

Green Practices and Event Performance in Hotel-Based Events: The Moderating Role of Organizational Factors in Nairobi City County, Kenya

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Abstract

Hotel-based events are expected to deliver service quality and financial returns while operating under increasing resource and environmental constraints. Yet, event-specific evidence on how green practices translate into performance, and on the organizational conditions that shape those effects, remains limited in African hospitality settings. This study examined the influence of water management, energy management, and waste management practices on hotel-based event performance in Nairobi City County, Kenya, and assessed the moderating role of organizational factors comprising leadership commitment, organizational culture, and resource allocation. An explanatory, cross-sectional design was used. From a target population of 162 managers in 54 classified 2- to 5-star hotels, 115 questionnaires were distributed and 106 complete responses were retained after screening. Hierarchical moderated regression showed that the direct-effects model explained 68.0% of the variance in event performance ($R^2 = .680$). Water management ($\beta = .222$, $p < .001$), energy management ($\beta = .218$, $p < .001$), and waste management ($\beta = .571$, $p < .001$) were positive predictors, with waste management the strongest. Adding organizational factors increased explained variance to 74.4% ($\Delta R^2 = .064$), and organizational factors had a positive direct effect ($\beta = .333$, $p < .001$). The final model explained 81.6% of variance ($R^2 = .816$). Moderation was domain-specific: the water management $\times$ organizational factors interaction was negative and significant ($\beta = -.386$, $p = .001$), whereas the energy and waste interactions were not statistically significant. The findings extend the Resource-Based View by showing that green operational practices function as performance-relevant capabilities whose contribution depends partly on complementary organizational systems, while Organizational Learning and Institutional perspectives explain how leadership, culture, and resources embed sustainability in routine event operations. Managers

should therefore combine visible operational gains, particularly in waste and water management, with stronger training, monitoring, budgeting, and cross-department accountability.

Keywords: Green Practices, Organizational Factors, Event Performance, Hotel-Based Events, Sustainability, Nairobi City County

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Introduction

Hotel-based events are a strategically important part of the hospitality industry because they generate revenue, increase venue visibility, strengthen brand equity, and support destination competitiveness. Hotels host conferences, meetings, banquets, weddings, exhibitions, and other organized gatherings that require tightly coordinated use of space, catering, utilities, technology, procurement, and human resources. Unlike routine hotel demand, events concentrate resource use into short operating windows. The same ballroom may require intensive lighting and cooling, high-volume food production, rapid cleaning cycles, washroom capacity, audiovisual reliability, and post-event waste handling within a few hours. This combination creates an event sustainability paradox: the operational pressure to deliver rapid, uninterrupted service can conflict with the time, capital, monitoring, and

behavioral discipline required for environmentally responsible operations.

This tension is particularly salient in Nairobi City County. Nairobi is not only Kenya's principal commercial, diplomatic, and hospitality hub; it is also an urban environment in which hotels operate under substantial pressures associated with water demand, energy use, waste generation, infrastructure constraints, and rising client expectations. The city's concentration of classified hotels and high event activity therefore provides a useful emerging-economy setting for examining whether green practices produce measurable performance benefits under resource stress rather than under ideal operating conditions. Evidence from Kenyan urban hotels already indicates that managers and guests recognize water, energy, and waste practices as meaningful components of hotel sustainability (Musau et al., 2024). However, such evidence remains primarily hotel-wide

and does not isolate the event function, where resource intensity, time pressure, and service visibility are unusually high.

Green practices in this study comprise water management, energy management, and waste management. These practices include efficient fixtures and preventive maintenance, energy-efficient technologies and monitoring, and waste prevention, segregation, reuse, recycling, eco-procurement, policy, and training. Contemporary hospitality research increasingly treats such practices as organizational capabilities rather than as isolated environmental actions. Water-saving measures can improve resilience and reduce operational waste (Gabarda-Mallorquí et al., 2024; Hu et al., 2023); energy-efficient technologies can support comfort, reliability, and cost control (Menegaki, 2025); and circular waste practices can improve material efficiency and reduce visible environmental burdens (Cardenas et al., 2024).

Event performance is conceptualized as a multidimensional construct with operational, reputational, and financial dimensions. Operational performance concerns smooth service delivery, reliability, staff efficiency, and continuity of event processes. Reputational performance reflects client trust, environmental credibility, repeat-booking potential, recommendations, and competitive positioning. Financial performance concerns cost savings, revenue, profitability, willingness to pay, and longer-term financial sustainability. This multidimensional framing is important because green practices may generate value through different mechanisms: reducing utility and material costs, preventing service disruptions, improving venue cleanliness and ambience, or signaling professional and environmental responsibility to clients.

The paper also disaggregates organizational factors into three measurable components: leadership commitment, organizational culture, and resource allocation. Leadership determines strategic priority and accountability; culture affects whether sustainable behaviors become routine; and resource allocation determines whether staff, time, technology, and budgets are available to implement green practices consistently. Prior hospitality research shows that communication, training, work environment, and corporate commitment influence sustainability implementation (Guerra-Lombardi et al., 2024), while eco-leadership and organizational culture are associated with pro-environmental behavior and sustainability outcomes (Yoo, 2024; Zheng et al., 2025). These findings suggest that technical practices may not translate into performance uniformly across organizations.

Despite this progress, three gaps remain. First, much of the literature examines hotel sustainability generally rather than the event-specific operational context. Second, evidence from Africa and Kenya remains limited relative to global hospitality research, even though resource constraints and uneven sustainability capacity may make organizational conditions particularly consequential. Third, organizational factors are often treated as antecedents or direct predictors rather than tested as conditions that alter the strength of the green practices–performance relationship. This study therefore examines the direct influence of water, energy, and waste management practices on hotel-based event performance and evaluates whether organizational factors condition those relationships. In doing so, it positions Nairobi as a theoretically useful context for understanding sustainability-performance relationships.

Literature Review

Water-management evidence

Hu et al. (2023) provide an important foundation for understanding water management in hotels through a longitudinal network analysis of hotel-industry policy documents. Their analysis shows that contemporary hotel water policy has moved beyond isolated conservation devices toward an integrated portfolio that combines efficient fittings, non-potable substitution, greywater recovery, rainwater harvesting, audits, metering, management plans, and education. This is important for hotel-based events because event operations concentrate water demand in kitchens, washrooms, cleaning, landscaping, and guest-service functions over short periods. However, Hu et al. focus on the evolution of policy instruments rather than testing whether these practices improve operational, reputational, or financial event outcomes. The present study therefore moves from policy content to empirical performance effects.

Gabarda-Mallorquí et al. (2024), in a systematic review of water-saving measures in the hotel sector, similarly show that effective water conservation is increasingly understood as a management system rather than a single technical intervention. Their review highlights the growing importance of low-cost conservation measures, reclaimed-water solutions, and integrated water stewardship. The study is valuable because it synthesizes international hotel evidence, but its broad review design cannot show whether water practices produce measurable performance benefits in a specific resource-pressured event setting. The present study addresses this limitation by testing water

management directly against multidimensional event performance in classified hotels in Nairobi City County.

Kenyan evidence reinforces the practical relevance of water management while also exposing the need for event-specific research. Musau et al. (2024) examined sustainability practices from the perspectives of urban hotel managers and guests in Nairobi and found that water-conservation technologies were among the environmental practices recognized within city hotels. Their findings demonstrate that green practices are visible to both managers and customers and therefore have potential operational and reputational significance. Nevertheless, the study remained hotel-wide and did not isolate hotel-based events or test how organizational conditions change the performance value of water practices. This distinction is important because conferences, banquets, weddings, and meetings create short-window peaks in sanitation, catering, and cleaning demand that may make water reliability more consequential than in routine hotel operations.

Energy-management evidence

Menegaki (2025) examines energy reduction in hospitality through a policy-driven, case-based, and scenario approach and identifies efficient lighting, smart HVAC systems, and renewable-energy integration as important pathways for lowering energy consumption and operating costs. The relevance to hotel-based events is direct: event spaces depend heavily on lighting, cooling, ventilation, audiovisual systems, refrigeration, and kitchen equipment. Energy efficiency can therefore support both cost control and service continuity. However, the study does not compare the relative performance contribution of energy management with other green-

practice domains or investigate the organizational conditions under which energy investments generate stronger returns. The present study makes that comparison explicitly and shows whether energy management retains explanatory value alongside water and waste practices.

Makoondlall-Chadee and Bokhoree (2024) broaden this perspective by reviewing environmental assessment tools and techniques used in hotels. They conclude that structured measurement systems help hotels evaluate energy, water, and waste performance and improve transparency, policy decisions, and operational control. Their contribution is especially relevant to the monitoring dimension of green management: technologies alone do not guarantee efficiency unless organizations measure use, detect deviations, and act on the information generated. Yet, their review is concerned primarily with assessment approaches rather than event-level performance. In the Nairobi context, where the present study found comparatively weaker implementation of energy monitoring and staff training than of energy-efficient equipment, this literature suggests that organizational and managerial routines may explain why technical energy investments do not always translate into equally strong performance gains.

Musau et al. (2024) also provide locally grounded support for the energy dimension. Their Nairobi urban-hotel evidence indicates that guests and managers recognize energy-efficient appliances, conservation technologies, and related environmental practices as part of hotel sustainability. This local visibility matters because event organizers increasingly evaluate venues not only on service functionality but also on environmental credibility. Even so, the study does not establish whether energy

practices improve the operational, reputational, and financial performance of hotel-based events or whether their effect differs according to leadership, culture, and resource allocation. Those unanswered questions are central to the present research.

Waste-management evidence

Cardenas et al. (2024) provide one of the clearest empirical syntheses relevant to waste management. Their review of circular practices in hospitality food waste shows that prevention, minimization, reuse, recycling, and related circular approaches dominate the contemporary waste-management agenda. This evidence is particularly pertinent to events because banquets and conferences generate concentrated flows of food waste, packaging, disposables, décor materials, and cleaning residues. Waste practices can therefore affect several performance dimensions simultaneously: they influence cleanliness and operational order, disposal and procurement costs, and the visible environmental image experienced by clients and attendees. However, Cardenas et al. do not quantify the comparative contribution of waste management to event performance. By estimating water, energy, and waste effects in the same model, the present study is able to determine whether waste management has a distinctive performance role rather than assuming that all green practices are equally influential.

The wider event-sustainability literature supports the need for this event-specific perspective. Cavallin Toscani et al. (2024), in a systematic review of environmental sustainability in the event industry, show that environmental impacts arise across multiple stages of event production and that the field still requires stronger

empirical work connecting environmental management to measurable organizational outcomes. Their review helps position hotel-based events as a distinct analytical setting because the venue controls permanent water, energy, catering, and waste infrastructures that are repeatedly used across events. The present study responds to this gap by linking concrete green-management domains to operational, reputational, and financial event performance rather than treating environmental sustainability only as an impact-reduction outcome.

Organizational conditions and implementation evidence

Guerra-Lombardi et al. (2024) shift attention from technical practices to the organizational conditions that determine whether sustainability strategies are actually implemented. Their hotel-sector study identifies corporate commitment, communication, training, and the work environment as important drivers of sustainability strategy implementation. This finding is highly relevant to the present moderator because leadership commitment, organizational culture, and resource allocation are unlikely to be peripheral features; they shape priorities, employee behavior, coordination, and the ability to maintain green practices over time. The limitation is that Guerra-Lombardi et al. explain implementation quality rather than testing whether organizational conditions alter the strength of a green practice-performance relationship. The present study extends this logic by modelling organizational factors as a moderator rather than only as an implementation antecedent.

Wang et al. (2025) likewise emphasize stakeholder engagement as a pathway to environmental management in the hotel industry. Their framework shows that environmental performance

depends on coordination among actors rather than on isolated managerial decisions. This has particular relevance to hotel events, where General Managers, Banqueting/Events Managers, Procurement/Supplies Managers, technical teams, guests, suppliers, and event organizers jointly influence resource use. The present study complements this stakeholder perspective by focusing on internal organizational capacity - leadership, culture, and resources - as the condition that may enable such coordination to produce stronger event outcomes.

Employee-focused studies provide further support for the conditioning role of organizational context. Yoo (2024) shows that eco-leadership and green human-resource practices foster organizational commitment and environmental citizenship behavior in hospitality, indicating that sustainability performance depends partly on how organizations motivate and equip employees. Zheng et al. (2025) similarly report that transformational leadership and organizational culture shape employee pro-environmental behavior and ESG outcomes in tourism and hospitality organizations. These studies demonstrate that leadership and culture influence the behavioral mechanisms through which sustainability is enacted. Their dependent variables, however, are employee or ESG outcomes rather than hotel-based event performance, and neither study tests the combined moderating construct used here. The present study therefore transfers this organizational logic to the event-performance domain and incorporates resource allocation alongside leadership and culture.

Taken together, the selected empirical studies establish four points. First, water, energy, and waste practices have credible operational and

environmental foundations in hospitality. Second, the strongest existing evidence is still predominantly hotel-wide, policy-oriented, review-based, or focused on environmental outcomes rather than event performance. Third, Kenyan evidence confirms that green practices are visible and relevant in Nairobi hotels, but it does not isolate the short-window, resource-intensive context of hotel-based events. Fourth, organizational studies show that leadership, culture, training, communication, stakeholder coordination, and resources affect sustainability implementation, yet direct tests of their moderating role in the green practice-event performance relationship remain limited. These gaps justify an event-specific model that compares the direct effects of water, energy, and waste management while testing whether organizational factors condition those effects.

Theoretical Foundation

The study is grounded in three complementary theoretical perspectives: the Resource-Based View (RBV), Institutional Theory, and Organizational Learning Theory. Together, these perspectives explain why green practices can operate as performance-relevant capabilities, why hotels face pressures to institutionalize sustainability, and why internal organizational conditions can shape the extent to which green practices translate into event outcomes.

The RBV argues that firms achieve advantage by developing and deploying valuable organizational resources and capabilities (Barney, 1991). In hotel-based events, water-conservation systems, energy-efficient technologies, waste-management routines, monitoring practices, and employee know-how can function as performance-relevant capabilities because they reduce resource inefficiency, limit disruptions, improve

service quality, strengthen environmental credibility, and lower costs. RBV therefore explains why water, energy, and waste practices are expected to predict event performance directly. The present study extends this logic by testing whether the value realized from those capabilities depends on complementary organizational conditions rather than on technical practices alone.

Institutional Theory explains why hotels adopt and formalize sustainability practices in response to regulatory, normative, and competitive expectations (DiMaggio & Powell, 1983). In event markets, clients, professional norms, competitors, regulators, and sustainability expectations can push hotels toward visible green practices. Institutional pressures alone, however, do not guarantee substantive implementation. Hotels can adopt sustainability symbolically while failing to provide the resources, routines, or accountability needed to translate practices into performance. This distinction makes internal organizational conditions theoretically relevant to the effectiveness of green practices.

Organizational Learning Theory emphasizes the acquisition, dissemination, and institutionalization of knowledge (Argyris & Schön, 1978). Green event practices require staff to learn new routines, coordinate across departments, interpret monitoring information, and improve implementation over time. Leadership commitment, a supportive culture, and adequate resources create conditions in which this learning can be embedded. For this reason, organizational factors are modeled as a moderator rather than a mediator. A mediator would imply that green practices first change organizational factors and that those changed organizational factors subsequently cause performance. The

study instead assumes that leadership, culture, and resource allocation pre-exist as contextual conditions that alter how effectively green practices are converted into event outcomes.

Hypothesis Development

Water management practices and event performance

Water management in hotel-based events includes water-efficient fixtures, rainwater harvesting, wastewater reuse, appropriate water substitutes, preventive maintenance, staff training, stakeholder engagement, consumption monitoring, and efficient irrigation. Water availability supports food preparation, sanitation, cleaning, landscaping, washroom functionality, and guest comfort. Consequently, failures in water management can translate quickly into operational disruption and reputational damage, while efficient use can reduce costs and improve service resilience. Hu et al. (2023) show that effective hotel water policy combines technical interventions with audits, management systems, and education, while Gabarda-Mallorquí et al. (2024) identify a growing shift from isolated low-cost measures toward integrated water stewardship. In Kenyan urban hotels, managers and guests also recognize water management as a visible sustainability practice (Musau et al., 2024). These mechanisms support a positive relationship between water management and event performance.

H₀₁: Water management practices have a positive and significant influence on event performance in hotel-based events.

Energy management practices and event performance

Energy management practices encompass energy-efficient lighting and appliances, smart HVAC systems,

occupancy controls, renewable energy, natural lighting, energy-efficient design, monitoring, staff training, and stakeholder engagement. Hotel events intensify energy demand through lighting, cooling, audiovisual equipment, refrigeration, food production, and vertical transport. Efficient energy systems can therefore improve thermal comfort, equipment reliability, operating-cost control, and environmental credibility. Menegaki (2025) identifies smart HVAC, efficient lighting, and renewable-energy integration as important hospitality energy interventions. Nevertheless, energy benefits may be slower to realize than waste or water gains because they often depend on capital investment, building design, grid conditions, and technical maintenance. The expected direction remains positive.

H₀₂: Energy management practices have a positive and significant influence on event performance in hotel-based events.

Waste management practices and event performance

Waste management practices include prevention, segregation, reuse of event materials, recycling and composting, eco-procurement, monitoring, formal policy, staff training, and stakeholder engagement. Waste is particularly salient in hotel events because food waste, packaging, décor, single-use items, paper, glass, and plastics accumulate rapidly and remain visible to guests and organizers. Effective waste systems can improve cleanliness and service flow, reduce disposal and material costs, and signal environmental professionalism. Cardenas et al. (2024) show that prevention, minimization, reuse, and recycling dominate contemporary circular hospitality practice, while Musau et al. (2024)

demonstrate that waste-related measures are recognized by both managers and guests in Kenyan urban hotels. Because waste management simultaneously affects backstage efficiency and front-stage perceptions, it is expected to be strongly associated with event performance.

H₀₃: Waste management practices have a positive and significant influence on event performance in hotel-based events.

Organizational factors as a moderator

Organizational factors in this study comprise leadership commitment, organizational culture, and resource allocation. Leadership commitment establishes strategic direction and accountability; organizational culture normalizes sustainable behavior and learning; and resource allocation provides the people, time, technology, and finance required to sustain green practices. Guerra-Lombardi et al. (2024) show that communication, training, work environment, and corporate commitment are central to hotel sustainability implementation. Yoo (2024) similarly links eco-leadership and green HRM to organizational commitment and environmental citizenship, while Zheng et al. (2025) shows that organizational culture can shape the effect of leadership on pro-environmental behavior and ESG outcomes. In Kenyan urban hotels, the need to improve sustainability communication and stakeholder involvement is also evident (Musau et al., 2024).

These studies justify a moderation model because the same technical practice can be implemented with different levels of managerial commitment, cultural support, staff capability, and resourcing. The hypotheses are intentionally non-directional with respect to the interaction

sign. Although stronger organizational support might be expected to amplify technical practices, it can also create broader performance pathways that reduce the marginal contribution of any single practice. The direction of moderation was therefore treated as an empirical question rather than assumed a priori.

H_{04a}: Organizational factors significantly moderate the relationship between water management practices and event performance.

H_{04b}: Organizational factors significantly moderate the relationship between energy management practices and event performance.

H_{04c}: Organizational factors significantly moderate the relationship between waste management practices and event performance.

Methodology

Research design and study context

The study used an explanatory, cross-sectional quantitative design to examine predictive relationships among green practices, organizational factors, and event performance. The design was appropriate for testing theoretically specified associations and interaction effects, although the cross-sectional nature of the data means that results should be interpreted as predictive associations rather than definitive causal effects. The study was conducted in classified 2-star to 5-star hotels in Nairobi City County, Kenya. Nairobi was selected because of its concentration of formal hotel operations, high event activity, international business and diplomatic functions, and resource-management pressures that make sustainability operationally consequential.

Population, sampling, and data collection

The target population comprised 162 managerial personnel from 54 classified hotels: 11 five-star, 19 four-star, 15 three-star, and 9 two-star hotels. From each hotel, the study identified one General Manager, one Banqueting/Events Manager, and one Procurement/Supplies Manager because these roles provide strategic, event-operational, and resource/procurement perspectives. A planned sample of 115 respondents was allocated proportionately across hotel-classification strata. Respondents were then grouped by managerial category within each stratum, and simple random sampling was used to select eligible respondents. This two-stage proportionate stratified random procedure improved representation across both hotel class and managerial role.

Structured questionnaires were distributed to the planned sample of 115. Five returned instruments were excluded because of substantial incompleteness, leaving 106 complete cases in the screened dataset. The instrument was pilot tested with 15 respondents drawn from three comparable hotels to assess clarity, flow, comprehension, and internal consistency before full administration. Participation was voluntary, informed consent was obtained, confidentiality was protected, and research authorization was obtained through Moi University and the National Commission for Science, Technology and Innovation (NACOSTI).

Measures and instrument quality

All substantive constructs were measured using five-point Likert-type items ranging from 1 (strongly disagree) to 5 (strongly agree) as indicated in Table 1.

Table 1: Measurement and reliability summary

Construct	Items	Cronbach's α	Measurement focus
Water management practices	10	.752	Fixtures, substitutes, rainwater/reuse, maintenance, training, engagement, irrigation, monitoring
Energy management practices	9	.804	Efficient lighting/technology/HVAC/appliances, renewable energy, natural light, monitoring, event design, training
Waste management practices	10	.761	Segregation, sorting, plastic reduction, composting, training, certified handling, reuse, eco-procurement, monitoring, policy
Organizational factors	10	.725	Leadership support, culture, communication, staff support, and resource allocation
Event performance	15	.760	Operational, reputational, and financial performance

Water management was assessed with 10 items, energy management with 9 items, waste management with 10 items,

organizational factors with an analyzed 10-item scale covering leadership commitment, organizational culture, communication, staff support, and

resource allocation, and event performance with 15 items spanning operational, reputational, and financial performance. The measurement items were informed by the study's operational definitions and the hospitality-sustainability literature. Composite indices were created by averaging the relevant items for each construct.

Internal consistency was acceptable for all constructs: water management $\alpha = .752$, energy management $\alpha = .804$, waste management $\alpha = .761$, organizational factors $\alpha = .725$, and event performance $\alpha = .760$. Exploratory factorability was

Data screening and diagnostic tests

Questionnaires were screened for completeness before analysis, and the five substantially incomplete responses were excluded from the screened dataset. Regression diagnostics addressed linearity, homoscedasticity, multicollinearity, and independence of errors. Residual and probability plots showed no material pattern suggesting serious non-linearity or heteroscedasticity. Multicollinearity was not problematic: tolerance values ranged from .520 to .780 and VIF values from 1.282 to 1.923 for the focal predictors. Specifically, VIF values were 1.383 for water management, 1.282 for energy management, 1.923 for waste management, and 1.730 for organizational factors. The Durbin-Watson statistic was 1.912, supporting independence of residuals. Taken together, these diagnostics indicated that the data were suitable for multiple regression analysis.

Hotel classification was incorporated into the sampling design rather than entered as a regression covariate. The estimated models therefore focused on the theoretically specified green-practice dimensions,

supported by a Kaiser-Meyer-Olkin statistic of .672 and a significant Bartlett's test of sphericity ($\chi^2 = 4147.200$, $df = 1378$, $p < .001$). Principal component extraction with Varimax rotation produced a multidimensional factor solution accounting for 72.693% of total variance. Because the measurement assessment was exploratory rather than confirmatory, the article treats Cronbach's alpha, factorability, and the observed item structure as preliminary evidence of measurement quality and does not substitute unreported CFA-based indices such as composite reliability or average variance extracted. organizational factors, and their interaction terms, consistent with the study objectives and conceptual framework.

Data analysis and model specification

Descriptive statistics were used to summarize the distribution and central tendency of the study variables, while Pearson product-moment correlations assessed bivariate associations. Hierarchical moderated multiple regression was then used to test the direct effects of water, energy, and waste management practices, the additional contribution of organizational factors, and whether organizational factors changed the strength of the green practice-event performance relationships. The models were entered sequentially so that each analytical step represented a conceptually distinct extension of the preceding model:

$$\text{Model 1: } EP = \alpha + \beta_1 WAT + \beta_2 ENE + \beta_3 WAS + \epsilon$$

$$\text{Model 2: } EP = \alpha + \beta_1 WAT + \beta_2 ENE + \beta_3 WAS + \beta_4 OF + \epsilon$$

$$\text{Model 3: } EP = \alpha + \beta_1 WAT + \beta_2 ENE + \beta_3 WAS + \beta_4 OF + \beta_5 (WAT \times OF) + \epsilon$$

$$\text{Model 4: } EP = \text{Model 3} + \beta_6 (ENE \times OF) + \epsilon$$

$$\text{Model 5: EP} = \text{Model 4} + \beta_7(\text{WAS} \times \text{OF}) + \varepsilon$$

Here, EP denotes event performance, WAT water management practices, ENE energy management practices, WAS waste management practices, and OF organizational factors. Interaction terms were operationalized as products of each green-practice composite and the organizational-factors composite and entered sequentially. Statistical tests used a 5% significance threshold. Standardized coefficients (β) are used for comparing relative predictor strength, whereas unstandardized coefficients are

appropriate for writing the fitted regression equation. Model assessment emphasized R^2 , incremental change where interpretable, coefficient t tests, and model-change tests.

Results

Descriptive statistics

The composite results in Table 2 indicate moderate-to-favorable implementation across the study constructs.

Table 2: Composite descriptive statistics

Construct	Mean	SD	Skewness	Kurtosis
Water management practices	3.63	1.23	-0.75	-0.08
Energy management practices	3.86	1.20	-0.99	0.35
Waste management practices	3.71	1.21	-0.91	0.22
Organizational factors	3.55	1.27	-0.58	-0.59
Event performance	3.74	1.28	-0.82	-0.36

Energy management recorded the highest mean ($M = 3.86$), followed by event performance ($M = 3.74$), waste management ($M = 3.71$), water management ($M = 3.63$), and organizational factors ($M = 3.55$). The item-level pattern showed stronger adoption of tangible technologies and routine operational measures than of monitoring, formal policy, staff support, and resource-allocation mechanisms. This

distinction is analytically important because hotels may adopt visible green technologies without institutionalizing the organizational routines needed to sustain them consistently.

Correlation analysis

All focal variables were positively associated with event performance as indicated in Table 3.

Table 3: Pearson correlation matrix

Variable	1	2	3	4	5
1. Event performance	1				
2. Water management	.579**	1			
3. Energy management	.529**	.371**	1		
4. Waste management	.765**	.484**	.401**	1	
5. Organizational factors	.721**	.387**	.376**	.632**	1

** $p < .01$ (two-tailed).

Waste management showed the strongest bivariate association ($r = .765$, $p < .01$), followed by organizational factors

($r = .721$, $p < .01$), water management ($r = .579$, $p < .01$), and energy management ($r = .529$, $p < .01$). Correlations among the

predictors ranged from .371 to .632. Together with the tolerance and VIF diagnostics, this pattern indicates related but empirically distinguishable constructs and does not suggest problematic multicollinearity among the main-effect predictors.

Hierarchical regression and direct effects

The first regression model tested the direct effects of water, energy, and waste management practices on event performance. The model explained 68.0% of the variance in event performance ($R = .825$, $R^2 = .680$). Water management ($\beta = .222$, $t = 3.782$, $p < .001$), energy management ($\beta = .218$, $t = 3.895$, $p < .001$), and waste management ($\beta = .571$, $t = 9.607$, $p < .001$) were all positive and statistically significant predictors. Waste management had the largest standardized effect, indicating that it made the strongest unique contribution to event performance in the direct-effects model. These results support H_{01} , H_{02} , and H_{03} .

Model 2 introduced organizational factors alongside the three green-practice dimensions. Explained variance increased from $R^2 = .680$ to $R^2 = .744$, an increment of .064. Organizational factors had a positive and significant direct effect on event performance ($\beta = .333$, $t = 5.651$, $p < .001$), while water management ($\beta = .196$, $p < .001$), energy management ($\beta = .175$, $p = .001$), and waste management ($\beta = .389$, $p < .001$) remained significant. The increase in explanatory power shows that leadership commitment, organizational culture, and resource allocation contribute to event performance over and above the three operational green-practice domains.

4.4 Moderating effects

Model 3 introduced the water management $\times$ organizational factors interaction. The model R^2 increased to

.808, and the interaction term was negative and statistically significant ($\beta = -.562$, $t = -6.473$, $p < .001$). The negative coefficient indicates a buffering pattern: water management remained positively associated with event performance, but the marginal strength of that relationship decreased as organizational support increased. This finding supports $H4a$ and suggests that hotels with stronger organizational systems rely less heavily on water management alone as a source of performance improvement.

Model 4 added the energy management $\times$ organizational factors interaction. The interaction coefficient was negative ($\beta = -.227$), but it was not statistically significant ($t = -1.756$, $p = .082$). The corresponding model-change test was likewise non-significant ($F\text{-change} = 3.082$, $p = .082$). Accordingly, $H4b$ was not supported. Organizational factors therefore improved event performance directly, but the evidence did not show that they significantly altered the relationship between energy management and event performance.

Model 5 added the waste management $\times$ organizational factors interaction and produced the final reported model fit of $R = .903$ and $R^2 = .816$. In the final model, water management ($\beta = .445$, $p < .001$), energy management ($\beta = .245$, $p = .025$), waste management ($\beta = .487$, $p < .001$), and organizational factors ($\beta = .680$, $p < .001$) all retained positive main effects. The water $\times$ organizational factors interaction remained negative and significant ($\beta = -.386$, $t = -3.330$, $p = .001$). By contrast, the energy interaction ($\beta = -.157$, $t = -1.140$) and waste interaction ($\beta = -.191$, $t = -1.417$) were not statistically distinguishable from zero when evaluated against their coefficient tests; the incremental test associated with adding the final interaction was also non-significant ($F\text{-change} = 2.007$, $p \approx .16$).

Thus, the moderation evidence was specific rather than universal: organizational factors significantly conditioned the water management-

event performance relationship, but comparable moderation was not supported for energy or waste management.

Table 4: Hierarchical regression results

Model	Predictor	β	t	p	R ²	Model step / result
1	Water management	.222	3.782	<.001	.680	Direct-effects model
1	Energy management	.218	3.895	<.001		
1	Waste management	.571	9.607	<.001		
2	Water management	.196	3.725	<.001	.744	OF added; $\Delta R^2 = .064$
2	Energy management	.175	3.436	.001		
2	Waste management	.389	6.258	<.001		
2	Organizational factors	.333	5.651	<.001		
3	Water management	.549	7.709	<.001	.808	Water $\times$ OF added; significant
3	Energy management	.148	3.342	.001		
3	Waste management	.383	7.074	<.001		
3	Organizational factors	.600	9.118	<.001		
3	Water $\times$ OF	-.562	-6.473	<.001		
4	Water management	.478	5.897	<.001	.816	Energy $\times$ OF added; change p = .082
4	Energy management	.306	3.058	.003		
4	Waste management	.368	6.770	<.001		
4	Organizational factors	.653	9.070	<.001		
4	Water $\times$ OF	-.445	-4.100	<.001		
4	Energy $\times$ OF	-.227	-1.756	.082		
5	Water management	.445	5.278	<.001	.816	Waste $\times$ OF added; change p $\approx$.16
5	Energy management	.245	2.262	.025		
5	Waste management	.487	4.879	<.001		
5	Organizational factors	.680	9.170	<.001		
5	Water $\times$ OF	-.386	-3.330	.001		
5	Energy $\times$ OF	-.157	-1.140	>.05		
5	Waste $\times$ OF	-.191	-1.417	>.05		

Notes. β = standardized coefficient; OF = organizational factors. R^2 is shown on the first row for each model.

Table 5. Summary of hypothesis tests

Hypothesis	Effect	β	p	Decision
H ₀₁	Water $\rightarrow$ event performance	.222	<.001	Supported
H ₀₂	Energy $\rightarrow$ event performance	.218	<.001	Supported
H ₀₃	Waste $\rightarrow$ event performance	.571	<.001	Supported
H _{04a}	Water $\times$ OF	-.386	.001	Supported
H _{04b}	Energy $\times$ OF	-.157	>.05	Not supported
H _{04c}	Waste $\times$ OF	-.191	>.05	Not supported

Decision rules are based on the direct-effect coefficients for H₀₁-H₀₃ and the interaction coefficients for H_{04a}-H_{04c} at $\alpha = .05$

Discussion

Water management and event performance

Water management positively predicted event performance, supporting H1. This finding is operationally plausible because water underpins sanitation, food production, cleaning, washroom functionality, landscaping, and guest comfort during events. Preventive maintenance, efficient fixtures, alternative water sources, and monitoring can reduce disruption risk and utility waste, while visible water stewardship can strengthen environmental credibility. The result aligns with Hu et al. (2023), who show that hotel water management increasingly combines technical and managerial approaches, and with Gabarda-Mallorquí et al. (2024), who identify a shift toward integrated water-saving systems. It also resonates with Kenyan evidence that both managers and guests recognize water management as part of hotel sustainability practice (Musau et al., 2024).

The significant negative water × organizational factors interaction is an important and theoretically informative result. A simple amplification expectation would predict that stronger organizational support always increases the payoff from technical practices. Instead, the negative interaction indicates a buffering relationship: water management continues to contribute positively to performance, but its marginal contribution is smaller in hotels with stronger leadership, culture, communication, and resourcing. One plausible explanation is a substitution or saturation mechanism. Strong organizational systems may improve performance through several reinforcing pathways—coordination, preventive maintenance, procurement discipline,

staff learning, monitoring, and service control so hotel performance becomes less dependent on any single technical domain. This interpretation extends the study's theoretical argument by showing that complementary organizational capabilities can reduce dependence on one operational practice even while improving performance overall.

Energy management and event performance

Energy management was a positive and significant predictor, supporting H2, but it was weaker than waste management and only marginally different from water management in the direct model. The result is consistent with the role of efficient lighting, HVAC, appliances, renewable energy, and monitoring in reducing operating costs and supporting service reliability (Menegaki, 2025). Yet the comparatively smaller effect is understandable in the Nairobi hotel context because energy performance often depends on capital-intensive infrastructure, building design, technical maintenance, and the pace at which investment costs are recovered. Event managers may also have less immediate control over fixed building systems than over waste-handling routines or water-use procedures.

The energy × organizational factors interaction was negative but not statistically significant. This finding indicates that the direct performance benefits of energy management were comparatively stable across observed levels of organizational support. Energy efficiency may depend more heavily on installed infrastructure, technical specifications, building design, and long investment cycles than on short-run variation in leadership or culture. Organizational factors can therefore improve event performance directly

without necessarily changing the slope of the energy-performance relationship.

Waste management and event performance

Waste management was the strongest direct predictor of event performance, supporting H3. This dominance is theoretically and operationally meaningful. Waste is highly visible during events, accumulates quickly, and affects cleanliness, food service, back-of-house efficiency, material costs, and guest perception simultaneously. Unlike some capital-intensive energy investments, segregation, reuse, food-waste controls, eco-procurement, and staff routines can generate relatively rapid operational improvements. Cardenas et al. (2024) similarly identifies prevention, minimization, reuse, and recycling as central circular practices in hospitality. Kenyan urban-hotel evidence also indicates that waste practices are recognized by both managers and guests (Musau et al., 2024).

The waste × organizational factors interaction was negative but not statistically significant. This is substantively important because a strong direct predictor does not necessarily require a significant moderator. Waste management may influence event performance through immediate, visible, and process-driven mechanisms such as cleanliness, material control, food-waste reduction, reuse, segregation, and disposal efficiency that remain valuable across different organizational environments. Organizational support still contributes independently to performance, but the evidence does not indicate that it materially changes the strength of the waste-performance relationship.

Organizational factors and the green practice–performance relationship

Organizational factors made a substantial independent contribution to event performance. Adding leadership commitment, organizational culture, and resource allocation increased R^2 from .680 to .744, and the direct standardized coefficient was $\beta = .333$ in Model 2. This result is consistent with Guerra-Lombardi et al. (2024), who show that corporate commitment, communication, training, and work environment shape sustainability implementation. It is also consistent with Yoo (2024) and Zheng et al. (2025), who demonstrate that leadership and organizational culture influence pro-environmental behavior and sustainability outcomes in hospitality and tourism settings.

The moderation findings refine the organizational argument. Leadership commitment, culture, and resource allocation clearly matter for event performance, but their conditioning role is domain-specific rather than uniform. RBV explains why green practices can function as valuable operational capabilities; Institutional Theory explains the external and internal pressures that encourage hotels to formalize sustainability; and Organizational Learning Theory explains how leadership, communication, culture, and resources help routines become embedded and repeatable. The significant water interaction adds a further insight: complementary organizational capabilities may buffer dependence on a single operational practice rather than simply amplifying its effect. This more differentiated interpretation strengthens theoretical precision and avoids treating moderation as an automatic consequence of organizational support.

Conclusion

This study examined how water, energy, and waste management practices relate to hotel-based event performance in Nairobi City County and assessed the role of organizational factors. All three green-practice dimensions had positive direct effects on event performance, with waste management emerging as the strongest direct predictor. Organizational factors also made a substantial independent contribution, increasing explanatory power beyond the three operational green-practice domains. The final hierarchical model accounted for 81.6% of the reported variance in event performance.

The moderation evidence was selective. Organizational factors significantly moderated the water management-event performance relationship, and the interaction was negative, indicating a buffering effect. The evidence did not support significant moderation of the energy or waste relationships. This distinction is important: leadership, culture, and resources are strong performance drivers in their own right, but they do not necessarily alter the effectiveness of every green-practice domain in the same way.

Overall, the findings show that sustainable event performance is neither purely technical nor purely organizational. Hotels require effective water, energy, and waste practices together with leadership, culture, learning, communication, and resources that make sustainability repeatable and performance-oriented. For resource-pressured urban hospitality environments, an integrated strategy is therefore appropriate: pursue visible operational gains in waste and water management, invest progressively in energy efficiency, and strengthen the organizational systems that

institutionalize sustainability across the event cycle.

Theoretical, Managerial, and Policy Implications

Theoretical implications

The study makes three theoretical contributions. First, it extends RBV by showing that green practices are not merely environmentally desirable routines but measurable performance-relevant capabilities in hotel-based events. Their value is reflected in operational reliability, reputation, and financial outcomes, with waste management showing especially strong performance relevance. Second, the study extends the complementary-capabilities logic of RBV: the value of a technical resource depends partly on broader organizational systems, but the conditioning effect need not always be positive. The significant negative water interaction suggests that strong organizational capabilities can create alternative performance pathways that reduce reliance on a single technical domain.

Third, the findings link Institutional Theory and Organizational Learning Theory to the implementation-performance boundary. Institutional Theory explains why hotels face pressures to adopt visible sustainability practices, whereas Organizational Learning Theory explains why those practices become substantive only when supported by leadership, culture, communication, training, and resources. The evidence therefore helps distinguish adoption from performance realization: possessing a green practice is not identical to having an organizational system capable of learning from, coordinating, and sustaining that practice.

Managerial implications

For General Managers, the priority is to convert sustainability from a stated commitment into an accountable operating system. This requires explicit goals for event water, energy, and waste performance; cross-department responsibility; routine review of sustainability indicators; and dedicated budgets. Leadership should also ensure that sustainability is included in management meetings and performance discussions rather than delegated solely to engineering or housekeeping.

For Banqueting/Events Managers, sustainability should be integrated into the event cycle. Pre-event planning should identify resource-intensive requirements, event layouts, catering volumes, equipment schedules, waste streams, and client sustainability expectations. During events, managers should monitor service quality alongside resource use and waste handling. Post-event reviews should capture lessons on utility peaks, waste generation, service interruptions, and client feedback so that each event contributes to organizational learning.

For Procurement/Supplies Managers, the strongest immediate opportunity is to reduce waste at source through eco-procurement. Purchasing decisions should favor reusable, recyclable, durable, and lower-packaging materials, while food and event-material orders should be aligned more closely with expected demand. Supplier expectations can also be incorporated into purchasing criteria so that sustainability is embedded upstream rather than addressed only during disposal.

The findings also suggest a cost-benefit sequence. Waste management offers comparatively visible and lower-cost “quick wins” through segregation, reuse, food-waste control, purchasing

discipline, and staff procedures. Water management can also generate early gains through maintenance, leak prevention, efficient fixtures, and monitoring. Energy management remains essential but may require longer investment horizons for HVAC, building systems, renewables, and controls. Managers should therefore combine quick operational gains with phased capital investment rather than treating all sustainability interventions as financially equivalent.

Training is a cross-cutting requirement. Quarterly sustainability workshops can be tied to operational roles, supported by short refresher briefings before major events, and reinforced through departmental performance indicators. Training should focus on practical routines such as equipment shutdown, leak reporting, waste sorting, reusable materials, procurement specifications, and event-level monitoring rather than generic sustainability awareness alone.

Policy implications

For county and national tourism and environmental stakeholders, the findings support practical guidance tailored to hotel-based events. Policy tools can encourage water audits and efficient fixtures, energy audits and phased efficient-technology investment, and standardized event-level waste segregation and diversion. Capacity-building programs should also target leadership, sustainability measurement, staff training, and cross-department implementation because the study shows that organizational conditions contribute directly to performance. Benchmarking systems that combine environmental indicators with event-performance measures would help move the sector from symbolic sustainability claims toward measurable implementation.

Limitations and Future Research

Several limitations should guide interpretation. First, the study examined only three green-practice domains such as water, energy, and waste so it does not represent the full sustainability agenda. Future research should incorporate carbon management, transport, certification, food sourcing, green procurement as a standalone construct, and broader ESG indicators. Second, the study was confined to classified 2- to 5-star hotels in Nairobi City County; comparative studies across Kenyan counties, other African cities, and non-hotel event venues would strengthen external validity.

Third, the study relied on self-reported managerial data collected at one point in time. Perceptual measures may be affected by common-method and social-desirability bias, and cross-sectional regression cannot establish temporal causality. Future studies should combine surveys with utility data, waste records, event profitability, repeat-booking rates, client ratings, and longitudinal designs. Fourth, the estimated models did not include hotel size, event type, or manager tenure as covariates, while hotel star rating was incorporated through the stratified sampling design rather than as a regression control. Future research should examine whether the observed relationships remain stable after accounting for these structural characteristics.

Finally, future moderation studies should explicitly document interaction-term construction, apply mean-centering where appropriate, report confidence intervals, and present simple-slope or interaction-plot analyses for statistically significant interactions. Replication with longitudinal or multi-source data would be especially useful for establishing whether the buffering effect

observed for water management persists across hotel categories, event types, and changing resource conditions.

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