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Evaluating Customer Satisfaction, Emotion and Experience of Smart Hotels in Zhejiang, China: An Analysis of Online Reviews

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Abstract

With the rapid advancements in information technology, the integration of big data management across various sectors is becoming ubiquitous. Recent trends show that hotels in Zhejiang Province are increasingly adopting big data management techniques encompassing data analytics, customer relationship management, and strategies to enhance customer satisfaction. This study explores the domain of smart hotels, specifically examining customer satisfaction measures linked to these innovative establishments in Zhejiang Province. Moreover, it seeks to identify disconnects between technical intelligence and customer satisfaction within smart hotels and to outline prospective developmental trends. The study draws upon customer reviews collated from online platforms, scrutinizing expected outcomes like overall satisfaction, emotional reactions, and the technical adaptability encountered by guests at these smart hotels. Our findings of the study reveals that customers generally express contentment with their smart hotel experiences, particularly valuing the technological atmosphere and the accessibility of smart features. However, the findings also illuminate prevailing challenges, such as irregularities in smart device functionality, a deficiency in perceived cutting-edge intelligence within the hotels, and a shortfall in meeting unique customer needs. Advancing the progression of smart hotels necessitates a focus on enhancing the guest experience by integrating critical factors—environmental, service, and value—alongside insightful customer feedback to refine and shape customer satisfaction.

Keywords:

Customer Satisfaction; Smart Hotel; Online Review; Customer Experience

1   Introduction

In the contemporary hospitality landscape, hoteliers are increasingly turning to innovative service modalities to enhance tourist experiences and secure competitive edges. A prominent example of such innovation is the integration of artificial intelligence technologies, including service robots, aimed at enriching customer interactions. Tan (2017) posits that the creation of an exceptional customer experience stands as the cornerstone of modern hotel operations.

In a pioneering venture, Alibaba's FlyZoo Hotel, operational since 2018, exemplifies a fully unmanned establishment where artificial intelligence and intelligent robotic systems spearhead frontline operations—ranging from guest check-in and concierge services to dining and in-room service delivery (Lei, 2022). Despite these advancements, customer feedback reflects a divide in satisfaction with intelligent services. Research by Lu et al. (2019) reveals that a significant fraction, approximately one-fourth, of consumers are sceptical about the capacity of intelligent services to augment their service experience, with a certain demographic expressing reservations towards robots in roles typically reserved for human staff, including reception and room service attendants, as well as bellhop functions.

Moreover, a 2022 assessment of customer reviews of FlyZoo Hotel's intelligent services on various platforms indicated that about 25.4% of guests were discontent with their experience of the smart amenities, a sentiment that could potentially influence their future patronage decisions. This scenario underscores the crucial need to unravel the nuanced impact of artificial intelligence on the guest experience, as Tung & Au (2018) emphasize, to inform strategies that could significantly bolster guest satisfaction.

2   Literature Review

2.1 Customer Satisfaction

Customer satisfaction is an inherently subjective state, encompassing experiences and emotions that customers develop post-purchase, contingent upon the quality of service received versus their initial expectations. Yang (2019) posits that customer satisfaction is typically determined by this discrepancy between anticipated and perceived service quality. Evaluative measures of hotel customer satisfaction enable establishments to gain timely, accurate, and dependable insights into how customers view their offerings. Such evaluations illuminate the standing of hotel products and services in the consumer's mind, pinpointing areas for improvement. This intelligence is instrumental for informing business strategies and steering hotels toward more effective market competition.

Currently, most hotel customer satisfaction metrics draw from customer perception theories. They employ frameworks like the American Customer Satisfaction Index (ACSI), assessing satisfaction through various lenses—including the quality of hotel services, culinary offerings, accommodations, and environmental factors like location and price, as well as the hotel's brand reputation (Wang & Ma, 2019). Zeng (2019) devised a non-

linear factor analysis model to mine extensive data sets for insights into customer satisfaction, facilitating a quantitative approach to this assessment. Similarly, Li et al. (2020) argue for the strategic importance of distilling valuable insights from large data volumes, emphasizing its critical role in enhancing corporate profitability and customer satisfaction.

2.2 Emotion and Experience

The integration of intelligent customer service in the hospitality industry necessitates a deeper understanding of its perceived value and satisfaction from a tourist's perspective. With the technological synergy between intelligent customer service and fields like artificial intelligence, mobile internet, and big data, scholars like Jiang and Cao (2024) highlight its potential to enhance operational efficiency, enrich the customer experience, mitigate staff workloads, curtail operational costs, and refine the brand image of enterprises.

The assessment of a smart hotel's success is inherently tied to the guest living experience, where the design of smart guest rooms transcends mere convenience. It delves into enriching the customer's entire stay by honing in on their experiential perception (Yu, 2023). This sentiment is echoed by Ye and Zeng (2022), who posit that hotels should not only implement intelligent service facilities but should also weave them into the entire spectrum of the guest experience to elevate customer living standards.

Central to the intelligent evolution of hotels is the focus on the emotional experience of guest interactions, as argued by scholars like Wang (2023). The services provided by smart hotels should be intricately aligned with the unique needs of customers. Through comprehensive user profiles and precise segmentation, hotels can identify and cater to the distinct preferences of different customer groups with customized service combinations and product recommendations.

Furthermore, the role of emotions and experiences in smart hotels cannot be overstated. They are vital components that deeply influence guest satisfaction and brand loyalty. The ability of smart hotels to elicit and respond to guests' emotional states through sensitive and responsive technology plays a pivotal role in transforming an efficient stay into an unforgettable experience. Smart hotels that excel at recognizing and catering to these emotional needs can foster a sense of connection and satisfaction that may encourage repeat business and positive referrals. Thus, the interplay of advanced technology and emotional intelligence is essential, ensuring that the deployment of smart services enriches the human aspect of the hospitality experience.

2.3 Smart Hotels

The current scholarly literatures concerning smart hotels reveals substantial inquiry into the subject, with a search for terms such as "smart hotels" and "hotel intelligence" yielding over 500 journal articles and dissertations over the past decade. This body of

research predominantly explores the integration of smart technology into hotel design and the enhancement of functional capabilities.

Li et al. (2018) underscore the growing importance of smart technologies in the hospitality industry, highlighting active initiatives to advance equipment intelligence and the establishment of robotic services within hotels. Conversely, Han (2019) critiques the developmental trajectory of smart hotels, pointing out the challenges including the low level of intelligence implementation and underutilization of intelligent amenities. Moreover, Han notes that smart hotels have yet to synergize effectively with smart tourism to create a significant scale effect, and provides insights into the prospective evolution of smart hotels.

International studies often concentrate on the nuances of intelligent devices such as service robots, examining their implications on the user experience, particularly concerning the aspects of intelligence and security. Qiu et al. (2019) approach the subject from a brand perception angle, evaluating the influence of robotic services on hotel brand recognition. Furthermore, Gursoy et al. (2019) describe customer experience satisfaction as an intricate process encompassing psychological and emotional variations, where the experience is the psychological reaction of individuals to their surroundings, inclusive of subjective sensations, value judgments, and pleasure.

In evaluating customer satisfaction, scholarly attention is drawn to the American Customer Satisfaction Index (ACSI), an evolution of the Swedish Customer Satisfaction Index model. The ACSI is a macroeconomic indicator that assesses the quality of economic output and stands as a composite index, measuring customer satisfaction through the consumption process of products and services (Zhao, 2020). The ACSI model posits three determinants influencing customer satisfaction: perceived quality and perceived value, which are precursors to customer contentment.

The academic exploration of customer satisfaction within the context of smart hotels remains comparatively underdeveloped. This study seeks to bridge this gap by adapting the ACSI model and tailoring it to the unique attributes of smart hotels, thereby introducing a novel customer satisfaction evaluation model—specifically for the intelligent hotel milieu. This model incorporates established principles but is customized to reflect the specificities of smart hotels, aiming to delineate a set of evaluative indicators pertinent to this modern hospitality framework.

The proposed model considers several independent variables that are likely to influence customer satisfaction in smart hotels. These variables include customer perceptions of quality, expectations of smart hotel services, and perceived value of these innovative establishments. The observational variables under scrutiny are classified into three categories: environmental factors, service factors, and value factors. Here, the customer's perception of the quality of smart hotels and their expectations from smart hotel services are encapsulated by environmental and service factors. Meanwhile, the perception of the value of smart hotels is regarded as a value factor. This comprehensive approach aims to offer a holistic understanding of customer satisfaction drivers in the smart hotel sector.

2.4 Online Review System

The advent of online interactive evaluation systems has revolutionized customer engagement, facilitating real-time communication and sharing. Guo et al. (2022) advocate for sustaining customer relationships through online promotional activities that not only retain current customers but also lure new ones to engage with the brand's experience. Online reviews constitute post-consumption experiential feedback in various formats, including text and images. They significantly influence corporate reputation and are crucial for potential consumers deliberating purchase decisions, also providing valuable insights for companies strategizing future growth.

According to Shi et al. (2020), the quality of the tourist experience can exert a positive impact on tourists' behavioural intentions. The insights derived from this study are instrumental for destination managers aiming to refine services to cater to the diverse experiential needs of different tourist demographics.

Currently, platforms such as Ctrip Travel and Feizhu dominate the online tourism sector in China's domestic market. However, platforms like Yilong and Qunar also command a notable share of the online booking landscape, as discussed by Geetha et al. (2017). In 2022, Ctrip and Feizhu accounted for over 70% of the online review volume in China's online tourism marketplace, also leading in room transaction volume in the online hotel segment. These platforms are esteemed for their credibility among consumers and offer comprehensive online review metrics, making them highly pertinent for research on customer satisfaction in Hangzhou's hotel industry. Consequently, this study utilized Ctrip and Feizhu as the primary sources for online review data acquisition.

In summary, contemporary scholarship regarding smart hotels increasingly highlights the pivotal role of customer emotion and experience. Despite the last decade's scholarly focus primarily on the technological aspects and intelligent infrastructure of these establishments, there has been a noticeable deficit in studies concentrating on the customer experience. Current research trends advocate that smart hotels should expand their scope beyond merely refining technological features to also amplify their investment in enhancing customer experience. The ultimate objective of intelligent services within the hospitality industry is to attain elevated levels of customer experience and satisfaction, acknowledging that sophisticated technology should be leveraged to enrich human-centric aspects of the guest experience.

3   Methodology

Online content analysis is an established quantitative method that distils substantial data from the overt content shared on the internet, providing an objective, systematic, and quantitative overview of content disseminated online. This research employs quota sampling to collect data from prevalent Online Travel Agencies (OTAs) in China, namely *Ctrip* and *Feizhu*, ensuring the representativeness of the data. Due to the fact that FlyZoo

Hotel is a brand hotel under Alibaba, the booking rate and customer reviews on *Feizhu* platform are much higher than other OTA platforms such as Ctrip. Therefore, comments from *Feizhu* platform customer reviews as the data source for this study is more effective, the comments of FlyZoo hotel mainly from *Feizhu* platform, customer comments from other three hotels would be selected both of these two platforms, and the selected period is from October 2021 to October 2023. The study analyzed a dataset comprising 3,122 comments related to four distinguished smart hotels in Hangzhou—FlyZoo, Weilai, Yibo, and Taiyi—located in the Zhejiang Province, with the data retrieved via the Bazhuayu System. A thorough data cleansing process was implemented to ensure the integrity and applicability of the information. This process involved the removal of automatically generated positive feedback, irrelevant images, and repetitive posts, retaining solely the substantive textual feedback. The final data cleaning resulted in a collection of 2,052 valid comments suitable for the study's analysis.

Table 1: Statistics of Hotel, Platforms, Comments

Hotel	Platforms	No. of Comments	No. of Invalid Comments	No. of Valid Comments	Note
Hangzhou FlyZoo	Ctrip/Feizhu	1576	1037	539	
Hangzhou Weilai	Ctrip/Feizhu	743	519	224	The Most Popular
Hangzhou Yibo	Ctrip/Feizhu	452	283	169	
Hangzhou Taiyi	Ctrip/Feizhu	351	213	138	

Table 1 presents a synthesized view of the comments harvested from the respective OTAs, delineating the volume of discourse per hotel and distinguishing between valid and invalid submissions. Hangzhou FlyZoo Hotel emerges as the most frequently commented entity, indicative of its popularity among patrons.

The research further harnesses ROST CM software for a comprehensive high-frequency vocabulary analysis of the comments, aiming to elucidate customer satisfaction within smart hotel experiences. This involves cataloguing and sifting through high-frequency terms to create a visual representation of the experiential elements via a word cloud. Additionally, the study constructs a semantic network graph to explore the interrelationships and core semantics of pivotal high-frequency terms, enriching the understanding of the customers' hotel experiences. The sentiment analysis function within the ROST CM suite is deployed to evaluate the emotional tone of the public's feedback. Lastly, text segmentation and frequency analysis spotlight the top 50 high-frequency terms for focused examination.

4 Findings

4.1 High Frequency Vocabulary Statistics and Analysis of Online Review

The collation and analysis of high-frequency words from online reviews, detailed in Table 2, reveal insightful patterns about customer priorities and experiences in smart hotels. Evidently, 'smart' features are a central attraction and a frequent subject of guest commentary, with terms related to smart device experiences in hotel rooms prevailing in discussions.

Table 2: High Frequency Words

Words	Frequency	Words	Frequency
Bedroom	1129	Unmanned	166
Bathroom	981	Breakfast	151
Robot	827	Experience	140
Tianmaojingling	772	Control	133
Xiaodu	697	Safety	123
Service	654	Facilities	120
High technique	601	Operations	115
Children	522	Voice Identification	108
Convenient	519	Disappointed	100
Restaurant	410	Friends	89
Location	399	Shopping	87
Comfortable	378	Lights	70
Check-in	322	Buffet	65
Check-out	300	Future	60
Design	279	Suite	51
First time	244	Twin bedroom	49
Clean	232	Queen size room	44
Automatic	221	King size room	42
Value for money	210	Playground	38
Toilet	200	Lobby	29
Price	198	Curtain	28
Furniture	187	Publication	28
Food Flavor	177	Lunch	22
Happy	172	Dinner	20
AI technology	170	Lift	11

The term 'bedroom' leads the frequency count, suggesting that the primary living space holds significant importance for guests. Its high occurrence is indicative of the guests' focus on the comfort and functionality of the sleeping quarters. 'Bathroom' follows, reinforcing the value placed on private amenities and hygiene facilities within the accommodation. The prominence of 'robot' and specific device names like 'Tianmaojingling' and 'Xiaodu' implies that the novelty and performance of automated

services and devices capture guests' attention and significantly influence their perceptions.

The mention of 'children' with considerable frequency reflects the hotel's appeal to families, and a likely correlation with family-oriented services and amenities. The term 'convenient' aligns with the expectation for efficiency and ease, particularly valued by business travellers and families who often seek a seamless stay experience.

Analysing terms like 'check-in' and 'check-out' alongside 'automatic' suggests that guests are taking note of the automated processes involved in their arrival and departure, and their impact on the overall experience. 'Value for money' emerges as a significant factor, alluding to guests' evaluation of their expenditure in relation to the quality of their stay.

The appearance of 'disappointed' amidst predominantly positive terms may indicate areas where expectations are not met, and despite the high-tech allure, there remain aspects that require enhancement. It's crucial for hotel management to consider this feedback to refine their offerings.

Overall, this linguistic snapshot from Table 2 underlines the imperative for smart hotels to balance technological innovation with the essential comfort, service, and value that form the bedrock of hospitality. While guests are drawn to and appreciate the smart aspects of their stay, their satisfaction ultimately hinges on a holistic experience that adeptly integrates these advancements with the traditional expectations of quality service and accommodation.

4.2 Analysis of Classified Experience of Smart Hotels

The stratified analysis of smart hotel experiences dissects guest feedback into four distinct categories as represented in Table 3. These categories—hotel service, hotel environment, intelligent device classification, and usage experience of intelligent devices—are vital in discerning the aspects of service that most resonate with customers.

In the realm of hotel service, the high-frequency terms underscore the pivotal role of staff interactions, with specific emphasis on the conduct and demeanor of service personnel. Mentioned 1235 times, these references constitute 19.4% of the total frequency, highlighting the substantial weight of service quality in the customer experience.

Concerning the hotel environment, guests frequently cite elements such as bath amenities, comfort, location, and design. These terms, appearing 1689 times and comprising 26.6% of the comments, point to the significant value guests place on the aesthetic and functional aspects of the hotel's physical setting, with particular attention to core areas like restaurants and rooms.

Intelligent device discussions reveal guests' perceptions of the integration of technology within the hotel context. The terms associated with this category—such as AI technology and various device names—amass the highest frequency at 2331

mentions, representing 36.7% of the dataset. This underscores the intrigue and importance placed on smart devices in enhancing the hotel experience.

Table 3: Classification of High-frequency Words

Categories	High-frequency Words	Frequency	Specific Gravity%
Hotel Service	Service, Room, Restaurant, Clean, Breakfast, Dinner, Environment, Suitable, Design, Staff	1235	19.4%
Hotel Environment	Bath Amenities, Comfortable, Suitable, Location, Parking Area, Price, Lobby	1689	26.6%
Intelligent Device	Facilities, Room Service, Lift, Curtain, TV Set, Unmanned, AI Technology, High Technique, *Tianmaojingling, Xiaodu*	2331	36.7%
Usage Experience	Automatic, First Time, Children, Voice Identify, Safety, Control, Value for Money	1099	17.3%

Finally, the usage experience category reflects on how guests interact with the intelligent devices. Here, while many comments are positive, the recurrence of terms indicating inadequacies or disappointments, with 1099 occurrences and 17.3% frequency, signifies a critical area for improvement. These sentiments suggest that while customers are generally receptive to the incorporation of smart technologies, there remains a gap between their expectations and the actual functionalities or reliability of these devices.

The comprehensive analysis of high-frequency terms in customer feedback illustrates a clear picture of the customer experience landscape in smart hotels. It is evident that while there is an appreciation for the advanced technological environment, the service quality and human element remain paramount in achieving customer satisfaction. Moreover, the expectations from intelligent devices are high, and the hospitality industry must strive to address the noted shortcomings, ensuring that these innovative solutions not only meet but exceed the anticipated standards. The feedback indicates a need for a harmonious blend of sophisticated technology, impeccable service, and a welcoming environment to elevate the overall guest experience.

4.3 Satisfaction analysis of smart hotel experience

In the analysis of customer satisfaction regarding smart hotel experiences, four dimensions are explored to gauge the factors contributing to guest contentment (as detailed in Table 4). Environmental attributes, service quality, value propositions, and technological aspects are examined to understand their influence on customer perceptions. Environmentally, the prominence of terms such as 'comfortable,' 'clean,'

'decoration,' and 'hygiene' in customer feedback emphasizes the importance of the physical setting in shaping guest experiences. Notably, the term 'clean' surfaces as a recurrent point of discussion, accentuating the significance of cleanliness and hygiene in forming a positive public perception of the hotel's environment.

Service factors scrutinize interactions with hotel staff, with 'waiters' being a frequent subject of guest comments. However, these references often highlight concerns regarding the attitude of the waiting staff, pointing to an area needing improvement. Additionally, the topic of delivery services, particularly those executed by robots, surfaces regularly, suggesting an emerging trend or issue that requires attention within the realm of automated services.

Table 4: Word Frequency and Vocabulary of Customer Satisfaction Factors

Customer Satisfaction Factors	Frequency
Environmental Factors	
Comfortable	369
Clean	335
Decoration	297
Hygiene	280
Service Factors	
Waiters	391
Delivery services	377
Robot delivery	310
Work attitude	293
Value Factors	
Cost-Effectiveness	429
Suitable	401
Price	388
Worthless	361

When considering value factors, descriptors such as 'cost-effectiveness' and 'value' predominate, encapsulating the guests' assessment of their financial expenditure versus the perceived quality of their stay. These descriptors are vital in understanding how guests quantify the worth of their experiences at smart hotels.

This multifaceted approach to satisfaction analysis reveals that while certain aspects of the smart hotel experience, like environmental factors, are well-received, others, particularly in the domain of service, present opportunities for refinement. The mention of poor attitudes among waitstaff and the mixed reception of robotic delivery services indicate specific areas where the integration of technology and human touch need to be balanced and optimized. Furthermore, the focus on value suggests that customers are not only interested in the qualitative aspects of their stay but also in the economic rationale behind their choices.

To elevate the guest experience, it is evident that smart hotels must address service-related concerns promptly, ensure the environment remains a strong suit, and continuously evaluate the cost-benefit ratio from the perspective of their clientele. Simultaneously, a thorough assessment of how automated services are perceived can provide insights into the optimization of technological implementations within the hospitality industry.

4.4 Analysis of Customer Experience Comments and Concerns in Smart Hotels

Utilizing ROST CM software for the textual analysis of online customer reviews, the findings elucidate customer sentiment towards smart hotel services. The analysis identifies 'hotel,' 'room,' and 'experience' as central themes in customer discourse, serving as key indicators of service evaluation. These terms emerge as the most frequently mentioned, thereby forming a 'core layer' in the dataset, indicative of their significance in customer feedback.

Table 5 presents the distribution of emotional responses among the customers, providing valuable insights into the customer satisfaction landscape. The prevalence of positive emotional responses, comprising 72.3% of comments, signals a strong satisfaction rate and suggests that the majority of guests appreciate the convenience and enhancement brought about by smart technologies in their hotel experience.

Neutral responses, accounting for 16% of the dataset, represent a segment of the clientele whose experiences have not elicited a strong emotional response. This demographic may highlight an opportunity for smart hotels to further engage and potentially convert neutral sentiments into positive ones through targeted improvements or personalized experiences.

The proportion of negative emotions, although the smallest at 11.7%, offers critical feedback for the continued refinement of smart hotel services. These comments often provide specific insights into areas where expectations are not met, including aspects of the smart technology interface, customer service, or the overall ambience created by the intelligent systems.

The analysis through ROST CM offers a granular view of customer attitudes, and by dissecting both the subjective and objective content of reviews, hoteliers can construct a comprehensive picture of the customer experience. The statistical evidence of customer sentiment underscores the need for a dual approach: maintaining and enhancing areas that receive positive feedback while addressing the root causes of neutral and negative responses. For smart hotels, this approach is not merely a reaction to feedback but a strategic path to elevating the guest experience, tailoring services to meet and exceed the sophisticated expectations of modern travellers.

In synthesizing these findings, it is evident that the hospitality industry has made significant inroads in incorporating smart technology into the customer experience, achieving a strong base level of satisfaction. However, the existence of neutral and negative sentiments reveals an opportunity for further refinement. The data suggests a need to go beyond the rudimentary implementation of smart features and to delve into

a more tailored, emotionally intelligent approach that aligns closely with the evolving expectations of guests. By harnessing the detailed feedback encapsulated within customer reviews, smart hotels have the potential to innovate and fine-tune their services, fostering an environment where positive experiences are not just prevalent but are the standard expectation.

Table 5: Emotional Tendencies

Analysis Results	Number of Comments	Satisfaction Rate %
Positive Emotions	673	72.3%
Neutral Emotions	149	16%
Negative Emotions	109	11.7%

The tabulated emotional tendencies in Table 5 show that the majority of customer feedback is laden with positive sentiments, accounting for 72.3% of the comments, affirmatively reflecting on the efficacy and impact of smart hotel technologies. Neutral emotions, which neither express satisfaction nor dissatisfaction, constitute 16% of the feedback, suggesting an area where experiences could potentially be converted into more positive interactions with targeted enhancements. Notably, 11.7% of the comments express negative emotions, an important albeit smaller fraction that signals specific areas for improvement, including technological reliability, customer service, and the overall alignment of smart hotel features with guest expectations.

The varied emotional responses captured by customer feedback reveal that while smart hotel technologies have enhanced certain aspects of the hospitality experience, they have not consistently surpassed the psychological benchmarks of customer expectations to evoke a sense of extraordinary satisfaction. The quantitative satisfaction metrics indicate that the hospitality sector's technological advancements are on the right path, yet there is a noticeable margin for elevation. To transcend current levels and cultivate exceptional satisfaction, a deeper understanding of customer anticipations is essential. This entails not just meeting but exceeding the nuanced expectations guests associate with smart technology, which includes seamless integration, personalized experiences, and anticipatory service that caters to individual preferences and needs. The findings suggest a pivotal opportunity for smart hotels to refine their technological offerings and service protocols in pursuit of an elevated guest experience that aligns with the aspirations of modern travelers for efficiency, personalization, and technological sophistication.

5 Conclusion

Regarding customer satisfaction in smart hotels, customers have expressed overall contentment with key features such as efficient check-in processes and enriching experiences. The qualitative aspects of these experiences are reported to be of a high

standard, often meeting the expectations for convenience and technological engagement, thereby positively influencing guest reviews. These elements are fundamental to fostering customer loyalty and potentially increasing hotel profits. However, a comparable number of reports cite negative experiences, primarily attributed to inconsistent functionality of smart devices, unsatisfactory staff interactions, and an intelligence level of the amenities that fell short of expectations.

Customer reception of smart hotel technologies generally appears favourable. The ease and rapidity of use, as mentioned in word frequency analyses, suggest that the operational complexity of smart devices is minimal, which is conducive to the acceptance of novel technologies by users. In the past, smart hotels focused more on the development of technology, big data and artificial intelligence, but neglected customer experience. The future development trend of smart hotels may start from providing personalized service experiences for each customer by collecting and analyzing customer preference and habit data, including customized room decoration, dining choices, event arrangements, etc. Smart hotels can also focus on integrating humanized elements into their architecture and interior design, creating a comfortable and warm environment, and enhancing the living experience and emotional identity of customers. In addition, Smart hotels can adopt more environmentally friendly and energy-saving technologies and equipment, reduce resource consumption and environmental pollution, promote the concept of sustainable development, and conform to the values of contemporary society. Finally, the development of smart hotels in the future will pave more attention to customer experience and improve customer satisfaction and brand value through innovation in personalized services, humanized design, and sustainable development.

In relation to customer expectations, the technology largely fulfils the anticipated needs of guests. Nonetheless, instances of dissatisfaction and perceived value deficits have been identified, highlighting a misalignment between the actual service provided and some customers' psychological expectations. In essence, for smart hotels to progress, the enhancement of technical services, refinement of the customer emotional journey, and delivery of smarter, more secure, reliable, and tailored services constitute the pivotal elements.

6 About the author

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7   References

Geetha, M., Singha, P., Sinha, S. (2017). Relationship between Customer Sentiment and Online Customer Ratings for Hotels - An Empirical Analysis. *Tourism Management,* (61): 43-54.

Guo, Y. Q., Zhang, X. H., Zhao, Z. J., Zhao, Q. S. (2022). The Impact of Online Comment Content on Hotel Customer Satisfaction. *Journal of Economic Research Guide,* (26): 45-47.

Gursoy, D., Chi, H. O., Lu, L. (2019). Consumers Acceptance of Artificially Intelligent Device Use in Service Delivery. *International Journal of Information Management,* (2): 157-169.

Han, D. (2019). Research on the Development Status of Smart Hotels in Yantai City. *Journal of Modern Economic Information,* (21) 483-487.

Jiang, F., Cao, Y. (2024). Analysis of perceived value and satisfaction of tourists towards intelligent customer service. *Journal of Business Exhibition Economy,* (04): 052-055.

Lei, C. (2022). Research on the Impact of Customer Experience Satisfaction in Smart Hotels. *Journal of Chongqing Technology and Business University (Social Science Edition)* (2): 145-155.

Li, L., Zhao, H., Yang, J. (2020). Using Data Mining to Improve Customer Satisfaction. *Technical Economy,* (10): 41-43.

Lu, L., Cai, R., Gursoy, D. (2019). Developing and Validating a Service Robot Integration Willingness Scale. *International Journal of Hospitality Management,* 80(1):36-51.

Qiu, H., Li M., Shu, B. (2019). Enhancing Hospitality Experience with Service Robots: The Mediating Role of Rapport Building. *Journal of Hospitality Marketing and Management,* (2):862-866.

Shi, Y. Q., Zhuang, Y. W., Gen, W. (2020). A Study on Hotel Customer Satisfaction based on the Content of Medium and Poor Reviews. *Journal of Taiyuan University (Social Science Edition),* (5): 17-23.

Tan, J. (2017). Analysis of Customer Satisfaction of High Star Hotels in Guangzhou based on Ctrip Online Review. *China Market*, (3): 32-34.

Tung, V. W. S., Au, N. (2018). Exploring Customer Experience with Robotics In Hospitality. International Journal of Contemporary Hospitality Management, 30(70): 2680.

Wang, J., Ma, J. (2019). Research on Data-Driven Network Information Service Evaluation Model. Agricultural Library and Information, (2): 30-35.

Wang, J. F. (2023). Further Discussion on the Value Perception of "Smart Hotels" on Customer Experience. *Journal of China Management Informationization,* 23(07): 93-95.

Yang, G. (2019). A study on the Factors Influencing Consumer Satisfaction of Homestay Products In Lanzhou City based on Content Analysis Method. Lanzhou University of Finance and Economics.

Ye, H. Y., Zeng, Z. T. (2022). Customer Experience Design and Development Strategies for Smart Hotels in the 5G Era. *Journal of Enterprise and Economy,* (8): 107-108.

Yu, L. M. (2023). Discussion on the Construction of Smart Guestrooms in Hotels Based on Customer Experience. *Journal of Cooperative Economy and Technology,* (6): 122-123.

Zeng, X. (2019). Research on Customer Satisfaction Theory for CRM. *Wuhan: Huazhong University of Science and Technology,* (2): 45-50.

Zhao, H. (2018). Smart Hotel Review. *Journal of Low Carbon World,* (1): 54-57.

Zhao, J. X. (2020). User Experience Design in Smart Hotels. *Journal of Design,* (17): 63-65.