PALASH : A JOURNAL OF HOSPITALITY AND TOURISM SERVICE MANAGEMENT

Year 2025, Volume-1, Issue-1 (Jul - Dec)

Transforming Sustainable Tourism and Hospitality through Innovative Smart Practices

Madhu Kumari[1], Suneel Kumar[2], Nisha Devi[3], Anil Kumar[4]

[1]Research Scholar, Department of Tourism and Hospitality Management, Chandigarh University (India)
[2]Professor, Department of Commerce, Shaheed Bhagat Singh College, University of Delhi (India)
[3]Assistant Professor, Department of Commerce, Shri Ram College of Commerce, University of Delhi (India)
[4]Associate Professor Department of Commerce, Shyam Lal College (E), University of Delhi

ARTICLE INFO

Keywords: - Hospitality; Sustainable Tourism; Smart Practices; Innovation

doi: 10.48165/palash_IHM Ranchi.2025.1.1.04

ABSTRACT

Digitization encompasses the transformation of analogue information into a digital format, spanning a broad spectrum of data conversion. The aim of endeavours like Digital India is to harness the power of technology to elevate productivity through the effective use of digitized data and information. By integrating digital tools into business processes, these initiatives seek to optimize efficiency and foster growth within the economy. Since 2014, the government has placed a strong emphasis on digitization. Among the industry's leading the charge in this regard is the tourism and hospitality sector, which is still seeing rapid growth. This dynamic arena reflects the dynamics of several players in the tourism industry. The tourist sector has embraced digitalization and incorporated it into its operations to provide new travel routes and ways to increase guest satisfaction. It's a prevalent misconception that digitalization in tourism is restricted to online hotel reservations and electronic payments. UN Secretary-General Antonio Guterres emphasizes the pivotal role of tourism in preserving both natural and cultural heritage. However, the

*Corresponding author.
*E-mail address:*suneel.kumar@sbs.du.ac.in
Received : 10 March 2025
Revised : 10 April 2025
: 2 May 2025
: 11 June 2025
Accepted : 29 July 2025

expansion of tourism in various regions and countries brings significant impacts on natural resources, consumption patterns, pollution levels, and social dynamics. "Sustainable tourism and hospitality management" aims to achieve a balanced integration of three key facets of tourism development: environmental, economic, and socio-cultural. Consequently, this concept has gained significant traction among travel agencies, emphasizing the importance of fostering harmony among these aspects for long-term viability and positive impact. The objective of this delicate equilibrium is to ensure the enduring sustainability of the tourism sector. In order to be sustainable, we need to consider the social and economic effects of our actions on people as well as the environment. Therefore, the foundational principles of sustainable tourism encompass social equity, environmental preservation, and economic prosperity.

1. INTRODUCTION

Smart tourism, a term increasingly prevalent in the tourist industry, policy discussions, and research, signifies a paradigm shift in the way we approach travel experiences studies by (Borges-Tiago et al, in 2022). Originating alongside the emergence of smart cities, smart tourism has evolved into a concept that embraces the integration of information technology within the tourism sector, as discussed by (Micera et al., in 2013). Hunter et al. (2015), conceptualize smart tourism as a societal evolution catalysed by the convergence of information technology and the travel domain. According to Li et al. (2017), further elucidate smart tourism by defining it as the seamless provision of tour-related information services to travellers throughout their journeys, emphasizing the continuous and pervasive nature of this information dissemination. Essentially, smart tourism revolves around leveraging technology to enhance the travel experience, providing travellers with real-time and ubiquitous access to relevant information and services. Smart tourism has garnered significant attention across various sectors, with its concept evolving alongside advancements in technology and information systems as discussed by (Girish et al.,in 2022) . Initially associated with complete technology and information service support systems, the term "smart" has become widely popular, reflecting its application in various contexts such as smart service, smart home, smart phone, and smart working. According to Sorokina et al.in (2022) the evolving views on smart tourism highlight its dynamic nature, characterized by diverse definitions and applications in different settings. For instance, it can encompass innovative mobile information systems utilizing the physical infrastructure of tourist destinations to enhance visitor experiences. Scholars emphasize the integration of systems, technology, and management to grasp the full scope of smart tourism. While technology remains pivotal, there's growing recognition of the importance of non-technological aspects in defining smart tourism. According to Boes et al. (2015) also explore non-technological dimensions, suggesting the exploration of alternative terms to capture the concept comprehensively. However, discrepancies in defining smart tourism persist due to diverse perspectives and backgrounds among scholars. To address this gap, this study aims to redefine smart tourism by integrating both technological and non-technological dimensions. Specifically, it seeks to (1) comprehensively review previous studies, (2) Pinpoint the critical non-technological aspects influencing the evolution of smart tourism and provide an alternative expression and (3) Suggest a more precise description and potential pathways for future exploration.

Sustainability in tourism has emerged as a central column in contemporary tourism, inspired by global concerns in climate change, resource lack, and the need to balance economic development with environmental leadership (Gosling and Hall, 2019). This concept emphasizes negative ecological and cultural effects, maximizing socio-economic benefits for

host communities. Tourism stakeholders are not rapidly as an alternative to rapid sustainability but are recognized as a requirement for long-term competition and flexibility (UNWTO, 2018). Smart technologies. Integration of smart technologies has redefined how destinations operate and attach to visitors. Smart Tourism Destinations (STD) employs the Internet of Things (IOT), cloud computing, big data, and mobile platforms like equipment (Buhalis and Amarrangga, 2014), such as the adaptation of resources to devices such as big data and mobile platforms, to increase service efficiency and improve visitor experiences. These tools facilitate knowledge sharing, allow stakeholders to make decisions in real time, and facilitate individual travel experiences. In addition to the technical infrastructure, co-construction—in which travelers actively shape products through digital platforms—is emphasized by smart tourism (Hunter et al., 2015.

2. LITERATURE REVIEW

The incorporation of information and communication technology (ICT) plays a vital role in advancing the tourism industry, a fact well-documented in numerous studies (Lee et al., 2021). These investigations extensively analyse the impacts of ICT on various facets of the sector, highlighting its transformative effects and potential for enhancing business operations and tourist experiences. Among the benefits of ICT for the tourism sector are increased transparency, shortened distances between countries, and quick information diffusion. The study focused on how companies like hotels, tour and travel agencies, airlines, and car rentals embraced technology and changed the way they did business as a result. The survey indicates that standards must be set in order for the industry to successfully adopt digitalization. In the hospitality industry, digital client interactions have emerged as a result of growing digitalization. The study examined the influence of social media, websites, and other electronic marketing strategies on hotel financial performance and promotional efforts. Elena and Lopez (2013) investigated how information and communication technology (ICT) affected the competitiveness and efficiency of travel agency firms. Their findings suggested that while digitalization significantly transformed aspects related to near-field communications in the tourism sector, its impact on productivity and competitiveness was relatively moderate. To adapt to technological advancements, the report recommended maintaining consistent organizational structures within companies and implementing push and pull market strategies. These measures were proposed to facilitate the industry's adaptation to new technologies and changing market dynamics. The use of mobile phones for smart phone booking services by young, educated individuals was examined by Chang and Jang in (2014). The study's findings revealed that Smartphone booking behaviour was notably influenced by factors such as price level, relative advantage, and complexity. According to the survey, government policy gaps, ICT regulations, sporadic network availability, and organizational commitment are some of the obstacles preventing the tourism sector from adopting new technologies. In order to promote technology throughout the tourism sector, the paper suggested developing a national plan. In many industrialized economies, the service sector has had a major impact on how those economies have developed. The study identified the sharing economy as a prominent trend accelerated by digital innovation, particularly evident in the hospitality sector. It underscores consumers' increasing preference for digitalization in their experiences. However, perceived funding requirements emerged as a significant barrier to ICT uptake in hotels report highlighted the challenges faced by the European tourism industry, including declining tourist numbers, shortened stays, and reduced sales, prompting a need for innovation in products and service delivery. The study emphasizes the necessity for further research on innovation within the travel and hospitality sectors, with

regulatory attention directed toward small and medium-sized tourism enterprises. Raja Mohamed (2016) focused on the role and significance of ICT in shaping the travel and tourism industry, investigating its impact on hospitality and managers' perceptions of its role. According to Alexis in (2017), delved into the repercussions of automation and digitization on the travel and tourism sector via case studies. The report advocates for stakeholders to embrace digitization rather than oppose it, citing potential enhancements in customer satisfaction and novel avenues for further research. The study identified numerous benefits derived by the industry, including streamlined payment methods, enhanced access to travel information leading to more informed choices, and the emergence of innovative travel trends. Consequently, digitalization has fundamentally reshaped the way people engage in travel experiences. Their study highlighted the influence of digitalization on travellers' decision-making processes, interactions with marketers, and recollection of travel experiences. With tourists increasingly relying on internet-based resources for purchasing decisions, tourism organizations are placing greater emphasis on incorporating digital tools into event planning and marketing strategies. These days, the Internet plays a major role in the travel and tourist sectors. As a result, companies are increasingly placing a greater focus on digital platforms when creating their marketing plans. The tourism sector has benefited greatly from the internet's capacity to link consumers' interests in travelling to new destinations and cultures with the convenience of searching for and booking a wide range of products and services. Currently, there are multiple diverse segments within the tourism industry, the majority of which are focused on housing, food, and beverage consumption. As the landscape of our surroundings has evolved, the tourism sector has transitioned into a more commercialized realm. Within this structure, patrons commonly settle their expenditures for the products and services they utilize at accommodation establishments through billing protocols. The tourism industry is thought to be quite large globally in relation to other industries. The utilization of lodging for tourists leads to the formation of numerous specialized businesses that cater to leisure needs and consumer pleasure. This industry's primary source of growth is the provision of luxury services to customers, therefore meeting their needs and concentrating on their pleasure is key, Broman (2016). Härting et al. (2017) conducted an empirical study in Germany to explore the potential benefits of digitization within the travel and tourism industry. Their report not only discussed the advancements made in digitalizing the tourism sector but also highlighted the ongoing tasks required for further development. Through structural equation modelling, the research uncovered pivotal factors propelling digitalization within the travel and tourism sector. According to Dubbudu (2016), booking a ticket on the IRCTC website requires approximately 35 seconds, with online bookings constituting about 60% of ticket sales, as per government reports. This surge in online bookings has contributed to an uptick in overall ticket sales. Moreover, online check-in options deliver time efficiency and mitigate the stress associated with early arrivals at airports. Entities such as Yatra.com, Make My Trip, and even food delivery platforms like Zomato and Swiggy consistently offer daily deals, leveraging digitalization to furnish tailored offerings to travellers. The advent of digitalization has significantly influenced emerging opportunities in niche tourism sectors. Zomato is an app that helps users finds restaurants and hotels. It provides a list of popular restaurants, including the most well-known and long-standing establishments in the area. A number of applications have changed the way we order food, much like Swingy, Uber Eats, and Food panda Bhattacharya, (2019). Using only their fingers, a traveller may find out everything there is to know about the atmosphere, cuisine, and customer service of any restaurant. This is especially helpful for small, actual food

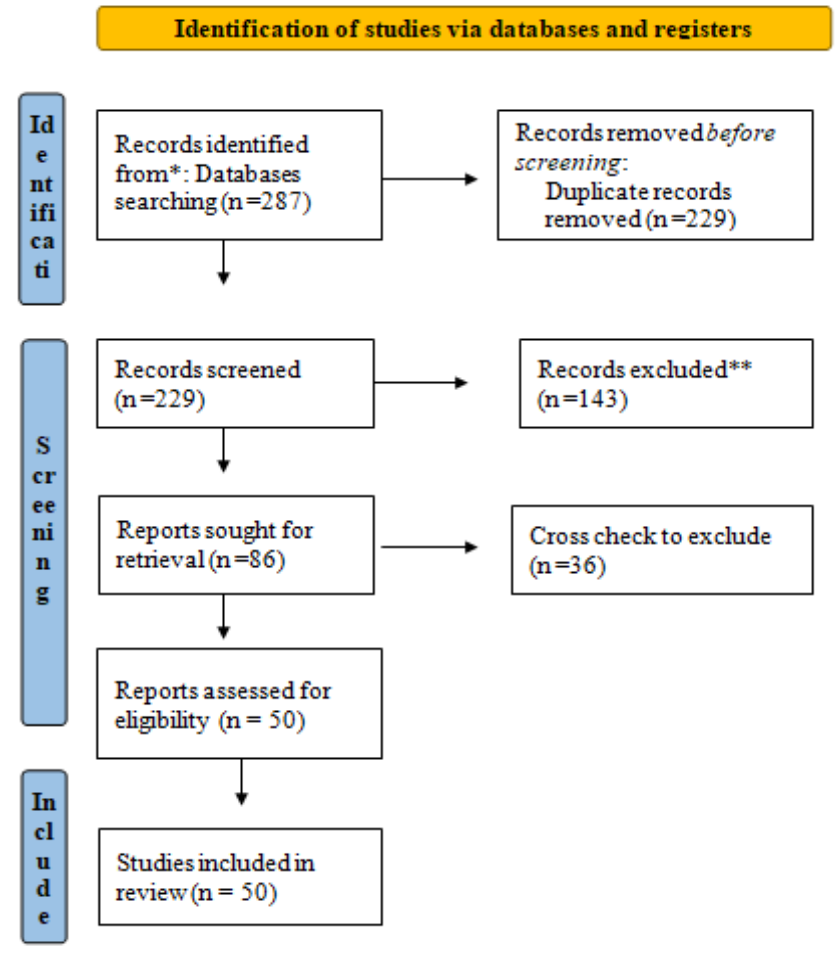
businesses that don't have a large marketing budget. With the advent of digitalization, the hotel industry can now provide guests with information instead of merely taking it. However, as nations and regions continue to expand their tourism sectors, significant implications arise concerning the conservation of these resources, consumer behaviours, pollution levels, and social dynamics. Recent research, exemplified by Kim et al. (2020), has presented findings associating tourism expansion with detrimental environmental consequences, such as biodiversity decline and natural resource depletion. Globally, such occurrences are on the rise. Certain destinations have implemented limitations on the maximum number of visitors allowed at any given time. To address the adverse environmental impacts of prior tourism activities, Boracay Island in the Philippines, for instance, has enforced a two-year closure to visitors (Canoy et al., 2020).The host country can profit financially from tourism in many ways, but as it grows, it is at the expense of locals, the environment, and cultural customs. It is vital to consider how tourism impacts the environment as the industry grows overall since, albeit to differing degrees, it can encourage environmental conservation. It's crucial to consider the social, economic, environmental, and cultural ramifications of tourism. Striving for a balanced interplay among the environmental, economic, and social aspects of tourism development, the notion of "sustainable tourism and hospitality management" has gained prominence, becoming a central concern for stakeholders in the travel industry. This strategic approach aims to ensure the long-term sustainability of the tourism sector through careful consideration of its impacts. Sustainability entails assessing how our actions influence the social and economic welfare of communities alongside environmental preservation. As a result, the fundamental principles of sustainable tourism encompass social equity, environmental preservation, and economic advancement. This study seeks to examine the impact of digitization on environmentally sustainable practices within the travel and hospitality sectors. Additionally, the essay aims to delve into the effects of digitization on different stakeholders within the tourism industry.

Conceptual foundation of smart tourism: Smart tourism is attracted by the ideological development of smart cities, where technical infrastructure enables connectivity, efficiency, and accountability in urban systems (Greatzel et al., 2015). Scholars argue that implementing these principles in tourism enhances destination intelligence, strengthens governance, and co-manufactures the value between stakeholders (Xiang & Fesenmaier, 2017). These innovations improve visitor satisfaction by enabling individual recommendations, spontaneous mobility, and interactive cultural experiences (Neuhofer et al., 2015). In addition, studies indicate that IOTs and big data analytics increase crisis management, adapt to crowds, and support the future modeling for the demand for tourism (Shafiee et al., 2019).

The sustainability and smart tourism intersection remains a growing area. Some scholars argue that smart technologies naturally promote environmentalism, while others take caution against the rebound effects of technology-inspired consumption (Gosling and Hall, 2019). Energetic studies suggest that smart energy systems, digital ticketing, and real-time monitoring destinations contribute to reducing carbon footprints (Hunter et al., 2015). However, critics say that the sustainability capacity of smart tourism is often overstated without adequate empirical evidence (Bose et al., 2016). GAPS have become quite advanced in literary theoretical outlines, with gaps in assessing the socio-cultural effects of smart tourism. Some studies evaluate equity in access to smart solutions, long-term implications for digital division between stakeholders, or workforce skills. Future research should expand the technology beyond the adoption of governance, morality, and inclusion in the creation of smart tourist destinations (Ivars-Baidal et al., 2017).

3. THEORETICAL BACKGROUND

Over the past five years, the discourse surrounding sustainable tourism through innovative smart practices has experienced significant evolution, aligning with the principles of smart cities and prioritizing sustainability within tourism planning efforts (Ivars-Baidal et al., 2017). This evolution is underpinned by two major trends: the widespread adoption of eTourism and the opportunities afforded by the smart city framework to optimize tourism resources and enhance visitor experiences. The trajectory of this discourse varies across different regions, reflecting the diverse approaches taken in development policies. In Asia, particularly in China and South Korea, there's a pronounced emphasis on smart development, evidenced by substantial investments in technological infrastructure aimed at strengthening. Research in this area has concentrated on identifying and adopting vital technological tools for Sustainable Tourism via Innovative Smart Practices, with a focus on open technological frameworks that integrate cloud computing, the Internet of Things, and end-user internet service systems. These tools are instrumental in facilitating knowledge exchange among stakeholders, thereby enhancing destination intelligence and fostering synergies within the tourism supply system. In Europe, the emphasis lies in enhancing



Source: PRIZMA Flow chart of screening process (Author own collaboration)

Figure. 1: Prisma flow diagram

innovation and competitiveness through the cultivation of dynamic stakeholder connections and ensuring accessibility across various end-user devices ((Buhalis & Amaranggana, 2014). At the core of this strategy lies the notion of smart tourism experiences, enabling tourists to engage, contribute, and collaboratively shape tourism offerings through smart technologies, thereby enhancing the overall visitor experience. Australian tourism policies prioritize smart governance and open data utilization, with a focus on increasing stakeholder interaction and aligning efforts toward common objectives. The Destination Management Organization assumes a pivotal role in leveraging collected data to design bespoke tourism experiences that cater to the needs of all stakeholders. A holistic perspective is essential in conceptualizing Smart Tourism Destinations, recognizing dimensions beyond technology, including leadership, human and social capital, entrepreneurship, and innovation (Boes et al., 2015). This comprehensive approach supports inclusive destination planning, fosters entrepreneurial initiatives, cultivates social capital through collaboration, and ensures the continuous development of human capital. Despite theoretical advancements, empirical studies evaluating the true embodiment of smart characteristics in Smart Tourism Destinations remain scarce, Boes et al. in 2016. This research gap underscores the importance of further investigation into the interplay between technology and effective destination management.

4. MATERIAL AND METHODS

This study utilized Bibliometric analysis as its primary method to examine the scientific production related to digital technology in sustainable tourism destinations. Bibliometric analysis, considered one of the most reliable literature review methodologies, was chosen for several reasons. Firstly, it enables the assessment of emerging scientific fields and the identification of trends. Secondly, it aligns with the study's goal of statistically evaluating the use of digital technology in sustainable tourism destinations. Thirdly, it is widely used in the evaluation of literature on sustainable development. Finally, it offers a straightforward and impartial approach, yielding robust findings. The analysis relied on Meta-Analyses (PRISMA) guidelines. The search query was meticulously crafted to gather relevant articles on Sustainable Tourism and Innovative Smart Practices adoption in sustainable tourism. The inclusion and exclusion criteria for selecting manuscripts ensured the integrity and focus of the analysis, emphasizing rigorous methodology, scientific rigor, originality, and relevance to the integration of digital technologies with innovative sustainable tourism practices. By applying these criteria, the study aimed to produce reliable and meaningful findings, contributing to the understanding of transforming sustainable tourism and hospitality through innovative smart practices.

The study compares the various obstacles that various hotel categories had to overcome in order to implement smart innovation. It also looks at how innovation in smart tourism may improve the consumer experience. In order to give readers a better knowledge of smart tourism research, this study uses a systematic review. The settings for this study that are deemed appropriate include Google scholar, Web of Science, Science Direct, and Research Gate. Only pertinent studies that were published in peer-reviewed English-language publications were taken into account. Every research publication that had the search phrases in its title, abstract, or keywords was assessed. The review covers works that were released between December 2023 and 2015.After eliminating 58 duplicate references, the literature search yielded a total of 287 records. Following this, the selection criteria were employed on the remaining 229 records, excluding non-journal publications like books, book chapters, comments, and reviews. Studies in which certain search phrases appeared in "indexed keywords" rather than "author-provided keywords" were also included in the literature screening for the current investigation

to guarantee uniformity across databases. Abstracts were also used for paper evaluation and, if needed, full text access. Following this methodology, a total of 86 records were identified. Each of these records underwent thorough assessment of their complete texts before being included in the final analysis. Notably, the analysis of the literature revealed the broad scope of the term "smart tourism," with several studies merely mentioning it without focusing on its principles or essence. After meticulous cross-checking, 50 research studies were deemed eligible, while 36 studies were found to be ineligible. To provide a transparent overview of our literature review process, Figure 1 illustrates the screening and exclusion stages of the reviewed studies. Moreover, our reporting flowchart adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, Moher in 2009 with slight modifications for clarity and completeness. Using Microsoft Excel, a summary table with the bibliographic data for each of the 50 studies was produced. The retrieved studies are compiled in Tables 1. The sources for empirical research used in this study are presented in Table 1.

Table 1. The Number of Research Paper Discovered

S.no	The Online publishers' databases	No of research paper found
1	Science Direct (sciencedirect.com)	35
2	Web of Science (webofscience.com)	167
3	Google Scholar (googlescholar.com)	37
4	Research Gate (researchgate.com)	48
	Total	287

Source: Author Own data source

5. DISCUSSION

According to most studies, visitors in the hospitality industry care about the environment, so the industry needs to use green sustainability measures to save the environment. Sustainability has advantages for the guests, the employees, and the hotels. Studies have indicated that preserving the environment in the hotel industry benefits guests. By putting into practice green initiatives that centre on the three Rs: reduce, reuse, and recycle, users can safeguard not just the environment and the well-being of hotel guests and staff, but also boost revenue for their establishment. The study's findings and conclusions show that a company that adopts an environmentally friendly business strategy benefits its customers by informing them about environmental regulations and the company's environmental protection initiatives.

5.1 CONCEPT OF SMART TOURISM

In today's interconnected world, the notion of "smart" is closely tied to technological advancements, especially in the realm of tourism and destination management. To achieve this smart status, destinations and players in the tourism industry are increasingly leveraging innovative technologies to enhance resource management efficiency. A smart tourism destination is one that caters to the needs of modern, mobile, and discerning travellers by

providing easy access to hospitality services, experiences, and amenities through various cutting-edge digital tools and technologies as discussed by (Shafiee et al., 2019). However, achieving this status requires the seamless integration of several components and factors. These include well-trained personnel, effective marketing strategies, advanced information and physical infrastructure, environmental consciousness, and collaboration among stakeholders. By focusing on smart features, destinations not only cultivate vibrant cultural and social environments but also provide tourists with unparalleled support, enriching their overall travel experiences.

5.2. REDEFINING TRAVEL EXPERIENCES THROUGH SMART TOURISM TECHNOLOGY

In recent years, the rapid advancement of the internet and information communication technologies (ICTs) has significantly reshaped the landscape of travel and tourism, profoundly influencing the way travellers engages with various experiences. Smart Tourism Technologies (STTs), as highlighted by (Pai, Kang, Liu, & Zheng, 2021), serve as the fundamental infrastructure amalgamating hardware, software, networks, and travel services, providing real-time data to empower destination stakeholders in making smarter decisions. These encompass a diverse array of solutions, including the Internet of Things (IoT), cloud computing, artificial intelligence, mobile applications, big data analytics, Wi-Fi connectivity, virtual and augmented reality, chat bots, wearable devices, QR codes, near field communication (NFC), RFID, social media platforms, and beacons. This comprehensive suite of STTs, offers multifaceted applications aimed at enhancing tourists' experiences and generating additional value. By providing extended reach, valuable information, enhanced flexibility, and decision support, STTs play a pivotal role in facilitating seamless and enjoyable travel experiences, as emphasized by (Gretzel et al., 2015).

5.3. SMART TOURISM EMPLOYS INNOVATIVE TECHNOLOGIES

A number of cutting-edge technologies have arisen to accompany travellers on their travels as a result of altered consumer behaviour and a significant movement toward the idea of smart tourism. Voice control and voice search via AI assistants have become essential for locating and buying tickets as well as delivering a positive customer experience. Additionally, voice-activated devices help guests with more than just booking and related tasks; they may also be used to gather information from visitors or operate lighting, heating, and other amenities without requiring assistance from a hotel staff. One of the most innovative uses of technology is robotics, which may be used to greet guests at hotels, screen them beforehand, provide them information, and help with cleaning and moving their luggage. Furthermore, robots are frequently used in food preparation and serving. According to Idris et al. (2021), the adoption of contactless payment methods not only accelerates transactions but also enhances the overall customer experience, particularly as cash becomes less essential for consumers. Furthermore, augmented and virtual reality technologies enable travellers to engage in virtual tours and augment their real-world experiences. These innovations, accessible through commonly used web browsers, are particularly valuable for hesitant travellers during uncertain times. Additionally, a key frontier in smart tourism involves the integration of cyber security measures to bolster customer service standards. In this sense, AI chat bots engage in providing clients with 24/7 query resolution. Another important component that supports biometric identifiers such as facial recognition, fingerprint recognition, retinal scanning, and others is

recognition technology as a result, the smart tourism sector has been increasingly leveraging identification technology for contactless check-ins and check-outs. This trend not only attracts tourists from around the globe but also enhances the industry's competitive advantage (Chen, 2018).

5.4. SMART SUSTAINABLE PRACTICES AND THEIR APPLICATIONS

The hotel business has long been a significant contributor to the global economy. Hotels and resorts must address environmental concerns, such as reducing energy use, water usage, and waste management, without compromising service or comfort. Fortunately, technological advancements enable the sector to address these concerns more efficiently and safely. The majority of hotels in the industry adopt eco-friendly technologies. Which embraces the "green" concept? The phrase "Green" refers to efforts to protect, improve, and care for the environment. "Green" hotels are often very self-sufficient, employing a variety of renewable energy sources. Sometimes the sort of hotel benefits from these sources. For example: The Falls Hotel & Spa in Co Clare, Ireland, is the first hotel in Ireland powered entirely by hydroelectric energy from the adjacent Inagh River. The hotel prioritizes environmental awareness and proactive measures. The 140-room hotel and leisure facility are powered by a 220-kWhhydropowerturbine.The Landal Resort Maria Alm in Austria is located on the River Urslau and features a hydroelectric power plant. The resort's hydroelectric plant provides energy and heat for about 550 bedrooms. Furthermore, apart from harnessing hydroelectric power, the resort actively encourages visitors to engage in proper waste segregation practices. Notably, the ITC Grand Chola in Chennai holds the distinction of being the world's largest hotel and commercial building to attain LEED Zero Carbon certification. Similarly, the ITC Windsor in Bengaluru stands out as the world's inaugural hotel to achieve this certification. Demonstrating their commitment to sustainability, the ITC Grand Chola has invested in a proprietary wind and solar farm, augmenting its reliance on renewable energy sources. This exemplifies their proactive approach to leveraging architectural and design solutions for carbon dioxide mitigation. Additionally, the Orchid Hotel Mumbai Vile Parle stands as a prominent eco-friendly establishment in India, being recognized as Asia's premier five-star hotel to obtain Ecotel Certification. The hotel strictly prohibits the use of single-use plastic goods, including among staff members using such sources benefits hotels in terms of sustainability, reputation, guest count, and quality of stay, as well as economic benefits. This encourages other hotel companies to follow suit, leading to more competition and improved environmental quality. However, this isn't the only way the hotel business addresses environmental challenges. The hospitality sector is divided into two major sections: food and beverage and travel and tourism. Eco-friendly techniques and technology improve service quality and sustainability in these sectors.

5.5 PRACTICAL IMPLICATION

This contribution emphasizes two crucial points for policymakers and destination marketers. Firstly, they must communicate that a tourism destination's success relies on collective efforts across various tourism sectors. This requires deep restructuring of relationships within and between organizations to enhance knowledge dissemination, transfer, and absorption, ultimately boosting innovation and competitiveness. Beyond internal communication and marketing, broader coordination mechanisms like fostering social norms and facilitating staff exchange are essential as discussed by (Bregoli & Del Chiappa, 2013). Secondly, stakeholders should be encouraged to invest in both physical and digital technologies to build a cohesive technological infrastructure.

Integrating both components optimally enhances knowledge transfer, innovation, and governance. Neglecting or misjudging either component leads to suboptimal information sharing and lower destination efficiency and competitiveness. It's crucial to educate stakeholders that technologies can only enhance competitiveness when accompanied by cultural and organizational change. Policymakers and marketers should focus on reinforcing both physical and digital components simultaneously through internal marketing efforts to achieve effective sustainable tourism and innovative smart practices by branding and governance.

5.6 FINDINGS AND CONCLUSION OF THE STUDY

The use of new technologies to promote connectivity between travellers and hotels has a lot of promise. This development could lead to solutions for updating hotel services so that visitors can have high-quality experiences according to D. FORIS et al. in 2021. Furthermore, in order to satisfy the expectations of millennial, hoteliers need to revaluate and reshape their services and offerings. Technology can be used as a starting point to develop and identify workable solutions for better communication and advertising, as well as steps to safeguard the health of visitors. The integration of new digital technologies, such as artificial intelligence (AI) and the Internet of Things (IoT), can enhance visitor loyalty and reinstate travellers' confidence in the assurance of their health and safety during their stay. It's getting more and more important for hotels to implement sustainable practices. In terms of efficiency, hotels that are accredited as eco-friendly can gain more trust from travellers by employing renewable energy sources, conserving water, recycling waste, and reducing water consumption. Additionally, a number of recommendations were given regarding ways that the Hotel may enhance its offerings for both eco-friendly travellers and millennial. The study's findings can help small and medium-sized businesses and hotel owners and managers better organize their operations and respond more effectively by utilizing new technology. The findings provide useful ideas for turning the hotel into an eco-friendly establishment while also encouraging stakeholders to consider potential environmental practices that could be applied in lodging units. From an academic perspective, this work contributes to the body of knowledge regarding the relationship between technology, sustainability, and hospitality.

5.7 FUNDING STATEMENT

This research paper is a part of research project funded by the Indian Council of Social Science Research (ICSSR) Under the Minor Research Project Grant No. ICSSR/RPD/MN/2023-24/ST/180

The corresponding author, Suneel Kumar, Professor, Department of Commerce, Shaheed Bhagat Singh College, University of Delhi can be contacted at suneel.kumar@sbs.du.ac.in

5.8 ETHICAL STATEMENT

This research relies exclusively on secondary data from published and publicly accessible sources, with no involvement of human participants or animals. Hence, ethical approval was not required. All data have been cited appropriately, and the study complies with standard academic and ethical guidelines.

5.9 AUTHOR CONTRIBUTIONS

Madhu Kumari collected and synthesized the secondary data, and drafted the introduction and literature review. Dr. Suneel Kumar contributed to the theoretical background and research design based on secondary sources. Dr. Nisha Devi analyzed the reviewed literature, and developed the discussion and practical implications. Dr. Anil Kumar guided the interpretation

of findings and conclusion. All authors contributed to refining the manuscript and approved the final version.

5.10 CONFLICT OF INTEREST

Authors declare no conflict of interest

5.11 DATA AVAILABILITY STATEMENT

Not applicable

REFERENCES

Alexis, P. (2017). Tourism and hospitality industry in the digital era: Case studies of automation and digitization. *Journal of Tourism Futures, 3*(2), 109–113. https://doi.org/10.1108/JTF-12-2016-0056

Bhattacharya, A. (2019). Impact of food delivery apps on restaurant marketing and customer experience. *International Journal of Hospitality Management, 81*, 184–192. https://doi.org/10.1016/j.ijhm.2019.03.006

Boes, K., Buhalis, D., & Inversini, A. (2015). Conceptualising smart tourism destination dimensions. In I. Tussyadiah & A. Inversini (Eds.), *Information and Communication Technologies in Tourism 2015* (pp. 391–403). Springer. https://doi.org/10.1007/978-3-319-14343-9_29

Boes, K., Buhalis, D., & Inversini, A. (2016). Smart tourism destinations: Ecosystems for tourism destination competitiveness. *International Journal of Tourism Cities, 2*(2), 108–124. https://doi.org/10.1108/IJTC-12-2015-0032

Borges-Tiago, T., Tiago, F., Silva, O., & Cabral, J. (2022). Digital transformation in tourism: A bibliometric review. *Tourism Management Perspectives, 41*, 100947. https://doi.org/10.1016/j.tmp.2021.100947

Borges-Tiago, T., Tiago, F., Silva, O., & Cabral, J. (2022). Smart tourism: A new perspective for destination competitiveness. *Sustainability, 14*(1), 1–20. https://doi.org/10.3390/su14010375

Bregoli, I., & Del Chiappa, G. (2013). Coordinating relationships among stakeholders in tourism destinations: Evidence from an Italian case study. *Current Issues in Tourism, 16*(7–8), 672–690. https://doi.org/10.1080/13683500.2013.785484

Broman, S. (2016). Luxury consumption and customer satisfaction in the global tourism industry. *Tourism Economics, 22*(4), 745–761. https://doi.org/10.5367/te.2015.0489

Buhalis, D., & Amaranggana, A. (2014). Smart tourism destinations. In Z. Xiang & I. Tussyadiah (Eds.), *Information and communication technologies in tourism 2014* (pp. 553–564). Springer. https://doi.org/10.1007/978-3-319-03973-2_40

Canoy, N., De Castro, R., & Villanueva, J. (2020). Boracay Island rehabilitation: Environmental recovery and policy lessons. *Journal of Sustainable Tourism, 28*(9), 1343–1362. https://doi.org/10.1080/09669582.2020.1720690

Chang, S., & Jang, J. (2014). Determinants of smartphone booking behavior among young travellers. *Information & Management, 51*(5), 587–594. https://doi.org/10.1016/j.im.2014.03.001

Chen, C. C., & Petrick, J. F. (2013). Health and wellness benefits of travel experiences: A literature review. *Journal of Travel Research, 52*(6), 709–719. https://doi.org/10.1177/0047287513496477

Chen, W. C., Cheng, H. T., & Liu, C. C. (2018). Personalized intelligent mobile tourism system: An empirical study. *Mobile Information Systems, 2018,* 1–12. https://doi.org/10.1155/2018/5131964

Dubbudu, R. (2016). Online ticketing in India: Efficiency and challenges of IRCTC. *Current Issues in Tourism, 19*(10), 1063–1069. https://doi.org/10.1080/13683500.2015.1062472

Girish, V. G., Joseph, J., & Sharma, A. (2022). Smart tourism: Evolution, trends and research

directions. *Journal of Hospitality and Tourism Technology, 13*(4), 662–680. https://doi.org/10.1108/JHTT-10-2021-0324

Gössling, S., & Hall, C. M. (2019). *Sustainable tourism futures: Perspectives on systems, restructuring, and innovations*. Routledge. https://doi.org/10.4324/9780203889055

Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart tourism: Foundations and developments. *Electronic Markets, 25*(3), 179–188. https://doi.org/10.1007/s12525-015-0196-8

Härting, R. C., Reichstein, C., & Härtle, F. (2017). Potentials of digitalization in the tourism industry: An empirical analysis. *Procedia Computer Science, 121*, 794–801. https://doi.org/10.1016/j.procs.2017.11.103

Hunter, W. C., Chung, N., Gretzel, U., & Koo, C. (2015). Constructivist research in smart tourism. *Asia Pacific Journal of Information Systems, 25*(1), 105–120. https://doi.org/10.14329/apjis.2015.25.1.105

Idris, M. A., Adamu, S., Aliyu, A. M., & Umar, A. (2021). Contactless payment technology adoption in the hospitality industry: Benefits and challenges. *Journal of Hospitality and Tourism Technology, 12*(4), 673–688. https://doi.org/10.1108/JHTT-09-2020-0195

Ivars-Baidal, J. A., Celdrán-Bernabeu, M. A., Mazón, J. N., & Perles-Ivars, Á. F. (2017). Smart destinations and the evolution of ICTs: A new scenario for destination management? *Current Issues in Tourism, 22*(13), 1581–1600. https://doi.org/10.1080/13683500.2017.1388771

Kim, H., Lee, S., & Choi, Y. (2020). Tourism growth and environmental sustainability: Evidence from global destinations. *Sustainability, 12*(11), 4574. https://doi.org/10.3390/su12114574

Li, Y., Hu, C., Huang, C., & Duan, L. (2017). The concept of smart tourism in the context of tourism information services. *Tourism Management, 58*, 293–300. https://doi.org/10.1016/j.tourman.2016.03.014

Micera, R., Presenza, A., & Splendiani, S. (2013). Smart destinations: New strategies to manage tourism industry. *Proceedings of the 6th Annual EuroMed Conference of the EuroMed Academy of Business*, 1293–1303.

Milovic, B. (2012). Social media marketing in the tourism industry. *Management & Marketing, 10*(2), 123–134.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine, 6*(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097

Neuhofer, B., Buhalis, D., & Ladkin, A. (2015). Smart technologies for personalized experiences: A case study in the hospitality domain. *Electronic Markets, 25*(3), 243–254. https://doi.org/10.1007/s12525-015-0182-1

Raja Mohamed, R. (2016). ICT and hospitality: Perceptions of managers. *Journal of Contemporary Hospitality Management, 28*(2), 246–265. https://doi.org/10.1108/JCHM-09-2014-0435

Shafiee, S., Ghatari, A. R., & Hasanzadeh, A. (2021). A new insight into smart tourism ecosystem: A service-dominant logic approach. *Journal of Destination Marketing & Management, 19*, 100531. https://doi.org/10.1016/j.jdmm.2020.100531

Shafiee, S., Ghatari, A. R., Hasanzadeh, A., & Jahanyan, S. (2019). Developing a model for sustainable smart tourism destinations: A systematic review. *Tourism Management Perspectives, 31*, 287–300. https://doi.org/10.1016/j.tmp.2019.06.002

Sorokina, T., Ivanov, S., & Webster, C. (2022). Smart tourism and its infrastructure: Mobile technologies and tourist experience. *Tourism Management Perspectives, 42*, 100955. https://doi.org/10.1016/j.tmp.2021.100955

Xiang, Z., & Fesenmaier, D. R. (2017). Big data analytics, tourism design, and smart tourism. In Z. Xiang & D. R. Fesenmaier (Eds.), *Analytics in smart tourism design* (pp. 299–307). Springer. https://doi.org/10.1007/978-3-319-44263-1_19