

The Implementation of Sustainable Supply Chain in The Beauty and Personal Care Industry in Indonesia: The Natural Resource-Based View

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ABSTRACT

This study aims to understand the knowledge of the beauty and personal care industry in Indonesia about sustainable supply chain and assess the impact of consumer views about sustainable supply chain implementation on corporate image and purchase intention. Specifically, the study tests the relationships between customers' knowledge regarding firms' sustainable supply chain practices and firms' corporate image. Sustainable supply chain practices are measured through the extent of sustainable procurement, sustainable warehousing, sustainable product design, sustainable energy, sustainable transportation, reverse logistics, and sustainable waste management. Customers' perception on the corporate image would further increase their purchase intention. The research uses a quantitative approach by surveying 438 beauty and personal care product users. The results show that sustainable waste management is the most recognized and perceived implementation that contributes to a good corporate image regarding sustainability. Therefore, beauty and personal care companies can leverage the customer perception of sustainable supply chains by emphasizing sustainable waste management through different strategies and educating customers on sustainable supply chain practices. The findings of this study provide valuable insight into the practical effectiveness of sustainable chain supply in the beauty and personal care industry and provide input to future sustainability efforts on the environment, society, and economics.

Keywords:

Beauty and Personal Care Industry, Environment, NRBV, Sustainable, Sustainable Supply Chain

INTRODUCTION

Beauty and personal care products significantly contribute to Indonesia's economy through employment and the communities that provide their ingredients. These products come from the beauty and personal care industry, which is categorized as the chemical and chemical goods processing industry. According to a report from Statista in December 2022, Indonesia's beauty and personal care products market amounted to IDR 111.83 trillion in 2022 and is expected to grow annually by 5.81% from 2022 to 2027 (Statista, 2022). The increasing demand for beauty and personal care products does not escape the adverse environmental effects, ranging from production processes that cause water and

air pollution, habitat destruction, and plastic packaging waste (Ahdiat, 2022). One of the sustainable protection measures that can be implemented is a sustainable supply chain.

Sustainable supply chain (SSC) or also known as supply chain sustainability is a concept that emphasizes environmental concerns through a sustainable supply chain system. Previous research shows that SSC can reduce negative impacts on the environment. One of the sustainable supply chain approaches was coined by Hart (1995), namely the natural resource-based view (NRBV), or supply chain view with environmental awareness. The Natural Resource-Based View (NRBV) is an extension of the firm's traditional Resource-Based View (RBV), emphasizing how a company's environmentally sustainable practices will gain and sustain a competitive advantage. Proposed by Hart (1995), the NRBV highlights that firms can develop unique capabilities through pollution prevention, product stewardship, and sustainable development, reducing environmental harm and creating long-term economic value. Not only as a competitive advantage, SSC or sustainability topics are deemed to improve the company's image (Widyastuti *et al.*, 2019; Lee & Chen, 2019; Al-Ghdabi, 2019; Mazur-Wierzbicka, 2021). One of the studies involving the NRBV concept in the supply chain was by Yunus & Michalisin (2016), who found that the supply chain from upstream to downstream is implemented by companies differently based on the dimensions of NRBV to form a competitive advantage.

In Indonesia, the crisis-resilient nature of the beauty and personal care industry has a positive impact on industry players. However, the high demand of Indonesian consumers contributes to environmental damage caused by beauty and personal care product packaging, including single-use plastic waste (Arisman and Fatimah, 2023). Several beauty and personal care companies are implementing sustainable principles in their supply chains to face these environmental challenges. Some companies that practice sustainable supply chains in Indonesia include L'Oréal with sustainable sourcing and emission reduction programs; Unilever, through sustainable sourcing; Procter & Gamble, with reduced fuel emissions and green sourcing; and The Body Shop, committed to environmental welfare. Studies on Indonesian consumers' responses to brands that implement green brand products show the positive influence of brands that implement environmentally friendly production on product packaging (Pandjaitan *et al.*, 2022).

The findings have not yet drawn a definite response, especially regarding sustainable practices encouraging customers to fully support the implementation (Puspitasari, 2020; Kuwakuma *et al.*, 2021; Jauhari *et al.*, 2021). Consumer consistency in supporting beauty and self-care products with sustainability is also difficult to ascertain because the research domain is only limited to certain recognized brands (Diva, 2020; Utami *et al.*, 2022). Given this gap, there is still a need to deepen consumer responses to the challenges that may arise from implementing sustainability concepts in beauty and self-care products in Indonesia. Therefore, this study aims to understand the knowledge of the beauty and personal care industry in Indonesia about sustainable supply chain, assess the impact of sustainable supply chain implementation on consumer views on the company, and discuss the

implementation of recent sustainable supply chain practices in the beauty and personal care industry in Indonesia.

The supply chain is an important part of the company, where the supply chain is a system related to goods that need to be supplied from suppliers or suppliers to carry out the production process until the product reaches consumers or distribution. Therefore, several companies that carry out the production of a product and provide services to consumers consisting of producing, delivering, and recycling materials, components, and end products can be referred to as a supply chain (Wisner *et al.*, 2012). In addition to producing and distributing products to consumers, the supply chain also consists of a design and activities to channel information and funds or costs from suppliers to consumers that require coordination and management for all activities (Sanders, 2017).

The existence of a sustainable supply chain or sustainable supply chain management is an effort to break the target barrier that is not only related to operational efficiency and cost reduction but also relates to the use of natural resources related to the environment and helps stakeholders improve performance in other areas (Wang and Dai, 2018). In addition to commitment to the environment, companies implement sustainable procurement to answer consumer questions about corporate responsibility regarding the environment (Perkiss *et al.*, 2021). Based on this understanding, the following hypothesis is formed:

H1: Consumer perception of sustainable procurement positively affects corporate image.

Warehousing activities play a significant role in the product cycle and the arrival of products in the hands of consumers. Sustainable warehousing is considered one of the company's efforts to achieve a sustainable supply chain, but it requires further investigation (Mukonza & Swarts, 2020; Ali & Kaur, 2021). However, as part of the sustainable supply chain, sustainable warehousing is an implementation that shows the company's concern for the environment and can potentially improve corporate image (Karia & Asaari, 2013).

H2: Consumer perception of sustainable warehousing positively affect corporate image.

The findings in previous studies also show the need for sustainable product design to implement the value of sustainable supply chains in companies. The realization of the implementation of the sustainability concept in the form of product design not only opens a profit path for the company but provides a tangible form for consumers to assess the company's commitment to the concept of sustainability (Bukhari *et al.*, 2017). In addition to concern for the environment, the implementation of sustainable product design has the opportunity to increase consumer confidence in the company so that the corporate image of the company is getting better (Widyastuti *et al.*, 2019).

H3: Consumer perception of sustainable product design positively affects corporate image.

The use of environmentally friendly energy that several companies have carried out is one part of the sustainable supply chain activities in the beauty and self-care industry as a result of previous research. Quoted from research by Shekari and Rajabzadeh Ghatari (2013), companies can improve

their image by increasing the effectiveness of green supply chain management by conducting sustainable procurement or green procurement (green purchasing), green production or concerned with the environment by optimizing energy, conducting waste recovery or waste treatment activities, and reducing water, air and soil pollution.

H4: Consumer perception of sustainable energy positively affects corporate image.

Sustainable transportation is one of the sustainable supply chain activities carried out by several companies based on previous research results. Logistics activities are important in the company's supply chain activities and significantly contribute to air pollution (de Souza *et al.*, 2022). Jayarathna *et al.* (2023) argued that sustainable transportation, namely green logistics, provides excellent benefits to the company's economic value but has a relatively low social and environmental impact.

H5: Consumer perception of sustainable transportation positively affects corporate image.

A form of sustainable supply chain carried out by several companies based on the results of previous research is reverse logistics. Reverse logistics can increase value and profit sustainably for the company. It can also provide new channels for companies by utilizing existing resources and making better use of products. Companies that organize, coordinate, monitor, and implement reverse logistics have strategic capabilities and resources (Jayaraman *et al.*, 2007).

H6: Consumer perceptions of sustainable reverse logistics positively affect corporate image.

Waste management practices certainly did not escape the attention of company representatives or resource persons in previous studies. Waste management is something that companies consider important. Many large companies have initiated waste management practices and launched circular economy strategies to obtain CSR values and achieve operational efficiency and competitive advantage (Romero- Hernández *et al.*, 2018). Such implementation can potentially improve the company's image in the eyes of consumers and create a favorable perception of companies that show concern for the environment through sustainable waste treatment (Ko *et al.*, 2013).

H7: Consumer perceptions of sustainable waste management positively affect corporate image.

The corporate image formed by the company will influence the desire to buy from consumers for the products produced by the company. Corporate image is found to be significantly related to consumer loyalty. It cannot be ignored because it is the key to success for almost all types of organizations and businesses in the global economy, so it also has an important role in increasing purchase intention (Ronaldo *et al.*, 2018). Perceptions of companies that have a good image or image determine consumers' willingness to buy these products (Huang *et al.*, 2014).

H8: Consumer Perception of Corporate Image positively affects Purchase Intention.

RESEARCH METHODS

This study conducted quantitative research using a survey to obtain expansive beauty and body care consumer responses regarding sustainable supply chain practices. This quantitative research

examines the relationship between company implementation and consumer perspectives. In addition, the expected results of quantitative research are consumer perspectives on corporate image and consumer assessments and influences on companies that implement sustainable supply chain practices.

The target population is consumers of beauty and personal care products throughout Indonesia, which was determined using purposive sampling; as such, the sample for the quantitative research stage is consumers of beauty and personal care products in the age range of 15-35 years. Based on previous research, it was found that this age range is classified as an age group that makes many purchases of beauty and personal care products.

Based on calculations using the Cochran formula, consumer opinions can be identified by collecting at least 384 questionnaire respondents. The questionnaire sample was determined using purposive sampling using online media as a means of distributing the questionnaire. The respondents needed in this study are people who live throughout Indonesia with an age range of 15-65 years because this age group is considered to buy a lot of cosmetic products. The number of respondents who participated in this stage of the research was 438 respondents.

The analysis of quantitative data was carried out using the JASP software. The series of data processing carried out was the classical assumption test, which consisted of validity, reliability, normality, homoscedasticity, and multicollinearity tests on each variable used in the study. After passing the classical assumption test, the existing data were tested using regression analysis to determine the relationship between the independent and dependent variables.

RESULTS AND DISCUSSIONS

The objects targeted for research are consumers of beauty and self-care products throughout Indonesia aged 15-65 years. Previous research found that this age range is classified as an age that purchases a lot of beauty and self-care products (Handriana *et al.*, 2020). The following are the results of quantitative research that has been conducted on 438 respondents.

Validity, reliability, and classical assumption tests

Questionnaire items are declared valid if the p-value is below 0.05 (Hair *et al.*, 2006). Through Pearson's Correlation analysis, all questionnaire items are valid and can be used for analysis. In the next test results, the reliability of the research data is declared good if Cronbach's Alpha > 0.6 (Black and Babin, 2019). Computations on research variables show good reliability, where all variables have Cronbach's Alpha > 0.6.

To support the results of the validity test carried out on the research data, a classical assumption test was carried out consisting of normality test, multicollinearity test, and Levene test. Classical tests are necessary to ensure the robustness and validity of the data prior to conducting more complex behavioral analyses such as structural equation modeling. These tests help to confirm that the assumptions underlying our statistical techniques are met and that the observed relationships are not artifacts of poor data quality. Figure 1 is a distribution plot of the residual values of the research data.

The distribution of the research data appears close to the regression line, so the data is declared to have a normal distribution. Furthermore, based on Black and Babin (2019), research data is declared to pass the multicollinearity test if Tolerance > 0.1 and VIF < 10.00. Test results with qualified values indicate there is no correlation between variables. The results in Table 1 show that there is no multicollinearity in the data.

Table 1. Multicollinearity and Levene's Test Results

Variables	Multicollinearity Test		Levene's Test	
	Tolerance	VIF	F	Sig.
Sustainable Procurement (SR)	0.415	2.412	9.478	0.975
Sustainable Warehousing (WH)	0.328	3.051	4.844	0.028
Sustainable Product Design (DS)	0.388	2.575	1.479	0.225
Sustainable Energy (EN)	0.336	2.979	4.407	0.036
Sustainable Transportation (TR)	0.338	2.956	2.571	0.11
Reverse Logistics (RL)	0.475	2.106	2.403	0.122
Sustainable Waste Management (WM)	0.307	3.253	0.106	0.745
Corporate Image (CI)	0.561	1.783	0.052	0.82
Purchase Intention (PI)			2.337	0.127

Source: Authors' work

Levene's Test was conducted to test the variance in research data or the homogeneity of sample variance. This Test is classified as one of the classic assumption tests to assess the uniformity of variance within groups in research, where the group used as the basis for Levene's test assessment is the gender of the respondent. The results in Table 1 show that there is no significance to the value of 0.015, so it is evident that the data used in this study is not homogeneous in variance.

Based on the classical assumption test carried out on the research data, there are indications that the data obtained from respondents has a high level of homoscedasticity. High heteroscedasticity occurs when the resulting data obtains a too-high correlation. These results indicate abnormal data and may produce less accurate analysis (Singh & Kumar, 2021).

Hypothesis testing

After conducting the classical assumption test, we tested mediation analysis and linear regression for the test variables. The following are the results of the test of all variables on corporate image and purchase intention. The results of the data analysis on JASP are summarized in Table 2.

Table 2. Linear Regression Results of Sustainable Supply Chain on Corporate Image

DV	A(F-Test Sig.	R2	IV	Beta	Sig. (t-test)	Conclusion
CI	<0.001	43.90%	SR	-0.029	0.621	Not supported
			WH	0.056	0.388	Not supported
			DS	0.016	0.786	Not supported
			EN	0.147	0.022	Not supported
			TR	0.112	0.080	Not supported
			RL	0.068	0.212	Not supported
			WM	0.377	<0.001	Supported
PI	<0.001	37.50%	CI	0.12	<0.001	Supported

Source: Authors' Work

The results shows that only the perception of variable waste management practices (WM) or sustainable waste treatment significantly affects corporate image. Linear regression was further

performed for the corporate image variable on purchase intention, which shows significant results, as evidenced by the *t*-test value or *p*-value less than 0.05.

The results show that the supported hypotheses are H7 and H8, while hypotheses H1, H2, H3, H4, H5, and H6 were not. Hypothesis H7, namely the relationship between sustainable waste management and corporate image, and hypothesis H8, namely the relationship between corporate image and purchase intention, has a significant influence. The following is a discussion of each hypothesis obtained based on the results of the linear regression test.

Sustainable procurement has no positive effect on corporate image.

Based on the regression results, sustainable procurement does not affect corporate image. These results illustrate the role of sustainable procurement on consumer views of the image of beauty and self-care companies. Prior research suggests that the impact of sustainable procurement on corporate image may be contingent upon the visibility and communication of such initiatives (Mir *et al.*, 2021). If stakeholders, including customers and the public, are not fully aware of these efforts or perceive them as compliance-driven rather than value-driven, the influence on corporate image may be limited. Moreover, firms often focus sustainability communication on more consumer-facing activities, such as marketing or product innovation, while procurement remains a back-office function with lower public visibility. These dynamics may explain the lack of a significant relationship in our findings. The study by Roberts (2003) emphasizes that sustainable procurement as part of the sustainable supply chain is a demand from consumers that can be illogical and unpredictable. Thus, the finding of no relationship between sustainable sourcing and corporate image may be due to consumers' perceptions that are not entirely logical (Roberts, 2003). In addition, the lack of awareness of the true meaning of sustainable procurement can be a driving factor in the absence of a relationship between sustainable procurement and corporate Image (Glass *et al.*, 2012).

Sustainable warehousing has no positive effect on corporate image.

The perception of sustainable warehousing practices does not affect corporate image. Similar with the procurement practices, customers often unaware of these activities and companies do not share them to their customers. Along with this issue, implementing sustainable warehousing can create a disconnect between consumer perceptions of warehousing that prioritizes environmental goodness (Torabizadeh *et al.*, 2020). Sustainable warehousing still requires deepening and more emphasized implementation to reap a close relationship with consumer perceptions (Aravindaraj & Chinna, 2022), especially for beauty and self-care products.

Sustainable product design has no positive effect on corporate image.

The regression test results show that product design does not influence corporate image. As stated by several informants in this study, product design is a factor that requires much consideration, one of which is the quality of beauty and self-care products contained in the packaging. Packaging with sustainability elements is likely to create impressions such as relatively high prices (Yan & Yazdanifard,

2014), so consumer perceptions of companies that implement sustainable product design do not have a close relationship. A study by Soon & Kong (2012) shows that different product characteristics can lead to different perceptions of sustainable product design and consumer responses to corporate image as a result of such implementation. Moreover, in line with the remarks of one of the research informants, consumer behavior in developing countries related to sustainability is considered to have good interest value but is not driven by an interest in supporting product design with sustainable properties (Boz *et al.*, 2020).

Sustainable energy has no positive effect on corporate image.

Based on the regression test, sustainable energy does not influence corporate image. Consumer perceptions of sustainable energy are likely influenced by consumer openness to sustainable energy innovations, especially solar panels (Mappangara & Kartini, 2019). The lack of openness to innovation and understanding of the environmental benefits of sustainable energy can also be influenced by the perception of generations who did not receive specific education on the environmental benefits of sustainable energy (Altuntaş & Turan, 2017; Ali *et al.*, 2019; Assali *et al.*, 2019). Not only educational exposure but also the finding of no relationship between sustainable energy and corporate image can be supported by individual interest in the topic and its impact on personal life (Karatepe *et al.*, 2012).

Sustainable transportation has no positive effect on corporate image.

After performing linear regression on the sustainable transportation variable on corporate image, an insignificant result was found. This means that sustainable transportation does not affect corporate image. According to research by Aslam (2019), various factors are the main reasons for carrying out sustainable transportation or logistics. Sustainable transportation is implemented to improve the company's image and relations or relationships with the community, optimize logistics flow, and become part of the corporate responsibility (CSR) agenda. Companies can build a positive corporate image by creating awareness about environmental issues by implementing sustainable supply chain practices (Aslam *et al.*, 2019). In addition to improving corporate image, according to ISO 14001, companies that apply awareness to implement sustainable logistics have the advantage of reducing company costs and saving energy and raw materials (Gong *et al.*, 2013).

Reverse logistics has no positive effect on corporate image.

From the linear regression results that have been carried out, reverse logistics shows insignificant results on corporate image. The study by Khan *et al.* (2024) states a significant correlation between reverse logistics and competitive advantage. However, there is no clear evidence of a direct relationship between reverse logistics and corporate image but rather an explanation that reverse logistics can help improve the company's competitiveness by utilizing resources, generating revenue, and reducing costs. Therefore, there is currently no substantial evidence showing that reverse logistics can have a direct impact on corporate image.

Sustainable waste management has a positive effect on corporate image.

Sustainable waste management or waste management has a positive influence and has significant regression test results on corporate image. Consumers widely know waste management practices. A total of 101 out of 350 supporting answers from respondents stated that companies known by respondents can be said to be sustainable or sustainable because they carry out waste management activities. The waste management in question includes the company having products that can be recycled (recycle), the company having or providing a recycling station, and the company having products that can be refilled (refillable). In addition, respondents also stated that the company implements or conducts green marketing campaigns or activities related to waste management activities, both reuse, reduce, and recycle (3R). This also indicates that the company's green marketing or communication can significantly impact the corporate image (Aslam, 2019).

Corporate image has a positive effect on purchase intention.

Based on research by Ronaldo (2018), corporate image has an important role in increasing purchase intention. The results of the linear regression carried out show significant results between corporate image and purchase intention. The study conducted by Lee (2018) explains that corporate image and brand image are also influenced by activities carried out by the company, one of which is CSR or corporate social responsibility activities, which directly influence the desire to buy from consumers or the purchase intention. The corporate image also significantly influences customer trust, where trust can help increase consumer purchase intention (Lin *et al.*, 2010).

The Natural Resource-Based View (NRBV) and Sustainable Supply Chain

The resource-based view of the company emphasizes the importance of competitive advantage in utilizing existing resources. According to Hart (1995), the initiatives of industry players needed to reduce negative environmental impacts need to be done by considering the company's resources to realize real impacts. There are three main dimensions in sustainable strategies that reduce the negative impact of production on the environment, including:

1. **Pollution Prevention.** The pollution prevention strategy seeks to reduce these impacts around production activities and cut the costs required for pollution disposal. Implementing pollution prevention is tacit knowledge or information that can be combined with experience to make it easier for each individual.
2. **Product Stewardship.** Companies can reduce negative impacts on the environment by combining environmental conservation schemes with product design. In product stewardship, companies move towards reducing waste and extending the product life cycle.
3. **Sustainable Development.** Production's impact on the environment can be reduced while strengthening the company's competitive advantage. Implementing a sustainable development strategy encompasses efforts to preserve the environment by empowering the company's resources to its related parties.

The pollution prevention dimension reduces waste along the company's supply chain. Pollution prevention and supporting environmental sustainability also help reduce excessive costs along the supply chain. This encouragement can help beauty and self-care companies overcome implementation challenges in Indonesia, such as finding the best route with efforts to develop ERP or using more environmentally friendly modes of transportation. In the end, pollution prevention can be implemented to meet future development potential. The dimensions of product stewardship in Indonesia have sufficient understanding. The results show that implementing product stewardship is considered expensive, and the transformation stage for practices that intersect with product stewardship is minimal. Efforts from companies related to activities in the product stewardship dimension that are effective in attracting consumer interest are by carrying out reverse logistics activities, namely receiving back consumable packaging from consumers. The packaging is returned by opening a packaging return place or working with third parties.

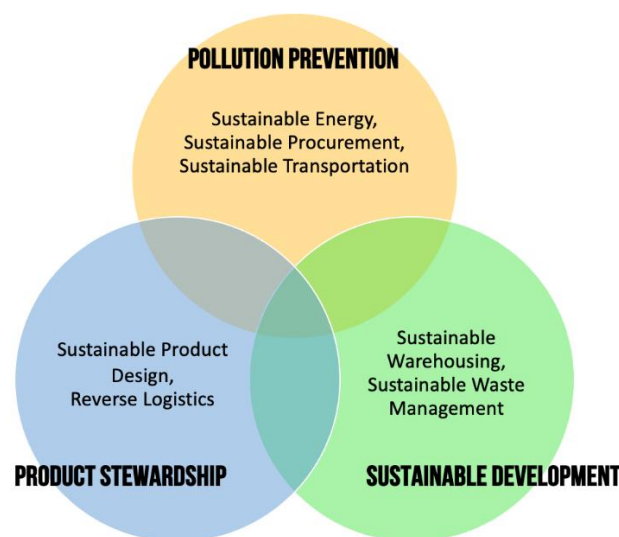


Figure 1. The Relationship between Sustainable Supply Chain Practices and NRBV
Source: Authors' Work

Based on supporting answers by respondents, 101 answers stated that sustainable companies are companies that carry out waste management activities in a sustainable manner, namely openly carrying out waste management, having products that can be recycled or can be recycled, providing recycling stations so that consumers can support the recycling movement, and having products that can be refilled or refillable. Respondents also believe in green marketing programs and activities carried out by companies related to 3R (reuse, reduce, recycle) activities.

The results show that, in general, a sustainable supply chain has been recognized in practice in Indonesia, represented by both company representatives and the general public, as represented by respondents. The implementation of SSC based on the NRBV dimension in Indonesia has its obstacles. Still, it does not close the awareness of beauty and self-care industry players to the worsening environmental situation. With good encouragement, such as prioritizing SSC priorities and being

determined to go through SSC challenges, beauty and self-care companies in Indonesia can realize SSC better and explore the potential for its sustainable implementation. In addition, the awareness and desire of consumers to participate in protecting the environment can be one of the supporting reasons for companies to implement sustainable supply chain policies in the company.

By emphasizing waste management as an integral aspect of sustainable supply chain practices, companies can align with evolving customer expectations regarding sustainability and gain a competitive advantage over industry competitors. Waste management practices are already standard in most beauty and personal care companies, so these implementations can be used to enhance and refine practices that fall under the pollution prevention and product stewardship strategies, thereby transforming company-owned resources into strategic assets that differentiate the company in the eyes of customers.

CONCLUSION AND RECOMMENDATION

The study aims to understand consumer assessments of SSC implementation efforts and the effect of SSC implementation on consumer views of the company. The most significant or prominent influence of SSC implementation on companies in the eyes of consumers is shown in the significance of the relationship between sustainable waste management and corporate image. This study lacks evidence of the positive relationships between other dimensions of sustainable supply chain practices (namely, sustainable procurement, sustainable warehousing, sustainable product design, sustainable energy, sustainable transportation, and reverse logistics) and corporate image, possibly due to limited consumer awareness or perceived relevance of these practices. Notably, the research highlights that a strong corporate image built through SSC efforts can positively influence consumer purchase intention. This finding contributes to the literature by emphasizing the differentiated impact of SSC dimensions on consumer perception and purchase behavior, and it offers practical guidance for firms to prioritize SSC areas that resonate most with consumers when seeking to enhance their image and market performance.

This study should be interpreted with caution as some limitations exist. Firstly, the research employs a convenience sampling technique in data collection, limiting the generalizability of the findings. However, a valid sampling frame is nonexistent, and thus a random sampling technique would be a challenge. Future research might improve the condition by increasing the number of respondents to reduce response bias. Secondly, the study measures the sustainable supply chain practices from the customers' perspective. Future research could enrich the findings by examining the real practices within companies.

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