

Sustainable Menu Practices and the Performance of 4- and 5-Star Hospitality Establishments in Kenya: Evidence from Nakuru and Narok Counties

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Abstract

Menus are the most visible sign of a hospitality enterprise's sustainability efforts, yet research linking sustainable menu practices to success remains limited, especially in developing countries. This study examined how sustainable menu practices affect 4- and 5-star hotels in Kenya. Using the Balanced Scorecard and Triple Bottom Line frameworks in a mixed-methods design, data was collected from 150 executives (chefs, purchasing officers, and restaurant supervisors) across all 50 star-rated hotels in Nakuru and Narok Counties. Interviews with 17 food and beverage managers and an officer from Ecotourism Kenya provided qualitative insights. Results showed moderate adoption of sustainable practices (Mean = 3.40, SD = 1.26), with plant-based menus most common (Mean = 3.87) and seasonal changes least (Mean = 2.96). Correlation analysis indicated a positive link between sustainable menus and performance ($r = 0.734$, $p < 0.01$), confirmed by regression ($\beta = 0.613$, $p < 0.001$). Qualitative findings showed sustainability through indigenous and plant-based dishes, seasonal menus, provenance labelling, and communicating sustainability to guests. Challenges included limited customer familiarity with local cuisines, higher organic ingredient costs, and menu constraints. The study concludes that sustainable menus are a strategic tool for improving non-financial performance and suggests increasing indigenous foods, raising guest awareness, and adjusting seasonal menus.

Keywords: Sustainable menu practices, sustainable menu planning, indigenous foods, hotel performance, hospitality establishments

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Introduction

Sustainable menu practices have assumed a vital role within the hospitality industry, harmonizing environmental, social, and economic objectives (Camilleri, 2021). Stakeholders including consumers, investors, and regulators support measures aligned with the United Nations Sustainable Development Goals (SDGs) and broader sustainability initiatives (Clark et al., 2020). Sustainability has become indispensable to long-term success, shifting from voluntary Corporate Social Responsibility (CSR) initiatives to a core requirement (Legrand et al., 2022). These endeavours, particularly sustainable menus, influence food production, consumption, and dining behaviours, helping enterprises reduce their environmental footprint and meet the growing demand for healthy, environmentally friendly options.

The scope of sustainable menu practices extends beyond meal preparation, including planning strategies such as seasonal menu adaptations, prioritising local ingredients, integrating traditional cuisines, expanding plant-based options, minimising waste, and clearly communicating sustainability initiatives to guests (Ruiz Molina et al., 2022). These initiatives promote resource conservation by reducing food miles, supporting local farmers, lowering emissions, and preserving culinary heritage, aligning with Sustainable

Development Goal 12 (United Nations, 2015).

Growing consumer awareness of environmental and social concerns has led to a rise in sustainable menu practices within the hospitality industry. Guests increasingly favour hotels that prioritise responsible sourcing, offer healthy local dishes, and maintain transparency concerning sustainability initiatives (Kwok & Huang, 2019). Sustainable menus provide a competitive edge by enhancing guest experiences, strengthening establishments' reputations, and differentiating brands (Dagenais et al., 2022). Nonetheless, empirical evidence on their impact on organisational performance remains limited, particularly in developing nations. Most existing research focuses on food waste, procurement processes, or attitudinal aspects, with comparatively few studies examining customer satisfaction, innovation, or competitive positioning (Filimonau et al., 2019; Jones et al., 2016). In Kenya, despite its abundant agricultural resources and ongoing sustainable tourism initiatives, research on sustainable menus remains scarce. This study investigates the influence of sustainable menu practices on non-financial performance within four- and five-star Kenyan hospitality establishments.

Theoretical Review

This study is theoretically anchored at the conceptual convergence of the Triple Bottom Line (TBL) framework (Elkington, 1998) and Kaplan and Norton's (1996) Balanced Scorecard (BSC). The TBL framework posits that true corporate performance must be comprehensively measured across three sustainable pillars: planetary health (environmental sustainability), human equity (social responsibility), and fiscal viability (economic prosperity). In hospitality establishments, sustainable menu planning, preparation, and communication serve as core environmental and social inputs that operationalise TBL values into functional, daily strategic actions. However, while the TBL provides a comprehensive sustainability perspective, it does not explicitly demonstrate how these practices translate into measurable organisational performance.

To integrate these multi-layered inputs and strategic capabilities into a balanced diagnostic output, this study deploys the Balanced Scorecard. The BSC expands traditional organizational assessment far beyond short-term financial accounting to capture long-term strategic success through four non-financial dimensions: customer satisfaction, internal business processes, competitive advantage, and organisational innovation and learning.

Integrating the TBL and BSC provides a robust theoretical foundation for this study. The TBL explains the sustainability principles underpinning sustainable menu practices, while the BSC provides the framework for assessing their contribution to organisational performance (Al-Malkawi et al., 2024; Razzak & Mahmud, 2025).

Empirical Review and Hypothesis Development

According to Zanella (2020), a sustainable menu involves producing and using food in a way that ultimately supports the ongoing well-being of both ourselves and our planet. Sustainable menu practices integrate sustainability principles throughout menu planning and development, from ingredient selection and food preparation to communicating sustainability information to customers.

Sustainable menu planning focuses on strategically designing menus that promote environmental stewardship, social responsibility, and economic viability. This includes developing seasonal menus, incorporating locally sourced, fresh ingredients, increasing plant-based offerings, and preserving indigenous and traditional food systems (Legrand et al., 2022). Local and seasonal sourcing has become a cornerstone of sustainable hospitality because it reduces carbon emissions associated with long-distance transportation, strengthens local food systems, and enhances destination authenticity (Filimonau et al., 2022). Furthermore, behavioural studies indicate that strategically positioning plant-based dishes and traditional foods on menus can encourage guests to select low-carbon meal options without compromising customer satisfaction (Coskun et al., 2023). Consequently, sustainable menu planning enhances resource efficiency while strengthening brand authenticity and customer value (Abd Latip & Shaari, 2025).

Sustainable menu preparation translates menu plans into environmentally responsible kitchen operations through efficient resource utilisation and waste minimisation. This dimension includes energy-efficient cooking techniques, optimised ingredient utilisation, standardised portion control, and systematic food waste reduction

(Subramanian et al., 2021). Effective menu engineering enables hospitality establishments to maximise ingredient cross-utilisation, reduce spoilage, improve inventory management, and lower food production costs (Lee & Huang, 2023). Similarly, portion standardisation and the careful management of high-cost ingredients minimise food waste while maintaining product quality. Hotels implementing comprehensive food waste reduction programmes have reported significant reductions in purchasing costs and operational waste, demonstrating that sustainable preparation practices improve internal business efficiency and encourage continuous operational innovation (Abdou *et al.*, 2020).

Complementing menu planning and preparation, sustainable menu communication focuses on informing customers about the environmental and social attributes of menu offerings. Through menu descriptions, eco-labels, local sourcing information, and sustainability messages, hospitality establishments enhance transparency and encourage responsible consumption (Vasiljevic et al., 2025; DuPuis *et al.* (2022). Effective communication of sustainability initiatives has been shown to improve consumers' perceptions of ethical value, strengthen brand image, and increase customer loyalty. However, sustainable menu communication remains inconsistent in many developing countries because of limited regulatory guidance, financial constraints, and inadequate sustainability standards within hospitality operations (Government of Kenya, 2025; Mbasera et al., 2024). Despite these challenges, hotels that effectively communicate their sustainability initiatives are better positioned to differentiate themselves in increasingly sustainability-conscious tourism markets, thereby enhancing customer satisfaction

and competitive advantage. Cozzio *et al.* (2021).

Collectively, sustainable menu planning, preparation, and communication constitute complementary dimensions of sustainable menu practices that support environmental conservation, operational efficiency, customer satisfaction, and organisational competitiveness. By embedding sustainability across the menu lifecycle, hospitality establishments create value for customers while strengthening their long-term organisational performance. Accordingly, this study hypothesises that:

H₀₁: Sustainable menu practices do not have a statistically significant influence on the non-financial performance of four- and five-star-rated hospitality establishments in Kenya.

Methodology

The study employed a mixed-methods approach, gathering quantitative survey data and qualitative interviews concurrently during the primary fieldwork phase. These datasets were analyzed independently and subsequently integrated during the interpretation process (Takona, 2024). The research was conducted in Nakuru and Narok Counties, two prominent tourism centers in Kenya characterized by numerous 4- and 5-star hospitality facilities. These locations were selected because their hospitality sectors generate substantial food volumes attributable to high levels of domestic and international tourism, while also being environmentally sensitive tourism regions. The investigation focused on fifty registered 4- and 5-star hospitality establishments licensed by the Tourism Regulatory Authority (TRA). Given the

limited number of such establishments, a census was undertaken for the quantitative component, encompassing all 150 employees engaged in food and beverage services such as executive chefs, purchasing officers, and restaurant supervisors. For the qualitative component, purposive sampling was used to select key decision-makers, including seventeen food and beverage managers from the five-star establishments and one senior informant from Ecotourism Kenya.

Overall, the research involved 135 employees completing surveys and 11

managers participating in interviews. In this study, variables were measured using scales adapted from prior research, with minor modifications to suit the current context. Participants evaluated each key construct using multi-item, five-point scales ranging from 1 (strongly disagree) to 5 (strongly agree). The instruments underwent pilot testing, and reliability analysis demonstrated high internal consistency, with Cronbach's alpha coefficients of 0.909 for sustainable menu practices and 0.794 for organisational performance.

Table 1: Reliability Analysis

Variable	Cronbach's Alpha	No of Items	Comment
Sustainable Food Purchasing Practices	0.754	11	Reliable
Sustainable Menu Practices	0.909	11	Reliable
Sustainable Waste Management Practices	0.778	12	Reliable
Management Support	0.891	15	Reliable
Performance	0.794	20	Reliable

Source: (*Field Data, 2025*)

Content, face, and construct validity were confirmed through expert evaluation and exploratory factor analysis, such as principal component analysis. The data were appropriate for factor analysis, as indicated by a Kaiser–Meyer–Olkin (KMO) value of 0.701 and a significant

Bartlett's Test of Sphericity ($\chi^2 = 8924.639$, $df = 2346$, $p < .001$). Most items showed communalities above 0.50, suggesting that the identified factors effectively explained the variance in the measurement items and supporting the instrument's construct validity.

Table 2: KMO and Bartlett's Test

<i>KMO and Bartlett's Test</i>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.701	
	Approx. Chi-Square	8924.64
Bartlett's Test of Sphericity	Df	2346
	Sig.	0

Source: (*Field Data, 2025*)

Data analysis involved both descriptive statistics such as frequency, percentage, mean, and standard

deviation—and inferential statistics, including correlation and regression. To evaluate the hypothesis, a regression

model was employed, utilizing the following equation.

Direct effect

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon \dots\dots\dots$$

Where: y is the dependent variable (performance).

β_0 is the intercept

β_1 is the change in y for each increment change in X_1

X_2 connote sustainable menu practice

Results

Descriptive Results

The study sought to assess the influence of sustainable menu practices on performance of 4- and 5-star hospitality establishments in Kenya. Descriptive results were presented on Table 3.

Table 3: Descriptive Statistics Results of Sustainable Menu Practices

Sustainable Menu Practices	Mean	SD	Skewness	Kurtosis
We adjust the menu according to the seasonal availability of food	2.96	1.314	-0.414	-1.247
We include authentic traditional Kenyan dishes on our menu	3.36	1.352	-0.632	-0.85
We prioritize menu on fresh ingredients	3.05	1.293	-0.254	-1.336
We incorporate locally grown fruits during menu planning	3.44	1.318	-0.3	-1.193
We incorporate indigenous vegetables during menu planning	3.34	1.374	-0.291	-1.218
We incorporate plant-based food during menu planning	3.87	1.304	-0.768	-0.712
We prefer food that applies energy-efficient cooking techniques in our menus	3.5	1.307	-0.437	-0.725
We optimise our menu planning to ensure crossover usage of the same ingredients in different dishes	3.6	1.19	-0.652	-0.516
We reuse ingredients left over to recreate new menus such as soup, stock or salads	3.43	1.334	-0.291	-1.217
We communicate organic food on the menus and buffet tags	3.24	1.178	-0.573	-0.694
We communicate locally sourced food on the menus and buffet tags	3.57	1.223	-0.419	-0.842
Mean of Sustainable Menu Practices	3.4	1.26	-0.44	-0.9

Source: (Field Data, 2025)

Overall, the adoption of sustainable menu practices was moderate and inconsistent ($M = 3.40$, $SD = 1.26$), making it the least adopted area within sustainable food production. Plant-based options were the most common ($M = 3.87$), reflecting global dietary trends,

followed by ingredient optimisation ($M = 3.60$) and local sourcing ($M = 3.57$). Methods such as energy-efficient cooking ($M = 3.50$) and leftovers reuse ($M = 3.43$) showed moderate use; however, variation in leftovers reuse suggests concerns about food safety and guest perceptions, which

may limit wider adoption. Sustainable planning based on Kenyan cuisine - featuring locally grown fruits ($M = 3.44$), traditional dishes ($M = 3.36$), and indigenous vegetables ($M = 3.34$) - offers a significant opportunity for cultural differentiation. Less favoured practices included organic communication ($M = 3.24$), prioritising fresh ingredients ($M = 3.05$), and seasonal menu changes ($M =$

2.96), with seasonal changes the only practice below the midpoint. This may reflect supply chain issues and guest expectations for year-round availability. The negative kurtosis observed across many items indicates considerable variability in adoption levels among establishments, rather than a uniform trend across the sector.

Table 4: Descriptive Statistics Results of Performance

Performance	Mean	SD	Skewness	Kurtosis
We receive positive customer feedback regarding customer satisfaction with our services	3.63	1.362	-.552	-1.032
We have repeat customers who recommend us to others	4.32	.980	-1.532	1.577
Our customers' loyalty has improved over the past year	3.76	1.207	-.646	-.748
Our customers are satisfied with the overall quality of our services	3.48	1.360	-.466	-1.110
Our hotel has a clear and unique value proposition in the market.	3.81	1.256	-.734	-.809
Our market share has increased over the past year.	4.17	1.044	-1.454	1.577
We regularly analyze competitor performance and adapt accordingly	4.29	.978	-1.803	3.139
We use innovation effectively to stay ahead in the market.	4.29	.978	-1.767	3.023
Communication among teams is effective and clear	3.96	1.120	-1.028	.154
We encourage employees to suggest improvements for more effective operations	3.45	1.216	-.342	-1.011
We train our staff on suitable food practices to improve the operation process	4.30	.992	-1.686	2.469
We monitor our sustainable food production practices/operations to enhance efficiency	4.05	1.107	-1.153	.479
We have streamlined our internal business process	3.81	1.154	-.664	-.720
Employees feel a strong sense of belonging and commitment to the organization.	3.94	1.119	-.964	-.041
The hotel can deliver high-quality service with minimal waste or delay	3.97	1.132	-1.049	.132

Our organization fosters a culture of innovation on our daily operations	4.28	.935	-1.625	2.641
Continuous learning and development on current trends is a core value of the Organization	3.86	1.104	-.942	.121
Our employees are given opportunities to share ideas related to sustainable food practices	4.21	1.011	-1.570	2.140
Employees are encouraged to participate in training programs related to sustainability in food production	4.05	1.046	-1.145	.595
Employees have opportunities for professional growth and development.	4.29	.949	-1.682	2.690
Mean of Performance	4.00	1.10	-1.14	0.76

Source: Field Data, (2025)

The overall performance was measured at a mean of 4.00 with a standard deviation of 1.10, exhibiting negative skewness of -1.14 and positive kurtosis of 0.76, which suggests a clustering of responses towards agreement. Within the customer perspective, repeat customers who recommend the establishment achieved the highest scores ($M = 4.32$), followed by loyalty improvement ($M = 3.76$) and overall satisfaction with service quality ($M = 3.48$), indicating that loyal advocates coexist with variability in day-to-day service consistency. The competitive-advantage perspective demonstrated robustness: market share growth ($M = 4.17$), competitor analysis and adaptation ($M = 4.29$), and the effective utilization of innovation ($M = 4.29$). Internal processes reflected effective team communication ($M = 3.96$) and the capacity to deliver quality services with minimal waste or delays ($M = 3.97$). The innovation and learning perspective emerged as the strongest overall, encompassing staff training on sustainable food practices ($M = 4.30$), fostering a culture of innovation in daily operations ($M = 4.28$), providing

opportunities to share ideas on sustainable food practices ($M = 4.21$), participation in sustainability training ($M = 4.05$), and professional growth opportunities ($M = 4.29$). The prominence of sustainability-related learning items within the performance profile prefigures the strong association with menu performance: establishments that perform well are those actively enhancing their sustainable food capabilities.

The qualitative findings corroborated the survey results by demonstrating that the implementation of sustainable menu practices was inconsistent across participating venues. Managers observed that seasonal menu planning remained irregular owing to supply chain disruptions and guest preferences, despite its recognition as a fundamental sustainability strategy. Similarly, the utilization of indigenous foods was selective; chefs adapted traditional dishes to align with guest expectations while preserving authenticity. Furthermore, participants highlighted the integration of healthier options, such as plant-based meals, low-fat preparations, and traditional

ingredients including cassava, arrowroot, and mursik, as measures to differentiate their establishments and advance sustainability initiatives.

Menu communication was identified as the primary challenge in implementation. Management noted that spatial and design limitations frequently restricted the display of sustainability information on menus and buffet tags. Furthermore, some guests perceived indigenous, organic, and plant-based foods as less attractive or more expensive than conventional options. A key informant from Ecotourism Kenya also confirmed that sustainable menu practices such as local sourcing,

minimizing food waste, and organic kitchen gardens—are increasingly assessed through the national Eco-rating Certification Scheme, thereby encouraging hotels to improve their sustainability initiatives to maintain their certification.

Correlation and Regression Results

Sustainable menu practices showed a strong positive correlation with performance ($r = 0.734$, $p < 0.01$). This indicates that establishments with higher levels of menu sustainability consistently achieve superior outcomes in customer satisfaction, competitive advantage, internal processes, and innovation.

Table 5: Correlation Analysis

Variables	P	FPP	SMP	WMP	NMS
Performance (P)	1				
Food Purchasing Practices (FPP)	.739**	1			
Sustainable Menu Practices (SMP)	.734**	.460**	1		
Waste Management Practices (WMP)	.747**	.582**	.463**	1	
Management Support (MS)	.848**	.594**	.901**	.598**	1

** . Correlation is significant at the 0.01 level (2-tailed).

Source: (Field Data, 2025)

The regression analysis further substantiated this, revealing that sustainable menu practices exerted a significant positive influence ($\beta = 0.501$, p

< 0.001) on the performance of four- and five-star hospitality establishments in Kenya.

Table 6: Coefficient Results for Direct Effect

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	T	
1 (Constant)	.048	.007		7.081	.000
Sustainable Food Purchasing Practices	1.680	.123	.522	13.659	.000
Sustainable Menu Practices	.933	.072	.501	12.934	.000
Sustainable Waste Management Practices	-.008	.003	-.089	-2.659	.008

Source: (Field Data, 2025)

Specifically, each unit increase in sustainable menu practices corresponded

to a 0.501 increase in their performance metrics. The null hypothesis was rejected,

indicating that sustainable menu practices significantly improve the performance of 4- and 5-star hospitality establishments in Kenya. This highlights that integrating sustainability into the menu is a crucial factor for organizational success.

Discussion

This research shows that implementing sustainable menu practices has a significant positive effect on the performance of 4- and 5-star hotels in Kenya ($\beta = 0.613$, $p < 0.05$). The findings suggest that sustainable menu planning, preparation, and communication function as strategic instruments that enhance organisational performance beyond routine operations. By aligning menu offerings with environmental sustainability objectives and evolving consumer preferences, hotels can increase customer satisfaction, augment brand image, and establish a competitive advantage.

The findings align with recent global research showing that sustainable menu practices benefit both customers and hospitality businesses. Innovation in sustainable menus strengthens brand identity and offers a competitive edge (Jones et al., 2025). Additionally, sustainability-focused menus boost guest loyalty and intent to revisit by enhancing perceptions of environmental responsibility (Dedat & Rodrigues, 2025). Likewise, Lin et al., (2025) found that incorporating Sustainable Development Goal (SDG) principles into menu design enhances customer satisfaction, brand image, and loyalty supporting the view that menu sustainability has become a key strategic performance factor rather than just a culinary aspect.

The research reinforces that sustainable menu practices boost tourism competitiveness overall. Soliman et al. (2025) found that innovative menus make

a destination more attractive and encourage repeat visits. Lin et al. (2025) highlighted that ethical menu innovations build customer loyalty and help organizations create a unique identity. In Africa, using indigenous and locally sourced foods not only supports environmental sustainability by reducing reliance on imports but also preserves cultural heritage and offers authentic visitor experiences (Okechukwu et al., 2025). Additionally, Artini et al. (2024) noted that sustainable menus improve food quality, safety, and eco-friendly branding, leading to higher guest satisfaction and stronger organizational positioning.

The qualitative results support the quantitative data by demonstrating how sustainable menu practices contribute to improvements in organizational performance. Participants noted that redesigning menus to include healthier, locally sourced, and culturally authentic foods enabled establishments to better meet the evolving preferences of guests. The addition of vegetarian options, reduced-sugar alternatives, traditional Kenyan dishes, and local ingredients increased customer satisfaction and distinguished hotels from their competitors. Furthermore, providing detailed information about dietary options, ingredient sources, and sustainability initiatives on menus fostered transparency and enhanced customer trust, in accordance with studies indicating that signals of sustainability elevate perceived value, willingness to pay, and customer loyalty (Camilleri, 2021). These findings are further supported by service design theory, which asserts that visible customer-facing innovations result in improved performance outcomes due to their direct impact on perceived service quality and customer experience (Dedat & Rodrigues, 2025).

Despite these positive results, qualitative evidence indicated certain challenges during implementation. Some guests initially exhibited resistance to the concept of reduced-meat menus or regarded organic foods as more costly. This implies that effective adoption relies on incremental customer education and transparent communication regarding the advantages of sustainability. These results align with previous studies indicating that sustainability initiatives may not succeed if customers perceive them as greenwashing or do not grasp their importance (Eze, 2025). In summary, this research enhances the empirical evidence from Kenya, highlighting that sustainable menu practices constitute a vital strategic asset for enhancing hospitality performance.

Conclusion

Sustainable menu practices significantly and positively influence the performance of 4- and 5-star-rated hospitality establishments in Kenya. Hospitality establishments that integrate sustainability into menu planning, preparation, and communication achieve higher levels of customer satisfaction, competitiveness, and innovation. The findings further revealed that guest-visible sustainable practices, cultural authenticity, and effective communication of sustainability initiatives strengthen organizational performance. However, inconsistencies in the adoption of seasonal menu planning and sustainability communication limit the full realization of these benefits. The strong, statistically significant relationship confirms that when sustainable menu practices are implemented consistently, hospitality establishments experience improved organizational performance, highlighting sustainable menu management as a key

strategic approach for enhancing competitiveness and long-term success in the hospitality sector.

Recommendations

The study indicates that hospitality establishments should enhance their utilization of seasonal menus and actively promote the use of local and organic ingredients to enhance food quality, address the increasing demand for sustainable dining, and strengthen their environmental and market positions. Additionally, they are advised to educate guests regarding indigenous and traditional dishes by integrating them into seasonal and adaptable menus, which are progressively acknowledged as essential sustainable strategies. Hotel management should establish formal policies for sustainable menus and administer continuous staff training to ensure uniform application across all food services. At the policy level, regulatory and certification authorities ought to incorporate sustainable menu indicators into hotel classification and certification systems, thereby motivating establishments to adopt standardized sustainable menu practices as integral components of their quality and environmental commitments.

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