KADUNA JOURNAL OF GEOGRAPHY
2025, VOL. 7, No. 1, 419-432
https://doi.org/10.47514/kjg.2025.07.01.045

SPECIAL ISSUE: CELEBRATING 20 YEARS OF GEOGRAPHY IN KADUNA STATE UNIVERSITY - ADVANCES AND FRONTIERS IN GEOGRAPHY

Institutionalization of Sustainable Practices in the Hospitality Industry: Evidence from the Kaduna Metropolis, Nigeria

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ABSTRACT

The hospitality industry is a sector that employs a significant population in the country; however, it continues to face challenges regarding the health and safety of employees due to poor working conditions, inadequate waste management, and a lack of protective equipment. This study, therefore, assessed the institutionalization of sustainable practices in the hospitality industry in Kaduna Metropolis, Nigeria. Data were obtained from 349 staff and key informant interviews with managers across hotels, restaurants, and guesthouses. The study revealed that 63.9% of the staff believed that their establishments had clearly defined sustainability policies, and 61.6% believed that sustainable practices were monitored. The study revealed the widespread adoption of practices such as waste segregation and recycling, water-efficient fixtures, transition to clean energy (solar panels, LED lighting), energy conservation tools, and regular safety training. The interviews with managers revealed challenges such as the high cost of implementing green technologies, staff behavioral resistance to new sustainable practices, and inadequate recycling infrastructure. The study concludes that the integration of sustainable practices is essential for long-term industry viability, which is in line with global frameworks such as the UN SDGs and the occupational health policies of Nigeria. The study therefore recommends targeted training, policy incentives for renewable adoption, and further comparative research to scale effective interventions.

ARTICLE HISTORY
Submitted 29 November 2025
Accepted 20 December 2025
Published 01 January 2026

GUEST EDITOR
A. M. Ahmed

KEYWORDS
Sustainable practices; Kaduna Metropolis; Hospitality; Leisure and Tourism; Employee Health; Occupational Safety

1 Introduction

The hospitality industry remains a cornerstone of global economic activity, contributing significantly to employment, income generation, and international trade. According to the United Nations World Tourism Organization (UNWTO, 2023), the industry accounted for more than 10% of the global GDP before the COVID-19 pandemic, and it continues to rebound with a strong focus on sustainability. As environmental awareness increases, hospitality businesses worldwide are embracing sustainable practices such as energy-efficient infrastructure, eco-friendly waste disposal, and staff-focused health and safety measures to ensure long-term viability and social responsibility (Prakash et al., 2023).

The conversation around sustainability has evolved to include not only environmental performance but also the health and safety of workers, who are often overlooked in the quest for economic growth (Adesua-Lincoln, 2025). The hotel and tourism industry is known for high staff turnover and poor working conditions, which have implications for worker productivity and well-being (Giousmpasoglou, 2024). Sustainable workplace practices, including improved ventilation, reduced exposure to cleaning chemicals, and ergonomically sound kitchen designs, can greatly enhance the physical health and safety of hospitality employees (Olalekan et al., 2023). Furthermore, sustainable practices in the hospitality industry have become a global imperative because of increasing environmental concerns, regulatory demands, and rising consumer awareness. Across the globe, countries are adopting strategies to embed sustainability into tourism and hospitality operations, driven by international frameworks such as the United Nations Sustainable Development Goals (Sharma et al., 2024). Developed nations are advancing in terms of green architecture, waste management, and renewable energy adoption, whereas developing countries, particularly in Africa, face challenges related to awareness, infrastructure, and policy implementation (Atofarati et al., 2025).

However, in Africa, increasing attention has been given to sustainable practices in tourism and hospitality. Empirical evidence from Ghana, for example, suggests that hotels that prioritize eco-friendly policies and staff training tend to experience increased guest satisfaction and reduced operational costs (Abdou et al., 2020). In Nigeria, research by Ndalnamu et al. (2024) highlights the potential of sustainable tourism to contribute to national development through employment generation and conservation. However, implementation remains uneven across regions. Additionally, the hospitality industry is

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one of the fastest-growing sectors, driven by increasing urbanization, business travel, and domestic tourism. However, the implementation of sustainable practices remains sporadic, largely due to poor regulatory enforcement, limited capacity, and a lack of awareness (Ofem et al., 2024).

Although Nigeria has adopted several frameworks under the Sustainable Development Goals (SDGs), many small and medium–sized hospitality businesses continue to operate with minimal regard for staff welfare and environmental standards. Most hotels, restaurants, and related businesses in Kaduna operate under conditions that expose workers to hazards such as poor ventilation, inadequate waste management, and limited access to protective equipment (Aliyu & Rogo, 2022). However, there is limited empirical evidence on the extent to which sustainable practices can reduce these health and safety risks in Kaduna. In addition, no comprehensive study has assessed how differences in hotel size, class, or ownership (small vs. large establishments) influence the adoption of sustainability practices within the Kaduna Metropolis.

Available studies on Kaduna, such as Aliyu and Rogo (2022), highlight occupational hazards and insufficient safety practices in budget hotels but do not extensively examine how sustainable practices influence staff health and workplace safety. Similarly, research by Obiora and Okonkwo (2023) and Oluwaseun and Eze (2020) discusses health and safety concerns at the national level without addressing Kaduna's unique urban and infrastructural challenges. Moreover, there is a lack of data on how different categories of hospitality businesses in Kaduna (from small guesthouses to large hotels) differ in terms of sustainability adoption.

This gap is critical because the Kaduna metropolis is a fast-growing urban center with increasing hospitality demand, yet it lacks systematic sustainability integration. The absence of localized research limits policymakers' and stakeholders' ability to design effective interventions to improve workplace safety and protect staff health. This study, therefore, addresses these gaps by investigating the types of sustainable practices adopted in the Kaduna metropolis, evaluating their effects on physical health and workplace safety, and identifying challenges to implementation.

2 Materials and Methods

2.1 Study Area

The Kaduna metropolis is located between latitudes 10°25′0″N and 10° 35′30″ N of the equator and longitudes 7°22′30″ E and 7°30′30″ E of the Greenwich Meridian. The Kaduna metropolis covers an area spanning a distance of approximately 50 km from the city center. The Kaduna metropolis occupies practically the entire mid-central portion of Kaduna State, and it is situated in the northern part of Nigeria. The study area stretches across the Kaduna North Local Government Area and Kaduna South, as well as parts of the Igabi and Chikun Local Government Areas (Ojonuba et al., 2025).

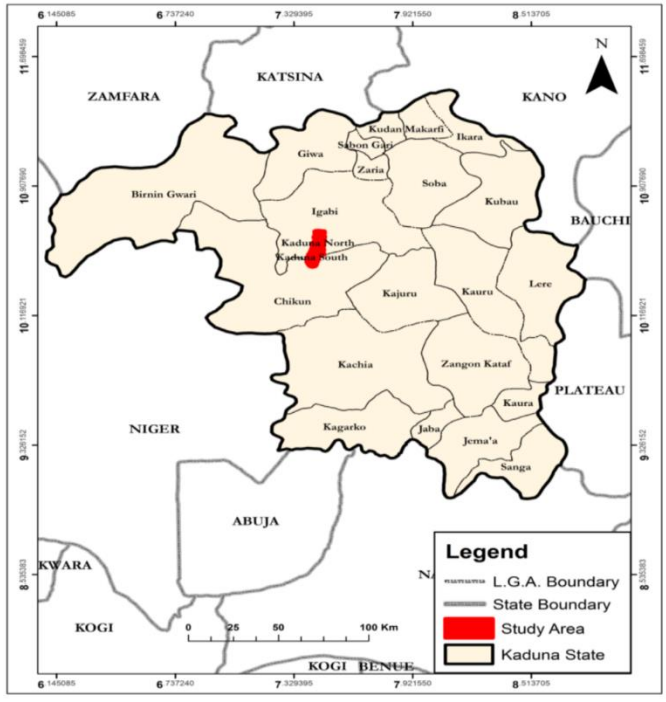

Figure 1: Study area
Source: Modified from GRID3 – Nigeria, 2025

The study area experiences a tropical continental climate that is influenced by seasonal winds that blow from the northeast-tropical continental (cT) and southwest tropical maritime (mT) regions (Muhammad & Abubakar, 2025). The variation in the onset of rainfall is attributable to the fluctuation of the boundary between these two air masses. The rainy season normally starts in April and increases gradually to its peak in August. It then declines by September and ceases by the end of October (Baba et al., 2020). The monthly average rainfall is approximately 361 mm, which is usually recorded between April and September. During the rainy season, the mT from the south influences the area.

The maximum temperature often increases to approximately 38°C between March and April and may decrease significantly to approximately 20°C or less during the peak rainy period (July/August), and during the peak rainy period, northern disasters or harmful winds (November/February) may occur (Umar et al., 2025; Yisa et al., 2019), whereas the minimum mean monthly temperature falls below 22°C during the coldest month (December/January) when the sun's rays are most acute in northern Nigeria. The mean annual temperature of Kaduna State exceeds 34°C during the hottest months (March-April).

The Kaduna metropolis is a trade center and a major transportation hub for the surrounding agricultural areas

with rail and road junctions. The 2023 projected population of the Kaduna metropolis stood at 1,913,526 (Uroko, 2018). Some of the major ethnic groups in the state include Hausa, Fulani, Baju, Ham, Gbagyi, Koro Kaninko, Gure, Kurama, Atyap, Ikulu, Aegorok, Adara, Atakad, Chawai, Kagoma, Kahugu Nimzo, and Numana (Michael et al., 2021). There are other ethnic minorities, such as Yoruba and Igbo, among others, who have come as immigrants from western, eastern, and other parts of the country. Islam and Christianity are the major religions, with other traditional religions forming minority groups (Adamu et al., 2025).

Residential land uses occupy the largest area in the Kaduna metropolis. This consists of low, medium, and high residential neighborhoods. The major residential areas include Kawo, Unguwar Dosa, Hayin Banki, Badiko, Rigasa, Tudun Wada, Tudun Nupawa, Malali, Unguwar Rimi, Kabala West, Kabala Costain, Kabala Doki, Narayi, Makera, Barnawa, Sabon Tasha, Television, Romi, and Gonin Gora, among others (Ruma et al., 2020). These neighbourhoods are a combination of modern and traditional buildings. Most high-rise buildings are found around the central business district and are characterized by impervious surfaces (Ezeamaka et al., 2019). With this land use pattern, petrol filling stations within residential areas are very common.

2.2 Reconnaissance Survey

A reconnaissance survey was conducted before the main research was conducted to gain preliminary insight into the hospitality sector in the Kaduna metropolis and to inform the design of the study instruments and sampling approach. The purpose of this survey was to identify the types, sizes, and distributions of hospitality establishments in the study area; assess their operational characteristics; and understand their level of awareness and implementation of sustainable practices related to health and workplace safety. During these visits, brief discussions were held with managers, supervisors, and frontline staff to understand that 10 establishments were visited during the reconnaissance phase.

2.3 Data sources

The data used in this study are described in Table 1.

Table 1: Types, Sources, and Relevance of Data

S/N	Data Needed	Source of the Data	Relevance/Use of the Data
1	Types of sustainable practices adopted by hospitality businesses	Primary data employees of hospitality businesses	To identify the nature and range of sustainable practices implemented in the hospitality sector
2	Challenges faced in implementing sustainable practices	Primary data from management interviews and focus group discussions	To understand the practical, financial, or regulatory barriers affecting the implementation of staff-centered sustainability efforts

2.4 Population of the study

The target population comprises hospitality businesses in Kaduna Metropolis (hotels, restaurants, and guesthouses) and their staff. Two categories of respondents were considered: management staff, to provide insights into sustainable practices and policies, and operational staff, to capture perceptions and experiences of workplace health and safety.

2.5 Sample size and sampling technique

The sample size was determined using Cochran's formula (1977) for large populations:

$$n_0 = \frac{Z^2 p(1-p)}{e^2} \quad (1)$$

where:
n_0 = sample size
Z = confidence level (1.96 at 95%)
p = estimated proportion of the population with the attribute (0.5 assumed for maximum variability)
$q = 1 - p$
e = margin of error (0.05)

This yields a minimum of 384 respondents, adjusted proportionally to reflect the staff strength of each stratum (wards and staff categories). The study used stratified random sampling.

2.6 Data Analysis

To identify the types of sustainable practices adopted, descriptive statistics were used to analyse the responses obtained from the questionnaire. SPSS v28 was used to code the questionnaire and perform data cleaning. Exploratory factor analysis (EFA) was used to group sustainable practices into components (e.g., waste, energy, water, eco-materials, training).

Furthermore, key informant interviews (KIIs) were carried out with the managers, recorded using a mobile phone voice recorder, and transcribed using Amazon Transcribe. The transcripts were subsequently imported

and coded via NVivo software. This was used to generate thematic reports. The themes were generated on the basis of the frequency of the codes highlighted during the readout sessions.

3 Results and Discussion

3.1 Sociodemographic Characteristics of the Respondents

Table 2 reveals that the gender breakdown of the people who answered the survey shows that most of them were women. Among the 349 people who took part, 201 (57.6%) were women, and 148 (42.4%) were men. This shows that there were a few more women than men working in the hotel industry in the Kaduna Metropolis. This suggests that the industry may hire or attract more women than men.

Table 1: Sociodemographic characteristics of the respondents

Gender	Frequency	Percentage
Male	148	42.4
Female	201	57.6
Total	**349**	**100.0**
Age		
Under 20	11	3.2
20–29	175	50.1
30–39	102	29.2
40–49	33	9.5
50+	28	8.0
Total	**349**	**100.0**
Education		
Informal	27	7.7
Primary	40	11.5
Secondary	133	38.1
Tertiary	149	42.7
Total	**349**	**100.0**
Years of Experience		
<1	7	2.0
1–3	75	21.5
4–6	105	30.1
7–10	103	29.5
10+	59	16.9
Total	**349**	**100.0**

The age profile of the people who answered shows that most of the workers in the hotel industry in Kaduna are young. More than half of the people who took part (50.1%) were between the ages of 20 and 29, and 29.2% were between the ages of 30 and 39. A total of 9.5% of the people were between 40 and 49 years old, and only 8.0% were 50 years old or older. Only a tiny percentage (3.2%) were under 20 years old. This trend shows that most people who work in hospitality are young. This is because a hospitality job is typically physically demanding and requires energy, flexibility, and adaptability.

The results suggest that most of the people who answered had a high degree of formal schooling. Approximately 42.7% went to college, while 38.1% finished high school. A smaller percentage of the sample had received primary education (11.5%), whereas only 7.7% had no formal schooling. This shows that hospitality enterprises in Kaduna attract reasonably educated staff, with many having postsecondary credentials, which may contribute favourably to service delivery and the adoption of workplace innovations.

Work experience distribution implies that the sector benefits from a combination of fresh entrants and long-serving staff. The largest group (30.1%) had between 4 and 6 years of expertise, closely followed by those with 7 and 10 years (29.5%). Another 21.5% had 1–3 years of experience, whereas 16.9% had more than 10 years in the field. Only a small minority (2.0%) were new employees with less than one year of experience. This balance shows that the hospitality sector in Kaduna preserves a considerable number of experienced people while also providing opportunities for newcomers, which may encourage both continuity and creativity within enterprises.

3.2 Type of Establishment

Figure 2 reveals that the distribution of respondents across different types of hospitality enterprises shows that medium-sized hotels represented the majority, with 189 respondents (54.2%) saying that they work in such facilities. This is followed by guest houses, which accounted for 70 respondents (20.1%), showing their very extensive presence in the Kaduna Metropolis. Large hotels supplied 49 respondents, or 14.0% of the total sample, whereas restaurants and eateries made the smallest contribution, with 41 respondents (11.7%). These data imply that medium-sized hotels dominate the hospitality business in Kaduna, functioning as the principal employers of labor within the sector. The relatively reduced proportions of large hotels and eateries reflect the structure of the business, where medium-sized companies appear to form the backbone of hospitality services in the metropolis.

Figure 1: Types of tourism establishments surveyed

3.3 Sustainable practices adopted by hospitality businesses in the Kaduna metropolis

Table 3 presents the sustainable practices adopted by hospitality businesses in the Kaduna metropolis.

Table 2: Sustainable practices adopted by hospitality businesses in the Kaduna metropolis

Statement	SD	S	N	A	SA	Mean
My workplace has a clearly defined sustainability policy or guidelines that staff are required to follow.	8	48	70	165	58	3.62
Sustainable practices in my workplace are regularly monitored and enforced, not just documented.	21	45	68	121	94	3.64
Cost considerations often lead management to ignore or compromise sustainability measures (e.g., cheaper but unsafe materials).	103	22	72	87	65	2.97
The adoption of sustainable practices in my workplace is mainly for public image/marketing, not genuine staff health and safety.	63	38	65	62	121	3.4
Training and sensitization on sustainable practices are comprehensive, practical, and continuous, not just one-off events.	73	48	66	124	38	2.99

Table 3 illustrates mixed perceptions about sustainability policy presence, enforcement, financial impacts, motivations behind practices, and training in organizations, reflecting varied implementation and commitment levels. The high level of agreement (63.9% combined agree/strongly agree) about clearly defined sustainability policies aligns with prior studies that highlight the increasing institutionalization of such policies in organizational settings (Epstein et al., 2017). However, the notable proportion remaining undecided or in disagreement suggests gaps in visibility or understanding of these policies among staff, which is consistent with findings by Maak and Pless (2006), who emphasize the challenge of policy communication and awareness within firms.

With respect to enforcement and monitoring, the majority of those who perceive active oversight (61.6% agree/strongly agree) support the notion that documented policies are often complemented by enforcement mechanisms, as suggested by Montiel and Delgado-Ceballos (2014). Nonetheless, the presence of neutral and dissenting responses (38.4%) indicates variability in enforcement rigor, echoing observations from Brammer and Pavelin (2006) on uneven sustainability management practices across organizations.

In terms of the impact of cost considerations, the responses were polarized, reflecting the tension between sustainability goals and economic constraints noted in the literature (Bocken et al., 2014). The significant share (48.4% agree/strongly agree) recognizing financial barriers aligns with Rauter et al.'s (2023) argument that cost considerations can hinder full sustainability integration. Conversely, 29.5% strongly disagree, suggesting that some organizations prioritize sustainability despite

financial challenges, which coincides with findings of Tarnovskaya (2023) on sustainability as a source of innovation and competitive advantage.

The skepticism that sustainability practices are mainly marketing tools rather than genuine commitments (52.5% agree/strongly agree) reflects concerns expressed by Delmas and Burbano (2011) about "greenwashing" and symbolic sustainability strategies. However, the near balance with those disagreeing indicates varied organizational authenticity in adopting sustainability, matching conclusions by Lyon and Montgomery (2015), who document heterogeneity in corporate sustainability motivations.

Finally, perceptions of training and sensitization reveal partial commitment to building staff capacity, with 35.5% agreeing that training is continuous, whereas a significant 36.1% disagreed or strongly disagreed. This result resonates with the propositions of Jabbour and Jabbour (2016) that effective sustainability training remains a weak point in many firms, despite its critical role in embedding sustainable behaviors (Flores et al., 2024). These findings highlight a complex sustainability landscape where policy existence is relatively widespread, but enforcement, cost pressures, authentic motivation, and staff development efforts vary considerably, which is consistent with the extant literature on organizational sustainability challenges.

3.4 Sustainable Practices in Hospitality Businesses in the Kaduna Metropolis

Table 4 shows the results of the exploratory factor analysis for sustainable practices in hospitality businesses in the Kaduna metropolis. Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser normalization. Rotation converged in 3 iterations. Factor loadings < .30 are suppressed. KMO measure of sampling adequacy = .72; Bartlett's test of sphericity: $\chi^2(10) = 185.33$, $p < .001$.

Table 3: Dominant factors influencing sustainable practices in hospitality businesses

Statement	Factor 1 (Policy & Enforcement)	Factor 2 (Motives & Barriers)
Policy guidelines	0.79	0.22
Monitoring/enforcement	0.82	0.18
Training & sensitization	0.75	0.3
Adoption for image/marketing	0.29	0.77
Cost compromises	0.21	0.81
Eigenvalue	2.45	1.18
% of Variance	0.408	0.197
Cumulative %	0.408	0.605

Table 4 categorizes sustainability factors into two primary components, "institutionalization of sustainability practices" and "barriers and superficial adoption", which correspond well with recent literature on sustainability integration in organizations. The first factor, which captures institutional mechanisms such as clearly defined policies, monitoring/enforcement, and training, aligns with contemporary frameworks emphasizing the systematic embedding of sustainability practices. Galleli and Amaral (2025) explicitly underscore that successful institutionalization involves codified policies, iterative monitoring, and continuous capacity building to embed sustainability into everyday operations and culture. This systematic approach reflects an organizational maturity model in which structural commitment to sustainability evolves through these core mechanisms. Similarly, studies highlight that sustainability institutionalization requires well-defined procedures and training to foster shared understanding and employee engagement, which drives authentic practice rather than tokenism (Tarquinio & Xhindole, 2022).

The second factor, reflecting economic hurdles and superficial motivations such as marketing-driven adoption, corresponds with persistent challenges documented in current sustainability scholarship. Financial constraints remain among the most cited barriers in sustaining meaningful sustainability efforts, especially for SMEs, where cost considerations frequently limit comprehensive adoption (Durrani et al., 2024). Furthermore, research on sustainability "greenwashing" confirms that some organizations use sustainability initiatives predominantly for external image enhancement rather than deep integration, reinforcing the theme of superficial adoption motivated by reputation management (Delmas & Burbano, 2011; Lyon & Montgomery, 2015). Distinguishing between genuine institutionalized sustainability and barriers or symbolic gestures reflects a nuanced understanding prevalent in recent empirical and theoretical works (Montiel & Delgado-Ceballos, 2014).

Together, these two factors present a dual perspective widely recognized in the literature: while some

organizations advance through systematic policies and practices that embed sustainability into their operations, others remain constrained or resort to symbolic adoption influenced by economic and reputational imperatives. The EFA findings mirror the dynamic and often contested process of sustainability institutionalization described in the latest studies.

3.5 Challenges faced by hospitality businesses in implementing sustainable practices that protect staff health and safety

Table 5 presents the challenges faced by hospitality businesses in implementing sustainable practices to protect the health of staff and their safety.

Table 4: Challenges faced by hospitality businesses in implementing sustainable practices

S/N	Themes	Sub-Themes
1.	Motivation for sustainable practices	Cutting costs Concern for staff health and safety
2.	Sustainable practices implemented	Minimizing food waste Enhanced waste management Water efficiency Transition to clean energy Safety training
3.	Benefits	Improved staff health and safety Business performance
4.	Challenges	Staff compliance Cost of implementation
5.	Future plans	Use of biofuels from organic waste Optimized waste management Complete transition to clean energy More training on sustainable practices

3.5.1 Motivation for implementing sustainable practices

The main reasons why hotels and restaurants embrace sustainable practices are to save money, keep their employees happy, be responsible for the environment, and meet client demand. The people who answered said these were their reasons:

a. Cutting costs

Saving money is one of the best reasons to use eco-friendly methods. Businesses in the hospitality industry said that cutting down on waste, making things more efficient, and adopting renewable energy all directly slashed their costs. For example,

> *"… apart from just helping for staff well-being, it is also helping us economically, or let us say financially, because we are spending less for fuel, less for maintenance, less for evacuating waste, and so on. Therefore, it helps a lot."*

A4 further highlighted this, noting,

> *"… the need to reduce operational costs and run a more efficient business."*

This is similar to the findings of Makoondlall-Chadee and Bokhoree (2024) that cost reduction through energy efficiency and waste minimization is the principal driver for hotels embracing sustainability.

b. Concern for staff health

Another significant reason is to keep employees safe and healthy. People who answered that sustainable methods not only lower environmental dangers but also keep personnel healthy. For example, A1 said,

> *"One, as you said, is a concern for the well-being of our staff."*

A2 added that,

> *"Of course, because of the well-being of our staff, you know, so and then also, as I said, it is the policy of the owner of the hotel to actually run a business that is friendly with the environment generally."*

A3 emphasized multiple factors, saying,

> *"The motivation came from three main factors. First, there is a growing need to reduce our environmental footprint. Second, it is recognized that sustainable practices lower operational costs in the long run. In addition, last, our responsibility to provide a safe and healthy environment for our staff and the surrounding community, in addition to customer demand and global awareness of sustainability, also influenced our decision."*

A6 also linked motivation to broader environmental concerns, explaining

> *"First, there is growing concern about waste management challenges in Kaduna. In addition, our commitment to guest satisfaction, as many guests now prefer environmentally responsible hotels."*

This aligns with the findings of Abdou et al. (2020) that hotel employees' health is also critical, as sustainable practices reduce hazards such as pollution and waste exposure, which improves morale.

3.5.2 Sustainable practices

The hospitality businesses that were examined used a variety of sustainable methods to reduce waste, save resources, and ensure that both staff and guests were happy. The people who answered provided details about these practices:

a. Minimizing food waste

Reducing food waste has emerged as a key strategy for sustainability. The respondents described how specific kitchen policies were introduced to control excess production. In this regard, A1 said,

> *"… and our kitchen, we actually came up with a policy that helps us minimize food waste. Therefore, these are just some of the things we did."*

This is similar to the findings of Elkhwesky et al. (2024) that techniques, such as limiting food waste, are well-established initiatives in hospitality sustainability. Similarly, food waste reduction is recognized globally as a major area for reducing the environmental impact of hotels (Papargyropoulou et al., 2016).

b. Enhance waste management

Waste segregation and recycling procedures have also been widely implemented to minimize environmental effects and improve resource recovery. A3 stated,

> *"Our business has adopted a range of sustainable practices, such as waste segregation and recycling."*

A4 reinforced this point, noting that

> *"In our hotel, we have adopted several sustainable practices. We segregate waste and work with local recycling agents, minimize single-use plastics, and encourage the use of refillable water dispensers."*

Waste segregation and recycling improve resource recovery and reduce landfill contributions, as emphasized by Garcés-Ayerbe et al. (2019).

c. Water efficiency

Efficient water use was highlighted as part of sustainability. Businesses use tools and techniques to prevent needless consumption. A4 stated,

> *"Water is managed through efficient plumbing fixtures."*

This is in line with the findings of Gabarda-Mallorquí et al. (2024), who revealed that the impact of this sector on water resources can be partially alleviated by obtaining the maximum levels of water-saving efficiency, contemplating reorganization, and even decreasing the number of hotel services that consume water intensively.

d. Transition to clean energy

The transition to clean and renewable energy sources was another key practice implemented. The respondents highlighted the use of solar energy, LED lighting, and energy-saving appliances as significant initiatives. A2 explained,

> *"In our hotel, we have carried out some sustainable policies, you know, like transition from using a generator as backup to using solar. Second, we have done another thing, which is to minimize the use of all these appliances that consume a lot of electricity, because, by default, even when running a business. Currently, we use solar energy because it is more environmentally friendly. You do not have exhaust smoke from exhaust, so it will not affect our staff or your guests."*

A5 added,

> *"… because of how fossil fuels impact the health of staff, because of smoke and everything. We actually introduce renewable energy so that it will help reduce the exposure to this dirty fuel and so on."*

A6 noted,

> *"… we also conserve energy by using LED lighting, solar panels, and key card systems that automatically turn off power when guests leave their rooms."*

Similarly, A3 described a combination of initiatives:

> *"… energy efficiency measures, solar power and LED lighting, water conservation, and eco-friendly procurement. Then, to promote staff safety and reinforce occupational health and safety standards, provide protective*

equipment and conduct regular training on environmental responsibility and workplace safety."

The transition to solar energy and LED lighting echoes global shifts toward renewable energy in hospitality to reduce carbon emissions (Ukoba et al., 2024).

e. Safety training

In addition to technical practices, hotels also invest in safety training to ensure proper waste handling and the creation of a safe workplace. A4 stated,

"We provide safety training, ensure proper waste handling procedures, and maintain a clean, healthy working environment."

Baum (2015) reported that safety training among hotel workers enhances occupational health and highlights worker well-being as vital to sustainable operations.

3.5.3 Benefits

Hospitality businesses found that using sustainable practices had many benefits, the most important of which were better health and safety for employees and better business performance overall.

a. Improved staff health and safety

A major benefit of sustainable practices is the reduction of health risks for staff. The respondents stressed that reducing pollution, noise, and exposure to harmful waste directly enhanced staff well-being and morale. A1 explained,

"…these sustainable practices are actually helping our staff to become less exposed to all these hazards or things that can actually impact their health, because now we are even trying as much as possible to see that even noise from the generator we are reducing, even the smoke from the generator, we are reducing, so it is helping actually. In addition, as I mentioned before, a happy staff means a very good performing business."

A2 added,

"I think you can see it now. When your staff has less work to do, they are happier, and when your staff is happier, I think that automatically translates to your clients being happier. They are more friendly, you know."

A3 emphasized,

"Sustainable practices improve workplace safety by reducing exposure to harmful waste and pollutants, which lowers health risks to staff. A clean and safe environment boosts morale, productivity, and staff retention."

A4 also highlighted,

"These practices have a very positive impact by managing waste properly and reducing pollution; staff are exposed to fewer health risks, and a cleaner and safer work environment increases morale and productivity from the business perspective."

This finding agrees with the findings of Sadick and Kamardeen (2020) that improved staff health and business performance are extensively reported benefits in hospitality sustainability research. Perramon et al. (2022) reported that reductions in health risks from pollution and waste exposure contribute to increased employee morale, productivity, and retention.

b. Business performance

In addition to personnel well-being, firms also benefit from greater efficiency, cost reduction, and enhanced reputation. A1 described,

"… However, now that we are working with dedicated renewable energy as a sustainable energy source, it is automatic. The moment the light is out, it switches to the backup. In addition, the staff is then happy with a lower workload. You know, our clients are happy, and everybody is happy."

A3 noted,

"On the business side, these practices reduce operational costs, improve efficiency, enhance brand reputation, and increase customer loyalty."

A4 was also added,

"Sustainability improves our reputation, attracts eco-conscious guests, and reduces operating costs in the long run. It also gives us a competitive edge over hotels that have not yet embraced these practices."

This finding is in agreement with the findings of Bohdanowicz et al. (2011), who revealed that enhanced operational efficiency through energy and waste cost savings improves financial performance. Adewole (2024) added that sustainable branding strengthens reputation and attracts ecologically conscious customers, supporting competitive advantage. Similarly, Chen et al. (2024) reported that eco-innovation enhances a company's reputation and compliance with environmental regulations, which can attract

environmentally conscious customers and investors.

3.5.4 Challenges

Even while things have improved, businesses still have much work to do to put sustainable policies into place. These obstacles largely concern personnel compliance and the high cost of implementation.

a. Staff compliance

One of the ongoing obstacles to adopting sustainability is influencing staff behavior and overcoming entrenched norms. A1 explained,

> *"The challenges are actually enormous, and they vary from, you know, one policy to another. For example, when you look at food waste. One of the greatest challenges we face is staff compliance, as some staff members are accustomed to working in a certain way. For example, they are expected to cook a certain amount in a day. However, that is not truly what we are looking into now. Now we are cooking based on a forecast, through understanding a pattern, or based on a request.'*

The challenges of staff compliance and high implementation costs mirror barriers commonly reported worldwide. Li et al. (2022) reported that behavioral resistance to new sustainable practices is well documented; overcoming entrenched habits requires ongoing training and cultural change management.

b. Cost of implementation

Another important challenge concerns the high cost of adopting green technologies and renewable energy systems. The respondents remarked that financial and infrastructural obstacles typically impede growth. A1 stressed,

> *"A lot of challenges. For example, these things can be very expensive. You want to use gas-efficient generators, but they are expensive. You want to migrate to solar, but if you are using it for the first time, it can be very expensive. It is difficult. You need expertise and somebody to actually put in all these things. Therefore, this is actually a challenge, and even though it is even more sustainable, it is difficult to implement, because the cost of implementation is what is actually keeping many people away."*

A3 also stated,

> *"The main challenges include high initial investment costs for green technologies, limited access to reliable recycling facilities, resistance to behavioral change among staff, and inadequate infrastructure to support large-scale sustainable issues."*

This aligns with the findings of Osman et al. (2023) that cost remains a major obstacle, especially for renewable energy and advanced waste technologies, which require high initial investments. Limited recycling infrastructure and technical expertise also constrain wider adoption. This result indicates that Falabi and Folorunso's (2020) findings of workplace hazards such as improper waste disposal and inadequate protective equipment in Nigerian hotels are not major problems among hospitality industries in the Kaduna Metropolis.

3.5.5 Future plans

In the future, hospitality businesses will reveal ambitions to extend their environmentally friendly efforts through the adoption of biofuels, improved waste management, a complete transition to clean energy, and further training and collaboration.

a. Use of biofuels

Some businesses expressed interest in experimenting with biofuels from organic waste as part of their energy transition strategies. The intentions to adopt biofuels, smart waste technologies, full clean energy transitions, and enhanced training are forward-looking strategies that are consistent with recent trends in sustainable hospitality management.

b. Optimized waste management

The respondents also emphasized future intentions to improve waste management through technology-driven and circular economy initiatives. A6 explained,

> *"We plan to invest in smart waste management technologies, expand the use of renewable energy, and adopt circular economy principles whereby products are reused or converted into new resources."*

c. Complete transition to clean energy

A full transition to clean and digital energy management systems was also considered necessary for long-term sustainability. For instance, A5 stated,

> *"We are also considering digital systems to monitor energy and water usage in real time, so we can reduce consumption."*

d. More training on sustainable practices and collaboration

The respondents additionally stressed the need for continual staff training and involvement with communities to enhance sustainability. For example, A3 stated that,

> *"We also aim to track our sustainability performance and strengthen partnerships with local communities to promote awareness and collective action."*

This is in line with the findings of Babagbale and Adeyinkra (2019), who underscore the role of hospitality employees' capacity building in adopting sustainable practices. In a related comment, A3 added,

> *"We aim to strengthen our staff training programs on sustainability and encourage guests to participate in eco-friendly initiatives during their stay."*

Similarly, A1 stressed,

> *"We are installing, gradually installing energy-efficient devices, you understand, and our staff is adequately trained. When staff training is inadequate, regardless of what policy is used, it becomes problematic. Additionally, if you come up with a policy to say, okay, reduce food waste, reduce the waste you generate, recycle, do what you can, or reuse what you have, everything will work out fine."*

Community collaboration for sustainability education aligns with participatory approaches advocated by the United Nations World Tourism Organization (UNWTO, 2023).

4 Conclusion

This study proves that the adoption of sustainable workplace practices in the hospitality industry in the Kaduna Metropolis has a positive effect on the health and safety of workers while improving efficiency in the workplace. Some of the sustainable practices adopted in the workplace include the segregation of waste, the use of solar power, the use of LED bulbs, the conservation of water, and safety training, which help in the prevention of work-related accidents and injuries from pollution, noise, and chemicals. All these sustainable practices are in line with global sustainability agendas, such as the UN's SDGs and Nigeria's local government agendas, which face a number of challenges in implementation due to the lack of regulations and awareness. Although the adoption of sustainable practices in the workplace faces a number of challenges, such as the cost of implementation and the attitudes of workers, the benefits of the adoption of sustainable practices in the workplace far outweigh the challenges. The results fill an important research gap in terms of the differences in the sizes of hotels and the emphasis on the well-being of workers as an essential component of business viability in urban centers such as Kaduna. Ultimately, the inclusion of sustainability results in healthy businesses and healthy work conditions, which are environmentally and socially beneficial.

The study therefore recommends that hospitality businesses should train their employees on sustainable practices to ensure compliance. Additionally, stakeholders should organize awareness programs in the community to make the adoption of eco-friendly practices and the circular economy a norm. Future studies should carry out a comparative analysis of sustainable practices across different regions in Nigeria.

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