

EXPLORING THE IMPACT OF ARTIFICIAL INTELLIGENCE INTEGRATION ON GUEST EXPERIENCE IN THE HOTEL INDUSTRY

Pritilata ACHARYA* 

Siksha 'O' Anusandhan University, Research Scholar, Odisha, India, e-mail: priti.acharya@yahoo.co.in

Smita S. MAHAPATRA 

Shiksha 'O' Anusandhan University, Faculty of Hospitality and Tourism Management, Odisha, India, e-mail: smitamahapatra77@gmail.com

Citation: Acharya, P., & Mahapatra, S.S. (2024). EXPLORING THE IMPACT OF ARTIFICIAL INTELLIGENCE INTEGRATION ON GUEST EXPERIENCE IN THE HOTEL INDUSTRY. *Geojournal of Tourism and Geosites*, 54(2spl), 802–810. <https://doi.org/10.30892/gtg.542spl04-1255>

Abstract: This study examines AI's role in enhancing guest satisfaction and efficiency in the hotel industry. Employing a mixed-methods approach, it analyzes guest feedback and interviews staff at AI-integrated hotels. The findings aim to identify key AI applications that boost satisfaction and efficiency, and outline challenges and best practices for AI implementation. This research offers a holistic view of AI's influence on hospitality, enriching understanding and guiding industry practices. As the hotel industry continues to evolve, the integration of artificial intelligence (AI) technologies has become increasingly prevalent, aiming to enhance guest experience. This research investigates the impact of AI integration on guest experience enhancement within the hotel industry. The purpose of this study is to comprehensively explore how AI technologies influence various aspects of guest satisfaction in hotels. A mixed-methods approach is employed, combining quantitative analysis of guest feedback data with qualitative methods by interviewing the guests staying in the hotel. Data is collected from a diverse range of hotels that have implemented AI technologies, allowing for a nuanced understanding of the impacts across their establishments. This research is expected to provide valuable insights into the multifaceted effects of AI integration in the hotel industry. Specifically, it aims to identify the specific AI applications that most significantly contribute to guest satisfaction levels. Additionally, the study seeks to uncover potential challenges and limitations associated with AI implementation, as well as best practices for successful integration. This topic lies in its comprehensive examination of AI's impact on both guest experience within the hotel industry. While previous research has explored AI's role in hospitality, few studies have undertaken such a holistic analysis, considering its implications for guests. By addressing this gap, this research contributes to a deeper understanding of the transformative effects of AI in the hotel sector, providing practical insights for industry practitioners and stakeholders.

Keywords: Artificial intelligence, Guest experience, Hospitality technology, Hotel industry

* * * * *

INTRODUCTION

In recent years, the hotel industry has witnessed a rapid proliferation of artificial intelligence (AI) technologies aimed at enhancing guest experiences. From chatbots and virtual assistants to predictive analytics and smart room controls (Gupta et al., 2023), AI innovations offer unprecedented opportunities for hotels to deliver personalized services and streamline operations (Daniel, 2022). This research aims to explore the impact of AI integration on guest experience enhancement within the hotel industry (Kong et al., 2023; Sankar and David, 2023).

While there has been considerable research on the integration of artificial intelligence (AI) in the hotel industry, there exists a notable research gap in understanding the specific nuances of its impact on guest experience enhancement. While there is acknowledgment of AI's potential to improve various aspects of hotel operations, there is a lack of specificity regarding the types of AI applications that have the most significant impact on guest experience. While AI implementation aims to enhance guest experience, there is limited research on how guests perceive and respond to AI-driven initiatives within hotels. Understanding guest attitudes, preferences, and concerns regarding AI technologies is essential for effective implementation and customization. Despite the potential benefits of AI integration for enhancing guest experience, there is a lack of research on the challenges and limitations encountered during implementation.

The following are the research objective for the study:

- To Investigate the Impact of AI Integration on Guest Experience Enhancement.
- To Identify Key AI Applications Driving Guest Experience.
- To Understand Guest Perceptions and Attitudes Towards AI Integration.
- To Provide Practical Recommendations for AI Implementation in the Hotel Industry

LITERATURE REVIEW

Artificial intelligence (AI) is revolutionizing various industries, including hospitality, by offering innovative solutions to enhance guest experiences (Makar, 2023; Bulchand-Gidumal, 2022). As hotels seek to provide personalized services and

* Corresponding author

streamline operations, the integration of AI technologies has become increasingly prevalent (AI-Hyari et al., 2023; Bronzin et al., 2021). Studies by Kumar et al. (2023) and Jamaluddin and Rahmat (2022) highlight how AI-powered chatbots and virtual concierges can enhance guest satisfaction by providing real-time assistance and personalized recommendations (Nannelli et al., 2023; Rajan et al., 2022; Singh et al., 2022). Moreover, research by Doborjeh et al. (2022) and Bulchand-Gidumal et al. (2023) emphasizes the role of AI in optimizing revenue management, resource allocation, and predictive maintenance, leading to improved operational efficiency and cost savings (Lestari et al., 2022; Park et al., 2024) ultimately leading to increase in customer satisfaction. Artificial intelligence (AI) is revolutionizing various industries, including hospitality, by offering innovative solutions to enhance guest experiences (Daniel, 2022; Cheong and Law, 2023).

As hotels seek to provide personalized services and streamline operations, the integration of AI technologies has become increasingly prevalent (Jamaluddin and Rahmat, 2023; Sharma et al., 2023). One of the most significant ways AI enhances guest experiences is through personalized interactions (Gupta et al., 2022; Cao et al., 2024). AI-powered chatbots (Camilleri and Troise, 2023) and virtual assistants enable hotels to engage with guests in real-time, addressing inquiries, providing recommendations, and facilitating bookings efficiently (Rosman et al., 2023; Daniel, 2022; Gonçalves et al., 2024). These conversational interfaces offer a seamless communication channel, allowing guests to access information and services conveniently, enhancing overall satisfaction (Brylska et al., 2022; Rauf et al., 2022).

Moreover, AI enables hotels to deliver personalized recommendations and experiences tailored to individual preferences Erik, 2023. By analyzing guest data and behaviour patterns, AI algorithms can anticipate guest needs and preferences, offering customized suggestions for dining, entertainment, and activities (Dangwal et al., 2023). This level of personalization creates a sense of exclusivity and fosters emotional connections with guests, leading to enhanced loyalty and positive word-of-mouth (Praharaj et al., 2023; Gursay and Cai, 2024). AI-driven technologies also contribute to improved efficiency, indirectly impacting guest experiences (Hassan et al., 2022; Koranne and Sandhu, 2021; Bhuiyan et al., 2024). Automated processes, such as check-in/check-out procedures and room allocation, streamline operations, reducing wait times and minimizing errors (Bulchand-Gidumal, 2023; Dangwal et al., 2023; Praharaj et al., 2023). Predictive analytics and demand forecasting algorithms optimize inventory management and pricing strategies, ensuring availability of desired amenities and services while maximizing revenue (AI-Hyari et al., 2023; Ersoy and Ehtiyar, 2023; Han et al., 2023). However, despite its numerous benefits, AI integration in guest experiences poses certain challenges and considerations (Zhu et al., 2023; Nam et al., 2021). Privacy concerns and data security issues are paramount, as hotels must safeguard guest information (Rawal et al., 2022) and ensure compliance with regulations such as GDPR (Dogru et al., 2023; Dwivedi et al., 2024; Mingotto et al., 2021). Additionally, there may be resistance to AI adoption from guests who prefer human interactions or perceive AI as impersonal (Nguyen et al., 2023; Goel et al., 2022). Therefore, striking a balance between AI-driven automation and personalized human touch is essential to maintain guest satisfaction (Rajan et al., 2022; Nguyen et al., 2022). The hypothesis for the above study is as follows:

H0: The integration of artificial intelligence (AI) in the hotel industry positively impacts guest experiences, leading to enhanced satisfaction levels.

METHODOLOGY

1. Population and Sample of the Study

The study is cross sectional. The study was conducted in Kolkata region of India. Kolkata is the capital city of the Indian state of West Bengal. Renowned for its rich history, cultural heritage, and vibrant arts scene, is often referred to as the "cultural capital of India". Every year Kolkata experiences a high volume of domestic as well as international tourism. As per the data released by ministry of Tourism, India West Bengal has received 27.7 million tourists in the year 2021 (India Tourism Statistics, 2022). The minimum sample size of the study was determined as 385 with a confidence level of 95%, 5% as the marginal error and 50% of the population proportion (Narayan et al., 2023). A total of 400 questionnaires were sent but only 390 completely filled valid questionnaires were received. Snowball sampling is used to send the questionnaire to the various guests who have stayed in different star category hotel and have used AI features.

2. Data Collection Tools

In order to understand and measure the impact of artificial intelligence integration on guest experience in the hotel industry, a well structured questionnaire has been designed. The questionnaire is divided into four parts. The first part of the questionnaire is used to understand the demographic profile of the respondents like gender, age, occupation, education level, etc. The second part of the questionnaire is used to list the factors on which the satisfaction level of the guests depends. Likert scale of 1 to 5 was used for rating, with 1 being not very important and 5 being extremely important. The third part of the questionnaire is used to understand the impact of AI integration in increasing the satisfaction level of the guests. Questions were asked to the respondents to rate their satisfaction level in a scale with a range of very Dissatisfied to very Satisfied. The fourth part of the questionnaire is an unstructured questionnaire which is used to understand the opinion of the guests using AI during their stay in the hotel.

3. Data Collection

The form was prepared in 3 languages - English, Hindi and Bengali. The questionnaire was translated in different languages by the help of 2 language experts. The validity of the questionnaire was checked using the pilot survey. The questionnaire was prepared online by using Google forms and the link was forwarded in various community groups of eastern India on different social media platforms and mails. Specification regarding the 3 star and above category hotels

were mentioned in the questionnaire. Respondents included guests who stayed in hotels like ITC SonarBangla, Taj Bengal, Hyatt Regency, Marriott International etc. The data was collected online from 07 January 2024 till 10 March 2024.

4. Data Analysis

A mixed method approach (Figure 1) is used to analyze the impact of AI integration on guest experience and operational efficiency in hotel Industry. Quantitative analysis (data was subjected to percentage and frequency analysis, correlation, Anova and multiple regression analysis) is used to analyse the data in order to draw the conclusion for understanding the guests adaptation of AI during their stay in the hotel. Also qualitative method is used to understand the intention of the customers regarding the utility of AI by the hotel by thematic analysis. SPSS 26.00 (Statistical package for social sciences) was used in order to analyze the data.

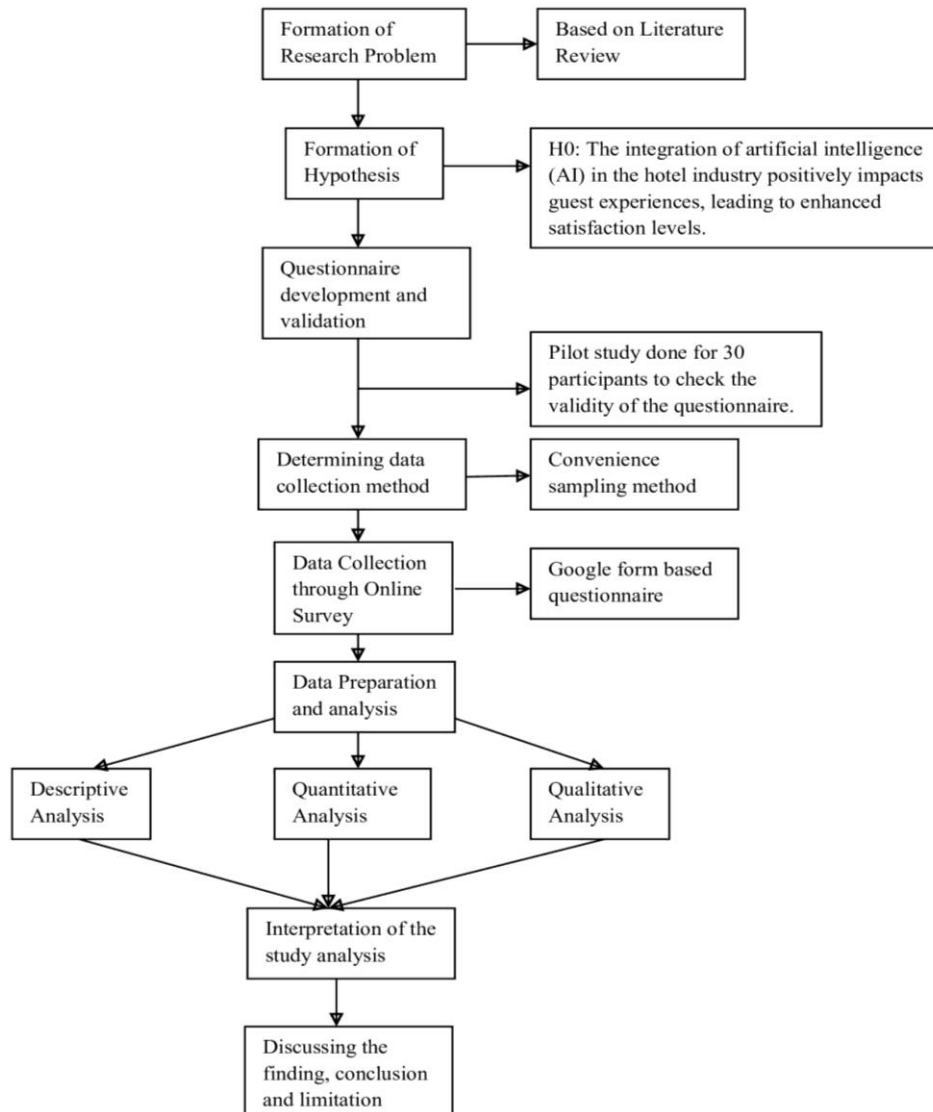


Figure 1. Flow Chart of methodology steps

RESULTS

The survey sample in Table No 1 is heavily skewed towards younger adults, with 91.9% of respondents being under the age of 41. This indicates that the majority of respondents to this survey are young adults, which could reflect either the general population distribution, the targeting strategy of the survey, or perhaps the demographics of those more likely to stay in hotels or participate in surveys. There is a significant gender imbalance in the sample, with 73.4% males compared to 26.6% females. This could suggest that more men are engaging with hotels or that there was an unequal opportunity or willingness to respond to the survey based on gender. The majority of respondents are having occupation in the hotel industry (54.8%), which could suggest that most of the guests visiting the hotel are industry professionals.

Government and private sectors are less represented, and this distribution should be taken into account when generalizing the findings to the entire hotel guest population. A large portion of the respondents (55.6%) hold a Bachelor's degree, followed by those with a high school education or below, and Master's degrees both at 19.4%. This suggests that the respondents are relatively well-educated, which could influence their expectations and experiences with hotel stays. The most common frequency of hotel stays is 'Once or twice a year' (41.9%), followed by 'Other'

(35.5%), which could include various different frequencies and requires further specification. A smaller segment of the sample stays every few months (15.3%) or monthly (7.3%). This suggests that the majority of respondents are not regular hotel users, which could impact their exposure to and perception of AI integration in the hotel industry.

Table 1. Descriptive Analysis

		Frequency	Percent
Age	Less than 20 years	151	38.7
	21 - 40 years	207	53.2
	41 - 50 years	29	7.3
	Above 60 years	3	0.8
Gender	Female	104	26.6
	Male	286	73.4
Occupation	Government Sector	44	11.3
	Hotel Industry	214	54.8
	Private Sector	60	15.3
	Other	72	18.6
Level of Education	Bachelors Degree	216	55.6
	Doctorate or professional Degree	22	5.6
	High School or below	76	19.4
	Masters Degree	76	19.4
Frequency of stay in hotel	Every few month	60	15.3
	Monthly	29	7.3
	Once or twice a year	163	41.9
	Other	138	35.5

Table 2. Descriptive Statistics

	Mean	Std. Deviation
GE1	3.82	1.397
GE2	3.63	1.291
GE3	3.77	1.274
GE4	3.72	1.291
GE5	3.61	1.267
GE6	3.54	1.278
GE7	3.74	1.306
AI2	3.22	1.213
AI3	3.27	1.271
AI5	3.41	1.249

In Table 2, GE represents guest experience and AI represents Artificial Intelligence integration. GE1 represents cleanliness, GE2 represents staff friendliness, GE3 represents Room comfort, GE4 represents location, GE5 represents amenities, GE6 represents personalization of service and GE7 represents Ease of booking process. GE1 has the highest mean (3.82) and std deviation (1.397), which suggests that guests rated this aspect of their experience relatively high, with the highest mean of all the guest experience factors. However, the standard deviation is also relatively high, indicating there's considerable variability in guests' perceptions or experiences related to this factor. The mean of the guest experience from GE2 to GE7 ranges between 3.54 to 3.74 and the standard deviation ranges from 1.267 to 1.306.

These variables represent different facets of the guest, suggesting positive experiences. The standard deviations are quite similar across these measures, indicating a consistent level of variance in guest responses. AI2, AI3, AI5 have a mean ranging from 3.22 to 3.41, which suggests that guests have a positive perception of their experience at the hotel and the integration of AI and the standard deviation from 1.213 to 1.249, which suggests that there is a fair amount of variability in the responses. This would mean that even if the guests had positive experience still there is room for improvement.

Table 3. Correlations

	GE1	GE2	GE3	GE4	GE5	GE6	GE7	AI2	AI3	AI5
GE1	1	.851**	.914**	.860**	.806**	.810**	.902**	0.138	.243**	0.173
GE2	.851**	1	.838**	.756**	.777**	.793**	.854**	.239**	.330**	.211*
GE3	.914**	.838**	1	.801**	.812**	.815**	.864**	0.137	.234**	0.176
GE4	.860**	.756**	.801**	1	.777**	.793**	.834**	0.102	.236**	0.168
GE5	.806**	.777**	.812**	.777**	1	.854**	.834**	0.103	.233**	0.158
GE6	.810**	.793**	.815**	.793**	.854**	1	.815**	0.159	.309**	.216*
GE7	.902**	.854**	.864**	.834**	.834**	.815**	1	0.149	.293**	.215*
AI2	0.138	.239**	0.137	0.102	0.103	0.159	0.149	1	.710**	.595**
AI3	.243**	.330**	.234**	.236**	.233**	.309**	.293**	.710**	1	.666**
AI5	0.173	.211*	0.176	0.168	0.158	.216*	.215*	.595**	.666**	1

*. Correlation is significant at the 0.05 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed)

The high correlations (Hukkelberg et al., 2019) within GE variables (0.7 - 0.9 range) in Table 3 suggest that guest experiences in one area tend to be associated with experiences in other areas. This could mean that a hotel's performance in one aspect of service could affect its performance in others, or it might reflect a guest's overall satisfaction influencing their ratings across the board. The AI correlations (0.5 - 0.7 range) suggests that there might be underlying factors that influence the perception of AI. The low correlations between GE and AI variables (below 0.3) suggest that guests' ratings of their overall experience do not strongly relate to their perceptions of AI integration.

This might indicate that AI integration is not a primary factor in their overall guest experience or that AI's role in guest experience is not yet fully realized or understood by the guests. The significance of correlations, especially the highly significant ones, provides a strong indication that these relationships are consistent and reliable. Overall, while AI integration seems to be perceived positively, its impact on the overall guest experience is not strongly correlated, suggesting that other factors might play a more central role in shaping guest experiences in hotels.

Table 4. ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
GE1	Between Groups	227.940	24	9.497	77.341	0.000
	Within Groups	12.157	99	0.123		
GE2	Between Groups	175.982	24	7.333	25.072	0.000
	Within Groups	28.954	99	0.292		
GE3	Between Groups	178.793	24	7.450	35.314	0.000
	Within Groups	20.885	99	0.211		
GE4	Between Groups	175.434	24	7.310	24.377	0.000
	Within Groups	29.687	99	0.300		
GE5	Between Groups	171.668	24	7.153	27.499	0.000
	Within Groups	25.751	99	0.260		
GE6	Between Groups	174.619	24	7.276	27.514	0.000
	Within Groups	26.180	99	0.264		
GE7	Between Groups	192.543	24	8.023	46.180	0.000
	Within Groups	17.199	99	0.174		

Table 4 presents the results of ANOVA (Analysis of Variance) tests (Corners, 2020) conducted on different guest experience variables labelled GE1 through GE7. GE are considered as dependent variables and AI is considered as independent variable. The purpose of ANOVA is to compare the means of these variables across multiple groups to determine if there are any statistically significant differences between them. The table includes the sum of squares, degrees of freedom (df), mean square, F-statistic (F), and the significance value (Sig.). For all guest experience variables, the significance value is 0.000, indicating that there are statistically significant differences between groups. The F-statistics are all quite high, ranging from 24.377 to 77.341, which further confirms that the differences between groups are statistically significant. The table indicates that for all seven guest experience variables, there are significant differences in the means between the different groups analyzed. This suggests that the factor (Different levels of AI integration) the groups are based on have a statistically significant effect on guests' experiences.

Table 5. Multiple regression Model results of AI1, AI2, AI3 on Guest experience and operational efficiency

Variables	Regression Coefficient	t test	Significance
AI1	-0.729	-0.828	0.409
AI2	2.229	2.462	0.015
AI3	0.282	0.35	0.727
F Count	3.943		
R ²	0.09		

Table 5 presents the results from a multiple regression analysis (Neale et al., 1994) that investigated the impact of three different AI variables (AI1, AI2, AI3) on guest experience and operational efficiency. AI1 shows a negative association with the dependent variables, and the relationship is not statistically significant ($p = 0.409$). AI2 shows a positive and significant association with the dependent variables ($p = 0.015$). This implies that improvements or increases in AI2 are related to significant increases in guest experience and operational efficiency. AI3 has a positive, but not significant, association with the dependent variables ($p = 0.727$). The F statistic from the regression (3.943) suggests that the model is better than a model with no predictors, but the lack of a corresponding p-value makes it difficult to judge the overall model significance. R-squared is 0.09, which means that approximately 9% of the variability in the dependent variable (guest experience and operational efficiency) is explained by the AI variables in the model.

This is generally considered a low value, indicating that the model does not explain much of the variation in the dependent variables. The regression model suggests that overall the guests are satisfied in using the Artificial intelligence features in the hotel which has a statistically significant positive impact on guest experience and operational efficiency. AI1 and AI3 do not significantly impact the outcomes studied which means that the suggestions given by AI like dining suggestion, local attraction etc and choosing a hotel to stay (which highlights its AI features) by advertisements is not a criteria for increasing the satisfaction level of the customers. With a R-squared value of 0.09, the model explains only a

small fraction of the variance in guest experience and operational efficiency, indicating that other factors also play a substantial role. In summary, while certain AI integrations can positively affect guest experience, a significant portion of the variation in these outcomes is explained by factors other than the AI variables measured.

A qualitative analysis was also conducted to analyze the feedback from the guests staying in hotels. The question asked to the guest is as follows:

Question: What are your views regarding the integration of artificial intelligence in the hotel industry?

Answer: A questionnaire was designed with open ended question for the customers of the hotel. Only 11 respondents gave genuine feedback regarding the use of AI in hotels, most of them did not want to reply and some of the replies were not valid. The replies of the guests of the hotel are as follows.

Respondent 1: "I think AI can improve on recommendation basis of dining and stays based on the features provided by each of the hotels listed on a certain website comparing its price tags, menu and service style"

Respondent 2: "Use the technology very careful"

Respondent 3: "AI should more upgrade in Hotel industry"

Respondent 4: "Hospitality means the warmth extended, AI cannot fill in...I would still prefer to talk to a staff rather depend on AI"

Respondent 5: "I think that AI in this hotel industry AI is not very comfortable to thy guest in some cases whether ai also dangerous for security threat etc."

Respondent 6: "Hotel industry is all about interaction so I suggest AI should be integrated but not all the places in the hotel"

Respondent 7: "AI harmful for the humans"

Respondent 8: "AI should be more advanced and user Friendly"

Respondent 9: "AI is a machine integrated interface. It can't understand human mind, feelings. So, I think for understanding a human mind AI has not reached that level that it can replace human being"

Respondent 10: "AI integration is with complete system is important. However human touch is always necessary as hospitality is dependent on human interaction. However we can automate much of the things like order taking process in IRD, which can help us by minimising the human errors and delayed execution. Same goes for the express check in bots present in hotel website which works on algorithms of common terms used by guests for check in experience such as smoking rooms, rooms on high floor, rooms with view etc. We can also keep an interactive kiosk in hotel for travel information or city exploration. AI is growing at a great pace in day to day life but it's important to keep on check with guests as we as person can make their stay or dining experience memorable which can create repetition of guest."

Respondent 11: "No matter how much integration of AI Hotel industry incorporates it can never remove the Human Touch which is the very need of Hotel industry"

Table 8. Thematic Analysis of Customer Feedback

SI No	Validated Broad Themes	Validated Sub -Theme
1	Efficiency and personalization through AI	Technological Advancement
2	Necessity of Human Touch	AI Limitations in Emotional Intelligence
3	Caution and balanced integration	Concerns over privacy and security
4	Resistance and skepticism emerged towards AI	No Sub-Theme emerged
5	AI's role in non interpersonal aspects of service	No Sub-Theme emerged

Note: Themes mentioned in italics have emerged from the customer interview data

The thematic (Majumdar, 2022) analysis of customer feedback reveals a complex attitude towards AI in the hotel industry. There's an acknowledgment of AI's potential to improve personalization service, but this is tempered by a strong belief in the necessity of human interaction and the irreplaceable nature of the human touch in hospitality. There are also significant concerns about the emotional limitations of AI, its potential security threats, and its impact on employment. The insights suggest that the hotel industry could benefit from a hybrid model that leverages AI for efficiency and personalization in certain areas, while ensuring that human interaction remains at the forefront of guest services. Moreover, the industry should address privacy and security concerns to mitigate customer scepticism. It's clear from the responses that any technological advances should not come at the cost of the personal, human-centric approach that defines the hospitality industry.

DISCUSSION

First of all the study reveals that AI integration partially impacts the guest experience, but its effectiveness is contingent upon maintaining a balanced approach that preserves the essential human touch in guest services. The findings advocate for a hybrid model where AI enhances service capabilities without overshadowing the invaluable human interactions that defines the hospitality industry.

Secondly the previous studies have generally found that while guests appreciate the efficiency and novelty brought by AI (e.g., automated check-ins, AI-driven personal assistants), there is still a strong preference for human interaction, particularly in service-oriented scenarios where empathy and personal touch are valued (Prentice et al., 2020; Al-Hyari et al., 2023). This Aligns with previous findings as it shows positive reception towards AI in operational aspects but indicates a preference for human interaction in personal service areas. The low correlation between guest experience metrics and AI integration metrics suggests that AI is not yet seen as a central component of the overall guest experience, a sentiment echoed in past research.

Thirdly previous studies have often concluded that the hospitality industry should pursue a hybrid model of service delivery, where AI enhances but does not replace human interactions (Seyitoğlu and Ivanov, 2020). They stress continuous adaptation and responsive changes based on guest feedback. However, the current Study supports these implications by demonstrating the importance of a balanced AI integration that respects the primacy of human touch in hospitality. It also underscores the need for addressing privacy and security concerns, which is crucial for gaining guest trust.

Fourthly, the current study contributes to the ongoing discourse on AI in hospitality by providing updated empirical data on guest perceptions and by highlighting specific AI applications that could enhance guest experiences. It also reinforces the call from previous studies for the industry to engage in a cautious yet innovative approach to technology integration.

Relating the current study to past research shows both consistency in findings and an evolution of understanding regarding AI's role in hospitality. The industry is advised to remain agile, continuously integrating guest feedback and technological advances to create a service environment that leverages the best of both AI capabilities and human warmth (Hayat, 2023; Tripathi et al., 2022). This approach will not only enhance operational efficiency but also ensure guest satisfaction and loyalty in a rapidly changing technological landscape.

CONCLUSION

Guests place significant importance on traditional hospitality factors such as cleanliness, staff friendliness, and room comfort, which continue to shape overall satisfaction levels.

However, the integration of AI technologies introduces new dimensions to guest experiences, offering personalized recommendations and streamlining operational processes. AI-powered recommendations were perceived as valuable additions to guest experiences, albeit with moderate effectiveness ratings. While there is room for improvement, the potential of AI to enhance guest satisfaction through personalized services is evident.

The improvement of operational efficiency through AI integration was evident, with guests recognizing the benefits of streamlined processes and optimized services. This underscores the importance of operational excellence in driving guest satisfaction and loyalty. Moreover, guests' expressed likelihood to choose AI-integrated hotels for future stays indicates a growing acceptance and preference for AI-driven services in the hospitality sector. As guests become more accustomed to AI technologies, their expectations for personalized and efficient experiences are likely to increase.

Overall, the findings of this study contribute to our understanding of the implications of AI adoption for the hotel industry, highlighting the potential for enhanced guest experiences and operational efficiency. As AI continues to evolve, hoteliers must remain attentive to guest preferences and concerns, ensuring transparent communication and ethical use of AI technologies to maximize their benefits for both guests and the industry as a whole.

Limitation of the study

This demographic distribution may not accurately represent the broader population of hotel guests. Since the study employs a cross-sectional design, it captures data at a single point in time. This approach does not allow for observations of changes over time or the evolution of attitudes towards AI in hospitality. Consequently, it cannot establish causality between AI integration and changes in guest satisfaction or operational efficiency. The study may have focused on a limited set of AI applications in the hospitality industry. There are many potential uses of AI that were not covered, which means the study does not provide a complete picture of how various AI technologies could impact the hotel experience. The field of AI is rapidly evolving, and the technologies discussed or evaluated in the study may quickly become outdated. This rapid pace of change can make it difficult to draw long-term conclusions from the findings.

Author Contributions:

Conceptualization, P.A and S.S.M.; methodology, P.A. and S.S.M; software, P.A.; validation, P.A. and S.S.M.; formal analysis, P.A. and S.S.M; investigation, P.A. and S.S.M.; data curation, P.A. and S.S.M.; writing - original draft preparation, P.A. and S.S.M.; writing - review and editing, P.A. and S.S.M.; visualization, P.A. and S.S.M.; supervision, S.S.M.; project administration, P.A. and S.S.M.. All authors have read and agreed to the published version of the manuscript.

Funding: Not applicable.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study may be obtained on request from the corresponding author.

Acknowledgments: The research undertaken was made possible by the equal scientific involvement of all the authors concerned.

Conflicts of Interest: The authors declare no conflict of interest.

REFERENCES

- Al-Hyari, H. S. A., Al-Smadi, H. M., & Weshah, S. R. (2023). The impact of artificial intelligence (AI) on guest satisfaction in hotel management: An empirical study of luxury hotels. *Geojournal of Tourism and Geosites*, 48, 810-819. <https://doi.org/10.30892/gtg.482sp115-1081>
- Bhuiyan, K.H., Ahmed, S., & Jahan, I. (2024). Consumer attitude toward using artificial intelligence (AI) devices in hospitality services. *Journal of Hospitality and Tourism Insights*. <https://doi.org/10.1108/JHTI-08-2023-0551>

- Bronzin, T., Prole, B., Stipić, A., & Pap, K. (2021). *Artificial Intelligence (AI) brings enhanced personalized user experience*. In 2021 44th International Convention on Information, Communication and Electronic Technology (MIPRO), 1070-1075, IEEE. <https://doi.org/10.23919/MIPRO52101.2021.9596938>
- Brylska, P., Cobanoglu, C., & Dogan, S. (2022). *Users versus non-users: The impact of experience on hotel guests' attitudes towards service robots in hotels*. In Information and Communication Technologies in Tourism 2022: Proceedings of the ENTER 2022 eTourism Conference, January 11–14, 2022, 55-66, Springer International Publishing. https://doi.org/10.1007/978-3-030-94751-4_5
- Bulchand-Gidumal, J. (2022). Impact of artificial intelligence in travel, tourism, and hospitality. In *Handbook of e-Tourism, 1943-1962*, Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-48652-5_110
- Bulchand-Gidumal, J., William Secin, E., O'Connor, P., & Buhalis, D. (2023). Artificial intelligence's impact on hospitality and tourism marketing: exploring key themes and addressing challenges. *Current Issues in Tourism*, 1-18. <https://doi.org/10.1080/13683500.2023.2229480>
- Camilleri, M.A., & Troise, C. (2023). *Chatbot recommender systems in tourism: A systematic review and a benefit-cost analysis*. In Proceedings of the 2023 8th International Conference on Machine Learning Technologies, 151-156. <https://doi.org/10.1145/3589883.3589906>
- Cao, L., Sarkar, S., Ramesh, B., Mohan, K., & Park, E.H. (2024). Shift of ambidexterity modes: An empirical investigation of the impact of artificial intelligence in customer service. *International Journal of Information Management*, 76, 102773. <https://doi.org/10.1016/j.ijinfomgt.2024.102773>
- Cheong, F., & Law, R. (2023). Human employees versus robotic employees: Customers and hotel managers' perceived experience at unmanned smart hotels. *Cogent Social Sciences*, 9(1), 2202937. <https://doi.org/10.1080/23311886.2023.2202937>
- Chi, N.T.K., & Nam, V.H. (2022). The impact of AI chatbot on long-term relationships between customers and hotels. *VNU University of Economics and Business*, 2(6). <https://doi.org/10.57110/vnujeb.v2i6.145>
- Corners, M.F. (2020). Innovation: a sociological perspective. *BEEF. Spanish Journal of Sociology*, 29 (3), 5-37. <https://doi.org/10.22325/FES/RES.2020.55>
- Dangwal, A., Kukreti, M., Angurala, M., Sarangal, R., Mehta, M., & Chauhan, P. (2023). A Review on the Role of Artificial Intelligence in Tourism. In *2023 10th International Conference on Computing for Sustainable Global Development (INDIACom)*, 164-168, IEEE.
- Daniel, Schuster. (2022). A Review on Service Delivery in Tourism and Hospitality Industry Through Artificial Intelligence. https://doi.org/10.1007/978-981-19-1142-2_34
- Doborjeh, Z., Hemmington, N., Doborjeh, M., & Kasabov, N. (2022). Artificial intelligence: a systematic review of methods and applications in hospitality and tourism. *International Journal of Contemporary Hospitality Management*, 34(3), 1154-1176. doi.org/10.1108/IJCHM-06-2021-0767
- Dogru, T., Line, N., Mody, M., Hanks, L., Abbott, J.A., Acikgoz, F., & Zhang, T. (2023). Generative artificial intelligence in the hospitality and tourism industry: Developing a framework for future research. *Journal of Hospitality & Tourism Research*. <https://doi.org/10.1177/10963480231188663>
- Dwivedi, Y.K., Pandey, N., Currie, W., & Micu, A. (2024). Leveraging ChatGPT and other generative artificial intelligence (AI)-based applications in the hospitality and tourism industry: practices, challenges and research agenda. *International Journal of Contemporary Hospitality Management*, 36(1), 1-12. <https://doi.org/10.1108/ijchm-05-2023-0686>
- ERSOY, A., & EHTİYAR, R. (2023). The Impact of Artificial Intelligence on Hospitality Employees' Work Outcomes. *Advances in Hospitality and Tourism Research (AHTR)*, 11(4), 505-526. <https://doi.org/10.30519/ahtr.1264966>
- Goel, R., Singh, T., Sahdev, S.L., Baral, S.K., & Choudhury, A. (2022). Impact of AI & IOT in sustainable & green practices adopted in hotel industry and measuring hotel guests' satisfaction. In *2022 10th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO)*, 1-5, IEEE. <https://doi.org/10.1109/ICRITO56286.2022.9965152>
- Gonçalves, A.R., Costa Pinto, D., Shuqair, S., Mattila, A., & Imanbay, A. (2024). The paradox of immersive artificial intelligence (AI) in luxury hospitality: how immersive AI shapes consumer differentiation and luxury value. *International Journal of Contemporary Hospitality Management*. <https://doi.org/10.1108/IJCHM-11-2023-1689>
- Gupta, S., Modgil, S., Lee, C. K., Cho, M., & Park, Y. (2022). Artificial intelligence enabled robots for stay experience in the hospitality industry in a smart city. *Industrial Management & Data Systems*, 122(10), 2331-2350. <https://doi.org/10.1108/imds-10-2021-0621>
- Gursoy, D., & Cai, R. (2024). Artificial intelligence: an overview of research trends and future directions. *International Journal of Contemporary Hospitality Management*. doi.org/10.1108/IJCHM-03-2024-0322
- Han, Y., Chen, J., Dou, M., Wang, J., & Feng, K. (2023). The Impact of Artificial Intelligence on the Financial Services Industry. *Academic Journal of Management and Social Sciences*, 2(3), 83-85. <https://doi.org/10.54097/ajmss.v2i3.8741>
- Hassan, W.W., Mahmoud, A., & Hussien, H.M. (2022). The impact of smart services on the efficiency and effectiveness of employees performance in hotels. *Minia Journal of Tourism and Hospitality Research MJTHR*, 14(1), 145-164. <https://doi.org/10.21608/mjthr.2022.145144.1042>
- Hayat, K. (2023). 19 Leveraging Artificial Intelligence in Hospitality and Tourism for Success. *Teaching Cases in Tourism, Hospitality and Events*, 214. <https://doi.org/10.1079/9781800621022.0019>
- Hukkelberg, S., Keles, S., Ogden, T., & Hammerstrøm, K. (2019). The relation between behavioral problems and social competence: A correlational Meta-analysis. *BMC psychiatry*, 19, 1-14. <https://doi.org/10.1186/s12888-019-2343-9>
- India Tourism Statistics, 2022. [https://tourism.gov.in/sites/default/files/2022-09/India%20Tourism%20Statistics%202022%20\(English\).pdf](https://tourism.gov.in/sites/default/files/2022-09/India%20Tourism%20Statistics%202022%20(English).pdf)
- Jamaluddin, Z., & Rahmat, A.K. (2022). Artificial intelligence technology in travel, tourism and hospitality: current and future developments. In *Technology Application in Aviation, Tourism and Hospitality: Recent Developments and Emerging Issues*, 169-177, Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-19-6619-4_12
- Kong, H., Wang, K., Qiu, X., Cheung, C., & Bu, N. (2023). 30 years of artificial intelligence (AI) research relating to the hospitality and tourism industry. *International Journal of Contemporary Hospitality Management*, 35(6), 2157-2177. <https://doi.org/10.1108/IJCHM-03-2022-0354>
- Koranne, S., & Sandhu, S. (2021). Embedding artificial intelligence in hospitality & tourism. *Psychology and Education Journal*, 58(2), 5384-5389. <https://doi.org/10.17762/PAE.V58I2.2950>
- Kumar, S., Kumar, V., & Attri, K. (2023). Integration of Robotics Technology and Artificial Intelligence in the Transformation of the Tourism Industry: A Critical Viewpoint. In *Technology and Social Transformations in Hospitality, Tourism and Gastronomy: South Asia Perspectives*, 39-53, GB: CABI. <https://doi.org/10.1079/9781800621244.0004>
- Lestari, N.S., Rosman, D., Chan, S., Nawangsari, L.C., Natalina, H.D., & Triono, F. (2022). Impact of Robots, Artificial Intelligence, Service Automation (RAISA) Acceptance, Self-efficacy, and Relationship Quality on Job Performance. In *2022 4th International Conference on Cybernetics and Intelligent System (ICORIS)*, 1-6, IEEE. <https://doi.org/10.1109/ICORIS56080.2022.10031336>

- Majumdar, A. (2022). Thematic analysis in qualitative research. In *Research anthology on innovative research methodologies and utilization across multiple disciplines*, 604-622, IGI Global. <https://doi.org/10.4018/978-1-5225-5366-3.CH009>
- Makar, K.Š. (2023). Driven by Artificial Intelligence (AI)–Improving Operational Efficiency and Competitiveness in Business. In *2023 46th MIPRO ICT and Electronics Convention (MIPRO)*, 1142-1147, IEEE. <https://doi.org/10.23919/mipro57284.2023.10159757>
- Mingotto, E., Montaguti, F., & Tamma, M. (2021). Challenges in re-designing operations and jobs to embody AI and robotics in services. Findings from a case in the hospitality industry. *Electronic Markets*, 31(3), 493-510. <https://doi.org/10.1007/S12525-020-00439-Y>
- Nam, K., Dutt, C.S., Chathoth, P., Daghfous, A., & Khan, M.S. (2021). The adoption of artificial intelligence and robotics in the hotel industry: prospects and challenges. *Electronic Markets*, 31, 553-574. <https://doi.org/10.1007/S12525-020-00442-3>
- Nannelli, M., Capone, F., & Lazzeretti, L. (2023). Artificial intelligence in hospitality and tourism. State of the art and future research avenues. *European Planning Studies*, 31(7), 1325-1344. <https://doi.org/10.1080/09654313.2023.2180321>
- Narayan, K.G., Sinha, D.K., & Singh, D.K. (2023). *Sampling Techniques*. In *Veterinary Public Health & Epidemiology: Veterinary Public Health-Epidemiology-Zoonosis-One Health*, 111-123, Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-19-7800-5_12
- Neale, M.C., Eaves, L.J., Kendler, K.S., Heath, A.C., & Kessler, R.C. (1994). Multiple regression with data collected from relatives: testing assumptions of the model. *Multivariate behavioral research*, 29(1), 33-61. https://doi.org/10.1207/S15327906MBR2901_2
- Nguyen, V. T., Phong, L. T., & Chi, N. T. K. (2023). The impact of AI chatbots on customer trust: an empirical investigation in the hotel industry. *Consumer Behavior in Tourism and Hospitality*, 18(3), 293-305.
- Nguyen, V.T., Phong, L.T., & Chi, N.T.K. (2023). The impact of AI chatbots on customer trust: an empirical investigation in the hotel industry. *Consumer Behavior in Tourism and Hospitality*, 18(3), 293-305. <https://doi.org/10.1108/cbth-06-2022-0131>
- Park, H., Jiang, S., Lee, O.K.D., & Chang, Y. (2024). Exploring the attractiveness of service robots in the hospitality industry: analysis of online reviews. *Information Systems Frontiers*, 26(1), 41-61. <https://doi.org/10.1007/s10796-021-10207-8>
- Praharaj, S., Mishra, B.B., Mishra, U.S., Panigrahi, R.R., & Mishra, P.C. (2023). Role of service automation on guest experience of hotel industry. *Tourism and hospitality management*, 29(2), 265-278. <https://doi.org/10.20867/thm.29.2.11>
- Prentice, C., Dominique Lopes, S., & Wang, X. (2020). The impact of artificial intelligence and employee service quality on customer satisfaction and loyalty. *Journal of Hospitality Marketing & Management*, 29(7), 739-756. <https://doi.org/10.1080/19368623.2020.1722304>
- Rajan, P.S., Babu, D.S., & Sameena, M.H. (2022). Chatbots: Their Uses and Impact in the Hospitality Sector. In *Machine Learning for Business Analytics*, 45-55, Productivity Press. <https://doi.org/10.4324/9781003206316-4>
- Rauf, A., Zurcher, M., Pantelidis, I., & Winbladh, J. (2022). Millennials' perceptions of artificial intelligence in hotel service encounters. *Consumer Behavior in Tourism and Hospitality*, 17(1), 3-16.
- Rawal, Y.S., Soni, H., Dani, R., & Bagchi, P. (2022). A review on service delivery in tourism and hospitality industry through artificial intelligence. In *Proceedings of Third International Conference on Computing, Communications, and Cyber-Security: IC4S 2021*, 427-436, Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-19-1142-2_34
- Rosman, D., Wahyuningtias, D., Levyta, F., Putra, E.D., & Maulana, R. (2023). The Deployment of Service Robots Powered by Artificial Intelligence in Five-Star Hotels: Does it Influence the Customer's Booking Intention? In *2023 8th International Conference on Business and Industrial Research (ICBIR)*, 1254-1258, IEEE. <https://doi.org/10.1109/icbir57571.2023.10147705>
- Roy, P., Ramaprasad, B.S., Chakraborty, M., Prabhu, N., & Rao, S. (2020). Customer acceptance of use of artificial intelligence in hospitality services: an Indian hospitality sector perspective. *Global Business Review*. <https://doi.org/10.1177/0972150920939753>
- Sankar, J.G., & David, A. (2023). Measuring the Service Quality of Artificial Intelligence in the Tourism and Hospitality Industry. In *Handbook of Research on Innovation, Differentiation, and New Technologies in Tourism, Hotels, and Food Service*, 133-155, IGI Global. <https://doi.org/10.4018/978-1-6684-6985-9.ch007>
- Seyitoğlu, F., & Ivanov, S. (2020). A conceptual framework of the service delivery system design for hospitality firms in the (post-) viral world: The role of service robots. *International Journal of Hospitality Management*, 91, 102661. <https://doi.org/10.1016/j.ijhm.2020.102661>
- Sharma, S., Rawal, Y.S., Soni, H., & Batabyal, D. (2023). Technological impacts of AI on hospitality and tourism industry. In *Proceedings of International Conference on Data Science and Applications: ICDSA 2022*, 1, 71-78, Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-19-6631-6_6
- Singh, A.K., Tyagi, P.K., Singh, A.K., Tyagi, P., Kapure, S., & Singh, E.R. (2022). Robotics and artificial intelligence in the hotel industry: A systematic literature review. In *2022 8th International Conference on Advanced Computing and Communication Systems (ICACCS)*, 1, 1788-1792, IEEE. <https://doi.org/10.1109/ICACCS54159.2022.9785257>
- Tripathi, P., Kumar, S., & Rawat, P. (2022). Paradigm shift in the functioning of the tourism and hotel industry using NLP, digital assistant, and AI models. In *Artificial Intelligence for Societal Development and Global Well-Being*, 196-210, IGI Global. <https://doi.org/10.4018/978-1-6684-2443-8.ch012>
- Zhu, J.J., Liu, Z., Huang, T., & Guo, X.S. (2023). Roboethics of tourism and hospitality industry: A systematic review. *Plos one*, 18(6), e0287439. <https://doi.org/10.1371/journal.pone.0287439>