




The Effect of Environmentally Sustainable Practices on Hotel Guests' Satisfaction and Retention

Abstract

Juliana Philip NDALNAMU 
Department of Tourism and Events
Management, Afe Babalola University,
Ado-Ekiti, Email,
ndalnamujp@abuad.edu.ng

Ngozi EZENAGU 
Department of Tourism and Events
Management, Afe Babalola University,
Ado-Ekiti, Email,
ngozenagu@gmail.com
Corresponding author

Olumide OLUGBEMI-GABRIEL 
Department of Languages and Literary
Studies Afe Babalola University, Ado-
Ekiti, Email,
olumideog@abuad.edu.ng

It is not unexpected that hotel guests are now demanding for products and services that are environmentally friendly following the increased awareness of the importance of environmental sustainability. Accordingly, many hotels' management are working hard to adopt and implement environmentally sustainable practices. However, empirical data on the existence of positive impact of hotels' "environmental" practices on guests' satisfaction and retention, is still surprisingly scarce in Adamawa state, Nigeria, despite global concern on environmental degradation. Descriptive research design was used through structured questionnaire approach. Simple random sampling technique was employed to select a sample size of 400 respondents from the selected hotels. Out of the 400 copies of questionnaire administered, 177 copies were properly filled. Data elicited were analysed with the use of descriptive and inferential statistics. The study found that environmentally sustainable practices has a significant effect on guests' satisfaction and retention based on the result obtained ($p < 0.05$, $\beta = 17.0616$). Hence, the adoption and implementation of environmentally sustainable practices in the study area is essential for hotels daily operations as a strategy to improve hotel competitive image and increase guests' satisfaction. The value in the study lies in that the availability of sustainable practices policy in hotels is key to mitigate the impact of industrial activities on the environment.

Keywords environmental practices, guest retention, customer satisfaction, sustainable practices, hotel

How to cite this article: Ndalnamu, J.P., Ezenagu, N. & Olugbemi-Gabriel, O. (2024). The Effect of Environmentally Sustainable Practices on Hotel Guests' Satisfaction and Retention. *African Journal of Hospitality, Tourism and Leisure*, 13(1):149-158. DOI: <https://doi.org/10.46222/ajhtl.19770720.492>

Introduction

The tourism and hospitality industry is highly dependent on the natural environment (Kassim, 2023). Thus, natural resources are not only being over-exploited, but they are also being contaminated with toxic chemicals which puts the survival of future generations in grave danger (Arora, 2018). The hotel industry offers a variety of services to visitors to cater to their differing needs. However, many of these services have a negative impact on the environment and, of course on the natural resources (Akhtar & Najar, 2020). Consequently, the hospitality sector is widely believed to exert a detrimental influence on the environment - primarily through the extensive utilisation of natural resources (water, energy, and forests) and waste generation (Khatter, 2023). Given such exploitation, a range of environmental concerns may arise not limited to climate change, the escalation of sea levels, erratic weather patterns, deforestation, the decline of biodiversity, the depletion of resources, the generation of toxic and persistent waste, increased pollution, global warming, and the potential loss of natural habitats (Khatter, 2023). In reaction to environmental degradation, companies, particularly the hotel industry, are obligated to incorporate environmentally sustainable practices (ESPs) in order to create a balance between industrial activities and the environment. Hence, sustainable environmental practices are emerging issues in modern management approaches in the hotel sector (Khonje et al, 2021). This is because environmental sustainability is one of the biggest issues faced by mankind at present (Arora, 2018). The reduction of environmental pollution generated by production industries is one of the major concerns of the society (Bittrich Vargas et al., 2022). Environmental issue is not only a concern of the manufacturing sector around the world but also the focus area of the hotel industry (Kassim, 2023). Thus, ESPs have been highlighted as part of the critical measures aimed at assisting organisations in meeting their environmental management objectives. Abdou et al. (2022) aver that ESPs are techniques used by companies to preserve the quality of natural resources used in economic processes. In other words, the goal of ESPs is environmental sustainability. Given this, companies are transitioning towards adopting environmentally sustainable practices in their business operations (Khatter, 2023). This is because the sustainability process can help a wide range of sectors including tourism and hospitality to minimise environmental damages, which is not only about minimising uses of energy, water, and amount of waste produced (Kassim, 2023) but enhancing competitive image. Environmental sustainability measures include items related to product design such as energy and water saving, the use of solar power, and communication with customers (Olya et al., 2023). Hence, it is a concept, that, has as its goal, the creation and maintenance of conditions under which people and nature can co-exist in productive harmony while fulfilling social, economic, and other requirements of the present and future (Nwokorie & Obiora, 2018). In other words, environmental sustainability has become increasingly important to the consumer as the number of environmental issues has accelerated drought, habitat destruction, and rising sea levels. Therefore, the literatures on sustainability across the globe focus on environmental concerns as well as consumer behaviour (Shedid et al., 2022) because of the vulnerability of the subject. Environmental concern is crucial to most industries, especially the hotel. As Foris & Foris (2020) pointed out that the impact of hotel industry on the environment has become a serious concern for both hoteliers and tourists. This is because hotel activities are dependent on environmental resources and as a result the quality of the environment determines the viability of the industry.

In Nigeria, the hotel sector has expanded over the past ten years to become the single largest corporate sector (Nwokorie & Obiora, 2018). Despite, its contribution to the economy of the country, hotel-related activities, processes and



services generate environmental impacts that may contribute to global warming and the depletion of natural resources (Rosa & Silva, 2017). Khonje et al. (2021) concur that hotel business creates some negative environmental impacts. Significant amounts of energy and water are wasted in providing comfort and amenities to hotel guests, with negative consequences for the environment (Ali et al., 2021; Prakash et al., 2022). Thus, hotels' guest satisfaction is a concern that impacts on the environment if uncontrolled. However, the increased awareness of the implications of environmental degradation raises guests' desire for sustainable practices. Some studies (Ahmed et al., 2021; Prakash et al., 2022) have linked environmentally sustainable practices to customer satisfaction and retention; however, these studies were done in developed countries. Extant literature (Abdou et al., 2020; Ndubuisi-Okolo et al., 2020; Wang et al., 2019) has also proven that adopting environmentally sustainable practices is beneficial in saving resources and also important in building a customer base. As a result, several sectors of the economy, including the hotel sector, are actively pursuing environmentally sustainable practices as serious issue for the sector's future. Numerous scholars (Boronat-Navarro & Pérez-Aranda 2020; Fitriani & Ajayi, 2022; Kim & Hall, 2020; Salem et al., 2022) have shown that the hotel industry's rapid growth contributes significantly to global environmental degradation. In order to promote environmental preservation and enhance the quality of life, the majority of hotels, especially those in developed nations, have adopted sustainable policies (Abdou et al., 2020) that promote ESPs. Thus, hoteliers are now responsible for protecting the environment since their continued existence is reliant on the environment (Sucheran & Moodley, 2019). Given this, Khonje et al. (2021) suggest that it is imperative for the hotel businesses to key into environmental sustainability practices. Environmental hotel practices refer to measures that eliminate the negative impact of activities on the environment. Hotels that practice ESPs are known as environmental hotels, which are environmentally-friendly establishments whose managers are eager to institute programs that save water, save energy, and reduce solid waste, while still making a profit to help protect the environment (Boronat-Navarro & Pérez-Aranda 2020). Other initiatives included drinking water that was locally supplied and purified, instead of using bottled water (Dube et al., 2018). Despite the benefits of adopting and implementing environmental practices in hotel daily operations from literature, there has been relatively little empirical evidence to support these claims in Adamawa state, Nigeria. Also, a few of such studies carried out in Nigeria were done in other sectors of the economy other than the hospitality industry. Therefore, this study examines the effect of hotels' environmentally sustainable practices on customer satisfaction and retention in Adamawa state, Nigeria.

Literature review

Human progress and development has always depended on industrial activities that have undesirable impacts on the environment (Pereira et al., 2023). The various effects that the extensive exploitation of environmental resources has on the earth makes sustainability a crucial concept. The concept of sustainability has its origins in a clear ecological root, in the sense that its primary driver is the management of natural resources (Calisto et al., 2021). Invariably, this has led to the emergence of sustainability as a paramount concern in contemporary global affairs (Khatter, 2023), with emphasis on companies' economic, social, and environmental responsibilities (Calisto et al., 2021). Social sustainability measures include items related to the work environment, employee safety and wellbeing, and customer orientation, quality and information dissemination while Economic sustainability measures included items related to occupancy and revenue growth, competitiveness and market share growth (Olya et al., 2023). Environmental sustainability in the hospitality industry measures the balance that must exist between an activity and the environment in which it is developed (Abdou, et al., 2020). These measures are necessary to salvage the environment from further destruction due to human industrial activities; in this case, hotel-related activities.

The hotel industry is important to the world economy as it contributes to economic and social development (Rosa & Silva, 2017). It is an industry with an array of services that is dependent on environmental resources. Once the hotel started their operation, it generates lots of garbage in solid and liquid forms, which find their way ultimately into the nearby water bodies or land and causes a lots of environmental and health hazards (Akhtar & Najar, 2020). In other words, the hotel sector has been associated with negative effects on the environment through the consumption of natural resources, the generation of greenhouse gases, and waste production (Nimri et al., 2020). Its operations consume high levels of water and energy and the production of this energy emits greenhouse gases which negatively affect the ecosystem (Abdou et al., 2020; Khatter et al., 2019). Singh and Nicolaidis (2014) concur that many regional changes in climate can be attributed to the emission of greenhouse gases.

The consequences of high consumption of resources result in environmental degradation which has created an imperative for hotels to adopt and implement environmentally sustainable policies and practices (ESPPs) (Khatter et al., 2019). Moreover, with rising awareness of energy saving and environmental protection, the hotel industry has inevitably had to develop different strategies to cope with environmental issues (Lin et al., 2023). This implies that the hotel industry are taking strides to green their operations (Njerekai, 2019). Subsequently, energy reduction has been recognised as one of the most significant areas of environmental management in the hotel industry (Abdou et al., 2020). Olya et al. (2023) have suggested ways for hotels to minimise these negative environmental impacts by engaging in environmental monitoring and/or collaborative efforts including product redesign and greening of production processes. Against this background, the hotel industry significantly emphasises environmental considerations, particularly waste management, water and energy consumption (Khatter, 2023).

More so, Langgat et al. (2023) summarise the environmentally sustainable practices that hotels need to implement to include energy-saving, water-saving and waste management practices, while advanced practices include measuring industries carbon usage and participating in global environmental protection activities, among other practices. Also, Langgat et al. (2023) aver that the use of energy efficient lighting and the reuse of towels are simple measures that curb this excessive consumption of resources. In addition, Han et al. (2018) suggest that these practices can be achieved in three broad ways which are water



conservation, energy efficiency, and waste management. The authors further recommend that business organisation (hotels) need to measure the environmental sustainability success rate, which is crucial to determining the parameters of energy consumption, water and waste management in order to improve their operations. Therefore, the implementation of environmental sustainability measures has become imperative for businesses operating in today's world, particularly within the hospitality sector (Khatter, 2023).

Clearly, hotels are water-intensive businesses that use large amounts of water primarily for daily activities and leisure purposes (Abdou et al., 2020). In this vein, it is imperative for hotels to adopt practices that will ensure water conservation management in their operation. Since, water conservation management has been widely used as an important green management strategy in the hotel sector (Abdou et al., 2020). Accordingly, Han et al. (2018) suggest that the water conservation measures to be adopted by the hotel sector should include installation of water-efficient devices and appliances (e.g., using low-flow toilets, showerheads, and infrared-activated faucets), implementing towel/bed linen reuse programmes, fixing leaks in toilets and baths regularly, watering grass and plants early in the morning and late at night to limit evaporation, recycling grey water (water from washing vegetables and fruits) for grass irrigation and monitoring water consumption in each department to track usage. By following some of these steps, hotels can manage and conserve water for the benefits of future generation.

However, apart from extensive consumption of water, hotels consume huge amounts of fossil fuel energy and electricity in different operational areas (Abdou et al., 2020). The sector accounts for a significant amount of the carbon generated and released into the atmosphere (Khatter, 2019). Hence, energy reduction is recognised as one of the most significant areas of environmental management in the hotel industry. In addressing this issue, Abdou et al. (2020) found that different energy conservation measures have been adopted in the hotel industry. Díaz Perez et al. (2018) develop a model for the reduction of energy consumption in hotels using aerothermal energy which results in a significant reduction in the amount of energy consumed by the sampled hotels over an extended period of two years. Similarly, Novacka et al. (2019) suggest that energy efficiency measures should include implementing renewable energy programmes (i.e., solar and wind power), installing energy-efficient appliances and apparatus, minimising guestroom energy consumption through digital thermostats, adoption of energy star-qualified products, installation of motion sensors to automatically turn lights off in low-traffic areas, installation of reflective glass or triple-glazed windows, usage of energy-efficient light bulbs (LED) and the use of daylight rather than artificial light for minor task. These practices have been found to reduce energy consumption and promote sustainable energy efficiency in the hotel business.

Also, hotel operations produce waste which negatively impacts the environment. Accordingly, Abdou et al. (2020) opine that the hotel industry is regarded as a major contributor to greenhouse gas emissions through waste generation. Amusan & Olutola (2017) attest that carbon emissions produced by tourism-related activities pose serious global challenge. Consequently, hotel operators began to adopt various practices that aimed at reducing wastes, such as: separating hotel wastes by using clearly labelled containers and coloured bins for collecting recyclables, purchasing products that contain recycled content, collecting organic kitchen wastes separately for soil composting, purchasing food items and cleaning chemicals in bulk, adopting a donation programme (donating food leftovers and linens to charity) and grinding leftover guest soaps for use as laundry detergent (Çavusoglu et al., 2021; Han et al., 2018). With the above measures in place, it is clear that the adoption and implementation of sustainable practices can enhance customer satisfaction and augment the probability of repeat patronage (Khatter, 2023). Nevertheless, the practical aspects of achieving sustainability in the hospitality industry are extremely complex (Abdou et al., 2020). As such there are challenges that are faced in an attempt to adopt and implement the sustainability paradigm within the hotel industry (Khonje et al., 2021). On one hand, there is the issue of re-evaluating every process that supports the hotel business, from amenities to distribution, while also seeking means of creating sustainable luxuries. On the other hand, the cost of this process may be a major issue.

Therefore, sustainable practices are achievable in the hotel industry if proper control is implemented. Given this, various scholars have debated these issues and presented their findings. Adegbola & Arowosafe (2022) examined sustainable green practices in hotels to raise hotel managers' and tourists' knowledge of green practices for sustainable hotel amenities and tourism growth. The study found that guests' awareness of green practices in the hotel is limited to energy-saving bulbs, low-saving, low-flow water in the bathroom and toilet, reusable plastics, towels, cutlery, and bedding, and purchase of local or indigenous food in the hotel kitchen. In Lammi & Tesfaye's (2021) study, hotels' environmental practice indicators were examined under water-saving, energy-saving, green purchase and waste management themes. Within these themes, the installation of energy-efficient bulbs, installation of a key card for light, using energy-efficient appliances, regular maintenance of water and electric facilities; the installation of dual toilets and other low-flow water technologies, placing of dustbins, sorting and disposing of solid wastes, and buying of local products were implemented to a certain extent. These studies implicate the requirement of intervention to make hotel operations environmentally sustainable. Contrarily, Rawashdeh & Al-Ababneh (2021) represents an attempt to link tourists' perceptions toward green practices in hotels and their willingness to stay in eco-label hotels in Jordan. The study found a positive but moderate correlation between tourists' perceptions of environmental practices and their stay in green hotels. In addition, the different sustainable practices were positively related to tourists staying in an environmentally friendly hotel. In response to guests' behaviour and outcomes on environmentally sustainable practices, Zengeni & Leboho (2021) sought to evaluate the impact of environmental awareness initiatives on guests' environmental inclusion and participation in the hotel sector in Zimbabwe. The findings indicated that environmental awareness initiatives by hotels have a positive influence on guests' environmental consciousness and participation. The more guests were involved and encouraged to conserve resources, the more they conserve resources. The study also found that hotel guests prefer some form of reward for conserving resources such as water and energy, instead of paying more. Additionally, previous studies (Londoño



& Hernandez-Maskivker, 2016; Nwokorie & Obiora, 2018; Owusu-mintah, 2018; Samengon, 2019) indicated that there is a positive relationship between environmentally sustainable practices of hotels and customer satisfaction and retention. This implies that the success of the hotel business depends on the provision of a safe and attractive environment (Pereira et al., 2023). Across these studies, there is consistent evidence(s) to suggest that environmentally sustainable practices have a positive influence on customers' satisfaction and retention.

Theoretical framework

The triple bottom line – TBL theory originated from the growing interest in the need for organizations to be more sensitive to their corporate impact vis-à-vis the sustainability of environmental and human capital (Stoddard et al., 2012). The TBL framework embodies three inextricably connected pillars: economic prosperity, social equity, and environmental integrity, leading to sustainability (Høgevold et al., 2015; Khan et al., 2023). Out of the three dimension of sustainability, environmental sustainability is gaining more importance and many hotels have started the implementation of sustainability practices in their daily business routine (Akhtar & Najar, 2020). The dimension focuses on reducing the negative impact of hotel operations on the environment (Wang et al., 2019). Hence, TBL is an essential tool for evaluating how nations and business organisations respect people and the planet (Nogueira et al., 2023). The theory evolved in the mid-1990s when the consulting group Account Ability coined the term, which was later popularised by John Elkington (Stoddard et al., 2012). According to the TBL theory, instead of a single bottom line, there should be three: profit, people, and the planet. The idea is that a company may be managed so that it not only makes a profit but also improves people's lives and the planet's well-being through the adoption and implementation of sustainable practices. Thus, the triple-bottom-line perspective is often used to explore how sustainable activities promote balanced development of environmental, social, and economic aspects (Wang et al., 2019) of organisations. It is clear that hotel industry with its array of services depletes environmental resources. As a result, applying the principle of the TBL theory becomes a significant and vital aspect not only for enhancing the natural environment but also for sustaining this industry's competitive performance (Pereira et al., 2023). Accordingly, Assaf et al. (2012) aver that the hotel industry can earn a competitive and cost advantage by being environmentally and socially responsible. By leveraging the principles of TBL theory, hotels can minimize their environmental impacts by reducing their energy use, water usage, waste generation, greenhouse gas emissions, and ecological footprints which bring about environmental protection and cost savings. In addition, they can also employ renewable energy, develop recycling and composting programmes, use green building standards, and buy local and organic products. By implementing these effective ESPs, they will lower their expenses, risks, and liabilities for profit maximisation. As Akhtar & Najar (2020) suggest that if hotels should focus on triple bottom line of sustainability the effects of such practices will increase hotel attractiveness and the quality of guest experience and also repeat guest intention.

Methodology

The study employed descriptive survey research design and adopted multi-Stage sampling technique in selecting the sample population. The process involved selecting 10 large (100 rooms) hotels from Adamawa State, Nigeria using a stratified sampling technique. The hotels were grouped into small (1-49 rooms) medium (50-99 rooms) and large (100 rooms and above) based on hotel classification system in Nigeria. Therefore, only hotels with 100 rooms and above which fall within the category of large hotels were sampled for this study. The hotels were also selected due to the environmental practices adopted. The second stage involved selecting the sample respondents for the study using a simple random sampling technique. This process involved the random selection of 40 respondents from each of the selected hotels. Thus, the sample size of the study comprised 400 respondents. Subsequently, 400 copies of questionnaire were administered to the respondents through the front desk officer of each of the selected hotels. However, 177 copies of questionnaires were appropriately filled and returned. Data elicited for the study were analysed with the use of descriptive and inferential statistics.

Results

In this study the output of the demographic analysis is presented below. These presentations would enable the understanding of the demographic distribution of the sample. Table 1 displays the gender of the guests of the hotels with male being 119 (67.2%) and female 58 (32.8%). The implication of this result is that there is a gender imbalance in the hotel industry, with a higher proportion of male guests than female guests. This could be due to a number of factors, including differences in travel patterns and preferences, as well as differences in the types of hotels and accommodations that are available. Data on age distribution indicates that 11.3% respondents were within the age bracket of 18-25 years, 39.5 % were within the age range of 26-35 years, 24.9% of the respondents were within the age range of 36-45 years, 11.3 % were within the age range of 46-55 years and 13% of the respondent were above 56 years. The majority of the respondents fall within the age range of 26-45 years, accounting for a total of 64.4% of the sample population. This could be useful information for the hotel management to target their marketing efforts towards this age range. On the other hand, the percentage of guests within the age range of 18-25 years and 46-55 years is relatively small, accounting for only 11.3% each. The hotel management may want to consider ways to attract more guests from these age groups by offering promotions or events that cater to their interests. Additionally, the relatively small percentage of guests above 56 years may suggest that the hotel is not perceived as particularly senior-friendly, which could be an area of improvement for the management. Overall, analysing age distribution can provide valuable insights into the hotel's marketing and operational strategies.



Table 1: Socio-demographic characteristics of respondents (guests)

| Description | Frequency | % |
|---------------------------|-----------|------|
| Gender | | |
| Male | 119 | 67.2 |
| Female | 58 | 32.8 |
| Age | | |
| 18-25years | 20 | 11.3 |
| 26-35years | 70 | 39.5 |
| 36-45years | 44 | 24.9 |
| 46-55years | 20 | 11.3 |
| Above 56years | 23 | 12.0 |
| Marital Status | | |
| Single | 66 | 37.3 |
| Married | 101 | 57.1 |
| Divorced/Separated | 7 | 4.0 |
| Widow/widower | 3 | 1.7 |
| Educational Status | | |
| Masters/PhD | 12 | 6.8 |
| Degree/HND | 27 | 15.3 |
| Diploma/NCE | 70 | 39.5 |
| Secondary | 59 | 33.3 |
| Total Night Spent | | |
| 1-5 nights | 68 | 38.4 |
| 6-10nights | 51 | 28.8 |
| 11-15nights | 37 | 20.9 |
| Above 15nights | 21 | 11.9 |

N=177

The data on the marital status of the hotel guests shows that 37.3% were single, 57.1% of the respondents were married, 4% represent respondents who were divorced/separated and 1.7% were either widow/widower. The implications of the results are that the majority of the hotel guests are married, accounting for 57.1% of the sample population. This suggests that the hotel may be popular among couples and or families. Therefore, hotel management may want to consider offering family-friendly packages or promotions to further attract this demographic. Additionally, the relatively high percentage of single guests (37.3%) may indicate that the hotel is also popular among lone guests or young adults/entrepreneurs. The hotel management could consider offering amenities or services that cater to this demographic, such as single occupancy rooms or social event for lone guests. Overall, analysing the marital status of the hotel guests can provide valuable insights for the hotel's marketing and operational strategies, allowing them to tailor their services to better meet the needs of their guests.

The data presented on the educational qualifications of the hotel guests indicates 6.8% had either Masters/Ph.D degrees, 15.3% had HND/BSC degree, 39.5% had a diploma/National Certificate of Education (NCE), 33.3% had secondary school education and 5.1% had only primary school education. The relatively low percentage of guests with Masters/PhD degrees (6.8%) may suggest that the hotel may not be popular for academic events. However, the hotel management could consider offering amenities or services that cater to this demographic, such as conference rooms or business services. The guest with secondary and primary educational profile of 33.3% and 5.1% respectively. The low percentage of guests with secondary school education (33.3%) suggests that the hotel may be a popular destination for young adult/entrepreneurs' guests who prioritise budget over luxury. The hotel management may want to consider offering more affordable packages or promotions to attract this demographic.

Overall, analysing the educational qualifications of the hotel guests can provide valuable insights for the hotel's marketing and operational strategies, allowing them to tailor their services to better meet the needs of their guests. The hotel management could consider offering different packages or services to cater to guests with different educational backgrounds. The data presented on total nights spent shows that 38.4% often spend between 1-5 nights in the hotels, 28.8% often spend between 6-10 nights, 20.9% usually spend up to 11-15 nights stay at the hotel and 11.9% spend above 15 nights stay at the hotels. The implications of the results are that the majority of the hotel guests often spend a relatively short period of stay at the hotel. 38.4% of the respondents often stay between 1-5 nights, suggesting that the hotels cater primarily to short-stay guests. This could be of an advantage for the hotels, as short-stay guests tend to generate higher occupancy rates and can be easier to manage from an operational standpoint. Nevertheless, 28.8% often spend between 6-10 nights which suggest that the hotels also attract guests who stay for slightly longer periods of time. The hotel management could consider offering amenities or services that cater to the needs of these guests, such as business services or meeting rooms. The 11.9% who spend above 15 nights suggests that the hotels may not be a popular destination for long-term stays. However, the hotel management could consider offering special rates or packages for guests who plan to stay for extended periods of time, in order to attract more long-term guests. Overall, analysing the length of stay of the hotel guests can provide valuable insights for the hotel's marketing and operational strategies, allowing them to enhance their services to better meet the needs of their guests. The hotel management could consider offering different packages or services to cater to guests who stay for different lengths of time.

Descriptive analysis on information on the sustainable practices available in the hotels with respect to environmentally sustainable practices

This section presents a descriptive analysis of the information on sustainable environmental practices in hotels. In generating the data on the operationalised variables, environmental sustainability measured on a set of multi-item instruments used a 5-point likert scale instrument. Therefore, in interpreting the mean values, the study relies on Asawo's (2016) categorisation of responses with mean (\bar{x}) thus: $1 < \bar{x} \leq 2.5$ = low; $2.5 < \bar{x} \leq 3.5$ = moderate; $3.5 < \bar{x} \leq 4.5$ = high and $4.5 \geq \bar{x}$ = very high. The data in Table 2 illustrates the response rates and frequency for information on environmental sustainability measured on a 9-item instrument and scaled on a 5-point likert scale. From the data, the first question item shows a mean score of 2.27 which is on



the disagree or moderate range of the scale. The 2nd, 3rd, 4th, 5th, 6th, 7th, 8th and 9th question items with 3.06, 2.96, 2.85, 3.31, 3.22, 2.95, 3.03 and 2.75 mean scores (x) respectively, which also implies that the respondents are more inclined to the agree range of the scale used in measurement. The results affirm to all nine indicators for information on environmental sustainability within the target hotels as supported by the low disparity in response ($SD \leq 2.00$).

Table 2: Descriptive statistics for information on environmentally sustainable practices

| | N | Minimum | Maximum | Mean | Std. Deviation |
|--|-----|---------|---------|------|----------------|
| This hotel uses renewable energy(solar) | 177 | 1 | 5 | 2.27 | 1.596 |
| This hotel uses occupancy sensors in guest rooms | 177 | 1 | 5 | 3.06 | 1.198 |
| This hotel has a towel and linen programme in place | 177 | 1 | 5 | 2.96 | 1.049 |
| This hotel stocks the room with reusable coffee mugs and glasses rather than plastic ware, paper, or styrofoam | 177 | 1 | 5 | 2.86 | 1.079 |
| This hotel has water-saving showers, faucets, and flush tanks in place | 177 | 1 | 4 | 3.31 | .687 |
| This hotel promotes healthy organic growing kitchen operation | 177 | 1 | 4 | 3.22 | .882 |
| This hotel has a green roof to improve air quality | 177 | 1 | 5 | 2.95 | .980 |
| This hotel has sustainable management policies in place | 177 | 1 | 4 | 3.03 | .784 |
| This hotel opts for biodegradable, non-toxic products in sustainable packaging | 177 | 1 | 4 | 2.75 | 1.018 |
| Valid N (listwise) | 177 | | | | |

The data in Table 3 illustrates the response rates and frequency for the knowledge and awareness of environmental sustainability measured on a 10-item instrument and scaled on a 5-point Likert scale. From the data, the first question item shows a mean score of 2.89 which is on the agree range of the scale. The 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th and 10th question items with 3.12, 3.16, 2.98, 3.24, 3.48, 3.07, 3.21, 3.54 and 3.16 mean scores (x) respectively which implies that the respondents are more inclined to the agree range of the scale used in the measurement. The results affirm to all ten indicators for the knowledge and awareness of environmental sustainability within the target hotels as supported by the low disparity in response ($SD \leq 2.00$).

Table 3: Descriptive statistics for knowledge and awareness of environmentally sustainable practices

| | N | Minimum | Maximum | Mean | Std. Deviation |
|--|-----|---------|---------|------|----------------|
| Renewable energy (solar) | 177 | 1 | 5 | 2.89 | 1.333 |
| Electricity system which shuts down after leaving the room (room keys) | 177 | 1 | 5 | 3.12 | 1.174 |
| Harvesting rainwater for laundry use | 177 | 1 | 5 | 3.16 | 1.457 |
| Organic food on the menu | 177 | 1 | 5 | 2.98 | 1.314 |
| Energy efficient bulbs | 177 | 1 | 5 | 3.24 | .819 |
| The hotel uses energy saving lighting facilities | 177 | 1 | 5 | 3.48 | .649 |
| Provision of bulk soap and shampoo dispensers in place of individual bottles | 177 | 1 | 5 | 3.07 | 1.066 |
| Use of water saving showers and flush tanks | 177 | 1 | 5 | 3.21 | .825 |
| Towel and linen programme in place | 177 | 1 | 5 | 3.54 | .898 |
| Environmental recycling policy | 177 | 1 | 5 | 3.16 | 1.421 |
| Valid N (listwise) | 177 | | | | |

The data in Table 4 illustrates the response rates and frequency for customer satisfaction with environmental sustainability of the hotels measured on a 10-item instrument and scaled on a 5-point likert scale. From the data, the first question item shows a mean score of 3.15 which is on the agree range of the scale. The 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th and 10th question items with 3.05, 2.72, 2.53, 2.81, 3.21, 3.15, 3.28, 3.20 and 3.21 mean scores (x) respectively which implies that the respondents are more inclined to the agree range of the scale used in measurement. The results affirm to all ten indicators for customer satisfaction with environmental sustainability within the target hotels as supported by the low disparity in response ($SD \leq 2.00$).

Table 4: Descriptive statistics for guest satisfaction with environmentally sustainable practices

| | N | Minimum | Maximum | Mean | Std. Deviation |
|--|-----|---------|---------|------|----------------|
| This hotel uses renewable energy (solar) | 177 | 1 | 5 | 3.15 | 1.266 |
| This hotel uses electricity system which shuts down after leaving the room | 177 | 1 | 5 | 3.05 | 1.221 |
| This hotel uses occupancy sensors in guest rooms | 177 | 1 | 5 | 2.72 | 1.496 |
| This hotel opts for biodegradable, non-toxic products in sustainable packaging | 177 | 1 | 5 | 2.53 | 1.496 |
| This hotel prefers non-packaged goods | 177 | 1 | 5 | 2.81 | 1.397 |
| This hotel uses energy saving lighting facilities | 177 | 1 | 5 | 3.21 | 1.092 |
| This hotel uses water saving showers, faucets and flush tanks | 177 | 1 | 5 | 3.15 | 1.034 |
| This hotel has towel and linen program in place | 177 | 1 | 5 | 3.28 | .977 |
| This hotel has an environmental recycling policy | 177 | 1 | 5 | 3.20 | 1.428 |
| This hotel stocks the room with reusable coffee mugs and glasses rather than plastic ware, paper, or Styrofoam | 177 | 1 | 5 | 3.21 | .923 |
| Valid N (listwise) | 177 | | | | |

The data in Table 5 illustrates the response rates and frequency for customer retention in the hotels which were measured on a 5-item instrument and scaled on a 5-point likert scale. From the data, the first question item shows a mean score of 2.98 which is on the agree range of the scale. The 2nd, 3rd, 4th and 5th question items with 3.24, 3.48, 3.07 and 3.21 mean scores (x) respectively which implies that the respondents are more inclined to the agree range of the scale used in measurement. The results affirm to all five indicators of customer retention within the target organisations as supported by the low disparity in response ($SD \leq 2.00$).

Table 5: Response rates and descriptive statistics for guest retention

| | N | Minimum | Maximum | Mean | Std. Deviation |
|--|-----|---------|---------|------|----------------|
| I am committed to the products and services of this hotel | 177 | 1 | 5 | 2.98 | 1.314 |
| I will engage in repeat purchase of this hotel's products and services | 177 | 1 | 5 | 3.24 | .819 |
| I will recommend this hotel to my friends | 177 | 1 | 5 | 3.48 | .649 |
| I will return to this hotel on my next visit | 177 | 1 | 5 | 3.07 | 1.066 |
| I will stick with this hotel over time | 177 | 1 | 5 | 3.21 | .825 |



| | | | | | |
|--------------------|-----|--|--|--|--|
| Valid N (listwise) | 177 | | | | |
|--------------------|-----|--|--|--|--|

Test of hypothesis

This section presents the tested and interpreted hypotheses formulated in this study. The decision rule shows that the p-value, and the t-value are presented and analysed to test the stated hypotheses of the study. The decision rule in the test of hypotheses is to accept the null hypothesis where the t-calculated is less than (<) the t-tabulated at 0.05 significance level. Thus, where t-calculated is greater (>) t-tabulated, then the null hypothesis is rejected and the research hypothesis accepted.

H₀₁: *Hotels’ environmentally sustainable practices do not have a significant effect on customer satisfaction and retention.*

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .803 ^a | .645 | .638 | .62367 | .645 | 92.776 | 1 | 51 | .000 |

a. Predictors: (Constant), environmental sustainability practice

The model summary in Table 6 show the extent to which environmental sustainability practice influences customer retention with regression value of (R-v =0.645). In this instance, the correlation coefficient represents a strong positive effect of environmental sustainability practice on customer retention. The coefficient of determination with (R²=0.638) indicates that environmental sustainability practice for (63.8%) variation on guests’ satisfaction/retention in Adamawa State, Nigeria while the remaining (36.2%) could be due to the effect of other factors that are not included in the study.

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|--------|-------------------|
| 1 | Regression | 36.087 | 1 | 36.087 | 92.776 | .000 ^a |
| | Residual | 19.837 | 51 | .389 | | |
| | Total | 55.925 | 52 | | | |

a. Predictors: (Constant), environmental sustainability practice
 b. Dependent Variable: Customer satisfaction on environmentally sustainable practice)

Furthermore, in Table 7 the analysis of variance (Anova) shows a regression sum of square value of (36.087) which is higher than the residual sum of squares value of (19.837). This implies that the model involving environmental sustainability practices account for most of the variations in the guest satisfaction/retention. The F calculated value of (92.776) depicts the significance and reliability of the model developed through the regression analysis results. In addition, the significant P-value of (0.000) is smaller than (0.05), which implies that there is significant evidence to extrapolate that environmental sustainability practice is related to guests’ satisfaction/retention. This proposes that the model is measured to be fit and environmental sustainability practices influence guests’ satisfaction/retention.

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | 95.0% Confidence Interval for B | |
|-------|---------------------------------------|-----------------------------|------------|---------------------------|-------|------|---------------------------------|-------------|
| | | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 | (Constant) | 1.761 | .251 | | 7.001 | .000 | 1.256 | 2.265 |
| | Environmental sustainability practice | .616 | .064 | .803 | 9.632 | .000 | .487 | .744 |

a. Dependent Variable: Customer satisfaction on environmentally sustainable practice

From Table 8, it shows that environmentally sustainable practices have a calculated t-value of 7.001 and a corresponding sig. value/probability value (PV) of 0.000. From the decision rule, since t-calculated = 7.001 is greater than t-tabulated (0.05, 258) =1.96; then the null hypothesis is rejected. Therefore, there is a significant effect of environmental sustainability practices on guests’ satisfaction and retention in the study area. Thus, this finding implies that an increase in (β= 0.616) of guest satisfaction/retention is attributed to a unit increase in environmental sustainability practices in Adamawa State, Nigeria.

Discussion and conclusions

Hotel services are environmental dependent activities consequently, sustainability practices is imperative for the success of the business. Given this, findings of the study revealed that there is positive significant relationship between sustainable hotel practices and customer satisfaction and retention in Adamawa state, Nigeria. This implies that the success of hotel businesses depend on providing a safe and attractive environment (Pereira et al., 2023). Also, findings showed that the correlation coefficient represents a strong positive effect of environmentally sustainable practices on customer satisfaction and retention. This is as a result of the adoption and implementation of ESPs. Khatter (2023) agrees that the adoption and implementation of sustainable practices can enhance customer satisfaction and augment the probability of repeat patronage. The study tested the knowledge and awareness of the various sustainable practices in the hotel and found that customers had knowledge and awareness of environmental practices. This corroborates with Adegbola & Arowosafe (2022) findings that many guests are aware of green/sustainable practices in the hotel. Sharma et al (2018) concur that there is an increase in the number of guests that seek out hotels which tend to follow environmentally friendly practices. Given this, it is clear that guests and hoteliers are concerned about environmentally sustainable practices. It is no gainsaying that guests were also willing to pay a premium for the sustainable products and services offered by the hotels as indicated by the high mean scores for the environmental indicators.



The implication of this result is that environmental awareness initiatives of hotels have a positive influence on customers' consciousness and participation. This finding agrees with Assaf et al. (2012) study that the hotel sector can earn a competitive and cost advantage by being environmentally responsible. In addition, Akhtar & Najjar (2020) suggest that the adoption of TBL practices will increase the hotel attractiveness and the quality of guest experience and also repeat guest intention. Applying TBL principles implies that hotels activities are not just focused on profitability but also on sustainability.

The study also found that towel and linen programme had the highest mean score followed by energy saving lighting facilities and energy efficient bulbs. This finding offers a meaningful insight into how normative, volitional, habitual, and cognitive processes relate to eco-friendly decisions on guests are staying at a hotel. The finding is also consistent with the principles of TBL which postulates that the implementation of environmentally sustainable practices such as reducing energy and water consumption, eliminating single-use plastics and proper waste management will promote patronage through customer retention. This is because following the global trend on environmental degradation, most hoteliers and guests are constantly clamouring for hotels with sustainable practices. Accordingly, Pereira et al. (2023) affirm that applying the principle of the TBL theory not only enhances the natural environment but also sustains the sector's competitive performance. More so, the theory suggests that businesses should not focus on profit-making at the expense of sustainability of activities. In other words, TBL creates a balance between profit generation and implementation of sustainable practices. Hence, by addressing environmental sustainability of TBL, hotel businesses can achieve customer satisfaction and retention, cost reduction through efficient use of resources and improved brand perception and reputation.

Furthermore, for the test of hypothesis, the study also revealed the extent to which environmentally sustainable practices affects customer satisfaction/Retention with a regression value of ($R-V=0.645$). This implies that the correlation coefficient represents a strong positive effect of environmentally sustainable practices on customer satisfaction and retention. In addition, the p-Value was significant at 0.05 levels which implies that there is a significant evidence to extrapolate that environmental sustainability is related to customer satisfaction and retention. Based on the decision rule that when the $P>0.05$ the null hypotheses is rejected. It can therefore be deduced that customers are satisfied with the environmentally sustainable practices provided in the sampled hotel. The findings of Adegbola & Arowosafe (2022) agrees with the findings of this study in which environmental sustainable practices such as energy-saving bulbs, low saving, low-flow water in the bathroom and toilet, reusable plastics, towels, cutlery, and bedding, and purchase of local or indigenous food in the hotel kitchen have a significant and positive effect on guests' satisfaction and retention. Similarly, the current study findings corroborate with Lammi & Tesfaye (2021) that there is a significant impact of hotels' environmental practice indicators which were examined under water-saving, energy-saving, green purchase, and waste management themes on guest satisfaction and retention. In Rawashdeh & Al-Ababneh (2021) study, hotel guests' perceptions of environmentally friendly practices found a positive but moderate correlation between tourists' perceptions of environmental practices and their stay in green hotels. In addition, the various dimensions of sustainable practices were positively related to tourists staying in an environmentally friendly hotel. Also, the findings affirm the finding of Zengeni & Leboho (2021) that environmental awareness initiatives by hotels have a positive influence on guests' environmental consciousness and participation. The more guests were involved and encouraged to conserve resources, the more they conserve resources. However, the study findings indicated that hotel guests would prefer some form of reward for conserving resources such as water and energy, instead of paying more. This will encourage guest's implementation of sustainable practices which will invariably lower hotel expenses and liabilities for profit maximization.

An overview the findings affirm that the adoption and implementation of EPSs is crucial to the hotel sector. The sector massive consumption of resources has severe impact on the environment. In other words, despite the positive impacts, hotels contribute to environmental decay and depletion of natural resources (Akhtar & Najjar, 2020). The industry's reckless use of energy and water to satisfy its customers contributes to the growing problem of environmental degradation, which is a global concern. Consequently, environmental sustainability is one of the biggest issues faced by the mankind at present (Arora, 2018) and must be reduced for longevity of the planet. As a result, research commissioned by the International Tourism Partnership (ITP), mandate that the hotel industry must reduce its greenhouse gas (GHG) emissions per room annually by 66% from 2010 baseline by 2030 and 90% by 2050 to align with the 2°C threshold agreed upon at United Nations Climate Change Conference (COP21) (International Tourism Partnership, 2017). The COP21 is geared towards engendering concrete action and cooperation between governments and non-state actors, which translates into an era in which hotel companies must model their operations on renewable energies with a clear phasing out plan for non-renewable, as well as continuous improvements in waste management across all waste streams (Rawashdeh & Al-Ababneh 2021).

Therefore, the subject of environmental sustainability in hotels is relevant, and it is directly related to the global concerns with the survival of the planet itself (Rosa & Silva, 2017). This is because hotels have the potential to contribute to societal well-being through their efforts to address environmental issues and eliminate superfluous and inefficient practices, in addition to promoting their business interests (Khatter, 2023). Sustainability of hotel operations is beneficial to both the industry and the environment. This is because there is a link between sustainable initiatives in hotels and how guests experience their stay (Sharrock et al., 2021). However, it is only achievable if proper control is implemented to determine the parameters (energy consumption, water management and waste management) which hotel operations will be improved in that regard (Abdou et al., 2020). Thus, it becomes imperative that hotel managers consider adopting environmentally sustainable practices as a strategy to improve customer satisfaction and retention. As Sucheran & Moodley (2019) observed that hotel guests place high levels of importance on environmentally-friendly practices. In other words, hoteliers who adopt environmental sustainability will enjoy a competitive advantage and improve their hotels' productivity (Emmanuel et al., 2021). Therefore, investing in sustainable practices is not only beneficial to the environment, but it also helps hotels to attract and retain customers who value



sustainability. Hence, to maintain sustainable environment hotels should implement water and energy conservation, waste management, and eco-friendly initiatives.

Practical implications

Hotels in Nigeria can improve customer satisfaction and retention through environmentally sustainable hotel practices by adopting and implementing practices such as water-efficient fixtures, low-flow showerheads, and LED lighting, which can help reduce water and energy consumption, leading to cost savings for the hotel and improved satisfaction for guests who value sustainability. Also, a hotel can develop and implement a comprehensive waste management programme that includes recycling, composting, and the reduction of single-use plastics in guest rooms and public spaces. Hotels can also promote eco-friendly initiatives by offering eco-friendly amenities such as refillable water bottles, toiletries, and towels, as well as educating guests about environmentally sustainable practices.

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