



Exploring the Role of Biophilic Design Elements in Enhancing Guest Well-Being In Resort Hotels: A Study From Southwestern Nigeria

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ABSTRACT

The study explores the integration and impacts of biophilic design elements (BDEs) within selected resort hotels in Southwestern Nigeria, highlighting their potential to enhance user experiences and well-being. The aim is to evaluate how BDEs such as water features, plants, natural lighting, and landscapes contribute to guests' relaxation, mood, cognitive perception, and overall satisfaction. The research employed a multi-stage sampling technique, selecting five resort hotels based on their incorporation of biophilic features, and gathered data from 350 respondents through questionnaires administered using incidental sampling during peak visitation days. Data analysis was performed using descriptive statistics and mean weight values (MWV).

Findings reveal that water features and greenery are the most positively perceived elements, significantly contributing to relaxation and mood improvement. La Campagne Tropicana and Green Legacy Resorts ranked highest in guest satisfaction with water features and outdoor facilities, respectively. The study also identifies variation in the perceived impacts of BDEs on cognitive experiences and duration of stay. Relaxation recorded the highest MWV (3.28), while the duration of stay received the lowest (2.74). These results underscore the importance of integrating BDEs in resort hotels to foster user well-being and promote ecological sustainability. Recommendations are provided to optimize the inclusion of BDEs in future resort designs.

KEYWORDS: Biophilic design, Resort hotels, User perception, Well-being, Southwestern Nigeria, Natural elements

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I. INTRODUCTION

In an era marked by rapid pace of urbanization and modernization, the transformation of living spaces has resulted in a monoculture dominated by humanity, resulting in a decline in access to natural environments. Over recent decades, the built environment has dealt with accommodating an unprepared population explosion, instigating irreversible changes to natural surroundings to serve human interests (Söderlund & Newman, 2015; U.N., 2017; Beatley, 2017; Downton *et al.*, 2017). This shift has not only disrupted ecological balance but has also detrimentally affected individuals' psychological well-being, contributing to a spectrum of ailments (Martin, *et.al* 2015;Pranita & Deepali, 2019).

Recognizing the urgent need to reintegrate nature into urban design for psychological wellness and ecological harmony, Adegun and Olusoga (2021) stress this imperative, advocating for the inclusion of green open spaces and natural features, particularly in the rapidly evolving landscapes of developing countries like Nigeria. To address these challenges, the concept of biophilia emerges as a pivotal paradigm, originating from Greek roots meaning "love of life," giving rise to biophilic design. This philosophy intricately incorporate elements of nature into the very essence of human-occupied spaces, acknowledging the essential symbiotic relationship between the built environment and the natural world (Downtown *et al.*, 2017).

Biophilic design endeavors to bridge the gap between Man and Nature, rectifying the limitations of contemporary architecture. It aims to create environments that not only promote human health and fitness but also contribute to overall well-being. Moreover, nature integrated into the built environment is considered biophilic design element only when it influences innate human inclinations that promote fitness and survival (Radha, 2022). Thus, the emphasis on natural elements and urban green spaces assumes paramount significance,

as their potential benefits often languish in the periphery during the planning and developmental phases in Sub-Saharan African cities, Nigeria included (Marie, 2018).

Furthermore, in the ever-evolving scenery of Southwestern Nigeria, where urbanization contends with the imperative to preserve cultural and natural heritage, a noticeable research gap persists, particularly concerning resort hotels. A dearth of research has been directed towards understanding how to effectively intertwine biophilic elements into the hospitality sector, considering the distinct interplay of cultural and environmental dynamics. This study aims to explore the integration of biophilic elements within selected resort hotels, acting as a microcosm that captures the broader global challenge of harmonizing urban development with ecological preservation and cultural sustainability. The paper seeks to fill this void by providing a comprehensive overview of biophilic design elements within selected resort hotels of Southwestern Nigeria, aiming to contribute to the improvement of urban areas and the hospitality sector.

Study Area

The study area covers Southwestern Nigeria, which encompasses states such as Lagos, Ogun, Oyo, Osun, Ekiti, and Ondo, reveals a diverse site with coastal plains in Lagos and undulating hills in Ogun and Oyo. Positioned approximately between latitudes 6° N and 9° N and longitudes 2° E and 6° E, this region holds strategic coordinates influencing its climate and economic activities. The topography showcases varied slopes, ranging from gentle gradients to more pronounced inclines, impacting factors like water drainage and agriculture. Influenced by its proximity to the Atlantic Ocean, southwestern Nigeria experiences a mix of tropical and subtropical conditions, with milder temperatures along the coast, particularly in Lagos. The climate is marked by distinct wet and dry seasons, with rainfall typically occurring between March and November.

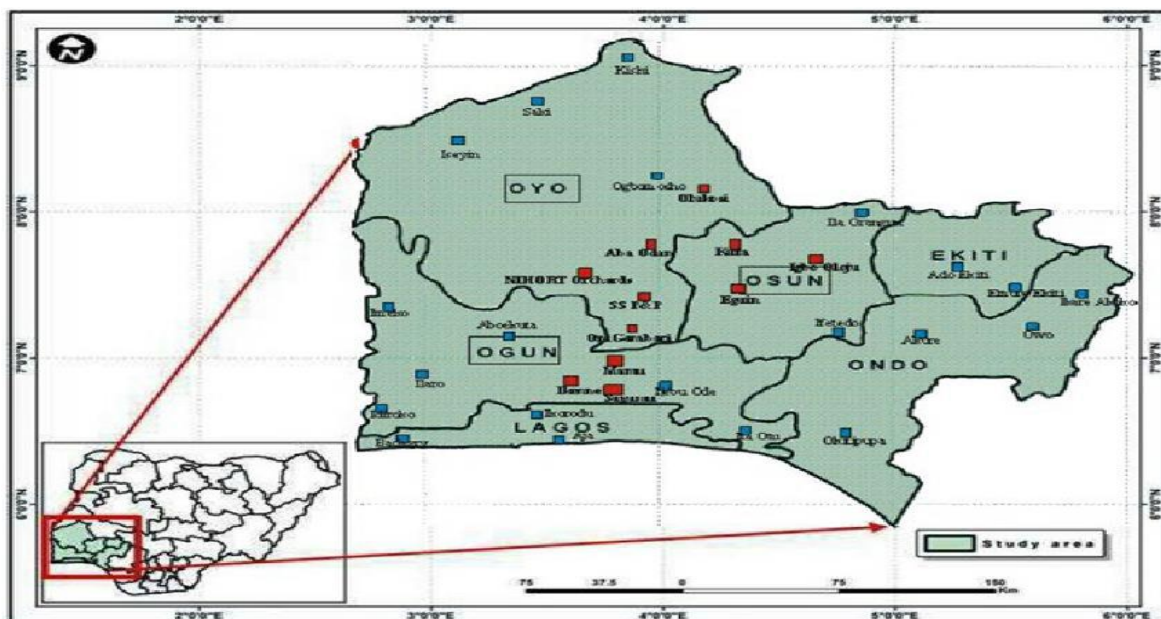


Figure 1.0: Map of South West, Nigeria
Source: United Nations cartographic section (2022)

II. LITERATURE REVIEW

The relationship between urbanization and the well-being of its inhabitants has been a matter of growing concern in the modern era. A wealth of literature has explored the multifaceted challenges and opportunities brought about by rapid urbanization. Many Scholars such as (Cohen,2006;Day,2017) emphasised the psychological implications of living in densely populated, concrete jungles, emphasizing the need for a reconnection with the natural world. Biophilic architecture, stemming from the concept of "Biophilia," was introduced by German psychologist Fromm (1973), and further defined by American biologist Wilson (1984) as the innate human connection with nature. With urbanization's rise and subsequent disconnection from nature, advocating for biophilia has become imperative to mitigate urban stressors (Wilson, 1984). Biophilic design aims to forge strong connections between nature and built environments, prioritizing human well-being (Kellert, 2008).

In response to these urban challenges, biophilic design has emerged as an innovative and promising approach. It draws its theoretical foundation from the concept of biophilia, which asserts that humans possess an innate affinity for nature. Kellert (2015), analyzed biophilic design elements that weave nature into the fabric of urban spaces. This approach resonates with the call for sustainable, human-centric urban architecture as it aligns

with the principles of wellness and restoration, creating environments that are not just functional but also emotionally and psychologically enriching for their inhabitants.

The ecological implicates of biophilic design cannot be overlooked. In the face of ecological challenges such as climate change, habitat loss, and resource depletion, the integration of nature into urban environments takes on an added dimension of importance. Studies by Ryan (2014) underscore the role of biophilic design in promoting sustainability, reducing environmental impact, and fostering biodiversity within the urban landscape. It aims to forge strong connections between nature and built environments, prioritizing human well-being (Kellert, 2008). He further categorizes relevant features into two dimensions, encompassing six elements and 70 design attributes, including Environmental Features, Natural Shapes and Forms, Natural Patterns and Processes, Light and Spaces, Place-Based Relationships, and Evolved Human-Nature Relationships (Kellert, 2008). However this study focuses on the contributions to human health, comfort, and connection with nature within built environments of the environmental features such as water, air, natural light, plants, natural landscapes, and ecosystems within biophilic design.

Despite the theoretical promise of biophilic design, empirical research on its practical application remains scarce, especially in the context of resort hotels. Richardson *et.al* (2022) and Abdelaal (2019) explored biophilic design in various urban contexts, the specific experiences and perceptions of users in resort hotels have been largely neglected. Understanding how guests interact with Biophilic Design Elements (BDEs) in these settings is essential to fully realize the potential of biophilic design in the hospitality industry.

This literature review sets the stage for our research by examining the existing body of knowledge related to urbanization, biophilic design, and ecological challenges. By synthesizing the insights from these diverse strands of literature, we can more comprehensively investigate users' perceptions of BDEs in selected resort hotels and their broader implications for the hospitality industry.

III. METHODOLOGY

Both primary and secondary data were collected for the study. The primary data were obtained through multi-stage sampling. In the first stage, the southwest region in Nigeria was stratified into states: Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo. In the second stage, resort hotels were identified in each state from the Federal Ministry of Tourism record (2022). A total number of Eighteen (18) resort hotels were registered in south-west Nigeria which constitute the sample frame. A total of five (5) resort hotels were selected for the sample Size, based on the presence of biophilic elements as a primary criterion for selection. The selection was done using purposive sampling techniques to ensure the sample was representative of the diversity of resorts in the region in terms of variability, style, location, and clientele. This technique had been used in previous research (Cetin & Kinay, 2017). The participants were primarily from five different states, Zenabab's (5.9%) Osun, Green Legacy (30.9%) Ogun, La campagne (26.2%) Lagos, Ikogosi (13.6%) Ekiti, and Ilaji (23.4%) in Oyo state. This distribution contributes to a more comprehensive understanding of the impact of BDEs across different areas. The study used Statistical Package for Social Sciences (SPSS, 2018) and the descriptive statistics, clustering analysis were adopted for the study.

Reconnaissance Survey shows that the average number of visitors per week for the five resort hotels is 2,700. Thus 12.8% of the visitors had been sampled for questionnaire administration making a total of three hundred and fifty questionnaires that had been administered for the study. During the data collection process, incidental sampling was utilized to select tourists (users) visiting the resort hotels. The sampling was conducted on peak days, which included Sunday, Fridays, and Saturdays. These days were chosen based on the relative use of spaces by resort hotel users, with Sunday being perceived as moderate and Fridays and Saturdays as highly active days. Sampling was carried out during two specific time slots: the morning session from 10:00 am to 12:00 pm and the evening session from 4:00 pm to 6:00 pm. The purpose of these time slots was to capture a diverse range of users and their experiences throughout different parts of the day. During each session, the number of patrons visiting the resort hotels was recorded to determine the total sample size of tourists surveyed. The incidental sampling approach allowed for a more spontaneous selection of participants, providing a varied and representative sample of resort hotel users and their perceptions of the biophilic design elements such as water bodies, plants, lighting etc.

IV. FINDINGS

User's Perception of Biophilic Elements

An in-depth analysis of users' perceptions of various BDEs in selected resort hotels was presents in Figure 1.1. Water features are highly regarded by users, with all resort hotels receiving relatively high ratings. La champagne and Green Legacy stand out as the top performers in this category, with 89% and 78% of users perceiving water elements positively, respectively. Zenababs and Ikogosi also received positive ratings, indicating that water features are generally well-received and contribute to a pleasant ambience in these resort hotels.

Users' perception levels varied across hotels. At La champagne, 24.16% of respondents were most satisfied with Water features while Ilaji had the lowest respondents satisfaction of 16.16%. Satisfaction with water sport activities was notably high at La champagne with 22.23% whereas Zenababs had the lowest satisfactory perception of 17.18%. Additionally, 23.19% of respondents in Green legacy were highly satisfied with Natural lights while Ilaji has the least satisfaction of 15.97%. Outdoors, Plants and garden are also highly regarded by users across all the resort hotels. La champagne received the highest rating for outdoor facilities, with 78% of users perceiving them positively. Landscape were perceived positively in Zenabab's, Ilaji and La champagne, with ratings ranging from 68% to 75%. These findings suggest that incorporating adequate lighting and lush vegetation contributes positively to users' perceptions of the resort hotels' biophilic design. However, the ratings for landscape and vista across the resorts were mixed. La Campagne received the highest rating for both categories, indicating that its landscapes and scenic views are particularly well-regarded by users. On the other hand, Zenabab's and Ikogosi received relatively lower ratings, suggesting that there may be room for improvement in these areas.

Materials used in the resort hotels' design were perceived more positively by Green Legacy resort and la champagne, with ratings of 60% and 55%, respectively. This indicates that users appreciate the choice of materials in these establishments. However, Ikogosi and Zenabab's received lower ratings, suggesting that users may perceive the materials used in these resorts as less appealing or less aligned with biophilic design principles. When it comes to the presence of animals, La campagne received the highest rating of 46%, indicating that users perceive the resort hotel as having a notable presence of animals. The other resort hotels had lower ratings in this category, suggesting that users may not perceive the presence of animals as strongly in those establishments. The prevalence of BEs, facades, and other prevalent features received relatively low ratings across all the resort hotels. This indicates that users may not perceive these elements as prominently present or impactful in shaping their overall experience and perception of the resorts' biophilic design

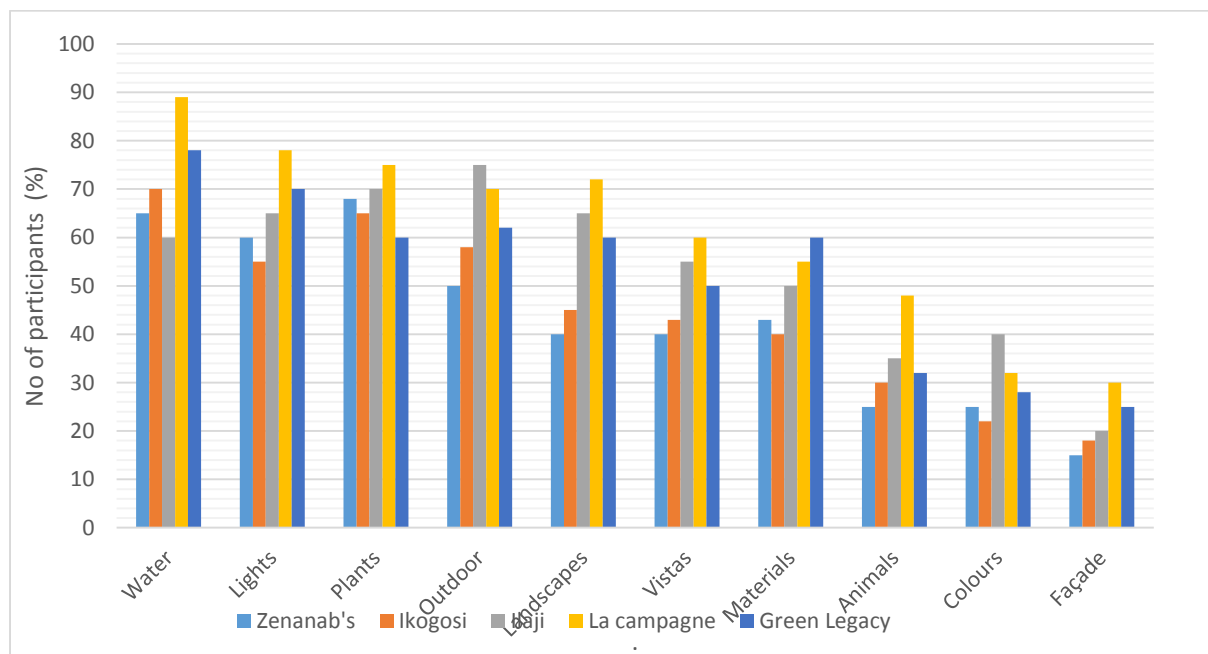


Figure 1.1: Users' Perception of BEs in Selected Resort Hotels

Source: Author's compilation

The analysis reveals that Users generally perceive water features, particularly watersports and fountains as the most predominant biophilic elements in resort hotels, This finding is consistent with recent studies by Bratman *et.al* (2019) and Zhang *et.al* (2021), which suggest that water features enhance opportunities for physical activities and social engagement while reducing stress and depression levels. Thus, the results align with and support that water features play a significant role in promoting positive experience and well-being in resort environment. Moreover, the analysis emphasizes the significant value attributed to plants and gardens within the resort. This observation is supported by research from Thompson *et.al* (2016), which identified the presence of green spaces and access to gardens or allotment as predictors to stress levels.

Impact of BDEs on well being

The impact of BEs on guests' relaxation, visual perception, mood, cognitive experience, and duration of their stay in selected resort hotels was present in **Figure 1.1**. Varying levels of impact, ranging from "Not Sure" to "Very High," were assessed. In terms of relaxation, the majority of guests reported experiencing a high or very high level of relaxation in response to BEs. The "High" and "Very High" impact categories received the highest ratings, with 31.4% and 43.2% of guests, respectively, indicating that the BEs significantly contributed to their relaxation. Regarding visual perception, guests had varied responses. The "Low" impact category had the highest rating of 9.3%, suggesting that some guests did not perceive a strong visual impact from the BEs. However, the "High" impact category also had a notable rating of 33.6%, indicating that a significant portion of guests found the design elements visually appealing and impactful.

The impact on mood followed a similar pattern, with the "High" impact category receiving the highest rating of 34.3%. This indicates that a substantial number of guests reported experiencing a positive effect on their mood due to the BEs. In terms of cognitive experience, the "Moderate" impact category had the highest rating of 29.3%, suggesting that guests perceived a moderate level of cognitive enhancement as a result of the BDEs. The "High" impact category closely followed with a rating of 41.4%, indicating that a significant proportion of guests reported a more pronounced cognitive impact.

The duration of guests' stay showed an interesting trend. The "Moderate" impact category had the highest rating of 38.9%, suggesting that guests perceived a moderate effect on the duration of their stay due to the BDEs. The "Low" impact category also had a relatively high rating of 12.1%, indicating that a portion of guests did not perceive a significant impact on the duration of their stay. Overall, the result demonstrates that BEs have a positive impact on guests' relaxation, mood, and cognitive experience in the selected resort hotels. Visual perception showed more variability, with some guests perceiving a stronger impact than others. The duration of the guests' stay showed a mixed response, with some guests perceiving a moderate impact while others did not notice a significant effect. These findings highlight the potential of BDEs to create a relaxing and positive environment for guests, supporting their overall well-being and enhancing their experience during their stay at the resort hotels.

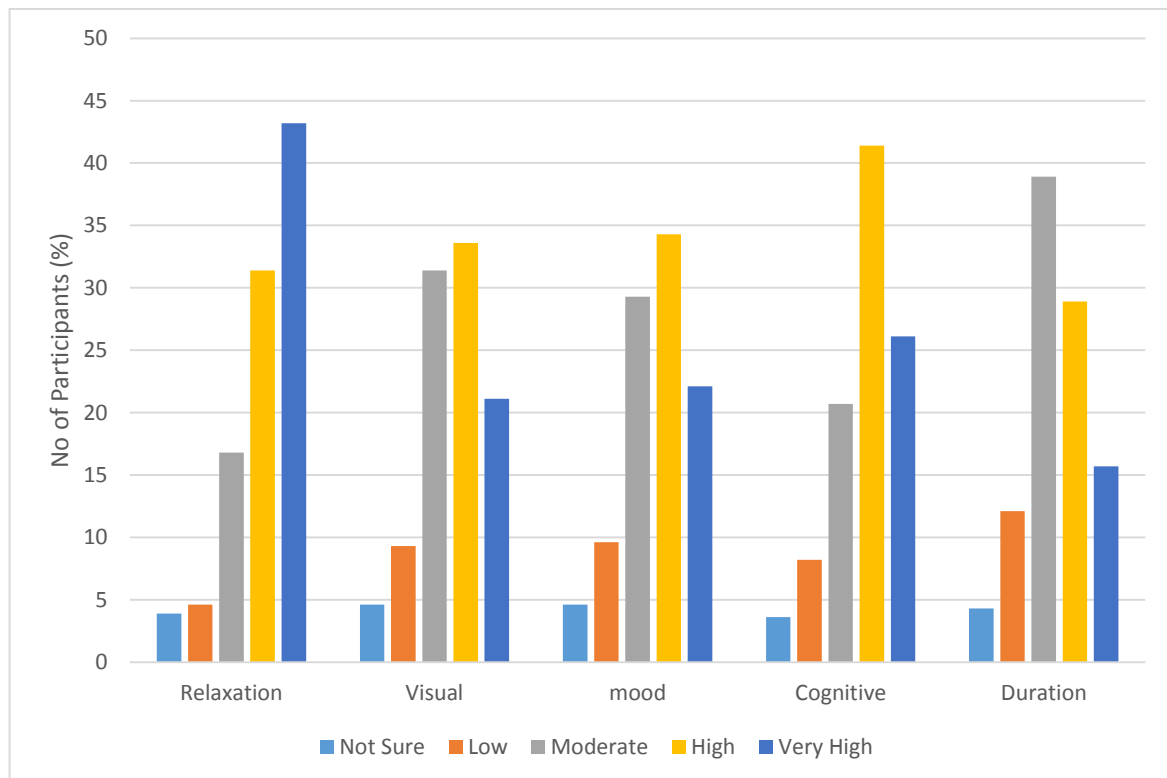


figure 1.2 : The Impacts of Biophilic Element on Guests in Selected Resort Hotels
Source: Author’s compilation

Mean weight values (MWV) were utilized to assess the impact of BDEs on well-being in **table 1.0**. Relaxation received the highest (MWV= 3.28) followed by cognitive benefits at (MWV= 3.05). The users’ duration aspect of stay had the lowest at (MWV= 2.74) suggesting that BEs is less beneficial to users length of stay.

Table 1:0 : Showing MWV for Guest’s Perception of Biophilic Elements (BEs)

SN	Impact level	Rating and Weighted value					M	Total Weight value	Mean Weight value
		5	4	3	2	1			
1	Relaxation	121	88	47	13	11	346	1135	3.28
2	Virtual	59	94	88	26	13	346	1000	2.89
3	Mood	62	96	82	27	13	346	1007	2.91
4	Cognitive	73	116	58	23	10	346	1088	3.05
5	Duration	44	81	109	34	12	346	951	2.74

MEAN OF ΣWV = 14.88/5 = 2.976

Total MWV= 14.88`

Note 5= very high 4= High 3= Moderate 2= Low 1 = Not Sure

V. CONCLUSION AND RECOMMENDATIONS

Findings revealed that water features were the most highly regarded biophilic design elements (BDEs) across the selected resort hotels, with La Champagne and Green Legacy standing out for their positive ratings (see Figure 1.1 above). Water features such as fountains and watersports were consistently associated with relaxation, mood enhancement, and social engagement, as supported by previous studies. Hence, integrating prominent and interactive water features is recommended for resort hotels, especially in those like Ikogosi and Zenababs, where users’ satisfaction was comparatively lower. It was also observed that plants, gardens, and natural lighting had a strong positive influence on user satisfaction. These elements were noted to significantly enhance relaxation and visual appeal, with La Champagne receiving the highest ratings in these categories. However, ratings for landscapes and vistas were mixed, with Zenababs and Ikogosi receiving lower ratings. This disparity indicates that additional investment in lush vegetation, scenic views, and cohesive landscaping would enhance user perception in these locations.

On a general note, BDEs were observed to perform excellently in promoting relaxation and cognitive benefits, with mean weight values (MWV) of 3.28 and 3.05, respectively (see table 1.0 above). However, the impact of BDEs on the duration of stay was the lowest (MWV = 2.74), suggesting that while BDEs contribute significantly to well-being, their influence on guests’ length of stay is relatively moderate. Overall, La Champagne and Green Legacy were identified as exemplary models, presenting the highest levels of user satisfaction and impact. Therefore, a replication of their design strategies, particularly the integration of water features, outdoor greenery, and high-quality materials, is recommended for other resorts in the study area.

Conflict of Interests

The authors have not declared any conflict of interests.

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