

Influence Of Technological Innovations on Room Division Management in The Indian Hospitality Sector

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ARTICLE INFO ABSTRACT

This study explores the impact of technological advancements on Rooms Division Management in Indian hotels, emphasizing guest experience and operational efficiency. It examines smart room technologies by analysing academic research, industry reports, and conference papers to identify trends and gaps. Using an exploratory approach, insights are gathered from primary and secondary sources. Given limited research, a narrative review of leading hospitality journals provides a comprehensive perspective. Findings reveal that guests prioritize flexible check-in/check-out, digital meeting facilities, and online booking systems. Process innovations have the most impact, while product and management innovations also contribute positively. However, market knowledge innovations like virtual tours and social media marketing are less influential. The study highlights the need for personalized technological solutions based on guest demographics and travel preferences, offering actionable recommendations for hoteliers to enhance efficiency, satisfaction, and long-term loyalty in a competitive industry.

Key words: Hotel technology, innovation, guest experience, process innovation, guest satisfaction

1. Introduction

The Indian hospitality sector is experiencing a remarkable transformation driven by technological advancements, significantly impacting how hotels manage their operations and enhance guest experiences. The adoption of modern technology in rooms division management has optimized efficiency, streamlined processes, and elevated service quality (Wang & Xiang, 2017). As hotels strive to meet the growing expectations of today's tech-savvy travellers, the integration of innovative digital solutions has become crucial for maintaining a competitive edge in the industry (Fuchs & Reichel, 2013). Differentiation in a service-based industry like hospitality is an ongoing challenge, especially as technological advancements are no longer confined to luxury establishments but are becoming widespread across mid-range and budget accommodations (Ruiz-Molina, 2018). Today's guests expect seamless and technology-driven services, influenced by their exposure to smart homes, AI-powered personal assistants, and high-speed internet connectivity (Latan et al., 2020). Previously, hotel rooms were considered more advanced than guests' personal environments, but with rapid digital transformation, hotels must now ensure their technology offerings surpass what travellers experience at home (Hostettler, 2016). Rooms division management has undergone significant evolution, impacting core functions such as reservations, check-in and check-out processes, housekeeping, security, and in-room services. Artificial intelligence (AI) and automation have become integral to hotel operations, reducing human error and enhancing operational efficiency (Yoganathan et al., 2019). Contactless check-ins and keyless entry have transformed the guest arrival experience, allowing travellers to bypass traditional reception desks and access their rooms using mobile applications (Wang & Xiang, 2017). These innovations have led to smoother, more convenient stays and improved operational workflow (Fuchs & Reichel, 2013). AI and machine learning have also revolutionized customer service by enabling AI-powered chatbots and virtual assistants to offer 24/7 guest support (Ruiz-Molina, 2018). These intelligent systems efficiently handle routine inquiries, recommend personalized services, and even facilitate room bookings, significantly reducing

front desk workload (Latan et al., 2020). Moreover, predictive analytics powered by AI help hotels anticipate guest preferences and provide customized experiences, enhancing customer satisfaction and loyalty (Hostettler, 2016). The introduction of the Internet of Things (IoT) has further transformed rooms division management by creating interconnected environments that allow guests to control various in-room devices with ease (Yoganathan et al., 2019). Smart thermostats, automated lighting, voice-controlled assistants, and intelligent entertainment systems enable guests to personalize their stay, enhancing comfort and convenience (Wang & Xiang, 2017). These technologies also contribute to sustainability by optimizing energy consumption and reducing environmental impact (Fuchs & Reichel, 2013).

Hotel security has also been enhanced with advancements in biometric authentication, facial recognition, and digital identity verification, ensuring that only authorized individuals can access hotel rooms and restricted areas (Ruiz-Molina, 2018). AI-powered surveillance systems enable real-time monitoring, detecting unusual activities, and allowing hotels to respond to emergencies swiftly (Latan et al., 2020). Additionally, cybersecurity measures have become a critical focus, with hotels implementing robust protocols to protect guests' personal and financial data from potential cyber threats (Hostettler, 2016). Housekeeping, a vital component of rooms division management, has been significantly improved through smart housekeeping management systems that leverage real-time data analytics (Yoganathan et al., 2019). These systems optimize cleaning schedules, track staff productivity, and ensure timely service delivery (Wang & Xiang, 2017). Sensor-based technology notifies housekeeping teams when guests leave their rooms, enabling efficient and disturbance-free cleaning operations (Fuchs & Reichel, 2013). Additionally, automated inventory management helps maintain optimal stock levels of essential supplies, further enhancing operational efficiency (Ruiz-Molina, 2018).

Despite the numerous advantages of integrating technology into hotel operations, certain challenges persist. One of the primary concerns is the substantial financial investment required to implement and maintain these systems (Latan et al., 2020). High-tech solutions demand significant funding, and budget constraints may prevent smaller hotels from keeping pace with industry leaders (Hostettler, 2016). Moreover, while technology enhances efficiency, excessive automation may compromise the personalized touch that defines hospitality (Yoganathan et al., 2019). Striking a balance between automation and human interaction remains a critical challenge for the industry (Fuchs & Reichel, 2013).

Another challenge is the need for continuous training and skill development for hotel employees to efficiently manage and operate digital systems (Ruiz-Molina, 2018). Staff must be equipped with the necessary expertise to handle new technologies effectively, necessitating ongoing training programs and adjustments in traditional management approaches (Wang & Xiang, 2017). Additionally, resistance to change among employees, particularly those accustomed to conventional methods, can hinder the seamless adoption of technology (Fuchs & Reichel, 2013). Despite these obstacles, the long-term benefits of technological advancements in rooms division management are evident. Studies suggest that technology-driven enhancements significantly improve guest experiences, increase operational efficiency, and drive higher revenue growth (Latan et al., 2020). Research also indicates that travelers perceive technologically advanced hotels as more competent and reliable, fostering greater customer loyalty and positive word-of-mouth (Hostettler, 2016). Furthermore, data-driven insights enable hotels to make informed business decisions, optimize pricing strategies, and enhance overall performance (Yoganathan et al., 2019).

Looking toward the future, the Indian hotel industry is expected to witness further technological advancements, including blockchain, robotics, and augmented reality (AR) (Ruiz-Molina, 2018). Blockchain technology offers potential improvements in hotel bookings by ensuring transparency, reducing fraud, and streamlining payment processes (Latan et al., 2020). Robotics, already being tested in some luxury hotels globally, may become more widespread in housekeeping, concierge services, and room service operations (Hostettler, 2016). Augmented reality has the potential to enhance guest experiences by offering interactive virtual tours, digital concierge services, and immersive local exploration tools (Yoganathan et al., 2019). Sustainability will also be a key focus in future technological innovations, with energy-efficient systems, smart water management, and eco-friendly solutions becoming integral to modern hospitality practices (Wang & Xiang, 2017). Hotels that integrate green technologies such as AI-powered energy management, solar-powered infrastructure, and waste-reduction systems will not only reduce their environmental footprint but also attract eco-conscious travelers (Fuchs & Reichel, 2013).

In conclusion, technological advancements have significantly impacted rooms division management in the Indian hotel industry, revolutionizing operations through automation, AI, IoT, and enhanced security measures (Ruiz-Molina, 2018). While challenges such as financial investment, workforce adaptation, and maintaining personalized service remain, the benefits of integrating technology far outweigh the drawbacks (Latan et al., 2020). As the hospitality sector continues to evolve, embracing innovation will be key to staying competitive. Hotels that successfully balance digital transformation with personalized guest experiences will be best positioned for long-term success in an increasingly technology-driven industry (Hostettler, 2016).

Literature Review

Technological advancements are harnessed to better fulfil the needs of guests. The idea of smart rooms originated in multinational companies around the world. Artificial Intelligence (AI) is integrated into these rooms to deliver tailored services to visitors. Modern smart rooms now feature voice commands, automated

lighting, sensors, mobile applications, and additional functionalities. Considering these technological innovations, whether the hotels are successfully meeting guest expectations or not, this study seeks to enhance our understanding in the context of smart room concepts, investigate guest preferences for smart room features, and compare the experiences offered by traditional rooms versus smart rooms (Tyagi & Patvekar, 2019).

Technological advancements have consistently influenced the travel, airline, and hospitality industries (Leung, 2019). Within the hotel sector, user-generated content is increasingly recognized as a crucial resource for enhancing service quality and gaining insights into customer satisfaction (Torres et al., 2015). Hotels are progressively adopting modern technologies to optimize efficiency, lower operational costs, customize guest experiences, and elevate service levels (Talwar, 2012). The introduction of advanced technologies in guest rooms has led to higher levels of guest satisfaction, reflecting the growing importance of innovation in hotels, as what is considered a luxury today may quickly become a basic expectation (Lukanova & Ilieva, 2019). Research on technology adoption within the hospitality industry has grown significantly, with a focus on understanding the factors that drive innovation and its utilization (Pourfakhimi et al., 2018). Making informed decisions on innovation has become essential for the sector's growth (Ahmad & Scott, 2019). As technology progresses, it is crucial to consider how guests interact with these advancements. Resistance from guests towards adopting new technologies can pose challenges to integrating them smoothly into hotel operations (Ivanov et al., 2018). Guests' readiness to engage with technology varies, and this difference can influence their overall satisfaction with their hotel experience (Pham et al., 2018).

Guests who are more technologically confident are likely to appreciate the benefits of these innovations more than those who are less familiar with them. Investigating technology adoption through the lens of guest experiences can provide more nuanced insights into how technology-related decisions are made in hotels. The introduction of advanced technologies has been shown to increase guest satisfaction, improve service quality, and boost hotel profitability and competitiveness (Almomani et al., 2017). Research supports the idea that self-service technologies enhance customer satisfaction and loyalty, strengthening the positive relationship between guests and hotels (Shahid et al., 2018). These innovations empower guests to take a more active role in shaping their service experience, allowing hotels to enhance the quality of their offerings (Wang & Sparks, 2014). Self-service technologies, particularly through the internet, have become increasingly integral to hotel renovations and upgrades (Beldona et al., 2018). Pham et al. (2020) argue that technological innovations, particularly in personalized services, are gaining traction in the hotel industry. Integrating self-service technology on hotel websites not only benefits the hotel but also enhances the guest experience (Xiang et al., 2015). Advanced technologies offer greater value by creating more enjoyable and customized service experiences for both guests and frontline employees (Marinova et al., 2017). Enz and Harrison (2008) highlight that innovation plays a key role in areas such as business models, products, services, processes, and marketing channels. The distinction between product innovation, which focuses on developing or enhancing products, and process innovation, which centres on improving business operations—including external procedures and service upgrades—is a common theme in the literature (Kahn, 2018). In the tourism sector, researchers have further refined these categories. For instance, Hjalager (1997) introduced a framework for service innovation that differentiates between management, institutional, and information-handling innovations. Novelli et al. (2006) built upon this model, identifying four types of innovation relevant to tourism: product, process, market knowledge, and management innovation. Product innovation refers to creating new or enhanced products, services, or experiences that deliver added value to customers, while process innovation focuses on improving how these offerings are produced, delivered, or consumed, often incorporating advanced technologies or more efficient business methods. Enhanced market knowledge is about gaining a better understanding of customer preferences, behaviours, and needs through research and data analysis. Management innovation involves implementing new organizational structures or management practices that increase a company's efficiency and effectiveness (Novelli et al., 2006). All four types of innovation are essential for driving growth and success in the hospitality industry.

Understanding what hotel guests want and need is crucial for designing offerings that meet their expectations. This allows hotels to introduce new services or improve existing ones in ways that are more appealing to guests (Kotler et al., 2003). It's also important to recognize that technology-based innovations might hold different value depending on whether guests are traveling for business or leisure, or whether they are domestic or international visitors. For example, business travellers typically require technology that supports remote work, while leisure travellers may focus more on entertainment and relaxation technologies. Likewise, domestic guests and international guests may have differing needs due to cultural or travel pattern differences. By understanding these variations in technology preferences, hotels can better tailor their technological offerings to different guest segments, increasing both satisfaction and loyalty. Additionally, this insight enables hotels to allocate resources effectively, ensuring that technology investments align with the specific needs and expectations of their guests.

Research suggests that evaluating the significance of technology-based innovations in relation to different guest segments and their travel purposes can provide valuable insights for hotel managers. For example, a study by Neuhofer et al. (2014) revealed that the perceived value of technology innovations varies greatly among different guest demographics, with younger guests generally valuing these technologies more than their older counterparts. In a similar vein, Kim et al. (2018) found that the importance of technology-based innovations

depends on the purpose of travel, with business travellers showing a preference for technologies that aid in work-related tasks. Understanding these variations in how guests perceive technology innovations is crucial for hotels aiming to enhance their competitive edge, improve guest satisfaction, and foster loyalty while optimizing resource allocation. Different generations have distinct needs and expectations, making it imperative to stay abreast of technological advancements and emerging guest desires (Fenich et al., 2011). While much of the existing research has focused on the overall impact of technology on guest experiences, it often neglects to delve into the specific types of innovations that hold the most significance for guests (Buhalis & Amaranggana, 2014; Neuhofer et al., 2014; Sigala, 2016). This study seeks to address this oversight by investigating how product, process, market knowledge, and management innovations influence guest satisfaction and loyalty. It evaluates the importance of these technology-driven innovations in enriching the hotel customer experience across the four identified categories: product innovations, process innovations, enhanced market knowledge, and management innovations. Additionally, the study will explore how the perceived value of these innovations varies according to travel intentions and demographic characteristics. The surge in air travel during the 1960s led to the development of Global Distribution Systems (GDS), marking the start of dynamic pricing and providing travel agents with a platform to view available inventories, which ultimately laid the groundwork for today's online travel agencies. In 1966, the Intercontinental Group introduced vending and ice machines on hotel floors. Throughout the 1970s, various innovations emerged, such as MICROS systems and electronic room keys. Between 1973 and 1976, hotels started offering entertainment options like movies and premium TV subscriptions, including HBO, as part of the guest experience. From 1982 to 1986, Teledex introduced phones in hotel rooms, allowing guests to easily make home calls, with the Teledex Diamond phone becoming the most popular model, with over 15 million units used in 125 countries. This progression opened the door for smartphone technology in hotels, with devices like Handy offering guest internet access, local exploration features, and the ability to make calls without using their personal data. Handy was soon replaced by the rise of mobile technology that provided free roaming and Wi-Fi, enhancing the guest experience even further.

Research Hypothesis to guide the investigation

The following research hypotheses are proposed to guide this investigation:

H1: There is a significant difference in guest preferences for technology-driven innovations based on the purpose of travel (leisure vs. business).

H2: There is a significant difference in guest preferences for technology-driven innovations based on the nature of travel (domestic vs. overseas).

H3: There is a significant difference in guest preferences for technology-driven innovations across different age groups.

2. Methodology

This article aims to explore the research related to smart room technologies and the latest trends in their application within the Indian hotel industry. It includes a detailed review of existing literature on smart room technologies by analysing academic studies, industry reports, conference papers, and relevant books. Through this review, key themes, trends, and gaps in the current research have been identified. To address the topic, an exploratory research approach was adopted, gathering information from primary and secondary sources. Given the limited number of available studies, a narrative review of leading journals in the field was selected as the method for this research.

2.1 Scale Development

This research utilized a two-phase method. The first phase involved a qualitative assessment of 12 hotel websites to better understand the existing technological offerings in luxury hotels. Luxury hotels are described as properties that provide "top-tier amenities, services, and facilities in prime locations, catering to well-off travellers seeking exceptional experiences" (Kim & Ko, 2019). These hotels typically feature upscale accommodations, tailored services, and a wide array of premium amenities such as gourmet dining, spas, fitness centres, and entertainment options (Kim & Ko, 2019). Additionally, interviews with six managers from five-star hotels in Kolkata, Hyderabad, Pune, and New Delhi were conducted to identify the innovative technological practices being adopted in their establishments.

For the exploratory study, a survey was conducted with hotel guests to gather their perspectives on the industry's innovation efforts. The survey was divided into three sections. The first section collected demographic details. The second section asked guests to share their opinions on the importance of technology-based innovations they encountered during their most recent hotel stay. Participants rated 50 technologies using a five-point Likert scale, where 1 meant 'Not at all important' and 5 meant 'Very important.' These technologies were chosen based on a review of hotel websites and consultations with hotel management, and they represented innovations that guests were likely to have experienced. In the third section, respondents evaluated the outcomes of technology-based innovations (9 items) on a five-point scale, from 1 (Strongly agree) to 5 (Strongly disagree). These outcome items were developed from insights gathered through a literature review.

2.2 Data Collection

This study gathered quantitative data from both leisure and business travellers who had recently stayed in selected 3- to 5-star hotels in major metro cities of India especially in Kolkata, Hyderabad, Pune and New Delhi as well as from hoteliers working in the above category hotels in India. Primary data regarding impact of technological advancements in room division management in hotels of India was also collected from the hoteliers and the employees working in various hotels in the prime cities of India. Primary data was collected through surveys, questionnaires, social media platforms, online and face to face discussions. Using a non-probability purposive sampling method, the research team reached out to potential respondents through various channels, including direct contact with hoteliers, hotel guests, Google Drive, and social media for collecting primary data. A total of 680 responses were initially collected, but after screening, 631 were deemed suitable for analysis. It's worth mentioning that responses obtained during the pilot testing phase of the survey were excluded from the final analysis. Secondary data was collected of 3 star to 5 star hotels located in prime Indian cities by referring about them in journals, articles, hospitality industry reports, hotel websites and company records. The primary objective of this study was to explore how innovative technologies currently adopted by hotels impact guest experiences.

2.3 Tables

Table 1: Semi Structured Questions for Data Collection

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- Q1** How satisfied are you with the use of technology (self-check-in kiosks, mobile key access, AI chatbots) during your stay?
- Q2** What technological features in the room (smart lighting, voice assistants, automated temperature control) enhanced your experience the most?
- Q3** Have you faced any challenges while using technology-based services in hotels? If yes, please specify.
- Q4** Do you prefer human interaction over automated services (e.g., digital concierge, self-service check-in)? Why?
- Q5** How likely are you to choose a hotel with advanced technology over a traditional one for future stays?
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Table 2. Indian Cities from where Primary data was collected
Name of Indian Cities **Number of Hotels from where data was collected**

Kolkata	10
Hyderabad	6
Pune	6
New Delhi	8
Total	30

3. Results and Discussion

3.1 Findings: Demographic Profile

Out of the 631 respondents who completed the guest questionnaire, 61% were male and 39% were female. Age-wise, 60% of respondents were under 35, 35% were between 36 and 50, and only 5% were over 51 years.

Regarding travel purpose, 82% of respondents were leisure travellers, while the remaining 18% were on business trips. Income-wise, 34% of respondents had an annual income between ₹0-5 lakhs, 37% between ₹5-10 lakhs, 23% between ₹10-15 lakhs, and 5% earned over ₹15 lakhs annually.

Most respondents (82%) were domestic travellers, while only 18% were international tourists.

The respondents identified the following as the top five technologies enhancing their hotel experience: digital meeting facilities, flexible check-in and check-out times, check-in and check-out processes bypassing the front office, online booking systems, and the use of disposable cutlery and glassware. Conversely, the five least significant technological features, as perceived by respondents, included restaurant table management systems, social media marketing, real-time guest feedback mechanisms, digital communication tools, and closed social networks.

Guests ranked process innovations as the most important, followed by product innovations. Management innovations were also valued but ranked lower, while market knowledge innovations were seen as the least significant.

3.2 Process Innovations

Guests appreciated innovations that made their stay more seamless, such as flexible check-in and check-out times, the ability to bypass the front desk during check-in and check-out, convenient online booking systems, disposable cutlery and glassware for added hygiene, and self-service concierge options.

3.3 Product Innovations

When it came to products, features like digital meeting facilities, contactless reservation and check-in, personalized room settings controlled remotely, automated mini-bars, and free Wi-Fi access across the property stood out as favourites.

3.4 Management Innovations

Guests also recognized the importance of management-related technologies, with rainwater harvesting topping the list. Other valued features included advanced property management systems, air purification technologies, virtual menus in restaurants, and automated order-taking systems that enhance the overall experience.

3.5 Market Knowledge Innovations

Among the most appreciated advancements in market knowledge were virtual tours and picture galleries provided on hotel websites, which allow potential guests to explore properties in detail before making a booking decision. Furthermore, promoting deals and offers through social media platforms, combined with the effective use of social media marketing strategies, emerged as key technological features that significantly enhance the overall guest experience.

3.4 Highlights of Indian Hotels adopting global trends in Room Division Management

The Oberoi, Mumbai

This renowned hotel seamlessly blends technology with luxury, offering guests a streamlined experience through digital systems for bookings and services. Features such as contactless check-ins and AI-powered concierge services ensure smooth operations. The Oberoi prioritizes sustainability by implementing eco-friendly practices and enhancing guest experiences through international partnerships.

Taj Palace, New Delhi

Taj Palace skilfully merges traditional Indian hospitality with modern room management technologies, including mobile controls. Its AI-enhanced housekeeping guarantees timely and precise room service. Committed to sustainability, the hotel employs energy-efficient systems to minimize its ecological impact. Collaborations with global brands further elevate the guest experience, positioning it as a leader in hospitality.

ITC Grand Chola, Chennai

Famous for its elegance and sustainability, ITC Grand Chola has adopted automation and green technologies in its room management systems. Guests benefit from real-time room tracking and AI-driven housekeeping, ensuring efficient service. The hotel's eco-friendly initiatives, such as energy and water conservation, distinguish it in the luxury hospitality market.

Leela Palace, Bengaluru

At Leela Palace, advanced room management technologies facilitate smooth check-ins and digital concierge services. The hotel emphasizes operational efficiency through automation and AI, prioritizing tailored guest experiences. Its commitment to sustainability, including water conservation measures, makes it a premier luxury destination.

JW Marriott, Kolkata

JW Marriott Kolkata fully embraces contemporary technology, featuring smart check-in systems and AI-supported housekeeping that enhance guest satisfaction and operational efficiency. The hotel adheres to international sustainability standards through energy-efficient practices, setting a new benchmark for hospitality in the region.

Hyatt Regency, Pune

Hyatt Regency Pune employs AI to optimize housekeeping and room management, enhancing guest comfort with automated temperature and lighting controls. The hotel is committed to sustainability using eco-friendly materials and energy-saving initiatives. Its international collaborations enable it to provide exceptional services that meet global standards.

The Lalit, Mumbai

The Lalit Mumbai is a leader in adopting international trends, offering fully digitized room management systems for a seamless guest experience. AI-assisted housekeeping ensures smooth operations, while the hotel promotes sustainable practices such as water recycling, making it an ideal option for eco-conscious travellers.

Radisson Blu, Agra

Radisson Blu Agra stands out with its mobile-based room control systems, allowing for a customized stay. AI-enhanced housekeeping ensures that rooms are impeccably maintained. The hotel's use of solar energy as part of its sustainability strategy makes it a luxurious choice near the Taj Mahal.

Trident, Jaipur

Trident Jaipur combines traditional elegance with modern conveniences, implementing international best practices in room management. AI-driven housekeeping ensures prompt service, and the hotel's eco-friendly initiatives, such as green energy systems, reflect a commitment to sustainability. The blend of luxury and efficiency makes this hotel a top choice in Jaipur.

Novotel, Hyderabad Airport

Novotel Hyderabad Airport utilizes cutting-edge technology to enhance guest services, featuring automated room division systems and real-time housekeeping tracking. Its sustainability initiatives include energy-saving measures and waste reduction programs. Through its global network, the hotel delivers high-quality service and modern conveniences for international visitors.

Vivanta by Taj, Goa

Vivanta Goa merges with Goan hospitality, offering mobile-based room controls and AI-powered housekeeping for a smooth stay. The hotel is committed to sustainability through water-saving technologies and the use of green energy. By adopting international best practices, it provides a unique blend of luxury and eco-consciousness.

The Park, Kolkata

The Park Kolkata employs digital systems to simplify room bookings and guest services, providing a hassle-free experience. AI-driven housekeeping ensures that rooms are always immaculate and ready for guests. The hotel's eco-friendly initiatives, including energy-efficient lighting and water conservation, align with global trends in sustainable hospitality.

Sheraton Grand, Bengaluru

Sheraton Grand Bengaluru has embraced global trends through automated check-ins and AI-powered housekeeping, ensuring operational efficiency and guest satisfaction. Its commitment to sustainability is demonstrated through renewable energy usage and waste reduction programs. This combination of innovation and luxury makes it a favoured choice for international travellers.

Four Seasons, Mumbai

Four Seasons Mumbai merges luxury with advanced technology, offering AI-driven housekeeping and smart room controls for a personalized guest experience. The hotel is dedicated to sustainability, implementing energy-efficient systems and eco-friendly practices. Its global partnerships help maintain high service standards, positioning it as a leader in contemporary hospitality.

Fairmont, Jaipur

Fairmont Jaipur presents a unique blend of tradition and innovation, with mobile-based room services and AI-enhanced housekeeping to ensure a remarkable stay. The hotel's sustainability initiatives, including energy-saving practices, make it both luxurious and eco-conscious, consistently aligning with international service standards.

The Westin, Gurgaon

The Westin Gurgaon focuses on delivering a seamless guest experience with automated room systems and AI-supported housekeeping. Its eco-friendly initiatives, such as water recycling and energy-efficient lighting, reflect a commitment to sustainability. Global partnerships ensure that its services meet international luxury standards.

The St. Regis, Mumbai

St. Regis Mumbai combines timeless elegance with modern technology, utilizing AI-driven housekeeping and automated room controls to enhance guest comfort. The hotel's sustainability efforts, including the use of green energy, aligning with global environmental standards, creating a unique blend of luxury, innovation, and eco-friendliness.

Renaissance, Ahmedabad

Renaissance Ahmedabad employs international room management systems for efficient, automated guest services. AI-enhanced housekeeping ensures that rooms are always spotless and ready for guests. The hotel prioritizes sustainability with energy-saving technologies and eco-friendly materials, aligning with modern luxury hospitality standards.

Grand Hyatt, Kochi

Grand Hyatt Kochi integrates technology and service with AI-driven housekeeping and real-time room management. Guests enjoy personalized experiences based on data insights. The hotel's commitment to sustainability, featuring energy-efficient systems and waste reduction strategies, positions it as a leader in responsible luxury hospitality.

Pullman, New Delhi Aerocity

Pullman New Delhi Aerocity employs smart room controls and AI-driven housekeeping to deliver an efficient and comfortable stay. The hotel is dedicated to eco-friendly practices, focusing on energy conservation and water-saving initiatives. Its emphasis on luxury and technology keeps it aligned with global hospitality trends.

The Ritz-Carlton, Bangalore

The Ritz-Carlton Bangalore seamlessly blends luxury with modern innovation through its advanced smart room management systems and AI-driven housekeeping services. Its dedication to sustainability is evident in its energy-efficient operations and environmentally friendly practices. By prioritizing personalized guest experiences, the hotel continues to be a top choice for international travellers seeking exceptional hospitality.

Holiday Inn, Chennai

Holiday Inn Chennai provides efficient, technology-enhanced guest services through automated room management systems and AI-assisted housekeeping. The hotel's sustainability efforts, including water conservation and green energy use, align with global environmental trends. Its focus on technology and eco-friendly practices sets a new standard for contemporary hospitality.

Conrad, Pune

Conrad Pune merges with the latest room management technologies, offering automated services and AI-driven housekeeping as exceptional guest experience. The hotel's sustainability initiatives, including energy-saving systems, reflect a strong commitment to eco-consciousness. Its focus on personalized service keeps it in line with global trends.

Aloft, Bengaluru

Aloft Bengaluru offers modern guest experience with mobile-based room controls and AI-enhanced housekeeping. Its commitment to sustainability is evident using renewable energy and eco-friendly practices. By embracing global hospitality trends, it effectively combines comfort and innovation seamlessly.

Crowne Plaza, Jaipur

Crowne Plaza Jaipur integrates international standards with automated guest services and AI-driven housekeeping to provide a smooth stay. The hotel's eco-friendly initiatives, such as energy-efficient lighting and water conservation, reflect a commitment to global sustainability trends. Its blend of luxury and innovation guarantees a high-quality experience for all guests.

3.5 Room Technology Advancement Case Studies in Indian Hotels

The adoption of smart technology in hotel rooms varies across different hotel chains and individual properties in India, with some leading hotels setting the benchmark in tech-enhanced guest experiences.

ITC Hotels, India: Known for integrating advanced technology, ITC Hotels in India offer smart room features like automated lighting, climate control, and in-room entertainment systems. These innovations aim to enhance personalization and convenience for guests during their stay (Prabhu, 2018).

The Park Hyderabad: The Park Hotels, including its Hyderabad location, are pioneers in adopting modern technology. They feature centralized smart room controls, enabling guests to adjust lighting, temperature, and other room settings with ease. This technology not only boosts guest comfort but also supports energy efficiency.

Marriott Hotels, India: Certain Marriott properties in India have incorporated smart room technology, allowing guests to control aspects like lighting and temperature via their smartphones. Marriott's global investment in guest-centered technology is evident in its Indian properties as well (Balani, 2023).

Taj Santacruz, Mumbai: Known for its luxury accommodations, Taj Santacruz in Mumbai uses technology to elevate guest experience. Smart room features include automated curtains, in-room tablets for control, and services customized to guests' personal preferences.

Lemon Tree Hotels: Recognized for its tech-forward approach, Lemon Tree Hotels in India offer smart room controls for lighting and temperature, among other features designed to create a seamless, modern hospitality experience (Goel, 2015).

3.6 Future Outlook

Hoteliers in India are expected to increasingly adopt innovations that enhance guest comfort, boost operational efficiency, and align with global hospitality trends. Key advancements may include:

Integration of Artificial Intelligence (AI): AI could enable personalized and anticipatory services in smart hotel rooms. AI-powered virtual assistants may learn guest preferences, adjust room settings, recommend amenities, and offer local information.

Voice-Activated Controls: Virtual assistants like Amazon Alexa or Google Assistant may become more common, allowing guests to control room settings, access information, and make service requests through voice commands.

Enhanced Security Features: Advanced biometric technologies for access control could enhance security and privacy, providing guests with a seamless, secure experience.

IoT (Internet of Things) Ecosystems: Smart sensors and devices connected through IoT could improve energy efficiency, facilitate room customization, and optimize maintenance operations in smart hotel rooms.

Augmented Reality (AR) Experiences: AR applications could allow guests to explore hotel amenities, view nearby attractions, and take virtual tours directly from their smartphones or AR glasses.

Contactless Technology: Driven by COVID-19, hotels may continue to emphasize contactless options, like mobile check-ins, digital keys, and touchless controls for lighting, temperature, and entertainment.

Environmental Sustainability: Future smart rooms are likely to incorporate eco-friendly practices, energy-efficient systems, and waste reduction measures, aligning sustainability goals.

Personalized Experiences through Data Analytics: Data analytics could help hotels tailor room settings and recommend services based on guest preferences, creating a more customized stay.

Blockchain for Security and Transparency: Blockchain technology could improve the security of guest data and transactions, offering a transparent and tamper-proof system for reservations, payments, and loyalty programs.

Robotic Assistance: Robotics might be used to support room service, housekeeping, and concierge services, adding a futuristic element to the guest experience.

4. Conclusion

The main objective of this study was to identify the most appealing technology-driven amenities from the guests' viewpoint to improve their overall satisfaction. This research contributes to the academic field by providing updated insights into the most impactful technologies accessible to guests while highlighting innovative advancements with the potential to significantly enhance their experiences. The findings of this study hold significant relevance as they focus on guests' perspectives regarding technology-driven innovations in the hospitality sector. For hotel managers, it is essential to remain aligned with guests' preferences for technological use within hotel settings. The insights gained from this research can aid hotel management in assessing the influence of different technologies on guest satisfaction, enabling them to prioritize upgrades or introduce amenities that guests perceive as valuable. Continuously improving technological offerings not only enhances the guest experience but also allows hotels to differentiate themselves in the market, securing a competitive advantage.

By considering this study's recommendations, hoteliers have the potential to achieve differentiation by offering the latest essential tech amenities that elevate guest experience, potentially attracting a new clientele and increasing revenue.

Smart hotels are transforming the future of the hospitality industry, bringing a new wave of innovation and customer-centric solutions. By incorporating technologies like AI-driven personalization, virtual reality for immersive guest experiences, blockchain-powered loyalty programs, robotic assistance to streamline operations, and sustainable practices to promote eco-consciousness, hotels can stand out and thrive in a highly competitive landscape. These technologies have the potential to not only elevate guest experience but also redefine how hotel managers operate and manage their businesses.

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