# Exploring the criteria for a green and smart hotel: insights from hotel managers' perspectives

Gökhan Akel
*Department of Management Information Systems, Antalya Belek University, Antalya, Turkey, and*
Elçin Noyan
*Department of International Trade and Business, Antalya Belek University, Antalya, Turkey*

Received 22 August 2023
Revised 1 October 2023
13 November 2023
19 December 2023
Accepted 24 December 2023

## Abstract

**Purpose** – This study aimed to explore the adaptations and perspectives of hotel managers regarding green and smart hotel technologies within the context of sustainability.

**Design/methodology/approach** – A comprehensive literature review guided the formulation of this study, followed by face-to-face, semi-structured interviews with hotel managers. A total of 17 prepared questions were finalized after examination by two expert academicians. The responses were analyzed using qualitative research methodology and the results were weighted using the step-wise weight assessment ratio analysis (SWARA) method.

**Findings** – Interviews with sustainability and operational managers yielded insights into environmentally friendly practices and strategies such as reducing energy and water consumption, waste and chemical reduction, supporting local entrepreneurs and adopting smart technologies. These factors are crucial in eco-friendly hotels. According to the SWARA analysis, 'reducing energy consumption' is the most effective criterion.

**Research limitations/implications** – This study offers insights into green and smart hotel management by focusing on the perspectives of hotel managers with a small sample. In future studies, research with larger samples on customer perspectives and the effect of hotel selection is recommended.

**Practical implications** – This study offers insights to hotel managers on energy conservation and customer satisfaction enhancement through green and technological applications. These technological applications can improve hotel service quality and provide personalized experiences, fostering customer loyalty.

**Originality/value** – This pioneering study focuses on the intersection of green and smart practices in hospitality. By intertwining the often separately discussed concepts of "green" and "smart," this study presents a novel approach to the sustainability practices in the hospitality industry, holding a key position, especially in Turkey. Implementing these concepts can yield environmental and economic benefits, offering invaluable insights to hotel managers and policymakers into integrating smart technologies with sustainability.

**Keywords** Green hotel, Sustainable marketing, Smart hotel, Qualitative research, Multi-criteria decision-making methods

**Paper type** Research paper

## Introduction

The hotel industry, a significant contributor to the global economy, is increasingly focusing on sustainable practices because of its substantial consumption of resources such as energy, water and goods (Subbiah and Kannan, 2011; Chung, 2020; Nisar *et al.*, 2021). Focusing on sustainable practices is crucial for maintaining ecological balance and meeting guests' needs responsibly (Chen *et al.*, 2004). Playing an important role in promoting green consumption and environmental protection (Wang *et al.*, 2020), green hotels adopt basic sustainable practices, such as waste reduction and water and energy conservation (Subbiah and Kannan, 2011; Radwan *et al.*, 2012; Eldemerdash and Mohamed, 2013; Yusof and Jamaludin, 2013; Wyngaard and de Lange, 2013; Singh *et al.*, 2014; Han and Hyun, 2018; Rahman and Reynolds, 2019; Abdou *et al.*, 2020; Nisar *et al.*, 2021). Green hotels embrace efficient resource

Journal of Hospitality and Tourism Insights
© Emerald Publishing Limited
2514-9792
DOI 10.1108/JHTI-08-2023-0555

use and waste management and are called environmentally certified hotels (Martínez García de Leaniz *et al.*, 2018; Moise *et al.*, 2020; Nelson *et al.*, 2021; Qu *et al.*, 2022). There is a growing trend for green hotels to improve their sustainability efforts through the adoption of smart technologies. By integrating tools connected to information and communications technology (ICT) infrastructure, such as cloud computing and the Internet of things (IoT) (Sánchez, 2016; Chan *et al.*, 2019; Trinchini *et al.*, 2019), smart systems not only increase operational efficiency and innovation, but also contribute to broader sustainability goals in the hospitality industry.

While numerous studies have addressed green and smart hotels, few have delved deeply into the sustainable practice criteria of these establishments from both green and smart perspectives. Particularly in Turkey, a key tourism player, the integration of smart technologies with sustainable tourism has not been extensively examined. This exploratory study aims to bridge this gap using qualitative and multi-criteria decision-making (MCDM) methods, offering economic, social and environmental insights into the hotel industry. The study underscores the importance of simultaneously being "green" and "smart" for sustainable hotel operations in Turkey.

Previous research has focused on aspects such as consumer behavior (Tsai and Tsai, 2008), attitudes (Verma *et al.*, 2019), satisfaction (Yusof *et al.*, 2017) and loyalty (Han *et al.*, 2018); however, the specific criteria contributing to sustainability in green and smart hotels remain underexplored. Additionally, the potential of smart technologies in enhancing sustainable tourism destinations is yet to be fully assessed (Shafiee *et al.*, 2023). This study argues for the necessity of hotels being both "green" and "smart" based on the findings and analyses conducted, advocating for this dual approach in future operations. It evaluates green and smart hotel criteria in Turkey, a country with substantial accommodation facilities and natural heritage, especially in major provinces like İstanbul, Antalya, Muğla and İzmir (Güney Marmara Kalkınma Ajansı, 2016; Türkiye İstatistik Kurumu Turizm Verileri, 2023; T.C. Kültür ve Turizm Bakanlığı, 2023).

The findings of this study contribute to the marketing, tourism and hotel industries, both theoretically and practically. First, it expands the literature by exploring the concept of green and smart hotels. Second, it sheds light on hotels' understanding of green and smart hotels. Third, this study aims to create stronger intentions and attitudes for hotel managers to be referred to as green and smart hotels. Thus, businesses will be able to gain superiority in attracting guests, increasing their market share and competitive advantage. The fact that hotels engage in green activities in line with their economic and social purposes will not only attract the attention of conscious consumers (Dodds and Holmes, 2016), but will also gain a competitive advantage (Han *et al.*, 2009; Yong *et al.*, 2019).

The remainder of this paper is organized as follows. The next section provides a detailed overview of green and smart hotels and their criteria. This is followed by a description of the methodology employed, encompassing sample information, data collection methods and analysis procedures. Subsequently, the study presents the results and examines the driving factors behind hotels' environmental and technological advancements. The final section discusses the limitations, future research directions and implications for hotel managers and policymakers.

## Literature review

This literature review explores the integration and impact of green and smart hotel concepts in the hospitality industry, highlighting how advancements in information technology and the demand for smart solutions are reshaping hotel operations, management and environmental sustainability practices. These studies have examined the relationship between information technology and hotel performance, the implementation of smart room control systems and the concept of smart hotels. These studies have shed light on different

aspects of green initiatives, including resource conservation, environmental certification, consumer preferences and the economic and ecological benefits of adopting green practices.

*Green hotel*

Green is referred to as "eco-friendly," "environmentally friendly," and "sustainable" (Manaktola and Jauhari, 2007; Han *et al.*, 2009; Han and Kim, 2010; Verma *et al.*, 2019; Chung, 2020). Green hotels implement eco-friendly practices and have eco-labels and environmental certifications (Moise *et al.*, 2020; Qu *et al.*, 2022). Such green-certified hotels enhance performance by reducing costs and minimizing environmental damage and waste (Kim *et al.*, 2019; Babaei and Fani, 2022). Green marketing impacts consumer and organizational behavior towards the environment (Baran and Popescu, 2016) and focusing on green practices can significantly improve guest loyalty (Liu *et al.*, 2015; Li *et al.*, 2016), which is a crucial factor in differentiating hotel loyalty segments (Han *et al.*, 2018). Despite their growing importance, the adoption of green innovation in hotels is still emerging (Hsiao and Chuang, 2016). Studies exploring green hotels have demonstrated the comprehensive impact of ecological certification and sustainable practices on hotel management. Millar and Baloğlu (2011), found that the most valued eco-friendly feature among guests is the "green hotel certificate," along with preferences for reusable amenities such as shampoos, light bulbs, towels and sheets, highlighting the growing guest inclination towards staying in green hotels.

Yusof *et al.* (2017), emphasized the need to take precautions against contemporary problems, such as environmental problems, water pollution, air pollution, waste disposal, climate change, global warming, deforestation and haze, which have become major problems in Malaysia. This study measures the effects of green practices on customer satisfaction and loyalty in non-green hotels. The results show that green practices in the hotel industry have a significant impact on customer satisfaction and loyalty.

Nilashi *et al.* (2019), proposed a hybrid method for online review analysis through MCDM, text mining and predictive learning techniques to find out the relative importance of factors affecting travelers' decisions to choose green hotels with spas. As a result, the developed system enables travelers to decide on hotel selection through user-generated content, and it is predicted that this will help hotel managers improve their service quality and marketing strategies. When the in-depth analysis of customer comments by Nilashi *et al.* (2019) is combined with the green hotel management standards discussed by Auliandri and Angraeny (2017), sustainability efforts in the sector become clearer. Auliandri and Angraeny (2017) highlighted the significant energy consumption of the hospitality industry, particularly in hotel operations, such as air conditioning, lighting and elevators. The study focused on Majapahit Hotel's initiatives in Surabaya to meet Green Hotel Management standards, using the analytic hierarchy process (AHP) method to weigh various criteria, such as energy saving and renewable sources, aligned with expert opinions on achieving green hotel certification.

Zolfani *et al.* (2018) evaluate the impact of innovations on environmental sustainability and provide information on how hotel businesses can integrate innovations. Zolfani *et al.* (2018), evaluated hotel construction projects in terms of environmental sustainability proposing a hybrid MCDM model in their study. Using SWARA and Complex Proportional Assessment (COPRAS) methods, this study is based on the establishment of a five-star hotel in Tehran, Iran. When Zolfani *et al.* (2018) approach to evaluating hotel construction projects in terms of environmental sustainability is combined with Ilına *et al.*'s (2019) analysis of the regional accommodation market and the applicability of the "green hotel" concept, it becomes clearer how sustainability strategies can fit into regional economic structures. Ilına *et al.* (2019), analyzed the regional characteristics of the Russian accommodation market, the economic and environmental factors affecting the development and implementation of the

"green hotel" concept and suggested an approach for the implementation of the "green hotel" concept.

Chung (2020), emphasized the importance of a green economy and strategy in the hotel system and argued that pro-environmental consumers contribute to consumer economic benefits and environmental sustainability. In this study, the benefits of green hotels in protecting the environment are discussed, with the aim of developing a green marketing-oriented model through the logic of utilizing stress. The study revealed that flaws and corporate socially responsible hotels can enhance a hotel's image through green marketing and increase its commitment to behavior. Rahman *et al.* (2020), focus on the direct effects of hotels' environmental practices on customer satisfaction and loyalty, further highlighting the practical aspects of the sustainability approach. İşler and Oğuz (2020), examined the relationship between consumers' thoughts towards environmentally friendly hotels and their intention to stay in green hotels during their purchasing behavior. The results of a study conducted on customers staying in green hotels in Antalya determined that there are statistically significant relationships between their thoughts about environmentally friendly hotels and their intention to stay.

*Smart hotel*

Çetin and Akgül's (2015), study, within the Green IT technologies movement, compares virtualized systems to classical systems, emphasizing the production of products and design of systems for reduced energy consumption and lower carbon dioxide emissions. They found that a laboratory using virtual system technology achieved 82% energy efficiency savings of 81% and energy consumption costs compared to a laboratory with a classical system.

Gonzalez and Gidumal (2016), developed a model for the relationship between information technology and hotel performance and interviewed 30 managers from different hotels. According to this model, information and communication technologies have been argued to affect operational efficiency, employee productivity, customer service and commercialization, thus increasing customer satisfaction, income and profit. As a result, it was determined that information technologies are generally effective in the aforementioned dimensions and sub-dimensions of hotel performance.

In Topsakal's (2018), study, based on the literature, suggestions were made in the hotel industry about how hotels can benefit from technologies to become "smart hotels". Examples include opening the room door with near-field communication (NFC) technology and collecting data according to the location of customers in the hotel using a Global Positioning System (GPS) and Bluetooth-Based Interaction Technology. These technologies not only guide their shopping preferences, but also facilitate fast entry with a smart application. Following Topsakal's (2018) general recommendations on smart hotel technologies, Karamustafa and Yılmaz (2019), investigated the real-world effects of innovations on hotel image and operational performance, demonstrated the practical applicability of smart technologies and evaluated hospitality managers' perceptions regarding the benefits of smart technology applications in tourism. The study, which was applied to 4-star and 5-star hotels and holiday villages in Antalya, showed that the adoption of smart technologies by business managers increased room sales, positively affected the image of the business, increased energy and resource efficiency, and strengthened the hotel's environmental reputation.

Kim and Han (2020), emphasized the significant impact of smart hotel features on enhancing customer experience and shaping their visit intentions, thus influencing tourist behavior through these technological innovations. Their research delved into the unique characteristics of smart hotels, often referred to as hotels in the future, and analyzed how these features contribute to the development of customer visit intentions by improving the expected customer experience quality and emotions. The findings, derived from the

structural analysis, assessed how these distinct features influence the formation of customers' intentions to revisit. When smart hotel practices are integrated with green hotel initiatives, they not only foster environmental awareness but also heighten guest satisfaction, marking a shift in hotel practices towards this combined approach. Unlike traditional hotel methodologies, smart hotel applications employ cloud services, IoT, mobile communication technologies and artificial intelligence, as outlined by Zhang and Yang (2016). These technologies, encompassing physical, information, social and tourism commercial infrastructures, offer smart services to various stakeholders in the tourism sector, thereby enhancing value in the tourism industry, as noted by Guo *et al.* (2014).

Guo (2022), highlighted the key components of smart content, such as big data technology, smart hotel management, networking and digital technologies, emphasizing their role in revolutionizing smart hotel management. They propose the development of a smart hotel management business model, aligning it with the innovative capabilities of these technologies. The basis of green informatics applications is the conversion of hardware into power mode when not in use for a while; however, solutions related to processors are widely accepted as solution sources that are widely used in applications such as energy cost accounting, virtualization and e-waste (Çetin and Akgün, 2015). Damar and Gökşen (2018), observed that green IT, which encompasses applications such as environment-friendly products, green energy use, data center management and cloud computing, significantly contributes to environmental sustainability. This is achieved through methods such as reducing paper consumption with electronic document systems, saving water with smart irrigation systems, decreasing resource waste through public transportation, enhancing light and ventilation efficiency in smart offices, improving business performance while concurrently reducing garbage production and supporting recycling efforts.

Atay *et al.* (2019), considering smart hotel applications, evaluated 4–5-star hotels where tourists stay in Istanbul. In this study, the concept of a smart hotel within the scope of two themes, mobile applications and personalized services, has been reached. Within the scope of mobile applications, "one-touch application," online check-in and online checkout services are used and "user profile note" within the scope of personalized services, it was determined that personalized room service applications were used. As a result, for smart hotel applications, the automation infrastructure cost that needs to be provided is high. Therefore, it has been found that only a very limited part of the smart hotel criteria can be implemented within the hotels that were covered in the research.

When existing studies are analyzed, it is evident that diversifying green hotel practices boosts guest satisfaction and loyalty, whereas in smart hotels, the development and expansion of personalized products enhances guest experiences. This leads to benefits such as competitive advantage, time and workforce savings and reduced waiting times, leading to a noticeable preference among guests for green and smart hotels for their accommodations. Concurrently, the conservation of environmental and economic resources through green IT, which focuses on environmental sustainability, presents strategic opportunities for businesses. This approach not only contributes to sustainable competitive advantage but also allows businesses to bolster their competitiveness in the global market.

The literature review on green and smart hotels reveals a wealth of studies on sustainability and technological applications in the hotel sector; however, most of these studies lack a comprehensive view of green and smart hotel concepts, with a particular dearth of in-depth analysis on sustainable practice criteria. This gap is especially pronounced in Turkey, a significant player in tourism, where research on the integration of smart technologies within sustainable tourism is lacking. To address this shortfall, this study employs qualitative and MCDM methods to highlight the sustainability criteria of green and smart hotels, underlining their importance for future hotel operations in Turkey. Despite the acknowledged positive impact of smart technologies on sustainable tourism destinations,

their application in the Turkish context has not been adequately evaluated. This study proposes a dual approach for hotels to be both "green" and "smart," as supported by literature and analysis and includes an evaluation of green and smart hotel criteria in Turkey. Additionally, the study involved a survey of hotel managers on key criteria for qualifying as green and smart hotels, objectively ranking these criteria according to their importance, thereby offering a comprehensive perspective on the integration of sustainability and smart technology in the Turkish hotel sector.

It is difficult to define qualitative research because it does not have its own theories, paradigms, unique methods, or practices (Denzin and Lincoln, 2011). In qualitative research design, a situation, event, or process is analyzed (Merriam, 2015). The aims of qualitative research are based on interviews and observations, and content analysis is among the basic components of this research (Creswell, 2009). Descriptive analysis aims to describe a phenomenon, understand who, what, where, when and to what extent (Loeb *et al.*, 2017), and summarize and interpret data according to predetermined themes (Özdemir, 2010).

Adopting a phenomenological epistemological approach, this study examined hotel managers' adaptation to green and smart hotel technologies and their perspectives on this issue in detail. In this study, face-to-face semi-structured interviews were conducted with managers and the resulting criteria were weighted. A comprehensive literature review was conducted, semi-structured interviews were conducted with managers, and the SWARA method was used. The research flowchart is shown in Figure 1. Using these methods, we aimed to reveal how managers adapt to these criteria.

## Methodology

Defining qualitative research is challenging, as it lacks distinct theories and paradigms, and does not possess clear, unique methods and practices (Denzin and Lincoln, 2011). As in other research, the research questions of qualitative research aim to understand the subject to be researched by participants (Haradhan, 2018). In a qualitative research case study design, a situation, event, action, or process was analyzed (Merriam, 2015). Qualitative research aims are typically based on interviews, and observation and content analysis are considered

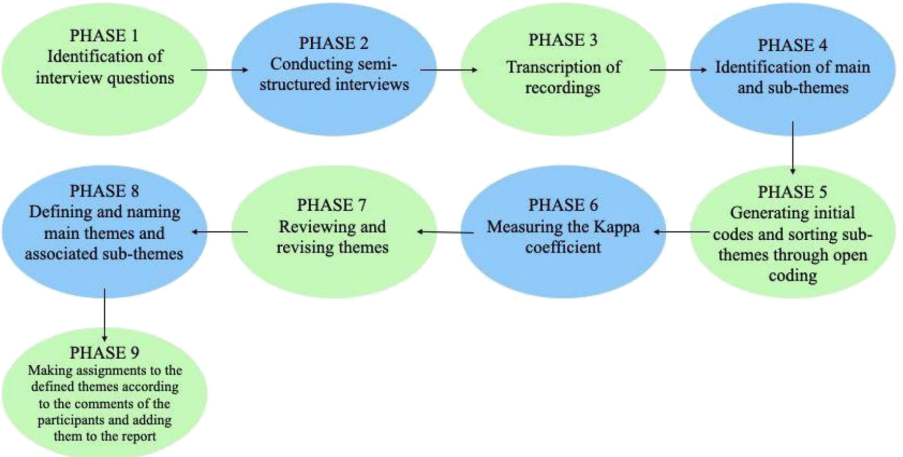


**Figure 1.**
Flow chart of qualitative research

**Source(s):** Author's own creation/work

among the basic design components of this study (Creswell, 2009). Descriptive analysis aims to describe a phenomenon; to understand who, what, where, when and to what extent; to determine the causal effects (Loeb *et al.*, 2017); and to summarize and interpret the data obtained according to predetermined themes (Özdemir, 2010).

This study adopts a phenomenological epistemological approach and aims to examine hotel managers' adaptations to green and smart hotel technologies and their perspectives on this issue in detail. In this study, face-to-face semi-structured interviews were conducted with managers and weighting was made regarding the emerging criteria. In this study, an extensive literature review was first conducted, semi-structured interviews were conducted with managers and the SWARA method was then used. The research flowchart is shown in Figure 1. Using these methods, we aim to reveal how managers adapt to new technologies with an understanding of both green and smart hotels, guide their employees and reveal their sustainability and future-oriented predictions and targets.

Analyzing the answers given by the participants with qualitative research and the ability to provide these themes with criterion weighting strengthens the results of the study. The literature was examined in depth, and 17 questions were formed. Two academicians, experts in both green hotels and smart technologies, were asked to examine the questions regarding sustainability in tourism. The interview form was finalized based on all recommendations and suggestions. Before the interviews with the hotel managers constituting the study sample, a consent form for participation in the interview was obtained from the hotel managers, and preliminary information about the objectives of the study was provided.

*MCDM method*

The MCDM method is used for scoring or ranking a finite number of alternatives. The theory of decision-making forms the basis for more systematic and rational decision-making, especially in situations in which multiple criteria need to be accounted for. This decision theory does not take much time to be fully recognized with the four terms, consolidated to be known as MCDM (Abdullah, 2013). The MCDM process provides a ranking solution to determine the best quantitative solution from a set of Hussain and Mandal (2016). In this study, the criteria were weighted using the SWARA method, which is an MCDM method.

*SWARA method*

SWARA method was used to determine the relative weights of the criteria using SWARA method steps (Kersuliene *et al.*, 2010) as follows.

Step 1. The criteria are sorted in descending order based on their expected significance. In cases where there is more than one decision maker for the overall ranking, the geometric mean of these processes is considered.

Step 2. Starting from the second criterion, the respondent expressed the relative importance of criterion j in relation to the previous *(j-1)* criterion for each particular criterion.

Step 3. Determine the coefficient *kj:*

$$kj = \begin{cases} 1 & j = 1 \\ sj + 1 & j > 1 \end{cases} \begin{cases} 1 & j = 1 \\ sj + 1 & j > 1 \end{cases} \quad (1)$$

Step 4. Determine the recalculated weight *qj*:

$$wj = \begin{cases} 1 & j = 1 \\ \dfrac{xj-1}{kj} & j > 1 \end{cases} \begin{cases} 1 & j = 1 \\ \dfrac{xj-1}{kj} & j > 1 \end{cases}. \quad (2)$$

Step 5. The relative weights of the evaluation criteria are determined as follows:

$$qj = \frac{xj}{\sum_{k=1}^{n} wk} \frac{xj}{\sum_{k=1}^{n} wk} \quad (3)$$

*Sampling, data collection and instruments*

This study, conducted in Muğla, Turkey, a key tourism hub known for its diverse hotels in size, customer profiles and technology use, strategically focused on this region because of its prominence in tourism, appeal to various tourists, quality accommodations and leadership in green and smart hotel technologies. Emphasizing Muğla's commitment to sustainability and technology, the research involved objective surveys with managers of 5-star hotels and ranking of green and sustainability criteria. The study's setting, including hotels' physical environments, technological infrastructure and routines, was detailed to provide a comprehensive context for Muğla's selection, highlighting its dedication to sustainability and innovation in hospitality.

Purposive sampling was employed to select individuals with valuable insights into the green and smart hotel approach (Patton, 2014). Data were collected through semi-structured interviews involving 10 hotel managers between May and July 2023. Informed consent was obtained from all participants who were briefed about the study's objectives, methods and expected outcomes, with an emphasis on voluntary participation. The interviews, conducted in Turkish and translated into English, were audio-recorded and verbatim transcribed. Data confidentiality was maintained throughout the study. After examining the collected data, it was determined that the saturation point was reached, which is the point at which the answers begin to repeat and new information cannot be obtained. Therefore, the data collection process was terminated, considering that collecting more data would not add any additional value to the research. Face-to-face interviews with hotel managers lasted for an average of 30–60 min. The data obtained from hotel managers were coded into names and codes between P1 and P10 were assigned to the participants. The data obtained were evaluated using descriptive and content analyses, which are frequently used in qualitative research. After the main themes created through the analysis were classified, the coding was performed. Figure 1 shows the main themes and sub-themes of the green and smart hotels.

Through semi-structured interviews, valuable information was obtained regarding the practices and strategies that hotels can adopt to be more environmentally friendly and technological. When the demographic data of the participating managers were examined, the range of the participants was 24–52. According to the data collected from six female and four male participants, it is seen that 6 people have a bachelor's degree, one had a master's degree and three had a high school degree. The average professional experience of the participants in the field of tourism was 11,3 years and their work experience was between 2 and 22 years (see Table 1).

*Validity and reliability*

In the qualitative research, reliability and validity were emphasized. Internal validity is a concept that expresses causal relationships and the validity of the effect of a variable on other variables (Zikmund, 2000). To ensure internal validity, consistency was maintained throughout the data collection, analysis and interpretation. Participants were informed of

| Participants | Age | Gender | Education | Working time in the industry |
|---|---|---|---|---|
| P1 | 32 | Female | Master | 9 |
| P2 | 35 | Female | Bachelor | 7 |
| P3 | 45 | Female | High School | 12 |
| P4 | 52 | Male | High School | 22 |
| P5 | 24 | Female | Bachelor | 2 |
| P6 | 36 | Female | Bachelor | 8 |
| P7 | 41 | Male | Bachelor | 7 |
| P8 | 43 | Female | High School | 10 |
| P9 | 44 | Male | Bachelor | 22 |
| P10 | 42 | Male | Bachelor | 14 |

**Source(s):** Authors' own creation/work

**Table 1.**
Profile of participants

the importance of the study and methodology. Confidentiality was assured and systematic sampling techniques were used to enhance external validity. External validity relates to the generalizability of research findings (Emory and Cooper, 1991; Sekaran, 2000). The results of this study are valid and can be adapted to other settings and conditions. Naturally, the results of social research cannot be generalized to other environments, because they originate from the environment in which they are conducted. However, in quantitative research, this is possible to do so, albeit indirectly (Akan, 2018).

An in-depth literature review was conducted before creating the interview form for this study on green and smart hotels, ensuring internal validity and leading to the development of well-considered questions. These questions were reviewed and refined on the basis of feedback from two academic experts in the field. To ensure both internal and external validity, thorough measures were taken, including a detailed briefing of participants, as recommended by Yıldırım and Şimşek (2018), and using purposive sampling techniques. The collected data were thoroughly analyzed, with a main theme table and a code table created from participants' responses, and content analysis was performed to ensure internal reliability. Expert evaluations and validations were integral to this process, enhancing the overall reliability of the study. The Kappa coefficient (Cohen, 1960), calculated to assess the agreement between evaluators (Landis and Koch, 1977), indicated almost perfect agreement with a value of 0.95 (see Table 2).

$$\kappa = \frac{P - Pe}{1 - Pe} \tag{4}$$

## Results

The hospitality industry's increasing emphasis on sustainability and technology has led hotels to adopt eco-friendly practices. This study aimed to uncover hotel managers' adaptations and

| κ | Value ranges |
|---|---|
| <0.00 | None |
| 0.00–0.20 | Minimal |
| 0.21–0.40 | Weak |
| 0.41–0.60 | Moderate |
| 0.61–0.80 | Strong |
| 0.81–1.00 | Almost perfect |

**Source(s):** Landis and Koch (1977)

**Table 2.**
Value ranges for Kappa value

views on green and smart hotel technologies from a sustainability standpoint, offering practical advice to both managers and policymakers to enhance their environmental and technological performance.

Using descriptive and content analyses, this study identified main themes and subthemes for green and smart hotels (see Figure 2). Green hotel themes included reducing energy and water consumption, minimizing waste and chemical use, and promoting sustainable products, local businesses and environmental education. For smart hotels, the focus is on technology adaptation and upgrades, use of technological tools and keeping abreast of tech and tourism trends. The green hotel concept primarily aims to minimize the environmental impact through reduced consumption and waste, thereby lessening the hotel's environmental footprint.

In this context, it is very important to make hotel management sustainable with a green understanding; reduce the use of water, energy and chemicals; and ensure waste management. Comments from hotel managers who have this understanding:

> . . . There are aerators on the faucets. In addition, drip systems prevent excessive use of water in garden irrigation . . . (P2)

> . . . We have implemented energy-saving lighting and smart room systems to significantly reduce energy consumption, which automatically turn off if no motion is detected for 45 minutes. Our heating, cooling, and lighting systems are fully automated for energy efficiency . . . (P4)

> . . . We use silver copper or ions in our pools to reduce chemical consumption, aligning with our goal to be a greener hotel with fewer chemicals used in pool disinfection . . . (P4)

> . . . We separate all plastics and recycling materials in rooms, public areas, bars, and kitchens, sorting plastic, glass, and solid waste separately in all bars . . . (P6)

Based on the participants' statements, it is evident that hotels are increasingly embracing green initiatives that focus on ecological balance, nature conservation and cost reduction. It is important to make hotel management sustainable with a green understanding, sustainable product options, the support of local entrepreneurs and environmental education programs. Comments from hotel managers who have this understanding:

> . . . We use recycled straw instead of plastic, and our rooms are equipped with vegan soaps and shampoos. Refillable products are also a standard, reflecting our principle of choosing nature-friendly products. Even our cloth bags for beach use are free from digital printing . . . (P1)

> . . . We have minimized long-distance purchases to reduce carbon dioxide emissions. We focused on working with local people and hiring staff from the local community. There's a special emphasis on supporting female employees, prioritizing local women for recruitment . . . (P6)

> . . . In our rooms, we use environmental cards to inform guests about our sustainability practices. We also regularly train our employees on these topics to ensure they are well-informed and aligned with our environmental goals . . . (P7)

The concept of green hotels goes beyond reducing energy and water usage. It also involves the use of sustainable products, the support of local businesses and the implementation of environmental education. Sustainable products reduce natural resource consumption and environmental harm, while sourcing boosts the local economy and reduces carbon emissions and waste. Environmental training for staff and guests further reduces the hotel's ecological footprint, enhances its economic performance and promotes environmental sustainability through sustainable products, local engagement and education.

In addition, the concept of sustainability should be viewed through the lens of smart hotels. Sustainable hotel management should incorporate intelligent practices, including adapting to smart technology training programs, using technological tools and devices, and maintaining technology and trends.


**Source(s):** Author's own creation/work

**Figure 2.**
Sub-themes of green and smart hotels

> . . . Before starting the work, our personnel underwent orientation training. Each department, with top management's approval and allocated budget, follows specific plans for necessary training . . . (P1)

> . . . We have integrated various technological tools and devices in our operations, such as automated check-in kiosks and mobile key access, to streamline guest arrivals. Our guest rooms feature IoT-enabled devices, allowing guests to customize settings via an app . . . (P6)

> . . . For technology and sustainability Ongoing follow-ups and improvements are crucial for technology and sustainability. We organize and participate in training and seminars to stay informed and progress in these areas . . . (P10)

The concept of smart hotels involves using technology to enhance efficiency and the customer experience. This includes adopting sustainable practices, engaging in smart technology training, utilizing technological tools and equipment, and keeping pace with technological and sustainability trends. Smart hotels are likely to become more prevalent in the future.

The criteria determined by the literature research for green and smart hotels in Figure 2 are coded as C1, C2, C3, . . . C10. These codes were used in the SWARA analysis, as shown in Table 3.

In Table 4, the responses of the 10 decision-makers were analyzed by scoring 10 different criteria. Initially, the arithmetic mean of the obtained scores was computed and the geometric mean was calculated. The subsequent calculations of the *kj, wj and qi* values were performed using Equations (1), (2) and (3). The criterion with the highest geometric mean was identified as the most effective, and the calculated values were ranked in the

**Table 3.**
Green and smart hotel criteria

| C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 |
|---|---|---|---|---|---|---|---|---|---|
| Reducing energy consumption | Reducing water consumption | Reducing chemicals | Ensuring waste reduction | Sustainable product options | Supporting local entrepreneurs | Environmental education programs | Adoptions to smart technologies training programs | Using technological tools and devices | Following technology and trends |

**Source(s):** Authors' own creation/work

| | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | Arithmetic mean | Geometric mean | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1 | 0.186 | 0.168 | 0.168 | 0.168 | 0.186 | 0.187 | 0.187 | 0.187 | 0.187 | 0.186 | 0.174 | 0.174 | 1 |
| C2 | 0.177 | 0.160 | 0.160 | 0.160 | 0.177 | 0.178 | 0.178 | 0.178 | 0.178 | 0.177 | 0.166 | 0.165 | 2 |
| C3 | 0.147 | 0.146 | 0.146 | 0.146 | 0.147 | 0.148 | 0.137 | 0.137 | 0.155 | 0.147 | 0.146 | 0.146 | 4 |
| C4 | 0.134 | 0.132 | 0.132 | 0.186 | 0.134 | 0.135 | 0.125 | 0.119 | 0.141 | 0.134 | 0.133 | 0.133 | 5 |
| C5 | 0.116 | 0.186 | 0.186 | 0.169 | 0.116 | 0.117 | 0.100 | 0.108 | 0.104 | 0.187 | 0.162 | 0.159 | 3 |
| C6 | 0.080 | 0.137 | 0.155 | 0.125 | 0.090 | 0.084 | 0.069 | 0.077 | 0.080 | 0.129 | 0.124 | 0.119 | 6 |
| C7 | 0.057 | 0.092 | 0.124 | 0.109 | 0.072 | 0.064 | 0.049 | 0.057 | 0.062 | 0.092 | 0.091 | 0.087 | 7 |
| C8 | 0.042 | 0.065 | 0.092 | 0.072 | 0.053 | 0.048 | 0.041 | 0.046 | 0.049 | 0.068 | 0.067 | 0.063 | 8 |
| C9 | 0.034 | 0.050 | 0.065 | 0.056 | 0.038 | 0.038 | 0.030 | 0.038 | 0.041 | 0.057 | 0.050 | 0.048 | 9 |
| C10 | 0.026 | 0.035 | 0.045 | 0.040 | 0.026 | 0.026 | 0.026 | 0.026 | 0.034 | 0.045 | 0.035 | 0.034 | 10 |

**Source(s):** Authors' own creation/work

**Table 4.**
Weighting of criteria with SWARA method

descending order. The SWARA analysis results presented in Table 4 highlight the preeminence of the first criterion, C1 "reducing energy consumption," which has a higher weight (0.17) compared to the other criteria. This is followed by ranking by the C2 criterion "reducing water consumption" (0.165) and the C5 criterion "sustainable product options" (0.159).

## Discussion and conclusion

Sustainability is essential for maintaining a competitive advantage through economic, environmental and social responsibilities. In the hospitality industry, the emphasis on sustainability and technology has led to the adoption of environmentally friendly practices. This study aimed to reveal the criteria for green and smart hotels from a sustainability perspective. These concepts and their contributions to sustainability were evaluated using data collected through semi-structured interviews and analyzed using the SWARA method.

Hotel managers focus on green initiatives, such as minimizing energy and water consumption, chemical use, waste management, offering sustainable products, supporting local businesses and providing environmental education. Smart hotels focus on adapting to smart technology, adopting sustainable practices, upgrading technology, using technological tools and following industry trends to increase efficiency and gain a competitive advantage.

The integration of green and smart practices is crucial for success, requiring a deep understanding of consumer behavior and the rapid adoption of innovations. By emphasizing environmentally friendly practices and social responsibility, managers aim to support local products and the workforce and transform tourist areas into production areas. This approach not only increases guest satisfaction, but also contributes to the national economy.

The findings are in line with previous studies, Lee *et al.* (2016), Yusof *et al.* (2017), Auliandri and Angraeny (2017), Ilına *et al.* (2019), Rahman *et al.* (2020), İşler and Oğuz (2020), Han and Hyun (2018), Singh *et al.* (2014), that emphasize sustainable practices in the hospitality industry, especially in the post-COVID-19 era where health and wellbeing are increasingly prioritized. Camillo *et al.* (2015), highlighted the need for hotels to incorporate healthy offerings into their services.

### *Theoretical implications*

This study explores how hotel managers implement sustainability and enriches theories of sustainable tourism and environmental management. It delves into the acceptance of technology and the environmental impacts of smart technology in hotels, focusing on practices, such as consumption reduction, waste minimization and sustainable product use. The integration of training with technology adoption in smart hotel practices makes a notable contribution to academic discussions in this field, highlighting the synergy between green and smart concepts in hotel management and its innovative role in sustainable tourism research.

Research emphasizes green management and eco-centered practices in hotels and investigates strategies to minimize environmental impacts during service production (Cramer, 1998). It examines sustainable development, eco-centered management, low energy use, harmony with nature, pollution and waste reduction and safe employee conditions (Önel, 2021), including practices to minimize the use of renewable resources and reduce environmental pollution (Çilingir and Erkılıç, 2021).

This study provides valuable insights into green and smart hotel practices, demonstrating their contribution to national economies, and enhancing guest satisfaction and loyalty. Consistent with previous research, this reaffirms the role of hotels in promoting green consumption (Wang *et al.*, 2020), conserving resources and implementing efficient waste

management strategies (Eldemerdash and Mohamed, 2013; Yusof and Jamaludin, 2013; Wyngaard and de Lange, 2013; Singh *et al.*, 2014; Han and Hyun, 2018; Rahman and Reynolds, 2019; Abdou *et al.*, 2020; Nisar *et al.*, 2021). The importance of environmental certification and ecological labels has also been highlighted (Martínez García de Leaniz *et al.*, 2018; Moise *et al.*, 2020; Nelson *et al.*, 2021; Qu *et al.*, 2022).

This study also focuses on the increasing integration of smart technological tools (Trinchini *et al.*, 2019), including cloud computing and IoT (Sánchez, 2016), which significantly enhances hotel operations. By examining hotel managers' practices in green and smart hotels and identifying key criteria, this research offers valuable insights for future research and practical applications in hotel management.

Ultimately, this demonstrates that smart hotels, by enhancing business performance and customer experience, also contribute to energy efficiency and environmental sustainability. This approach not only improves service quality, but also reduces operational costs, leading to greater staff satisfaction and enriching guest experiences, thus adding substantial economic value. The findings underscore the importance of integrating green and smart practices in hotels and create a sustainable and technologically advanced hospitality sector.

*Practical implications*

This study provides practical insights for hotel managers to enhance their environmental and technological performance by implementing green and smart hotel practices. These practices can enhance marketing strategies and emphasize energy-saving benefits to improve customer satisfaction. These findings support the development of sustainability education programs, raising awareness and providing a competitive edge (Buhalis *et al.*, 2019; Buhalis and Wagner, 2013; Wang *et al.*, 2018). Such awareness is vital for minimizing the environmental impacts and shaping industry-specific policies and regulations.

This study underscores the impact of technology on enhancing hotel service quality and personalizing experiences, thereby boosting customer loyalty and repeat business (Neuhofer *et al.*, 2015). Sustainable and technology-driven practices not only make hotels more appealing and competitive but also align with the growing consumer preference for eco-friendly and technologically advanced accommodations. The commitment of hotels to green and technology-focused practices significantly shapes consumer preferences, spurring investment in eco-friendly technologies and bolstering both market competitiveness and social responsibility. This strategic approach goes beyond mere procedures and represents a deeper commitment to sustainable business operations and building brand equity among environmentally conscious consumers.

A unique aspect of this study is the application of SWARA analysis to assess hotel managers' decisions regarding sustainability practices, which involves scoring these practices based on the literature and calculating their subjective weights. This method is particularly useful for high-level decision-making processes and identifying the most effective sustainability criteria. The study also emphasizes the importance of educating hotel employees on green and smart practices, raising their awareness of sustainability and underlining the critical role of staff in the effective implementation of these practices.

Effective communication between hotel guests and management is crucial for guest satisfaction, competitive advantages and economic growth. Prioritizing the guest experience supports personalized product development and the growth of the digital tourism market. Keeping pace with innovation and integrating smart rooms, sensors and advanced design products is essential to maintain competitive advantage and requires significant investments. Developments in Industry 5.0 require a deep understanding of guest expectations and the integration of smart technologies and artificial intelligence to create

customized guest rooms and digital recommendation systems. These practices, aligned with Industry 5.0 principles, improve marketing, guest satisfaction and sustainable operations.

*Limitations and future research*

This study offers insights into green and smart hotel management, but it is limited by its small sample size and focuses only on hotel managers' perspectives in Muğla, primarily from large chain hotels. Agag and Çolmekcioğlu (2020) suggest that promoting sustainable attitudes in green hotels could enhance environmental awareness and increase their prevalence, thus reducing resource consumption. Future research could benefit from incorporating guest opinions and evaluations to better understand their impacts on guest satisfaction and hotel choices, thereby broadening the findings of this study and enriching the field.

## References


Abdou, A.H., Hassan, T.H. and El Dief, M.M. (2020), "A description of green hotel practices and their role in achieving sustainable development", *Sustainability*, Vol. 12 No. 22, p. 9624, doi: 10.3390/su12229624.

Abdullah, L. (2013), "Fuzzy multi criteria decision making and its applications: a brief review of category", *Procedia-Social and Behavioral Sciences*, Vol. 97, pp. 131-136, doi: 10.1016/j.sbspro.2013.10.213.

Agag, G. and Colmekcioglu, N. (2020), "Understanding guests' behavior to visit green hotels: the role of ethical ideology and religiosity", *International Journal of Hospitality Management*, Vol. 91, 102679, doi: 10.1016/j.ijhm.2020.102679.

Akan, H. (2018), "Deneysel Çalışmalarda Yanlılık Kaynakları, Sorunları ve Önlemler: Iç Geçerlilik", in Akın, B. and Tanyer, D. (Eds), *Kanıt Düzeyindeki Hemşirelik Araştırmalarında Kalite:Yöntem Ve Raporlama*, Ankara, Türkiye Klinikleri, pp. 8-10.

Atay, L., Yalçınkaya, P. and Bahar, F. (2019), "İstanbul'daki akıllı otel uygulamalarının değerlendirilmesi", *MANAS Sosyal Araştırmalar Dergisi*, Vol. 8 No. 1, pp. 667-678, doi: 10.33206/mjss.479120.

Auliandri, T.A. and Angraeny, R. (2017), "The implementation of green hotel management standard in Majapahit Hotel Indonesia", *International Journal of Organizational Innovation*, Vol. 9 No. 3, pp. 45-62.

Babaei, Y. and Fani, M. (2022), "The effect of green human resource management on environmental citizenship behavior and environmentally-friendly behaviors of hotel staff", *Tourism Management*, Vol. 16 No. 56, pp. 211-249.

Baran, T. and Popescu, C. (2016), "Generation Z attitudes toward green marketing: a cross country and gender analysis", Annals of the Constantin Brâncuşi University, pp. 6-9.

Buhalis, D. and Wagner, R. (2013), "E-destinations: global best practice in tourism technologies and applications", in Cantoni, L. and Xiang, Z. (Eds), *Information and Communication Technologies in Tourism*, Springer, Berlin, Heidelberg, pp. 119-130.

Buhalis, D., Harwood, T., Bogicevic, V., Viglia, G., Beldona, S. and Hofacker, C. (2019), "Technological disruptions in services: lessons from tourism and hospitality", *Journal of Service Management*, Vol. 30 No. 4, pp. 484-506, doi: 10.1108/josm-12-2018-0398.

Camillo, A., Presenza, A. and Di Virgilio, F. (2015), "An analysis of the characteristics and dynamic development of an emergent sustainable hotel business model in Italy: 'Albergo Diffuso (Diffused Hotel)'", in *Handbook of Research on Global Hospitality and Tourism Management*, IGI Global.

Çetin, H. and Akgün, A. (2015), "Yeşil bilişim teknolojileri bağlamında sanallaştırılmış ve Klasik sistemlerin karşılaştırılması", *Journal of Alanya Faculty of Business/Alanya İşletme Fakültesi Dergisi*, Vol. 7 No. 2, pp. 131-142.

Chan, C.S., Peters, M. and Pikkemaat, B. (2019), "Investigating visitors' perception of smart city dimensions for city branding in Hong Kong", *International Journal of Tourism Cities*, Vol. 5 No. 4, pp. 620-638, doi: 10.1108/ijtc-07-2019-0101.

Chen, E.G. Kuo, W.G. and Hsiao, M.L. (2004), "Green of marketing and research the green expense behavior relations the environmental protection textile: for example Taipei city", *Journal of the Hwa Gang Textile*, Vol. 11 No. 2, pp. 117-131.

Chung, K.C. (2020), "Green marketing orientation: achieving sustainable development in green hotel management", *Journal of Hospitality Marketing and Management*, Vol. 29 No. 6, pp. 722-738, doi: 10.1080/19368623.2020.1693471.

Çilingir, F. and Erkılıç, E. (2021), "Yeşil yıldızlı otel işletmelerinin yeşil yönetim ve uygulamaları üzerine bir inceleme: Muğla örneği", *Journal of Tourism Intelligence and Smartness*, Vol. 4 No. 2, pp. 218-238.

Cohen, J. (1960), "A coefficient of agreement for nominal scales", *Educational and Psychological Measurement*, Vol. 20 No. 1, pp. 37-46, doi: 10.1177/001316446002000104.

Cramer, J. (1998), "Environmental management: from fit to 'stretch'", *Business Strategy and the Environment*, Vol. 7 No. 3, pp. 162-172, doi: 10.1002/(sici)1099-0836(199807)7:33.0.co;2-q.

Creswell, J.W. (2009), *Research Design: Qualitative, Quantitative and Mixed Method Approaches*, 3rd ed., Los Angeles: SAGE Publications, London.

Damar, M. and Gökşen, Y. (2018), "Yeşil bilişim yaklaşımıyla kullanıcı ve kurum odaklı Enerji yönetim sistemi", *Dokuz Eylül Üniversitesi Mühendislik Fakültesi Fen ve Mühendislik Dergisi*, Vol. 20 No. 58, pp. 259-274, doi: 10.21205/deufmd.2018205821.

Denzin, N.K. and Lincoln, Y.S. (Eds.) (2011), *The SAGE Handbook of Qualitative Research*, 5th ed., SAGE Publications, Thousand Oaks, CA.

Dodds, R. and Holmes, M. (2016), "Is there a benefit from being green. Assessing benefits from marketing sustainability by North American hotels", *Journal of Hotel and Business Management*, Vol. 5 No. 145, pp. 2169-0286, doi: 10.4172/2169-0286.1000145.

Eldemerdash, J.M. and Mohamed, L.M. (2013), "Exploring obstacles of employing environmental practices: the case of Egyptian green hotels", *Journal of Human Resources in Hospitality and Tourism*, Vol. 12 No. 3, pp. 243-258, doi: 10.1080/15332845.2013.769140.

Emory, C.W. and Cooper, D.R. (1991), *Business Research Methods*, 4th ed., Irwin, Homewood, IL.

Gonzalez, M.S. and Gidumal, B.J. (2016), "A model that connects information technology and hotel performance", *Tourism Management*, Vol. 53, pp. 30-37, doi: 10.1016/j.tourman.2015.09.005.

Güney Marmara Kalkınma Ajansı (2016), "Balıkesir turizm Yatırım Rehberi", available at: https://www.gmka.gov.tr/dokumanlar/yayinlar/Balikesir-Turizm-Yatirim-Rehberi.pdf (accessed 8 August 2023).

Guo, Q. (2022), "Research on the challenges and countermeasures of Smart hotel management based on big data technology", *2022 8th Annual International Conference on Network and Information Systems for Computers (ICNISC)*, IEEE, pp. 385-387.

Guo, Y., Liu, H. and Chai, Y. (2014), "The embedding convergence of smart cities and tourism internet of things in China: an advance perspective", *Advances in Hospitality and Tourism Research (AHTR)*, Vol. 2 No. 1, pp. 54-69.

Han, H. and Hyun, S.S. (2018), "Role of motivations for luxury cruise traveling, satisfaction, and involvement in building traveller loyalty", *International Journal of Hospitality Management*, Vol. 70, pp. 75-84, doi: 10.1016/j.ijhm.2017.10.024.

Han, H. and Kim, Y. (2010), "An investigation of green hotel customers' decision formation: developing an extended model of the theory of planned behavior", *International Journal of Hospitality Management*, Vol. 29 No. 4, pp. 659-668, doi: 10.1016/j.ijhm.2010.01.001.

Han, H., Hsu, L.T.J. and Lee, J.S. (2009), "Empirical investigation of the roles of attitudes toward green behaviors, overall image, gender, and age in hotel customers' eco-friendly decision-making

process", *International Journal of Hospitality Management*, Vol. 28 No. 4, pp. 519-528, doi: 10.1016/j.ijhm.2009.02.004.

Han, H., Lee, J.S., Trang, H.L.T. and Kim, W. (2018), "Water conservation and waste reduction management for increasing guest loyalty and green hotel practices", *International Journal of Hospitality Management*, Vol. 75, pp. 58-66, doi: 10.1016/j.ijhm.2018.03.012.

Haradhan, M. (2018), "Qualitative research methodology in social sciences and related subjects", *Journal of Economic Development, Environment and People*, Vol. 7 No. 1, pp. 23-48, doi: 10.26458/jedep.v7i1.571.

Hsiao, T.Y. and Chuang, C. (2016), "Creating shared value through implementing green practices for star hotels", *Asia Pacific Journal of Tourism Research*, Vol. 21 No. 6, pp. 678-696, doi: 10.1080/10941665.2015.1068194.

Hussain, S.A.I. and Mandal, U.K. (2016), "Entropy based MCDM approach for selection of material", *National Level Conference on Engineering Problems and Application of Mathematics*, pp. 1-6.

Ilina, E.L., Miloradov, K.A. and Kovaltchuk, A.P. (2019), "Green hotel: concepts and implementation", *Journal of Environmental Management and Tourism*, Vol. 10 No. 2, pp. 300-306.

İşler, D. and Oğuz, R. (2020), "Tüketicilerin çevre dostu tutumlarının yeşil otel tercihleri üzerindeki etkisi: antalya ilinde bir uygulama", *Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, Vol. 32, pp. 156-178, doi: 10.20875/makusobed.625190.

Karamustafa, K. and Yılmaz, M. (2019), "Konaklama işletmeleri yöneticilerinin akıllı turizm teknolojilerinin olası faydalarına yönelik algılarının değerlendirilmesi", *Journal of Tourism and Gastronomy Studies*, Vol. 7 No. 3, pp. 1669-1688, doi: 10.21325/jotags.2019.442.

Kersuliene, V., Zavadskas, E.K. and Turskis, Z. (2010), "Selection of rational dispute resolution method by applying new step-wise weight assessment ratio analysis (SWARA)", *Journal of Business Economics and Management*, Vol. 11 No. 2, pp. 243-258, doi: 10.3846/jbem.2010.12.

Kim, J.J. and Han, H. (2020), "Hotel of the future: exploring the attributes of a smart hotel adopting a mixed-methods approach", *Journal of Travel and Tourism Marketing*, Vol. 37 No. 7, pp. 804-822, doi: 10.1080/10548408.2020.1835788.

Kim, Y.J., Kim, W.G., Choi, H.M. and Phetvaroon, K. (2019), "The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance", *International Journal of Hospitality Management*, Vol. 76, pp. 83-93, doi: 10.1016/j.ijhm.2018.04.007.

Landis, J.R. and Koch, G.G. (1977), "The measurement of observer agreement for categorical data", *Biometrics*, Vol. 33 No. 1, pp. 159-174, doi: 10.2307/2529310.

Lee, H., Jai, T.M. and Li, X. (2016), "Guests' perceptions of green hotel practices and management responses on TripAdvisor", *Journal of Hospitality and Tourism Technology*, Vol. 7 No. 2, pp. 182-199, doi: 10.1108/jhtt-10-2015-0038.

Li, M., Qiu, S.C. and Liu, Z. (2016), "The Chinese way of response to hospitality service failure: the effects of face and guanxi", *International Journal of Hospitality Management*, Vol. 57, pp. 18-29, doi: 10.1016/j.ijhm.2016.05.002.

Liu, C.R., Wu, T.C., Yeh, P.H. and Chen, S.P. (2015), "Equity-based customer loyalty mode for the upscale hotels—Alternative models for leisure and business travels", *Tourism Management Perspectives*, Vol. 16, pp. 139-147, doi: 10.1016/j.tmp.2015.07.017.

Loeb, S., Dynarski, S., McFarland, D., Morris, P., Reardon, S. and Reber, S. (2017), *Descriptive Analysis in Education: A Guide for Researchers*, (NCEE 2017-4023), U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Washington, DC.

Manaktola, K. and Jauhari, V. (2007), "Exploring consumer attitude and behaviour towards green practices in the lodging industry in India", *International Journal of Contemporary Hospitality Management*, Vol. 19 No. 5, pp. 364-377, doi: 10.1108/09596110710757534.

Martínez García de Leaniz, P., Herrero Crespo, Á. and Gómez López, R. (2018), "Customer responses to environmentally certified hotels: the moderating effect of environmental consciousness on the formation of behavioral intentions", *Journal of Sustainable Tourism*, Vol. 26 No. 7, pp. 1160-1177, doi: 10.1080/09669582.2017.1349775.

Merriam, S.B. (2015), *Nitel Araştırma Desen Ve Uygulama Için Bir Rehber*, çev. Selahattin Turan, Nobel Yayınları, Ankara.

Millar, M. and Baloglu, S. (2011), "Hotel guests; preferences for green guest room attributes", *Cornell Hospitality Quarterly*, Vol. 52 No. 3, pp. 302-311, doi: 10.1177/1938965511409031.

Moise, M.S., Gil-Saura, I. and Ruiz-Molina, M.E. (2020), "Implications of value co-creation in green hotels: the moderating effect of trip purpose and generational cohort", *Sustainability*, Vol. 12 No. 23, pp. 1-20, doi: 10.3390/su12239866.

Nelson, K.M., Partelow, S., Stäbler, M., Graci, S. and Fujitani, M. (2021), "Tourist willingness to pay for local green hotel certification", *Plos One*, Vol. 16 No. 2, e0245953, doi: 10.1371/journal.pone.0245953.

Neuhofer, B., Buhalis, D. and Ladkin, A. (2015), "Smart technologies for personalized experiences: a case study in the hospitality domain", *Electronic Markets*, Vol. 25 No. 3, pp. 243-254, doi: 10.1007/s12525-015-0182-1.

Nilashi, M., Mardani, A., Liao, H., Ahmadi, H., Manaf, A.A. and Almukadi, W. (2019), "A hybrid method with TOPSIS and machine learning techniques for sustainable development of green hotels considering online reviews", *Sustainability*, Vol. 11 No. 21, p. 6013, doi: 10.3390/su11216013.

Nisar, Q.A., Haider, S., Ali, F., Jamshed, S., Ryu, K. and Gill, S.S. (2021), "Green human resource management practices and environmental performance in Malaysian green hotels: the role of green intellectual capital and pro-environmental behavior", *Journal of Cleaner Production*, Vol. 311, 127504, doi: 10.1016/j.jclepro.2021.127504.

Önel, B. (2021), "İşletmelerin yeşil yönetim algıları ve sürdürülebilirlik bilinci", *Uluslararası Afro-Avrasya Araştırmaları Dergisi*, Vol. 6 No. 11, pp. 21-33.

Özdemir, M. (2010), "Nitel veri analizi: sosyal bilimlerde yöntembilim sorunsalı üzerine bir çalışma", *Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi*, Vol. 11 No. 1, pp. 323-343.

Patton, M.Q. (2014), *Nitel Araştırma Ve Değerlendirme Yöntemleri*, M. Bütün and S. B. Demir (Çev. Edt.), Pegem Akademi, Ankara.

Qu, X., Khan, A., Yahya, S., Zafar, A.U. and Shahzad, M. (2022), "Green core competencies to prompt green absorptive capacity and bolster green innovation: the moderating role of organization's green culture", *Journal of Environmental Planning and Management*, Vol. 65 No. 3, pp. 536-561, doi: 10.1080/09640568.2021.1891029.

Radwan, H.R., Jones, E. and Minoli, D. (2012), "Solid waste management in small hotels: a comparison of green and non-green small hotels in Wales", *Journal of Sustainable Tourism*, Vol. 20 No. 4, pp. 533-550, doi: 10.1080/09669582.2011.621539.

Rahman, I., Chen, H. and Reynolds, D. (2020), "Evidence of green signaling in green hotels", *International Journal of Hospitality Management*, Vol. 85, 102444.

Rahman, I. and Reynolds, D. (2019), "The influence of values and attitudes on green consumer behaviour: a conceptual model of green hotel patronage", *International Journal of Hospitality and Tourism Administration*, Vol. 20 No. 1, pp. 47-74, doi: 10.1080/15256480.2017.1359729.

Sánchez, A.V. (2016), "Exploring the concept of smart tourist destination", *Enlightening Tourism: A Pathmaking Journal*, Vol. 6 No. 2, pp. 178-196.

Sekaran, U. (2000), *Research Methods for Business*, 3rd ed., John Wiley & Sons, New York: New York.

Shafiee, S., Jahanyan, S., Ghatari, A.R. and Hasanzadeh, A. (2023), "Developing sustainable tourism destinations through smart technologies: a system dynamics approach", *Journal of Simulation*, Vol. 17 No. 4, pp. 1-22, doi: 10.1080/17477778.2022.2030656.

Singh, N., Cranage, D. and Lee, S. (2014), "Green strategies for hotels: estimation of recycling benefits", *International Journal of Hospitality Management*, Vol. 43, pp. 13-22, doi: 10.1016/j.ijhm.2014.07.006.

Subbiah, K. and Kannan, S. (2011), "The eco-friendly management of hotel industry", *International Conference on Green technology and environmental Conservation (GTEC-2011)*, IEEE, pp. 285-290.

T.C. Kültür ve Turizm Bakanlığı, Yatırım ve İşletmeler Genel Müdürlüğü (2023), available at: https://yigm.ktb.gov.tr/TR-201137/belediye-belgeli-tesis-istatistikleri.html 2020 (accessed 8 August 2023).

Topsakal, Y. (2018), "Akıllı turizm kapsamında engelli dostu mobil hizmetler: Türkiye 4.0 için öneriler", *Journal of Tourism Intelligence and Smartness*, Vol. 1 No. 1, pp. 1-13.

Trinchini, L., Kolodii, N.A., Goncharova, N.A. and Baggio, R. (2019), "Creativity, innovation and smartness in destination branding", *International Journal of Tourism Cities*, Vol. 5 No. 4, pp. 529-543, doi: 10.1108/ijtc-08-2019-0116.

Tsai, C.W. and Tsai, C.P. (2008), "Impacts of consumer environmental ethics on consumer behaviors in green hotels", *Journal of Hospitality and Leisure Marketing*, Vol. 17 Nos 3-4, pp. 284-313, doi: 10.1080/10507050801984974.

Türkiye İstatistik Kurumu Turizm Verileri (2023), available at: https://data.tuik.gov.tr/Kategori/GetKategori?p=egitim-kultur-spor-ve-turizm-105anddil=1 (accessed 8 August 2023).

Verma, V.K., Chandra, B. and Kumar, S. (2019), "Values and ascribed responsibility to predict consumers' attitude and concern towards green hotel visit intention", *Journal of Business Research*, Vol. 96, pp. 206-216, doi: 10.1016/j.jbusres.2018.11.021.

Wang, Y., Han, M.S., Xiang, D. and Hampson, D.P. (2018), "The double-edged effects of perceived knowledge hiding: empirical evidence from the sales context", *Journal of Knowledge Management*, Vol. 23 No. 2, pp. 279-296, doi: 10.1108/jkm-04-2018-0245.

Wang, L., Wong, P.P. and Narayanan, E.A. (2020), "The demographic impact of consumer green purchase intention toward green hotel selection in China", *Tourism and Hospitality Research*, Vol. 20 No. 2, pp. 210-222, doi: 10.1177/1467358419848129.

Wyngaard, A.T. and De Lange, R. (2013), "The effectiveness of implementing eco initiatives to recycle water and food waste in selected Cape Town hotels", *International Journal of Hospitality Management*, Vol. 34, pp. 309-316, doi: 10.1016/j.ijhm.2013.04.007.

Yıldırım, A. and Şimşek, H. (2018), *Sosyal Bilimlerde Nitel Araştırma Yöntemleri*, Seçkin Yayıncılık, Ankara.

Yong, J.Y., Yusliza, M.Y., Ramayah, T. and Fawehinmi, O. (2019), "Nexus between green intellectual capital and green human resource management", *Journal of Cleaner Production*, Vol. 215, pp. 364-374, doi: 10.1016/j.jclepro.2018.12.306.

Yusof, Z.B. and Jamaludin, M. (2013), "Green approaches of Malaysian green hotels and resorts", *Procedia-Social and Behavioral Sciences*, Vol. 85, pp. 421-431, doi: 10.1016/j.sbspro.2013.08.371.

Yusof, Y., Awang, Z., Jusoff, K. and Ibrahim, Y. (2017), "The influence of green practices by nongreen hotels on customer satisfaction and loyalty in hotel and tourism industry", *International Journal of Green Economics*, Vol. 11 No. 1, pp. 1-14, doi: 10.1504/ijge.2017.10003675.

Zhang, L. and Yang, J. (2016), "Smart tourism", in Jafari, J. and Xiao, H. (Eds), *Encyclopedia of Tourism*, Springer.

Zikmund, W.G. (2000), *Business Research Methods*, 6th ed., The Dryden Press, Chicago, IL.

Zolfani, S.H., Pourhossein, M., Yazdani, M. and Zavadskas, E.K. (2018), "Evaluating construction projects of hotels based on environmental sustainability with MCDM framework", *Alexandria Engineering Journal*, Vol. 57 No. 1, pp. 357-365, doi: 10.1016/j.aej.2016.11.002.

**Appendix:**
**Questions asked to participants in the study**

*Q1.* How is the hotel currently implementing sustainable practices? Can you describe the sustainable practices or initiatives that the hotel is currently implementing?

*Q2.* How does the hotel manage its energy use? What measures have been taken to reduce energy consumption in the hotel?

*Q3.* How does the hotel manage its water use? What measures have been taken to reduce water consumption in the hotel?

*Q4.* How does your hotel manage waste? What measures have been taken at the hotel to reduce waste and encourage recycling?

*Q5.* How does the hotel provide food and beverage offerings? Does the hotel prioritize local, organic or sustainable food and beverage options?

*Q6.* Does the hotel have any programs or initiatives to educate guests on sustainable practices?

*Q7.* Are there any difficulties or obstacles that the hotel faces in implementing sustainable practices? If so, how were these challenges addressed?

*Q8.* What do you think is the most important criterion for being green and sustainable?

*Q9.* What does the term "smart hotel" mean for your hotel and how does your hotel apply smart technology in its sustainability practices?

*Q10.* How does being a smart hotel contribute to your hotel's sustainability goals and objectives?

*Q11.* In what ways has being a smart hotel helped you reduce your hotel's environmental impact?

*Q12.* How does your hotel ensure that the use of smart technology does not compromise guests' comfort or safety?

*Q13.* What kind of training and development opportunities are offered to employees so that they can effectively use smart technology for sustainability?

*Q14.* How do you plan to upgrade your hotel's existing smart technology to keep it efficient and effective?

*Q15.* How does your hotel measure the success of smart technology in meeting its sustainability goals?

*Q16.* Have you noticed any changes in guest behavior or expectations since you started implementing smart technology? If so, how did you react to these changes? What advice would you give to other hotels that want to implement smart technology for sustainability purposes?

*Q17.* How does your hotel plan to stay one step ahead in terms of technology and sustainability trends?

**Corresponding author**
Gökhan Akel can be contacted at: gokhan.akel@belek.edu.tr