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The effects of internal driver, external pressure and green entrepreneurial orientation (GEO) on green supply chain management (GSCM) performance through GSCM practice in wood processing companies in Lumajang district

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A B S T R A C T

This study examines the correlation between internal drivers, external pressures, Green Entrepreneurial Orientation (GEO). In the context of wood processing companies in Lumajang, this study examines how green supply chain management (GSCM) practices and performance interact. The study relies on theoretical underpinnings grounded in both institutional theory and the Natural Resource-Based View (NRBV) theory to thoroughly explore and comprehend these complex interconnections. Data was collected from a sample of 98 wood processing companies registered as Primary Timber Forest Product Industries (IPHHK) in the Lumajang District Forestry Office up to 2020, using a saturated sampling technique over three months from January to March 2022. This study's data analysis was carried out using structural equation modeling (SEM), which uses the partial least squares (PLS) methodology. The results of the analysis indicate that internal drivers do not exert a significant influence on Green Supply Chain Management (GSCM) performance. In contrast, external pressure and Green Entrepreneurial Orientation (GEO) have a notable and statistically significant impact on GSCM performance. Furthermore, GSCM practices play a crucial mediating role, fully mediating the correlation between internal drivers and GSCM performance and partially mediating the correlation between external pressure, GEO, and GSCM performance. This research holds practical implications for managers, supply chain specialists, and Lumajang wood processing industry policymakers. It clarifies the significance of particular drivers in putting GSCM practices into practice and reaching improved performance levels. Future research should consider expanding the sample size, extending the scope of the survey, exploring additional research avenues, and implementing longitudinal designs to investigate green supply chain integration and firm behavior over time.

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1. Introduction

One of the government's main concerns in economic development today is overcoming the trade-off between efforts to fulfill development and maintain environmental sustainability (Fauzi, 2004; Ansari & Qureshi, 2015). These efforts have been established through policies related to green industry, which are contained in Law No. 3 of 2014 article 30 concerning industry, which mandates that industrial firms efficiently and sustainably manage natural resources while being environmentally conscious, as well as article 79 and article 80 which specifically states that industrial companies are required to meet the provisions of green industry standards (green industry). The processing industry sector is recognized as one of the prominent segments within the broader industrial sector. Data from the Ministry of Industry (2020) notes that In 2019, the manufacturing sector in Indonesia emerged as the primary driver of economic growth, making a substantial contribution of 0.80% to the overall economic expansion of 5.02%. The wood industry experienced contraction, especially in the non-oil and gas

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processing industry. However, although the wood processing industry is a key factor in increasing state revenue from the forestry sector and supporting the economy, the growth of the wood processing industry in Indonesia has decreased in the last five years, especially in 2019. Industry Research data processed by the Director General of Customs, BPS, and the wood processing industry's growth is exhibiting a noticeable and consistent decline. According to statistical findings from the Bureau of Industry (BI), there was a subsequent and noteworthy diminishment observed in the export valuation of processed timber commodities during the year 2019.

Meanwhile, the import value of processed wood products shows the opposite trend, which has experienced a constant increase over the past five years (2015 - 2019). This situation demonstrates that the performance of sustainable or environmentally friendly practices in the wood processing industry has not yet reached its full potential. The most prominent general problem in the wood processing industry is the large gap between the need and availability of wood raw materials (Purwanto, 2007). Moreover, the increasing number of timber companies will potentially increase the risk of environmental damage if production management is not carried out by paying attention to aspects of sustainability. For this reason, a supply chain management strategy is needed to improve company performance and competitive advantage (Anatan and Ellitan, 2014). Most companies may have implemented the concept of the green industry in their company but do not know the limits or characteristics and understanding of the green industry as a whole. Therefore, in the development of green business, environmental friendliness is expected to encourage companies to operate more ethically and socially responsible (Diabat and Govindan, 2011 Verma et al., 2018; Gast et al., 2017). Implementing Green Supply Chain Management (GSCM) signifies an organizational commitment to embracing green business and supply chain management strategies. This commitment extends beyond mere compliance with government regulations related to environmentally friendly practices within the industry, as highlighted by Chien and Shih (2007). Instead, GSCM reflects an organization's responsiveness to societal demands and its aspiration to establish effective supply chains that prioritize environmental preservation and minimize adverse environmental impacts, aligning with the principles put forth by Porter and Kramer (2006). Consequently, GSCM is regarded as a holistic strategy that integrates the tenets of sustainable development across all facets of supply chain operations, spanning both upstream and downstream activities, as articulated by Sarkis in 2012. The primary objectives of this approach are to promote sustainable economic development and advance environmental protection, in alignment with the perspectives emphasized by de Brito et al. in 2008.

Conversely, the adoption of GSCM is anticipated to enhance business performance, subsequently leading to increased organizational profitability, this perspective is consistent with the findings of the studies mentioned in Foo et al. (2019) and Yildiz et al. (2019). This performance improvement encompasses both financial and non-financial aspects, as outlined by Seuring and Mueller (2008). Evaluating the performance of GSCM practices serves the purpose of maintaining a balance in the GSCM process and identifying areas that require enhancement, drawing on the insights of Bond (1999) as cited in Mishra et al. (2017). According to Olugu and Wong (2009), evaluating the effectiveness of green supply chain methods enables businesses to decide for themselves whether or not to continue or modify their current policies. The evaluation process is a considerable difficulty for supply chain managers, especially when it comes to quantifying the outcomes of supply chain activities, with a prominent focus on sustainability, as emphasized by Habib et al. (2018) and Jiang et al. (2018). (2020). This diversity in performance outcomes can introduce complexity into the implementation of GSCM, given the difficulty in comprehensively recognizing and assessing the various dimensions of performance as a cohesive whole, as observed by Tsai and Hung (2009). Therefore, measuring Green Supply Chain Management (GSCM) performance serves multiple purposes. It goes beyond external reporting and extends to internal control, enabling more effective business management. Additionally, it facilitates internal analysis, providing organizations with a deeper understanding of their operations for the sake of continuous improvement. Additionally, it plays a pivotal role in system planning, design, implementation, and monitoring, aligning with the perspectives of Hervani et al. (2005) and Bjorklund et al. (2012). In summary, the evaluation of Green Supply Chain Management (GSCM) performance has conventionally leaned on tangible measures that span environmental, operational, and economic dimensions. These measurement methodologies have been shaped by the scholarly contributions of researchers such as Zhu et al. (2005), Green Jr et al. (2012), Hong et al., (2009), De Giovanni and Vinzi (2012).

The predominant focus in GSCM research has revolved around the identification of factors that trigger, incentivize, or drive the adoption of GSCM initiatives, as exemplified in the studies conducted by Diabat and Govindan (2011) and Govindan et al. (2014). These studies delve into the examination of how these drivers and motivations exert a substantial influence on the comprehensive sustainability performance of organizations, as exemplified in the research conducted by Green Jr et al. (2012), Lee et al. (2012), Haldar (2018) and Zhu et al. (2012). In this case, the performance of GSCM is determined by the factors that motivate GSCM practices. Referring to institutional theory, Sarkis et al. (2011) identified the factors that motivate GSCM practices as drivers and pressure factors, sourced from internal and external company parties. Drivers generally refer to internal actions that lead companies to adopt GSCM practices. In contrast, pressure factors usually refer to external factors that force companies to instate Green Supply Chain Management (GSCM) practices independently and sustainably (Zhu and Sarkis, 2004). Drivers encompass both internal pressures originating within the organization and external pressures stemming from factors outside the organization. These forces significantly influence the internal activities of the organization, as highlighted by Alzawawi (2014). Testa and Iraldo (2010) explain that internal factors are more associated with business strategic processes, while external factors are mostly associated with stakeholder pressures. Thus, driver factors are more associated with proactive implementation of GSCM. On the contrary, pressure factors are often associated with a reactive approach to Green Supply Chain Management (GSCM), as substantiated in the research conducted by Micheli et al. (2020). This suggests

that companies primarily adopt GSCM practices due to internal motivations and incentives. However, when internal adoption presents challenges, motivation or pressure may arise from external environmental factors, as explained by Bowen et al. (2001). The driver aspect of GSCM implementation can differ for each company, the implementation of GSCM is often tailored to align with the unique characteristics of both the supply chain and the organization itself., as highlighted by Zhu et al. (2007). In particular, Walker et al. (2008) underscored that among internal drivers, organizational factors assume a crucial role. These encompass the personal commitment of leaders, management, and investors, along with endeavors to cut costs through waste and pollution reduction. In line with this opinion, Huang et al. (2012, 2015) also emphasized several internal drivers of successful GSCM practices, including personal commitment, aspirations to build a positive environmentally friendly image, and the desire to reduce costs and save energy. In contrast, pressure factors are believed to trigger the good and sustainable implementation of GSCM. Hence, It is essential to acknowledge that the impacts of supply chain management (SCM) pressures on economic and environmental performance vary depending on their source, as discussed by Zhu et al. (2007). External pressures have exerted significant influence on organizations, compelling them to integrate social and environmental practices into their day-to-day supply chain activities. Today, many organizations view external pressure as a necessity to guarantee the environmental sustainability of all their products and services, as underscored by Alzawawi (2014).

In addition to internal drivers and external pressure in GSCM practices, the company's sustainability initiatives also determine other determinants of GSCM performance. The embrace of a Green Entrepreneurial Orientation (GEO) strategy emerges as an exceedingly efficacious method for enacting Green Supply Chain Management (GSCM) practices, ultimately resulting in improved sustainability performance. This perspective is strongly emphasized by Habib et al. (2020). GEO enables organizations to identify business opportunities while also factoring in environmental considerations, as highlighted by Jiang et al. (2018). Furthermore, it has been shown to contribute to improved organizational performance, as supported by the research of Fatoki (2019), Hajikhani et al. (2012) and Habib et al. (2020). In alignment with the Natural Resource-Based View (NRBV) theory, originally conceived by Hart (1995), challenges serve as catalysts for companies to create and execute environmentally conscious business strategies that are grounded in entrepreneurial and innovative orientations. This perspective is corroborated by the findings in the study conducted by Habib et al. (2020) and Guo et al. (2020). These strategies facilitate the inception of ideas, methodologies, and products that play a pivotal role in supporting environmental initiatives, as also noted by Correa et al. (2008). The NRBV theory by Hart (1995) additionally suggests that a firm's competitive edge is closely tied to its relationship with the natural environment. Within this context, GEO emerges as an organizational strategic orientation that takes environmental considerations into account. According to the dynamic capability view, this can be regarded as an intangible capability critical for effectively responding to and implementing strategic practices like GSCM, ultimately leading to improved firm performance, as discussed by Altinay et al. (2016).

Studies associated with the influence of internal drivers, external pressure, and GEO, both on GSCM practice and GSCM performance, conducted on the object of timber companies in Indonesia are still quite limited. In addition, empirical findings for different objects in previous studies show inconsistent (conflicting) results, Indeed, the implementation of Green Entrepreneurial Orientation (GEO) can present a formidable challenge for organizations seeking to adopt Green Supply Chain Management (GSCM) practices. This challenge arises from the apparent inconsistency observed in previous studies, and it can be attributed to three primary factors: 1) Heterogeneity in GSCM Practices: The specific GSCM practices chosen and implemented within individual organizations exert varying influences on performance outcomes, as evidenced by Azevedo et al. (2011). This variation implies that the nature and scope of GSCM practices play a crucial role in shaping their impact on organizational performance, 2) Diversity in Performance Metrics: The utilization of diverse performance measurement metrics across different studies contributes to a nuanced and intricate relationship between GSCM practices and their resultant outcomes, in accordance with Zhu et al. (2012). This variance in performance metrics introduces complexity into the assessment of the effects of GSCM practices on performance,3) Classification of Determinants: The classification and categorization of determinants or influential factors in the context of GSCM implementation exhibit inconsistency among studies. For instance, Xu et al. (2013), Lee et al. (2013), and Mathiyazhagan et al. (2013, 2014) collectively classify both internal and external dimensions as "pressure factors" in GSCM implementation. Conversely, Singh and Kumar (2012), Rahman et al. (2014), and Dhull and Narwal (2016) categorize these factors as "driver factors" in GSCM implementation. On a contrasting note, Zhu and Sarkis (2006) and Zhu et al. (2007) employ the dual terminology of "driver/pressure" when categorizing internal and external factors in the context of GSCM. In contrast, Wu et al. (2012), Liu et al. (2011, 2012), Esfahbodi et al. (2016), Susanty et al. (2018), and Balon (2019) establish a clear distinction by classifying these factors into two distinct dimensions: “internal drivers” for internal GSCM factors and "external pressure" for external GSCM factors.This diversification in the categorization of influential factors underscores the multifaceted nature of GSCM implementation and its complex relationship with performance outcome.

Previous empirical results imply some important linkages among GSCM drivers and/or pressure concepts, GSCM practice, and GSCM performance. However, the understanding of the concept of GSCM still shows that there is potential room for more intense study in this area. By integrating the previous concepts into one research framework, it is expected that this research can provide more comprehensive findings. Thus, referring to theoretical and empirical phenomena, as well as considering the problems that exist in the field, the focus of this research is mainly directed at developing theories/concepts and conceptual models built. This research explains how the company's green supply chain performance (GSCM) is viewed from several underlying theoretical perspectives, namely institutional theory and NRBV theory. Determinants of GSCM

performance in the context of institutional theory can be attributed to various factors that encourage or drive companies, both from the normative and cognitive facets of the institutional milieu and coercive pressure. In the context of NRBV theory, GSCM performance is more associated with the company's important role in developing green entrepreneurship typology, so it is expected in pursuit of attain a competitive advantage and corporate sustainability based on resource allocation and natural environmental conditions. Furthermore, the conceptual framework employed in this study is an evolved model developed based on prior research. especially those conducted by Esfahbodi et al. (2016) and Habib et al. (2020), which were then integrated with several other studies, such as Vanalle et al. (2017); Yu et al. (2009, 2016, 2017); Al-Ma'aitah (2018); Jiang et al. (2018), Susanty et al. (2018); and Fatoki (2019). Based on this, the novelty of this research can be seen as an integrative research model. Most previous study contexts only focused on the relationship or direct influence between internal drivers, external pressure, GEO, GSCM practice, and GSCM performance variables. This study places its primary focus on examining the entirety of the relationships among variables, encompassing both direct and indirect influences. The emphasis on the role of GSCM practice can be seen in its position as a mediating variable for the influence of internal drivers, external pressure, and GEO on GSCM performance. In addition, this study also uses the GEO variable as a determinant of GSCM practice, which is still rarely used in previous studies.

Specifically, the wood processing company in Lumajang District, East Java was chosen as the object and location of the research with the consideration that the empirical dynamics of the phenomena and problems of the wood processing industry are quite frequent. The main issues that have emerged are related to environmental and regulatory issues (overexploitation, unlicensed exploration, inadequate waste management, etc.). It is quite interesting for researchers to explore this phenomenon within the research framework on green management practices in supply chain management and its performance in the wood processing industry. The outcomes of this study are anticipated to offer valuable insights for managers seeking to cultivate competencies in green supply chain management. Moreover, they can offer a preliminary understanding of certain empirical matters, serving as a starting point for further validation, substantiation, and concrete findings through the execution of this research. In summary, the core aim of this study is to thoroughly investigate the causal relationships among internal drivers, external pressure, Green Entrepreneurial Orientation (GEO), Green Supply Chain Management (GSCM) practices, and GSCM performance, with a particular emphasis on wood processing companies located in Lumajang.

2. Material and methods

2.1. Samples and Data Collection

This study focuses on the wood processing industry, one of the industries with a high environmental impact, starting from the logging process, the wood processing process, to the post-production wood waste disposal process. Using explanatory research, the study was conducted on wood processing companies operating in Lumajang district, from January to March 2022. Lumajang district was chosen as the research location because it is one of the regions with the largest number of timber companies, and is the center of timber processing companies in East Java, Indonesia. The area has also been the site of community sengon forest development through the National Forest Rehabilitation Movement (Gerhan).

2.2. Sampling and Target Population

The study concentrates on the wood processing industry, characterized by its significant environmental impact, spanning from the logging phase through wood processing to post-production wood waste management. Data collection took place between January and March 2022, with a specific focus on wood processing companies situated in Lumajang district, East Java, Indonesia. Lumajang district was selected due to its high concentration of timber companies and its prominence as a hub for timber processing in East Java. Moreover, it has witnessed community Sengon forest development through the National Forest Rehabilitation Movement (Gerhan).

2.3. Data Collection Procedure

Data collection primarily relied on survey questionnaires distributed to selected respondents. Given the multifaceted nature of Green Supply Chain Management (GSCM) activities, operational managers were chosen as the most suitable respondents due to their in-depth understanding and direct involvement in GSCM practices within their respective companies. Questionnaires were distributed directly to operational managers in the wood processing companies. The distribution and collection of questionnaires were conducted by the researchers themselves, considering the geographical proximity and accessibility of the research area. This approach helped save time and resources, facilitating a more robust data collection process. A total of 108 respondents completed and returned the questionnaires, resulting in an impressive response rate of 90%. Out of the 108 questionnaires, 10 were not filled out entirely by the respondents. Consequently, 98 fully completed questionnaires were available for subsequent data analysis, which was carried out using Structural Equation Modeling (SEM) - Partial Least Square (PLS) model (Kohli & Hawkins, 2015).

2.4. Research Instruments for Independent Variables

The independent variables, specifically Internal Drivers (ID), External Pressure (EP), and Green Entrepreneurial Orientation (GEO), were assessed using validated instruments and statement items. The specific indicators and statement items for each

variable were adapted from existing research studies. Table 1 below provides detailed information on these research instruments.

Table 1
Research Instruments for Independent Variables

Variables	**Indicators**	**Statement Items**
Variables	Internal Driver (ID_1) Organizational Support	Company environmental vision.
		Senior management support for green strategy.
		Middle management support for green strategy.
		Employees' support in implementing GSCM practices.
		The company has allocated dedicated human resources for implementing GSCM practices.
	Technology (ID_2)	The company's human resource competencies are sufficient to implement new technologies or new processes related to GSCM practices.
		The company has the technical expertise to assist with implementing new technologies or new processes related to GSCM practices.
		The existing production process practices exhibit a high degree of flexibility in transitioning to new systems
		Companies can use many new technologies related to reuse/recycling of used products in the wood processing industry.
	Knowledge (ID_3)	Awareness of adopting reverse logistics.
		Belief in environmental benefits.
		Accessibility of Environmental Opportunities
		Presence of Environmental Proficiency Among Supply Chain Participants
		Accessibility of Environmental Knowledge
		Simplicity in Accessing Information Regarding Potential Environmental Enhancements
		Openness to Transitioning to Novel Systems
	Financial/Economic (ID4) Regulatory Pressure (EP1) Market Pressure (EP2)	The collection of used products does not impose significant financial burdens on the company.
		Bank loans are readily available to facilitate the promotion of environmentally friendly products and processes.
		No additional costs for additional human resources in implementing GSCM practices.
		Low hazardous waste disposal costs.
		Lower costs for transitioning to new production systems related to the reuse/recycling of used products.
Variables	Supplier Pressure (EP3)	Governmental environmental regulations at the central level.
		Environmental regulations at the local level.
		Environmental Regulations in Exporting Countries
		Possible Product-Environmental Regulation Conflicts
	Financial/Economic (ID4) Regulatory Pressure (EP1)	Potential for exporting green products.
		Sales to foreign customers.
		Customer awareness of the environment.
		Demand to build a "green" company image.
	Market Pressure (EP2) Supplier Pressure (EP3)	Supply chain integration.
		Supplier Progress in Developing Eco-Friendly Products
		Environmental Collaborations and Certifications with Suppliers
		Ensuring Supplier Long-Term Sustainability
	Competition Pressure (EP4)	Gaining a Competitive Edge through Green Strategies
		Rival Companies' Green Strategies
		Activities of environmental protection professional groups.
Variables	**Indicators**	**Statement Items**
Variables	Green Innovativeness (GEO_1)	There is a pronounced focus on eco-friendly practices, including research and development (R&D), technological leadership, and innovation.
		Introducing multiple lines of environmentally friendly products.
		Dramatic changes in environmentally friendly products or service lines.
	Proactiveness (GEO_2)	Proactive attitude to capture potential green opportunities.
		Taking the initiative in environmental actions responded to by competitors.
		Pioneering the introduction of environmentally friendly products and technologies.
		Tending to be at the forefront of introducing green ideas or products.
	Risk-Taking (GEO_3)	A pronounced preference for high-risk projects with substantial return potential.
		Bold ecological decision-making actions.
		Bold and aggressive attitude to maximize potential green opportunity exploitation.

2.5. Operationalization of the Variables

2.5.1. Independent Variables

The independent variables in this study consist of Internal Drivers (ID) and External Pressure (EP), both of which play key roles in motivating wood processing companies in Lumajang Regency to implement GSCM practices. The measurements for these variables are based on established indicators and statement items drawn from prior research.

2.5.2. Dependent and Intervening Variables

2.5.2.1. Green Entrepreneurial Orientation (GEO): This variable evaluates the inclination of timber companies in Lumajang Regency towards recognizing opportunities that can yield economic and ecological benefits through the adoption of environmentally friendly products and services. The measurements for GEO were adapted from instruments and statement items found in previous studies.

2.5.2.2. Green Supply Chain Management Practice (GPC): GPC represents the proactive efforts undertaken by wood processing companies to integrate environmental considerations into their supply chain operations. This includes various stages such as Procurement, Manufacturing, Packaging, Logistics, Marketing, and Reverse Logistics. Measurement criteria for GPC were adapted from existing research instruments and statement items.

2.5.2.3. Green Supply Chain Management Performance (GPR): GPR involves the systematic assessment of supply chain performance achieved by wood processing companies in Lumajang Regency, encompassing environmental, economic/financial, and operational dimensions. The measurement criteria for GPR were derived from established instruments and statement items in the literature.

Detailed descriptions of the statement items for each variable are presented in Table 2.

Table 2
Research Instruments for Intervening and Dependent Variables

Variables	Indicators	Statement Items
GSCM Practice (GPC)	Internal Environmental Management (GPC_1)	GSCM commitment from senior managers.
		Collaboration Across Functions for Environmental Enhancement
		Establishment of an Environmental Management System
		Adherence to Environmental Compliance and Audit Protocols
		Attainment of ISO 14000 Certification
	Green Purchasing (GPC_2)	Eco-labeling on products.
		Furnishing Suppliers with Design Specifications Incorporating Environmental Criteria for Procured Items
		Collaborative Initiatives with Suppliers for Environmental Objectives
		Environmental Auditing of Suppliers' Internal Management Practices
		Suppliers' Attainment of ISO 14000 Certification
	Cooperation with Customer (GPC_3)	Collaboration with Customers for Eco-Design Initiatives
		Collaboration with Customers for Cleaner Production Practices
		Collaboration with Customers for Environmentally Friendly Packaging Solutions
	Eco-Design (GPC_4)	Product Design Aimed at Minimizing Material and Energy Consumption
		Product Design to Facilitate Reuse, Recycling, and Material/Part Recovery
		Product Design Geared Toward Eliminating or Mitigating Hazardous Products and Manufacturing Processes
	Green Construction (GPC_5)	Implementation of Waste Recycling Facilities at the Project Site/Factory
		Minimized Usage of Hazardous Materials
		Comprehensive Waste Management Strategy for the Project Site/Plant
		Deployment of Fuel-Efficient Equipment/Machinery at the Project Site/Plant
	Investment Recovery (GPC_6)	Realizing Returns on Excess Inventory through Sales
		Selling of Scrap and Scrap Materials
		Disposing of Surplus Capital Equipment
GSCM Performance (GPR)	Performance Environment (GPR_1)	Curtailing Air Emissions
		Minimizing Water Waste
		Mitigating Solid Waste Generation
		Reducing Consumption of Hazardous/Toxic Materials
		Lowering the Frequency of Environmental Accidents
		Enhancing the Company's Environmental Profile
	Financial/Economic Performance (GPR_2)	Cutting Material Procurement Costs
		Reducing Energy Consumption Expenses
		Decreasing Costs Associated with Waste Treatment
		Trimming Waste Disposal Costs
		Mitigating Fines Due to Environmental Incidents
	Operational Performance (GPR_3)	Augmenting Timely Deliveries of Goods
		Streamlining Inventory Levels
		Accelerating Unloading Processes
		Enhancing Product Quality
		Expanding Product Line
		Optimizing Capacity Utilization

2.6. Measurement Scale

The study employs a Likert scale measurement approach, wherein respondents provide opinions based on their views and beliefs concerning a series of statements related to the research variables. The Likert scale categories used in this study are as follows:

2.6.1. Internal Driver (ID), External Pressure (EP), and Green Entrepreneurial Orientation (GEO): These variables are measured using a five-level Likert scale with the following categories: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

2.6.2. Green Supply Chain Management Practice (GPC): For evaluating the implementation of GSCM practices, a five-level scale is employed with distinct interpretations: 1 = not considered at all, 2 = plans to be considered, 3 = being considered, 4 = starting to be implemented, and 5 = fully implemented.

2.6.3. Green Supply Chain Management Performance (GPR): GPR indicators are measured using a Likert scale with categories: 1 = very bad, 2 = not good, 3 = less good, 4 = good, and 5 = very good.

3. Results and Discussions

3.1. General Results and Descriptive Statistics

The results of the research instrument test using SPSS software show that all statement items from each variable have met the validity criteria, with the overall correlation coefficient value above the critical value of 0.3. In addition, the Cronbach's Alpha value for each variable is also above the cut-off value of 0.60, namely for the internal driver variable (ID) of 0.863; the external pressure variable (EP) of 0.682; the green entrepreneurial orientation variable (GEO) of 0.758; the GSCM Practices variable (GPC) of 0.756 and the GSCM Performance variable (GPR) of 0.689. Thus, all variables observed and tested in the research model have met the reliability criteria. The results of testing the percentage and average of respondents' answers to the descriptive statistical test show the mean value of the internal driver variable of 3.727 which is in the strong enough category. This category is based on the range of average values on the four internal driver indicators studied, which range from 3.583 to 3.924. The external pressure variable also shows the same thing, with a mean value of 3.943, which is in the strong enough category. The mean values on the four external pressure indicators range from 3.847 to 4.003. It can be said that both internal drivers and external pressure on the implementation of GSCM are felt quite strongly by wood processing companies in Lumajang Regency. In contrast, the mean value of respondents' answers to the GEO variable shows a result of 4.007, which is in the strong category (with a range of mean values on the three GEO indicators from 3.918 to 4.167). This result indicates a strong green entrepreneurial orientation in implementing GSCM practices in the company. Furthermore, the mean values on the GSCM practices and GSCM performance variables show a fairly good category, with 3.832 and 3.949 respectively. The average values for the six dimensions of GSCM practices, including eco-design, green purchasing, cooperation with customers, green construction, investment recovery, and internal environmental management fall within the range of 3.738 to 4.024. While the range mean scores on the three GSCM performance indicators (environmental, financial/economic, and operational) ranged from 3.935 - 3.974. Thus, it can be said that the level of implementation of GSCM practices in wood processing companies in Lumajang Regency is perceived to be quite good, followed by a fairly good performance of GSCM practices.

3.2. Results of Structural Model

The research model was tested using path analysis formed on each relationship path in the research model built. Judging from the nature of the indicators that form latent variables, it is known that the indicators in this study are reflective. Referring to the measurement model analysis developed by Ghozali and Latan (2012), The assessment of the reflective indicators in the outer model involves evaluating convergent validity, discriminant validity, composite reliability, and Cronbach's alpha. The test results using Smart-PLS software show that all variable indicators observed in this study have met the requirements of convergent validity, with the overall outer loading value found to be above 0.60. In the Internal driver (ID) variable, the highest level of tendency is reflected by the knowledge indicator (ID3) with a factor weight coefficient of 0.886, while the lowest level of tendency is reflected by the technology indicator (ID2) with a factor weight coefficient of 0.829. External pressure (EP) variables show the highest level of tendency in the regulatory pressure indicator (EP1) with a factor weight coefficient of 0.8861, and the lowest level of tendency in the competitive pressure indicator (EP4) with a factor weight coefficient of 0.6057. The highest level of tendency in the GEO variable is reflected by the risk-taking indicator (GEO3), while the lowest level of tendency is reflected by the green innovativeness indicator (GEO1), with factor weight coefficients of 0.8789 and 0.695, respectively. The green purchasing indicator (GPC2) was found to have the highest level of tendency (0.9068) in the GSCM practice variable (GPC), while the investment recovery indicator (GPC6) reflected the lowest level of tendency (coefficient value = 0.6134). Then, in the three indicators of GSCM performance (GPR), operational performance (GPR3) has the highest factor weight coefficient (0.8374) and environmental performance (GPR1) has the lowest factor weight coefficient (0.7626). It can be said that GSCM performance is best reflected by operational performance resulting from GSCM activities. The results of discriminant validity testing in Table 2 show the √AVE value on all constructs of 0.8023 to 0.8574. While the correlation between latent variables is between 0.196 to 0.703. Overall, the √AVE value is greater than the average correlation between latent variables, and the AVE value of the construct is also above 0.50. Thus, all constructs for each sample category meet the validity requirements based on discriminant validity criteria. Furthermore, this study has also met the reliability requirements according to the composite reliability and Cronbach's alpha criteria, with each value above 0.70 (see Table 3).

Table 2
Discriminant Validity Test Results

Construct	AVE	√AVE	Internal Driver	External Pressure	GEO	GSCM Practice	GSCM Performance
Internal Driver	0.7351	0.8574	1.000				
External Pressure	0.5747	0.7581	0.331	1.000			
GEO	0.6470	0.8042	0.364	0.455	1.000		
GSCM Practice	0.5707	0.7555	0.444	0.532	0.540	1.000	
GSCM performance	0.6437	0.8023	0.274	0.196	0.703	0.600	1.000

Tabel 3
Test Results of Composite Reliability and Cronbach Alpha

Construct	Composite Reliability	Cronbach's Alpha	Result
Internal Driver	0.9173	0.8808	Reliable
External Pressure	0.8389	0.7556	Reliable
GEO	0.8449	0.7322	Reliable
GSCM Practice	0.8853	0.8428	Reliable
GSCM performance	0.8441	0.7320	Reliable

Furthermore, the assessment of the reflective indicators in the outer model, the structural model (or inner model) is evaluated to determine the model's accuracy and validity within the study. The =t results on the 1st equation model show the R-square value of GSCM practice of 0.4372 (moderate model category). It means that 43.72 percent of GSCM practice variation can be explained by internal drivers, external pressure, and green entrepreneurial orientation variations. In comparison, the remaining 56.28 percent is explained by variations in other variables not observed in the model or outside the three variables (internal drivers, external pressure, and green entrepreneurial orientation). On the other hand, testing the 2nd equation model shows a strong model category, with an R-square value of GSCM performance of 0.6307. This means that 63.07 percent of the variation in GSCM performance can be explained by variations in internal drivers, external pressure, green entrepreneurial orientation and GSCM Practice, but the remaining 36.93 percent can be explained by variations in other variables not observed in the model or outside the four variables.

The evaluation of the structural model in this study includes an assessment of its predictive relevance through the Q-Square Predictive Relevance (Q2), as outlined by Solimun (2010). Q2 is calculated using the formula Q2 = 1 - (1 - R12) (1 - R22), resulting in a value of 0.7921. This value suggests that the estimated model in this study demonstrates strong predictive relevance, approaching 1 and exceeding the threshold of 0.35. As a result, it falls within the category of robust model. Furthermore, an evaluation of the model's overall accuracy, known as the Goodness of Fit (GoF), is presented in Table 4, yielding a value of 0.5819 (computed from $\sqrt{}$ A.Com × A.R2). This GoF value indicates that the structural model employed in this study possesses excellent predictive properties (a large GoF), signifying a high capacity to elucidate empirical data, particularly in explaining the model's representation of the influence of internal drivers, external pressure, Green Entrepreneurial Orientation (GEO), and Green Supply Chain Management Practice (GPC) on Green Supply Chain Management Performance (GPR).

Table 4
Goodness of Fit Evaluation

Construct	**Communality (Com)**	**R Square (R^2)**
Internal Driver	0.7351	
External Pressure	0.5747	
GEO	0.6470	
GSCM Practice	0.5707	0.4372
GSCM performance	0.6437	0.6307
Average (A)	**0.6342**	**0.5339**

3.3. Results of Path Analysis

The results of the path analysis are provided in Table 5, and a visual representation is presented in Fig. 2. In the examination of the direct effect between internal drivers and Green Supply Chain Management (GSCM) performance among wood processing companies in Lumajang Regency, the analysis revealed that the relationship was statistically insignificant. This is evidenced by a t-statistic value of 0.753045, which falls below the critical threshold of 1.96, and a corresponding p-value of 0.4533249, exceeding the significance level of 0.05. Based on these findings, it can be concluded that Hypothesis 1a in this study neither supports nor rejects the notion that internal drivers have a significant influence on GSCM Performance. In other words, the study suggests that higher levels of internal drivers do not demonstrate the capability to enhance the GSCM performance of wood processing companies in Lumajang Regency. Furthermore, GSCM practice provided a perfect mediating role in the indirect effect of internal drivers on GSCM performance. The determination of the nature of this mediation refers to the criteria set by Hair et al. (2010), namely if the values of a (β1) and b (β7) are significant, but c (β4) is not significant, then it can be declared as perfect mediation. It can be seen in Table 5 that the path coefficient value on the direct effect between internal drivers on GSCM performance (β4) is -0.049 and is not significant. The path coefficient value on the indirect effect between internal drivers on GSCM practice (β1) and GSCM practice on GSCM performance (β7) is 0.226 and 0.453, respectively, and both are significant. Thus, hypothesis 1b is declared acceptable, meaning that internal drivers cannot influence GSCM performance directly without going through GSCM practice. The analysis of the direct effect of external pressure on Green Supply Chain Management (GSCM) performance yielded significant results, with a t-statistic value of 3.102027, surpassing the threshold of 1.96, and a corresponding p-value of 0.0025450, which is less than the significance level of 0.05. Therefore, Hypothesis 2a in this study is supported, indicating that external pressure has a statistically significant impact on GSCM Performance. However, it's noteworthy that the direction of this effect is negative,

as indicated by the beta coefficient (β5 = -0.309). This implies that higher levels of external pressure actually lead to a reduction in the GSCM performance of wood processing companies in Lumajang Regency.

Table 5. Path Analysis Results

Relationship Between Constructs	Path Coefficient	*t-Statistic*	*P-Value*	*Description*
Internal Driver ➔ GSCM Practice	0.225	3.412702	0.0009540	Significant
External Pressure ➔ GSCM Practice	0.314	3.998811	0.0001276	Significant
GEO ➔ GSCM Practice	0.316	4.683750	0.0000096	Significant
Internal Driver ➔ GSCM Performance	-0.049	0.753045	0.4533249	Not Significant
External Pressure ➔ GSCM Performance	-0.309	3.102027	0.0025450	Significant
GEO ➔ GSCM Performance	0.616	6.528336	0.0000000	Significant
GSCM Practice ➔ GSCM Performance	0.453	3.717951	0.0003431	Significant

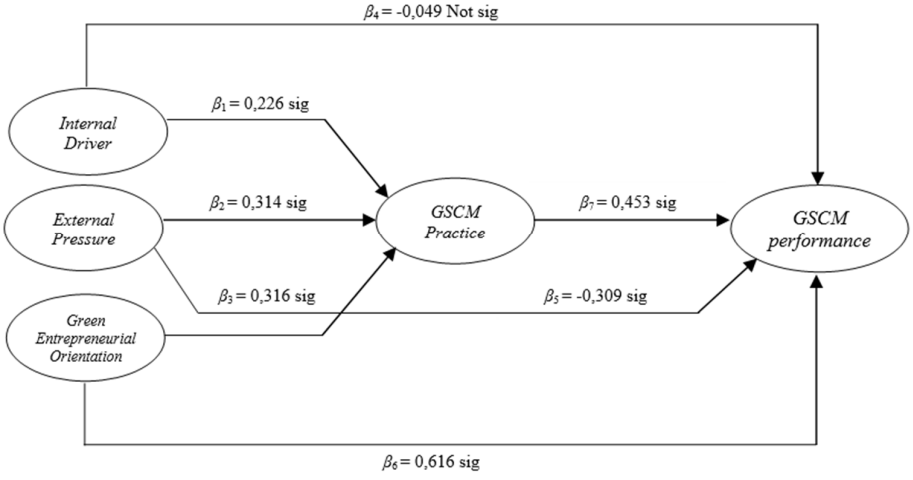

Fig. 2. Path Diagram of Research Results

A similar pattern is observed in the examination of the indirect effect, where GSCM practice partially mediates the correlation between external pressure and GSCM performance. The path coefficient values for the direct effect between external pressure and GSCM performance (β5 = -0.309) and the indirect effect between external pressure and GSCM practice (β2 = 0.314) and between GSCM practice and GSCM performance (β7 = 0.453) are all statistically significant. Consequently, Hypothesis 2b is deemed valid, signifying that external pressure can influence GSCM performance, either directly or through the intermediary effect of GSCM practice. However, it's crucial to recognize that higher external pressure is linked to a decrease in the GSCM performance of wood processing companies in Lumajang Regency. The effect of GEO on GSCM performance is also found to be significant and its effect is the largest when compared to other variables. From this, hypothesis 3a is declared acceptable, with a t-statistic value of 6.528336 (> 1.96) and a p-value of 0.0000000 (< 0.05). The beta coefficient (β6) of 0.616 indicates that the stronger green entrepreneurial orientation (GEO) improves the GSCM performance of wood processing companies in Lumajang Regency. In addition, GSCM practice can provide a partial mediating role on the indirect effect of GEO on GSCM performance, so hypothesis 3b is also declared acceptable. It can be seen that the coefficient value of the direct effect between GEO and GSCM performance (β6) is 0.616 and is significant (with p-value = 0.0000000). The path coefficient value on the indirect effect between GEO on GSCM practice (β3) and GSCM practice on GSCM performance (β7) is 0.316 and 0.453, respectively, and both are significant (with p-value = 0.0000096 and 0.0003431). Thus, GEO can influence GSCM performance directly without going through GSCM practice. Still, good GSCM implementation will further strengthen the impact of GEO on the achievement of the company's GSCM performance.

4. Discussions

4.1. Internal Driver, GSCM Practice, and GSCM Performance

The research findings show that the stronger the internal organizational (environmental) drive, the more it cannot directly improve the GSCM performance of wood processing companies in the Lumajang district. In other words, there is no linear influence between internal drivers and the GSCM performance of the wood processing companies. In addition, GSCM practice is known to mediate the influence of internal drivers on GSCM performance. It can be interpreted that GSCM practices assessed by wood processing companies in Lumajang Regency can encourage an increase in the impact of internal drivers on GSCM performance. Companies cannot feel the influence of internal drivers on GSCM performance without implementing GSCM practices.

Environmental management activities play a crucial role in enabling companies to mitigate adverse environmental impacts, such as reducing emissions and waste production. Simultaneously, companies are compelled to enhance their overall organizational performance. Among the factors driving the adoption of green supply chains, internal drivers pertain to managerial aspects associated with ethical values and the commitment of the top management team. Organizational drivers, on the other hand, are linked to the economic advantages of incorporating environmentally responsible practices into the supply chain. Many of the influential factors with substantial driving force and reliability are operational or tactical in nature. These factors have the potential to determine the degree to which Green Supply Chain Management (GSCM) practices can be effectively implemented within an organization. This insight guides managers in formulating proactive strategies that either support the implementation of effective GSCM practices or prepare the company for their successful adoption.

In the Resource-Based View Theory perspective, companies have long sought to pool internal resources through collaboration among different functional departments. Such resources are seen as potential sources for generating competitive advantage. However, due to the increasing pressure to meet the challenges of globalization, customer service, and competitive markets, companies began to realize the importance of focusing only on certain activities and maintaining them. It can be understood that environmental management has given impetus to wood processing companies in Lumajang Regency to improve and adapt in implementing green supply chain management practices that can provide added value to the company.

The results of this study do not align with previous research, such as Zhu and Sarkis (2007), which emphasized the significant connections between internal organizational factors and the enhancement of environmental performance. Additionally, the findings do not corroborate prior studies like Wu et al. (2012) and Ahmed et al. (2019, 2020), which underscored the pivotal relationship between internal drivers and Green Supply Chain Management (GSCM) Performance. In the context of this study, internal drivers allude to the factors that incentivize an organization to establish closer collaborations with its key suppliers and/or customers. The divergence in results could be attributed to various factors, including those that initiate supply chain integration and the organizational culture. In this study, organizational culture denotes the prevailing norms or values within the organization, which can either facilitate or hinder the implementation of supply chain integration practices.

In general, the findings of the research results can confirm the resource-based view, where the organization's internal resources can be a driver from within the organization about strengthening GSCM practices (Lee, 2008; Walker et al., 2008; Sarkis et al., 2011). In the context of this study, the findings show that the internal drive-in wood processing companies in Lumajang Regency is believed to increase the success of implementing Green Supply Chain Management (GSCM) practices, which is certainly supported by the availability of resources, both tangibles, intangibles, and in the form of organizational capabilities. The possession of adequate resources in green supply chain management will support the implementation of good GSCM practices (Diabat and Govindan, 2011) and subsequently improve the company's performance (Azevedo et al., 2011; Lee et al., 2013).

In the context of Green Supply Chain Management (GSCM) practices, previous research has proposed an internationalization or externalization framework. This framework suggests that organizations operating in imperfect and uncertain market conditions may opt to internalize certain markets. In this scenario, organizations utilize their internal resources to navigate these markets rather than relying solely on external partners. It's important to note that internalization and externalization are not mutually exclusive strategies; an organization can employ both approaches as needed. The emphasis on internal drivers in this context underscores the significance of a company's internal capabilities. These internal drivers play a crucial role in enabling organizations to establish more environmentally friendly supply chains. This consideration takes into account the dynamic capabilities of the organization, reflecting its ability to adapt and respond to changing circumstances and challenges in the pursuit of sustainable supply chain practices.

4.2. External Pressure, GSCM Practice, and GSCM Performance

The research findings show that external pressure is found to have an important meaning on GSCM Performance, but the findings reveal a negative nature. This suggests that the stronger the pressure from the organization's external environment, the more it can directly reduce wood processing companies' green supply chain performance in the Lumajang district. From the results of indirect testing, the research findings indicate a partial mediating role of GSCM practice on the influence of external pressure on GSCM performance. This illustrates that the impact of external pressure felt by timber companies in Lumajang district, which generally comes from stakeholders outside the organization, can influence GSCM performance without the involvement of GSCM practices implemented by the company. However, it is believed that implementing good GSCM practices will strengthen the impact of external pressure on the achievement of the company's GSCM performance.

Conceptually, institutional theory requires systematic analysis to better understand and promote a proactive environment in strengthening the implementation of GSCM practices in companies (Zhu et al., 2013). The pressure felt by wood processing companies in Lumajang Regency to pay more attention to environmental management in the production process is an impetus for organizations to improve and adapt to adjust to existing changes, especially those related to regulations. In the minds of the wood processing company representatives, regulatory pressure is the most important thing that reflects the pressure from the external environment. These companies understand that potential conflicts will arise with their products and regulations

related to environmental management. The findings of this study reveal that although external pressure is considered strong enough to encourage green supply chain practices, it can directly reduce the performance of the green supply chain of wood processing companies in Lumajang District.

Numerous studies have delved into the examination of strategic collaborative mechanisms and the supply chains within which they operate. The findings of this study align with prior research, such as the work of Jazairy and Haartman (2019), which elucidated how pressure or response dynamics help in comprehending the influence of specific company and market characteristics in moderating the level of pressure. Additionally, it underscores the role of managerial commitment in moderating environmental responsiveness. Furthermore, the results of this study support the insights presented by Zhu et al. (2013), who explored how GSCM practices strengthen institutional pressures, subsequently influencing organizational performance. This study's outcomes are in accordance with the views expressed by Adebanjo et al. (2016) and Rakhmawati et al. (2019), both of whom emphasized the significance of external factors within an organization that can impact the extent to which green supply chain management is implemented and influence its overall performance.

4.3. Green Entrepreneurial Orientation (GEO), GSCM Practice, and GSCM Performance

GEO was found to have an important effect on GSCM Performance. This suggests that the stronger the green entrepreneurial orientation, the stronger the green supply chain performance of the wood processing companies in the Lumajang district. There is a dominant influence of GEO on the GSCM performance of the wood processing companies. GEO was found to have the largest influence value compared to other GSCM performance determinants. Furthermore, from the mediation test results, it is known that GSCM practice partially mediates the influence of GEO on GSCM Performance. It can be interpreted that the GSCM practice assessed by wood processing companies in Lumajang Regency can encourage an increase in the effect of GEO on the achievement of the company's GSCM performance.

The implementation of Green Supply Chain Management (GSCM) within an organization is intricately linked to the recognition and execution of a green entrepreneurial orientation. As elucidated by Eltayeb et al. (2011), GSCM practices serve as a pivotal differentiating factor for organizations in the realm of environmental practices. Organizations that effectively adopt GSCM practices have the potential to achieve commendable economic, environmental, and social performance outcomes. From an institutional perspective, GSCM practices signify a positive legitimization of the company's commitment to seeking added value and maximal benefits, not only for its stakeholders but also for the organization itself. In accordance with theoretical frameworks, the findings of this study substantiate the idea that a company's green entrepreneurial orientation can enhance its competitive advantage through the adoption of GSCM practices. This, in turn, leads to an improvement in Green Supply Chain Management Performance (GSCM performance). In essence, this research supports the notion that aligning a company's entrepreneurial orientation with environmentally responsible practices can yield a competitive edge and superior GSCM performance.

The results of this study also confirm the findings of previous studies, such as Habib et al. (2020), which mention the importance of green entrepreneurial orientation related to how companies manage their green supply chains while striving to improve their green supply chain performance. In addition, the research findings also support the findings of Fatoki (2019) which revealed that GEO can be associated with company performance. Jiang et al. (2018) added that from the perspective of dynamic capabilities, companies that have a green entrepreneurial orientation are likely to be able to drive their company's performance.

Generally, a firm's GEO can capture market knowledge and support strategic decision-making to translate this comparative advantage into a competitive advantage through GSCM practices. The drivers for innovative, proactive and risk-taking strategies related to green supply chain practices as revealed by the research include elements that shape partner relationships in the supply chain and elements related to a firm's "internal" readiness to implement GSCM practices. The findings of this study indicate that GEO is considered to strongly drive the green supply chain performance of wood processing companies in Lumajang Regency, with the nature of the influence being dominant between the two relationships. From the resulting model, GEO can be considered an important determinant of GSCM Performance in wood processing companies in Lumajang District. The stronger the tendency of wood processing companies to increase green innovation, proactivity and more environmentally friendly risk-taking, the more this can improve the green supply chain performance of the company, especially as indicated by its operational performance (efficiency, increased capacity utilization, and timeliness in product processing). In addition, the impact of such performance improvement will also be increasingly felt by wood processing companies in Lumajang Regency when the companies can implement GSCM well.

5. Conclusions

This study aims to examine the effects of GSCM determinants (i.e. internal drivers, external pressure, and GEO) on GSCM performance, both directly and indirectly through the role of GSCM practice itself. The research findings showed that internal drivers did not significantly influence GSCM performance in the object of Wood Processing Companies in Lumajang Regency. In contrast, external pressure and GEO substantially influenced GSCM performance.

In the results of indirect testing, GSCM practice is found to provide a perfect mediating role on the influence of internal drivers on GSCM performance. This suggests that the impact of internal drivers cannot drive GSCM performance without implementing good GSCM practices. In contrast, GSCM practice can only partially mediate the indirect effect of external pressure and GEO on GSCM performance. This finding illustrates that although pressure from outside the organization and green entrepreneurship can directly affect GSCM performance, implementing good GSCM practices will further strengthen its impact, especially in wood processing companies in Lumajang Regency.

The findings of this study provide implications for the theoretical model built, especially in contributing to the development of institutional theory, by incorporating important elements of intrinsic and extrinsic motivation to promote the adoption of green practices in organizations. The findings also provide additional support for the relevance of NRBV theory to GSCM performance, especially in developing a typology of green entrepreneurship for corporate sustainability strategies. The final model formed from the analysis of this study can be a very useful tool in helping to identify important determinants of the GSCM performance of wood processing companies in Lumajang district. Practically, this study also provides significant managerial implications for the wood processing industry in Lumajang district, especially for managers and supply chain specialists, as well as for policy makers, who can be inspired by the role of certain drivers in the adoption of GSCM practices, and the level of performance that can be achieved from adopting GSCM. In perceiving green supply chain management practices, wood processing companies in Lumajang District show more internal environmental management than others. Strengthening internal organization such as technology and knowledge of green supply chain management is the basis for achieving a comprehensive integration of GSCM practices in wood processing companies in Lumajang district. This shows that companies that cannot manage their knowledge and environmental aspects well will find it difficult to improve the company's performance. Henceforth, policy makers can provide support to companies in helping them develop the ability to adopt green practices in their supply chain management, especially to lower-middle scale companies that are relatively financially flexible and limited in terms of ownership of innovative technologies and tend to rely on government assistance/support that enables them to pursue GSCM implementation.

Considering the pre-determined research design and methods, this study is not free from some limitations that may result in shortcomings appearing in the research. Therefore, future research should expand the sample size and scope of the survey by sketching additional research directions. First, additional insights can be gained from using a similar approach in other industry contexts, simultaneously testing all possible mediation and moderation hypotheses between drivers, pressure, practices, and performance of GSCM (instead of separating drivers/pressure-practices and practices-performance, as in this study and previous literature) with different environmental impacts of a single firm and supply chain. Second, as recent research has shown, additional moderator effects, such as the role of social control and environmental dynamism or supplier engagement, could prove interesting. More generally, future research could explore collaboration with supply chain partners, given that the link between the adoption of GSCM practices and performance would be misleading without considering a firm's specific position in the supply chain. In addition, there is a need to develop longitudinal designs to investigate green supply chain integration and analyze the behavior of companies or respondents over some time. Longitudinal studies will provide a more comprehensive understanding of how components of supply chain integration (such as material integration) can be developed and observe the impact of developing such material integration initiatives over time. It is essential to observe the changes that may occur in the level of green supply chain integration companies face before reaching a certain level of integration. Thus, this will be an interesting research area for future studies.

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