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Synergy of Green Innovation, Waste Management Policy, and Green Competitive Advantages: A Catalyst for Enhancing SMEs' Enviropreneurship Performance in Achieving Sustainable Development

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ABSTRACT. This research examines the impact of Green Supply Chain Management (GSCM), Green Innovation (GI), Green Competitive Advantage (GCA), and Waste Management Policy (WMPP) on the Enviropreneurship Performance (EP) of SMEs in Indonesia. Using the Resource-Based View (RBV) approach, this study develops a model that interconnects these variables. Data analysis from 333 respondents using AMOS 25 revealed significant positive relationships among all studied variables. GSCM was found to enhance both waste management policies and green innovation, which is particularly crucial given Kalimantan Indonesia's environmental challenges. Green competitive advantage serves as a mediator between GSCM and enviropreneurship performance. The findings indicate varying implementations of green practices across Kalimantan's provinces, reflecting the different characteristics of dominant industries in each region. This study makes theoretical contributions by expanding the understanding of enviropreneurship performance in the context of developing economies. Practical implications include recommendations for integrating GSCM, green innovation, and waste management to enhance the enviropreneurship performance of SMEs in Kalimantan. The research emphasizes the importance of a holistic approach in managing environmental aspects of business to achieve sustainable economic development in the region.

KEYWORDS -*Green Supply Chain Management, Green Innovation, Green Competitive Advantage, Waste Management Policy, Enviropreneurship Performance, Kalimantan*

I. INTRODUCTION

Enviropreneurship, combining "environment" and "entrepreneurship," refers to pursuing innovative business opportunities that prioritize sustainability and environmental improvement. Despite increasing environmental awareness, there remains a gap between current practices and sustainable models needed to address urgent environmental challenges. The world faces unprecedented environmental challenges, including climate change, biodiversity loss, pollution, and resource depletion (Rashid et al., 2024a). According to the Intergovernmental Panel on Climate Change (IPCC), we are already experiencing the consequences of a 1°C rise in global temperature, with more severe impacts predicted if temperatures continue to rise. Entrepreneurs play a crucial role in transitioning to a sustainable economy.

SMEs in Kalimantan face several barriers, including limited access to capital for environmentally friendly initiatives. BPS 2023 data shows only 15% of SMEs in Kalimantan have access to green financing. There's also a lack of technical skills in managing sustainable businesses. The Ministry of Cooperatives and SMEs' 2023 survey revealed that 68% of SME owners in Kalimantan feel they lack knowledge about environmentally friendly business practices.

Limited supporting infrastructure is another challenge. Ministry of Public Works and Housing 2023 data shows only 30% of industrial areas in Kalimantan have adequate waste treatment facilities. This presents an essential problem to solve. International concerns about climate change drive the importance of achieving carbon neutrality. Many companies' operations are linked to natural resources and the environment, both directly and indirectly, affecting environmental sustainability (Chaudahary, 2020). Businesses now strive to incorporate environmental and social aspects into their strategies (Cabral and Jabbour, 2020), implementing "go green" practices in various areas such as GHRM (Chowdhury et al., 2023), green finance and accounting (Rounaghi, 2019), green marketing and supply chains (Srivastava, 2007), and green creativity (Song and Yu, 2018).

The market for environmentally friendly products and services is growing rapidly, with consumers increasingly seeking sustainable options. This shift in consumer preferences creates opportunities for entrepreneurs to deliver eco-friendly solutions while meeting market demands. Significant growth in environmentally conscious consumption offers opportunities for businesses to provide sustainable transportation. Resource-Based View (RBV) has emerged as a crucial theoretical perspective in understanding companies' achievement of sustainable competitive advantage. Hashmi et al. (2021) emphasize the importance of companies' unique resources and capabilities. Thoo et al. (2014) explain how companies can leverage capabilities and resources to respond to environmental challenges.

Enviropreneurship emerges as an innovative approach to addressing environmental issues while maintaining financial profitability. Hitt et al. (2016) and Kuenzi et al. (2019) demonstrate the integration between RBV, supply chain management, and entrepreneurship. Guang Shi et al. (2012) detail the GSCM approach encompassing product design, material selection, manufacturing, sales, and recovery. Natural Resource-Based View (NRBV) focuses on the role of natural resources in achieving competitive advantage (Thoo et al., 2014).

Existing studies have examined various relationships, including the impact of green supply chain practices on operational capabilities for competitiveness (Huma et al., 2023) and the influence of green innovation on entrepreneurial sustainability (Mathushan and Pushpanathan, 2020). This research examines the relationship between Green Supply Chain Management (GSCM), waste management, green competitive advantage, green innovation, and enviropreneurship performance in Small and Medium Enterprises (SMEs).Kannan et al. (2014) found that companies integrating GSCM sustainable improvement methods tend to be more engaged in green innovation. Zhu (2018) affirms that consistently enhanced GSCM practices influence green innovation, reflected through waste reduction and environmentally friendly technology use. Zhaolei et al. (2023) support these findings.

Research by Kannan et al. (2014), Zhu (2018), and Zhaolei et al. (2023) shows a positive relationship between GSCM practices. GSCM implementation encourages companies to develop innovative solutions for environmental challenges, creating a positive cycle that enhances environmental performance and sustainable business model development. Hashmi et al. (2021) state that GSCM is a valuable resource that can improve environmental and entrepreneurial performance. Chen & Chang (2013) define green competitive advantage as the strategic adoption of environmental management approaches and green technology. Chatterjee et al. (2023) add that organizations often use green efforts to build an image as sustainable entities.Chen (2008) states that competitive advantage can be a differentiating attribute for companies. Setyawati et al. (2017) and Anwar (2018) examine the relationship between innovation, competitive advantage, and business performance. Muisyo et al. (2022) reveal that green HRM can help companies gain green competitive advantage. Debnath et al. (2023) affirm the importance of GSCM adoption for company efficiency and environmental performance. Tang et al. (2017) and Al Khattab & As'ad (2015) show positive relationships between green innovation, GSCM, and company performance.

Mafini and Muposhi (2017) found that GSCM practices such as procurement, green logistics, and green manufacturing positively influence SMEs' environmental performance. Chin et al. (2015) emphasize the importance of environmental collaboration in facilitating GSCM practices. Debnath et al. (2023) reaffirm the significance of GSCM adoption for company efficiency and environmental performance. Tang et al. (2017) and Al Khattab and As'ad (2015) demonstrate positive relationships between green innovation, GSCM, and company performance.Albhirat et al. (2024) show a positive correlation between green innovation and enviropreneurship. Asad et al. (2023) find that green business strategies can increase companies' financial profits. Hizarci-Payne et al. (2021) confirm the positive relationship between environmental innovation and company performance. Thoo et al. (2014) emphasize the critical role of enviropreneurship in sustainability. Chen (2008), Setyawati et al. (2017), Anwar (2018), and Muisyo et al. (2022) provide the foundation for the hypothesis that waste management policy positively influences green competitive advantage.

Research gaps exist due to limited studies integrating all these elements. Dhillon et al. (2023) indicate that research on flexible GSCM is limited to varying regional contexts. This suggests the need for research to understand how to adapt or transfer flexible reverse logistics benchmark strategies, green design, and waste management from developed to developing economies. Limited research on the role of green innovation in waste management and its impact on performance improvement in GSCM (Rasheed et al., 2024) also indicates the necessity of this research.Problem Statement: How do waste management policy, green innovation, and green competitive advantage influence the enviropreneurship performance of environmentally committed SMEs in Kalimantan, with green competitive advantage serving as a mediator between green supply chain management and enviropreneurship performance? Can the proposed conceptual model explain the relationships between these variables in the context of environmentally-based SMEs in Kalimantan?

Research Objectives:

1. To analyze the influence of waste management policy, green innovation, and green competitive advantage on the enviropreneurship performance of SMEs in Kalimantan.

2. To evaluate the mediating role of green competitive advantage between green supply chain management and enviropreneurship performance.
3. To test the validity and conceptual empirical model explaining the relationships between variables in the context of environmentally-based SMEs in Kalimantan.

Research Scope: This research focuses on SMEs in Kalimantan committed to environmental sustainability. The studied aspects are limited to innovation and strategies for improving environment-based SME performance and entrepreneurship. The conceptual model is built using waste management, green competitive advantage, and green innovation as mediators between green supply chain management and enviropreneurship performance. The research does not cover SMEs outside Kalimantan or those without commitment to environmental sustainability. Factors beyond the mentioned variables are not discussed in this research.

II. METHOD

Research Methodology: This research employs a quantitative survey method to gather respondent opinions and predict environmental performance and correlations between variables. This method was chosen for its advantages in reach and response rates. To identify important sustainability components in the manufacturing industry, a descriptive and cross-sectional quantitative random sampling technique was applied.Before distribution to the general respondents, a pilot test was conducted with 30 employees to evaluate the scale's validity and reliability. Based on the pilot results, the survey instrument was modified by removing irrelevant items and clarifying ambiguous questions. The questionnaire also included demographic questions covering respondents' age, gender, position level, and educational background.

Data collection took place over three months, from February to April 2024. Respondents were provided clear information about the research scope and objectives, along with confidentiality guarantees for their responses. Eligibility criteria for participation were detailed in the survey cover letter.The research sample consisted of entry-level employees to senior managers from SMEs in Kalimantan committed to implementing green concepts. This selection was based on these companies' significant contribution to climate change and excessive natural resource consumption. The focus on Kalimantan's SMEs enables exploration of sustainable practices implementation in this specific industry and regional context.

Measurements: Each component of GHRM, GI, GCA, and Environmental Performance was assessed using a 5-point Likert scale, ranging from "strongly disagree [1]" to "strongly agree [5]". Participants were asked to evaluate statements about sustainability improvements in the manufacturing sector. Variable measurements include: GSCM (Chiou et al., 2011), WMP (Abah and Ohimain, 2011), GI (Seman et al., 2019), EP (Seman et al., 2019 and Singh et al., 2020), GCA (Muisyo et al., 2022).Discussion: The distribution of environmentally-friendly SMEs across Kalimantan shows interesting variations between provinces. East Kalimantan leads with 98 SMEs (29.4% of total), reflecting this province's focus on sustainable industry development and possibly driven by progressive environmental policies. This position can also be attributed to high economic activity and environmental awareness in the region.

South Kalimantan ranks second with 75 SMEs (22.5%), demonstrating strong commitment to environmentally friendly business practices. This may result from local government programs encouraging SMEs to adopt green practices or response to consumer demand for more sustainable products and services.West Kalimantan with 68 SMEs (20.4%) ranks third, indicating stable growth in environmental awareness among local entrepreneurs. This figure may reflect a balance between economic development and preservation of natural resource-rich environments.

Central Kalimantan has 52 SMEs (15.6%) implementing eco-friendly concepts, showing significant future growth potential. Though the percentage is lower, this could indicate an early shift toward more sustainable business practices in this region.North Kalimantan, as the youngest province, has 40 SMEs (12.1%) focusing on sustainability. Although the smallest number, this percentage shows the province is building a strong green economy foundation since its formation.

Sector Details:

1. Agriculture: Organic pepper cultivation SMEs in East Kalimantan, agroforestry businesses combining rubber trees with food crops.
2. Forestry: Forest honey processing SMEs in West Kalimantan, ecotourism businesses in Tanjung Puting National Park, Central Kalimantan.
3. Fisheries: Freshwater fish aquaponics SMEs in South Kalimantan, energy-efficient smoked fish processing businesses.
4. Crafts: Environmentally friendly rattan weaving SMEs in East Kalimantan, recycled material craft businesses in urban Kalimantan.
5. Tourism: Eco-friendly homestay management SMEs in nature tourism areas, community-based tour businesses with ecotourism concepts.

6. Food Processing: Local ingredient snack production SMEs with eco-friendly packaging, sustainable civet coffee processing businesses.

Table 1 Demographic results (N = 333)

Demographics	Profile	Frequency	Percentage
Gender	Male	206	61.8
	Female	127	38.1
Age	23-28	112	33.6
	29-34	78	23.4
	35-40	93	27.9
	Above 40	50	15.0
Education	Junior High School	73	21.9
	Senior High School	85	25.5
	Diploma	106	31.8
	Bachelor's Degree	69	20.7
Experience	Less than 3 years	103	30.9
	3-6 years	58	17.4
	7-10 years	88	26.4
	Above 10 years	84	25.2
Company Age	More than 10 years	82	24.6
	6-10 years	108	32.4
	4-5 years	83	24.9
	Less than 4 years	60	18.0

Source: Data processing results 2024

The demographic data analysis from local university registrations in 2024 provides interesting insights into the profile of 333 respondents involved in this research. Gender distribution shows significant male dominance, with 61.8% male respondents, while females represent 38.1% of the total sample. This gender gap may reflect broader trends in workforce participation or specific characteristics of the SME sector in Kalimantan.In terms of age, the largest group falls within the 23-28 years range, representing 33.6% of respondents. This indicates many young professionals are active in the SME sector and interested in further education development. The second-largest age group is 35-40 years (27.9%), possibly reflecting more experienced professionals seeking skill enhancement or new knowledge.

Respondents' education levels show interesting trends, with diploma graduates dominating at 31.8%, followed by high school graduates at 25.5%. This indicates that many SME professionals in Kalimantan have higher education backgrounds and may be seeking specialization or additional knowledge through local university programs.

Regarding work experience, there is an interesting distribution. The majority of respondents (30.9%) have less than three years of work experience, possibly reflecting recent graduates or those newly entering the SME sector. The second-largest group (26.4%) has 7-10 years of experience, indicating a mix between relatively new and experienced professionals.The age of companies where respondents work also varies. The majority (32.4%) work in companies aged 6-10 years, followed by companies over 10 years old (24.6%) and 4-5 years old (24.9%). This distribution shows that many respondents come from established SMEs, but there is also significant representation from younger companies.

This demographic data provides a comprehensive picture of SME managers' profiles and professionals enrolled in local universities in Kalimantan. The diversity in age, education, work experience, and company age

reflects the dynamics of the SME sector in the region and indicates a strong interest in professional development and continuing education among SME practitioners.

III. RESULTS

Table 2. Convergent Validity

Construct	Higher-Order Constructs With Items	Loading	α	CR	AVE
GSCM	GSCM 1	0.801	0.862	0.894	0.859
	GSCM 2	0.788			
	GSCM 3	0.832			
	GSCM 4	0.841			
	GSCM 5	0.799			
WMP	WMP 1	0.738	0.842	0.881	0.807
	WMP 2	0.803			
	WMP 3	0.826			
	WMP 4	0.829			
GI	GI 1	0.792	0.813	0.824	0.782
	GI 2	0.816			
	GI 3	0.842			
	GI 4	0.851			
	GI 5	0.867			
GCA	GCA 1	0.887	0.902	0.897	0.809
	GCA 2	0.798			
	GCA 3	0.862			
	GCA 4	0.901			
	GCA 5	0.889			
EP	EP 1	0.756	0.802	0.817	0.841
	EP 2	0.694			
	EP 3	0.802			
	EP 4	0.738			

Source: Data processing study results, 2024

Table 3 presents the convergent validity analysis results for the five main constructs in this research: Green Supply Chain Management (GSCM), Waste Management Policy (WMP), Green Innovation (GI), Green Competitive Advantage (GCA), and Enviropreneurship Performance (EP).The factor loading values for all items in each construct are above 0.7, indicating good convergent validity. Cronbach's Alpha (α) for all constructs exceeds 0.8, demonstrating high internal reliability. Composite Reliability (CR) also shows values above 0.8 for all constructs, confirming strong internal consistency.The Average Variance Extracted (AVE) for each construct is above the acceptable threshold of 0.5, with the highest value of 0.859 for GSCM and the lowest of 0.782 for GI. This indicates that the variance in the indicators can be well explained by their latent constructs.Overall, these results demonstrate that the measurement instruments used in this research have good validity and reliability, providing a strong foundation for further analysis and interpretation of research findings.

Table 3.Heterotrait-Monotrait (HTMT).

Variables	ESP	GCA	WMP	GI	GSCM
ESP					
GCA	0,803				
WMP	0,792	0,834			
GI	0,682	0,806	0,814		
GSCM	0,801	0,792	0,782	0,849	

Source: Data processing study results, 2024

Table 4 presents the results of the Heterotrait-Monotrait (HTMT) analysis used to assess discriminant validity between variables in the research. The HTMT ratios displayed show the relationships between tested constructs, including Enviropreneurship Performance (ESP), Green Competitive Advantage (GCA), Waste Management Policy (WMP), Green Innovation (GI), and Green Supply Chain Management (GSCM).The displayed values fall below the threshold of 0.85, indicating good discriminant validity between constructs. The strongest relationship is observed between GSCM and GI (0.849), demonstrating the close connection between Green Supply Chain Management and Green Innovation. Meanwhile, the weakest relationship exists between ESP and GI (0.682), suggesting that Enviropreneurship Performance and green innovation have sufficiently distinct conceptual differences.

Overall, these results indicate that the five constructs studied have significant distinctions from one another while maintaining interconnections within the context of enviropreneurship and sustainable business practices in Kalimantan, Indonesia.

Table 4. Hypothesis Testing

Hipotesis	Path	Beta (β)	*t*-value	*p*-value	CILL	CIUL	VIF	f^2	Supported
H1	GSCM→WMP	0.801	11.083	0.000	0.261	0.781	1.000	1.043	Yes
H2	GSCM→GI	0.719	6.092	0.002	0.492	0.692	2.813	0.243	Yes
H3	GSCM→ EP	0.811	7.813	0.004	0.346	0.583	2.906	0.806	Yes
H4	WMP→EP	0.804	7.808	0.004	0.281	0.546	2.883	0.809	Yes
H5	GI→ EP	0.818	7.918	0.001	0.129	0.596	3.087	1.043	Yes
H6	GISCM → GCA	0.794	8.029	0.000	0.306	0.304	3.092	0.807	Yes
H7	GCA→EP	0.809	11.806	0.001	0.382	0.443	3.844	0.913	Yes
H8	GI → GCA	0.813	10.834	0.001	0.029	0.408	4.083	0.892	Yes
H9	WMP → GCA	0.703	9.829	0.002	0.181	0.434	1.269	0.987	Yes
H10	GSCM→GCA→EP	0.029	3.814	0.002	0.344	0.492			Yes

Source: Data processing study results, 2024

IV. DISCUSSION

The data analysis results show significant support for all hypotheses proposed in this research. Green Supply Chain Management (GSCM) demonstrates strong positive effects on Waste Management Policy (WMP), Green Innovation (GI), and Enviropreneurship Performance (EP), with path coefficients of 0.801, 0.719, and 0.811 respectively. WMP and GI also show significant positive impacts on EP, with coefficients of 0.804 and 0.818. GSCM, GI, and WMP positively influence Green Competitive Advantage (GCA) with coefficients of 0.794, 0.813, and 0.703 respectively. GCA itself has a strong positive influence on EP with a coefficient of 0.809.As the province with the highest industrialization level in Kalimantan, SMEs in East Kalimantan demonstrate the most advanced implementation of GSCM. The dominant oil and gas industry in this province has driven the adoption of strict GSCM practices, particularly in waste management.

The mediating effect of Green Competitive Advantage (GCA) between GSCM and Enviropreneurship Performance (EP) appears significant in this province, supporting the findings of Chen (2008), Chen et al. (2015), Dubey et al. (2015), Oliva et al. (2018), Setyawati et al. (2017), Anwar (2018), Muisyo et al. (2022), and Thoo et al. (2014). SMEs in East Kalimantan have successfully integrated GSCM practices into their business strategies, creating unique competitive advantages.In South Kalimantan, SMEs show a strong relationship between GSCM and waste management (Hashmi et al., 2021). The dominant mining sector has encouraged many SMEs to adopt more effective waste management practices. For example, small companies involved in mining product processing have begun implementing cleaner and more efficient technologies in their waste management.

The implementation of GSCM across various industrial sectors in Kalimantan shows interesting variations. In East Kalimantan, the oil and gas sector drives strict GSCM implementation. In South Kalimantan, the coal mining sector is the main focus. West Kalimantan focuses GSCM implementation on the palm oil plantation and wood processing industries. Central Kalimantan focuses on forestry and ecotourism sectors, while North Kalimantan focuses GSCM on sustainable fishery development and renewable energy.Overall, these findings demonstrate that across all provinces in Kalimantan, green innovation, GSCM, and effective waste management have become key factors in building competitive advantage and improving SME enviropreneurship performance (Albhirat et al., 2024; Asad et al., 2023; Hizarci-Payne et al., 2021; Thoo et al., 2014). While there are variations in focus and approach between provinces, the general pattern shows that SMEs successfully integrating sustainable practices into their business strategies tend to achieve better performance (Kraus et al., 2020; Chen, 2008, 2015; Dubey et al., 2015; Oliva et al., 2018).

These findings affirm the importance of a holistic approach in managing environmental aspects of SME businesses in Kalimantan. GSCM, green innovation, and waste management should be viewed as complementary components in a comprehensive sustainability strategy (Chen, 2008; Setyawati et al., 2017; Anwar, 2018; Muisyo et al., 2022). By adopting this integrated approach, SMEs in Kalimantan can enhance their competitiveness in an increasingly environmentally conscious market while contributing to sustainable economic development in their region.

V. CONCLUSION

This research examines the impact of green supply chain management (GSCM), green innovation, green competitive advantage, and waste management on enviropreneurship performance in Kalimantan. The study reveals that environmentally friendly practices can enhance enviropreneurship performance, a novel concept in sustainability. These findings are particularly relevant in Kalimantan, rich in natural resources yet facing serious environmental challenges. GSCM implementation proves to enhance waste management policy

value and green innovation. The research emphasizes the importance of superior management systems for effective waste handling, crucial considering the impact of extractive industries and plantations. The implications encourage businesses in Kalimantan to integrate GSCM, green innovation, and waste management to improve enviropreneurship performance, reduce waste, and enhance stakeholder relationships.

VI. THEORETICAL AND PRACTICAL IMPLICATIONS

Theoretical Implications: This research presents a new perspective in understanding enviropreneurship performance, a rarely studied concept. Through the Resource-Based View (RBV) approach, this study constructs a model connecting GSCM, waste management, green innovation, green competitive advantage, and enviropreneurship performance. The main theoretical contribution lies in the deep exploration of enviropreneurship performance in the context of advanced economies, filling gaps in existing literature. Unlike previous studies focusing on procedural and managerial aspects of green innovation, this research expands understanding by incorporating sustainable development dimensions. Empirical validation using SEM not only confirms the legitimacy of enviropreneurship performance concept but also provides a strong foundation for future research. The resulting model offers a comprehensive framework for analyzing complex interactions between green practices and organizational performance, paving the way for theoretical development and practical applications in sustainability management.

Practical Implications: The practical implications in this research can take the form of public policy recommendations serving as references for both SMEs and related cross-sector policy users, adapted to each Kalimantan province's specific conditions. In East Kalimantan, dominated by the oil and gas industry, the main focus is reducing greenhouse gas emissions and industrial waste management. Large companies can lead by implementing eco-friendly technologies like carbon capture and storage. SMEs can optimize transportation routes and invest in energy-efficient equipment. Green innovation is directed toward alternative fuel and renewable energy development.

South Kalimantan, with its dominant coal mining sector, emphasizes waste management and post-mining land rehabilitation. Mining companies can implement advanced wastewater management systems, while SMEs adopt environmentally friendly materials in their operations. Green innovation focuses on converting mining waste into value-added products. In West Kalimantan, with its strong agricultural sector, GSCM implementation focuses on sustainable farming practices. Plantation companies can implement efficient water management and organic farming practices. SMEs can optimize supply chains to reduce food waste.

Green innovation is directed toward developing environmentally friendly products based on local resources. Central Kalimantan, with significant forest area, emphasizes sustainable forest management practices. Forestry companies can implement wood monitoring and tracking systems. SMEs in the wood processing sector can optimize raw material use and renewable energy. Green innovation focuses on developing non-timber forest products. In North Kalimantan, with great ecotourism potential, GSCM implementation focuses on developing eco-friendly tourism infrastructure and services. Resorts and tour operators can implement efficient energy and water management systems. SMEs can use local and environmentally friendly products in their operations. Green innovation is directed toward developing conservation-based tourist attractions.

Cross-sector Public Policy Recommendations for each Kalimantan province:

1. East Kalimantan:
    a. Focus on comprehensive development and implementation of environmentally friendly technology in the oil and gas sector, particularly emphasizing emission reduction technologies
    b. Implement progressive tax incentives and financial benefits for companies demonstrating significant emission reductions
    c. Establish and promote strategic partnerships between large corporations and SMEs to facilitate effective green technology transfer and knowledge sharing
    d. Develop extensive GSCM training programs and capacity-building initiatives for SMEs
    e. Create specialized innovation hubs focused on sustainable energy solutions
    f. Establish monitoring systems for environmental compliance
2. South Kalimantan:
    a. Prioritize comprehensive post-mining land reclamation programs with active involvement of local SMEs and community organizations
    b. Create robust and accessible funding schemes specifically designed for environmental services and green initiatives
    c. Develop and support comprehensive environmental product certification systems for SMEs
    d. Establish advanced innovation centers specializing in mining waste utilization and transformation
    e. Implement monitoring systems for land rehabilitation progress
    f. Create incentive programs for sustainable mining practices
3. West Kalimantan:

a. Promote integrated agroforestry systems and sustainable agriculture practices through comprehensive training programs
b. Facilitate strategic partnerships and knowledge transfer between large plantations and local SMEs
c. Support extensive development, marketing, and distribution of non-timber forest products
d. Enhance and expand infrastructure to support efficient green supply chains
e. Develop certification programs for sustainable agricultural products
f. Establish research centers for agricultural innovation

4. Central Kalimantan:
   a. Implement comprehensive peatland rehabilitation programs with active SME involvement
   b. Develop and promote community-based ecotourism initiatives with sustainable practices
   c. Support and incentivize regenerative agriculture and local organic product development
   d. Create comprehensive incentive packages for SMEs implementing environmentally friendly practices
   e. Establish monitoring systems for peatland conservation
   f. Develop educational programs about sustainable forest management
5. North Kalimantan:
   a. Develop comprehensive programs for sustainable fisheries and marine conservation tourism
   b. Support and implement small-scale renewable energy projects with SME participation
   c. Create and maintain certification programs for sustainable fishery products
   d. Establish marine conservation areas with community involvement
   e. Develop coastal ecosystem protection programs
   f. Create training centers for sustainable fishing practices
6. For all provinces:
   a. Fully integrate GSCM and green innovation principles into regional economic development strategies
   b. Establish comprehensive and transparent environmental monitoring systems
   c. Foster and maintain active multi-stakeholder collaboration networks
   d. Develop extensive green entrepreneurship education and training programs
   e. Create regional knowledge-sharing platforms
   f. Establish inter-provincial cooperation mechanisms for environmental protection
   g. Implement standardized reporting systems for environmental impact
   h. Develop cross-sector sustainability initiatives
   i. Create provincial environmental performance indices
   j. Establish regular sustainability assessment programs

VII. LIMITATIONS AND FUTURE RESEARCH

Research on enviropreneurship performance in Kalimantan, Indonesia faces several significant limitations. The current research scope is primarily concentrated on specific regions or sectors, with insufficient comprehensive studies across all provinces. Many existing studies suffer from limited sample sizes and minimal longitudinal research tracking long-term impacts. Additionally, there is a notable lack of comparative studies with other regions, which could provide valuable insights into best practices and regional variations.

Methodological constraints present another significant challenge. Current research heavily relies on quantitative methods, with limited mixed-method approaches and insufficient in-depth case studies. Data collection challenges in remote areas of Kalimantan and limited access to comprehensive industry data further complicate research efforts. These limitations affect the depth and breadth of understanding regarding enviropreneurship implementation across different contexts.

Implementation challenges are particularly evident among SMEs, which haven't fully adopted GSCM practices. This limitation stems from various factors including limited financial resources and access to capital, insufficient technical knowledge and expertise, inadequate supporting infrastructure, and limited awareness of enviropreneurship benefits. Technology adoption barriers and market access constraints further compound these challenges, particularly for smaller enterprises in remote areas.

Contextual limitations also play a significant role, with varying levels of environmental awareness across regions and different regulatory frameworks between provinces. Diverse industry characteristics and challenges, coupled with cultural and social factors, affect implementation success. Geographic and infrastructural disparities between regions create additional complications for standardized implementation approaches.

Looking forward, the future research agenda should focus on several key areas. First, comprehensive empirical studies are needed across various industries in Kalimantan, exploring relationships between GSCM

practices and environmental performance indicators relevant to local conditions. This includes developing sector-specific implementation models and investigating successful cases of GSCM adoption.

Performance measurement represents another crucial area for future research, requiring the development of region-specific indicators and standardized measurement frameworks. This includes creating impact assessment tools and establishing benchmarking systems to monitor long-term sustainability outcomes. Research into implementation strategies should examine effective technology transfer methods, successful capacity-building approaches, and innovative financing mechanisms.

The impact on sustainable development requires particular attention, including assessment of contributions to regional economic growth, environmental impact reduction, and social benefits. Research should evaluate market competitiveness improvements and analyze supply chain resilience in the context of sustainable practices.

Despite these limitations, this research has successfully validated all proposed hypotheses and developed an innovative base model for environmental entrepreneurship. The findings provide original theoretical contributions and practical recommendations, enriching understanding of sustainable entrepreneurship in the context of Kalimantan's SMEs. This work has established a strong foundation for future research and development, identifying key areas for improvement and intervention while contributing significantly to regional sustainable development knowledge and the advancement of enviropreneurship studies. The research outcomes offer valuable insights for policy makers, SMEs, researchers, and various stakeholders involved in environmental entrepreneurship and sustainable development initiatives in the region.

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