



Automated service delivery in hotels: balancing efficiency and human interaction for optimal guest satisfaction

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Abstract

The area of implementation of automated business in the tourism and hospitality sector attracts increasing attention due to the difference compared to the traditional way of providing service, which is characterized by warmth and interpersonal communication. With the increase in automation technologies in the hospitality industry, it is essential to examine how these systems affect the guest's satisfaction and the delicate balance between efficiency and human interaction. Automated service delivery in hotels offers numerous benefits, including streamlined operations, faster service, reduced waiting times, reduced staff workload along with others. Technologies such as self-check-in kiosks, automated concierge services, and robotic assistants have the potential to enhance efficiency and convenience for guests. However, finding the right balance between automation and human interaction is essential to ensure optimal guest satisfaction. This paper aims to explore the challenges and opportunities associated with automated service delivery in hotels. It examines the impact of reduced human interaction on guest satisfaction, considering factors such as personalisation, emotional connection, and perception of service quality. It also addresses the challenges that arise from implementing automated systems, including costs, guest adaptation, need for proper staff training, cultural differences, resistance of employees and guests to technology, etc. This paper emphasises the importance of leveraging automation to improve efficiency while preserving key aspects of personalised guest experiences and high-quality service. In the paper, preliminary results are presented that support all the previously mentioned points, with the note that they are subject to change because the survey is still active, and data is still being collected. Ultimately, finding the right balance between efficiency and human interaction is crucial for achieving optimal guest satisfaction in an automated hotel environment.

Keywords: Automation; Technology; Hotel; Human interaction; Guest satisfaction.

1. Introduction

Automation in the service sector is becoming increasingly prevalent in our everyday lives. If we take a moment to reflect, we will realize that we are more frequently opting for online bill payments, ordering food through mobile applications, avoiding queues at the bank, reserving appointments there, and so on. The primary reason for this shift is often attributed to time savings. On the other hand, the situations mentioned are common with predictable outcomes, so there is nothing that excites us or compels us to go through the same process again. Instead, we want to spend our free time more quality-oriented and in a different way.

However, what is the situation in the tourism and hotel industry? It has always been characterized by its warmth and human interaction. Tourists are incorporating automation and service robotics at every stage of their journeys: before reaching their hotel, during check-in, during their stay in a hotel, during check-out, and even after departing from the hotel (Lukanova & Ilieva, 2019). Prior to reaching their hotel destination, they gather information about the location and the hotel itself, followed by making reservations for accommodation and flights. These tasks are accomplished by using mobile applications, virtual reality, or by engaging with chatbots. Upon arrival, they have the flexibility to choose their

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check-in time, which can be completed as early as at the airport or at the hotel itself using digital kiosks (self-service kiosks). During their stay in a hotel, guests have the option to fully tailor their experience by utilizing various technological solutions, which will be elaborated on in the following sections. Technology also simplifies the check-out process, allowing guests to spend less time at the reception desk while providing information about transportation, weather forecasts, and the time remaining until their flight. After departing from the hotel, guests can use a mobile app to leave feedback and rate their previous stay. By opting to do so, guests contribute to enhancing the hotel's operations and may enjoy certain advantages during their next stay. All of these aspects align with the viewpoint of certain authors who assert that it is feasible to automate hotel operations, either partially or entirely, on a sector-by-sector basis. Yet, beneath the surface lies a complex question: can hotels successfully navigate this digital frontier without compromising the personal touch that has long defined their essence?

While there were prior concerns among researchers about the limited optimism regarding the adoption of social robots, largely because the tourism industry prioritized personalized, hands-on experiences, the emergence of the COVID-19 public health crisis has opened up new possibilities and applications for robotic solutions (Zeng et al., 2020). In the foreseeable future, an increasing number of accommodation service providers are expected to embrace automation and robotics to deliver personalized services to tourists. Drawing from past practical examples, we can anticipate ongoing reductions in the cost of technological solutions. This trend will enhance accessibility for providers of tourism services, streamline their operations, and result in substantial cost savings, as discussed in earlier sections of this paper. Given these evolving dynamics in the industry, it is crucial to initiate training programs now to enhance the skills of employees (Kuo et al., 2017). In the same way, companies should also take into account the chance that customers might need a certain amount of learning or information, which would require them to adjust their business activities strategically. (Bowen & Morosan, 2018). The adoption of this technology, when widespread, may introduce fresh challenges, as it could reveal its technical shortcomings and potentially lead to customer dissatisfaction (Buhalis & Moldavska, 2021). The purpose of this paper is to emphasize the significance of utilizing automation to enhance efficiency while preserving essential aspects of personalized guest experiences and high-quality service. Ultimately, it emphasizes that finding the right equilibrium between efficiency and human interaction is pivotal for achieving optimal guest satisfaction in an automated hotel environment. The structure of the paper is the following: after the introductory part, the authors present the theoretical background to enable an easier understanding of the concept of automation in the hotel sector, and its growing presence in various aspects of daily life. Following the authors present the methodology, as well as the results of the empirical research. Based on the findings a discussion was developed, after which follows the conclusion.

2. Automation implementation in the hotel sector: theoretical background

Automation can be explained as the process in which machines are used to perform predefined tasks (Ivanov et al., 2017). Automation of numerous production and service processes is carried out to save time, financial resources, and create identical products. Initially, automation was predominantly present in manufacturing processes. Nowadays, we can experience the automation process in our everyday lives and when receiving various types of services, such as automatic adjustable lights, autonomous vehicles, self-service checkouts, electronic toll collection, air conditioning systems in cars, etc. Younger generations largely embrace these ideas, seeking new and different experiences while aiming to accomplish tasks with minimal effort. On the other hand, older individuals are often more conservative and may have difficulty accepting or may not accept innovations like these. Some reasons for this can include a fear of change, limited knowledge of the subject matter, and a desire for complete control, relying on their existing knowledge and experience. Regardless of the characteristics of both groups of people, the question is how much effort they invest in acquiring knowledge in the field of science and technology, as well as how readily they can adapt to changes in business operations like these.

The integration of automation within the hotel sector is a dynamic endeavor that promises to reshape the hospitality landscape. While it offers numerous advantages such as enhanced operational efficiency and improved guest convenience, it also introduces a spectrum of challenges. Automation technologies encompass a wide range of innovations, from self-check-in kiosks to AI-driven concierge services and robotic assistants. These technologies, as revealed by studies like Vermeulen and Seegers (2009) and Wang et al. (2014), are designed to streamline processes, reduce time of waiting, and ultimately enhance the guest experience. Additional reason for implementing robotics and automation in the hotel industry is to address the pervasive challenges of personnel shortages and high employee turnover, with the industry considering robotics as a viable solution to assume tasks, ultimately leading to a reduction in the required human workforce for effective hotel operation (Koerten & Abbink, 2022). However, the successful implementation of these systems requires careful consideration of factors such as guest adaptation, initial costs (Sigala, 2020), staff training, and the preservation of the essential human touch that defines the hospitality industry (Berry et al., 2002). Furthermore, the disadvantages including concerns about their limited functions, excessive technology usage, job displacement, and reduced human interaction illustrate the concerns linked to its use (Brylska et al., 2022). The automation of services is reshaping the traditionally high-touch tourism sector into a high-tech domain, with concerns among consumers that an overreliance on technology by service providers may diminish social interaction opportunities, potentially resulting in feelings of loneliness and anxiety among consumers (Goel et al., 2022). As we navigate this transformation, it is imperative to leverage automation's potential for efficiency while preserving the hallmark elements of personalized guest experiences

and high-quality service. Inadequate implementation of technological innovations in business practices can significantly impede meeting the service users' requirements (Alrawadieh et al., 2020).

Inadequate implementation of technological innovations in business practices can significantly impede meeting the service users' requirements (Alrawadieh et al., 2020). Some of the main challenges that need to be considered, as highlighted by Ivanov & Webster (2017), include organizational culture, the relationship between labor costs, technology, and productivity, ease of use of technology for guests and employees, guests' willingness to use technology, cultural characteristics of employees and guests, etc.

Within the organizational culture, the service delivery methodology in hotels reflects a range of factors including the hotel's classification, geographical location, size, culture of employees and organizational principles. Family-owned hotels, typically smaller and known for their personalized approach, often epitomize warm hospitality and interpersonal engagement. In contrast, city hotels or those catering to business travelers prioritize expediency, seeking streamlined check-in processes and guest access to facilities. Consequently, the introduction of additional automation in the hospitality industry, through various technological solutions, requires a shrewd assessment by hotel managers (Ivanov & Webster, 2017), especially those overseeing family-owned establishments. Striking an equilibrium that harmonizes automation with the personalized touch is paramount.

The relationship between labor costs, technology, and productivity represents a critical aspect of automation integration. The infusion of technology into hotel operations comes with significant financial investments, particularly when novel technologies are introduced, and suppliers are limited. These expenses encompass various aspects, ranging from technology acquisition and maintenance to staff training, as well as intangible elements like managing employee resistance and mitigating potential negative publicity (Ivanov & Webster, 2017). It is crucial, however, to recognize that human resource productivity is not solely contingent on qualifications; it is also intricately linked to motivation and situational variables. This variance can manifest as inconsistencies in service delivery, even among equally qualified employees. The adoption of automation principles can serve to mitigate these variations, ensuring the consistent delivery of high-quality service around the clock.

User-friendliness represents another important factor underpinning the successful assimilation of automation technology. Whether applied for the benefit of hotel guests or staff members, technology must not introduce complexities or uncertainties in its usage. A complex or unclear utilization process undermines the primary goal of time savings, a fundamental element of technology of this kind.

Guests' readiness and willingness to embrace technology weigh heavily on their satisfaction levels during the stay in a hotel (Cobanoglu et al., 2011). Introducing technologies that do not align with guest preferences or inclinations can yield adverse consequences, ultimately undercutting satisfaction levels. Consequently, rigorous research and meticulous analysis of target market segments are paramount. The insights derived from these assessments form the bedrock of strategic decisions governing the integration of specific technological solutions.

The cultural dimensions of employees and guests exert substantial influence over technology adoption. Disparities in technological readiness and acceptance on a global scale are evident. Countries like Japan, China, and the United States of America readily adopt technology without inherent concerns or fears (Global Innovation Index 2023). In contrast, underdeveloped regions, including selected African countries struggle with pronounced technological challenges. These sociocultural complexities require careful consideration when introducing technology into established work environments. A thorough assessment of employee and guest openness to specific technological solutions is a necessary step, complemented by proactive measures to deal with and reduce resistance if it arises.

In navigating the complex terrain of automation integration within the hospitality sector, these multifaceted challenges serve as significant considerations (Belais & Vasiliadis, 2022). A scenario in which robots predominantly evolve to serve as assistants would pose fewer difficulties for society, as it would avoid direct competition between humans and machines, although conventional jobs might still face significant disruption. At the same time, a keen recognition of automation's transformative potential, capable of improving operational efficiency and guest experiences, remains essential to the changing landscape of hospitality services.

3. Methodology

To investigate the impact of automated services on guest satisfaction in the hotel sector, empirical research was conducted using a structured survey questionnaire which was prepared based on a careful review of the limited prior research pertaining to the utilization of automation within the hospitality industry, specifically in relation to the guest experience with automation (de Kervenoael et al., 2020; Belanche et al. 2021; Brylska et al. 2022; Ivanov et al. 2018; Tavitiyaman et al. 2020 and Xie & Kim, 2022). The questionnaire included questions related to factors influencing hotel selection, key drivers of satisfaction with automated services, and the qualities guests value most in hotel staff within predominantly automated environments, as well as sociodemographic questions. Participants had multiple choice options for most of the

questions (choosing between one or more options depending on the question), but a Likert scale ranging from 1 to 5 was also used for some of the questions. The survey was distributed in August 2023, through email and social networks, and 57 respondents participated successfully in the survey by answering all the questions given. The collected data was processed in Microsoft Excel.

4. Results of the empirical research

According to the results visible in table 1, a total of 57 participants participated in the research. The majority of the respondents were female (50,87%), while there was 47,37% of the male respondents. 1 respondent chose not to disclose their gender. In terms of the age, most of the respondents belonged to the age group 25-34 years (50.87%), after which follow the those belonging to the age group 35-44 (17.54%), 15-24 (15.79% 45-54 (10.53%) and 55 and above (5.26%). Most of the participants (78,95%) are employed, 15,79% identified as students, while 5,26% reported being unemployed. Interestingly, there were no retired individuals among the survey participants. These findings provide a comprehensive overview of the survey's demographic composition, offering valuable insights into the perspectives of a diverse group of individuals across different age groups, genders, and occupational backgrounds.

Table 1. Demographic structure of respondents

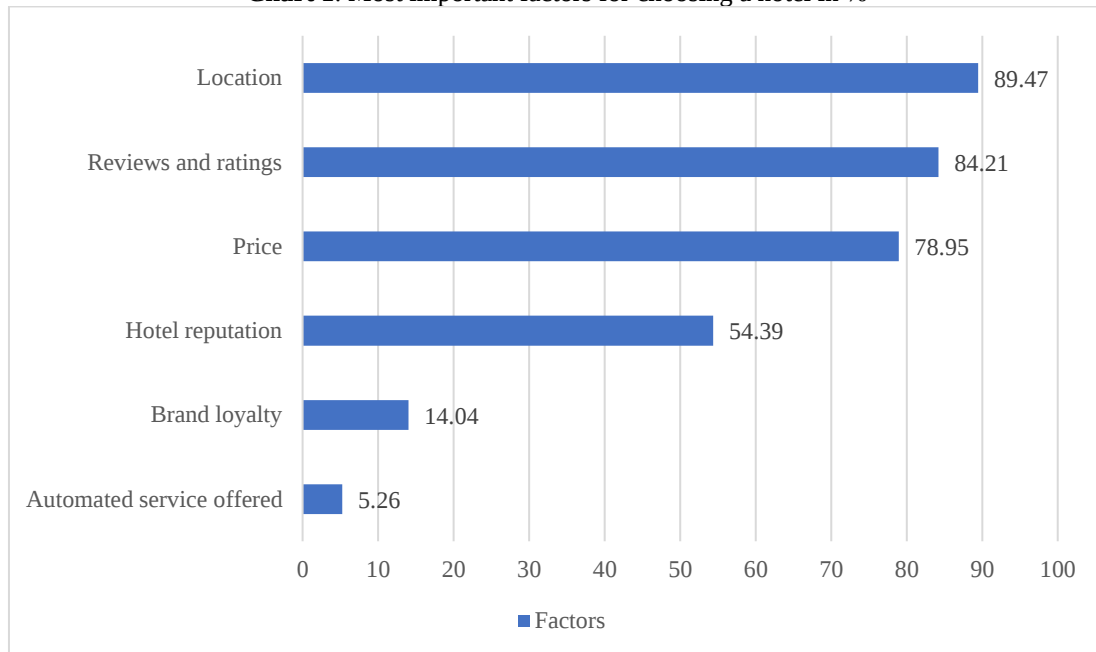
Frequency (N = 57)		
	n	%
Gender		
Male	27	47.37
Female	29	50.88
Prefer not to say	1	1.75
Age		
15 – 24	11	15.79
25 – 34	29	50.87
35 – 44	12	17.54
45 – 54	19	10.53
55+	5	5.26
Current occupation		
Student	9	15.79
Employed	45	78.95
Unemployed	3	5.26
Retired	0	0
Total	57	100.0

Source: Author's calculation based on SPSS 25.0

When selecting a hotel for their stay, travelers tend to consider several crucial factors to ensure their stay meets their expectations (chart 1). The respondents were offered a list and asked to choose three of the most relevant options for them. The results indicate that the following factors emerged as the most important for the respondents:

- Location (89.47%): unquestionably, location proved to be the paramount factor influencing travelers' choices. Being in the right place, whether it's for business, leisure, or convenience, is a top priority for most of the respondents.
- Reviews and ratings (84.21%): trusting the experiences and recommendations of fellow travelers is crucial. High ratings and positive reviews provide valuable insights into the quality of a hotel's service and amenities.
- Price (78.95%): affordability remains a significant determinant in the decision-making process. Travelers are keen on finding the best value for their money while ensuring a comfortable stay.
- Hotel reputation (54.39%): a hotel's overall reputation, which includes factors beyond just reviews and ratings, such as past experiences or word-of-mouth recommendations, still plays a significant role.
- Brand loyalty (14.04%): a smaller but notable percentage of respondents prioritize brand loyalty, often sticking with familiar hotel chains or brands they trust.
- Automated services offered (5.26%): while a relatively smaller percentage, some travelers are intrigued by hotels that offer advanced automated services, reflecting the growing trend of technological convenience in the hospitality industry.

These findings underscore the multi-faceted nature of travelers' decision-making processes, emphasizing the importance of a well-rounded approach to meet the diverse needs and preferences of hotel guests.

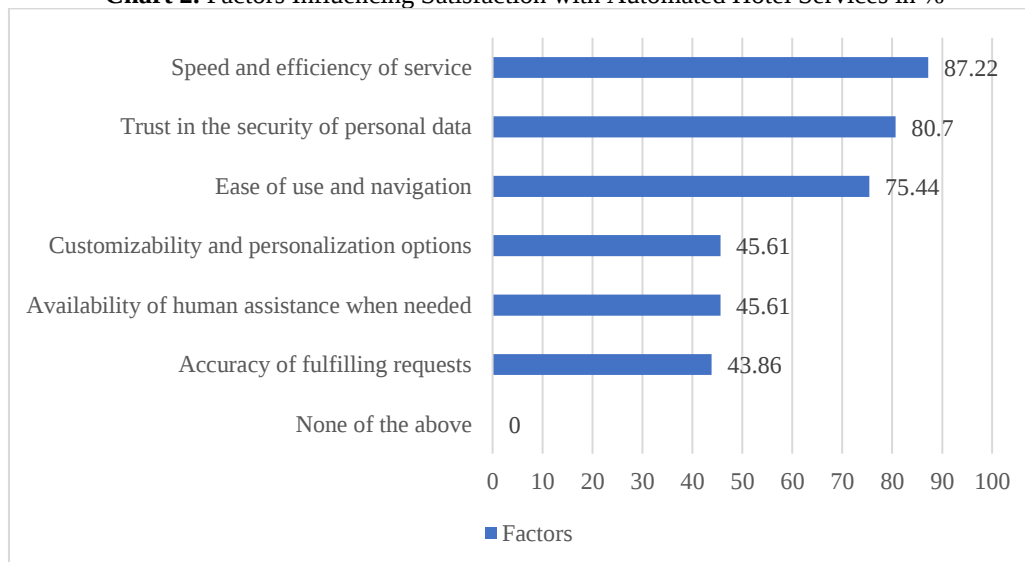
Chart 1. Most important factors for choosing a hotel in %

Source: Authors' analysis

Service robots should not only provide advantages to the company but also deliver tangible benefits to customers by enhancing the quality of service (Belanche et al., 2021). As the hospitality industry increasingly integrates automated services into the guest experience, understanding the factors that influence guest satisfaction has become paramount. In this research, the participants were also asked to select multiple factors that contribute to their satisfaction with these automated services in hotels. The findings illuminate the key drivers of guest contentment:

- Speed and efficiency of service (87.22%): for most respondents, the foremost factor influencing satisfaction was the speed and efficiency of automated services. Guests appreciate quick and seamless experiences that enhance the overall quality of their stay.
- Trust in the security of personal data (80.7%): ensuring the security of personal information ranked high among respondents' concerns. Trust in the safeguarding of their data is a critical element in their overall satisfaction with automated services.
- Ease of use and navigation (75.44%): user-friendliness emerged as a pivotal factor. Guests value systems that are intuitive and easy to navigate, contributing to a hassle-free and enjoyable experience.
- Availability of human assistance when needed (45.61%): while automation is valued, a significant percentage of respondents emphasized the importance of having human assistance readily available when required. This balance between technology and personalized service was considered essential.
- Customizability and personalization options (45.61%): guests seek a degree of personalization in their automated experiences. The ability to tailor services to individual preferences and needs enhances guest satisfaction.
- Accuracy of fulfilling requests (43.86%): The accuracy with which automated systems fulfill guest requests also played a substantial role in influencing satisfaction. Ensuring that technology consistently meets guest expectations is a crucial aspect of guest contentment.
- Notably, there were no respondents who selected "None of the above," underscoring the relevance of these factors in shaping guest satisfaction with automated hotel services.

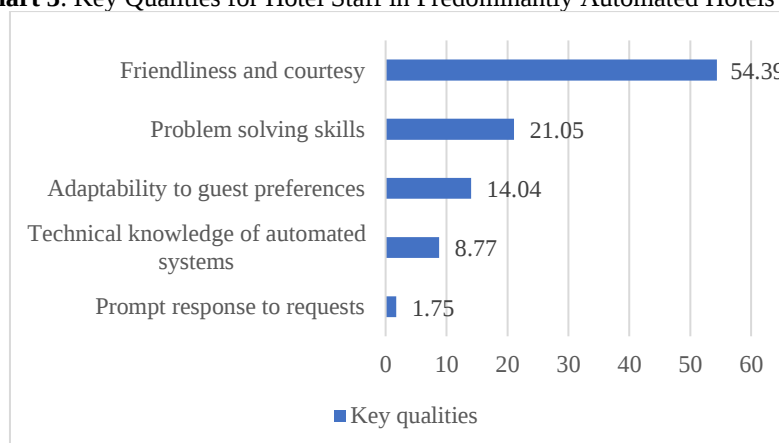
In conclusion, these findings emphasize the multifaceted nature of guest satisfaction with automated services in hotels. Hoteliers should consider these factors to create a well-rounded and fulfilling guest experience that successfully integrates automation while addressing guest preferences and concerns.

Chart 2. Factors Influencing Satisfaction with Automated Hotel Services in %

Source: Authors' analysis

A survey also sought to identify the key qualities that guests consider most important when hotel staff assists them in these technologically advanced settings (chart 3). Participants were asked to select a single quality that they considered paramount. The findings are the following:

- For the majority of respondents (54.39%), the fundamental quality they value in hotel staff is friendliness and courtesy. In an environment increasingly driven by automation, a warm and welcoming demeanor from staff members remains an essential element in creating a positive guest experience.
- Problem-solving skills were identified as the next most important quality (21.05%). Guests appreciate staff members who can swiftly and effectively address any issues or concerns that may arise during their stay.
- The ability of hotel staff to adapt to individual guest preferences was another significant factor (14.04%). This quality allows guests to enjoy a personalized experience within the context of automated services.
- While automation takes center stage in these hotels, a portion of respondents emphasized the importance of staff possessing technical knowledge about the automated systems in place (8.77%). This knowledge ensures that guests receive informed assistance when needed.
- A smaller percentage of respondents placed the highest importance on the staff's ability to respond promptly to guest requests, highlighting the value of efficient service in predominantly automated environments (1.75%).

Chart 3. Key Qualities for Hotel Staff in Predominantly Automated Hotels in %

Source: Authors' analysis

5. Discussion and conclusion

The implementation of automation in the tourism and hotel sector is a subject of growing interest, presenting a significant departure from traditional service delivery characterized by warmth and interpersonal communication. With the increasing adoption of automation technologies in the hotel industry, it is essential to examine their impact on guest satisfaction and the delicate equilibrium between efficiency and human interaction.

This paper delved into the challenges and opportunities associated with automated service delivery in hotels. It explored how reduced human interaction impacts guest satisfaction, considering factors such as personalization, emotional connection, and the perception of service quality. It also addressed the challenges that arise from implementing automated systems, including costs, guest adaptation, the need for proper staff training, cultural differences, and resistance from employees and guests to technology.

The evolution of automation in the service sector is a global trend driven by the quest for time efficiency and convenience. While automation has become the norm in various aspects of daily life, its integration into the hotel industry has introduced a new dimension of challenges and opportunities.

One of the critical challenges lies in the preservation of the distinctive human touch that has traditionally defined hospitality. Guests have long appreciated the warmth, courtesy, and problem-solving skills of hotel staff. As revealed by the survey, friendliness and courtesy rank as the most valued qualities among hotel staff in predominantly automated hotels. This underscores the enduring importance of interpersonal skills in guest satisfaction.

However, the survey also highlights a growing acceptance of automation among guests, with factors like speed, efficiency, and trust in data security influencing satisfaction significantly. This suggests that guests are open to embracing technology when it enhances their experience. Hoteliers must carefully navigate this terrain, leveraging automation to streamline operations while ensuring that it complements, rather than replaces, the human element.

Another challenge is the varying preferences and expectations of guests based on factors such as age, cultural background, and travel purpose. Younger generations tend to embrace technology more readily, seeking novel experiences and convenience. However, older individuals may exhibit more resistance, preferring the familiarity of traditional service. The cost of implementing automation and staff training can be substantial, but the potential benefits in terms of efficiency and consistent service quality can justify these investments. Hotel managers must carefully weigh these costs against the long-term advantages of automation.

In conclusion, the integration of automation in predominantly automated hotels is a complex journey that requires a delicate balance. It demands a blend of advanced technology, human touch, and an acute understanding of guest preferences. As the hotel industry continues to evolve, finding this equilibrium will be instrumental in delivering exceptional guest experiences while reaping the benefits of automation.

Limitations

The findings presented in this paper are based on preliminary data, which means that they are subject to change as more data is collected and analyzed. The survey that serves as the basis for this study is currently in progress. This ongoing nature of data collection implies that the final results may differ from what is presented in the paper.

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