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Sustainable supply chain practices and business performance of culinary MSMEs in West Java

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Abstract
This study explores the relationship between sustainable supply chain practices and the business performance of Culinary MSMEs in West Java, Indonesia. Using a quantitative approach, data were gathered from 292 Culinary MSMEs through structured questionnaires and analyzed using SEM-PLS with SmartPLS software. The research examines three dimensions of sustainable practices—environmental, social, and economic—and their impact on MSME performance. Findings show that sustainable supply chain practices positively and significantly influence business performance by enhancing operational efficiency, customer satisfaction, and market reputation. The study provides empirical evidence from a developing country context and emphasizes the strategic importance of sustainability for MSMEs aiming to remain competitive and resource-efficient while addressing environmental and social challenges. It also highlights the role of policymakers and supply chain stakeholders in supporting sustainability integration within MSME operations. The study recommends future research to consider longitudinal or comparative approaches across regions to deepen insights into sustainable food supply chain practices.

Keywords: Business Performance, Culinary MSMEs, smart PLS, Sustainability, Supply Chain

Abstrak
Penelitian ini mengkaji hubungan antara praktik rantai pasok berkelanjutan dengan kinerja bisnis UMKM Kuliner di Jawa Barat, Indonesia. Dengan menggunakan pendekatan kuantitatif, data dikumpulkan dari 292 UMKM Kuliner melalui kuesioner terstruktur dan dianalisis menggunakan metode SEM-PLS dengan bantuan perangkat lunak SmartPLS. Penelitian ini memfokuskan pada tiga dimensi utama praktik keberlanjutan (lingkungan, sosial, dan ekonomi) serta pengaruhnya terhadap kinerja bisnis UMKM. Hasil penelitian menunjukkan bahwa praktik rantai pasok berkelanjutan berpengaruh positif dan signifikan terhadap peningkatan efisiensi operasional, kepuasan pelanggan, dan reputasi pasar UMKM. Studi ini memberikan bukti empiris dalam konteks negara berkembang dan menekankan pentingnya strategi keberlanjutan bagi UMKM untuk tetap kompetitif, efisien dalam penggunaan sumber daya, serta responsif terhadap isu lingkungan dan sosial. Penelitian ini juga merekomendasikan dukungan dari pemangku kepentingan, termasuk pembuat kebijakan dan pelaku rantai pasok, dalam mendorong integrasi prinsip keberlanjutan pada operasional UMKM. Penelitian selanjutnya disarankan untuk menggunakan data longitudinal atau studi perbandingan antar wilayah guna memperkaya pemahaman tentang keberlanjutan dalam rantai pasok pangan.

Kata kunci: kinerja bisnis, UMKM kuliner, SmartPLS, keberlanjutan, rantai pasokan.

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1. Introduction

Sustainable supply chain management has emerged as a critical global issue amidst escalating environmental degradation, climate change, and growing socio-economic disparities (Alexander et al., 2014). The urgency for sustainable practices is further underscored by international frameworks such as the United Nations' Sustainable Development Goals (SDGs), which emphasize the need for inclusive and environmentally responsible economic systems (Stroumpoulis et al., 2024). In response, businesses worldwide are increasingly expected to adopt supply chain strategies that are economically viable, environmentally sound, and socially equitable, regardless of their scale. The shift toward sustainability is no longer optional but a necessity for long-term competitiveness and resilience (Sun et al., 2022).

In the context of developing economies such as Indonesia, Micro, Small, and Medium Enterprises (MSMEs) represent the backbone of the national economy, accounting for over 99% of business units and employing the majority of the workforce (Achmad & Wiratmadja, 2025; Widodo et al., 2019). Despite their strategic importance, MSMEs often face significant challenges in adopting sustainable supply chain practices due to resource constraints, limited access to technology, and inadequate institutional support (Dalimunthe et al., 2022; Uttam et al., 2024). This is particularly evident in the culinary sector, which is characterized by high resource intensity, waste generation, and complex stakeholder interactions (Martin-Rios et al., 2022; Todd & Faour-Klingbeil, 2024). While sustainability presents an opportunity to enhance business performance through improved efficiency and market differentiation, the extent to which culinary MSMEs integrate sustainability principles into their operations remains unclear and under-researched (Açar et al., 2019; Vu et al., 2017).

The province of West Java is home to one of the most vibrant culinary MSME sectors in Indonesia (Nuraisyah et al., 2025; Umaran et al., 2022). However, many of these enterprises struggle with sustainability integration due to limited environmental awareness, inconsistent supply chain coordination, and a lack of knowledge regarding the long-term benefits of sustainable practices. Implementing sustainability—through efficient resource usage, waste management, and ethical partnerships—can potentially lead to improvements in operational performance, customer satisfaction, and business reputation (Nguyen & Sarker, 2018; Roffé & González, 2023). Nonetheless, empirical studies that examine the link between sustainable supply chain practices and business performance in the context of culinary MSMEs, particularly in developing countries, remain scarce (Mastos & Gotzamani, 2022; Silva et al., 2021).

This study addresses this gap by empirically examining the relationship between sustainable supply chain practices and the business performance of culinary MSMEs in West Java, Indonesia. Accordingly, this research seeks to answer the following question: To what extent do sustainable supply chain practices affect the business performance of culinary MSMEs in West Java? By exploring this question, the study contributes to the existing literature by providing context-specific evidence from a developing country setting. Furthermore, it offers practical implications for MSME

operators, policymakers, and supply chain stakeholders to foster the adoption of sustainability principles in small-scale food enterprises. The findings are expected to support the development of more adaptive, inclusive, and sustainable supply chain strategies tailored to the unique constraints and opportunities faced by MSMEs in emerging economies.

2. Literature Review

Environmental Sustainability in Supply Chains

Environmental sustainability in supply chains refers to the extent to which firms integrate eco-friendly practices across procurement, production, distribution, and end-of-life product management. These practices include waste reduction, resource efficiency, carbon footprint minimization, and adoption of green technologies (Seuring & Müller, 2008). The environmental dimension is especially relevant for the food industry, where resource-intensive operations often contribute to environmental harm, including excessive food waste, energy usage, and pollution. In the context of MSMEs, environmental sustainability is frequently overlooked due to limited resources and knowledge. However, studies have shown that environmentally sustainable practices can result in cost savings through waste reduction, improved energy efficiency, and regulatory compliance (Zhu & Sarkis, 2006). These benefits are significant for culinary MSMEs operating on narrow profit margins, where operational efficiency is key to survival and growth (Topleva & Prokopov, 2020).

Moreover, consumers are increasingly placing value on environmental responsibility, especially in food-related businesses. This trend suggests that eco-friendly practices not only reduce costs but also enhance customer trust, loyalty, and satisfaction (Kumar et al., 2019). For culinary MSMEs, branding their operations as “green” can serve as a competitive advantage in niche markets where sustainability is a purchasing criterion (Tan et al., 2018).

Despite growing awareness of the environmental footprint in supply chains, many MSMEs—especially in the culinary sector—have yet to institutionalize green practices due to limited access to capital and technical knowledge. Nonetheless, the potential benefits of adopting environmentally sustainable measures remain compelling, particularly for enterprises seeking operational efficiency and long-term viability (Chun et al., 2015; Rasit et al., 2019). Integrating such practices into daily operations can help culinary MSMEs comply with regulatory requirements and align with shifting consumer preferences (Nigam & Kumari, 2018).

H1: Environmental sustainability practices have a positive effect on the integrated sustainable supply chain practices of culinary MSMEs.

Social Sustainability and Stakeholder Engagement

Social sustainability in supply chains emphasizes the human and relational aspects of business operations, including fair labor practices, workplace safety, community involvement, and ethical sourcing (Carter & Rogers, 2008). These elements are essential for building trust with stakeholders, ensuring long-term workforce stability, and mitigating social risks that could harm business performance. For MSMEs,

particularly those in the food industry, social sustainability is crucial in managing relationships with employees, suppliers, and local communities. Studies suggest that businesses with socially responsible practices often enjoy stronger stakeholder support and lower turnover rates, which contribute to improved operational continuity (Pagell & Wu, 2009). In addition, socially sustainable firms are more likely to attract ethically conscious customers.

In the culinary sector, where interpersonal interaction and service quality are critical, social sustainability can also enhance customer satisfaction and brand image. Employing local labor, supporting community initiatives, and ensuring employee well-being contribute to a business's social capital, which is difficult for competitors to replicate (Açar et al., 2019; Cantele & Cassia, 2020). As social sustainability becomes a central theme in global supply chain discourse, its relevance to MSMEs has intensified, especially in sectors reliant on human labor and community trust, such as food and beverage. Ensuring socially responsible practices not only mitigates operational risks but also reinforces business legitimacy in the eyes of stakeholders. For culinary MSMEs, which often rely on interpersonal service quality, the social dimension can be a vital source of differentiation and value creation (Kot, 2018; Tomasella et al., 2023).

H2: Social sustainability practices have a positive effect on the integrated sustainable supply chain practices of culinary MSMEs.

Economic Sustainability and Long-Term Viability

Economic sustainability refers to a firm's ability to remain profitable while balancing social and environmental responsibilities (Elkington, 1997). It emphasizes long-term value creation, cost efficiency, innovation, and adaptability. For MSMEs, economic sustainability is not just a goal but a necessity, as these enterprises often operate under significant financial constraints. Incorporating sustainable practices into the supply chain can lead to economic benefits such as reduced material and energy costs, increased process efficiency, and access to green financing or subsidies. Moreover, sustainable firms may be better positioned to manage risks and adapt to market changes, improving their overall resilience (Porter & Kramer, 2011).

In the culinary MSME sector, economic sustainability is also closely linked to local sourcing, portion control, and inventory optimization, which reduce waste and increase profitability. These practices not only support long-term viability but also resonate with customers seeking value and authenticity (Pilati & Stradis, 2023; Proença et al., 2022). In today's competitive landscape, MSMEs must balance short-term profitability with long-term economic resilience—an objective closely aligned with the principles of economic sustainability. Strategic investments in sustainable supply chain initiatives may offer cumulative financial returns, particularly when these practices lead to improved productivity and cost structures. For culinary MSMEs in developing countries, such approaches can also facilitate market expansion and access to sustainability-conscious consumers (Pilati & Stradis, 2023; Wu, 2017).

H3: Economic sustainability practices have a positive effect on the integrated sustainable supply chain practices of culinary MSMEs.

Integrative Sustainable Supply Chain Practices and Firm Performance

While the individual dimensions of sustainability (environmental, social, economic) have distinct contributions to business outcomes, recent literature emphasizes the importance of an integrative approach to sustainable supply chain management (Golicic & Smith, 2013). Integrating all three pillars can create synergistic benefits that enhance overall firm performance beyond the sum of its parts.

Such integration is crucial for culinary MSMEs, which face multifaceted challenges related to cost, reputation, and operational efficiency. A holistic sustainability strategy enables businesses to align values with operations, improve consistency across business functions, and meet evolving customer expectations (Beske & Seuring, 2014). Empirical evidence suggests that firms adopting integrated sustainability approaches experience better performance in areas such as brand reputation, customer retention, and innovation. However, achieving this integration requires internal alignment, strategic intent, and often external support—factors that may be underdeveloped in MSME contexts (Bodhanwala & Bodhanwala, 2018; López-Pérez et al., 2018).

While each sustainability dimension independently contributes to business performance, integrating them into a cohesive strategy may yield synergistic benefits that amplify organizational outcomes. A holistic approach enables alignment between internal values and external market expectations, creating consistency across functions and reducing performance volatility. This integration is particularly pertinent for culinary MSMEs, which face unique pressures to remain competitive, responsive, and socially embedded (Açar et al., 2019; Bayu et al., 2022; Rezaee, 2018).

H4: Integrated sustainable supply chain practices positively influence the overall business performance of culinary MSMEs.

Conceptual Framework

The conceptual framework of this study is grounded in the triple bottom line (TBL) theory, which underscores the need for organizations to achieve balance across three dimensions of sustainability: environmental, social, and economic (Elkington, 1997). This framework is further reinforced by empirical studies suggesting that sustainability-oriented supply chain practices can enhance firm performance, particularly when these practices are integrated holistically (Seuring & Müller, 2008; Beske & Seuring, 2014). In the context of culinary MSMEs, environmental sustainability practices—such as waste minimization, resource efficiency, and green procurement—are expected to contribute positively to operational efficiency and cost reduction, ultimately enhancing overall business performance. This relationship is supported by prior studies highlighting the operational and reputational gains associated with environmental responsibility (Zhu & Sarkis, 2006; Kumar et al., 2019).

Similarly, social sustainability practices—including fair labor conditions, employee welfare, ethical supplier engagement, and community involvement—are posited to strengthen stakeholder trust and improve customer satisfaction, leading to more sustainable competitive advantages. Prior literature confirms that social responsibility is increasingly recognized as a driver of brand loyalty and employee retention (Carter

& Rogers, 2008; Pagell & Wu, 2009). From an economic perspective, sustainability emphasizes long-term value creation, cost-effectiveness, and innovation, all of which are especially critical for MSMEs operating in resource-constrained environments. Economic sustainability practices such as local sourcing, efficient inventory management, and cost control mechanisms can enhance profitability and strategic agility (Porter & Kramer, 2011).

The framework further recognizes the importance of an integrative approach, wherein the alignment and interaction of environmental, social, and economic practices are expected to yield synergistic benefits. This holistic implementation of sustainable supply chain practices can optimize firm performance through enhanced resilience, innovation, and market positioning (Golicic & Smith, 2013). As such, the study posits four core hypotheses, each representing a direct relationship between a dimension of sustainability and business performance.

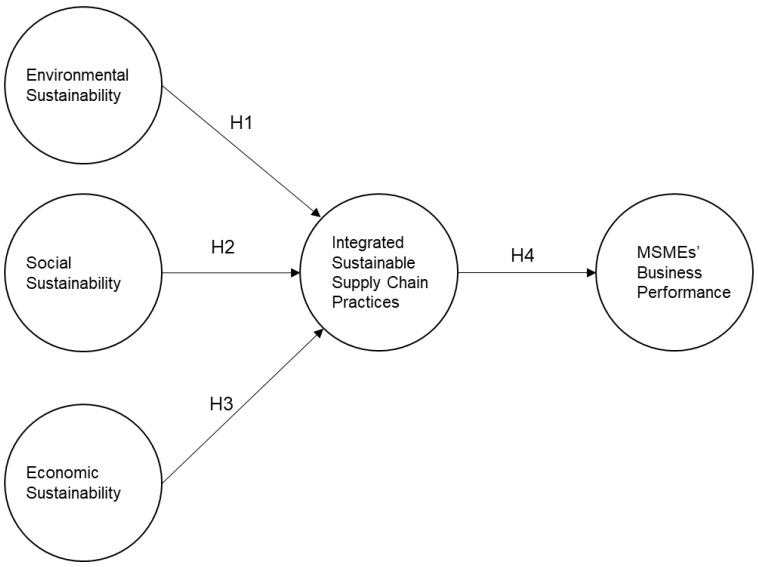

Figure 1. Conceptual Framework
Source: Authors' Interpretation (2025)

3. Research Method

This research was carried out in Indonesia, concentrating on micro, small, and medium-sized firms as the topics of investigation. Small enterprises are favored due to their significant reliance on numerous economies, especially in emerging nations. The predominant number of organizations worldwide are small enterprises, which are essential for stimulating global economic growth and creating new job possibilities. Consequently, small enterprises in Indonesia will be pivotal in propelling the nation's future economic growth (Tambunan, 2022).

This study utilizes a quantitative research methodology to investigate the correlation between sustainable supply chain management and the operational performance of culinary micro, small, and medium-sized companies (MSMEs) in Indonesia. The study used a structured questionnaire as the principal data collection tool, aimed at obtaining comprehensive information on operational performance, halal risk management, halal logistics practices, supply chain traceability, halal certification, and compliance with

Islamic principles. The questionnaire items were created using recognized scales from the available literature, ensuring both validity and reliability. A pilot test was performed with a limited sample of MSMEs to enhance the questionnaire and guarantee its clarity and relevance. Subsequent to the pilot test, the completed questionnaire was disseminated to a broader cohort of MSMEs across diverse sectors in Indonesia.

This research solely employed primary data and adopted a cross-sectional temporal framework. The selections encompassed the Indonesian creative industry. Questionnaires were employed as a survey tool to collect data for this investigation. The research paradigm is positivist since it can be statistically analyzed and employs a rigorously designed data collection method, such as a survey. The question utilizes a Likert scale from 1 to 5, where "1" signifies "Strongly Disagree" and "5" denotes "Strongly Agree". The researchers employed non-probability sampling to identify the study respondents. This methodology is regarded as the most efficacious means of obtaining quantitative survey data from a designated sample (Hameed et al., 2018).

Data were collected over a period of three months (January–March 2025) targeting 300 culinary MSMEs across West Java. A total of 300 questionnaires were distributed, with 292 valid responses (97.3% response rate) included in the final analysis after excluding 8 incomplete responses. Table 1 presents the detailed profile of respondents, who were predominantly owners or managers responsible for strategic and operational decisions in their MSMEs. The data gathering process entailed distributing structured questionnaires to a sample of 292 Indonesian MSMEs. The questionnaires were disseminated via online platforms and in-person visits to cater to respondents' preferences and enhance the response rate. Respondents were generally owners, managers, or senior executives with extensive understanding of their firm's halal logistics processes and operational performance. The data collection phase lasted three months, during which follow-ups and reminders were issued to enhance participation. The study sought to promote truthful and precise responses from participants by guaranteeing confidentiality and anonymity. Table 1 presents the profile of the respondents in this investigation.

Table 1. Respondents' Profile

Parameters		Number	Percentage
Business Size	Micro-sized Businesses	152	52.05
	Small-sized Businesses	89	30.47
	Medium-sized Businesses	51	17.46
Position	CEO/Owner	194	66.44
	Manager/Supervisor	54	18.55
	Employee	44	15.01
Total		292	100%

To assess the degree of consensus among responders for each item or statement, we utilized a five-point Likert scale. This scale varied from 1, denoting "strongly disagree," to 5, denoting "strongly agree." The measuring markers for each variable were adjusted according to previous research:

1) Environmental sustainability refers to the extent to which culinary MSMEs adopt practices that minimize negative environmental impacts and promote efficient use of natural resources in their supply chain operations (Açar et al., 2019; Latifah & Soewarno, 2023). This dimension is reflected in several key indicators, including the use of energy-efficient equipment or technologies in daily operations, the implementation of waste reduction or recycling initiatives, and the preference for environmentally friendly raw materials or packaging (Huang et al., 2023; Rumansyah & Nainggolan, 2025).
2) Social sustainability involves practices that support employee well-being, fair labor conditions, and engagement with the local community, ensuring socially responsible supply chain practices (Elbelehy & Crispim, 2024; Mani et al., 2017). This dimension is reflected in several indicators, including fair treatment, training, and safety practices for employees; engagement with and contribution to local community activities; and the establishment of ethical relationships with suppliers and other stakeholders (Carroll, 1999; Khan et al., 2018).
3) Economic sustainability reflects the ability of MSMEs to maintain profitability and efficiency over the long term while adopting sustainable supply chain strategies (Beske & Seuring, 2014; Kumar et al., 2019). This dimension is indicated by effective cost control across procurement and operations, increased revenue or customer base resulting from sustainable practices, and investment in innovations that enhance long-term efficiency (Beske & Seuring, 2014; Hashim et al., 2021).
4) This variable captures the extent to which MSMEs simultaneously and cohesively apply environmental, social, and economic sustainability principles in their supply chain operations (Rezaee, 2018; Zhu & Sarkis, 2006). It is measured through indicators such as the alignment and balance of sustainability practices across all three dimensions, cross-functional planning or integration for sustainable decision-making, and a continuous improvement culture involving sustainability across departments (Pagell & Wu, 2009; Kumar et al., 2019).
5) Business performance refers to the outcomes experienced by culinary MSMEs in terms of operational efficiency, customer satisfaction, and market competitiveness as a result of their supply chain practices (Golicic & Smith, 2013). This variable is measured through indicators such as improvements in operational efficiency (e.g., reduced waste and time savings), customer satisfaction and repeat purchase rates, and growth in sales, market share, or brand reputation (Huang et al., 2023; Beske & Seuring, 2014).

All measurement items were adapted from established studies to ensure validity and reliability (Huang et al., 2023; Khan et al., 2018; Porter & Kramer, 2011; Beske & Seuring, 2014; Hashim et al., 2021). The gathered data underwent analysis through structural equation modeling-partial least squares (SEM-PLS) utilizing the Smart PLS version 3.3.3 application. SEM-PLS is a powerful statistical method that facilitates the concurrent analysis of various relationships and the evaluation of intricate models, rendering it highly appropriate for this investigation. The analysis commenced with a

confirmatory factor analysis (CFA) aimed at validating the measurement model, thereby ensuring the reliability and validity of the constructs (Hair et al., 2017). Following this, the structural model underwent evaluation to determine the direct and indirect impacts of sustainable practices on the business performance of culinary MSMEs. The findings shed light on the robustness and importance of the connections among the variables, reinforcing the study's hypotheses and presenting meaningful implications for managers of MSMEs and policymakers. The following figure show the model of this research

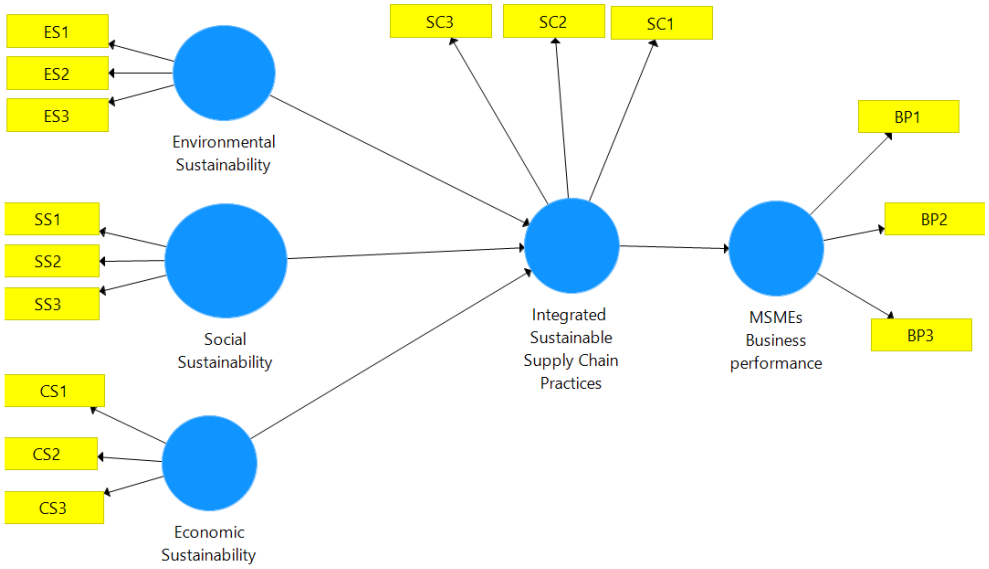

Figure 2. SEM-PLS' Model
Source: Authors (2025)

4. Results and Discussion

4.1. Results

The descriptive statistics showed the following average scores for each construct:

Table 2. Descriptive statistics

N	Variables	Mean	SD
1	Environmental Sustainability	4.01	0.56
2	Social Sustainability	3.85	0.62
3	Economic Sustainability	3.92	0.60
4	Integrated Sustainable Supply Chain Practices	3.89	0.58
5	Business Performance	4.05	0.53

These results indicate that respondents generally agree with the implementation of sustainable practices across all dimensions, with the highest average observed in business performance, suggesting that sustainability integration contributes positively to operational efficiency and market competitiveness (Huang et al., 2023; Khan et al., 2018).

Table 3. Factor Loadings and Measurement Model

Construct	Item	Factor Loadings	Composite Reliability	Cronbach Alpha	AVE	VIF
Environmental Sustainability	ES1	0.816	0.779	0.798	0.747	2.971
	ES2	0.805				2.636
	ES3	0.782				3.452
Social Sustainability	SS1	0.883	0.865	0.821	0.698	4.387
	SS2	0.843				3.265
	SS3	0.788				3.314
Economic Sustainability	CS1	0.725	0.719	0.765	0.792	1.279
	CS2	0.837				1.781
	CS3	0.859				1.751
Integrated Sustainable Supply Chain Practices	SC1	0.916	0.905	0.889	0.682	1.892
	SC2	0.961				2.445
	SC3	0.948				2.795
Business Performance	BP1	0.781	0.845	0.732	0.904	1.821
	BP2	0.886				1.894
	BP3	0.865				1.976

A variety of criteria are utilized to evaluate the quality of the measurement model. The findings in Table 3 demonstrate that the standardized outer factor loadings, utilized to evaluate the convergent validity of the created items, are exceptionally good. The loadings above the threshold value of 0.70 ($p<0.001$), as indicated by Hair et al. (2017). The results further indicate that the composite reliability (CR) values exceeds 0.7, and the Cronbach alpha (CA) surpasses 0.6, demonstrating that all variables possess adequate internal reliability. The AVE score of 0.682 exceeds the requisite cut-off of 0.5 (Hair et al., 2017), signifying compliance with the criteria for convergent validity. Additionally, we utilized the Fornell and Larcker (1981) criterion to evaluate discriminant validity.

Collecting data from specialized creative fields through a self-report questionnaire often results in considerable procedural diversity. This variance generates a measurement bias that may lead to inaccurate conclusions (Ng et al., 2019). Consequently, it is essential to evaluate the existence of common technique bias. The intrinsic inclination to answer questionnaire items in a socially acceptable way may lead to common method bias, resulting in variables displaying a degree of shared variance (Kock, 2015). A Variance Inflation Factor (VIF) score greater than 5 indicates significant collinearity and implies that a model may be affected by common method bias (Kock, 2015). Assume that all Variance Inflation Factors (VIFs) derived from an extensive collinearity assessment are equal to or less than 5. This suggests that the model is unaffected by frequent method bias (Kock, 2015). Furthermore, all VIF values were below the threshold of 5, indicating the absence of multicollinearity (Kock, 2015). The model was also tested for heteroskedasticity, and results showed no evidence of variance inconsistency across residuals, confirming the robustness and reliability of the estimations (Hair et al., 2017). According to prior research findings, the commonly

employed method of Variance was not an issue in this survey-based study, and the model lacks any common technique bias.

Stone Geisser's Q^2 is often utilized as a metric since R2 just conveys information regarding predictions made within the sample (Geisser, 1974; Stone, 1974). A greater Q^2 value ($Q^2>0$) signifies a reduced disparity between anticipated and actual values, hence affirming the precision and pertinence of the model's forecasts (Chin, 1998). Furthermore, Hair et al. (2017) proposed an additional criterion: a Q^2 value exceeding 0.00, 0.25, and 0.50 signifies poor, moderate, and high predictive importance of the PLS path model, respectively. The PLS-SEM results indicated that the endogenous variables possessed a R^2 value exceeding 0.25 but below 0.50, categorizing them as moderate. The Q2 findings demonstrated that the MSME's Integrated Sustainable Supply Chain Practices (Q square = 0.425) possessed a commendable capacity to forecast the route model. The outcomes are presented in Table 4.

Table 4. Predictive relevance based on R2 and Q2

	R Square	R Square Adjusted	Q^2 = (1-SSE/SSO)	Predictive Relevance
Integrated Sustainable Supply Chain Practices	0.431	0.428	0.425	Yes
Business Performance	0.321	0.319	0.361	Yes

The bootstrapping method was utilized to evaluate the relevance of the route coefficients through 5000 sub-samples. This study analyzes five different hypotheses. All of the hypotheses have been confirmed using hypothesis testing at a significance level of 0.05. Table 5 presents the results of hypothesis testing.

Table 5. Hypothesis Testing

	Hypotheses	Original Sample	p-Value	Decision
H1	Environmental Sustainability > Integrated Supply Chain Practices	0.327	0.001*	Accepted
H2	Social Sustainability > Integrated Supply Chain Practices	0.289	0.001*	Accepted
H3	Environmental Sustainability > Integrated Supply Chain Practices	0.419	0.001*	Accepted
H4	Integrated Supply Chain Practices > Business Performance of Culinary MSMEs	0.456	0.001*	Accepted

Note(s): *significant $p < 0.05$

4.2. Discussion

The results of this study confirm the significant and positive influence of environmental, social, and economic sustainability practices on integrated sustainable supply chain practices, which in turn directly and substantially affect the business performance of culinary MSMEs in West Java. These findings reinforce the central tenet of the Triple Bottom Line (TBL) theory (Elkington, 1997), which posits that organizational success

in the long term depends on balanced integration of environmental, social, and economic goals.

Specifically, environmental sustainability emerged as a strong predictor, highlighting the importance of adopting energy-efficient equipment, waste minimization, and eco-friendly packaging in reducing operational costs and enhancing market differentiation (Rasit et al., 2019; Kumar et al., 2019). This is consistent with Huang et al. (2023), who found that green practices significantly improved resource efficiency among culinary MSMEs.

Economic sustainability also showed a robust positive relationship with integrated practices, supporting prior findings that economic-oriented sustainability practices such as cost control, innovation, and local sourcing contribute to increased profitability and strategic agility (Porter & Kramer, 2011; Pilati & Stradis, 2023). Rezaee (2018) argued that economic sustainability allows MSMEs to remain resilient under financial constraints, while simultaneously fostering innovation and competitive advantage.

Social sustainability significantly influenced integrated practices, indicating the relevance of fair labor treatment, employee welfare, and community engagement in building stakeholder trust and customer loyalty (Carter & Rogers, 2008; Tomasella et al., 2023). This aligns with Pagell and Wu (2009), who emphasize that social responsibility in supply chains enhances firm legitimacy and operational continuity.

Lastly, integrated sustainable supply chain practices significantly improved business performance, indicating that a holistic approach creates synergistic benefits that surpass the sum of individual sustainability dimensions (Beske & Seuring, 2014; Golicic & Smith, 2013). This suggests culinary MSMEs should avoid fragmented sustainability initiatives and instead develop cohesive strategies that align environmental stewardship, social responsibility, and economic pragmatism to achieve superior performance outcomes.

5. Conclusion

This study contributes to the growing body of literature on sustainable supply chain management by offering empirical evidence from the context of culinary MSMEs in a developing country. Theoretically, the research strengthens the application of the triple bottom line framework in MSME settings, demonstrating that all three dimensions—environmental, social, and economic sustainability—positively influence integrated sustainability practices, which in turn enhance business performance. The confirmation of these relationships provides a nuanced understanding of how sustainability manifests and generates value in the micro-enterprise context, where resources and capabilities are often constrained.

From a practical standpoint, the findings emphasize the importance for MSME owners and managers to adopt integrated sustainable practices to remain competitive and resilient in today's dynamic markets. Policymakers and development agencies should prioritize capacity building, incentives, and educational programs that help MSMEs internalize and operationalize sustainability. Investments in green

technologies, fair labor practices, and cost-efficient innovations should be viewed not as burdens but as strategic imperatives that enhance performance. The study also offers actionable insights for supply chain consultants and incubators working with culinary entrepreneurs across Indonesia and other emerging markets.

Despite its contributions, this study has limitations. The cross-sectional design restricts the ability to capture dynamic changes over time, and the data relies solely on self-reported perceptions, which may introduce bias. Future research should consider a longitudinal or mixed-methods approach to validate and deepen the insights presented here. Comparative studies across different regions or sectors could further illuminate contextual factors that mediate the sustainability–performance relationship. Additionally, exploring moderating variables such as digital readiness or external support systems could enhance the explanatory power of the model and inform more targeted intervention strategies.

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