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AN IMPORTANCE-PERFORMANCE MAP TO ECO-FRIENDLY RESTAURANTS IN INDONESIA'S TOURISM CITIES

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ABSTRACT

The growing emphasis on sustainability in the food service industry has heightened the relevance of eco-friendly practices, particularly in tourism cities where restaurants shape both environmental impacts and visitor experiences. This study examined Sustainable Sourcing Ingredients, Waste Management Practices, Energy Efficiency Measures, and Customer Experience in eco-friendly restaurants across Jakarta, Bandung, and Labuan Bajo (NTT), Indonesia, using the Importance–Performance Map (IPM) to assess their role in shaping customer perception. Results showed that SSI is a relative strength, while WMP and CE revealed substantial performance gaps despite high importance, and EEM was moderately recognized but underutilized due to limited visibility. The study contributes theoretically by integrating operational sustainability and experiential factors within the IPM framework, and practically by offering actionable insights for managers and policymakers to enhance customer experience, improve waste management, and communicate energy efficiency more effectively. Limitations include the reliance on a predominantly young, local sample and the focus on three Indonesian cities, suggesting that future research should expand to other regions, incorporate international perspectives, and adopt longitudinal or comparative designs to capture broader sustainability dynamics in hospitality.

Keywords: IPM, sustainable sourcing ingredients, waste management practices, energy efficiency measures, customer experience

INTRODUCTION

The food service industry plays a critical role in the global effort to achieve sustainability, especially in tourism-driven cities where restaurants significantly influence both economic activities and environmental impacts. In Indonesia, cities such as Jakarta, Bandung, and Labuan Bajo (NTT) are not only vital hubs for tourism but also hot spots for the adoption of eco-friendly practices in food service management. The increasing awareness of environmental challenges, ranging from resource depletion to waste generation, has encouraged restaurants to integrate sustainable practices into their operations (UNEP, 2022; Lemy et al., 2020). These practices not only address environmental concerns but also serve to meet growing customer expectations for eco-conscious business operations (Zhang & Kim, 2021).

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Sustainable Sourcing Ingredients (SSI) is one such strategy adopted by eco-friendly restaurants to reduce their environmental impact. SSI involves the procurement of local, organic, and ethically sourced ingredients, which helps minimize the carbon footprint of long supply chains while supporting local producers. Research by Abubakar and Al-Refai (2021) highlights the role of SSI in enhancing customer perceptions of restaurant quality and sustainability. Similarly, Waste Management Practices (WMP), such as recycling, composting, and food donation, are essential for mitigating the environmental footprint of high-volume waste production in tourism cities. Previous studies have shown that integrating effective waste management not only benefits the environment but also influences consumer preferences, as eco-conscious dining gains traction worldwide (World Resources Institute, 2021; Tang et al., 2022).

Another critical dimension of sustainability in food service management is the adoption of Energy Efficiency Measures (EEM). The use of energy-efficient equipment, renewable energy sources, and low-waste kitchen operations are increasingly seen as both cost-effective and environmentally responsible approaches for restaurants. Studies by Alen and Heinonen (2021) and Zhang and Liu (2020) emphasize the positive impact of EEM on both operational efficiency and customer perceptions. In Indonesia's metropolitan areas such as Jakarta and Bandung, many restaurants have begun incorporating these practices, with varied levels of implementation and success.

Moreover, Customer Experience (CE) plays a crucial role in moderating the relationship between sustainability initiatives and consumer perceptions. As noted by Pearce and Oktadiana (2020), a positive customer experience amplifies the perceived value of sustainability efforts, fostering satisfaction and loyalty. This is particularly relevant in tourism cities where diners often seek an engaging blend of high-quality service, local culture, and environmental consciousness (Kim & Kim, 2019).

Specifically, the selection of Jakarta, Bandung, and Labuan Bajo (NTT) reflects the diversity of Indonesia's tourism and food service landscape. Jakarta, as the capital city and a metropolitan hub, represents the centre of culinary innovation and the growing trend of eco-conscious urban dining. Bandung, widely known as a creative city and a popular weekend destination, illustrates how mid-sized cities integrate sustainability into hospitality and lifestyle-driven restaurants. Meanwhile, Labuan Bajo symbolizes the emerging tourism frontier where eco-friendly restaurants are closely tied to sustainable destination branding. These three

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locations provide contrasting yet complementary contexts, urban versus regional, established versus emerging markets, enabling a comprehensive understanding of how sustainable practices are implemented and perceived in Indonesia's tourism cities.

Nevertheless, although sustainability in the restaurant industry has received increasing scholarly attention, several research gaps remain. First, in Jakarta, existing studies on sustainable dining focus largely on consumer awareness and lifestyle branding (Fauzi & Pertiwi, 2021; Syahadatina & Widodo, 2023), but little is known about how restaurants' operational practices (SSI, WMP, and EEM) are evaluated relative to their importance for customers. Second, in Bandung, research has emphasized culinary tourism and creative industry dynamics (Rahmawati et al., 2020; Hidayat & Sari, 2022), yet the extent to which eco-friendly restaurants balance sustainability performance with customer experience remains underexplored. Third, in NTT, particularly Labuan Bajo, most studies concentrate on sustainable destination management and local community participation (Putra & Darma, 2021; Wuryasti et al., 2022), with very limited attention to the micro-level practices of restaurants and how tourists perceive them.

Furthermore, previous works often examine individual sustainability practices in isolation, while the combined importance and performance of SSI, WMP, and EEM in shaping customer perceptions remain underexamined across these varied contexts. Another critical gap lies in the integration of Customer Experience (CE) as a moderating factor, despite growing evidence that experiential elements strongly shape eco-friendly dining choices (Lee et al., 2022; Han & Hyun, 2023).

By addressing this problem, the study aims to provide actionable insights for advancing sustainable food service management and supporting tourism ecosystems in Indonesia. Therefore, this study contributes originality by applying the Importance-Performance Map (IPM) to eco-friendly restaurants in Indonesian tourism cities, an approach rarely used in this field. It simultaneously evaluates SSI, WMP, and EEM while incorporating CE as a moderating variable. By situating the analysis in Jakarta, Bandung, and NTT, the study captures diverse urban, creative, and emerging contexts, offering fresh insights into how sustainability practices are perceived in metropolitan, lifestyle, and frontier destinations of a developing country.

LITERATURE REVIEW

Sustainable Sourcing Ingredients (SSI) has increasingly become a focal point in sustainability discussions within the foodservice industry. Studies show that customers often

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associate sustainably sourced ingredients with higher product quality and are even willing to pay more for meals prepared with local, organic, or ethically produced items (Yang & Li, 2020; Baciu et al., 2022). By emphasizing SSI, restaurants not only reduce environmental impacts but also gain consumer trust and loyalty (Zhao et al., 2020). This trend is particularly visible in metropolitan areas such as Jakarta and Bandung, where consumers are more familiar with sustainability certifications and conscious dining movements (Fauzi & Pertiwi, 2021). However, in destinations such as NTT, restaurants face challenges in consistently applying SSI due to infrastructure limitations and the higher costs of transporting organic or certified ingredients (Akbara et al.,). This contrast underlines that while SSI is highly valued, its performance varies significantly between urban centers and emerging destinations.

Moreover, Waste Management Practices (WMP) represent another dimension of sustainability that customers increasingly expect from restaurants. Efforts such as composting, recycling, and reducing single-use plastics are seen as visible commitments that enhance brand credibility (Tang et al., 2022). Research suggests that customers appreciate tangible actions like food donation programs and reusable packaging (Li & Zhang, 2019; Chen et al., 2021). Yet, differences across Indonesian cities remain evident. In Jakarta, waste management is guided by stricter regulations, but implementation is inconsistent and more common in upscale outlets (Syahadatina & Widodo, 2023). In Bandung, creative cafés often integrate waste reduction and upcycling into their branding strategies (Rahmawati et al., 2020). Meanwhile, NTT struggles with weak waste infrastructure and mounting plastic waste issues, particularly in Labuan Bajo where marine ecosystems are under pressure (Putra & Darma, 2021). These disparities show that while WMP is widely recognized as important, the gap between expectations and practices is still substantial.

Equally important, Energy Efficiency Measures (EEM) have gained traction as both environmentally and economically beneficial practices. While customers may not always notice behind-the-scenes energy initiatives, studies reveal that visible measures, such as LED lighting, eco-friendly air circulation, or the promotion of renewable energy, improve consumer perceptions (Liu & Huang, 2021; Wu et al., 2021). In Jakarta, larger restaurants often adopt energy-efficient equipment driven by financial incentives and compliance requirements (Analytika, 2023). In Bandung, smaller lifestyle-oriented establishments emphasize simple yet creative approaches, which resonate with their customer base (OECD, 2016). Conversely, in NTT, energy efficiency is often a necessity due to unreliable electricity supply rather than a

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deliberate branding effort (IESR, 2024). This illustrates that although EEM is acknowledged as valuable, its impact on customer perception depends largely on how visibly and effectively restaurants communicate these efforts.

Other than that, Customer Experience (CE) is widely recognized as a central factor in determining how sustainability practices are perceived. CE encompasses service quality, ambiance, and staff engagement, all of which strongly influence satisfaction and loyalty (Kim & Kim, 2019; Gupta & Singh, 2020). Integrating eco-friendly design and sustainability cues in restaurant environments has been shown to enhance overall customer impressions (Kuo & Lin, 2021). Moreover, when customers are actively engaged in sustainable initiatives, such as receiving incentives for eco-friendly behaviours, their sense of loyalty tends to increase (Chen et al., 2021). However, the meaning of a satisfying experience differs across contexts. Eco-friendly dining is often associated by customers with premium service standards in Jakarta, while in Bandung sustainability tends to be expressed through creativity, aesthetics, and cultural elements (Hidayat & Sari, 2022). In contrast, in NTT, greater emphasize is placed on authenticity and how sustainability contributes to destination branding (Wuryasti et al., 2022). These distinctions highlight that although Customer Experience (CE) remains universally significant, many restaurants still underperform in aligning their sustainability practices with the specific expectations of local consumers.

The existing literature confirms that SSI, WMP, and EEM play crucial roles in promoting sustainability in foodservice, but their effectiveness is closely tied to the quality of customer experience. Nevertheless, most prior research tends to examine these practices separately rather than in an integrated framework. Moreover, limited scholarly work has focused specifically on Indonesia's tourism cities, where Jakarta represents a highly urbanized culinary hub, Bandung stands out as a creative and lifestyle-driven market, and NTT emerges as a frontier destination with fragile ecosystems. The lack of comparative and holistic analysis across these varied contexts represents a critical gap. Therefore, this study proposes a conceptual framework in which SSI, WMP, EEM, and CE are positioned as key drivers of customer perception (CP).

Hypotheses Development

Building on prior studies, this research positions Sustainable Sourcing Ingredients (SSI), Waste Management Practices (WMP), Energy Efficiency Measures (EEM), and Customer Experience (CE) as direct drivers of Customer Perception (CP) in eco-friendly restaurants. While SSI is often linked with authenticity and quality (Baciu et al., 2022), WMP reflects

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visible environmental responsibility (Tang et al., 2022), and EEM demonstrates operational efficiency and innovation (Liu & Huang, 2021), their performance frequently lags behind customer expectations. At the same time, CE has been shown to play a decisive role in shaping perceptions through ambiance, service quality, and staff engagement (Kim & Kim, 2019; Kuo & Lin, 2021). To evaluate these factors, the study applies the Importance–Performance Map (IPM), which simultaneously examines their relative importance and performance.

Accordingly, the hypotheses proposed in this study are summarized in Table 1. These hypotheses reflect the expected importance of sustainability practices and customer experience in shaping customer perceptions, as well as the potential discrepancies between importance and performance that highlight areas for managerial improvement.

Table 1. Research Hypotheses

Hypothesis	Statement
H1	Sustainable Sourcing Ingredients (SSI) are perceived as an important driver of Customer Perception (CP).
H2	Waste Management Practices (WMP) are perceived as an important driver of Customer Perception (CP).
H3	Energy Efficiency Measures (EEM) are perceived as an important driver of Customer Perception (CP).
H4	Customer Experience (CE) is perceived as an important driver of Customer Perception (CP).
H5	There are discrepancies between the importance and performance of sustainability practices and customer experience, indicating priority areas for improvement.

The conceptual framework (see Figure 1) illustrates the relationships hypothesized in this study, positioning SSI, WMP, EEM, and CE as direct predictors of Customer Perception. By employing the Importance–Performance Map (IPM), the framework translates these theoretical relationships into a strategic tool for identifying areas where practices are both valued and underperforming. The following section outlines the methodology used to test these hypotheses and to operationalize the framework in the context of eco-friendly restaurants in Indonesia's tourism cities.

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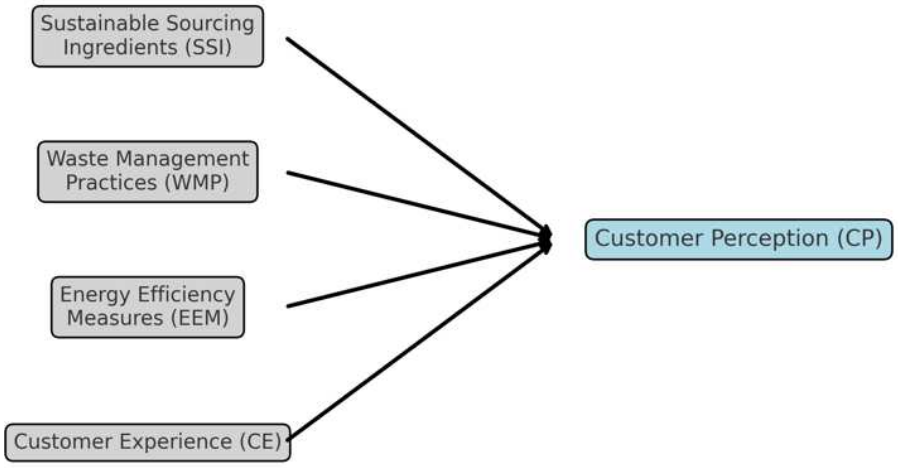

Figure 1. Conceptual Framework

RESEARCH METHOD

This study employed a quantitative survey design to evaluate the importance and performance of sustainability practices in eco-friendly restaurants. The analysis examined four constructs, Sustainable Sourcing Ingredients (SSI), Waste Management Practices (WMP), Energy Efficiency Measures (EEM), and Customer Experience (CE) to understand their role in shaping customer perceptions and to identify potential gaps between importance and performance.

Research Locations and Justification

The research was conducted in three Indonesian tourism cities: Jakarta, Bandung, and East Nusa Tenggara (NTT), selected for their diverse culinary and tourism contexts. In Jakarta, the case study was represented by Burgreen, a pioneer eco-friendly restaurant chain that emphasizes plant-based menus, organic sourcing, and sustainable packaging. Burgreen reflects the growing urban trend toward sustainability in Indonesia's capital city, where customers are increasingly eco-conscious and receptive to innovative dining concepts.

While in Bandung, the research focused on The Hummingbird Eatery, a well-known restaurant that integrates sustainability into its creative branding and ambiance. The restaurant emphasizes aesthetic appeal, thematic décor, and the use of local ingredients, making it a good representation of Bandung's reputation as a creative tourism destination where sustainability is closely tied to lifestyle and culture.

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Other than that, the selected site was Green Cherry Restaurant when in NTT (Labuan Bajo), which integrates eco-friendly practices such as local sourcing, energy-conscious kitchen management, and waste reduction strategies. Located in one of Indonesia's super-priority tourism destinations, Green Cherry symbolizes the critical role of eco-friendly restaurants in protecting fragile ecosystems while supporting the government's sustainable tourism agenda in Labuan Bajo.

The selection of these three locations thus captures contrasting but complementary contexts, which are a metropolitan hub (Jakarta), a creative city (Bandung), and an emerging eco-tourism destination (NTT). This diversity ensures a holistic view of how sustainability practices are implemented and perceived in Indonesia's tourism-driven foodservice industry.

Sampling and Respondents

A total of 257 respondents participated in the study, including customers who had visited eco-friendly restaurants, individuals familiar with the concept, and prospective diners. Respondents were recruited using purposive sampling to ensure familiarity with sustainable dining practices. Data were collected between March to July 2024 via online survey distribution using social media, such as WhatsApp Group, Instagram Story, etc. Ethical protocols were followed, including informed consent and anonymity.

Research Instrument

The questionnaire was designed for the four constructs (SSI, WMP, EEM, CE). Items were adapted from prior literature (Chaturvedi et al., 2022; Ju & Chang, 2016; Westbrook & Oliver, 1981) and measured using a four-point Likert scale (1 = very unsatisfied/very disagree, 4 = very satisfied/very agree). This design avoids neutral answers and captures clearer perceptions. Table 2 summarizes the constructs, indicators, and sources.

Table 2. Research instrument

Code	Indicator	Scale	Source
Sustainable Sourcing Ingredients			
Are you satisfied and do you feel it is important when an eco-friendly restaurant you visit in a tourism city in Indonesia emphasizes this?			
SSI1	The use of locally sourced and organic ingredients	Very Unsatisfied (1) – Very Satisfied (4)	Chaturvedi et al. (2022)
SSI2	This restaurant mainly serves vegetable dishes		
SSI3	This restaurant uses meat substitutes		
SSI4	This restaurant uses certified sustainable seafood/fish		

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SSI5	Use eco-friendly dairy products		
Waste Management Practices			
Do you observe and feel satisfied that it is important when the environmentally friendly restaurant you visit makes efforts to implement this?			
WMP1	Reduce single-use plastics	Very Unsatisfied (1) – Very Satisfied (4)	Ju and Chang (2016)
WMP2	Reduce food waste		
WMP3	Waste reduction of disposable products		
WMP4	Separate waste and recycle		
WMP5	Reuse office materials and waste reduction		
WMP6	Suppliers have recycling policies		
Energy Efficiency Measures			
Are you satisfied and do you consider it important when the eco- friendly restaurant you visit in a tourist city in Indonesia implements this policy?			
EEM1	Save energy and food ingredients in preparations	Very Unsatisfied (1) – Very Satisfied (4)	Ju and Chang (2016)
EEM2	Water efficiency system for kitchen equipment		
EEM3	Dual flush handle toilet		
EEM4	Energy-efficient equipment (dishwasher, heating/cooling machines)		
EEM5	Energy-efficient systems for walk-in refrigerator (e.g. strip curtain, temperature & moisture control system		
EEM6	Use LED lamps		
EEM7	Use LED lamps		
Customer Experience			
Please share your experience and perception of the eco-friendly restaurant you visited in a tourist city in Indonesia.			
CE1	I am pleased with the experience I had	Very Disagree (1) – Very Agree (4)	Westbrook and Oliver (1981)
CE2	The eco-friendly restaurant enhances the overall tourism experience		
CE3	The service met my needs well		

Analytical Tool: Importance–Performance Map (IPM)

Data were analyzed using the Importance–Performance Map (IPM), which simultaneously evaluates (1) the importance of sustainability practices in shaping Customer Perception, and (2) their performance as perceived by customers. This approach identifies practices that are highly valued but underperforming, providing actionable priorities for restaurant managers (Ringle & Sarstedt, 2016).

The use of IPM is particularly relevant in sustainability and hospitality research, as demonstrated by recent applications in tourism and eco-friendly contexts (Lee et al., 2021; Chou et al., 2022; Ng & Sun, 2024; Ringle & Sarstedt, 2016). This tool was chosen because the study is not only to understand the relationships between sustainability practices and customer perception but also to provide practical recommendations for eco-friendly restaurants. IPM directly translates theoretical constructs such as, Sustainable Sourcing Ingredients (SSI), Waste Management Practices (WMP), Energy Efficiency Measures (EEM), and Customer Experience (CE) into actionable insights by highlighting which practices are considered crucial but underperforming in practice. Thus, IPM is highly suitable for research situated in applied fields like foodservice sustainability, where managerial implications are essential.

In this study, IPM was applied to operationalize the conceptual framework and to test the five hypotheses (see Table 2). By applying IPM, the study not only tested whether these practices were significant in shaping customer perceptions but also identified which ones performed below expectations, thus linking theoretical relationships with practical implications.

RESULTS AND DISCUSSION

Demographic Background

A total of 257 respondents participated in this study refer to Table 3. The sample was predominantly female (66.67%) and largely composed of young adults aged 18–34 (88.89%), reflecting the relevance of eco-friendly dining to millennials and Gen Z. Most respondents were well-educated, with over half holding a bachelor's degree (55.64%), and a large proportion were students (42.41%) or private-sector employees (28.40%). Income levels were modest, with nearly 70% earning less than IDR 6 million per month, consistent with the dominance of younger and early-career groups. Geographically, respondents were concentrated in Jakarta (42.80%), Bandung (30.74%), and Labuan Bajo/NTT (15.95%), ensuring coverage of metropolitan, creative, and emerging tourism destinations. In terms of behavior, most visited tourist cities occasionally (41.27%) and eco-friendly restaurants occasionally (40.48%), suggesting that sustainable dining is growing in awareness but not yet habitual.

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Table 3. Respondent Demographics (N = 257)

Variable	Category	n	%
Gender	Female	171	66.67
	Male	86	33.33
Age (years)	18–24	98	38.10
	25–34	131	50.79
	35–44	20	7.94
	≥55	4	1.60
Nationality	Indonesian	253	98.40
	Non-Indonesian	4	1.60
Educational level	High school or below	27	10.51
	Diploma/Associate	52	20.23
	Bachelor's	143	55.64
	Master's/Doctorate	35	13.62
Occupation	Student	109	42.41
	Private-sector employee	73	28.40
	Public-sector employee	33	12.84
	Entrepreneur/self-employed	27	10.51
	Other	15	5.84
Monthly income (IDR)	< 3,000,000	102	39.69
	3,000,000–5,999,999	78	30.35
	6,000,000–9,999,999	51	19.84
	≥ 10,000,000	26	10.12
Geographic location (residence)	Jakarta	110	42.80
	Bandung	79	30.74
	NTT / Labuan Bajo	41	15.95
	Other	27	10.51
Visit frequency to tourist cities	Very frequently	41	15.87
	Occasionally (1–3×/month)	106	41.27
	Rarely	76	29.37
	Never	34	13.23
Visit frequency to eco-friendly restaurants	Frequently	37	14.29
	Occasionally	104	40.48
	Rarely	79	30.95
	Never	37	14.38

Having outlined the demographic characteristics of the respondents, the next step was to ensure that the measurement model used in this study was both reliable and valid. Establishing construct reliability and validity is essential before proceeding to hypothesis

testing, as it confirms that the indicators consistently measure the intended concepts and adequately capture the variance of each construct.

Validity and Reliability

The Table 4 presents an analysis of four constructs: Customer Experience (CE), Energy Efficiency Measures (EEM), Sustainable Sourcing Ingredients (SSI), and Waste Management Practices (WMP).

Table 4. Validity and Reliability

Constructs	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Customer Experience (CE)	0.886	0.832	0.785	0.526
Energy Efficiency Measures (EEM)	0.827	0.835	0.871	0.591
Sustainable Sourcing Ingredients (SSI)	0.75	0.756	0.833	0.502
Waste Management Practices (WMP)	0.797	0.85	0.851	0.589

Cronbach's Alpha, which measures internal consistency, shows that all constructs have acceptable reliability, with CE being the highest at 0.886, indicating excellent consistency. Other constructs, including EEM (0.827), SSI (0.750), and WMP (0.797), are also above the acceptable threshold of 0.70, meaning that their measurement items are consistently capturing the same concept. Rho_A, another measure of reliability, supports these findings, with all values exceeding 0.75, confirming the robustness of the constructs.

Composite Reliability further reinforces the reliability of the constructs, with all values above 0.70. EEM demonstrates particularly strong reliability (0.871), showing that its items are highly consistent in measuring the concept. The Average Variance Extracted (AVE) values also meet the recommended threshold of 0.50 for most constructs, indicating that they explain sufficient variance. CE (0.526), EEM (0.591), and SSI (0.502) perform well, while WMP has an AVE of 0.589, indicating good construct validity. Overall, the constructs show reliable and valid measures, with some constructs, like WMP, having strong performance across all metrics.

Importance-Performance Map

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The Importance–Performance Map in Figure 2 provides an overview of how the four main factors: Customer Experience (CE), Energy Efficiency Measures (EEM), Sustainable Sourcing Ingredients (SSI), and Waste Management Practices (WMP), contribute to shaping Customer Perception (CP) in eco-friendly restaurants. Consistent with the conceptual framework, these factors are analyzed not only in terms of their importance but also their performance, thus allowing a dual assessment of theoretical influence and practical delivery.

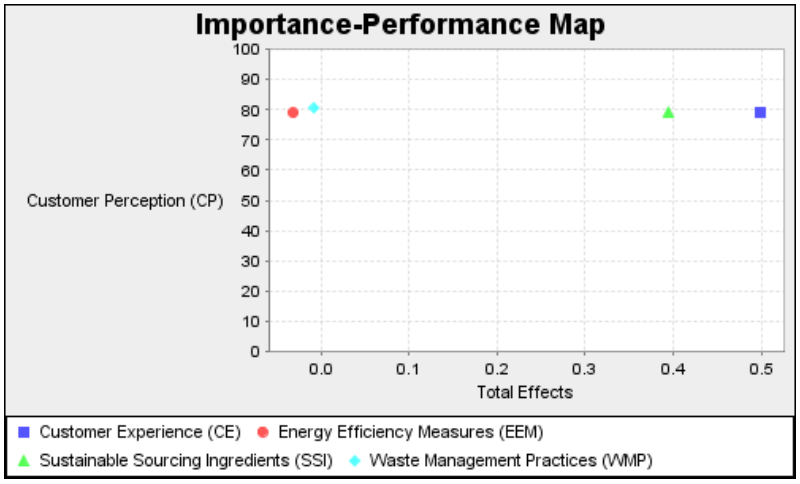

Figure 2. Importance-Performance Map (Variables)

Among the four factors, Customer Experience (CE) emerged as the most important driver of CP but displayed low performance. This supports H4, which hypothesized CE as a key determinant of customer perception. Respondents emphasized that aspects such as ambiance, service quality, and staff interaction were central to their evaluations, yet their actual experiences did not consistently meet expectations. This mirrors earlier findings by Kim and Kim (2019) and Chen et al. (2021), who noted that CE plays a decisive role in hospitality but often suffers from gaps in execution. The implication is that eco-friendly restaurants in Indonesia's tourism cities must prioritize improving service consistency and experiential value to enhance sustainability-related perceptions.

Energy Efficiency Measures (EEM) were also considered important, confirming H3, but their performance was only moderate. Indicators such as the use of LED lighting and energy-conscious kitchen equipment (see Figure 2) showed partial implementation, which limited their perceived impact. This suggests that while customers acknowledge the significance of energy-saving practices, these initiatives remain under-communicated or insufficiently visible. Prior studies likewise emphasize that energy efficiency enhances perceptions only when it is made salient to customers (Zhang & Liu, 2020; Sharma et al., 2021). Thus, restaurants need not only

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to adopt more energy-efficient systems but also to integrate them into their customer-facing communication.

By contrast, Sustainable Sourcing Ingredients (SSI) performed strongly relative to its importance, supporting H1. Customers clearly recognized the use of local, organic, and ethically sourced ingredients, which contributed positively to their perceptions of eco-friendly dining. This aligns with studies by Baciu et al. (2022) and Yang and Li (2020), who found that sustainable sourcing is increasingly valued by customers and can even justify premium pricing. Although SSI is not the most critical driver compared to CE, its strong performance indicates that it remains a strength that eco-friendly restaurants should continue to leverage as a point of differentiation.

In the case of Waste Management Practices (WMP), the results showed moderate importance but low performance, confirming H2. Customers valued waste reduction, separation, and recycling but observed that restaurants frequently underperformed in these areas. The IPM placed indicators such as food waste reduction (WMP2) and recycling practices (WMP4) in the high-importance but low-performance quadrant (see Figure 2), signaling an urgent need for improvement. This is consistent with research by Jiang et al. (2021) and Tang et al. (2022), who argued that waste management is often the most neglected element of sustainability in hospitality.

Overall, the IPM confirms H5, which proposed that discrepancies exist between importance and performance. CE and WMP represent the most critical gaps, requiring urgent managerial attention, while EEM remains a partially underutilized opportunity. In contrast, SSI stands out as a relative strength, performing above customer expectations. The results demonstrate that while all four constructs significantly contribute to customer perception, their effectiveness depends on the balance between importance and performance.

Indicator-Level Analysis

The indicator-level Importance–Performance Map in Figure 3 offers a more granular view of how respondents evaluated the specific practices underlying each construct. This analysis reveals not only which broad dimensions matter, but also which particular actions drive perceptions of eco-friendly dining in Indonesian tourism cities.

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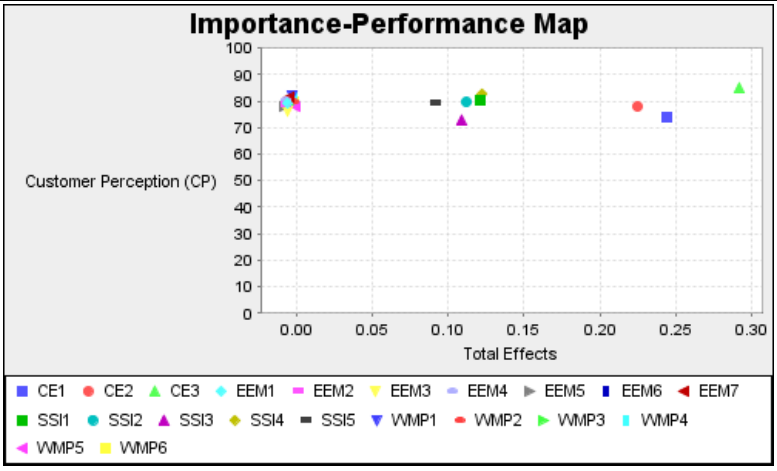

Figure 3. Importance-Performance Map (Indicators)

For Customer Experience (CE), indicators such as CE1 (overall satisfaction with the dining experience) and CE2 (enhancement of the tourism experience) were rated highly important but showed relatively low performance. This pattern illustrates that while customers expect eco-friendly restaurants to deliver seamless service and contribute to the uniqueness of their tourism experience, these expectations are not consistently met. The scattered performance of CE indicators reflects variability in service quality and staff engagement, suggesting that restaurants must address consistency to strengthen the experiential value of sustainability. This reinforces H4, as CE is confirmed as a highly important but underperforming driver of customer perception.

Turning to Energy Efficiency Measures (EEM), indicators such as EEM6 (use of LED lamps) and EEM7 (energy-efficient kitchen equipment) were perceived as moderately important and moderately performed. This suggests that while customers acknowledge energy-saving practices, they are not always visible or sufficiently communicated during the dining experience. EEM indicators therefore occupy a middle ground on the IPM map—recognized but not decisive. This partial support for H3 underscores the need for restaurants to make energy efficiency a more explicit part of their sustainability branding.

In contrast, Sustainable Sourcing Ingredients (SSI) indicators demonstrated relatively strong performance compared to their importance. Items such as SSI1 (use of local and organic ingredients) and SSI4 (certified sustainable seafood) were particularly well received by customers. This suggests that restaurants are already successful in integrating sourcing practices that customers value, confirming H1. While SSI does not dominate the importance

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axis in the same way as CE, its strong performance provides a tangible strength that can be leveraged as a differentiating factor in competitive markets.

Finally, Waste Management Practices (WMP) indicators presented some of the most critical gaps. Specifically, WMP2 (reducing food waste) and WMP4 (waste separation and recycling) appeared in the quadrant of high importance but low performance, reflecting visible shortcomings in restaurant operations. Other indicators, such as WMP1 (reducing single-use plastics) and WMP3 (waste reduction of disposables), showed similarly modest performance levels despite moderate importance. These findings confirm H2, highlighting waste management as an urgent area for managerial intervention. Customers are increasingly attentive to waste practices, particularly in tourism destinations where environmental fragility is more evident, yet restaurants are not consistently meeting expectations in this domain.

Overall, the indicator-level analysis validates H5, as it demonstrates clear discrepancies between importance and performance across multiple constructs. CE and WMP contain the largest performance gaps, making them immediate priorities, while EEM represents an underutilized opportunity, and SSI remains a relative strength. This detailed mapping provides practical insights into managers by showing precisely which aspects of sustainability and customer experience require urgent attention to improve customer perception and strengthen the competitiveness of eco-friendly restaurants.

In summary, the Importance–Performance Map confirms that all four factors, SSI, WMP, EEM, and CE, significantly influence customer perception in eco-friendly restaurants, but their relative strengths and weaknesses vary. Customer Experience (CE) is the most important determinant, yet its weak performance reveals a pressing need for improvement in service quality, ambiance, and staff engagement. Waste Management Practices (WMP) also show a considerable gap, with customers placing importance on food waste reduction and recycling but perceiving restaurants as underperforming in these areas. Energy Efficiency Measures (EEM), while recognized as important, remain moderately delivered and often invisible to customers, suggesting that greater visibility and communication are needed. In contrast, Sustainable Sourcing Ingredients (SSI) stand out as a strength, performing well relative to their importance and reinforcing positive perceptions of authenticity and quality. Together, these findings validate hypotheses H1 through H5 and demonstrate that while sustainable sourcing

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is already established as a competitive advantage, customer experience and waste management represent the most urgent priorities for eco-friendly restaurants in Indonesia's tourism cities.

Table 5. Hypotheses Testing Results

Hypothesis	Statement	Result	Explanation
H1	Sustainable Sourcing Ingredients (SSI) are perceived as an important driver of Customer Perception (CP).	Supported	SSI performed relatively strongly compared to its importance, confirming its role as a strength in shaping customer perception.
H2	Waste Management Practices (WMP) are perceived as an important driver of Customer Perception (CP).	Supported	WMP was valued by customers but underperformed in practice, showing a critical gap between expectation and delivery.
H3	Energy Efficiency Measures (EEM) are perceived as an important driver of Customer Perception (CP).	Partially Supported	EEM was recognized as important but delivered only moderately, often remaining invisible without explicit communication.
H4	Customer Experience (CE) is perceived as an important driver of Customer Perception (CP).	Supported	CE emerged as the most important factor, but its low performance highlights an urgent need for improvement.
H5	There are discrepancies between the importance and performance of sustainability practices and customer experience, indicating priority areas for improvement.	Supported	IPM confirmed gaps particularly in CE and WMP, validating the presence of underperforming but critical factors.

Table 5 summarizes the results of hypothesis testing, indicating that all proposed hypotheses were supported, with partial validation in the case of EEM due to its moderate performance. These findings provide the foundation for the subsequent discussion, which interprets the results considering existing literature and highlights both theoretical contributions and practical implications.

Discussion

The findings of this study provide several important insights into how sustainability practices and customer experience shape customer perceptions of eco-friendly restaurants in

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Indonesia's tourism cities. Consistent with the proposed framework, all four constructs—Sustainable Sourcing Ingredients (SSI), Waste Management Practices (WMP), Energy Efficiency Measures (EEM), and Customer Experience (CE)—were found to be important drivers of Customer Perception (CP), although their relative performance varied significantly.

First, the results confirm that Sustainable Sourcing Ingredients (SSI) are positively recognized by customers, supporting H1. Respondents valued the use of locally sourced, organic, and ethically certified ingredients, which enhanced perceptions of authenticity and quality. This aligns with Baciu et al. (2022) and Yang and Li (2020), who emphasize that sustainable sourcing increases customer trust and willingness to pay a premium. In the Indonesian context, SSI performed strongly, particularly in restaurants such as Burgreen (Jakarta) and The Hummingbird Eatery (Bandung), which highlight transparency in sourcing as part of their branding. This finding suggests that SSI can serve as a competitive advantage for eco-friendly restaurants, especially in metropolitan and lifestyle markets where consumers are highly responsive to food quality and ethical sourcing.

Second, Waste Management Practices (WMP) were valued but underperformed, confirming H2. Customers expected visible actions such as food waste reduction, recycling, and minimization of single-use plastics; however, restaurants often fell short in implementing these measures. These results are consistent with Tang et al. (2022) and Jiang et al. (2021), who noted that waste management remains one of the weakest aspects of hospitality sustainability. The performance gap was particularly pronounced in Labuan Bajo (NTT), where fragile ecosystems make waste management a pressing concern but infrastructure and implementation remain limited. This highlights an urgent need for restaurants to prioritize WMP, not only to meet rising customer expectations but also to align with Indonesia's broader sustainable tourism agenda.

Other than that, the analysis revealed that Energy Efficiency Measures (EEM) were considered important but achieved only moderate performance, partially supporting H3. While respondents acknowledged practices such as LED lighting and energy-efficient kitchen equipment, these measures often went unnoticed due to limited visibility and weak communication. Prior studies by Zhang and Liu (2020) and Sharma et al. (2021) indicate that energy efficiency enhances consumer perceptions only when it is made explicit in the dining experience. This finding suggests that eco-friendly restaurants in Jakarta and Bandung, where

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EEM adoption is relatively advanced, need to actively showcase their energy-saving technologies, rather than keeping them confined to back-of-house operations.

Moreover, Customer Experience (CE) emerged as the most important factor influencing perceptions, yet its low performance highlighted significant shortcomings, supporting H4. Respondents expected consistent service quality, ambiance, and staff engagement, but their experiences did not meet expectations. This result confirms earlier findings by Kim and Kim (2019) and Chen et al. (2021), who argue that CE is decisive in hospitality and often outweighs sustainability practices in shaping overall satisfaction. The implication is that sustainability cannot be separated from experience: eco-friendly practices are only meaningful when embedded in an engaging and memorable customer journey. For restaurants in tourism cities, this means integrating cultural elements, storytelling, and personalized service into eco-friendly branding to meet and exceed customer expectations.

Finally, the study confirmed H5, showing clear discrepancies between importance and performance across constructs. CE and WMP emerged as the most critical gaps, while EEM represented a partially underutilized opportunity, and SSI stood out as a relative strength. This integrated insight reinforces the utility of the Importance–Performance Map (IPM), which not only validates theoretical relationships but also provides a practical roadmap for improvement (Ringle & Sarstedt, 2016; Lee et al., 2021). Unlike previous studies that often-evaluated sustainability practices in isolation, this study demonstrated how combining operational dimensions (SSI, WMP, EEM) with experiential dimensions (CE) offers a more holistic understanding of eco-friendly dining (Bonfanti et al., 2025; Madanaguli, 2022).

From a theoretical perspective, this study contributes by extending the application of IPM to eco-friendly restaurants in a developing country context, bridging the gap between sustainability practices and experiential factors. It highlights that while operational practices matter, customer experience is the most decisive factor shaping perceptions, suggesting that future models of sustainable foodservice should explicitly integrate experiential constructs.

Practically, the findings provide actionable insights for managers and policymakers. Restaurants should maintain their emphasis on sustainable sourcing as a strength but urgently improve waste management systems and the consistency of customer experience. Energy efficiency should be made more visible to customers through communication strategies such

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as in-restaurant displays, menu highlights, or certifications. Policymakers and tourism stakeholders should also provide infrastructural support and awareness campaigns, particularly in emerging destinations such as Labuan Bajo, where systemic constraints hinder sustainability practices.

Therefore, the discussion underscores that eco-friendly restaurants cannot rely solely on sustainable sourcing as a differentiator; rather, they must deliver consistent experiences, demonstrate visible waste reduction, and showcase energy efficiency to fully align with eco-conscious customer expectations in Indonesia's tourism cities.

CONCLUSION

This study examined the importance and performance of sustainability practices in eco-friendly restaurants across Jakarta, Bandung, and Labuan Bajo using the Importance–Performance Map (IPM). The results confirmed that Sustainable Sourcing Ingredients (SSI), Waste Management Practices (WMP), Energy Efficiency Measures (EEM), and Customer Experience (CE) all influence customer perception, though their performance varied. SSI emerged as a relative strength, while CE and WMP showed critical gaps, and EEM was moderately recognized but underutilized.

Theoretically, the study contributes by integrating customer experience with operational sustainability practices in an IPM framework. This expands sustainability research in hospitality, which often treats such practices in isolation, and demonstrates that customer experience is a decisive element shaping perceptions of eco-friendly dining.

Practically, the findings suggest that eco-friendly restaurants should maintain strong sourcing practices while urgently addressing weaknesses in customer experience and waste management. Energy efficiency should also be made more visible to customers through communication and branding. Policymakers and tourism stakeholders can further support these efforts by providing infrastructure and incentives, especially in emerging destinations such as Labuan Bajo.

Despite its contributions, this study has limitations, including its reliance on a predominantly young, local sample and its focus on only three cities. Future research should broaden the geographic and demographic scope, employ longitudinal or comparative approaches, and integrate IPM with structural equation modeling to capture causal

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relationships. Such work would deepen understanding of how sustainability and customer experience jointly shape perceptions in diverse hospitality contexts.

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