

## GREEN SUPPLY CHAIN MANAGEMENT STRATEGY FOR ECONOMIC SUSTAINABILITY OF MINING SECTORS IN EAST KALIMANTAN

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### ABSTRAK

Studi ini menggunakan Manajemen Rantai Pasok Hijau, atau disingkat GSCM, sebagai variabel moderasi untuk menguji bagaimana investasi hijau memengaruhi kinerja bisnis pertambangan di Kalimantan Timur. Sektor pertambangan di Kalimantan Timur mendukung perekonomian daerah dengan berkontribusi pada Produk Domestik Regional Bruto (PDRB). Namun, sektor ini menghadapi tantangan besar dalam menjaga keseimbangan antara pertumbuhan ekonomi dan keberlanjutan lingkungan. Investasi hijau, yang mencakup pengeluaran untuk teknologi ramah lingkungan, adopsi energi bersih, dan pengelolaan limbah yang efisien, diharapkan dapat mendorong peningkatan kinerja perusahaan. Sementara itu, penerapan Green Supply Chain Management (GSCM), yang mengintegrasikan prinsip-prinsip ramah lingkungan ke dalam berbagai aspek rantai pasok, diyakini dapat memperkuat kinerja perusahaan secara lebih efektif. Penelitian ini menggunakan pendekatan metode campuran dengan orientasi kuantitatif, melibatkan perusahaan pertambangan skala besar yang beroperasi di wilayah Kalimantan Timur. Temuan menunjukkan bahwa implementasi GSCM memiliki dampak positif dan signifikan terhadap kinerja perusahaan, sedangkan investasi hijau tidak menunjukkan dampak signifikan dalam jangka pendek. GSCM juga tidak berperan sebagai variabel moderasi dalam hubungan antara investasi hijau dan kinerja perusahaan, karena keduanya memiliki fokus yang berbeda—investasi hijau lebih bersifat jangka panjang, sementara GSCM menekankan penerapan praktik ramah lingkungan dalam operasi perusahaan sehari-hari. Berdasarkan hasil penelitian ini, disarankan agar pemerintah meningkatkan kebijakan yang mendukung implementasi GSCM dan memberikan dukungan yang lebih besar untuk investasi hijau di sektor pertambangan.

**Kata Kunci:** Investasi hijau, Manajemen Rantai Pasok Hijau, Kinerja Perusahaan, Kalimantan Timur.

### ABSTRACT

This study employs Green Supply Chain Management (GSCM) as a moderating variable to investigate how green investment impacts the performance of mining businesses in East Kalimantan. The mining sector in East Kalimantan supports the regional economy by contributing to the Gross Regional Domestic Product (GRDP). However, this sector faces significant challenges in maintaining a balance between economic growth and environmental sustainability. Green investment, which includes expenditures on environmentally friendly technology, the adoption of clean energy, and efficient waste management, is expected to drive improvements in company performance. Meanwhile, the implementation of Green Supply Chain Management (GSCM), which integrates environmentally friendly principles into various aspects of the supply chain, is believed to strengthen company performance more effectively. This research employs a mixed-method approach with a quantitative orientation, involving large-scale mining companies operating in the East Kalimantan region. The findings indicate that the implementation of GSCM has a positive and significant effect on company performance, whereas green investment does not show a substantial impact in the short term. GSCM also does not act as a moderating variable in the relationship between green investment and company performance, as both have different focuses—green investment is more long-term in nature. At the same time, GSCM emphasizes the application of environmentally friendly practices in daily company operations. Based on the results of this study, it is recommended that the government enhance policies supporting the implementation of GSCM and provide greater support for green investment in the mining sector.

**Keywords:** Green Investment, Green Supply Chain Management, Company Performance, East Kalimantan.

## 1. INTRODUCTION

### Background

Sustainable development transformation has been a priority since the launch of the Sustainable Development Goals (SDGs). Pressure to adopt environmentally friendly practices is increasing in the mining industry. Considered a major contributor to carbon emissions, land degradation, and resource exploitation, the mining sector is now being challenged to adopt green business models as a form of social and ecological responsibility.

East Kalimantan is a region that contributes significantly to the Gross Regional Domestic Product (GRDP) through its mining sector, particularly in coal, oil, and gas. However, this sector also has significant environmental impacts.(Kurniawan et al., 2022) Stated that the former mining area in East Kalimantan has a high environmental vulnerability index (EVI), with the mine reclamation area only amounting to 41.35% of the issued permit. Vegetation damage, groundwater pollution, and decreased air quality are significant challenges to achieving sustainable development in this region.

Management of the green supply chain (GSCM) is a strategy considered effective in bridging the gap between economic efficiency and environmental sustainability. Management of Green Supply Chain is defined as the integration of environmentally friendly principles into the supply chain process, from raw material procurement (green procurement), production (green manufacturing), distribution (green logistics), and waste management and recycling (reverse logistics).(Gelmez et al., 2024).

Environmentally friendly principles are integrated throughout the entire supply chain cycle, from sourcing raw materials and manufacturing processes to distribution and waste management, to establish a green supply chain.(Geng et al., 2017). Recent research suggests that green supply management has a significant impact on green innovation, competitive advantage, and the enhancement of a company's economic, social, and environmental performance. (Gelmez et al., 2024)(Galdos-Urbizu et al., 2024). Effective management of the green supply chain (GSCM) practices can enhance operational efficiency, reduce carbon emissions, and foster stronger relationships with key stakeholders, including local communities and governments.

Green Supply Chain Management provides enhanced oversight mechanisms by integrating sustainability principles from the outset of the production cycle. Reverse logistics enables companies to recycle mining waste, thereby reducing the impact of water and soil pollution. Green Manufacturing encourages the use of energy-efficient and waste-free processing technologies.(Zahran, 2024). This research examines the relationship between GSCM and sustainable waste management.

In addition to managing the green supply chain (GSCM), implementing green investment strategies is also crucial for achieving a sustainable economy in this region. Strategies to support a sustainable economy (green economy) include green investment and green supply chain management. Green investment encompasses corporate spending on low-emission technologies, energy efficiency, waste management, and environmental certification. This assertion is supported by research showing that corporate spending on green technology, clean energy adoption, effective waste management, and certifications such as ISO 14001 can reduce carbon dioxide emissions and encourage the use of clean technologies (Chu et al., 2024). Green investment has successfully contributed to increased innovation in the mining sector, supported by financial technology (Akhtar et al., 2024).

The effects of green investments on business performance, however, have not yet yielded reliable findings. Green investments will only be effective if they are backed by a management system for the green supply chain (GSCM), according to several studies. (Ofori Antwi et al., 2022a). Several studies have found improvements in financial and environmental performance. (Siedschlag & Yan, 2023a), while other research shows that the success of green investment depends on the support of environmentally friendly supply chain management practices (Ngcobo et al., 2022).

A meta-analysis study in Asia confirms that green supply chain management practices consistently improve operational efficiency and environmental performance. (Geng et al., 2017). Research in South Africa has shown that implementing Green Supply Chain Management in mining companies enhances the efficiency of relationships with suppliers and stakeholders. (Ngcobo et al., 2022). However, research specifically integrating green investment, Management of the Green Supply Chain, and company performance in the mining sector in Indonesia is still limited.

Several earlier studies have only examined the connection between green investments and business performance, or the relationship between green supply chain management and company performance, as well as the relationship between the Management of the green supply chain (GSCM) and company performance.. (Asamoah et al., 2024), (C. C. Chen et al., 2024), (Ofori Antwi et al., 2022a; Siedschlag & Yan, 2023a), (Gelmez et al., 2024). However, it is possible that green investment can only provide optimal results if moderated by effective Management of the green supply chain (GSCM) practices, for example, in the form of green distribution or waste material recycling. Only a few studies have integrated the relationship between these two aspects simultaneously in the local context of Kalimantan. Studies on the interaction of green investment and Management of the green supply chain (GSCM) in the context of developing countries are also still limited. Therefore, this study examines the effect of green investment on the performance of mining companies, with Management of the green supply chain (GSCM) as a moderating variable in the context of East Kalimantan. The novelty of this study lies in the simultaneous integration of these three variables within the conceptual framework.

The implementation of green supply chain management (GSCM) in East Kalimantan remains uneven. This is because large mining companies still employ traditional approaches focused on exploration and production. Most large-scale companies with access to advanced technology tend to be quicker to adopt this concept. However, medium- and small-scale mining companies face significant obstacles, particularly in the form of initial investment costs, limited human resources, and inadequate regulatory support. Several studies have shown that without a systematic implementation of a green supply chain strategy, green investment efforts such as purchasing low-emission technology will not significantly impact company performance. (Ngcobo et al., 2022). One of the obstacles to implementing effective management of the green supply chain is the weakness of supply chain governance in the Indonesian mining sector, particularly in terms of reporting and transparency. (Franken & Schütte, nd) states that many mining companies in developing countries fail to meet due diligence standards due to a lack of active stakeholder engagement and insufficient technical capacity to measure environmental impacts.

This study used all mining companies in East Kalimantan. Companies with a gold or green mark and ISO 14001 certification in their Company Performance Rating Program in Environmental Management (PROPER) are strong indicators that they are implementing green supply chain management and green investment strategies. Additionally, the ISO 14111 environmental management system integrates operational processes and suppliers, including the disclosure of

supply chains and green initiatives in sustainability reports. Green Investment is characterized by energy efficiency (IPCC, conveyors), low-emission logistics infrastructure (overland conveyors, bargeloaders), and water treatment or reclamation that provides ecosystem services.

Table 1. Mining companies implementing GSCM and Green Investment in East Kalimantan  
Source : (Proper Secretariat of the Minister of Environment, 2025)

No	Company	Location	PROPER
1	PT Kaltim Prima Coal	East Kutai	Gold
2	PT Berau Coal	Berau	Gold
3	PT Kideco Jaya Agung	Paser	Gold
4	PT Indominco Mandiri	Bontang / East Kutai	Green
5	PT Trubaindo Coal Mining	West Kutai	Green
6	PT Bharinto Ekatama	West Kutai	Green
7	PT Bayan Resource Tbk	Kutai Kartanegara	Green
8	PT Jembayan Muara Bara	Kutai Kartanegara	Green
9	PT Indexim Coalindo	East Kutai	Green
10	PT Mahakam Sumber Jaya	Kutai Kartanegara	Green
11	PT Gunungbayan Pratamacoal	West Kutai	Green
12	PT Kayan Putra Utama Coal	East Kutai	Green

Table 1 above shows that only 12 out of 27 large-scale mining companies implement GSCM and Green Investment. In 2024, there were 1,403 licensed mining companies in East Kalimantan, and 75.5 hectares of unlicensed mining areas were identified. (Mining Data for East Kalimantan Province 2016-2024 - Mining Data for East Kalimantan Province 2016-2024 - One Data, nd)

Table 1 Comparison of Management of the green supply chain Implementation and its impact  
Source: Processed Data, 2025

Aspect	Companies with GSCM	Companies without GSCM
Energy Efficiency	High (use of IoT sensors for logistics efficiency)	Low (energy wasting and uncontrolled)
Carbon Emissions	Measurable and decreasing	Not monitored
Environmental regulatory compliance	Tall	Low
Relationship with stakeholders	Proactive (involving the community)	Reactive (after the conflict occurs)
Financial performance	Stable/increasing	Fluctuating (depressed)

The implementation of chain management for green supplies in the East Kalimantan mining industry not only addresses environmental challenges but can also provide long-term competitive advantages. This strategy encompasses green procurement, clean production, low-emission distribution, and recycling management. These four components have been proven to improve company performance across economic, social, and environmental dimensions. (Ofori Antwi et al., 2022a)

The research's specific goals are to: first, examine how the performance of mining businesses in East Kalimantan is affected by the adoption of green investments. Secondly, to investigate how green supply chain management (GSCM) functions as a moderating factor in enhancing or diminishing the correlation between green investment and business performance. Third, to provide evidence-based policy recommendations for realizing a green mining sector transformation to

achieve a sustainable economy in accordance with the National Medium-Term Development Plan (RPJMN) policy towards the vision of Golden Indonesia 2045.

### **Formulation of the problem**

In addressing sustainability challenges, mining companies in East Kalimantan are not only pursuing financial gains but also adopting environmentally friendly practices. One way to do this is by implementing green investments, which include allocating funds for green technology, sustainable clean energy, and efficient waste management. A key question that arises is the extent to which these green investments can have a direct impact on mining company performance, given their time-consuming nature and significant resource commitment. Furthermore, the implementation of Green Supply Chain Management (GSCM), which encompasses green procurement practices, environmentally friendly production, low-carbon distribution, and waste recycling, is also a potential strategic factor in improving operational efficiency and overall company performance.

Based on the explanation above, this study seeks to answer two key questions:

- a. How do mining businesses in East Kalimantan fare in relation to green investment?
- b. How far can the adoption of green supply chain management support the association between green investment and business success as a moderating variable?

### **Literature review and hypothesis**

This study integrates three strategic concepts —green investment, company performance, and GSCM — within a single moderation framework. Several studies link green investment to company performance and GSCM practices to company performance. However, the success of green investment on company performance may be supported by GSCM implementation.

Based on this conceptual framework, the research hypothesis is:

**H1:** Green investment has a positive impact on the performance of mining companies.

Environmentally friendly investments have a positive impact on the company's long-term performance.(Siedschlag & Yan, 2023a)(Widarwati et al., 2024). No data suggests that board size moderates firm performance, but green investment increases firm value. Research shows that green investment boosts company performance. (Y. Chen & Ma, 2021a; Siedschlag & Yan, 2023b; Widarwati et al., 2024) (Cortez et al., 2022; Widarwati et al., 2024). Companies that utilize sustainable supply chains, including green investments, exhibit increased Green Supply Chain integration and Performance.(Guo, 2022)

**H2:** Management of the green supply chain or GSCM has a positive impact on the performance of mining companies.

To enhance the sustainable performance of mining companies in developing countries, it is crucial to implement green supply chain practices.(Ofori Antwi et al., 2022a)The study investigates the relationship between GSCM and a company's performance.(Siedschlag & Yan, 2023a)(Y. Chen & Ma, 2021b)(Asamoah et al., 2024)(Zhang et al., 2016)(Sudarmaji et al., 2020) The implementation of Green Supply Chain Management plays a crucial role in reducing the carbon footprint and minimizing waste in manufacturing and distribution processes, thereby improving the company's environmental and social performance.(Galdos-Urbizu et al., 2024)GSCM has a significant impact on company performance in the manufacturing sector, particularly in terms of operational efficiency and environmentally friendly innovation.(Afzal & Hanif, 2022)GSCM practices such as reserve logistics, green manufacturing, and eco-design collectively improve company performance in Karachi.(Fatima, 2022)The implementation of GSCM improves supply chain

efficiency and company performance in Vietnam.(Vo, 2024)GSCM has a positive impact on competitive advantage and performance through good supply chain integration.(Tran, 2022)

**H3:** Green investment and mining business performance are moderated by GSCM management. GSCM acts as a moderating variable, strengthening the relationship between green investment and corporate performance. This indicates that the positive effects of green investment on performance are not optimal without an environmentally sound supply chain system. Therefore, synergy between green investment strategies and GSCM is key to achieving improved corporate performance.(Ofori Antwi et al., 2022a)

This study aims to address this gap by examining the impact of companies' green investments on their performance, considering the effectiveness of GSCM implementation. For example, companies using low-emission heavy equipment will be effective with the support of green distribution practices for waste material management. GSCM practices, which encompass eco-innovative and end-of-life management, have a significant impact on improving company performance across economic, social, and environmental dimensions. (Ofori Antwi et al., 2022b) GSCM significantly improves green innovation, environmental performance, and competitive advantage.(Gelmez et al., 2024).The integration of green investments with GSCM, as a moderator, shows a positive impact on the company's environmental performance.(Galdos-Urbizu et al., 2024). A study in South Africa demonstrated that the implementation of GSCM enhanced operational efficiency, relationship efficiency, and performance in mining companies.(Ngcobo et al., 2022).Green innovation and Green Supply Chain Management simultaneously drive company performance, but competitive advantage can be an important mediator.(Novitasari & Agustia, 2021).

The integration of GSCM with green training and green organizational culture has a significant impact on company performance.(Nureen & Xin, 2023). A meta-analysis of 134 studies reveals that GSCM generally enhances company performance across multiple dimensions, including financial, social, and environmental.(Holling & Backhaus, 2023a)

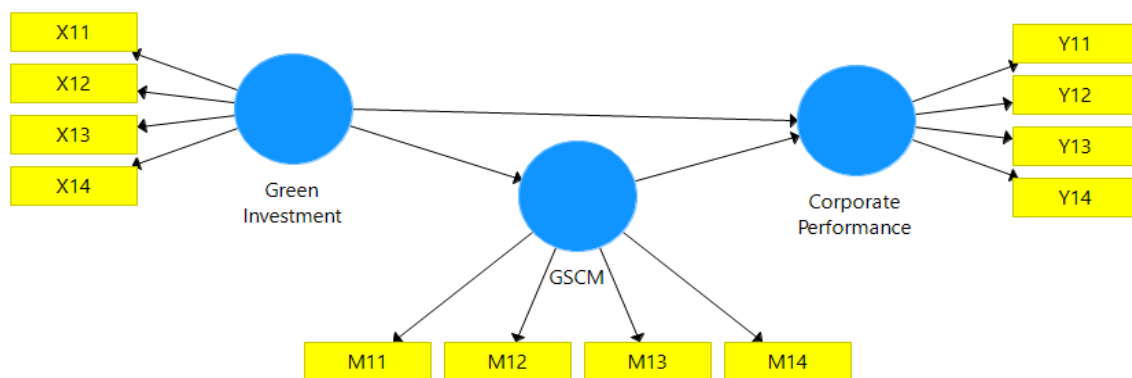


Figure 1. Research Framework  
Source: Processed Data 2025

## 2. RESEARCH METHODS

A mixed-methods quantitative analysis was employed to address the research problem. The subjects were large-scale mining companies operating in East Kalimantan, encompassing the coal, oil and gas, nickel, mining services, and nonmetallic quarrying sectors. As a moderating variable, the management of the green supply chain (GSCM) was the focus of the research, and the

investigation aimed to examine the influence of green investment on firm performance. Table 1 presents the research variables and their corresponding indicators.

Table 1 Operational Research Variables  
 Source: Processed Data 2025

Variable Name	Indicator	Source
Green investment (X)	<ul style="list-style-type: none"> <li>• Total Financing of Environmentally Friendly Technologies</li> <li>• Use of renewable energy</li> <li>• ISO 14001 Certification</li> <li>• Waste Management Financing</li> </ul>	(Igogo et al., 2020; Shi & Shi, 2025)
Company Performance (Y)	<ul style="list-style-type: none"> <li>• Financial Performance</li> <li>• Operational Performance</li> <li>• Environmental Performance</li> <li>• Competitive Advantage</li> </ul>	(Aulia et al., 2025; Cheng et al., 2025a; da Cunha et al., 2025; Tan et al., 2022)
Green Supply Chain Management (Z)	<ul style="list-style-type: none"> <li>• Green Procurement (environmentally friendly raw material procurement process)</li> <li>• Green Manufacturing (green production)</li> <li>• Green Distribution (transporting products with minimal carbon footprint)</li> <li>• Reserve Logistics (waste recycling)</li> </ul>	(Holling & Backhaus, 2023b; Komal & Khandare, nd; Rejeb et al., 2024; Salim Ba Awain et al., 2023; Yu et al., 2022)

The population of this study was large-scale mining companies operating in East Kalimantan. The sampling technique used was purposive sampling, with the criteria being active large-scale mining companies in East Kalimantan. The sample size analyzed was 30 companies. Ninety percent of the sampled companies were coal companies, with the remainder being other mining companies (oil, gas, nickel, and rock). Data were collected through a questionnaire.

Qualitative methods aim to elaborate on quantitative results and gain in-depth insights into the effectiveness of green investment and GSCM practices in mining companies. This aims to understand the implementation context in the field, the obstacles encountered, and the non-statistical factors influencing program success.

Qualitative data collection techniques were conducted through semi-structured interviews with Corporate Social Responsibility managers, operational managers, logistics supervisors, and environmental staff. Qualitative data were also obtained from company sustainability reports and local media publications.

### 3. RESULTS AND DISCUSSION

The results of this study were obtained through a series of statistical analyses, ranging from testing research instruments to analyzing regression models. The results are presented systematically to provide a comprehensive understanding of the relationships between the variables studied.

Validity tests showed that all indicators in the green investment (X), Green Supply Chain Management (Z), and company performance (Y) variables had calculated *r* values greater than the table *r* (0.4132). All items in the research instrument were declared valid. This means that each question asked in the questionnaire was able to represent the measured variable, making it suitable for use in the next stage of analysis.

Table 2 Reliability Test  
Source: Processed Data 2025

Variables	Cronbach's alpha	Note
X	0.891	Reliable
Z	0.936	Reliable
Y	0.883	Reliable

Reliability tests yielded Cronbach's Alpha values of 0.891 for the green investment variable (X), 0.936 for the Green Supply Chain Management variable (Z), and 0.883 for the company performance variable (Y). All values were above the minimum threshold of 0.60, thus confirming the reliability of this research instrument. The research instrument is robust and stable enough for further analysis.

To summarize the research findings, descriptive analysis was employed. Based on the findings, it was determined that the variable X, which represents green investment, had a mean value of 4.114 and a standard deviation of 0.628. This rating falls into the high category, which indicates that the majority of businesses have successfully implemented environmentally responsible investment strategies.

The management of the green supply chain or GSCM (Z) variable has a mean value of 3.889 with a standard deviation of 0.711, indicating that many companies are implementing GSCM practices, although variations still exist between companies. Meanwhile, the company performance variable (Y) had a mean value of 3.764 with a standard deviation of 0.728, indicating that company performance was in the medium to high category. Mining companies in East Kalimantan have attempted to implement green investment and GSCM, although the level of achievement varies across companies.

The hypothesis was tested using multiple linear regression in R Studio. A table containing the test results is provided below for your review.

Table 3 Hypothesis Testing  
Source: Processed Data 2025

Variables	Estimate	Standardized	Std..Error	t.value	P Value
(Intercept)	-0.005		0.096	-0.056	0.956
X	-0.296	-0.256	0.238	-1.246	0.228
Z	1.125	1,098	0.211	5,345	0.000
X: Z	0.015	0.009	0.163	0.089	0.930

The intercept value of  $-0.005$  indicates that if the green investment (X) and Green Supply Chain Management (Z) variables have a value of zero, then the company's performance (Y) also has a minimal value, assuming that other variables are held constant.

#### **The impact of green investment on company performance.**

The regression coefficient for green investment (X) is  $-0.296$ . This means that every one-unit increase in green investment actually decreases company performance by 0.296 units, although this effect is not significant ( $p = 0.228 > 0.05$ ). These test results suggest that green investment has not had a significant impact on company performance. In other words, the significant investment

in environmentally friendly technology, renewable energy, or waste management has not been able to improve company performance directly.

Green investments in East Kalimantan mining companies have not been able to impact company performance, which aligns with existing research.(Zhu & Chen, 2025)While green investment can improve a company's long-term performance, its impact is not always significant and is influenced by other factors, such as company size and scope. Furthermore, green innovation can improve environmental performance, but its impact on a company's financial performance is not always significant.(Cheng et al., 2025b). Green innovation can improve environmental performance, but its impact on a company's financial performance is not always significant.(Cheng et al., 2025b). Green investment in mining companies in East Kalimantan has not been able to improve company performance due to infrastructure and technology limitations, as well as high initial costs. Investment in environmentally friendly technology in mining has not shown any improvement in company performance in the short term, as it requires implementation and adaptation. Environmentally friendly waste management is not only costly but also a complex and long-term process. Substituting renewable energy sources does not entirely replace cheaper and more efficient conventional energy sources in the short term. The role of local government policies and regulations will also encourage the impact of green investment on company performance.

#### **Managing green supply chains moderates firm performance.**

The regression coefficient for GSCM (Z) is 1.125 with a significance value of 0.000 (<0.05). A one-unit increase in GSCM will result in a 1.125-unit increase in company performance, indicating that the implementation of GSCM has a significant positive impact on company performance. The better the implementation of green procurement practices, green production, environmentally friendly distribution, and waste recycling, the higher the company's performance will be. The interaction between green investment and GSCM (X\*Z) has a coefficient of 0.015 with a significance value of 0.930 (>0.05). This indicates that, although the interaction is mathematically positive, it is not statistically significant. In other words, GSCM does not act as a moderator in the relationship between green investment and company performance. Thus, although GSCM has a direct influence, it does not strengthen or weaken the influence of green investment on company performance. This phenomenon occurs because green investment and GSCM have different focuses. The regression analysis indicates that the Green supply-chain management (Z) variable significantly enhances corporate performance, evidenced by a p-value of 0.000 (<0.05). Enhanced use of GSCM correlates positively with improved firm performance.

A positive relationship exists between green supply chain practices and company performance, encompassing operations, finances, and market outcomes.(Holling & Backhaus, 2023c)The adoption of green supply chain management (GSCM) practices, including green purchasing and eco-design, has a positive impact on a company's performance.(Qorri et al., 2018)Green supply chain management also significantly impacts company performance when mediated by green innovation.(Novitasari & Agustia, 2021)The implementation of green supply chain management (GSCM) in mining companies in East Kalimantan has a positive and significant impact on the performance of these companies. However, GSCM practices cannot act as a factor that strengthens or weakens the influence of green investment on the company. This is because green investment focuses on the capital and resources a company allocates to adopt green technology, clean energy, and waste management, all of which are related to long-term investment and strategy. Meanwhile, GSCM focuses on sustainable operational practices throughout the supply chain, including waste management, the procurement of green raw materials, and environmentally friendly production.

GSCM focuses on daily operations, while green investment focuses on long-term changes.(Choi & Hwang, 2015).

In the mining sector, numerous external factors impact the success of GSCM and green investment in enhancing company performance, including government regulations, fluctuations in commodity prices, and global market conditions. Green investment can also be affected by market fluctuations and regulatory policies, which can impact company performance in the short term. These external factors prevent GSCM from directly strengthening or weakening the impact of green investment. The research results indicate that the implementation of green supply chain management (GSCM) has a significant impact on enhancing the performance of mining companies in East Kalimantan. Meanwhile, green investment has not been shown to have a significant direct impact on performance, and GSCM does not act as a moderating variable.

#### **4. CONCLUSION AND SUGGESTIONS**

##### **Conclusion**

This study examines the performance of mining businesses in East Kalimantan in relation to green investment and green supply chain management (GSCM). The findings indicate that the adoption of Green Supply Chain Management (GSCM) substantially enhances corporate performance across operational, financial, and environmental dimensions. Green management of supply chain strategies, including sustainable raw material procurement, eco-friendly production, and waste management, can enhance corporate efficiency and environmental performance. Nonetheless, green investment, although anticipated to have beneficial effects, has not had a substantial impact on corporate performance in the short term. This is due to elevated expenses and inadequate infrastructure, as well as the time required to implement sustainable solutions. Moreover, although GSCM has a beneficial impact, GSCM techniques cannot mediate the relationship between green investment and corporate performance, as they pertain to distinct areas of focus. Green investment is primarily directed towards long-term capital, whereas Green Supply Chain Management (GSCM) focuses on daily operating procedures.

The qualitative approach concluded that the main challenges to GSCM implementation in East Kalimantan are limited infrastructure, initial implementation costs, and low supply chain awareness of sustainability principles. Many mining companies are beginning to recognize the importance of sustainability, but green investment policies remain largely symbolic, merely to comply with regulations. Only large-scale mining companies are fully implementing GSCM and green investment.

##### **Suggestion**

East Kalimantan mining companies must integrate green investments into their long-term strategy, rather than treating them as a short-term regulatory obligation. Investments in clean technology, energy efficiency, and waste management have positive long-term impacts when integrated with the company's strategic planning. GSCM implementation should be integrated into all operational processes. Companies should develop internal policies and provide human resource training to strengthen green procurement practices, promote low-emission transportation, and implement recycling-based logistics.

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