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Article

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Abstract: The spotlight on "smart and green" has never been so bright and, within the hotel sector, emphasis on opportunities such as sustainability and digitisation are quickly shaping the agenda. This paper explores key components of the "smart and green" agenda among Irish hotels in the Republic of Ireland and how these concepts relate to their public customer image. While the multifaceted hybrid model of "smart and green" hotels is rapidly emerging as the new theme in the sustainable tourism industry, previous literature failed to address the issue in relation to a lack of uptake from Irish hoteliers. A post-positivistic paradigm was adopted for this study. Primary data indicates that most hoteliers were positively receptive towards "smart" and "green" despite many challenges. This research will interest policy makers, central government, tourism organisations and hotel practitioners.

Keywords: smart hotels; green hotels; sustainable tourism; smart hospitality; artificial intelligence; virtual reality

1. Introduction

The genesis of this paper arose while examining the concepts of "green" and "smart" initiatives in the tourism and hospitality sector in Ireland. Pertinent concepts in their own right, the literature is scant when trying to draw the threads together in a meaningful way. The purpose of this paper is to examine both concepts in the context of current issues as they relate to "smart and green", how they are communicated through social media, and how they can be enhanced through virtual reality. Although this paper is Irish facing, the contributors consist of hotel chains operating in the international arena with the same ethos and culture. Tourism represents one of the most important service sectors in the Irish economy [1]. In 2018, more than €9.4 billion was generated from tourism-related economic activities [2,3]. An integral part of all tourism and hospitality sectors and their economics, hotels and their portrayed image to tourists can often be the stimulus for travel and visiting a region, area or country.

Hotels, however, are also one of the highest energy consumers in their operations [4]. While the growth of the hotel sector has been phenomenal over the years, hotels are also facing pressure to improve their environmental performance by adopting eco-friendly activities that are not harmful to the environment [5]. Fortunately, consumers have steadily been made aware of the seriousness of environmental degradation and are more likely to behave positively towards hotels that have ecologically friendly practices [6,7]. Visitor behaviour is changing, and images of good sustainability practices are actively sought when looking at destination "stay" choices. For example, the United Nations' Publication Transforming our world: the 2030 Agenda for Sustainable Development outlines its determination to promote sustainable tourism, which will be policy led to promote sustainable tourism by creating jobs and promoting local culture and products by 2030 [8]. Linking sustainability and digitalisation, the European Commission has outlined that the sustainability transition can benefit from digitalisation and that the sustainability transition can, in turn, drive digital innovation, thereby facilitating new opportunities for innovation and competitiveness [9].

The overarching aim of this research is to explore the "smart and green" hotels concept for the future of the hospitality industry in Ireland, in line with expeditious technological advancement, while addressing the increasing environmental concerns associated with tourism. It is intended that the research findings will make valuable contributions to knowledge for Irish hoteliers, policy makers and governmental organisations, with respect to the economic and social viability of the proposed concept. This work will extensively analyse existing literature in relation to green and sustainability, smart hospitality, artificial intelligence, green credentials, social media marketing and international chains applicable to the hotel sector. Specific objectives include reviewing in detail the concepts of green and sustainability; smart hospitality with an emphasis on artificial intelligence in the hospitality setting; the impact of green credentials; social media; and international hotel chains. This study draws from experts to gather relevant and meaningful views on the "smart and green" hotels concept in Ireland with a view to making recommendations for future better practice. As hotels adopt green practices, it is correspondingly important to include smart concepts to future-proof the Irish hospitality industry and stay at the forefront of technological innovations. For example, artificial intelligence (AI) technology has penetrated many fields in recent years, including the hospitality and hotel industries [10]. Using AI in the sector can improve data mining, advanced algorithms, AI automation and the Internet of Things (IoT), which hospitality businesses can now strategically employ to manage daily challenges in a smart and sustainable way. Besides this, hotels have also started using AI to modernise processes and accelerate simple tasks such as check-in and check-out, concierge enquiries and room service to improve the visitor experience and reduce costs. Kabadayi et al. [11] indicated that advanced smart technologies have enhanced guests' hotel stay experience. Inevitably, smart operating environments transform industry structures, processes and practices by introducing disruptive impressions for service innovation, strategy, management, marketing and competitiveness in the hotel sector [12]. Within the space of AI, the popularity surge of virtual reality (VR) application in the tourism industry is difficult to ignore. The relevance of VR to the hotel sector is particularly apparent as virtual tourism or as a marketing tool [13,14] and to portray a better image for potential tourist stays in a smart way. VR also reduces the need to travel and visit in advance when organising events, as facilities can now be seen virtually, helping to reduce the carbon footprint.

When it comes to the communication of such processes, social media has a key role to play. Since the advent of social media, tourism and hospitality have been the ground-breaking industries for the utilisation of online reviews as a method to gather customers' feedback [15]. Travel knowledge sharing has important implications for advertisers as it may affect travellers' destination-decision behaviour and trip-planning processes, as well as the ultimate financial outcome of tourism destinations and corporations [16]. Consequently, some hotel marketers have become more proactive in engaging with customers via social media, rather than passively responding to questions from customers [17]. Social media is a useful tool to engage with consumers to improve image and messaging, thus, generating demand and promoting "call to action" [17].

In essence, integration between multidimensional approaches of "smart and green" as an emerging concept from numerous industries, including hospitality, plays a vital role [18]. As such, a gap exists in relation to the hybrid model where both "smart" and "green" concepts are amalgamated in the hotel sector in Ireland as a combined image. This study will serve as a foundation to developing an evidence-based set of recommendations in relation to "smart and green" hotels and their image. Achieving a balanced view between "smart" and "green" concepts is an immense challenge for many hotels. To provide a structure to the multifaceted topic, this research is framed around two significant areas, "smart and green" concepts and how these may encourage visitor behaviours towards such hotels. This study also intends to discover the degree of impetus in which social media plays towards the central theme of this research, the hybrid model of "smart and green" hotels. Drawing on the central theme of the research, the researchers seek to evaluate the

synergies between these key areas and their relevance to the Irish hospitality industry and their image for tourist behaviour.

2. Literature Review

2.1. Green Hotels

Green hotels refer to "hotels that tend to be more eco-friendly oriented through more efficient use of energy, raw materials and water while satisfying customers and providing quality services" [7]. As such, green hotels are "a natural tourist lodging developed and managed in environmentally sensitive ways to maintain its business environment and provide guests with green products, green services, and healthy, refreshing, and comfortable accommodation that reflect the features of natural ecologies" [19]. It follows that green hotels typically benefit from reduced costs and liabilities, high return and low-risk investments, increased profits and reduced waste while saving money [20–22]. While more than 92% of users have positive feelings towards the businesses that follow environmental protection practices, gaining a complete understanding of what potential customers desire in green consumption is still a serious challenge for hotel marketers [19].

While the "green hotels" definition is common in the literature and widely accepted [23], there has been no universally defined rules, regulations or standards to classify a green hotel. Subbiah and Kannan [21] found that conservation of energy could be achieved significantly, for example, by installing energy-efficient equipment in all departments of the hotels and changing hotel operations and maintenance practices. As a result, there are a growing number of hotels investing substantial resources in environmentally-friendly practices such as reducing waste, minimising energy consumption, generating renewable energy, low-flow faucets and shower heads, choosing green suppliers, and adopting recycling practices [24]. There is no doubt that concepts such as green and sustainable practices are gaining traction in the modern world and informed-consumers no longer accept just linen and towel reuse programs as being green enough in hotels [25]. Increased consumer demand and behavioural change for sustainable goods and services are creating new challenges and opportunities for organisations in all aspects of business [26]. The United Nations' [8] and the European Commission's [9] policies underpin this issue, suggesting that green or eco-friendly products/services have gained great relevance in response to increased consumer sensitivity to concerns for a continuously deteriorating environment [27]. Interestingly, Millar, Mayer [28] opine that although many green hotels have formulated environmentally friendly practices, they have not been strictly followed, therefore, in reality, the "green hotels" concept suffers from a lack of well-targeted goals and objectives. While consumers' awareness could be elevated via effective green marketing campaigns, some hotels simply use the term "green" as their marketing image [27,29] without any policy or strategy in place. Accordingly, the inappropriate utilisation of these so-called environmental claims is known as "green washing", a term for unsubstantiated claims about good environmental policies [29] that are not in place in the first instance. In such instances of greenwashing, customers might feel sceptical towards the environmental claims and do not behave positively toward the business [30]. As such, a green trust programme is important to gain customers' trust and reduce perceived mistrust risk [31]. The literature reveals that green trust is defined as "a willingness to depend on a product or service based on the beliefs or expectations resulting from its credibility, benevolence and ability about environmental performance" [32].

Consequently, the degree of trust consumers have in green hotels will influence their booking behaviour of a particular green hotel [32]. Chen, Bernard [33] agrees, suggesting that greenwashing has a significant negative influence on green trust, which in turn negatively affects the revisit intention of prospective clients. In addition, it is found that there is a positive relationship between guests' overall satisfaction level and hotels' genuine green practices and the guests' return intention and behaviour towards a hotel [34]. In a similar vein, Choi, Jang [23] found that consumers' behavioural intentions were influenced positively by green trust, which is consistent with previous studies [32]. To address these

factors and avert confusion, credible green hotel certifications from renowned agencies like Green Seal, LEED, Green Globe and Energy Star is an ideal way to avoid the image of greenwashing and increase green consumer trust [33]. Additionally, communication strategies that enhance green trustworthiness and make an emotional connection with the customers could potentially lead to greater willingness to pay a premium for green hotels [24,35]. On the other hand, whilst guests may be willing to engage in green practices and price premium, they do not want to experience low product quality, inconvenience or discomfort [36]. Customers expect advancements in their accommodation provider in parallel with policy led world advancements being progressed by the European Commission [9], and besides recognising the importance of green hotels, Bowen and Morosan [37] also found that the adoption of artificial intelligence technology in the hospitality industry will be a disruptive game-changer, particularly in the hotel sector; however, synergies exist between all these concepts.

2.2. Smart Hotels

As technologies have become more ingrained into our society, hotels are also utilising these modern technologies more than ever [38]. Competition, especially in the hotel sector, forces hoteliers to be innovative and creative, necessitating differentiation in the marketplace [39]. Hotels looking to have an edge where appropriate, use terms such as "smart hotels" referring to an "integrated concept which includes an automation control system, based on modern information technology, a sophisticated set of sensors and actuators, optical or any other source of speedy communication facilities and protocols, wireless technology, integrated renewable energy sources, modern waste treatment technology and constant education and training of all hotel employees to achieve its successful implementation" [40]. In fact, smart hotels entail the implementation of a range of technologies, including artificial intelligence (AI), robotics, cashless payments, augmented reality (AR) and virtual reality (VR) to varying degrees, propelling a range of disruptive changes and client behaviour [12].

With advancements in technology, travel, tourism and hospitality, companies have started to adopt robots, artificial intelligence and service automation (RAISA) in multiple formats, such as chatbots, delivery robots, robot concierge, and conveyor restaurants self-service information/check-in/check-out kiosks [41]. Digitalisation and advances in areas such as automation, location-based contextual services, and artificial intelligence are disrupting industries and current models of operation; the hospitality industry needs to keep up with the pace of endeavours to improve efficiency by leveraging new technologies and automation [42]. Makridakis [43] agrees with an industry-wide movement towards increased data volumes and advanced algorithms, where AI, automation, and robotics technologies in hospitality businesses are strategically solving multiple daily challenges. Smart Room or intelligent room technology is an example of artificial intelligence widely used now in hotels [44]. Consequently, smart hotels have started rolling out room controls within their smartphone platform that enable guests to change the room temperature, lighting mood, TV, music, blinds and more, thus empowering guests in their personal hotel space [45]. Shedd [45] emphasises that this level of personalisation has never been possible previously and will change both the guest experience and behaviour and optimise energy consumption, emphasising the synergy between smart and green.

Undoubtably, virtual reality (VR) is rapidly becoming a creator of new tourism experiences—as a source of information, entertainment, education, accessibility and heritage preservation [46]. Virtual reality (VR) is a set of technologies that allow a user to wholly immerse in an artificial environment, such that sensory perceptions (somatosensory, vision, sound and touch) are manipulated by the experience arising from screen-based technologies, haptic devices and exoskeletons [47]. Ercan [48] insists, for example, that virtual reality applications used in marketing the image of smart hotels, make it possible for guests to take virtual tours of cultural heritage sites around the world where smart and green align again and reduce the carbon footprint in a green way. Buhalis, Harwood [47] support

this and believe that tourism and hospitality organisations should use VR to permit clients to experience tourist sites and images through virtual tours and pre-arrival experiences of hotel facilities. Additionally, individuals with mobility impairments can benefit from the use of VR to pre-test the accessibility of the destination in advance [49], hence improving the customer experience.

VRs now enable hotel managers and travel agencies to offer a virtual trial hotel experience allowing the customers to obtain a realistic expectation of their chosen hotel [14]. Supporting these concepts, Moorhouse, Jung [50] found that tourism marketers' perspectives of VR's potential as an effective marketing tool lie in its capability to positively alter travellers' behavioural intentions and perceptions through VR images. International tourism is poised to make use of virtual reality to promote attractive and positive images of a destination that increase visitor numbers, encourage economic development and make consumers' decisions more crucial in a complex and competitive market [51]. However, not all researchers concur and Griffin, Giberson [52] contradict Likholetov, Lisienkova [51] because their findings reveal that some of their respondents did not behave positively towards VR and were not likely to travel in the next five years, nevertheless, they would still share information about the VR experience with friends and family, which is still positive. On the other hand, Guttentag [53] cautions that VR in tourism could lead an individual to believe that they had seen enough of a tourist site by "visiting" virtually. Although the novelty of VR experiences is exciting, it is also possible that the initial admiration of this new technology will wane [52]. Equally, many travel service providers are also met with challenges to undertake strategic investment decisions to leverage VR technology in order to influence consumers' travel behaviour, which can be costly [54]. Apart from the barrier of cost, the general consensus is that usability could remain a challenge to mainstream market penetration and thus, there is a need for greater adaptation of the technology for the optimal application of VR as a tourism marketing tool [55].

To clarify, robots, artificial intelligence, virtual reality and self-service technologies used in smart hotels could help to reduce operating costs, portray a positive brand image, provide targeted marketing opportunities, and generate a competitive advantage against other players in the market while advancing their green status [48]. In order to convince consumers to behave positively towards "smart and green" hotels, social media marketing plays an increasingly important role in hotels' marketing strategy [56]. In fact, Leung, Bai [57] agrees that user-generated content in social media could influence the decision-making process of customers who intend to book a hotel, illustrating the importance of social media marketing in the sector.

2.3. Application of Social Media in the Tourism and Hospitality Industry

Traditional marketing communications have experienced disruption, and a new pattern of multidimensional communications has emerged in recent times, where consumers find more integrity through peer opinions instead of traditional marketing channels [58–60]. As a result, informal communication seems to possess strong persuasive power for social network members [61]. In fact, social media has become a popular medium for information search in the tourism and hotel industry [62]. Consequently, Ong and Ito [63] suggest that social media marketing has sufficient power to change attitudes among consumers, which consequently affects the consumers' travel intention and their inclination to spread positive word-of-mouth travel experiences.

Research by Jashi [64] found that 87% of participants said online reviews impacted their hotel decision, 70% of participants trusted online recommendations, while only 14% of participants trusted advertisements. Seeler, Lück [65] confirmed the important role of social media and social media influencers in tourists' decision-making processes, but also postulated that social influence goes beyond these initial stages of inspiration and travel planning. Hence, if people have the right influential skills and competencies, the potential dissemination and reach of stories can result in them influencing millions of people, a situation that cannot be ignored by hospitality stakeholders [66]. Despite this,

Zeng [67] argues that one major roadblock to hoteliers' attitudes towards extensive social media marketing and implementation are the extra costs associated with implementing social media analytics; they are reluctant to invest in such technologies and staff upskilling. Subsequently, Michopoulou and Moisa [68] report that high staff turnover in the hotel sector leads to the lack of a full-time designated person taking full responsibility for the hotel's social media. This contributes to an inactive account or a lack of consistency in terms of content posted, tone of voice and the style of posts. Moreover, Aswani, Kar [59] highlight that digital marketing on social media can have an undesirable effect if it is executed by untrained service providers, as the negative impact in the long-term is magnified due to the speed of spread.

While considering "smart and green" concepts, managers in green hotels should be cautious that environmentally favourable practices will not necessarily lead to an increase in environmentally conscious guest's intention to book Han, Hsu [69] if the hotel's intention is not explicitly communicated. In light of this, social media technology forms a set of communication and organisational tools that are increasingly gaining attention due to their potential to facilitate rapid and effective communication to the public [70]. Gil-Soto, Armas-Cruz [70] clarified that when guests are more informed about green hotel images as they search for a hotel's information on social media sites, more guests began to acknowledge the hotels' green practices and leave more positive comments about them. Thus, social media is an effective instrument for hotels to communicate their environmentally friendly behaviour to customers and to inspire them to be greener [70,71]. In the context of smart hotels, Michopoulou and Moisa [68] make references to the use of artificial intelligence in social media platforms such as chatbot and Facebook messaging to take in reservations. For instance, the International Hotel Group (IHG) and Hyatt Group have tried using Facebook Messenger chatbot to communicate with guests, while Best Western International, Accor and Marriott International have implemented the TripAdvisor Instant Booking system [68] to embrace a technological future.

2.4. Literature Summary

A review of the literature reveals that previous studies illustrated that green and smart technologies bring real benefits to both hotel practitioners and guests and that strong synergies exist between "smart and green" concepts. The literature also highlights the possible challenges to these technologies. While the "green hotels" concept has taken off more successfully, the "smart hotels" concept is still limited due to the relatively new realm of artificial intelligence technology. The reviewed literature outlines that the trajectory for hotels who are reluctant to adopt new technologies will be challenging and competitive. Studies have also shown that social media has revolutionised communication in recent decades, and it has now almost become the "default" marketing channel for many businesses. Most millennials have indicated that they have greater trust in social media than in traditional marketing channels due to its multidimensional peer-validated reviews. Additionally, the review reveals that international chain hotels typically perform better than independent hotels, predominantly because they have a more streamlined booking process, more funding, better staff training, well-established loyalty programmes and are willing to try new technologies.

Reviewing the literature provided the impetus to examine the "smart and green" hotels concept in Ireland, specifically, as the literature is scant here. At present, in the context of the Irish market, there is insufficient work in the area of hotel operators in terms of combining "smart and green" and there is a paucity of research pertaining to this concept in Ireland. As such, this research will explore a hybrid model combining the green and sustainability elements with smart technology, such as artificial intelligence, to explore its practicality in the Irish hospitality industry. This work is relevant and current. According to the European Commission [9], synergies between a green transition and digitalisation are the essence of the green digital transformation, leading to societal, environmental, and economic benefits.

3. Materials and Methods

3.1. Research Philosophy

This study adopted an inductive reasoning philosophy. Inductive reasoning involves a process where a general conclusion is constructed from individual instances or observations [72]. The benefits of an inductive approach are such that it allows flexibility, attends closely to context and supports the generation of new theory [72].

3.2. Research Strategy

Before primary research can be conducted, a comprehensive literature search and review are needed; this was achieved thorough a systemic review of the literature. This search started using the keyword strategy on the topics of "green hotel", "smart hotel", and "social media". Table 1. illustrates the keywords used during the literature search and the key areas of explored literature. These proved very powerful, generating a wealth of informative data.

Table 1. Themes and keywords.

Main Themes		Supporting Themes	
Green Hotel	**Smart Hotel**	**Social Media**	**Global Hotel Chain**
➢ Consumer Awareness ➢ Environmental-Friendly ➢ Green Trust ➢ Greenwashing ➢ Hospitality ➢ Net Zero Energy Building ➢ Sustainability ➢ Green Technology	➢ Artificial Intelligence ➢ Chatbots ➢ Hospitality ➢ Robotics ➢ Smart Room ➢ Virtual Marketing ➢ Virtual Reality ➢ Virtual Tourism	➢ Branding ➢ Effective Communication ➢ Influence ➢ Marketing ➢ Peer communication ➢ Power ➢ Tourism and Hospitality ➢ Word-of-Mouth	➢ Bank ➢ Cashless ➢ Credit Card ➢ Frequent Traveller ➢ Growth ➢ Hotel Alliance ➢ International Chain Hotel ➢ Loyalty Programme ➢ Marketing ➢ Partnership

A disciplined attitude was adopted while embarking on this search to ensure that the researchers did not stray from the topic. The fundamental strategies taken were as follows: literature sources were searched from mainly online search engines such as Google Scholar and the University e-library database. The journal database consisted of IEEE Xplore digital library, NSAI, Emerald Insight, JSTOR, PubMED, SAGE Business Cases, SAGE Research Methods and Science Direct.

The literature selection process was determined by the relevance to the subject matter of interest and the credibility of the research paper after reviewing each paper in detail. The work was mainly drawn from pertinent leading academic journals with reliable and valid results and discussions relevant to the topic. Higher emphasis was placed on peer-reviewed academic journals and reports from reputable publishers. As outlined, exploring keywords from the journal articles ensured relevancy. Further deep reading of the journal articles looking for important concluding findings from each was continued, along with finding alternative journal articles to critique and explore differing viewpoints on similar subject matter.

The literature review combined research findings from several journal articles to prevent bias and provide analysis of arguments from all sides. Mostly and where possible (recently published 2020–2021), top-rated and ranking journal articles were incorporated, keeping the work current due to the "smart and green" concepts content. In some cases, older sources from 2000 were used where the content was applicable. The geographical location contained within the literature review focused on western and developed countries in Europe and the US. Some references were also made to developed nations in Asia. Endnote X9 desktop referencing software with a slightly modified "Cite Them Right—Harvard" referencing style was used. Additionally, Endnote click, cite while you write, and

Endnote capture were used as supplementary tools to assist in referencing. The researchers checked the online databases periodically using Endnote X9 to ensure all the referenced literature was up to date.

3.3. Data Collection Methods

Semi-structured interviews were utilised in this study as the researchers believed that this type of interview was best suited for the nature of the research, allowing some flexibility to elicit more novel information. Participants (see Appendix A) entirely understood what they were being asked to do and were informed if there were any potential negative consequences of such participation [73]. In line with ethical practices, informed consent was obtained from all invited participants, including permission to record for later transcription. The researchers chose to conduct 10 interviews in total, including a pilot interview. The pilot interview facilitated feedback on the interview guide (see Appendix B) on how to improve the interview questions and processes. The interview questions were based on gaps identified from the literature reviewed and the researchers' observation of problems.

3.4. Research Sample

The researchers applied "purposive or judgmental sampling", whereby a particular group of people was selected deliberately in order to provide important information that could not be obtained from other choices [74]. The significant stakeholders for this research would include persons such as hotel managers and representatives from government tourism agencies and the hospitality board because they are able to provide in-depth knowledge on the research topic and explain the phenomenon observed by the researchers. The semi-structured interview lasted between 45 and 65 mins. The ten Irish-based participants were chosen from relevant and appropriate stakeholders across various hotel sectors and geographical areas.

3.5. Data Analysis and Trustworthiness

In line with post-positivism and grounded theory, the researchers used qualitative data to construct new knowledge. Grounded theory was deemed appropriate as it is an inductive, comparative methodology that aims to provide methodical guidelines for gathering, synthesising, analysing and conceptualising qualitative data for the purpose of theory construction [75]. For this study, the researchers began with a broad query in the area of "smart and green" hotel concepts and gathered applicable information about the topic [76].

The researchers combined data analysis with data collection by simultaneously attending to the questions asked and the answers the researchers received. The data was then analysed according to the three phases of coding in grounded theory.

The researchers started with initial coding or open coding. This line-by-line coding was able to prompt the researchers to make a comparison between data [77]. Subsequently, the researchers performed axial coding, in which the researchers made a constant comparison between categories of data to try to identify linkages, relationships and the possibility of subcategories between data [78]. Finally, selective coding was implemented by the researchers, who were aware of the core category and methodically tried relating the identified categories to the core category via relationships. The ground theory coding allowed the researchers to appreciate the holistic view from a combination of multiple research participants' perceptions. The entire process of trying to find the "best fit" category from a plethora of data, constant comparison and analysis was instrumental in assisting the researcher to discover new knowledge. Thus, by exploiting grounded theory as a research method, a new theory was produced that is grounded by the researcher's data [78].

In a qualitative research study, Lincoln and Guba [79] substituted reliability and validity with the parallel concept of "trustworthiness", containing four aspects: credibility, transferability, dependability and confirmability within the post-positivism paradigm. The researchers applied grounded theory open coding to code each line from the interview

script to ensure no data loss. The researchers applied techniques in improving the credibility of this research, Erlandson, Harris [80], triangulating the data using extensive literature research, prolonged engagement with research participants, persistent observation on the research topic and reflection.

4. Main Findings and Discussion

4.1. "Smart and Green" Hotels Concept

> *I view green hospitality becoming a natural part of our day-to-day functioning in hotels.*

"Smart and green" concepts are pertinent and interrelated concepts, however, Irish hotels must progress these concepts to remain competitive and attractive to clients. One participant outlines, for example, that "green and sustainability in Irish hotels move at a very different pace when compared to New York, where I was based until 2004". However, consistent with the literature, this study finds that high energy consumption in hotels significantly impacts hotel competitiveness [4,81]. One interviewee mentioned that hotels by their nature, are huge consumers of energy and that "future generations will have to save on running costs". Thus, there is no dispute that hotels will benefit from green initiatives [20–22]. In total, 60% of the participants commented on the long-term savings by adopting green approaches, albeit with the high initial investment requirement, especially for "retrofitting older hotels". As more hoteliers attempt to be greener, so too is the growing awareness of environmental issues by consumers [24]. Interestingly, a vital finding from this study was that there is an increasing number of corporate clients who specifically look for green policies in hotels before contracts are awarded. Opportunities are presented, therefore, for niche marketing [22] and appeals to changing behaviour. For example, one participant outlined that the "Shard in London, which holds the Shangri-La hotel, have all the green initiatives incorporated in the building like an integrated Air Handling Unit to recycle hot air within the building. The Conscious hotel in Holland is also leading the way in sustainability", incorporating green with smart technologies and attracting clients as a result.

Previous studies on consumers' preference and behaviour found that consumers prefer to be associated with socially responsible companies [36,45]. This study confirms that consumers are more discerning now in relation to environmental awareness as 30% of the participants describe the importance of consumer demand as being a major driver in the green space. The following contributor elaborates that "growing consumer demand will motivate hotels to increase their green efforts and green image". This is consistent with previous literature on the topic of travellers' consciousness of their ecological footprint [82]. Additionally, adopting green approaches will improve businesses' profit margins [20–22,81]. 40% of interviewees mentioned potential cost savings because of being green, which is certainly compelling motivation for the sector to invest in green technology albeit at a "high cost"—it would be cheaper to newbuild and not retrofit".

Supporting previous studies discussing the lack of regulations on green hotels [28], this study suggests that there is no formal accreditation programme in Ireland for hotels to be green. This results in a lack of green credential awareness within the Irish community. 30% of the experts believed that green certifications are important, but "they are not well understood by the public". Green trust [27,29,30,32] is a real issue for some, and green certification will prevent the greenwashing phenomenon and improve the hotels' credibility and image, as consumers will reject an inferior green product. Surprisingly, 30% of the interviewees contradicted the previous literature and believed that a "green certification programme is merely for marketing purposes and imagery" without genuine green intention. Interestingly, an alternate finding is that some consumers would not be interested in green credentials despite clear communication. Participants here also contradict previous literature [32], in that, although consumers like the idea of green-certified hotels, they might not behave positively towards them as the "are not willing to pay more" to stay in them.

In the context of smart hotels, in line with Destors [83], the findings of this study prove that hotels are constantly looking for ways to increase efficiency and there is a need to constantly embrace change. 50% of the participants contended that there are aspects of artificial intelligence which will certainly improve manpower efficiency in the areas of yield management and reservation systems. Previous studies undertaken on artificial intelligence robots found that these robots are very applicable in hotels due to financial benefits, such as reduction in manpower costs [41,84]. Interestingly, this study contradicts the previous literature, as 90% of the participants either opposed the use of artificial intelligence robots or stated that robots have "limited application" in the wider hotel sector. An important point of contention is that in the context of Ireland, the hospitality image is built upon "human interaction, the core of Irish Hospitality"—"people, pace, place". The importance of Irish hospitality to the image of Irish tourism is reiterated in this study; "Ireland is world-renowned for its Irish welcome, introducing AI robots will affect the brand and image of Irish hospitality in its entirety". "60% of our guests come from North America; they want to experience the Irish hospitality. They do not want to use tablets, kiosks, or robots to check in". This study reveals a relevant point, however, contradicting previous literature [85], that workers should be upskilled rather than being made redundant with the adoption of AI robots and that valuable human resources could be redeployed to other more meaningful areas.

In terms of AI, Kostiainen, Rantasila [42], Tailleferd [86] and Makridakis [43] believe that AI could improve strategic marketing because active artificial intelligence can significantly benefit hotels in offering a personalised experience with its data mining ability. Supporting this, participants here commented that "AI can be utilised to learn guests' behaviour; this will help us to personalise their booking process". "Data mining and machine learning is the way forward for hotels to capture their clients. We can get to know our guests better through the aid of data mining". Validating previous literature that smart in-room technologies are becoming increasingly common [44,45,87], surprising 70% of participants responded positively about the development in this space despite their hesitancy towards artificial intelligence robots. This is particularly true for high-end luxury hotels where guests have higher expectations.

When looking at virtual reality (VR) being used as a tool for virtual tourism [47,48], only 20% of the participants supported this, while 80% of the interviewees outlined that travellers would prefer "tangible rather than virtual experiences when they travel". In line with previous literature on the risk of virtual tourism [53], this study confirms that some travellers might not visit a tourist site after visiting it virtually. However, this study recognised that VR commercials of the hotels themselves have countless marketing potential [14,46,52,88]. "VR is vital in attracting overseas guests using virtual rendition and images of the hotels' surroundings". Alternatively, there is a danger that "VR content may not reflect actual conditions of the hotel which may lead to guest's dissatisfaction".

As previously mentioned, in order for hotels to achieve "smart and green" status, hotels need to be retrofitted and new equipment needs to be installed [21]. The cost of installing energy-efficient systems and smart features are high [24,55]. Without financial assistance, many smaller independent hotels would find it challenging to adopt these technologies. 60% of the participants stated that there is a severe lack of government support for hoteliers to go "smart and green" even if the hoteliers would like to. A significant finding from this study suggests that on top of the cost challenge, the "lack of expertise in the field of "smart and green" technologies is a major obstacle for most hoteliers". One participant believes, however, that "there will have to be a lot of financial incentives and training in the next five years if there's a push for hotels to go "smart and green" ".

This study reinforces previous research that hotels located in big urban cities are easier to adapt to a "smart and green" hotel concept [83,84,87]. "In Dublin City, the very modern Moxy hotel (under the Marriott group) operates AI which is intriguing". In the smaller hotel owner Irish market however, hotels are slow to move in this direction

because it is challenging for hoteliers to reap profits from this hybrid concept due to low behavioural demand. Hotels located in rural locations are also generally more reluctant to adopt new technologies. The resistance towards "smart and green" hotels is felt both by hoteliers and consumers. "Irish consumers are very fixed in their ways, and they might not appreciate changes". When looking at AI, many challenges exist for hotels to stay abreast of the developments [89] however. One expert opines that a "piece of new technology will be outdated in 2–3 years' time due to rapid advancement in technology". However, participants are confident that "large multinational hotels will lead the way because they will have the means to invest in the technology".

4.2. Social Media in Tourism and Hospitality Industry

It is undisputed that the impact of social media is significant to our social and business lives [90–93] because social media has a serious impact on businesses. In line with previous studies, social media marketing emerges to be the most strategic platform for effective multidimensional communication between people [61,94]. All contributors here agree that social media is vital to the hotel sector. An interviewee outlined that "smart and green" hotels must "utilise the power of social media to their advantage". "They are connected and interrelated".

This study has found supporting previous studies [66,95,96] that the potential outreach of social media marketing to millions of consumers worldwide is impactful. An expert commented that "social media is an excellent platform to showcase the green efforts and the artificial intelligence technologies in a hotel". This study finds that they can work and support each other in an interrelated manner. Apart from creating awareness, social media can also generate demand for "smart and green" hotels. While it is evident that social media has wide audience outreach, previous studies also suggest that social media marketing has sufficient power to influence decision-making amongst consumers [63,94,97,98]. The findings of this study validate previous studies that social media can influence the decision-making of consumers when booking a hotel. Additionally, social media marketing is one of the most cost-effective ways to market a product [68,99] as they are mostly free or much cheaper than traditional marketing avenues. "There are so many channels such as Facebook, Instagram, LinkedIn, Twitter and Tik-Tok, which is something we have not even considered before. We must adopt it now because it has become very popular. For example, if I want to visit London, the first thing I will do is find the hotel's Instagram page".

Previous literature shows that despite the popularity of social media marketing in the hotel sector, it appears there is a lack of trained personnel to manage social media marketing due to high staff turnover within the sector [68]. One participant contended that "social media marketing has progressed to a more sophisticated level than before, and that hotels require specially trained persons to manage social media professionally". However, this could be a challenge in Ireland due to the issue of manpower shortage. Conversely, this study highlights the potential high-stake risk of social media marketing. The reputation and image of a hotel can be damaged very quickly due to the speed of spread and audience outreach from social media. "Social media can make or break any business, especially with online reviews". One participant outlined, "we have an employee dedicated to work on all social media platforms".

5. Recommendations

5.1. Adoption of Hybrid Model "Smart and Green" Hotels Concept

This study highlights the increasingly important role of the "smart and green" hotels concept within Irish hospitality, particularly in relation to exploring the adaption of a hybrid model. Figure 1. links these concepts as follows:
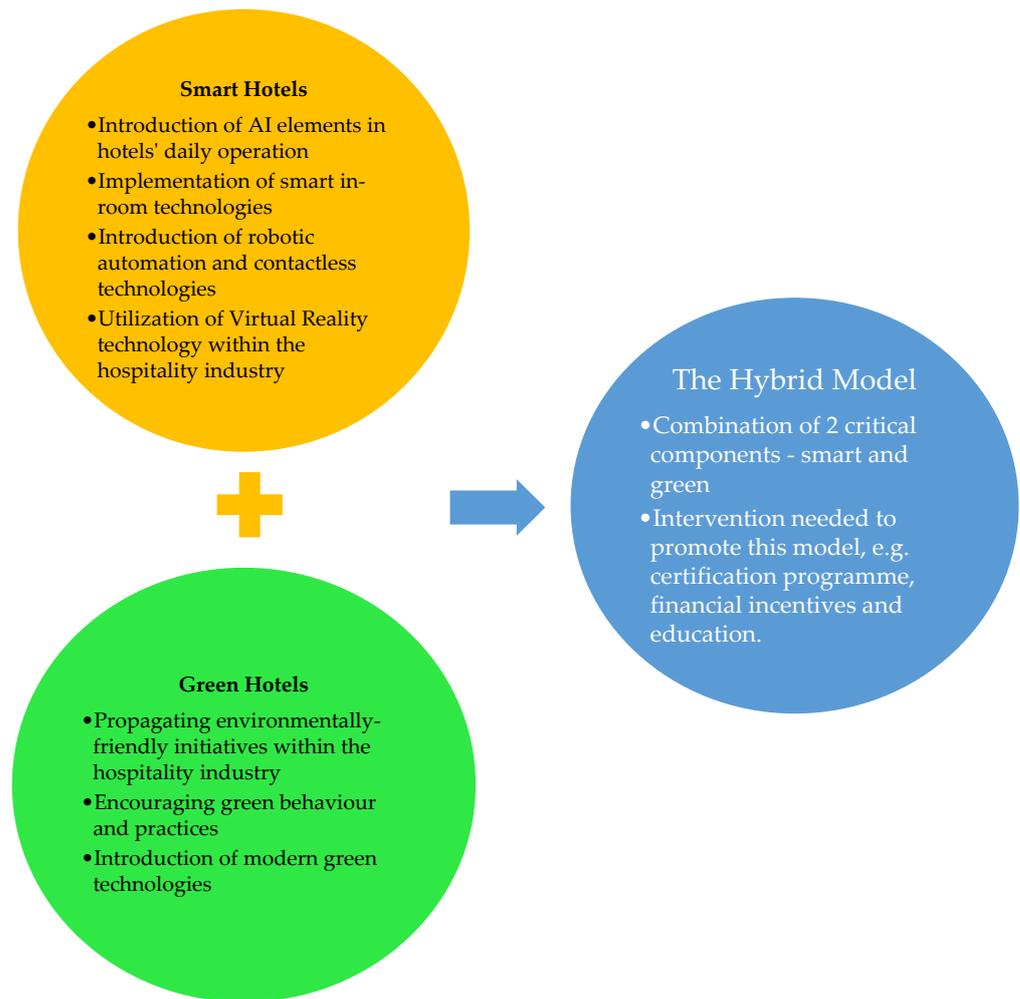
Figure 1. Exploring the Hybrid Model.

In terms of the green component of the hybrid model above, 100% of the participants acknowledged its importance and have introduced initiatives such as biodegradable plastics, reusable glass water bottles, food composters and paperless operations. To encourage positive behaviour towards green hotels, the introduction of a reward system for guests who opt to refuse bedsheets and towel changes for example, could yield positive customer behaviours. It is estimated that laundry service costs approximately EUR 0.5/kg; a hotel room with a hypothetical 75% annual occupancy and an average of 4kg per night, resulting in a cost of EUR 479 [100]. Another relevant recommendation from this model is that hotels could intelligently place items in the guest room, for example, extra towels, in a less obvious location. This should allow guests to access them if needed, but they will not necessarily use them. Findings here highlight the need to change consumer and hostelry provider attitudes in relation to sustainability, especially in high end providers, where some clients always require "daily laundered fluffy towels". Soap bars are often too big in most hotels and what makes the matter worse is the single-use plastic wrapper found on these bars. The findings of this study indicate that most hotel guests stay 1 or 2 nights only. Therefore, hotels should introduce smaller soap bars with biodegradable wrappers instead, designed for short stay guests. Hotels that have yet to adopt more advanced green practices should pressingly begin to consider introducing a variety of existing green technologies. An effective way to energy management in a hotel is to install a Building Management System (BMS). It is an intelligent automation system which has the ability to automatically increase or decrease energy output based on demand [101]. As outlined in this study, multinational corporate clients are demanding such green policies before committing to contracts and

hotels may risk losing corporate clients if they do not have green policies. Considering these findings, for hotels that have not adopted any green measures, they should consider incorporating green and sustainability efforts as part of their business model.

In terms of the smart component of the hybrid model, despite mixed opinions, this study has found that AI will invariably be part of the Irish and international hotel sector in the future. The use of AI robots and data mining technology should be used as supplementary tools to improve operational efficiency. The research recommends the use of AI chatbots in all hotels if possible as the empirical findings demonstrate that chatbots are useful in reducing the number of calls a hotel takes, which leads to better utilisation of manpower. This study further identified that AI potential also lies in the area of data mining which is beneficial to hotel practitioners. Hotels should actively utilise AI technology to learn consumers' preferences and booking behaviour in order to provide more personalised and targeted recommendations, offers and experiences. Advanced AI algorithms should be applied to predict the supply and demand of hotel rooms to dynamically manage room rates effectively. For instance, AI-powered hotel revenue management, such as Aiosell technology, has been proven to increase net revenue for hotels worldwide [102]. Besides this, 90% of the participants would like to see smarter in-room technology being implemented. This includes automatic check-in/check-out kiosks, mobile key technology and mobile check-in and check-out system. Considering the SARS-CoV-2 pandemic/COVID-19, these advancements will be welcomed by most. Also, these systems would save on manpower and reduce printed paperwork requirements, thus reducing printing. Quirky modern new build hotels are forward-facing here, however, challenges remain for older hotels to upgrade and retrofit.

Empirical findings from this study similarly show that 90% of the participants agree that virtual reality can be utilised as a useful marketing tool for hotels, particularly for overseas guests. VR technology is also exceptionally useful for hotels to showcase their setup for major events like weddings, conferences, or musical events in a more realistic manner than just regular pictures and videos while reducing their carbon footprint and showing the correlation between "smart" and "green". Moreover, in-room virtual reality technology should be introduced as an effective advertising tool to replace printed brochures for tourist sites and activities. This arrangement is like a virtual catalogue for activities, attractions sites, restaurants and bars. This hybrid proposal is both technologically innovative and environmentally friendly. This study proposes that the in-room VR contents should be more like a "sneak preview" rather than full content, to avoid unintended consequences. In essence, it is strongly recommended that airport hotels, business hotels, conference hotels and larger-sized hotels should lead the way in the "smart and green" hotel movement both in Ireland and internationally. In an Irish context, selected hotels in focus cities of Ireland such as Dublin, Cork, Limerick, and Galway should be earmarked for pilot trials of this concept and supported centrally by the Irish Government, internationally, parallel trials should be considered by stakeholders to remain competitive, attractive and sustainably smart.

5.2. Official Certification Programme

In terms of operationalising the proposed hybrid model, Government and policy makers should consider introducing an official certification programme for green hotels and smart hotels as the hospitality industry advances towards a greener and more digitally enabled future both in Ireland and internationally; at present, there are no formal certification programmes for either. This study indicates that a green certification programme will increase consumers' trust in the hotels' green initiatives, which should similarly apply to smart hotels certification. Early findings indicate that there is lack of consumer knowledge in relation to green hotels. The researchers infer that this is due to the lack of an official certification programme to inform consumers. Thus, certification programmes for "smart and green" hotels will also serve to confer better communication and images to consumers. It is important that these certification programmes are easy to understand and are managed

by accredited or reputable government-linked organisations. Otherwise, it will lead to mass confusion as to which programmes are genuine. Tourism officials should also consider introducing regular assessment of all hotel properties, similar to annual fire inspections, to ensure the standard once the certifications are obtained by the hotels.

5.3. Increase Financial Incentives

This research highlights the lack of financial support from the government in the space of "smart and green" hotels. To forward the proposed hybrid model of smart and green, incentives will be necessary. 60% of the participants felt that the cost of retrofitting a hotel is exceptionally high and most Irish hotels will not be able to aggressively adopt the "smart and green" hotels concept without financial assistance. As "smart and green" technologies become increasingly common in Ireland and internationally, the cost will be lowered as supply increases. Considering this, the Irish government should take a holistic approach towards introducing financial support packages such as increased grants and business loans. The government could seek additional funding from the European Investment Bank amid the low-interest-rate environment caused by the COVID-19 pandemic. Interestingly, this study reveals that it is important that any new schemes introduced should be suitable and easily accessible. Findings in this study reveal that some hotel owners are not fully aware of how they can apply for existing grants. Therefore, the requirements for the new proposed schemes should be sufficiently simple to follow. The proposed scheme should cover up to 75% of the equipment, retrofitting and installation cost. This quantum of 75% is proposed because the grant should be substantial to encourage hotels to get onboard.

5.4. Education and Training

The main challenge that hoteliers face is the lack of expertise in the field of the "smart and green" concept, to perform due diligence and initiate improvement projects of such a hybrid nature. Thus, the hospitality industry should upskill its talents by advocating a lifelong learning ideology. Government and policymakers should ensure that upskilling courses are made available in the space of "smart and green" technologies, and they should be affordable. The incidence of high staff turnover in the hospitality industry is proving difficult for hotels to introduce new "smart and green" technologies because of the need to continuously train new staff members. The research recommends that hotels should streamline the training process into concise job cards, containing easy-to-follow steps to simplify the training chores. Besides, social media is an effective platform for communicating the positive images and benefits of "smart and green" hotels to consumers. Based on the current study, it is evident that there is a lack of awareness in the "smart and green" hotels concept and this is a challenge. This study also suggests that some hotels are hesitant to introduce smart features in a green way for fear that the older age group of guests may not be technologically savvy to appreciate them; hence a conflict exists between pleasing these guests and the international corporate business clients that demand smart/green offerings. In this case, awareness campaigns, training videos and ample educational materials should be published online that are easily accessible to the public. Hotel staff should also be appropriately trained to impart the knowledge to them. The impact of increased education in the medium to long term is that hoteliers will behave more enthusiastically and embrace greener and smarter technologies due to greater consumer demand. It is important to send a clear message that a change is needed now for the Irish hospitality industry to be greener and smarter in line with other advanced economies of the world.

6. Limitations and Future Research Directions

The researchers acknowledge that this study was geographically limited to the Republic of Ireland due to time, funding, and COVID-19 pandemic restrictions, however, participants did have international experience due to their career movement working in other markets. Additionally, the research participants were predominantly male due to the

nature of the occupational position in management. Attempts to search for more female participants were made, but unsuccessfully due to the lack of availability in an Irish context. This gender imbalance is typical in the sector. A new study could use a larger sample size to gather additional empirical data and another study could examine these concepts with a broader European lens, for example.

Findings in this study have highlighted other areas that warrant future research. An interesting area of research would be to perform a quantitative research survey to examine the consumer demand and the price premium consumers would be willing to pay for "smart and green" hotels over regular hotels. The proposed quantitative research should also include the scope of what are some of the most important features of "smart and green" hotels that would influence them to book these hotels. This is important to measure consumer behaviour and demand towards specific products. The purpose of this research is to allow potential "smart and green" hotel practitioners to make an informed decision on their business strategy.

This study reveals that there is some hesitancy from the hoteliers to adopt AI technology. Additionally, it also suggested that consumers may be reluctant to accept AI technology in Irish hotels. Thus, another topic that would merit some further research is the acceptance of AI technology within the Irish hospitality industry. The researchers recommend quantitative research via surveys. The proposed research should aim to examine concerns and investigate the factors that would encourage them to embrace AI technology in the Irish hospitality industry.

7. Final Conclusions

Challenges exist for the future hybrid model of "smart and green" hotels, however, it will be worth embracing these concepts for the better of the industry, the traveller and sustainability. Tourists like to be positively reinforced and will behave and lean towards a promising offering. Given the heightened awareness around green, sustainable and smart concepts, the hotel sector must embrace these facts and offer compelling offerings to encourage consumption. Images will not suffice; tangible actions and visibility on the ground will be necessary in terms of sustainability, using AI to facilitate.

Policymakers and governments both in Ireland and Internationally must look to publishing a sustainable holistic action plan for the industry. Investigating the proposed hybrid model of the "smart and green" concept to achieve synergies between the two technologies was interesting in this paper. Previous studies only focused on "green hotels" and "smart hotels" as separate entities in other countries and not as a hybrid model. This study, however, presents a novel concept by combining both concepts into a hybrid model. This research is contextually relevant to Ireland, therefore, the contents and recommendations from this study are pitched towards the Irish market, but have a wider relevance, application, and can contribute to international concepts, behaviour, and work in this field due to the international expertise of all the contributors in this study in the sector.

This study has proven the importance for the hotel sector in Ireland to embrace changes to stay updated with current trends, nevertheless, a more proactive rather than a reactive approach is urgently needed from the hoteliers. The study highlights that more intervention is needed from the central government in this space as many independent, family-run hotels do not possess the financial capacity to go greener or smarter. It is interesting to note that while the importance of AI is being acknowledged, concerns remain on the potential negative impacts of AI on job security and reduced human interaction with clients, which are the foundations of the Irish hospitality image in particular.

This study illustrates that as important as green and sustainability are to the industry, artificial intelligence and smart technologies are being earmarked as the up-and-coming agenda. Thus, these new concepts and new theory must be embraced to move the industry forward into a relevant space for consumers to behave positively towards the "green and smart" hybrid hotel agenda. This agenda, where it is embraced now, will be a competitive image offering, but in the future, it will not only be relevant and modern, but the expected

behavioural offering and norm of the sector. Empowerment is necessary and government and relevant stakeholders must act now to secure the relevancy and image of the hotel sector to ensure a bright future for hospitality in Ireland and internationally that resonates with potential clients and their own behaviour.

Appendix A. Participants

Participant 1: Deputy General Manager 4-star large hotel and leisure centre (91 bedrooms); Town location, South of Ireland.
Participant 2: General Manager 5-star luxury hotel small hotel and spa, rural location; East of Ireland (39 rooms); Michelin star restaurant.
Participant 3: Operations Manager 5-star Large City Centre hotel; South of Ireland (87 rooms).
Participant 4: Food and Beverage Manager 5-star; west of Ireland hotel (104 rooms).
Participant 5: General Manager hotel on large estate; South West of Ireland; boutique hotel (66 rooms).
Participant 6: Accommodation Manager, small boutique hotel; Centre of Ireland (22 rooms).
Participant 7: General Manager, Capital City Hotel 3-star, old historical building (54 rooms).
Participant 8: Managing Director of large hotel group comprising of different hotel star ratings and various classifications in various locations across Ireland. This participant is also a member of the Management Committee of the Irish Hotel Federation (IHF).
Participant 9: Planning and Environment Manager Fáilte Ireland (the body responsible for promoting Ireland and product development).
Participant 10: Head of Accommodation & Operations Development Fáilte Ireland.

Appendix B. Interview Guide

Introduction

Thank you for taking time out for this interview. As you are already aware, the purpose of the interview is to gather your opinions on the research topic, "smart and green" hotels in the context of the Irish hospitality industry.

Green Hotels Green hotels describe hotels that strive to be more environmentally friendly through the efficient use of energy, water and materials while providing quality services. Green hotels operate in a responsible way towards society, community, the local culture, and the surrounding environment.

1. How do you view green and sustainability in the context of the hotel sector? Are there any elements of green and sustainability which have been implemented at your hotel? For researcher prompt: LED lightings, renewable energy (solar panels, heat recovery system), efficient heating, water-saving features, single-use plastics (toiletries), etc.

   - Follow up question: Do you think they are sufficient in terms of green efforts?

2.   In your opinion, what would motivate you for greater investment in green technology at your hotel? For researcher prompt: CSR recognition, business case profitability?

3.   In your opinion, do you reckon that guests have trust in your hotel's green initiatives?

- Follow-up question: How do you ensure that they trust your hotel's green initiatives?

Smart Hotels

It is crucial to note that rapid advancement in technology has resulted in artificial intelligence starting to creep into the hospitality industry, especially in the hotel sector. It is predicted that by 2030, artificial intelligence robots will make up about 25 percent of the workforce in the hospitality industry.

4.   Research shows that the adoption of artificial intelligence technology in the hospitality industry will be a disruptive game changer, particularly in the hotel sector. In your opinion, what is your view on the use of artificial intelligence in the hotel sector in Ireland? For researcher prompt: Chatbots in websites, robotic concierge for check-in/out, delivery robots, intelligent guest room (e.g., voice command, smartphone integration), etc.

- Follow-up question: What is your view on the use of artificial intelligence in the hotel sector here (including at your hotel) in the future? For researcher prompt: Widespread use, still in the infancy stage, might be obsolete?

5.   Research shows that virtual reality in the travel sector has exploded, in particular, smart hotels are constantly searching for new uses of virtual reality to attract guests. Some smart hotels have started to use virtual reality applications within the hotels, for example, guests could travel around the hotel and its surroundings with a virtual reality application/device without leaving the hotel room. Additionally, virtual reality could be used to allow guests to virtually visit tourist sites/destinations around the world (known as virtual tourism). What is your view on incorporating virtual reality technology into your hotel as an initiative to become a smart hotel? For researcher prompt: In terms of marketing strategy to attract guests, advertising revenue from tourism companies/overseas, any particular importance in COVID-19 times?

"Smart and Green" Hotels—A Hybrid Concept

6.   Now that we have discussed both "smart" and "green" hotels, how do you view the hybrid concept of "smart and green" hotels from an Irish hospitality industry perspective?

- Follow-up question: In your opinion, assuming your hotel is marketed as "smart and green hotel" in the future, how will it affect your pricing strategy and how will the consumers respond? For researcher prompt: Will you be charging more, less or no change? What amount of premium will consumers be willing to pay?

7.   In your view, what are some of the challenges in the implementation of "smart and green" hotel concept in Ireland? For researcher prompt: Your guest intention, demographic, cost of investment involved, location suitability, government support?

Social Media Marketing

In order to convince consumers regarding the benefits of "smart and green" hotels, social media marketing plays an increasingly important role in hotels' marketing strategy. Research has shown that social media could influence the decision-making process of customers who intend to book a hotel.

8.   What is your view on the statement? How does your hotel engage in social media marketing?

- Follow-up question: In your opinion, what are some of the challenges in social media marketing in the Irish hotel sector? For researcher prompt: Negativity, speed of spread?

International Chains

Besides social media marketing, to increase awareness of "smart and green" hotels particularly in the international market, "international chain" strategy could be considered by hotel operators.

9. In your opinion, what is your view in relation to global hotel alliances/international hotel chains in terms of revenue and visibility? For researcher prompt: In your view, how does association to an international chain, e.g., Marriott/Hilton/Hyatt affect sales/bookings, domestically and internationally? For researcher prompt: Not only will association with an international chain increase a hotel's spending budget to introduce "smart and green" technologies, revenue and sales should also improve owing to more bookings by international guests.

Concluding Questions

10. In conclusion, how do you view the concept of smart and green hotels as the future of the Irish hospitality industry? For researcher prompt: in the context of 5, 10, 15 or 20 years?

11. Do you have further thoughts/recommendations/proposals that would be beneficial to the research based on our discussions today?

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