

Sustainable Hotel Management: Crossroads of Comfort and Responsibility

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Abstract

The hotel industry is increasingly adopting green practices in response to climate change, resource depletion, environmental degradation, and other global challenges. As stakeholders become aware of sustainability-related issues, demand for sustainable hotel operations increases. This article deals with sustainability in hospitality. The scope of this paper does not limit the concept of sustainability. Sustainable hotel practices aim to reduce environmental impact and enhance socio-economic outcomes, thereby achieving long-term benefits for organisations. Hotels can enhance their environmental, economic and social performance by incorporating green initiatives to meet the requirements of customers and regulators. This study underscores the importance of sustainability for the future of the hotel sector, demonstrating that hotels can play a significant role in driving positive change in tourism.

Keywords: *Sustainable hotel practices, environmental performance, guest perceptions, energy efficiency, waste management, resource conservation, stakeholder engagement.*

1. Introduction

With a rapidly growing economy and adverse environmental effects, the hospitality sector must prioritise sustainable development now more than ever. Driven by government initiatives,

hotel operators are increasingly focusing on environmental issues. Ecology has been placed on the national agenda worldwide to promote sustainable development and prevent further degradation and ecological catastrophe.

Some industry experts argue that a hotel's environmental impact contributes to natural disasters. Hotel owners have observed that only when properties adopt sustainability practices can they achieve strong marketing outcomes that position the firm as a leading operator (Correia et al., 2023). The adoption of environmental management practices in a hotel clearly reflects the operator's responsibilities toward various interest groups, including workers, the community, and consumers. Hotel operations significantly impact the environment, especially through in-room facilities and appliances. Consequently, sustainable development is gaining more attention in the hotel industry. Perspectives on sustainable practices vary across hotels, depending on each hotel's environmental characteristics and location (Rowe, 2018).

2. Conceptual Framework for Sustainable Hospitality

The tourism sector has grown at an unprecedented pace over the last two decades. It has significantly overwhelmed and unsustainably exploited its physical and cultural assets, including biodiversity, ecosystems, natural resources, heritage and local cultures. (Rowe, 2018) Substantial investments are being made to expand existing facilities, build new hotels, and develop new resorts. The outlook for

global tourism will continue to grow in terms of numbers and average length of stay, despite economic downturns. Development is expected to occur in advanced countries and in newly emerging and conventional developing countries. Despite the proliferation of new hotels, existing operators that prioritise sustainable development are not bridging the gap. Some hoteliers believe that sustainable development should be incorporated into management and marketing. Local communities suffer net damage from the accommodation side of the tourism sector, even as they enjoy some benefits.

2.1. Definitions and Scope

According to the United Nations World Tourism Organisation and the World Health Organisation, the hospitality sector, along with the broader social system, is facing a growing crisis of sustainability. Essentially, it consumes scarce resources and degrades the environment faster than nature can restore it. According to Rowe, problems encompassing climate change, the nitrogen cycle and biodiversity loss disrupt natural ecosystems and threaten the safety, health and well-being of current and future populations. We have solutions that can sustain our consumption and the development of the natural resources on which we depend. However, their implementation depends

on the establishment of new global governance. The hospitality industry is under pressure to address the sustainability challenge following recent crises. Around the globe, sustainable development refers to meeting “the needs of the present generation without compromising the ability of future generations to meet their own needs”. It was one of the most important terms of the 20th century; sustainable development has much to offer the 21st-century hospitality industry.

2.2. Stakeholders and Drivers of Change

Sustainable hotel management is a strategic response to the growing demand for sustainability in the hospitality and tourism (H&T) sector. Stakeholders associated with H&T have expressed expectations regarding sustainability practices, while sustainability has also been promoted through market regulation by legal authorities (Rowe, 2018). Furthermore, the importance of sustainability remains uncertain at best, despite the existence of other regulations in the market. Sustainability practices were largely regarded as convenient rather than fundamentally necessary, affecting a range of industry stakeholders. The number of international travellers and, consequently, hotel stays is expected to grow for years following the pandemic. An increase in expected trips signifies

growth that hotels are pressuring to achieve sustainably. Various stakeholders expect them to adopt certain practices; however, minimal governmental regulatory guidance on sustainability is necessary to operate a hotel, which means existing hotel practices do not effectively satisfy expectations. Responding hotel managers have identified stakeholder groups that seek or require the deployment of sustainability practices in hotels.

The stakeholder group observed that the most committed and still supportive of sustainability activities are hotel chains with a strong self-region-oriented strategy. Demand for hotels that adopt more sustainable practices has increased despite low travel volumes (Fuchs et al., 2025). Changes in hotel owners' attitudes, enabling hotel chains to respond to their own expectations, appear to underlie the growing activities. Hotel chains adopting a self-region-oriented strategy prioritise low-effort operations, which hotel owners have leveraged to demonstrate ownership of sustainability practices; however, this has led hotels to lack self-region sustainability practices, although certain hotels still respond quickly to sustainability initiatives through independent initiatives. The importance of changing regulations governing proper stakeholder or authority within a

hotel chain, dubbed the same meeting point, different venue, toward joint activity alone (Costa & Vila, 2014).

Free-standing, standalone hotels have developed their own sustainability practices. No chain hotel supports these. They claim that, when compensated by chain hotels, regulations are displayed in the independent area outside, without assurance that this authority can support us as a regulatory body. The value of regulation was informed by a stakeholder meeting. When practice became existence, it was not practising in accordance with set expectations. The regulation was still in effect for any period of time. Regional actors in local government only act through improvements in sustainability. Regardless of the diligence imposed at the financial level, the hotel chain initiates the request. Regulation-driven requests occur over time to align the interests of hotel owners and operators. To a certain extent, enable a period of operational change. However, existing research on sustainability in the hotel sector does not yet cover all areas (Costa & Vila, 2014).

This professional association always tries to bring together stakeholders. They intend to guide the establishment of a space. It is a specific channel-of-appeal consultancy established and placed between the hotel and the operator. This

agreement marks mutual ownership as a common basis. However, at a broader level, the existing any-number placements are intended to build an institution. This institution will provide teaching knowledge, since the supply change regulation society still adheres to established frameworks. However, the establishment occurs during the pathway stage, along with the deployment of supporting equipment to the area. The group's self-publication focuses on sustainability. It raises peers' awareness of government efforts. Follow-up depends on the hotel's readiness. The attainment of each region could not provide sustainable procedural service. Sustainability is a well-known group that supports peers and respects, and highly appreciates, the status change in hotel practices. Sustainability has been merely a matter for an international hotel chain. Moreover, deem extended update-new finding. (Costa & Vila, 2014). Although sustainability is voluntary, when rapid spread is necessary, local forces can initiate a trend; in such cases, the typical H&T offering is a service that already has a provision end within the overall hospitality sector, which facilitates a more straightforward approach.

3. Environmental Sustainability in Hotels

Modern tourism fosters high energy and water consumption, pollution, waste

generation, and wildlife exploitation that challenge the infrastructure, economy, and environment of many destinations, particularly in developing countries. Hotels, which account for a major share of these impacts, play a pivotal role in achieving sustainability goals (R. Sucheran & V. Moodley, 2019). Sustainability in hospitality involves stakeholder engagement, planning, design, operations, procurement, renovation, and maintenance (Huff, 2019). Well-being encompasses health and safety, comfort, amenities, technology, tranquillity, and access, with trade-offs in social responsibility on the environmental pillar that set priorities. To assess the comparative sustainability of hotels, sustainable comfort indexes and multi-criteria decision approaches have been proposed (Mungai & Irungu, 2013).

Global initiatives for certification and performance reporting, such as Building Research Establishment Environmental Assessment Method, Leadership in Energy and Environmental Design, Green Key, EarthCheck, and the Global Sustainable Tourism Council Criteria, offer extensive guidance. Many of the required considerations appear across the literature under energy and water efficiency, waste management and circularity, procurement and supply chains, employee well-being and

training, guest experience and behavioural influence, community interaction and economic impact (Allesch & Huber-Humer, 2023).

3.1. Energy and Water Efficiency

Hotels are major consumers of energy and water resources. Energy and water efficiency have become high-priority issues because these resources together account for more than 80% of the industry's overall environmental footprint (Huff, 2019). Strong financial and regulatory incentives also drive efficiency interventions; if managed effectively, utility purchases can affect the bottom line more quickly than most other costs in hotel operations. Hotels spend about \$2.2 billion annually on energy, over \$2.5 billion on water, and more than \$22 billion on waste disposal, with many operators facing double-digit percentage rises in their utility bills. Improving energy systems has the added benefit of reducing greenhouse gas emissions while improving hotel comfort and enhancing guest experiences (Styles et al., 2014).

With the help of low-cost, water-efficient technologies, efficiency can be increased by 30% to 60%. Moreover, simple payback periods are often less than three years. Those among the best performers for water savings will also gain financially and positively influence

customer choice. Hotels' viewpoints on efficiency and resource use are changing fundamentally. The sector is being compelled to engage seriously with the

resource-efficiency agenda by rising costs of energy, water, waste disposal, and sewerage.

Aspect	Description	Impact
Energy Consumption	Hotels are major energy consumers, contributing significantly to their environmental footprint.	High energy consumption increases operational costs and carbon emissions.
Water Consumption	Water usage in hotels is also significant, accounting for a large portion of the environmental footprint.	Excessive water use increases costs and depletes resources.
Efficiency Improvements	Hotels can improve efficiency through low-cost, water-efficient technologies, reducing water use by 30-60%.	Financial savings from reduced water consumption and a positive impact on the environment.
Financial Incentives	Utility cost savings provide financial benefits, as energy and water expenses represent major operational costs.	Immediate ROI from implementing energy and water efficiency measures.
Guest Experience	Enhanced comfort and experience by managing resources efficiently.	Guests value hotels with eco-friendly practices, which may lead to higher satisfaction and loyalty.
Technological Innovations	Use of energy-efficient technologies and smart systems to reduce consumption.	Increased operational efficiency and reduced environmental impact.

Aspect	Description	Impact
Regulatory Drivers	Government policies and regulations provide incentives for energy and water efficiency.	Regulatory pressure encourages hotels to adopt sustainability practices.

3.2. Waste Management and Circularity

As space quickly became scarce, many players redirected money and time to turn waste into a resource. Waste generation, however, remained a key issue, as a substantial amount continued to be generated. Before long, pressure from government, community and consumer demands forced others into the [waste] management game, unbeknownst to them that in no time, it would move to a more circularity – Huff (2019)

According to Bohdanowicz-Godfrey and Zientara (2015), hotel waste can be broadly classified into food, plastics, metals, glass, paper, textiles, and hazardous waste. A waste audit is the first step taken toward addressing these problems. Through these audits, current information on incoming, outgoing (including recycling), and, particularly, discarded material streams on the property can be gathered to inform the development of a more tailored on-site waste management plan.

In the early stages of implementation, a company's actions often involve high-profile measures (e.g., no straws, recycled/recyclable products), often with a zero-waste-to-landfill goal. Due to material shortages and high employee turnover, the number of operational-level measures is limited. Substantial savings in paperwork, enabled by various electronic aids, can readily fulfil the prerequisite technical requirements and subsequently open the outer gate to lower-echelon, higher-commitment actions.

3.3. Sustainable Procurement and Supply Chains

The global tourism industry has moved beyond Sustainable Development (SD) in the last decade. It has expanded to a broader perspective in which tourism and other interlinked sectors contribute to on-the-ground and global sustainability. Moreover, tourism can address the UN 2030 Agenda and its 17 Sustainable Development Goals. An increasing pressure to adopt sustainability has hit the hospitality sector as well, which comprises 10% of

global employment and GDP and 7% of global tourism carbon emissions (Rowe, 2018)

The survey reveals that hoteliers are increasingly aware of sustainability. They recognise that it strongly affects guest behaviour and that we must address it. Sustainability running through their business can enhance social outcomes for the broader community. The hospitality chain comprises hybrid hospitality typologies that are complex and have not been sufficiently explored within the sustainability agenda.

The industry has not adequately examined the sustainability issues associated with hybrid hospitality venues. Since the sixties, hybrid operator brands have increased. They generate demand, translate accommodation into overnight stays, and foster the hospitality industry. Although hybrid hospitality is becoming increasingly popular, the academic literature has, until recently, neglected it. The emergence of an alternate hybrid accommodation brand can be attributed to two causes. One, the rise and maturing of property-sharing models, and two, the fervour of operators and investors to expand their portfolios and expedite return on investments. A revenue stream is generated for property owners through the presence of these brands, which offer guests on-demand services (Cao et al., 2022). The hospitality

industry is witnessing an exciting opportunity in the gradual blurring of lines among hospitality typologies. That is to say, the examination of the ever-evolving hybrid typologies, the prospects they offer for innovation and market differentiation, and their consequences for development, operation, financing and investment.

4. Social and Economic Dimensions

Sustainable practices in hotel management impact customers and employees. According to Rowe (2018), corporate social responsibility (CSR) principles play a significant role in fostering personnel well-being and work-life balance. Opportunities for training not only enhance learning and social interaction but also increase job satisfaction, sense of belonging, loyalty to the company, and employee retention. Recent research suggests that guests' perceptions of sustainable practices are associated with higher satisfaction, emotional engagement, and positive attitudes toward the accommodation. We associate sustainable development with clients, communities and the planet. One capacity-building approach for sustainable tourism development is the sharing of improved skills, knowledge, experience, and best practices across marketing, sustainable tourism management, human resources, and safety and hygiene initiatives. In various

contexts and across many dimensions, effects extend beyond accommodation to affect local businesses in the food and beverage, retail, transport, and tour operations sectors.

The hotel industry has an opportunity to lead sustainability across the travel value chain by engaging with customers to mitigate climate change and biodiversity loss. Hotels can tell guests that some sustainable options do not compromise their experience. Furthermore, they can provide clear messaging that clarifies the content, availability, and expected outcomes of green offers.

4.1. Employee Well-being and Training

The hospitality industry is characterised by unpleasant working conditions (Xue et al., 2022). Work has become increasingly challenging for employees due to low pay, unsuitable working hours, tedious tasks, night shifts, insufficient consideration for employee welfare, and rude, harsh, and uneducated treatment by guests. Hoteliers must contend with these conditions when adopting sustainable management. Resolving employee issues reduces turnover, recruitment, and training costs whilst increasing retention, loyalty, and recognition, thereby enhancing employees' competitive advantages and sustaining business success.

To achieve successful, sustainable management, action must focus on internal social responsibility, specifically on enhancing employees' workplace conditions. Sample answer: Case studies reveal that comfortable, safe and interactive surroundings make employees more compliant and devoted to management philosophy. Hence, internal social responsibility to employees is important for hotel sustainability.

4.2. Guest Experience and Behavioural Influence

Through the influence of the guest experience, the attitudes and behaviours of almost all customers in tourism and hospitality, during their purchase decisions and overall engagement, shape tourism and hospitality marketing and service strategies centred on the journey (Kasim, 2004). As a result, operators of hospitality businesses can modify various touchpoints of consumption to enhance the effective conversion of general consumer interest into a distinctly predefined metric throughout the journey by providing more tailored, consumer-driven experiential quality. Therefore, empowering the maximisation of sustainability offers outsiders a picture of this world in this dynamic space (they become integrated from the word 'go'), which will ultimately create opportunities for

sustainable overconsumption among its beneficiaries.

However, adapting responsible activities to the journey and overall engagement remains more challenging, despite rising demand for sustainability efforts (R. Sucheran & V. Moodley, 2019). Improvement can also be achieved through courses that observe, reflect on, and expound on the responsible aspects therein, thereby enhancing broader understanding of the schemes and action priorities for which aid is sought. Both the disruption and the opening of educational dialogues on sustainability thus warrant deeper exploration to yield even greater overall conversions toward desired investment aspirations.

4.3. Local Communities and Economic Impact

Hotels are hospitality services with specified characteristics, yet guests are the hotel's servants. Making the hotel business sustainable is a matter of hospitality, and the guest experience must be cherished. Using behaviour-based safety principles, hotels at check-in promote a green stay to guests. Do not use your towels daily. Request room cleaning every third day. Switch off the lights several times, and switch off the air conditioning during the hotel stay. Most hoteliers think guests can engage in sustainable practices through peer

influence and monitoring. Information technology, such as smartphones, is becoming essential for hotels to enable guests to quickly participate in green initiatives, as we rely on technology every day. Allowing them to receive messages is a persuasive strategy that further enhances guest engagement with sustainability measures. Hotels' ability to implement green initiatives is constrained by a traditional approach that limits guests' participation in green activities (Rowe, 2018).

5. Operational Strategies and Best Practices

The reputations of small hotels are strengthened by sustainability and environmental certifications. Various programs can assist in creating and sustaining a CO2 program. According to Rowe (2018), hotels that implement long-term, continuous measures to address social and ethical, stakeholder, and environmental issues derive significant benefits.

5.1. Design and Asset Management

Consumer demand for green initiatives demonstrates the importance of sustainable design and asset management across industries. Implementing environmental management systems and practices can enhance operational efficiency. Hotel managers' perceptions of corporate social

responsibility, in turn, affect hotel sustainability. By implementing a system to measure resource efficiency, hoteliers will be better able to manage their equipment. To summarise, responsible design and management can effectively promote sustainability in the hospitality industry (Rowe, 2018).

More hotels are taking initiatives to conserve resources and to promote community programs that advance sustainability. Hotels can reap financial benefits from smart green transformations—the influence of green voluntary programs on service satisfaction. Huff (2019) affirms that green programs strengthen the guest's intention to stay and satisfaction.

The construction of green buildings and sustainable asset management practices in the hospitality industry helps reduce public utility costs, save energy, support pollution prevention, encourage the use of alternative building materials, and improve environmental quality in hotels. Green sustainability measures in hotels can confer competitive advantages, including brand loyalty, corporate social responsibility, and improved messaging. The sustainable practices of eco-tourism enhance a hotel's flexibility and adaptability, enabling ongoing improvement that ultimately results in a more marketable and profitable hotel. Eco-tourism is beneficial for places with

many old buildings. Sustainable design enhances the hotel brand's image. The waste generated by construction is minimised in sustainable building design, which accounts for the use of reusable and energy-efficient materials, as well as environmentally safe goods and building systems. (Debrah and others, 2022).

The industry faces many challenges in sustainability practices. Firms' inability to adopt and implement eco-tourism practices is attributable to insufficient knowledge of effective sustainable development practices, inadequate consumer demand, limited understanding of government support, uncertain market conditions, and the high costs of sustainable hotel design and technology. Due to capital expenditure constraints, depressed return on investment, and owner constraints, many hospitality organisations have not yet adopted a CSR program. Hospitality firms seeking sustainable hotel design, sustainable practices, and responsible asset management should consider recording future operating costs and savings generated by eco-tourism projects. Interest in developing green infrastructure and ecotourism measures is increasing worldwide. Installing energy conservation and sustainability systems benefits the lodging market (Xu et al.). If hotel flexibility, adaptability,

and conditions for continuous improvement are enhanced, property owners can avoid obsolescence, which may lead to abandonment, demolition, or major renovations.

5.2. Technology and Digital Solutions

Sustainability has become a global movement across most industries, resulting in an increasing emphasis on sustainability in hotel management. Implementing green initiatives in hotel operations to enhance overall sustainability yields a range of benefits, from operational cost savings to improved reputation. The hotel management market in Turkey has yet to undergo a significant transformation toward green hotel operations, and the implementation of green initiatives varies even among chain hotels. To date, the sustainable hotel management movement has had insufficient impact on key decision-makers and stakeholders in Turkey's hotel management sector. It can be observed that the primary motivator for investment in green initiatives is the perceived economic return on investment (ROI), which limits the basis for adopting sustainable management practices and policies (Huff, 2019).

The key motivation for creating electronic opportunities is to adopt environmentally friendly practices that enhance hotels' competitive edge in the

eyes of guests and to enable the emergence of online guest communities. The motivations for adopting electronic systems and investing in social media differ significantly between the economy and five-star hotels. The economy pricing segment aims to gain operational cost savings from entering soft facilities. In addition, more sophisticated building management systems are adopted to enhance energy-saving initiatives further once the motivation to invest in green management and soft facilities, which do not provide direct financial returns, is established.

Social media plays a crucial role in the marketing strategy of five-star hotels (I Dinçer et al., 2016). By implementing and developing eco-friendly practices using in-house equipment and by leveraging government endorsement through letters, the addition of contaminant loads to the local area is deliberately reduced. Cleaning operations are reduced by digitalising the operational side of service, enabling guests to complete necessary tasks on the tablet.

5.3. Service Quality under Sustainability Constraints

Service delivery management ultimately depends on the combination of service concept design (usually under managerial direction) and service encounter delivery (almost always under

employee control); the sequence of logic determines the overall performance impact (Rowe, 2018). Cross-disciplinary service delivery modelling aims to manage this combination more efficiently. Within the domain of hotel service delivery, innovations tend to cluster around customer arrival and multi-stay service design (front-end management). At the same time, macro-approaches focus on guest service delivery – primarily staff and operations management – and reduce units at the manager-gambler cycle. An integrating methodology incorporates guest actions, meal preparation, dining paths, and interaction surfaces, so that performance measures such as leisure-time loss during service and disengaged time for service preparation remain visible.

The appeal of resort hotels on tropical islands stems primarily from the scope and sequence of activities associated with sun, sand, and water. However, fundamental attributes vary substantially among resorts of similar size that offer similar attractions. Guests considering participation in various activities often require information on the range of activities available and the resort's capacity to deliver them. Information gap modelling has thus been extended beyond resorts to encompass hotel clusters in urban-region destinations; large-volume economic

hotels were previously characterised as having simple facility and service gaps, a misconception that precluded further modelling. Integrated efforts among stakeholders – governments, destination marketing organisations, the Competitiveness Assurance Research Foundation, and consultancy firms – will boost broad-spectrum tourism, create professional jobs, and enable smart city cyberisation to reduce expenditures in both the public and private sectors.

6. Performance Measurement and Reporting

Relying solely on sustainability measures is insufficient for hotels to credibly demonstrate their commitment to sustainability and avoid allegations of greenwashing. They need to establish performance indicators, publish progress reports, and assess their vulnerability to climate change. (B.T. Mattimoe & Paul Tivnan, 2017) Sustainability accountability has three forms in the hospitality industry: (1) reporting on sustainability performance; (2) using indicators, certification, and audits to benchmark compliance; and (3) understanding interactions between sustainability and resilience and assessing the impact of possible climate hazards, such as drought or flooding, on operations. (Bohdanowicz-Godfrey & Zientara, 2015) The indecisiveness of many hotel companies as to the

establishment of a performance publishing system, despite its potential advantages, is a major barrier to sustainable hotel management against which hospitality scholars still have to investigate.

6.1. Key Performance Indicators for Sustainability

Despite progress in environmental sustainability, the hotel business faces conflicting views on the applicability of green operating practices to guest comfort. Hoteliers' commitment to environmental sustainability varies worldwide and remains only moderate for many properties. Sustainability practices are generally dispersed across buildings and instead focus on guest feedback and perceptions. Most customers expect hotels to address logistics beyond their visible, immediate zones, such as water harvesting. Nevertheless, hotels relying on third-party distribution channels often lack direct knowledge of customer preferences (Mungai & Irungu, 2013).

6.2. Certification Schemes and Reporting Standards

In recent years, researchers, hospitality managers, and other industry stakeholders have paid increasing attention to certification schemes and reporting standards to enhance hotels' environmental and social performance,

sustainability, and accountability. The frameworks can assist in measuring, reporting, monitoring, and improving hotels' performance across sustainability-related dimensions (J. Zhang et al., 2014). Various certification schemes and reporting frameworks were developed in the hotel sector. The Green Key Programme (Green Label) and the ISO 14001 Environmental Management Standard (ISO Certification) are widely used today, and their current status and trends in development can be assessed through them (Bohdanowicz-Godfrey & Zientara, 2015).

The Green Key Hotel Certification Programme is an international award granted to hotels and other tourism facilities that achieve high standards. The objective of this programme is to enhance environmental consciousness and the continuous improvement of the tourism sector. The program was launched in Denmark in 1994 and is one of the most recognised worldwide eco-labels. 34 Pilot Hotels participated in the project in 2000: Denmark, Iceland, Sweden, Norway and Finland. In 2005, the non-profit foundation Global Green Key programme was registered in the Netherlands. Following its pilot phase, the programme expanded to support other countries (Denmark, Iceland, Finland, and additional Nordic countries) in establishing national

versions of the programme. The ISO 14000 standard, developed by the International Organisation for Standardisation (ISO), aims to raise global awareness of responsible environmental behaviour in operations.

6.3. Risk Assessment and Resilience

Natural and human disturbances adversely affect the sustainability of hotel operations. Beyond environmental challenges, the hotel industry frequently confronts reputational attacks, financial downturns, and technology-driven changes in service delivery. Enhanced management adaptability, business continuity, and brand equity protection through risk assessment, mitigation measures and planned responses. Hotels located in urban areas face different risk exposures than those in coastal and rural areas. This is evident in differences in impact frequency attributable to climatic changes and distinct events (Dobie et al., 2018). Heat waves and sea-level rise pose potential climate risks to hotels. Depending on location, climate-related risks may vary; however, hotels in such places will become less viable if greenhouse gas emissions continue along the same trajectory.

7. Business Models and Financial Considerations

According to A. Quintás et al. (2023) argue that sustainable tourism can help

augment and restore stocks of natural capital and services in a manner compatible with economic development. According to Rowe (2018), the development of sustainable tourism supports a healthy ecosystem, social equity and economic vitality. Associations and organisations are increasingly aware of environmental degradation, and many are paying greater attention to sustainability issues in the hospitality sector. As a result, a category of sustainable hotels is becoming increasingly popular. Increasingly, sustainable hotels are recognised for their contributions to the maintenance of social and environmental capital in economic development. While the world's sustainable hotels may have improved significantly, the excessive waste they produce, their high rates of water and energy consumption, and the degradation of natural ecosystems remain challenges.

There is a direct relationship between energy and emissions. Hotels must consider the environmental impacts across the supply chain, as end users are major contributors to greenhouse gas emissions. The online hotel-booking business has recently brought the negative environmental impacts of the hotel industry to public attention. It is now clear that a hotel bid competes with online booking sites. The excellent

quality of hotel service, which has already become a necessity in offline booking, is further enhanced in online booking. To attract customers, one must understand how customers choose one hotel over another when the economic benefits exceed the economic outlay. (Khatter, 2023).

7.1. Investment Returns and Cost of Ownership

Since consumers are typically motivated by economic factors in their purchasing decisions (Rowe, 2018), the returns on investment for hotel properties that adopt sustainable practices remain an important consideration. Uncertainty surrounding citizenship and sustainability impacts, as well as tenants' perceptions, often affects the time stakeholders allocate to evaluating sustainability-related incentives. Noozhu et al. (2022) indicate that knowledge-intensive relationships within the hospitality sector are associated with growing concern among small operators about their environmental and social responsibilities.

Occupancy at lower-category hotels is also affected when sustainability performance is underdeveloped or very low. The type of accommodation determines both the risk taken by small operators and the range of sustainable practices adopted. Given the complexity

of hotel and restaurant operations, experience in sustainability is essential for new entrants to the hospitality market (Noozhu et al., 2022).

Sustainable technologies limit consumption while improving customer satisfaction. The substantial ROI and sustained growth of sustainable hotels justify studies on the financial effects of sustainable policies for new hotels. Investment returns and the cost of ownership for sustainable hotels warrant broader consideration in developing countries and in the application to other small operations (Noozhu et al., 2022).

7.2. Revenue Opportunities through Sustainability

Promotion of sustainable practices can generate revenue, enhance marketing, create business opportunities, and improve brand image. Initiatives to reduce the carbon footprint, recycle, conserve water and electricity, source items locally, and procure eco-labelled products can often stimulate sales. Some international hotel chains are shifting to 100% recyclable packaging and are seeing revenue increase (Rowe, 2018). Conversations about sustainable practices also help spur network and market development; hotels can attract new businesses and concert venues and gain leverage to influence changes in

other sectors, thereby achieving greater environmental impact.

7.3. Policy Context and Incentives

The concept of sustainable development can readily be linked to sustainable hotel management systems. The hotel industry can be recognised as one that interacts more directly with clients and represents them more directly in tangible terms (Rowe, 2018). This implies that hotels must consider sustainability at the level of

- (1) building design;
- (2) the ongoing hotel operation;
- (3) the interior management policy;
- (4) the external linkage with the customer, along with its guidance towards guiding customers' sustainable behaviour on an ongoing basis.

Connecting the sustainable hotel business with those aspects can significantly increase the chance of long-term successful operation when the sustainable hotel management can secure a higher return than the expenditure involved, the chance of achieving that the business runs for a long time under that original cost structure becomes relatively high (R. Sucheran & V. Moodley, 2019).

While the physical aspect that can connect directly with the guests before they conduct booking and reservation is

beyond the currently available technology to perceive from the outside view, through creating a set of practices inside of the hotel that can later be transferred across to the client, it may still be feasible to begin with a greener practice from elsewhere when the visitors are not yet initially aware of the sustainability height at which a hotel is positioned. Before introducing sustainable hotel practices, it may be advisable first to understand the target audience. This enables the identification of a gap in the approach to sustainable practices among the current customer base during the first stage of sustainable practise adoption (Mungai & Irungu, 2013).

8. Case Studies and Lessons Learned

Sustainability in the hospitality industry represents a complex balance between customer comfort and environmental responsibility. Advocating the prioritisation of comfort over ecological requirements, hoteliers recognise sustainability as relevant so long as it does not compromise the visitor experience; conversely, restricting access to natural resources might deny vital components of the retreat's enjoyment. Decisions concerning the well-being of employees, guests, and local communities also engage the pressing debate over the equitable provision of basic human needs. Hotels are governed

by a web of diverse, multifaceted criteria that determine the degree of sustainability achieved.

Insufficient accumulation of operational history hinders extensive exploration of the correlation between sustainability and profitability; nevertheless, accumulated experience across the hospitality sector consistently indicates investment in sustainable amenities engenders a proportionate return, regardless of hotel profile or market segment. Sustainability does not ultimately reside in sole ownership; each property endures a unique quest for its own variant (Rowe, 2018).

8.1. Global Examples of Sustainable Hotels

The Charter Hotel in historic downtown Seattle exemplifies the first aspect of design at the policy level. Its adaptation of a building that originally housed both the Hall of Justice and the U.S. District Court reflects long-term keep-out-of-landfill thinking by avoiding new construction. Its adaptations are tied, quite cleverly, to simplicity and natural materials, such as pine and concrete, that reduce resource withdrawals in maintenance and operation.

Kimo Janeway, The Charter's regional director of engineering, adds that a major problem with hospitality design—and one that the industry helps create—is

that “interior designs fall out of favour far too rapidly and require replacement.” The Fibonacci Gallery in Austin exemplifies a different approach at the project level. Phillips has positioned technology not as a barrier but rather as an ally to help the design meet its goals. (Youssef et al., 2024) This entailed eliminating auxiliary neon fixtures that detracted from the immersive experience of the custom holographic projection of a snowstorm photographed by a guest artist during winter in the nearby hill country. Phillips credits the absence of a specific creative influence with enabling a broad articulation of ideas and beguiling projects, thereby avoiding premature closure.

As part of an initiative by Rogaland County Municipality, Thon Hotel Sandnes has implemented five measures costing NOK 1.2 million, generating annual savings of about NOK 500,000, of which NOK 370,000 comes from energy savings and NOK 130,000 from water savings. The investments were allocated to plate heat exchangers, low-flow showers, taps and toilets, and low-energy presence-sensor fans. The Norwegian Hotel and Restaurant Association offers a certification with three categories under its Green Hotel Program. Thon Hotel Sandnes has already invested to reach the highest level. (Rowe, 2018)

8.2. Adaptation to Diverse Markets

Hotels' sustainability strategies are aligned with the diversity of markets worldwide. Hotel operators need to recognise the extent of consumer willingness to pay for green initiatives, as this varies by country. (Rowe, 2018) Understanding employees' perceptions of environmental practices and CSR helps tailor strategies for different regions. The way executives manage is responsible for environmental performance and sustainability.

Increasingly, sustainability initiatives have a guest-centric focus. As the industry involves customers in waste management and conservation, it can generate complete satisfaction and participation. R Sucheran V Moodley 2019 Enhancing the environmental performance of tourism accommodation is necessary to ensure more sustainability. Sustainability promotions should primarily target active eco-conscious hotel consumers whose travel and accommodation choices are influenced by both environmental considerations and social groups.

9. Challenges, Trade-offs, and Ethical Considerations

Focusing on sustainability, hotels can reduce energy and material consumption and enhance guest experiences. Environmental sustainability is a factor

that contributes to climate change, deforestation, resource depletion, and pollution. International organisations may have frameworks related to sustainable development. However, businesses still seem to follow a linear model that does not account for waste generated and resources extracted during operations. Corporate social responsibility broadens the horizons of business models, constraining their social and environmental impacts. In the hospitality sector, sustainability is motivated by energy consumption – mainly to improve 'other' resource management, reduce GHG emissions and improve guest comfort (Rowe, 2018). Stakeholders demand that hoteliers' operations be responsible and that they enhance social well-being while prospering businesses.

In hospitality, sustainability remains relevant, but it still requires considerable theoretical knowledge, consistent exposure to practical applications, and the compromises inherent in the corporate model. The hospitality milieu, comprising independent hotels and indigenously branded chains, as well as the elements that shape the guest experience, offers limited branding options. At the same time, the identity of the building remains intact. Sustainability models, despite repeated exposures and familiarity, will always

involve trade-offs. The boundaries of pursuit are dictated by corporate social responsibility; pressure from investors establishes minimum thresholds for intervention, and time, funds, infrastructure and staff capacity constrain implementation. Huff, 2019.

Finding comfort in sustainability raises ethical challenges. Luxury hotels cultivate a distinctive persona characterised by comfort and service efficiency. The Contexts and Duration of Travels, for which the expectation of Hospitality differs, some will still demand luxurious arrangements. Luxury is in the details at every level of a five-star property's experience. When we offer comfort-oriented options, we place ourselves in a temporary position of support. Sustainable luxury can still be embodied in respect for physical facilities, aesthetics, natural experiences, ambience, digital proximity, and personalisation. Still, sustainability comes second and is usually addressed alongside commoditised strategies, optional extensions, and afterthought provisions. (Chong, 2023)

The other end of this ethical spectrum is the use of sustainability to reach previously unreachable target audiences. The criteria for hospitality should include price points, barriers to entry, cognitive capabilities, personal situations, and related factors, while

hospitality-to-operability builds out the industry's hospitality space. The making of prevailing policy creates opposition to the policy of intervention, which further marginalises non-government segments; it creates obstacles that stunt growth and extend limitations towards an increasingly precarious gateway.

9.1. Balancing Comfort with Sustainability

In hotels, balancing comfort and sustainability is complex and often atypical. Environmental practices may enhance satisfaction simply by signalling care about the environment (Rowe, 2018). Green-certified hotels improve the guest experience by implementing practices that enhance health and comfort (R. Sucheran & V. Moodley, 2019). Integrated environmental management systems lead to improved environmental performance and management, significant reductions in waste, energy, and water, and substantial savings in energy and water bills, thereby contributing to a better overall guest experience. However, many organisations recognise that effective implementation of sustainability may require a minimum level of comfort and may even deter investment (Huff, 2019).

9.2. Equity and Accessibility

Equity is a fundamental principle of sustainable business. It refers to the

fairness of access to goods, services, and opportunities within and outside an organisation. Equity issues arise in multiple contexts, such as workplace equality for gender and racial identities, accessibility of accommodations for persons with physical disabilities, and pricing that is fair to all customers or community members.

Every organisation faces an equity challenge: the disproportionate burden imposed by business operations on vulnerable stakeholders (Tariq, 2024). Certain segments of society are more sensitive to the negative impacts of unsustainability than others. Those already struggling and those seeking assistance from government or charitable sources are especially susceptible. The hotel and hospitality sector is a significant employer and can directly affect equity barriers, whether through design or in response to external conditions. Ways to preserve equity include training current workers to support the advancement of underrepresented individuals and prevent discouragement of job applications. Hoteliers equip staff to help overcome financial, skill, or language hurdles individuals may face. Hotel workers often fall anew into these barriers during 'Generation Y' and 'Z' career selections after reshuffling in maxi cycles occurred (Rowe, 2018). Equity

considerations can extend to pay and job-share models, community support and time-off benefits, business impacts on the pricing and availability of local necessities, customer access to desired prices and services relative to sustainability efforts, and more.

9.3. Transparency and Trust

To build trust, the hospitality sector must be environmentally sustainable and transparent. According to Rowe (2018), hotel guests are willing to pay extra for green initiatives. To adopt a sustainable stance and build guest trust and loyalty, the hotel must appear credible relative to market trends. Further progressing the motion can render a visible engagement with sustainability certifications/principles. We can hence state the trust equation as $\text{Guest Willingness to Pay} = (\text{Suspected Industry Norms} - \text{Perceived Feasibility}) + (\text{Comm'n's Comp} - \text{Group Response Cert'ns})$

Another dimension of trust is employees' perception of general managers' commitment to environmental issues, which is positively associated with trustworthiness. Demanding and relevant certification schemes strengthen the hotel's external sustainability position and positively affect the general manager-trust relationship. We modify the trust equation to express that Guest

Willingness to Pay = (Suspected Industry Norms - Perceived Feasibility) + (Communication Competition + Group Response Certification) + General Manager Commitment (Memon et al., 2022).

10. Conclusion

Largely for the sake of ethics, but also for financial affordability, hotel managers try to act sustainably. A hotel is sustainable when it respects multiple limiting factors and can sustain its operations and service potential (Rowe, 2018). In response to global trends and the actions of major players, hotels should operate sustainably. Moreover, they seek to work for the lives and well-being of future generations. In other words, they aspire for hotels to undertake development planning and to use resources effectively. Today's guests seek to reduce the ecological impact of travel and accommodation, thereby maintaining a favourable human footprint and remaining mindful of sustainability issues.

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