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From networking orientation to green image: A sequential journey through relationship learning capability and green supply chain management practices. Evidence from the automotive industry

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ABSTRACT

Drawing on the resource-based view of the firm (RBV) and resources and capabilities theory, this study develops a model that extends our understanding of the mechanisms through which strategic assets, capabilities, and green supply chain management practices (GSCMP) contribute to green image (GI). The model comprises (i) two new antecedents of GSCMP: relationship learning capability (RL) and strategic networking orientation (NO), and (ii) the direct and mediated impacts of GSCMP and their antecedents on firms' GI. To empirically study the proposed relationships, data were collected from 106 Spanish firms in the automotive industry and analyzed using partial least squares structural equation modelling (PLS-SEM). The results indicate that NO, RL capability, and GSCMP positively affect GI through a sequential mediation relationship. An important implication is the identification of a stream of research proposing that GSCMP act similarly to a lower-order capability and that it is the interaction with other ordinary capabilities that can contribute to improving the green image.

1. Introduction

A successful "green image" can help firms to move towards customer acceptance. The number of companies concerned about being responsible and less harmful to the environment grows every day because of environmental pressures from society and consumer environmental consciousness (Dubey et al., 2015; Chen et al., 2006; Chen and Chang, 2012). A green image is a critical resource for developing new market opportunities and retaining a firm's competitive advantage (Chen, 2008; Walker, 2010). This strategic strength is a result of its value-creating capacity and its intangible character (Barney, 1991), which make it difficult for it to be imitated by rivals (Gold et al., 2010). These reasons lead companies to change their business strategy to focus on green supply chain management practices (GSCMP) and their green image (GI) in order to effectively respond to the concerns of green customers (Alghababsheh et al., 2022).

On the other hand, several studies support that green strategies and supply chain practices contribute to the development of firms' innovation portfolios (Hull and Rothenberg, 2008), enable profitability (Hart, 1995), impede imitation opportunities generating barriers to other competitors (Aragón-Correa and Sharma, 2003), develop competitive advantages (Chang, 2011), positively impact corporate reputation and a desirable green image for organizations (Quintana-García et al., 2021; Chen, 2008). In this context, GSCMP represent one of the most important issues facing industrial companies working in global supply chains.

The study of the antecedents of GI, legitimacy, and firms' GSCMP has been linked mainly to the evolution of Institutional Theory (Diabat and Govindan, 2011; Zhu and Sarkis, 2007). Traditionally, Institutional Theory has been used to investigate how a company addresses green issues due to external pressures (coercive, normative, and mimetic), and thus Institutional Theory has been the main research direction to explain environmental issues related drivers and consequences (Sarkis et al., 2011).

More recently, however, it has been suggested that a company's green reputation and image can be boosted by proactive environmental practices and by developing and maintaining an adequate management of its competencies, resources and capabilities, rather than by its advertising strategies, corporate social responsibility reports, more effective external corporate communications, or isomorphic pressures to be aligned with the norms and value systems of its stakeholders (Quintana-García et al., 2021; Kumar et al., 2020). So far, very little evidence exists on the factors that mediate the relationships between some strategic drivers (strategic assets and capabilities) and GI, as well as between certain strategic drivers and GSCMP, which leads to

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imprecise and confusing conclusions. In fact, the roll of key mediators, such as relationship learning capability (RL) or GSCMP, in the relationships between certain aspects of the firm's strategic orientation and its GI has received little research attention, especially in terms of any empirical research. In summary, a more strategic approach is missing in the literature on GSCMP and their direct and indirect antecedents and consequences (Micheli et al., 2020; Alghababsheh et al., 2022).

Thus, based on the perspective of the resource-based view of the firm (RBV) and more specifically on the resources and capabilities theory enabled by inter-organizational learning and previous literature on strategic management and supply chain management, this study proposes a model in which a strategic asset such as networking orientation (NO) together with the RL capability enables the adoption of GSCMP, which, in turn, mediates the link to a firm's GI. Our two research questions are (i) how do GSCMP mediate the impact of NO and RL in enhancing a firm's GI, and (ii) how do both NO and RL, and a firm's GSCMP directly and individually affect the GI creation process? This paper develops and, based on a sample of 106 Spanish firms in the automotive industry, empirically tests a research model that aims to shed light on these two central questions. The automotive industry has been selected because of firms' high dependence and close coordination with their suppliers and customers in global supply chains. In addition, these firms need to develop strong capabilities to perceive ecological changes and execute flexible/fast responses, and form a broad "knowledge base" because of intense networking orientation and inter-firm learning capabilities. Due to these conditions, the sector referred to is suitable for empirical testing of our research model.

Our paper aims to contribute to theoretical research on the firm value of GSCMP in several important ways: first, our model aligns with the stream that extends the resource and capabilities-based view of the firm (RBV theory) – rather than Institutional Theory – to examine how NO, capabilities such as RL, and other mediating factors, in this case GSCMP, interact for firm value creation via GI. Thus, this article contributes to the theoretical and empirical extension of the understanding of how specific driving resources and capabilities affect GSCMP, strongly reinforcing the idea that GSCMP is one of the critical mechanisms through which a firm's improvement in GI is influenced. Thus, secondly, this paper postulates that GSCMP act similarly to a lower-order capability that mediates the relationship between some drivers, such as NO, and RL capability towards GI. The role of GSCMP as a mediator is critical to leverage other relationship learning and networking capabilities of the firm with the aim of enhancing a key strategic resource such as green image. Previous studies on the drivers of GSCMP and IG have rarely applied the concepts of lower-order or higher-order capabilities, possibly because these concepts are hard and abstracted; recently, though, it is these that dominate the scientific scene on organizational theories.

The remainder of the article proceeds as follows. The next section presents the theoretical background, the definition of variables and the hypothesis statement for the research model. The empirical research methodology is then explained. The final sections present results of the analysis performed, the discussion of the results, practical and research implications, and limitations, with areas for future research.

2. Theory and hypotheses

The RBV suggests that competitive advantage and performance depends on how firms leverage their strategic resources, which are valuable, rare and difficult to imitate by rivals in markets (e.g., Barney, 1991). Derived from this approach, the literature on dynamic capabilities offers an important capabilities-based perspective, distinguishing two types, operational – low order – and dynamic – high order (Pavlou and El Sawi, 2011). Work in this area highlights a class of higher-order capabilities that affect the rate at which a firm is able to respond to changes in the environment (Winter, 2003) and describes these capabilities as "the ability to renew the firm's competencies and strategic assets to achieve congruence with the changing business environment" (Teece et al., 1997: 515). That is, the processes for "obtaining, integrating and reconfiguring resources to adapt to and/or create changes in the market" (Eisenhardt and Martin, 2000: 1107). Other authors define them as "repeatable and patterned routines that provide the ability to change the product, the production process, the scale or the customers (markets) served" (Winter, 2003: 992); or also as the ability of an organization to create, expand or modify its resource base (Helfat et al., 2007). Much of this work proposes different categorizations for particular types of adaptations or changes in the resource base, but the general implication is that dynamic capabilities affect how business organizations adapt and create heterogeneous resource positions in dynamic environments (Leiblein, 2011).

We draw on the RBV and the dynamic capabilities theory to analyze and explain the relationships between strategic assets – NO –, ordinary capabilities – RL and GSCMP – and GI in the context of the automotive industry, proposing that the interaction between strategic orientations or assets and operational capabilities (NO, RL and GSCMP) trigger higher-order capability development processes in supply chain organizations (sensing, leveraging, learning and reconfiguration), resulting in superior GI performance. In Fig. 1, we present our research model. Next, we describe the individual variables and then present the hypotheses.

2.1. Green image and green supply chain management practices

Organizational *green image* integrates the concepts of reputation and credibility (Chen, 2008; Massey, 2015). In the words of Massey, organizational credibility deals with the perceived level of the company's knowledge and reliability. On the other hand, organizational reputation is based on external stakeholders' perceptions, and holistic assessment of a business throughout time (Massey, 2015; Hatch and Schultz, 1997). Hence, organizational image has a double nature: it is projected by the firm, but at the same time is perceived and interpreted by external and internal audiences (stakeholders).

In this paper, we label GI as the perceptions of stakeholders about the degree to which a firm makes efforts and takes initiatives to be more sustainable and environmentally reliable. Consequently, a good GI occurs when stakeholders believe that the firm's decision-makers are taking environmental issues seriously. Literature shows that firms must create and maintain an attractive and appropriate image in order to gain competitive advantage (Gioia et al., 2000; Massey and Larsen, 2006).

Environmental problems and resource scarcity have generated a "green culture" in companies, inducing them to design *Green Supply Chain Management Practices* systems increasingly focused on reducing the environmental footprint caused by all their activities, from production and logistics to reverse resource recovery (Zhu et al., 2011). In other words, managing the socio-economic criteria of SCM and the principles of sustainability in an integrated manner. The GSCMP seek to create an endless cycle that considers customers/consumers as end users during product consumption and as suppliers of raw materials when they return used products and components for reintroduction into other supply chains (Couto et al., 2016). Azevedo et al. (2011) define GSCMP as all those cooperative actions that lead supply chains towards the elimination or reduction of any negative environmental impact without reducing quality and efficiency. In this sense, the emergence of GSCMP brought about a shift from intra-organizational improvement to all actors in the supply chain as a whole, including the management of processes and product flows from the initial sources of raw materials to the end user customer in both forward and reverse ways (Linton et al., 2007).

2.2. Networking orientation and relationship learning capability as antecedents of GI and GSCMP

Social network theory (SNT) is a useful framework for analyzing

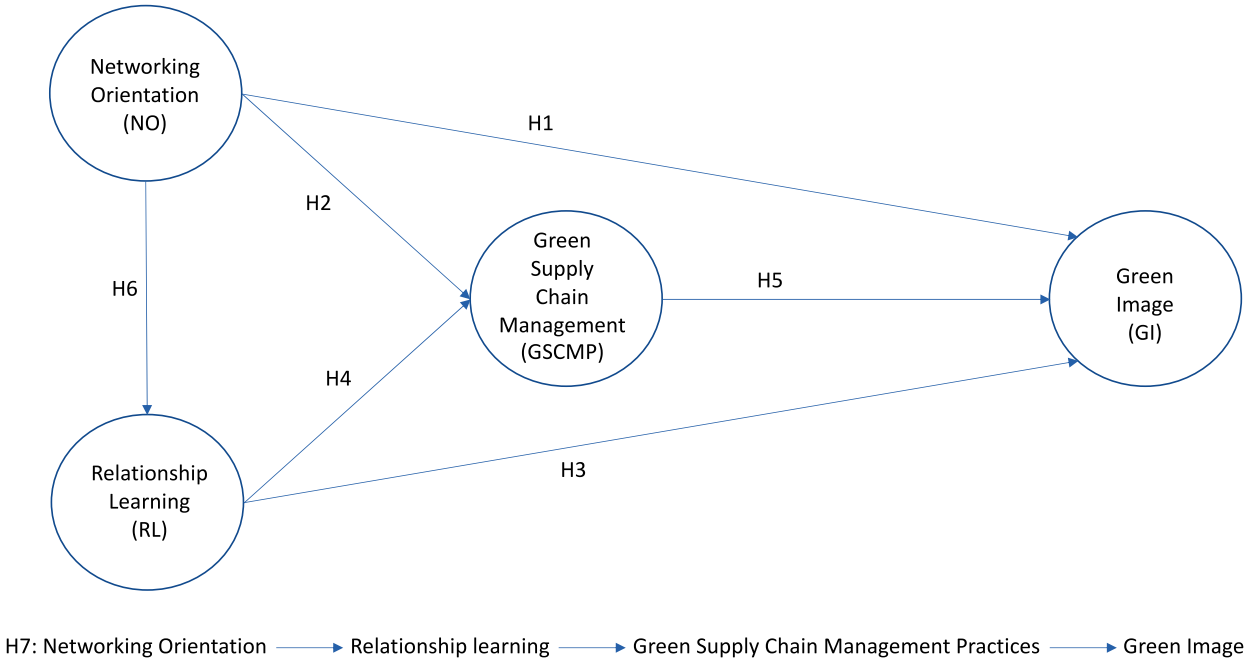

Fig. 1. Research model and proposed hypotheses.

sustainability (Sarkis et al., 2011) by considering that firm performance is the result of the management of social relationships between organizations or between individuals (Jones et al., 1997). Firms make decisions, strategies and behaviors based on the information and influence of their social network (Wuyts et al., 2004). However, being part of the network alone does not generate superior performance for the firm but depends on the deployment of a set of management capabilities and routines that extract value from network resources and strategic assets (Ritter et al., 2004; Vissa and Bhagavatula, 2012). An important typology of strategic assets contemplated in resource and capability theory are the strategic orientations of firms (Gulati et al., 2000), and among them the NO.

We define NO as the cultural orientation by which a company grants importance or emphasizes its connection with other organizations to obtain resources, information and knowledge (Knight and Cavusgil, 2004) and operate in a coordinated and integrated way with customers, suppliers, competitors, partners and stakeholders in general. NO is based on the network approach, which argues that firms leverage networks of useful actors to achieve business objectives and gain competitive advantages (Falahat et al., 2018).

Many authors consider organizational culture (i.e., a firm's set of values, beliefs, symbols, assumptions, norms and social artifacts) as a source of competitive advantage and an intangible strategic resource – valuable, rare and difficult to imitate (Barney, 1986; Schein, 1996; Hynes, 2009) – which determine the firm's strategic and operational behavior (Hynes, 2009).

Corporate culture plays a central role in the development of organizational processes and capabilities such as relationship learning mechanisms among employees, customers, competitors and suppliers of an organization (Brettel and Cleven, 2011; Leal-Rodríguez et al., 2014). Consequently, NO might be expected to have a significant impact on the firm's environmental performance and, particularly, on the degree of implementation of GSCMP. Hence, NO shaped by managers' values is a strategic asset as it intensifies the firm's focus on creating and sourcing information and knowledge flows between business peers, and can encourage RL processes and the successful and cost-effective deployment of GSCMP (Ariail et al., 2015; Suar and Khuntia, 2010). Indeed, the culture is not only an important aspect of an organization, but is the central driver of its superior business performance (Gallagher et al., 2008). Authors like Denison (1990) or Gallagher et al. (2008) assert that a company's cultural orientation influences everything it does. It is the core of what the company is really like, how it operates, what it focuses on and how it tries to satisfy the demands of its stakeholders (customers, employees, shareholders…).

Other studies highlight the role of top managers' values in the successful implementation of green strategies and practices (Park et al., 2014; Boiral et al., 2014) or environmental systems such as ISO 14000 (Cantor et al., 2013; Marshall et al., 2015). That is, the NO culture of managers influences the green or sustainable behavior of their companies (Aragón-Correa et al., 2004). Hence, we posit the following hypotheses of the model:

H1. NO is positively related to GI.

H2. NO positively influences the implementation of GSCMP.

The term "relationship learning" was first used by Selnes and Sallis (2003) to describe a cooperative effort between an organization and one or more stakeholders, such as a supplier, customer, partner or other party, with the aim of sharing information and attempting to generate more value collectively than they would individually or with other partners. RL, according to these authors, entails three aspects: information sharing, joint sensemaking and knowledge integration. Information sharing helps businesses to deliver the products that customers need, minimize cycle times, increase on-time delivery and cut costs (Vargo and Lusch, 2004). Information concerning customer requirements and changes in consumer behavior, market structures, information relating to technology advancements and information about financial or strategic concerns are a few instances of information sharing (Selnes and Sallis, 2003). In turn, joint sensemaking deals with the development of insight, knowledge, linkages between past activities, those actions' efficacy and future actions (Fiol and Lyles, 1985). Establishing collaborative teams with suppliers, partners and customers to discuss strategic concerns or address operational challenges is an example of this. Knowledge integration, on the other hand, is described as a tool for assessing the level of departmental collaboration that is necessary for meeting the needs of the environment (Cheung et al., 2011). The evaluation and adjustment of routines in order-delivery processes, the assessment and updating of relationship-related data in the company's electronic databases, and meeting face-to-face to renew

the personal network in the relationship are some instances of knowledge integration tools.

Preceding empirical evidence of the relationships between RL and GSCMP has not been found in the literature on logistics and SCM, although, in the related fields of innovation performance, and green innovation performance, several authors found evidence of a positive relationship between these variables (Cheung et al., 2011; Akgün et al., 2007). A study by Li et al. (2022) highlights that the inter-organizational learning perspective can facilitate deep understanding of the relationships between GSCMP and green innovation, emphasizing that it could be a promising avenue for future research in this area. Other recent work provides evidence on the synergistic effects between relational capital and GSCM. Specifically, such empirical studies reveal that the implementation of environmental practices along the supply chain is substantially enhanced the higher the level of relational capital (Yu and Huo, 2019; Yu et al., 2021a).

Firms that are sensitive to their stakeholders often develop structures where employees operate within systems of knowledge sharing and learning. Individuals and groups learn from inter-company experiences. In addition, these firms recognize that innovations and process improvements can occur at many points in the SC, but especially through coordinated efforts with other firms involved in the SC (Cheung et al., 2011; Prajogo et al., 2021). In addition, several authors found that firms that have a heterogeneous network of collaborating partners and rely on cross-organizational work teams obtain better results in the development of new products or in the improvement of existing ones (Brettel and Cleven, 2011; Ritter and Gemünden, 2003; Cheung et al., 2011). Hence, the creation of collaborative networks between businesses and their stakeholders in an SC context is crucial in innovation development (Bossink, 2002). Through partnerships and relationships, firms can successfully innovate by sharing complementary resources and competencies (Ahuja, 2000; Chen et al., 2009). Thus, a high degree of RL among the agents of an SC generates strong relationships of interdependence and coordination between the companies that integrate it (Leal-Rodríguez et al., 2014; Leal-Rodríguez, 2020). This means that certain practices of GSCM can only be implemented in a firm with the collaboration and involvement of its suppliers and clients (for example, collection or reverse logistics practices), so that firms may be involved by other partners in the SC to implement GSCMP.

Based on the above arguments, we can establish the following hypotheses:

H3. RL is positively related to GI.

H4. RL influences positively the implementation of GSCMP. The greater the RL, the greater the employment of GSCMP.

2.3. The consequence of the GSCMP: Green image

Several research works highlighted that green marketing and sustainability practices enhance perceived quality by customers and so improve the firm's GI (Rao and Holt, 2005; Jayaraman et al., 2012). The theoretical connection between the GSCMP and the improvement or strengthening of the firm's GI is suggested in many scientific works (Bag, 2013; Mafini and Muposhi, 2017; Yu et al., 2014; Zhu et al., 2010). Yet we have not found articles that demonstrate this relationship empirically.

Some studies stress that GSCM is essential for business reputation. In this vein, the control of supplier selection criteria and implementation procedures supports the credibility and reputation of the firm (Quintana-García et al., 2021). Moreover, Chen and Chang (2012) point out that as green products are increasingly in demand and valued by customers, firms need these consumers to experience a higher green perceived value. In addition, Chen and Chang (2012) show in their study that a high degree of green perceived value exerts a positive and significant impact on green purchasing intentions, assuming that this phenomenon is related to a greater green confidence and a better GI of the company as perceived by customers.

Based on these previous references, we formulate the following hypothesis:

H5. GSCMP has a positive influence on GI. The greater the implementation of GSCMP, the better the GI.

2.4. The sequential mediating effects of RL and GSCMP

Strategic orientations reflect the action of firms responding to the opportunities and challenges imposed by the business environment. In this study, firms' NO focuses on the reinforcement of RL activities, targeting in a knowledge creation process between partners along the supply chain. Such a process may require emphasizing joint sensemaking, knowledge integration and knowledge transfer capabilities with customers, suppliers, competitors, partners and stakeholders in general to create value for customers (Im and Rai, 2008; Nodari et al., 2016).

Scholars found relationship intensification and networking orientation to be associated with the development and expansion of inter-firm learning strategic activities (Selnes and Sallis, 2003; Miles et al., 2006) and large-scale inter-firm cooperation (Nelson, 2001; Oliver and Ebers, 1998). Hence, NO reflects whether a firm is connected to any parties to obtain resources and information (Paul and Rosado-Serrano, 2019) while exerting a strong impact on certain capabilities such as learning and innovation (Falahat et al., 2021; Zhou et al., 2007). When firms obtain major and better information from their network and access to valuable resources, information and knowledge, it allows them to act faster than their competitors (Freeman et al., 2006; Falahat et al., 2021). Besides, strong network ties may supply firms with rare sources of unique inputs and high levels of trust and confidence, which enhance the capabilities of these firms (Jack, 2010), leading to the following hypothesis:

H6. Networking orientation is positively related to relationship learning capability.

The pivotal role of RL capability while supporting firms' environmental endeavors has been previously addressed by scholars. For instance, Albort-Morant et al. (2016, 2018) stress the importance of encouraging decision-makers to nurture RL mechanisms with their main stakeholders, which may enable them to attain external knowledge and insight that might be cherished in the later development of environmental innovations. Another cutting-edge study on intelligent transformation of the manufacturing industry for Industry 4.0 was carried out by Yu et al. (2021b). This latter paper unveils that supply chain relationship capital exerts a positive and significant impact on corporate environmental management and companies' financial performance by means of deployment of a set of environmental management initiatives. Yet, for such SCGM practices to be effective and lead to the promotion or reinforcement of the company's GI, it is not enough to propose them; they must also be based on the expertise developed along the value chain. This is where NO and RL come into play. NO may seem a priori a requirement for knowledge to be generated and shared along the supply chain. However, in our view, such a cultural orientation should be seen as a necessary but not sufficient condition. In addition to such an orientation, companies need to invest significant resources and endeavors in the development of RL mechanisms.

RL highlights the outcomes of nurturing close ties among partners on mutual learning experience. Across the supply chain, by maintaining close bonds of trust and learning, partners are able to share and jointly grasp information, which might be in turn incorporated into a shared relationship-specific knowledge (Wang and Hsu, 2014) that may enhance the level of knowledge embeddedness (Nielsen and Nielsen, 2009). Therefore, the identification, prioritization and subsequent validation of GSCMP will require that companies (i) have a predisposition to form collaborative networks, and (ii) actively participate in the

exchange of knowledge throughout the network through the promotion of RL mechanisms.

Our research has sufficient support to suggest a multiple mediating approach: NO is related with RL capability, RL leads an organization towards the implementation of GSCMP, which in turn allows it to achieve GI. Consequently, we consider that by adding the three direct paths (NO→RL → GSCMP→GI) we conclude the existence of an indirect link between NO and GI through RL and GSCMP implementation. Our proposal tries to reinforce the hypotheses that are formulated above by introducing a multiple sequential mediation model (Kashyap and Rangnekar, 2016; Reb et al., 2019) that allows for the addition of a new perspective on the effects of RL and GSCMP, whose sequential mediating roles improve the achievement of GI. Thus, we hypothesize as follows:

H7. Relationship learning and GSCMP sequentially mediate the relationship between NO and a firm's GI.

3. Methodology and sample description

3.1. Sample and data collection

The unit of analysis for this study is the industrial firm, and the automotive industry is the selected population. This industry is shaped around extensive global supply chains with increasingly intricate relationships with suppliers and customers, strongly coordinated by the company assembling all the components of an automobile (Cusumano and Takeishi, 1991). On the other hand, the supply chains formed in this industry are the best example for the study of the complex relationships linking "the knowledge base" formed by all its agents and stakeholders through inter-firm learning processes and a strong networking orientation (Bensaou and Venkatraman, 1995). Finally, the automotive industry is one of the best exponents for analyzing the dynamics of 'multi-technology' industries, characterized by manufacturing products made up of components incorporating many technologies with unequal rates of change and innovation and strong concern for environmental impact issues (Perri et al., 2021). Due to these considerations, the automotive industry is suitable to empirically test our research model.

Using data from SABI NEO (*Sistema de Análisis de Balances Ibéricos*), a database of the INFORMA company that has collected information on Spanish and Portuguese companies since 1990, and data from the Spanish National Institute of Statistics (INE) with the CNAE-2009 code of industrial activity sectors – at three digits (291: manufacture of motor vehicles and 292: manufacture of components, parts and accessories for motor vehicles) –, the population of companies in these sectors located in Spain with a size greater than 20 employees is 496 firms. The data collection instrument is an offline survey, and the recipients are the logistics, purchasing and distribution managers or, alternatively, the general managers. Following a mailing effort conducted between December 2019 and January 2020, a total of 118 questionnaires were received. We then applied the criteria described by Hair et al. (2016) to address missing data, which led to the elimination of 12 cases. We obtained 106 usable surveys (a response rate of 21.3 %). The results obtained show a sampling error of 7.4 % at the 95 % confidence level. Similar sample sizes (less than 148 surveys) and type of methodology has been used in many other investigations to study this industrial sector (Svensson, 2004; Colombari et al., 2023; Qamar et al., 2021; Palea and Santhia, 2022; DeCampos et al., 2022; González et al., 2008; etc.). Data were collected in two waves. In this study, we used the translation–back translation procedure from English to Spanish and back to English, according to Brislin (1986). A panel composed of 13 experts and practitioners was employed to modify the questionnaire twice in order to increase its content validity and clarity. Before mailing the questionnaire, a pilot-test was undertaken. In addition, before proceeding to data analysis, we performed Levene's test for homogeneity of variance that compared early (first wave) with late respondents (second wave), verifying that the Levene's statistics obtained were not significant (Table 1),

Table 1
Levene's non-response bias test.

	Levene's statistic	Sig.
Relationship learning	0.028	0.869
Networking orientation	0.009	0.926
Green image	0.246	0.621
GSCMP	0.040	0.842

First wave 50 questionnaires, and 56 in the second wave.

hence suggesting that nonresponse bias is not a serious concern in the data set of this study and we can generalize the results to the broader population (Cochran, 1977; Babbie, 2007).

3.2. Measures of the variables

The design of the questionnaire (see Appendix A) is based on the literature review section. To measure the constructs and variables of the research model, this study uses previously validated scales, where all the items and responses appear on a seven-point Likert scale to measure the questionnaire items, ranging from 1 to 7. The scale for measuring RL, a second order construct shaped by three dimensions – information sharing, joint sensemaking, and knowledge integration – was adapted from Selnes and Sallis (2003), where 17 questions are modelled from 1 (high disagreement) to 7 (high agreement). The NO variable was measured adapting a scale developed by Yiu et al. (2007) and used too by Falahat et al. (2021), composed of 5 items, and ranging from 1 (not important) to 7 (highly important). Next, the degree of implementation of GSCMP was measured using a questionnaire of 21 items from the scale of Zhu et al. (2011), and ranging from 1 (no plan to implement) to 7 (full implementation). Furthermore, the dependent variable GI has been measured using the eight items used by Chen (2008). The eight items of GI range from 1 (high disagreement) to 7 (high agreement).

3.3. Data analysis

Once the responses were obtained, and to empirically test the research model and hypotheses, we use multivariate quantitative analyses to explore the connections hypothesized between the variables. The responses were transferred into an Excel sheet before its data processing carried out using SPSS software. Furthermore, for a more rigorous and academic data analysis, and to empirically test the research hypotheses, we use a scientific method such as Partial Least Squares (PLS-SEM), a Variance-based structural equation modelling method, carried out with the SmartPLS 3.3.7 software.

Partial Least Squares (PLS) is a cutting-edge path-modelling technique (Henseler et al., 2016) that allows the combined use of latent variables that represent the concepts grounded in theory and data from manifest variables. Thus, PLS was used to assess the measurement model – the reliability and validity of the measures – and to estimate the structural model – the relationships modelled between constructs. Moreover, PLS simultaneously enables the assessment of the reliability and validity of the measures of theoretical constructs (outer model) and the estimation of the relationships among these constructs (inner model) (Barroso et al., 2010). The election of the PLS technique is justified by the subsequent reasons as recommended by Henseler et al. (2016): (i) we use latent variables as composites; (ii) the research model has reflective latent variables (Henseler, 2017) that are used to define a state where perceived variables are equally dependent upon another variable which is not itself observed – as the model has reflective and formative variables, it will be analyzed using a Mode A (reflective) and a Mode B (formative); (iii) the research model uses non-normal data; (iv) the study employs an exploratory analysis that emphasizes a predictive approach rather than a confirmatory approach. We utilize the SmartPLS 3.3.7 software to test the validity and statistical significance of the measurement and structural models respectively (Dijkstra and Henseler, 2015).

Furthermore (v) this study uses latent variables scores in the subsequent analysis for a predictive relevance (Hair et al., 2011). The operationalization of the multidimensional superordinate constructs follows a two-step approach. Accordingly, the study optimally weights and combines the items for each dimension using the PLS algorithm to create a latent variable score. Thus, the dimensions or first-order factors became the observed indicators of the second-order constructs, such as the RL and GSCM variables (Chin and Gopal, 1995).

4. Results

With the aforementioned method for testing the model, we will respond to the stated research questions and objectives, and therefore this will support the trustworthiness of the findings. The interpretation of the PLS model comprises two phases: the estimation of the measurement model (outer model), and the structural model (inner model) analysis.

4.1. Measurement model results

Regarding the measurement of the variables and dimensions comprising the research model, RL, NO and GI are measured as reflective constructs (Mode A), while GSCMP constructs are measured as formative constructs (Mode B).

The evaluation of the measurement model portrays acceptable results. First, regarding the reflective constructs – RL, NO and GI –, the indicators measuring these variables satisfy the requirement of individual item reliability, since their outer loadings are, in general, greater than 0.707 (Table 2) and only some of the outer loadings are slightly under this critical level. Nonetheless, the decision is to retain them to support the content validity of the scale. Only a few items were removed since their outer loadings were too low. Moreover, the formative constructs – GSCM with customers, GSCVM with suppliers – also depict acceptable results, since the VIF values are under the 3.3 threshold (Table 2), which reveal that there is not multicollinearity between the indicators. Second, all the reflective constructs meet the requisite of construct reliability, because their composite reliabilities, Cronbach's Alpha and Dijkstra-Henseler's indicator (Rho_A), are greater than 0.7.

Table 2
Measurement model results.

Construct/*Indicator*	Outer loading	Outer weight	VIF	Cronbach's Alpha	rho_A	Composite reliability	AVE
Relationship learning (information sharing)	0.849			0.862	0.908	0.897	0.637
RL1	0.804						
RL2	0.703						
RL3	0.846						
RL6	0.818						
RL7	0.812						
Relationship learning (joint sensemaking)	0.899			0.826	0.841	0.884	0.657
RL8	0.841						
RL9	0.862						
RL10	0.786						
RL11	0.747						
Relationship learning (knowledge integration)	0.853			0.759	0.801	0.831	0.502
RL12	0.786						
RL13	0.686						
RL14	0.553						
RL15	0.683						
RL17	0.798						
Networking orientation				0,868	0,914	0,896	0,635
NO1	0.863						
NO2	0.686						
NO3	0.761						
NO4	0.830						
NO5	0.832						
Green supply chain management practices with customers				n.a.	n.a.	n.a.	n.a.
GSCMP10		0.566	1.309				
GSCMP11		−0.042	1.342				
GSCMP13		−0.351	1.250				
GSCMP14		0.188	1.357				
GSCMP15		0.130	1.248				
GSCMP16		−0.093	1.258				
Green supply chain management practices with suppliers				n.a.	n.a.	n.a.	n.a.
GSCMP1		0.392	2.198				
GSCMP2		0.370	1.842				
GSCMP3		0.251	1.656				
GSCMP4		−0.461	1.598				
GSCMP5		0.417	2.166				
GSCMP6		−0.153	1.396				
GSCMP7		0.042	1.999				
GSCMP8		0.313	1.707				
GSCMP9		0.392	1.908				
Green image				0.918	0.932	0.934	0.668
GI1	0.818						
GI2	0.871						
GI3	0.842						
GI4	0.794						
GI5	0.753						
GI6	0.847						
GI8	0.792						

Notes: VIF = Variance Inflation Factor; AVE = Average Variance Extracted; n.a. = nonapplicable; rho_A = Dijkstra-Henseler.

Third, these latent variables attain convergent validity because their average variance extracted (AVE) surpasses the 0.5 critical level (Table 3). Lastly, Table 3 reveals that all variables achieve discriminant validity following both the Fornell-Larcker and the HTMT criterion.

4.2. Structural model results appraisal and discussion

Following Hair et al. (2016), a bootstrapping technique (5000 re-samples) is used to generate standard errors and t-statistics that enable the evaluation of the statistical significance for the relationships posited within the research model. Table 4 comprises the main structural model results, including path-coefficients, t-statistics, *p*-values and 95 % bias corrected confidence intervals, which serve to test the direction and significance of the relationships hypothesized between the different constructs that shape the research model.

The PLS-SEM results reveal that six of the study's seven hypotheses are empirically supported. More specifically, the positive and significant relationships established between NO ($\beta = 0.214$*), RL ($\beta = 0.230$*), and the GSCMP ($\beta = 0.401$**) with the GI support hypotheses H1, H2 and H3, respectively. This shows that both NO, RL and GSCMP are important drivers of GI. Furthermore, of the two variables modelled as antecedents of GSCMP, only RL is a positive antecedent or driver of the GSCMP construct ($\beta = 0.424$***), which strongly supports hypothesis H5. The influence exerted by NO is negative and not significant, which suggests that RL capability stands as a fundamental driver of the firm's implementation of greener SCM practices. This is in line with the RBV, which claims that strategic resources and assets by themselves fail to impact performance directly, but do so only though the deployment of organizational capabilities, such as RL capability (Teece et al., 1997; Pavlou and El Sawi, 2011).

Table 3
Discriminant validity.

Fornell-Larcker criterion

	Green image	Green supply chain management practices	Networking orientation	Relationship learning
Green image	**0.809**			
Green Supply Chain Management Practices	0.486	**0.764**		
Networking orientation	0.296	0.001	**0.797**	
Relationship learning	0.454	0.372	0.352	**0.890**

HTMT criterion

	Green image	Green supply chain management practices	Networking orientation	Relationship learning
Green image				
Green Supply Chain Management Practices	0.815			
Networking orientation	0.316	0.153		
Relationship learning	0.470	0.551	0.347	

Notes: Fornell-Larcker Criterion: Diagonal elements (in bold) are the square root of the variance shared between the constructs and their measures (AVE). For discriminant validity, diagonal elements should be larger than off-diagonal elements. Off-diagonal elements are the correlations among constructs. Heterotrait-Monotrait Ratio (HTMT) criterion should be under the threshold of 0.85 (Kline, 2015).

However, our results do not find support for hypothesis H4, i.e., for the direct NO-GSCMP relationship ($\beta = -0.148$ ns), all of which indicates that NO neither exerts a positive nor significant influence on GSCMP, which leads to inconclusive results regarding the importance of networking orientation values while implementing GSCMP. Such a result differs from that of González-Benito and González-Benito (2006). Hence, we should reject hypothesis H4. One possible explanation for the rejection of H4 may be that the implementation of the GSCMP to a high degree depends not only on internal variables, such as the managers' cultural values, but in line with the RBV needs other complementary external resources or capacities to take effect (Helfat et al., 2007). Thus, implementing GSCMP in a firm requires not only a proactive internal attitude towards networking but also the collaboration of other agents or parties involved in the supply chain (suppliers, customers, consumers, etc.). In addition to a culture strongly oriented towards networking, implementing GSCMP adequately requires negotiation, collaboration and persuasion skills to involve suppliers and customers in such green practices (Chen et al., 2009). That is, generating processes of knowledge exchange, joint sensemaking and, in general, a capability for relationship learning (Cheung et al., 2011). Besides, although there is an indirect positive relationship between NO and GSCMP through the mediation of RL, we failed to find statistical significance for this direct link, which leads to inconclusive results regarding the importance of manager's networking orientation values while implementing GSCMP.

Nevertheless, we do find support for the indirect NO-GSCMP relationship through RL ($\beta = 0.149$*), thanks to the confirmation of hypothesis H6, i.e., there is a positive and significant relationship between NO and RL ($\beta = 0.352$***). Finally, we also found support for hypothesis H7, which stated that relational learning and GSCMPs sequentially mediate the relationship between network orientation and green firm image ($\beta = 0.060$*). Which indicates the relevant transformative role played by RL and GSCMP in the context of the model, facilitating GI. This is in line with prior studies that found that a firm's capability (i.e., RL) mediates the links between a firm's resources base (i.e., IT infrastructure) and green innovation performance and customer capital (Leal-Millán et al., 2016).

The coefficient of determination (R^2) is assumed as the main criterion to assess the explained variance, which is shown in the endogenous constructs, as path coefficients are depicted in the model. As shown in Fig. 2, which entails a summary of the structural model results, the structural model has acceptable predictive relevance for the three endogenous constructs within this model – RL ($R^2 = 0.124$), GSCMP ($R^2 = 0.157$) and GI ($R^2 = 0.363$). In particular, for the case of the outcome variable (GI), the R^2 value is above the moderate level (0.330) set by Chin (1998).

In our model, we have also included two control variables that can influence GI. We include the control variable “ISO 14000 certification”. Environmental certification can be seen as a formal sign of the company's environmental commitment, i.e. that standardized processes and procedures are followed to support the environmental management of the company's operations. Possessing an ISO 14000 certification allows the company to gain credibility with its multiple stakeholders (González et al., 2008).

We also used the number of employees to control for firm size. Size and visibility are considered key drivers of environmental awareness (Freimann and Walther, 2001). Larger companies are more visible, they are more in the media spotlight and any mistake or inappropriate action in environmental matters can seriously damage their image.

Analyzing the effect of the control variables, the main finding is the importance of ISO 14000 environmental certification in the model (Table 4). The results are significant for the ISO 14000 control variable and consistent with the statement that environmental certification helps companies to create a GI to their stakeholders (path coefficient = 0.171*). ISO 14001 certification can be used as a cue or signal to convey a clear message that the company meets stakeholders' environmental

Table 4
Structural model results.

Direct relationships	Path coefficient	T statistics	*P* values	5.0 %	95.0 %	Support
H1: Networking orientation ➔ Green image	0.214*	2.291	0.011	0.046	0.355	Yes
H2: Networking orientation ➔ Green Supply Chain Management Practices	−0.148 ns	1.377	0.084	−0.343	0.011	No
H3: Relationship learning ➔ Green image	0.230*	2.008	0.022	0.038	0.408	Yes
H4: Relationship learning ➔ Green Supply Chain Management Practices	0.424***	3.745	0.000	0.162	0.556	Yes
H5: Green Supply Chain Management Practices ➔ Green image	0.401**	2.577	0.005	0.092	0.600	Yes
H6: Networking orientation ➔ Relationship learning	0.352***	3.141	0.001	0.109	0.495	Yes

Indirect (mediation) relationships	Path coefficient	T statistics	P values	5.0 %	95.0 %	Support
H7: Networking orientation ➔ Relationship learning ➔ Green Supply Chain Management Practices ➔ Green image	0.060*	1.743	0.041	0.014	0.126	Yes
Networking orientation ➔ Green Supply Chain Management Practices ➔ Green image	−0.059 ns	1.259	0.104	−0.170	−0.006	No
Networking orientation ➔ Relationship learning ➔ Green Supply Chain Management Practices	0.149*	2.280	0.011	0.046	0.255	Yes
Networking orientation ➔ Relationship learning ➔ Green image	0.081*	1.622	0.050	0.014	0.171	Yes
Relationship learning ➔ Green Supply Chain Management Practices ➔ Green image	0.170**	2.315	0.010	0.057	0.288	Yes

Control variables	Path coefficient	T Statistics	P Values	5.0 %	95.0 %	Support
ISO 14001 ➔ Green image	0.171*	1.728	0.042	0.014	0.339	Yes
Size ➔ Green image	−0.101 ns	0.957	0.169	−0.277	0.068	No

Notes: BCCI: Bootstrapping bias corrected confidence intervals (based on $n = 5000$ subsamples). ***p b 0.001; **p b 0.01; *p b 0.05 (based on t(4999), one-tailed test). t(0.05, 4999); ns = not significant.

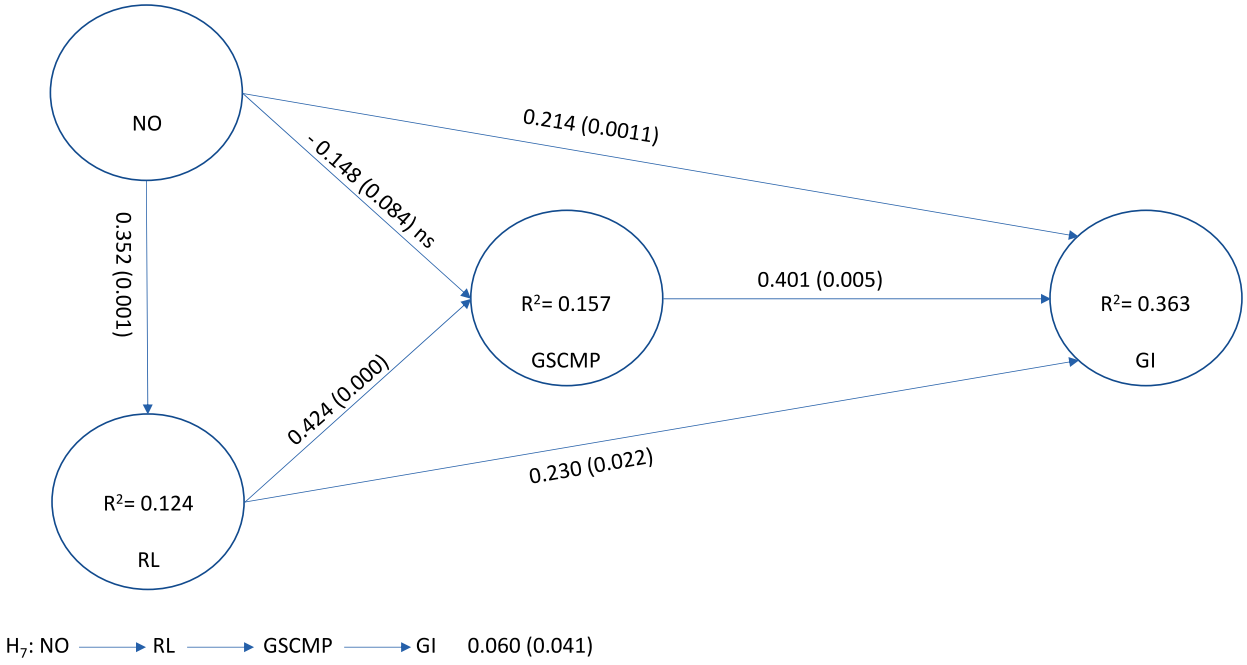

Fig. 2. Summary of structural model results.

expectations (Martín-de Castro et al., 2017). The company's ability to communicate how it formally integrates the environmental dimension into the management of its operations positively reinforces its GI. In contrast, as shown in Table 4, no significance was found in the relationship between firm size and GI (path coefficient = −0.101 ns). Thus, it can be assumed this relationship is not influenced by the firm's size.

4.3. Importance-performance map analysis

The above reported empirical results are complemented by the outcomes derived from applying the "Importance-Performance Map Analysis" (IPMA) technique (Ringle and Sarstedt, 2016). IPMA contrasts the total effects and indicates the relevance of the antecedent constructs or indicators in determining a certain target construct (Ringle and Sarstedt, 2016).

The IPMA technique has been implemented for the main target construct under assessment (GI). The focus is to pinpoint those antecedents that are especially relevant when determining the target construct (i.e., constructs with a strong total effect), while showing low-performing constructs (i.e., constructs with low mean latent variable scores). Therefore, the IPMA enables one to observe those areas that are of greatest importance for a target construct even though the construct has low performance (Nitzl and Chin, 2017), thus suggesting major areas to focus on or to improve. Next, Figs. 3–5 show the scatter plots of the

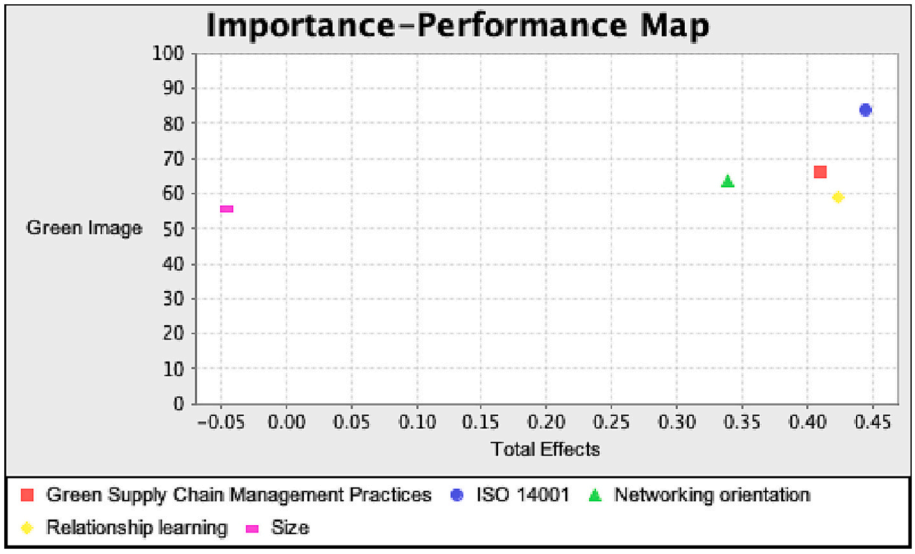

Fig. 3. IPMA v1 constructs level.

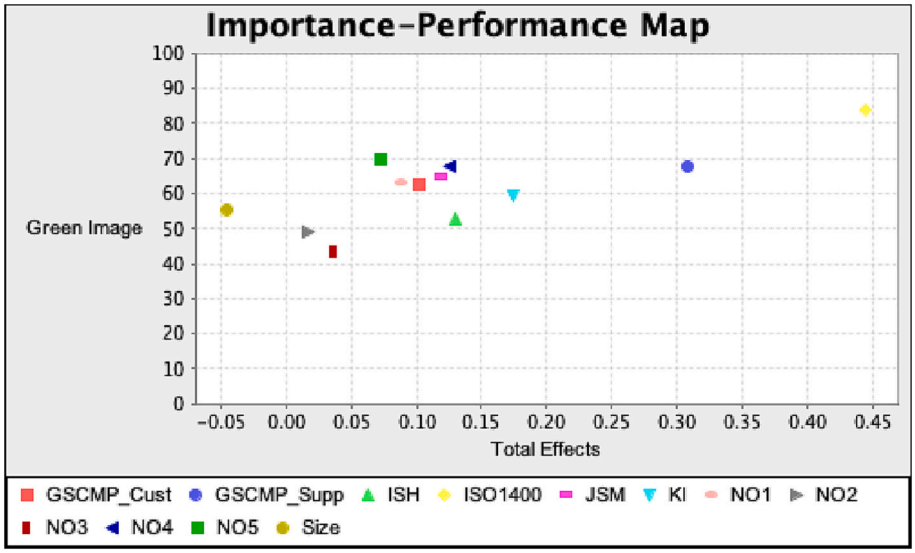

Fig. 4. IPMA v1 indicators level.

IPMA.

The first IPMA analysis (Fig. 3) endorses the above PLS-SEM reported outcomes and shows that the modelled as control variable 'ISO 14001 implementation' has the greatest influence on firms' GI (see upper right quadrant). This is in line with the assumption that ISO 14001 confers social approval by improving the firms' corporate reputation, as noted by prior studies (Arocena et al., 2021). Subsequently, in terms of importance, ISO 14001 implementation is closely followed by the RL and GSCM constructs. Finally, NO seems to be of minor importance, as it was already advanced in the PLS-SEM structural model results report. This constitutes an additional piece of evidence to sustain the sequential mediation hypothesis (H7). In other words, NO might be important to help companies to attain GI, but only to the extent that such cultural orientation leads it down the path of relationship learning capability building and the implementation of GSCMP. Neither of the dimensions appear in the bottom right quadrant, suggesting that these are not considered to be critical areas for further improvement. Finally, the control variable 'size' is located in the upper left quadrant, indicating that this variable is not important in determining the GI construct, confirming the result previously obtained in the PLS-SEM analysis.

At the indicators level, this first IPMA analysis (Fig. 4) depicts that after the implementation of the ISO 14001 standard, the most relevant manifest variable while determining the firms' GI is the GSCMP carried out with suppliers. In third place we find information sharing, one of the three dimensions of RL. This raises the question of which GSCMP are most important while determining the GI. To answer this question, we conducted a second IPMA analysis focused on finding out which of the different GSCMP are most relevant.

Therefore, the second IPMA analysis (Fig. 5) shows the importance of GSCMP with customers and suppliers for GI attainment. The results reveal that the most important manifest variables are GSCMP6 (adopting the just-in-time logistics system), GSCMP9 (requiring suppliers to use degradable and non-hazardous packaging), GSCMP7 (selecting suppliers using energy and pollution reduction criteria), GSCMP12 (cooperating with customers for green packaging), GSCMP4 (selecting suppliers with ISO14000 certification), GSCMP2 (cooperating with suppliers for energy and pollution reduction objectives) and GSCMP10 (cooperating with customers for eco-design). This brings out a really interesting contribution to the extent that it provides information at a disaggregated level, allowing not only to verify that GSCMP have a

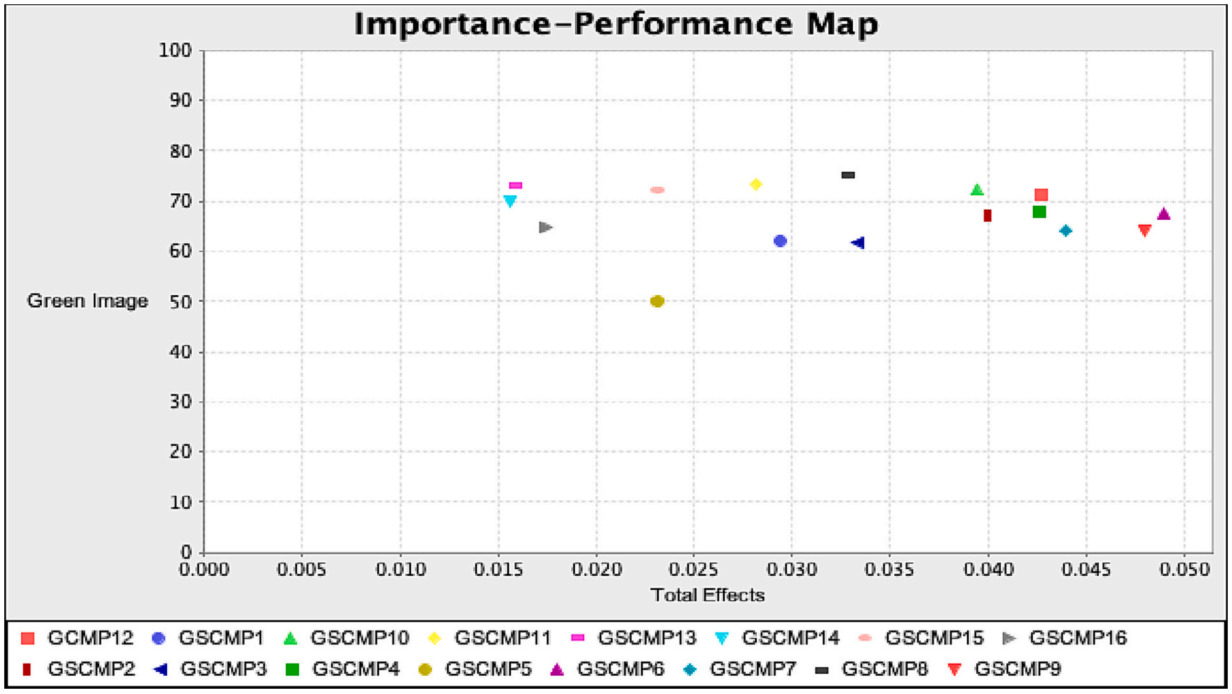

Fig. 5. IPMA v2. indicators level.

positive impact on the achievement of a green image, but also helps to identify which of these practices are of the utmost importance and should therefore be prioritized.

The IPMA analysis has shown that of all the GSCMP reviewed, seven are the determinants of GI, five involve suppliers and only two involve customers. Therefore, it follows that GSCMP with suppliers should be given higher priority (Wouters et al., 2009). This contrasts with the results put forward by Green et al. (2012), who failed to find support for the green purchasing-environmental performance link, while they found a strong positive relationship between cooperation with customers and environmental performance.

5. Conclusions, implications and limitations

Companies that manage the supply chain according to environmental standards may improve their GI. However, the connection between GSCMP and GI has received scant academic attention. Previous research studies have examined the link between supplier selection and corporate reputation (Quintana-García et al., 2021), concentrating solely on suppliers but ignoring other fundamental actors within the supply chain. In contrast, our study expands this framework through a more holistic model that comprises a more complete set of GSCMP, including customers and other partners along the supply chain. In sum, our study delved into how NO, RL, GSCMP, and GI interact with one another. Our work adds to and extends earlier research on the causes and effects of green supply chain management (Micheli et al., 2020; Alghababsheh et al., 2022).

5.1. Theoretical implications

In several ways, our paper attempts to contribute to theoretical research on the firm value of green image. First, our model corresponds with the stream that examines how NO, capabilities such as RL, and other mediating elements, in this case GSCMP, interact for firm value creation via GI. Our paper, hence, advances the resource-based view of the firm (RBV) and the dynamic capabilities theories (Barney, 1991; Teece et al., 1997; Pavlou and El Sawi, 2011) while shedding light on the connections between cultural orientation (NO), organizational capabilities (RL and GSCMP), and green image (GI) in the context of the automotive industry. We propose that the interaction between cultural orientations and capabilities (NO, RL, and GSCMP) in supply chain organizations causes higher-order capability development processes resulting in superior GI.

Second, this study demonstrates that GSCMP behave in a manner comparable to a lower-order capability that mediates the interaction between some factors, such as NO and RL capability towards GI. To maximize the firm's RL and NO and improve a crucial strategic resource like GI, the role of GSCMP as a mediator is crucial.

The third theoretical implication, and perhaps the most relevant one, is the validation of the existence of a sequential mediation model (Kashyap and Rangnekar, 2016; Reb et al., 2019). By virtue of this model, it follows that NO is a necessary but not sufficient condition to achieve an adequate implementation of the GSCMP and a better GI. To achieve both objectives, it is also of vital importance for the company to promote relational learning mechanisms with the various actors along its supply chain, from which it can obtain the necessary knowledge to develop the most appropriate GSCMP to improve its GI.

5.2. Practical implications

From the perspective of the practitioners, this study shows that RL is a crucial component for meeting both GSCMP and GI objectives. This point of view contends that managers ought to work to develop a robust RL culture. This kind of environment expedites the pursuit of new knowledge and customer understanding, resulting in a learning scheme that strengthens knowledge acquisition from stakeholders with the goal of improving environmental practices. As a source of intelligence and fresh ideas, this RL culture considers the degree of interorganizational knowledge (external knowledge of stakeholders).

Our results also reveal the importance of GSCMP with customers and suppliers for GI attainment. Implications for managers are clear, if they aim to boost GI, they ought to foster the following practices in this order: adopting a just-in-time logistics system; requiring suppliers to use degradable and non-hazardous packaging; selecting suppliers using energy and pollution reduction criteria; cooperating with customers for green packaging; selecting suppliers with ISO14000 certification;

cooperating with suppliers for energy and pollution reduction objectives; and cooperating with customers for eco-design. This brings out a really interesting contribution to the extent that it provides information regarding which practices are of the utmost importance and should therefore be prioritized.

5.3. Limitations and future lines of research

The study has several limitations. First, we provided a glimpse of an ongoing process. As a result, we were unable to investigate intricacies inherent to such a process over time. A longitudinal study that collects data over time and enables us to confirm the relationships outlined in the theoretical model should be a component of future research. Second, despite being as well defined as possible, drawn from pertinent literature, and validated by experts, the constructs are merely stand-ins for underlying, immeasurable latent phenomena. The incorporation of additional items in forthcoming research may aid in capturing the depth of the composites covered in the current study. Finally, future research should examine these empirical outcomes in distinct contexts. In this vein, conducting a cross-national and cross-industry study may be necessary to examine the relationships between the constructs under assessment. We are aware that different cultures adopt different attitudes towards learning and sustainability, so national culture may have a big impact on the findings of the analysis done in this study.

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CRediT authorship contribution statement

All the authors contributed equally to the design and implementation of the research, to the analysis of the results and to the writing and revision of the manuscript.

Data availability

The data that has been used is confidential.

Appendix A. Survey items

Network Orientation

My company encourages, promotes and makes great efforts to exchange information flows that keep it closely connected with…

- Government agencies, industry policy committee, University professors/scientist
- Bankers, financial institution members, shareholders
- Key customer(s) in international/local market
- Key supplier(s) in international/local market
- Individual(s) on board of directors of other firms or key competitors

Relationship Learning (Information Sharing)

In my company…

- We exchange information on successful and unsuccessful experiences with products exchanged in the relationship with partners and suppliers
- We exchange information related to changes in end-user needs, preferences, and behavior
- We exchange information related to changes in market structure, such as mergers, acquisitions, or partnering
- We exchange information related to changes in the technology of the focal products
- We exchange information as soon as any unexpected problems arise
- We exchange information related to changes in the organization's strategies and policies
- We exchange information that is sensitive, such as financial performance and know-how

Relationship Learning (Joint sensemaking)

In my company…

- It is common to establish joint teams to solve operational problems in the relationships with partners, suppliers and customers
- It is common to establish joint teams to analyze and discuss strategic issues in the relationship with partners, suppliers and customers
- The atmosphere in the relationship with partners, suppliers and customers stimulates productive discussion that encompasses a variety of opinions
- We have a lot of face-to-face communication in this relationship

Relationship Learning (Knowledge integration)

In my company…

- We frequently adjust our common understanding of end-user needs and behavior
- We frequently adjust our common understanding of trends in technology related to our business
- We frequently evaluate and, if needed, adjust our routines in order-delivery processes
- We frequently evaluate and, if needed, update the formal contracts in our relationship
- We frequently meet face-to-face to refresh the personal network in this relationship
- We frequently evaluate and, if needed, update information about the relationship stored in our electronic databases

Green Supply Chain Management Practices

- Providing design specification to suppliers that include energy and pollution reduction requirements for purchased items
- Cooperation with suppliers for energy and pollution reduction objectives
- Environmental audit for suppliers' internal management
- Suppliers' ISO14000 certification
- Second-tier supplier energy and pollution reduction practice evaluation
- Adopting just-in-time logistics system
- Suppliers are selected using energy and pollution reduction criteria
- Cooperating with suppliers to reduce packaging
- Require suppliers to use environmental packaging (degradable and non-hazardous)
- Cooperation with customers for eco-design
- Cooperation with customers for cleaner production
- Cooperation with customers for green packaging
- Cooperation with customers for using less energy during product transportation
- Adopting third-party logistics
- Cooperation with customers for product takes back
- Cooperation with customers for reverse logistics relationships
- Investment recovery (sale) of excess inventories/materials
- Sale of scrap and used materials
- Sale of excess capital equipment
- Collecting and recycling end-of-life products and materials
- Establishing a recycling system for used and defective products

Green Image

- The company is regarded as the best benchmark of environmental management

- The company is professional about environmental management
- The company is successful about environmental management
- The company is well-established about environmental management
- The reputation of the company about environmental management is stable
- The company is trustworthy about environmental management
- The company is dependable about environmental management
- The company concerns for customers about environmental management

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