CEOs' Green Innovation Awareness in Manufacturing Companies: Enhancing Environmental Performance through Supply Chain Integration

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Abstract. This article primarily investigates the impact of CEOs' green innovation awareness on corporate environmental performance, introducing green supply chain integration as an intermediary variable and green innovation and green innovation protection as moderating variables. Drawing on 500 questionnaire responses collected from manufacturing companies, the study employs regression analysis and correlation analysis in SPSS, revealing a significant positive correlation between CEOs' green innovation awareness and corporate environmental performance. Green supply chain integration is divided into green supplier integration, green internal integration, and green customer integration, showing a significant mediating effect. Green innovation protection, as a moderating variable, has a notable effect, whereas the moderating impact of green innovation itself is less distinct. In summary, these results provide insights for the sustainable development of green supply chains in manufacturing enterprises. Companies need to enhance the green innovation awareness of their CEOs and the internal protection of green innovation rights. Additionally, attention to the integration of green supply chains is crucial for promoting sustainable corporate development.

Keywords: CEO's green innovation awareness; Sustainability; Supply chain integration

1 Introduction

With the continuous advancement of industrialised society and rapid economic development, manufacturing companies have posed a significant threat to the natural environment. The ongoing deterioration of the natural environment also presents a severe challenge to national economic development and the survival of businesses. The United Nations' "2030 Sustainable Development Agenda" report emphasises that governments should encourage the adoption of sustainable production methods and set sustainable development as a primary goal. Companies, in turn, need to fulfil their environmental responsibilities and establish corresponding environmental protection strategies. Fur-

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thermore, businesses must formulate appropriate environmental responsibility or performance strategies. Therefore, proactive decision-making becomes particularly crucial.

On the other hand, business operators are increasingly recognising the environmental issues facing contemporary society and the significance of green innovation in corporate operations. Green innovation thinking is becoming more widespread in various segments of the supply chain, including design, production, manufacturing, and post-management. Researchers have also yielded some research findings about the relationship between green innovation and environmental performance. Furthermore, some researchers have made progress in understanding the link between green business practices and green innovation. However, there is still a limited body of research on the relationship between business operators' awareness of green innovation, supply chain integration, corporate performance, and environmental performance.

When businesses aim to fulfil their environmental responsibilities, it is essential to integrate environmental issues and green innovation into their internal operations and interactions with stakeholders to ensure a rapid response to stakeholder demands. Simultaneously, in the trend of economic globalisation, the optimisation of environmental performance and corporate efficiency extends beyond individual companies to encompass the entire supply chain. Any environmentally harmful actions from either suppliers or customers have the potential to spread throughout the entire supply chain, leading to irreversible negative effects on businesses both upstream and downstream. Therefore, as businesses strive for sustainability, they must coordinate green responsibilities among all participants in the supply chain to establish a complete green supply chain.

The integration of a green supply chain enables efficient strategic collaboration between upstream and downstream enterprises. It not only promotes the formation of a green supply chain but also reduces production costs, enhances production efficiency, and improves overall corporate performance and environmental performance. Green internal integration, green supplier integration, and green customer integration all create abundant resources. Consequently, the integration of a green supply chain not only enhances corporate performance while protecting the environment but also increases a company's overall competitive advantage, facilitating sustainable development. Additionally, the incorporation of green practices within the supply chain enhances the synergy and collaborative efforts between an organisation's internal eco-innovative processes and its external associates. This strategic alliance is pivotal in fostering exemplary environmental standards and promoting sustainable development.

This study seeks to thoroughly explore the research gaps identified above by formulating an innovative model of supply chain integration. This model aims to reveal the relationship between a CEO's green innovation awareness and the environmental performance of the company. Furthermore, the study integrates aspects of green innovation and the protection of green intellectual property as key variables, providing a comprehensive evaluation of the model's effectiveness. The model examines the following sequential elements: CEO's awareness of green innovation, green supply chain integration (comprising green supplier integration, green internal integration, and green customer integration), and their combined influence on corporate performance and environmental performance.

2 Literature Review

Various academics have undertaken pertinent studies of this subject. Chen et al. (2023) proposed that the perspective and decisions of a CEO can significantly mitigate the negative impact of adverse analysis on a company's strategic decisions[3]. Moreover, the strategic choices made by the CEO are instrumental in bolstering a company's competitive edge and aggregate performance amidst market rivalry. Huang et al. (2019) found that a CEO's environmental consciousness positively impacts a company's technological innovation capabilities[7]. Furthermore, the CEO's environmental consciousness can bolster the company's capacity for green innovation, thereby elevating the rate of successful innovations. Simultaneously, the CEO's environmental awareness can stimulate the innovation potential of stakeholders, leading to an overall enhancement of green innovation throughout the entire supply chain. Arici and Uysal (2021) showed that leadership plays a pivotal role in driving green innovation within organisations. Faced with environmental challenges, corporate leaders are tasked with heightening awareness of green innovation and leveraging their leadership capabilities to advance both business growth and environmental preservation[1]. Moreover, Lin et al. (2017) found that business leaders can boost consumer brand loyalty by promoting environmentally conscious behaviours among their customers. Consumer brand loyalty plays a substantial role throughout the company's journey towards green initiatives and sustainable development[10].

Papadas et al. (2019) proposed that in the course of adopting a green market strategy within a company, stakeholders, including consumers and suppliers, will take into account the company's green and sustainable development initiatives, thus putting pressure on the organisation[13]. Business leaders must develop suitable green strategies to improve stakeholder satisfaction, ultimately leading to a mutually beneficial outcome. In order to foster the sustainable development of the supply chain, Wolf (2011) found that strategies can be deployed through supply chain integration. This integration encompasses three key components: external stakeholder integration (also known as external customer integration), internal supply chain integration, and external supplier integration. Syed argued that the performance of a company is closely related to its sustainable internal integration and sustainable external integration[17]. Huo et al. (2014) put forward that as companies place greater emphasis on enhancing their competitive edge, the correlation between supply chain integration and corporate performance becomes more pronounced[8]. Consequently, companies can adopt strategies for supply chain integration to bolster their corporate performance and contribute to environmental sustainability. Efficient supply chain integration within an organisation encompasses various facets, encompassing upstream supply chains, internal operations, and interactions with customers. Establishing strategic partnerships with suppliers also assumes a crucial role in the process of supply chain integration (Sundram et al., 2016). In an era marked by the rapid advancement of big data analytics, companies have the opportunity to leverage big data analysis methods to establish close connections among suppliers, internal operations, and customers[15]. Benzidia et al. (2021) found that this facilitates the sharing of information and collaborative development, ultimately contributing to enhanced supply chain integration. Against the backdrop of the growing

emphasis on green innovation and environmental preservation, big data analytics can also play a pivotal role in fostering the integration of environmentally friendly supply chains, both internally within the organisation and in collaboration with external partners[2].

Meixell and Luoma (2015) argued that the innovation culture within a company, the practical execution of a sustainable supply chain, and the attainment of sustainable development objectives are all subject to the influence of stakeholders, which subsequently affects the entire supply chain. Furthermore, businesses must take into account the differing environmental factors during the stages of exploring an innovation mindset and planning its implementation. This consideration is crucial for devising appropriate response strategies[12]. Huang et al. (2015) explained that the market position of a company has a profound influence on its long-term growth[6]. Therefore, it is imperative for businesses to bolster their competitive edge in the market. To secure a lasting competitive advantage, a company must consistently refine its competitive strategies, including a focus on sustainability and green innovation, among other approaches. Roh et al. (2022) argued that there is a positive relationship between a company's green innovation capabilities and its green management practices in relation to its environmental performance[14].

Font et al. (2016) proposed that promoting sustainable development in a company is not solely the duty of individual managers. It is equally important to cultivate a strong sense of sustainability awareness among internal employees, as this plays a critical role in advancing the company's growth. Hence, companies should focus on raising the awareness levels of both managers and internal staff to facilitate sustainable development[4]. Groening et al. (2018) studied the individuals responsible for formulating green policies within a company and found that they have the potential to impact the effectiveness of consumers' environmentally friendly behaviours. Moreover, both policy makers and managers must heed the environmental preferences and demands of consumers[5]. In addition, Masudin et al. (2018) found that in order to develop environmentally friendly policies, businesses must align with the preferences of stakeholders to secure the support of both suppliers and customers[11]. Then, Teixeira and Ferreira (2019) proposed that while green innovation is crucial, protecting these innovations is equally important. Companies need to establish suitable innovation protection mechanisms, as this can contribute to improved business performance[16].

3 Methodology

This section firstly involves designing a questionnaire to gather values for the relevant variables. The second step entails consolidating and describing the collected data and formulating hypotheses. Finally, the data is analysed for correlations using SPSS, and the mediating and moderating effects are tested.

3.1 Questionnaire Design

The data in this article was obtained through questionnaire surveys. The questionnaire was distributed specifically within the manufacturing industry sector to ensure that all collected data originated exclusively from manufacturing enterprises. The questionnaire was distributed and collected via the professional survey platform wjx.cn. The questionnaire design consisted of six sections: basic information, CEO's green innovation awareness (CGIA), green supply chain integration (GSCI), corporate performance and environmental performance (GP), green innovation (GI), and green intellectual property protection (GIP), totalling 40 questions. Basic information includes the respondent's gender, age, and education level, as well as information about the enterprise such as company age and company scale. The remaining sections evaluated respondents' answers using a scale of very dissatisfied, dissatisfied, neutral, satisfied, and very satisfied, corresponding to scores of 1-5, respectively (Jiahui, 2022)[9].

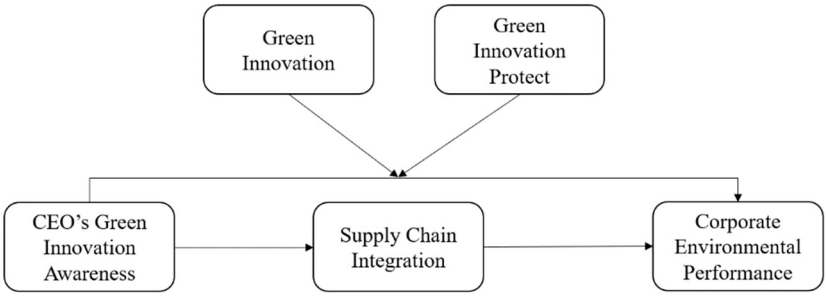

Fig. 1. Research Framework

3.2 Model Design

According to the Figure 1, the model can be designed. The model is as follows:

The impact of CEO's green innovation awareness on green supply chain integration:

$$GSCI = \beta_1 \times CGIA + \epsilon_1 \tag{1}$$

The impact of CEO's green innovation awareness on corporate performance and environmental performance:

$$GP = \beta_2 \times CGIA + \epsilon_2 \tag{2}$$

The impact of CEO's green innovation awareness and green innovation on green performance:

$$GP = \beta_1 \times CGIA + \beta_3 \times GI + \epsilon_3 \tag{3}$$

The impact of CEO's green innovation awareness and green intellectual property protection on green performance:

$$GP = \beta_1 \times CGIA + \beta_4 \times GIP + \epsilon_4 \quad (4)$$

'β' denotes the coefficients, and 'ϵ' represents the error term.

3.3 Hypothesis

This article primarily investigates the relationship between CEOs' green innovation consciousness and a company's environmental performance. Due to the lack of a direct connection between the two within the supply chain, green supply chain integration is introduced as a mediating variable. Based on prior research, green supply chain integration has been segmented into three parts: green supplier integration, green internal integration, and green customer integration. Additionally, green innovation and green innovation property protection are introduced as moderating variables with the aim of further studying their moderating effects. The study proposes the following hypotheses:

Hypothesis H1: There is a positive correlation between CEOs' green innovation consciousness and supply chain integration.

Hypothesis H2: There is a positive correlation between supply chain integration and a company's environmental performance.

Hypothesis H3: There is a positive correlation between CEOs' green innovation consciousness and a company's environmental performance.

Hypothesis H4: Green supply chain integration serves as a mediating variable with a significant mediating effect.

Hypothesis H5: The moderating effect of green innovation between CEOs' green innovation consciousness and a company's environmental performance is significant.

Hypothesis H6: The moderating effect of green innovation property protection between CEOs' green innovation consciousness and a company's environmental performance is significant.

3.4 Data Description

A comprehensive dataset of 500 survey responses was gathered from entities operating within the manufacturing sector. It is noteworthy that each of these responses has been validated and deemed effective for analysis. The survey gathered sample data from 32 provinces across China, including Anhui, Beijing, and Shandong. This study involves various manufacturing sectors, including the light textile industry, petrochemical manufacturing, pharmaceutical manufacturing, machinery manufacturing, and electronic manufacturing, among others. Additionally, two samples were collected from overseas sources, as Table 1. Among the collected data, the proportion of responses from Fujian and Guangdong provinces is the most significant, accounting for 14.6% and 10.4%, respectively.

If divided by regions, the manufacturing sector has the highest proportion in the Southeast, Southern, and Central regions, reaching 29.4%，20.4% and 27.2%. This prevalence underscores the dominant role of the manufacturing sector in these two provinces.

Table 1. Location Statistics

Characteristics	Classification	Number	Percentage
Location of the enterprise	Overseas	2	0.4%
	Northeast	28	5.6%
	Northwest	38	7.6%
	Southwest	47	9.4%
	Southeast	147	29.4%
	Central	102	20.4%
	South	136	27.2%

In terms of personal information, the largest proportion fell within the age range of 26 to 45, accounting for 74.2% of respondents. For educational background, the highest proportion held a bachelor's degree, comprising 75.8% of the respondents. The specific distribution is shown in Table 1. In terms of enterprise information, the highest proportion of companies fell within the age range of 6 to 15 years. The proportion of domestically-owned enterprises reached 66.6%, see Table 2. For specific details about the enterprises, see Table 3.

Table 2. Personal Information Statistics

Characteristics	Classification	Number	Percentage
Gender	Male	244	51.2%
	Female	256	48.8%
Age	Under the age of 18	4	0.8%
	18 to 25 years old	81	16.2%
	26 to 35 years old	183	36.6%
	36 to 45 years old	188	37.6%
	46 to 55 years old	42	8.4%
	Above 55 years old	2	0.4%
Education level	High school and below	34	6.8%
	Associate degree	65	13%
	Bachelor's degree	379	75.8%
	Master's degree and above	22	4.4%

Table 3. Manufacturing Company Information Statistics

Characteristics	Classification	Number	Percentage
Company age	5 years old and below	100	20%
	6 to 15 years old	271	54.2%
	16 to 25 years old	107	21.4%
	26 years old and above	22	4.4%
Type	State-owned	333	66.6%

Business scale	Privately owned	167	33.4%
	Micro-enterprise	65	13%
	Small enterprise	218	43.6%
	Medium-sized enterprise	185	37%
	Large enterprise	32	6.4%
Number of employees	Less than 20	34	6.8%
	Between 20 and 300	226	45.2%
	Between 301 and 1000	203	40.6%
	More than 1000	37	7.4%

3.5 Variables

3.5.1 Control Variables

This research selects enterprise age, enterprise type, enterprise size, number of employees, and geographical location as control variables based on the compilation of relevant literature.

1. Enterprise Age: Typically, the duration since an enterprise's establishment correlates with its capacity to amass technologies and resources conducive to green innovation, and its proficiency in integrating green supply chains. In this study, enterprise age is measured by the number of years since establishment.
2. Enterprise Type: Enterprises are classified as either state-owned or private. Different enterprise types bear varying responsibilities towards environmental conservation. State-owned enterprises prioritize national developmental roles, emphasizing social obligations such as environmental stewardship. Private enterprises concentrate more on product competitiveness, thus directing more investments towards research and innovation.
3. Enterprise Size: Larger enterprises possess greater capital and are better equipped to amalgamate technology and talent, thereby enhancing their capacity for green innovation and facilitating green supply chain integration. Although small and micro-enterprises lack substantial capital support, their organizational structures are simpler, resulting in easier internal communication and integration. Consequently, enterprise size will influence this study.
4. Number of Employees: A higher employee count indicates a more expansive internal organizational structure, potentially leading to increased resistance during the implementation of green supply chain integration. Conversely, a smaller workforce suggests a flatter hierarchy, enabling advantages in communication during green supply chain integration.
5. Geographical Location: To mitigate the influence of regional economic disparities and varying manufacturing capacities, this study categorizes enterprises based on their geographic locations into overseas, Northeast China, Northwest China, Southeast China, Southwest China, Central China, and South China regions.

3.5.2 Other Variables

3.5.2.1 Dependent Variables.

The dependent variables can be seen as Table 4.

Table 4. Dependent Variables

Variables	Proposition	Source
CEO's green innovation awareness (CGIA)	CGIA1.Redefining production and operation process to ensure internal efficiency in a green way	Arici (2021), Masudin (2018), etc.
	CGIA2.Re-designing and improving products or services to obtain new environmental criteria or directives	
	CGIA3.Encouraging and motivating employees to adopt a responsible attitude to remove waste	
	CGIA4.Managing environmental audits regularly and implements any corrective actions	

3.5.2.2 Independent Variables.

The Table 5 shows the independent variables.

Table 5. Independent Variables

Variables	Proposition	Source
corporate performance and environmental performance (GP)	GP1. The company has established departments related to environmental management	Tian (2022), Huang (2015)
	GP2. The company incorporates emissions reduction, eco-friendly material usage, and similar metrics into the Key Performance Indicators (KPIs) of relevant departments	
	GP3. The company participates in government environmental improvement activities	
	GP4. The company engages in practical environmental improvement activities by joining specific environmental protection associations	
	GP5. The company formulates relevant environmental responsibility reports	
	GP6. The company discloses its energy usage	
	GP7. The company discloses its greenhouse gas and harmful gas emissions	

3.5.2.3 Mediating Variables. 3.

Table 6 and Table 7 show the mediating variables and moderating variables.

Table 6. Mediating Variables

Variables	Proposition	Source
green supply chain integration (GSCI)	**Green Internal Integration (GII):** GII1. Various departments within the company can reach a consensus on environmental responsibilities t GII2. The company can effectively reduce the environmental impact of logistics GII3. The entire supply chain planned by the company meets the requirements of a green supply chain GII4. Applying environmentally friendly business practices throughout the company's franchises **Green Suppliers Integration (GSI):** GSI1. Various departments within the company collectively negotiate on how to reduce the adverse environmental impacts of production GSI2. The company reaches agreements with major suppliers regarding environmental performance responsibilities GSI3. The company collaborates with major suppliers to jointly reduce the environmental impact of business activities GSI4. The company negotiates with its logistics partners to explore greener logistics options **Green Consumers Integration (GCI):** GCI1. The company can reach agreements with customers regarding environmental performance GCI2. The company collaborates with customers to reduce the environmental impact of business activities GCI3. The company works with major customers to jointly achieve environmental goals	Wu (2013), Tian (2022), Zhao (2014), etc.

3.5.2.4 Moderating Variables.

Table 7. Moderating Variables

Variables	Proposition	Source
green innovation (GI)	GI1. When designing and developing new products, the company considers the ease of recycling and reuse GI2. During product design and development, the company reduces the usage of raw materials	Rehman (2021), Tian (2022), etc.

	GI3. The company selects materials in the manufacturing process that generate minimal pollution and emissions GI4. The company effectively reduces the consumption of traditional energy sources (such as oil and coal) during the manufacturing process GI5. The company is capable of recycling and reusing waste and emissions during the manufacturing process GI6. The company effectively reduces greenhouse gas emissions and the release of harmful substances during the manufacturing process	
green intellectual property protection (GIP)	GIP1. Trademark patent GIP2. Technology patent GIP3. Proprietary technology GIP4. Legal copyright	Teixeira (2019), Roh (2021)

3.5.3 Data Analysis

3.5.3.1 Reliability Assessment.

For this study, we conducted an analysis to determine the reliability of the data collected through questionnaire surveys. The findings of this analysis are summarized in the Table 8:

Table 8. Reliability Assessment

Cronbach's Alpha	Number of Questions
0.862	32

The alpha value exceeding 0.7 indicates that the data obtained from the questionnaire survey exhibits high consistency, enabling further validity analysis.

3.5.4 Validity Analysis

Following the reliability analysis, the results of the validity analysis are presented in the Table 9:

Table 9. Validity Assessment

KMO	Bartlett's Test of Sphericity		
	$\chi 2$	Df	Sig.
0.773	4264.881	496	.000

Based on the table above, the KMO value exceeds 0.6, and the significance level is less than 0.05, indicating that the data in this study are suitable for exploratory factor analysis and validity examination.

3.5.5 Correlation Analysis

Firstly, the average scores of each section from the collected questionnaire results were calculated to represent the respective ratings. Subsequently, the correlation between the CEO's green innovation consciousness and the integration of the green supply chain was determined. The correlation coefficient was found to be 0.442, with a p-value at the 0.01 level, indicating a significant positive correlation. Next, correlation analysis between the integration of the green supply chain and the company's green performance and outcomes was conducted. The correlation coefficient was 0.525, with a p-value at the 0.01 level, demonstrating a notable positive correlation, see Table 10.

Table 10. Correlation

		CGIA	GSCI	GP
CGIA	Correlation Coefficient	1.000		
	Significance (two-tailed)	.000		
	Cases	500		
GSCI	Correlation Coefficient	.442	1.000	
	Significance (two-tailed)	.000	.000	
	Cases	500	500	
GP	Correlation Coefficient	.439	.525	1.000
	Significance (two-tailed)	.000	.000	.000
	Cases	500	500	500

Regarding the relationship between the CEO's green innovation consciousness and the company's environmental performance and outcomes, the correlation coefficient was 0.439, with a p-value at the 0.01 level, also showing a significant positive correlation. Regression analysis 1 indicated an F-value of 333.63 with a significance level of 0.01, suggesting the meaningfulness of the regression model. Regression analysis 2 showed an F-value of 385.646 at the 0.01 significance level, indicating the meaningfulness of the regression model. The same inference applied to regression analysis 3. The effect value was 0.73, representing the contribution of the mediation effect to the total effect. The moderator variables were also analysed. Initially, green innovation was set as the moderator, but the interaction term's p-value was 0.09, greater than 0.05, suggesting green innovation had an insignificant moderation effect. When green innovation property rights protection was set as the moderator, the p-value was 0.036, less than 0.05, indicating the significant moderating effect of green innovation property rights protection, see Table 10 and Table 11.

Based on these findings, it is clear that there is a strong positive connection between CEOs embracing green innovation and both the integration of green practices within the supply chain and a company's environmental performance, as Table 12. The study highlights that when CEOs prioritise green innovation, it positively influences how well environmentally friendly practices are adopted within the supply chain, ultimately enhancing the company's environmental performance. Additionally, the study highlights that embedding green methodologies into the supply chain serves as a key intermediary. This integration is crucial in connecting the CEO's commitment to green innovation with the enhancement of the company's environmental performance.

Table 11. GI Coefficients

Model		Unstandardised Coefficients		Standardised Coefficients	t-value	Significance
		B	Standard Error	Beta		
1	(Constant)	1.483	.139		10.654	.000
	CGIA	.626	.034	.633	18.266	.000
2	(Constant)	.651	.123		5.274	.000
	CGIA	.325	.033	.329	9.778	.000
	GI	.513	.031	.550	16.355	.000
3	(Constant)	.760	.139		5.468	.000
	CGIA	.310	.034	.314	9.062	.000
	GI	.501	.032	.537	15.639	.000
	I1	-.007	.004	-.053	-1.697	.090

Table 12. GIP Coefficients

Model		Unstandardised Coefficients		Standardised Coefficients	t-value	Significance
		B	Standard Error	Beta		
1	(Constant)	1.483	.139		10.654	.000
	CGIA	.626	.034	.633	18.266	.000
2	(Constant)	1.183	.149		7.951	.000
	CGIA	.535	.038	.541	14.023	.000
	GIP	.162	.033	.192	4.964	.000
3	(Constant)	1.317	.161		8.158	.000
	CGIA	.515	.039	.522	13.165	.000
	GIP	.150	.033	.178	4.546	.000
	I2	-.012	.006	-.077	-2.097	.036

While the study did not uncover strong evidence to support the direct moderating role of green innovation itself, it did reveal that the defence of green innovation practices within a company plays a significant moderating role. This indicates that actively protecting and fostering green innovation rights within an organisation can markedly improve its environmental performance.

Fundamentally, the study underscores the importance of a CEO's commitment to green innovation in positively impacting a company's environmental footprint. It posits that the application of green supply chain integration as a conduit between the CEO's green-oriented approach and environmental outcomes can be advantageous. Furthermore, prioritising the protection of green innovation initiatives within the company can amplify its environmental efficacy. As show in table 13.

Table 13. Hypothesis Results

Hypothesis	Argument	Result
H1	P-value at the 0.01 level	Supported
H2	P-value at the 0.01 level	Supported

H3	P-value at the 0.01 level	Supported
H4	The effect value was 0.73	Supported
H5	P-value greater than 0.05	Declined
H6	P-value less than 0.05	Supported

4 Conclusion

In summary, this article demonstrates that a CEO's commitment to green innovation can significantly enhance a company's environmental performance. This improvement is primarily achieved by influencing the integration of green practices within the supply chain. Green supply chain integration serves as a mediating variable, with its mediating effect being significant. Additionally, the moderating effect of green innovation property protection is notable. To achieve sustainable corporate development, CEOs should enhance their green innovation consciousness, and companies should adopt suitable approaches to train CEOs in this regard. Furthermore, companies should prioritise green supply chain integration. This involves fostering communication with suppliers to promote green supplier integration and educating customers about green-related knowledge to encourage green customer integration. Internally, companies should focus on fostering coherence and refining policies related to green initiatives to facilitate green internal integration. Emphasising green innovation property protection is also crucial. Regular training sessions for employees to enhance their awareness of property protection can effectively contribute to a company's environmental performance.

This study involved a total of 500 valid samples. While the sample size is not particularly large, it can be further expanded in future research. However, considering the relevance analysis of the samples, they already demonstrate a certain degree of representativeness and accuracy. Additionally, the statistical data on aspects like age and educational background in the sample is not sufficiently precise, and analyses related to these factors were minimal in the detailed examination. These elements can be further explored in subsequent research.

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