2019; Sancha et al., 2019) suggest, confirms that different pressures have different influences and companies respond selectively to the different stakeholder groups and not in the same way as stated previously by Murillo-Luna et al. (2008). These findings could indicate that, in the case of sustainability, manufacturing plants are capable of identifying different pressures and giving different responses regarding the adoption and implementation of sustainability practices. On one hand, this result is observed for the whole sample, which includes companies from both developed and emerging countries, and reveals the ability of companies to identify different pressures and to respond to these in differentiated ways. On the other hand, it is also worth stressing that the results obtained for the two development contexts are in line with those of the whole sample and that this reinforces the findings obtained for the debate on the homogeneous (monolithic) versus differentiated perception of STP in favor of the latter.

The analysis of the *influence of the country context* on this topic has been proposed as interesting further research by previous studies in the field (e.g., Ferrón Vilchez et al., 2017). In relation to this topic (in our case, the level of country development), the debate between the *convergence* and *divergence* perspectives is still open (Machuca et al., 2020; Naor et al., 2010; Rungtusanatham et al., 2005). The *convergence perspective* (Dore, 1973; Form, 1979; Ralston et al., 1997) argues that globalization enables the "universal" use of management practices and reduces the effects of national culture (Von Glinow et al., 2002). In contrast, the *divergence hypothesis* (Ralston et al., 1997) and *contingency theory* (Lawrence & Lorsch, 1967) argue that the context (in our case, the economic development context) influences the use and level of achievement of organizational practices. The basis for this claim is that, despite globalization, the values of the national culture largely persist in organizations and influence the implementation of business practices (Ralston et al., 1997).

In this sense, some international reports highlight differences between developed and emerging countries in relation to firms' sustainability proactivity. However, this research contributes to this debate by supporting the convergence perspective. The confirmation of H3 (except in the marginal case of shareholders and ESP-Monitoring) implies that the effects of stakeholder pressures on the adoption and implementation of sustainability practices in manufacturing are similar in emerging and developed countries. In addition, the main significant stakeholders are the same in both contexts (Top Management, Employees, and Customers). Besides, in both analyzed contexts (emerging and developed countries), the results show a (partially confirmed) positive relationship between stakeholder pressures and the adoption of Sustainability Practices in Manufacturing.

One interesting finding comes from the significant negative difference for shareholder pressure on the *adoption of monitoring external SP* (-0.340^{**} in Table 4), which shows that the effect of this pressure is lower in the developed context than in emerging countries. Given the higher uncertainty and greater difficulty to control the supply network and the need to achieve a green reputation, substantial shareholder pressure in an emerging context can imply a company maintaining stricter control over its suppliers. On the other hand, shareholders in developed countries are more focused on economic results than those in emerging countries when the focus on monitoring external SP is compared. This is in line with some authors' findings that state that very few companies (represented here by the shareholders) are abandoning the traditional profit-focused approach in favor of a more environmental approach that seeks greater business value through a balance between profit and an environmental and social reputation (Chen et al., 2018). This is evidence of a short-term vision that acts as a barrier to proactive behavior in the adoption and implementation of sustainability practices, without considering that this could lead to the company gaining a bad reputation and poorer long-term results.

Other insights can be deduced from the values of the control variables (see Tables 3 and 4). Regarding plant *size*, the significant positive values for all the SP (except ESPm) are in line with previous studies that suggest that larger companies are more likely to implement sustainability practices (Seroka-Stolka & Fijorek, 2020). The possible influence of the *industry/sector* has been found to be nonsignificant for practically every AISP. There is only one exception: SP implementation in the machinery sector, which seems to be lower than in the automotive and electronics sectors. This seems logical given the much more dynamic character of these last two sectors in the application of advanced production practices, including SP. Lastly, one final remark is related to the control variable *development*, whose significant

positive value for IMP indicates that the implementation level is higher in developed countries. This is also logical as they are the first countries to be subjected to STP (and normally more intensively) and, consequently, the first to implement them.

This study has some implications for academia and managers. For academia, the evidence highlights the importance of stakeholder theory for improving the understanding of sustainability in operations. This study confirms that pressures from different stakeholders are perceived differently and consequently have different effects on the strategy that is designed. Therefore, rather than taking care to balance stakeholder pressures, it seems that companies respond more to the stakeholders from which they perceive that they are receiving the most pressure. In addition, it appears that the company's "distance" from the stakeholders is a fundamental factor, with most pressure for sustainability perceived to come from those closest to day-to-day plant operations (customers, employees, and managers). In addition, the evidence obtained from the analysis at a more granular level, which considers the interaction between individual stakeholder pressures and the level of country development, shows that the differences in the effects of individual stakeholder pressures according to the country's level of development were not statistically significant. Our results support the convergence perspective. This is also a call for further research with different samples and sectors to confirm or refute these findings and consider the opportuneness of seeking explanations for sustainability strategies in manufacturing at the intersection of different theories such as the stakeholder theory and contingency theory. Moreover, the "distance" of stakeholders could be considered to explain perceived pressures for sustainability, and future research should consider the point of view of distance in this debate from different perspectives such as cognitive, cultural, or geographic.

For practitioners, estimations suggest that pressures from both internal (employees and managers) and external (customers) stakeholders are determinants of manufacturing plants' sustainability proactivity, which highlights the complexity of managing different forces from different actors that affect manufacturing plants' sustainability actions. Therefore, the findings show the importance of a company's management's commitment to sustainability for it to successfully achieve environmentally friendly behaviors, as well as the importance of providing employees with training and education to develop sustainability skills that enhance their proactivity in the adoption and implementation of SP. Also, external pressures from customers should be considered as they exert major pressure on manufacturing plants to take responsible action. In relation to the sustainability strategy of global companies, which is usually set at the headquarters level for the entire organization, it might be advisable to provide local managers with some flexibility to allow them to respond appropriately to the greatest pressures in their respective contexts.

In addition, our findings advise policymakers and companies that pressures from Government and Regulations, NGOs, and shareholders are not enough on their own to determine the adoption and implementation of SP. This does not mean that they are unimportant but that they are likely to be jointly considered with other pressures from customers, employees, or top management. In this sense, this paper's findings could offer some insights for sustainability policymakers, who should try to focus on involving all the major stakeholders in order to advance SP. However, further research is needed to better understand the role of Government and Regulations, NGOs, and shareholders in the transformation toward sustainability.

One final additional implication for managers involves the importance of shareholder pressure for determining external monitoring of SP practices in emerging countries. Having its supplier network under control can be seen to be a good strategy for a business to achieve a green reputation, especially in emerging countries, where this issue is extremely relevant.

Despite this study's sample of worldwide countries improving the generalization of results compared with samples obtained at the national or regional levels, it is not without its limitations.

The first research limitation concerns the cross-sectional nature of the data. Future research could undertake a longitudinal study of the internal and external stakeholder pressure-based decisions that companies make on sustainability. Second, the HPM sample includes three important sectors (i.e., machinery, electronics, and automotive components). Replicating the study with different industries (e.g., fashion or agri-food) could yield different results for stakeholders' influence on sustainability practices. Also, a more disaggregated analysis of the STP construct indicators and/or the adoption and implementation of sustainability practice components could shed new light on the topic under study, for example, through the use of a different method such as the Importance-Performance Matrix Analysis available in PLS (Ringle & Sarstedt, 2016).

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