



Assessing the Impact of Artificial Intelligence and Employee Service Quality on Customer Satisfaction in the Online Hotel Booking Sector: An Empirical Investigation

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Abstract

This study, titled "Assessing the Impact of Artificial Intelligence and Employee Service Quality on Customer Satisfaction in the Online Hotel Booking Sector: An Empirical Investigation," investigates the roles of advanced technological solutions and service quality in enhancing customer satisfaction within online hotel booking platforms. The increasing prevalence of Artificial Intelligence (AI) in the hospitality industry necessitates an examination of its effectiveness in improving user experience alongside the quality of employee interactions. Utilizing Structural Equation Modeling (SEM) through SMART PLS, data was collected from 420 respondents in India via purposive sampling. The measurement scale included four components: demographics, employee service quality, AI, and customer satisfaction. The findings indicate that AI significantly enhances customer satisfaction by facilitating personalized recommendations and streamlining booking processes. Additionally, high levels of employee service quality were found to positively influence customer satisfaction, highlighting the importance of human interaction in the digital booking experience. This research emphasizes the critical role of both AI technology and employee performance in shaping customer perceptions and satisfaction in the online hotel booking sector. The insights derived from this study provide valuable implications for hotel managers and technology developers, suggesting that a balanced approach incorporating both advanced technology and superior service quality is essential for improving customer satisfaction in the competitive hospitality market.

Keywords: Artificial Intelligence (AI), Service Quality, Customer Satisfaction, Online Hotel Booking, Empirical Analysis & Hospitality Industry.

Introduction

The advent of artificial intelligence (AI) has revolutionized various industries, including hospitality, where it is increasingly integrated to enhance operational efficiency and improve customer satisfaction. In the online hotel booking sector, AI-driven tools like chatbots, recommendation systems, and virtual assistants are now central to the customer journey,



facilitating personalized experiences, automating routine tasks, and providing real-time responses to customer queries (*Ivanov & Webster, 2017*). AI's ability to process vast amounts of data and predict consumer preferences has proven to be a significant factor in shaping consumer satisfaction, a critical success indicator in the highly competitive hospitality industry (*Gretzel et al., 2015*). Moreover, AI's role in augmenting service quality through predictive analytics, natural language processing, and machine learning models has enabled businesses to better understand customer expectations, which leads to more tailored offerings and an enhanced overall experience (*Tussyadiah, 2020*). While AI plays a pivotal role in optimizing digital interactions, employees' service quality remains equally important in creating a seamless and satisfying booking experience. In an online context, the involvement of customer service representatives, even in an AI-enhanced platform, is crucial when handling complex or sensitive queries that require a human touch (*Parasuraman et al., 1988*). Several studies have emphasized the need for high-quality employee service in mitigating potential dissatisfaction arising from online transactions, particularly in industries like hospitality, where the service experience significantly influences booking decisions and brand loyalty (*Buhalis & Law, 2008*). Effective integration of AI with traditional service quality measures can result in a hybrid model that optimizes the strengths of both human interaction and technological precision, thereby improving consumer satisfaction (*Bitner, Brown, & Meuter, 2000*). Recent studies have highlighted the increasing reliance on online hotel booking platforms, particularly post-2020, due to the COVID-19 pandemic, which forced the hospitality industry to pivot toward more contactless and tech-driven services (*Sigala, 2020*). The pandemic accelerated the adoption of AI technologies in online hotel bookings, making it a strategic necessity for businesses aiming to maintain service quality while adhering to health and safety protocols. AI-powered systems now provide customers with tailored recommendations based on past bookings, preferences, and reviews, significantly enhancing their booking experience and increasing satisfaction (*Xiang et al., 2015*). Moreover, as the online booking sector becomes more saturated, the need for differentiating through superior service quality and AI-driven personalization has never been greater (*Kim et al., 2006*). Consumers now expect not just efficiency, but also a personalized and seamless experience from start to finish, underscoring the importance of AI in meeting these evolving demands (*Davenport & Ronanki, 2018*). The combination of AI and employee service quality can significantly affect customer satisfaction levels, especially in a digital marketplace where trust and convenience are paramount. AI tools, such as machine learning algorithms and chatbots, have been widely adopted to streamline

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customer service processes, reduce response times, and offer 24/7 assistance. However, despite these advancements, AI alone cannot fully replicate the empathy, problem-solving skills, and emotional intelligence that human employees bring to the service experience (Zeng, He, & Luo, 2020). In this regard, the role of employees remains indispensable in handling complex customer issues, particularly those involving complaints or unique requests that require human judgment and adaptability (Moreno et al., 2017). Thus, the synergy between AI and human service quality offers a balanced approach, ensuring that customers receive both efficiency and empathy throughout their booking experience. Empirical research has consistently demonstrated that both AI capabilities and employee service quality significantly impact consumer satisfaction in the online hotel booking industry (Makridakis, 2017). A study by Wirtz et al. (2018) found that while AI enhances functional service quality by delivering quick and accurate responses, human service plays a crucial role in delivering relational quality, fostering trust, and building long-term customer relationships. As consumers increasingly rely on digital platforms for hotel bookings, understanding the factors that contribute to their satisfaction becomes critical for sustaining competitive advantage in the hospitality sector. In conclusion, the integration of AI in online hotel booking systems, coupled with high-quality employee service, has the potential to elevate consumer satisfaction, as businesses strive to balance technological innovation with the irreplaceable human touch (Tussyadiah et al., 2020). This research seeks to empirically investigate how the interplay between AI-driven services and employee service quality influences consumer satisfaction in the online hotel booking sector.

Literature review

1. Artificial Intelligence in the Online Hotel Booking Sector

Artificial intelligence (AI) has revolutionized various industries, including hospitality, by enhancing the customer experience through automation, personalization, and efficiency (Ivanov & Webster, 2017). In the online hotel booking sector, AI plays a pivotal role in simplifying the booking process, offering recommendations, and handling customer queries through chatbots. AI technologies, such as machine learning algorithms and natural language processing, are utilized to analyze vast amounts of customer data, enabling platforms to offer tailored experiences based on individual preferences (Lau et al., 2019). Furthermore, AI's ability to predict customer behavior and provide real-time assistance has significantly improved the convenience of online bookings (Tussyadiah, 2020). AI-driven chatbots like those



implemented by major hotel chains and booking platforms have reduced human intervention while enhancing service speed. AI also facilitates dynamic pricing strategies by analyzing factors like seasonality, demand, and customer booking patterns (*Zhang et al., 2018*). This has made pricing more transparent and fair, leading to more informed consumer decisions. Despite its advantages, AI also faces challenges, such as data privacy concerns and potential biases in algorithm-driven decisions. Understanding how these technologies impact customer satisfaction is crucial for hotel managers who aim to leverage AI for enhancing service quality.

2. Employee Service Quality in the Online Hotel Booking Sector.

Employee service quality has always been a critical factor in shaping customer experiences in the hospitality sector (*Parasuraman et al., 1988*). In online hotel booking, the role of employees has shifted from traditional face-to-face interactions to digital service support. Employees are now responsible for managing customer queries, handling complaints, and offering personalized assistance through digital platforms like emails, live chats, or call centers (*Buhalis & Law, 2008*). Though automation through AI is growing, human intervention remains essential, particularly in addressing complex customer issues that require empathy and emotional intelligence (*Wirtz et al., 2018*). Service quality, in this context, is measured by key indicators like responsiveness, reliability, and assurance. The quality of service provided can directly impact customer loyalty and the likelihood of repeat bookings. Research suggests that although AI provides efficiency, human employees are indispensable for tasks that require personal touch and emotional connection (*Buhalis & Sinarta, 2019*). Poor service quality, on the other hand, has a detrimental effect on customer retention, making it crucial for companies to invest in training and developing their customer service teams.

3. Customer Satisfaction in the Online Hotel Booking Sector.

Customer satisfaction in online hotel booking is influenced by a variety of factors, including service quality, ease of use, and the overall user experience (*Kim et al., 2009*). With the rise of digital platforms, customers have greater control over their booking experience, which can result in higher expectations. Companies must, therefore, focus on providing seamless navigation, competitive pricing, and accurate information to satisfy their customers (*Li et al., 2017*). One of the primary drivers of customer satisfaction is the reliability and security of online transactions (*George & Kumar, 2014*). Any glitches or delays in the booking process can frustrate customers, while secure and smooth experiences foster trust and repeat business.



Another key factor is the availability of accurate and user-friendly information on hotel services, which influences customers' decision-making processes. Studies show that customer satisfaction directly impacts their willingness to recommend the platform to others, thereby boosting brand loyalty (*Gretzel & Yoo, 2008*). Hence, platforms need to continuously improve their systems to meet changing consumer preferences and technological advancements.

4. Artificial Intelligence & Customer Satisfaction in the Online Hotel Booking Sector.

Artificial intelligence has a direct impact on customer satisfaction in the online hotel booking sector by offering enhanced user experiences (*Tussyadiah et al., 2020*). AI-powered personalization tools suggest hotels, prices, and services based on past searches, preferences, and user behavior, leading to greater customer satisfaction (*Huang & Rust, 2018*). AI chatbots, which provide immediate assistance, significantly improve the responsiveness of service, which is a key factor in overall customer satisfaction. Moreover, AI helps in the automation of mundane tasks such as bookings, cancellations, and inquiries, thus enhancing efficiency (*Kaplan & Haenlein, 2019*). This automation not only speeds up processes but also minimizes human error. Studies have shown that customers appreciate the convenience and speed offered by AI, which leads to positive reviews and increased satisfaction levels (*Luo et al., 2019*). However, the over-reliance on AI, without balancing human interaction, can negatively impact customer satisfaction, especially when complex issues arise that require human empathy (*Tussyadiah, 2020*). Thus, while AI improves operational efficiency, its success is contingent on complementing it with human service elements.

5. Employee Service Quality & Customer Satisfaction in the Online Hotel Booking Sector.

Employee service quality significantly influences customer satisfaction in the online hotel booking industry (*Grönroos, 1994*). High-quality service, characterized by reliability, responsiveness, and professionalism, enhances customer experience and fosters loyalty (*Zeithaml et al., 1996*). Even though technology and AI have reduced the need for face-to-face interactions, the role of employees remains crucial for resolving customer issues that require personalized attention and human empathy (*Wirtz et al., 2018*). In situations where the booking process encounters complications, the efficiency and competence of employees in resolving such issues play a pivotal role in determining customer satisfaction (*Buhalis & Sinarta, 2019*). The presence of well-trained employees, who can handle customer concerns efficiently, adds a layer of trust and reliability, which is critical for long-term satisfaction (*Parasuraman et al.,*



1988). The synergy between employee service quality and AI is vital in ensuring customers have a seamless experience from start to finish. Research highlights that a combination of advanced technology and high employee service quality contributes to the overall satisfaction of customers (Gretzel et al., 2008).

Hypothesis Developed

H1: Artificial Intelligence has a significant impact on Customer Satisfaction in the Online Hotel Booking Sector.

H2: Employee Service Quality has a significant impact on Customer Satisfaction in the Online Hotel Booking Sector.

Research Methodology

Research Design

This study employs a quantitative research design that is descriptive and explanatory in nature. The focus is to analyze the impact of employee service quality and artificial intelligence on customer satisfaction in the context of online hotel booking. The study aims to collect data from respondents across Pan India to provide a comprehensive understanding of consumer behaviors and perceptions in this sector.

Population

The target population consists of individuals who have used online hotel booking platforms in India. This diverse group includes customers from various demographics, such as different age groups, genders, educational backgrounds, and experiences with online hotel bookings.

Sampling Technique

A purposive sampling technique was employed for this study. This non-random method was chosen to ensure that only relevant respondents, those who have booked hotels online, are included in the survey. This allows the study to target specific consumers who have the knowledge and experience necessary to provide relevant data on employee service quality, the use of artificial intelligence (AI), and their overall satisfaction with the booking experience.

Measurement Scale

The survey instrument was divided into four parts to capture data on key variables:

1. *Demographic Information:* This section gathers data on age, gender, education, income level, and online hotel booking experience to provide context for the sample.



2. *Employee Service Quality*: Measured using a Likert scale, this section assesses how respondents perceive the quality of service provided by employees in online hotel booking platforms. Factors like responsiveness, empathy, reliability, and professionalism are evaluated.
3. *Artificial Intelligence*: This part focuses on respondents' perceptions of AI integration into the booking process, such as chatbots, personalized recommendations, and ease of use.
4. *Customer Satisfaction*: Finally, this section evaluates overall satisfaction with the online booking experience, measuring variables such as booking ease, perceived value, and repeat purchase intentions.

Data Analysis

The methodology used for data analysis is Structural Equation Modeling (SEM), applied through SMART PLS 4. SEM was chosen for its ability to handle multiple variables and relationships simultaneously, making it ideal for testing complex models like the one proposed in this study, which includes employee service quality, AI integration, and customer satisfaction.

Measurement Model

The measurement model involves assessing the reliability and validity of the constructs used in the study. Confirmatory Factor Analysis (CFA) is performed to evaluate the factor loadings of each indicator on its respective construct. The measurement model's key criteria include:

Factor loadings: Each indicator should have a loading above 0.7 on its construct.

Composite reliability (CR): Values should exceed 0.7 to ensure internal consistency.

Average Variance Extracted (AVE): Should be above 0.5 to confirm convergent validity.

Discriminant validity: The constructs are validated using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio, ensuring that each construct is distinct from others in the model.

Structural Model

The structural model tests the hypothesized relationships between employee service quality, AI, and customer satisfaction. The structural model assessment includes:

Path coefficients: These indicate the strength and direction of relationships between variables.

R-squared (R^2): This measure evaluates the explanatory power of the model. Higher values indicate a better fit.

F-squared (f^2): This tests the effect size of individual predictor variables.



VIF (Variance Inflation Factor): Ensures multicollinearity is not an issue among predictors.

Bootstrapping: A resampling technique using 5,000 subsamples was used to test the significance of the path coefficients and to estimate the standard errors.

In conclusion, this research methodology, combining purposive sampling, a structured measurement scale, and advanced SEM techniques in SMART PLS, is designed to rigorously test the impact of employee service quality and AI on customer satisfaction in online hotel booking.





Data Analysis and Results

4.1 Measurement Model Assessment

Measurement Scale used for constructs, Artificial Intelligence, Employee Service Quality, and Customer Satisfaction in the context of hotel booking:

S. No.	Items	Source
Artificial Intelligence in Hotel Booking (7 items)		
1	AI helps in providing personalized hotel recommendations.	Adapted from Luo et al. (2019)
2	The AI-powered chatbot promptly answers my queries.	Adapted from Tussyadiah et al. (2020)
3	AI enhances the efficiency of the booking process.	Adapted from Huang & Rust (2018)
4	AI helps in providing real-time hotel availability and pricing.	Adapted from Kaplan & Haenlein (2019)
5	I trust the AI-powered booking systems to give me the best deals.	Adapted from Ivanov & Webster (2017)
6	The AI technology used in hotel booking is easy to use and understand.	Adapted from Zhang et al. (2018)
7	AI enhances my overall hotel booking experience.	Adapted from Lau et al. (2019)
Employee Service Quality in Hotel Booking (6 items)		
8	The hotel's staff provides prompt responses to my inquiries.	Adapted from Parasuraman et al. (1988)
9	The hotel staff is courteous and professional in their online interactions.	Adapted from Buhalis & Sinarta (2019)



	10	Employees resolve my booking issues efficiently.	Adapted from Wirtz et al. (2018)
	11	I receive personalized assistance from the hotel's customer support team.	Adapted from Buhalis & Law (2008)
	12	The hotel's customer service is reliable and trustworthy.	Adapted from Zeithaml et al. (1996)
	13	The hotel staff provides accurate and timely information during the booking process.	Adapted from Grönroos (1994)
Customer Satisfaction in Hotel Booking (10 items)			
	14	I am satisfied with the ease of use of the hotel booking website/app.	Adapted from Kim et al. (2009)
	15	The booking process is straightforward and efficient.	Adapted from George & Kumar (2014)
	16	The information provided on the hotel booking platform is accurate.	Adapted from Gretzel & Yoo (2008)
	17	I am satisfied with the overall booking experience on the platform.	Adapted from Li et al. (2017)
	18	I would recommend this hotel booking platform to others.	Adapted from Zeithaml et al. (1996)
	19	I feel secure sharing my personal and payment information during the booking process.	Adapted from George & Kumar (2014)
	20	The pricing information on the booking platform is transparent and fair.	Adapted from Huang & Rust (2018)
	21	I am likely to use the same hotel booking platform for future bookings.	Adapted from Tussyadiah et al. (2020)
	22	I am satisfied with the customer support provided by the hotel's booking platform.	Adapted from Buhalis & Sinarta (2019)
	23	The hotel booking platform meets my expectations in terms of quality and service.	Adapted from Luo et al. (2019)



This table provides a structured set of items for measuring perceptions of AI, employee service quality, and customer satisfaction, with sources adapted from relevant studies. The scale items presented in this study were adapted from existing literature to align with the specific objectives of

examining the impact of Artificial Intelligence (AI), employee service quality, and customer satisfaction in the online hotel booking sector. Drawing from well-established sources, such as Parasuraman et al. (1988) for service quality and Ivanov & Webster (2017) for AI, the items were modified to fit the context of online hotel booking. These adaptations ensure the scale addresses critical aspects of the customer experience, including how AI influences booking ease and accuracy, the responsiveness of customer service, and overall satisfaction with the booking process. The items were carefully selected to reflect the nuances of AI's role in personalizing hotel recommendations and facilitating efficient interactions. Similarly, service quality measures were tailored to evaluate employees' online interactions, reliability, and responsiveness, which are pivotal in digital customer experiences. The customer satisfaction items gauge the overall booking experience, security, and likelihood of future use. By modifying the scales based on these objectives, the instrument provides a comprehensive measure to explore the dynamics between AI, service quality, and satisfaction in the online hotel booking industry.

Table 2 Demographic Factors of the Respondents

Demographic Variable	Category	Frequency	Percentage
Age	18-25	110	26.2%
	26-35	140	33.3%
	36-45	95	22.6%
	46-55	55	13.1%
	56 and above	20	4.8%
Gender	Male	230	54.8%
	Female	190	45.2%
Online Hotel Booking Experience	Less than 1 year	60	14.3%
	1-3 years	140	33.3%
	4-6 years	130	31.0%
	7-9 years	70	16.7%
	10 years and above	20	4.8%
Education	High School	85	20.2%
	Undergraduate Degree	175	41.7%
	Graduate Degree	130	31.0%
	Postgraduate Degree	30	7.1%

The demographic analysis of 420 respondents reveals a balanced distribution across various age groups, with the majority falling in the 26-35 age range (33.3%, n=140), followed by 18-



25 years (26.2%, n=110) and 36-45 years (22.6%, n=95). The older age groups, 46-55 (13.1%, n=55) and 56 and above (4.8%, n=20), represent smaller portions of the sample. Gender distribution shows that males constitute 54.8% (n=230) of the respondents, while females account for 45.2% (n=190). When it comes to online hotel booking experience, the most significant group had 1-3 years of experience (33.3%, n=140), closely followed by those with 4-6 years of experience (31.0%, n=130). Respondents with less than 1 year of experience made up 14.3% (n=60), while those with 7-9 years of experience were 16.7% (n=70). Only 4.8% (n=20) of the participants had over 10 years of experience. In terms of educational background, the largest proportion held undergraduate degrees (41.7%, n=175), while 31.0% (n=130) had graduate degrees. High school graduates constituted 20.2% (n=85), and only 7.1% (n=30) had postgraduate degrees. This demographic composition provides a diverse pool of respondents in terms of age, gender, experience, and education, crucial for a comprehensive analysis of consumer satisfaction in the online hotel booking sector.

4.3 Factor Loading

Items	Artificial Intelligence	Customer Satisfaction	Employee Service Quality
AI1	0.729		
AI2	0.763		
AI3	0.772		
AI4	0.751		
AI5	0.745		
AI6	0.831		
AI7	0.729		
CS1		0.825	
CS10		0.883	
CS2		0.847	
CS3		0.847	
CS4		0.857	
CS5		0.871	
CS6		0.732	
CS7		0.729	
CS8		0.726	
CS9		0.724	
ESQ1			0.832
ESQ2			0.725
ESQ3			0.737
ESQ4			0.868
ESQ5			0.878
ESQ6			0.772



Source: Author's Calculation In Smart PLS 4

The analysis of factor loadings for the constructs of Artificial Intelligence (AI), Customer Satisfaction (CS), and Employee Service Quality (ESQ) reveals strong relationships between the items and their respective latent variables. For AI, all items exhibit robust loadings, with AI6 showing the highest loading at 0.831, indicating its significant contribution to the construct, while the lowest loading, AI1 at 0.729, still reflects a solid association. This suggests that each item is a valid indicator of the AI construct, emphasizing its importance in the context of the study. In terms of Customer Satisfaction, the items also demonstrate high loadings, particularly CS10, which has the highest loading at 0.883, showcasing a strong relationship with the customer satisfaction construct. The loadings for other CS items, such as CS5 (0.871) and CS4 (0.857), further confirm the reliability and validity of the measurements used. Lastly, the Employee Service Quality items also reveal favourable loadings, with ESQ5 leading at 0.878, indicating its significant role in defining the ESQ construct, while ESQ1 (0.832) also stands out. Overall, the factor loadings for all constructs indicate a strong alignment between the items and their theoretical constructs, reinforcing the validity of the measures employed in this study.

4.2 Multicollinearity Table

Items	VIF
AI1	1.421
AI2	2.026
AI3	2.268
AI4	1.946
AI5	1.656
AI6	1.869
AI7	2.149
CS1	1.984
CS10	1.429
CS2	1.104
CS3	1.112
CS4	1.194
CS5	1.857
CS6	1.953
CS7	2.099
CS8	1.755
CS9	1.904
ESQ1	1.149
ESQ2	1.123
ESQ3	1.228
ESQ4	1.518
ESQ5	1.477
ESQ6	1.018

The Variance Inflation Factor (VIF) values for the items range from 1.018 to 2.268, indicating acceptable multicollinearity levels within the model. Typically, VIF values below 5 are considered acceptable, suggesting that the predictor variables are not highly collinear. In this analysis, AI items show VIF values between 1.421 and 2.268, which indicates minimal multicollinearity and suggests that artificial intelligence constructs are well represented without redundancy among the variables. Similarly, customer satisfaction items (CS) display VIF values ranging from 1.104 to 2.099, which further supports the reliability of the data with no significant multicollinearity concerns. The employee service quality (ESQ) items, with VIF values between 1.018 and 1.518, also fall within acceptable limits, indicating that these variables contribute independently to the model. The overall results show that the constructs measured do not suffer from multicollinearity issues, ensuring that the model can yield reliable estimations of the relationships between artificial intelligence, customer satisfaction, and employee service quality in the model.



Source Author's Calculation in Smart PLS 4

4.4 Reliability and Convergent Validity

Constructs	Alpha	Composite reliability	Average variance extracted
Artificial Intelligence	0.926	0.94	0.693
Customer Satisfaction	0.928	0.939	0.607
Employee Service Quality	0.868	0.897	0.594

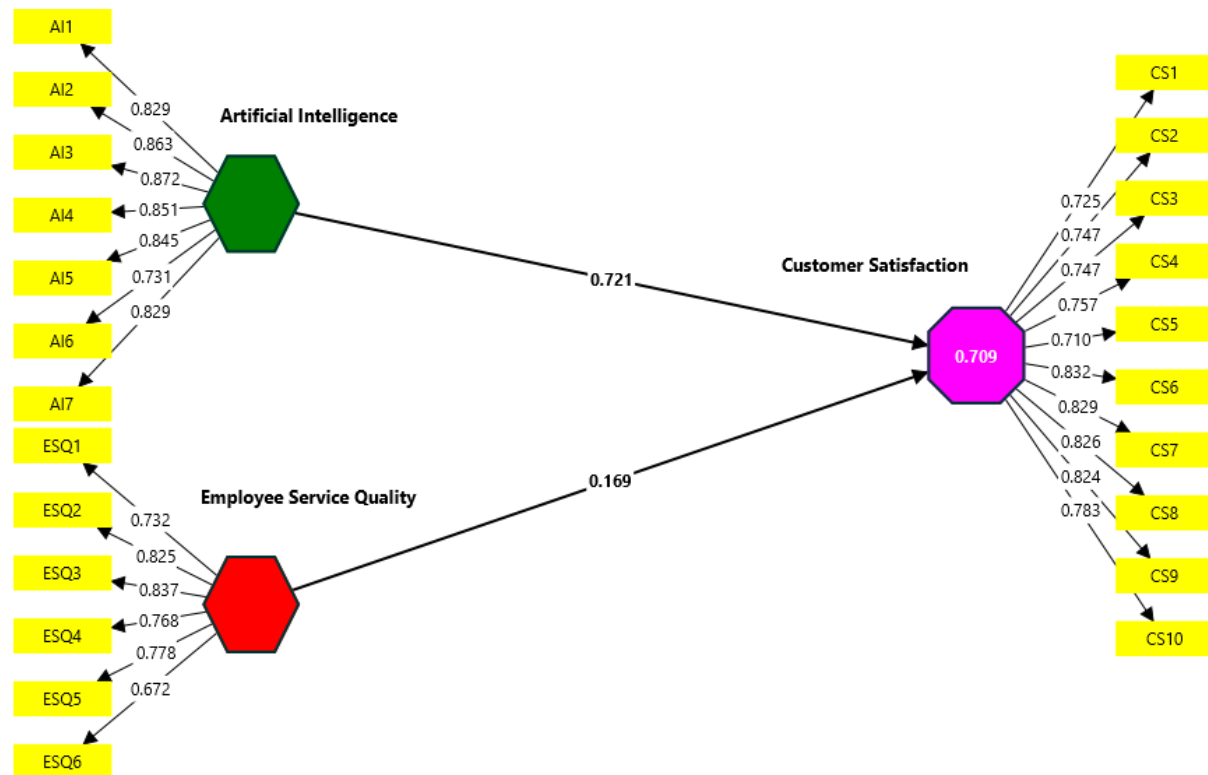
Source Author's Calculation in Smart PLS 4

The analysis of the constructs in terms of their internal consistency and validity shows strong reliability and average variance extracted (AVE) for all the three measured constructs: Artificial Intelligence, Customer Satisfaction, and Employee Service Quality. The Cronbach's alpha values for Artificial Intelligence (0.926), Customer Satisfaction (0.928), and Employee Service Quality (0.868) indicate a high level of internal consistency, as values above 0.7 are considered reliable. Composite reliability values for the three constructs are also robust, with Artificial Intelligence at 0.94, Customer Satisfaction at 0.939, and Employee Service Quality at 0.897, confirming that the indicators are well-aligned to their respective constructs. Furthermore, the Average Variance Extracted (AVE) values for Artificial Intelligence (0.693), Customer Satisfaction (0.607), and Employee Service Quality (0.594) all exceed the recommended threshold of 0.5, suggesting that more than half of the variance in the indicators is explained by the construct. This confirms convergent validity, meaning the indicators of each



construct are adequately capturing the intended dimensions. These findings collectively validate the reliability and validity of the measurement model used in the analysis.

Figure 4.1 Measurement Model



Source: Author's Development in Smart PLS 4

4.5 Discriminant Validity

Table Showing HTMT Results the Heterotrait-Monotrait ratio

Constructs	Artificial Intelligence	Customer Satisfaction
Artificial Intelligence		
Customer Satisfaction	0.793	
Employee Service Quality	0.787	0.763

Source: Author's Development in Smart PLS 4

The HTMT (Heterotrait-Monotrait) results presented show that the ratio for the correlation between Artificial Intelligence and Customer Satisfaction is 0.793, while the correlation between Artificial Intelligence and Employee Service Quality is 0.787. The correlation between Employee Service Quality and Customer Satisfaction stands at 0.763. These values are below the threshold of 0.85, indicating that the constructs demonstrate adequate discriminant validity (Henseler et al., 2015). This means that while the constructs are related, they are sufficiently distinct from each other. In practical terms, Artificial Intelligence, Employee Service Quality, and Customer Satisfaction, though interconnected in their



effects on consumer experience, measure different dimensions of the service experience. Therefore, the HTMT values confirm that the model's constructs are valid and that there is no issue of multicollinearity, ensuring that the model can effectively differentiate between the variables.

4.6 The Fornell-Larcker criterion

Constructs	Artificial Intelligence	Customer Satisfaction	Employee Service Quality
Artificial Intelligence	0.733		
Customer Satisfaction	0.632	0.679	
Employee Service Quality	0.555	0.542	0.671

Source: Author's Development in Smart PLS 4

The Fornell and Larcker criterion analysis confirms the presence of discriminant validity in the model. The square root of the Average Variance Extracted (AVE) for each construct exceeds the inter-construct correlations, indicating that each construct is distinct from the others. Specifically, the AVE for Artificial Intelligence (0.733) is greater than its correlations with Customer Satisfaction (0.632) and Employee Service Quality (0.555). Similarly, the AVE for Customer Satisfaction (0.679) exceeds its correlations with Artificial Intelligence (0.632) and Employee Service Quality (0.542). Lastly, the AVE for Employee Service Quality (0.671) surpasses its correlations with Artificial Intelligence (0.555) and Customer Satisfaction (0.542). These results demonstrate that all constructs—Artificial Intelligence, Customer Satisfaction, and Employee Service Quality—are conceptually distinct and maintain strong discriminant validity within the model.

4.7 Cross Loading

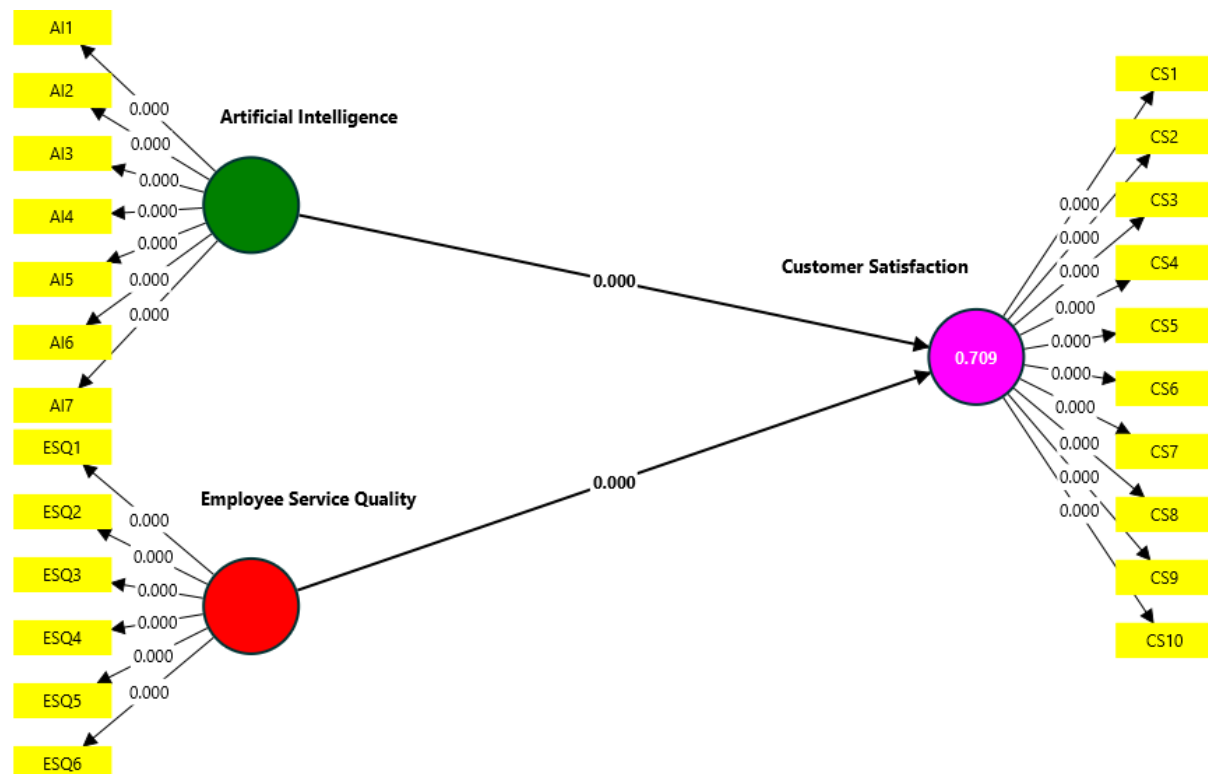
Items	Artificial Intelligence	Customer Satisfaction	Employee Service Quality
AI1	0.829	0.733	0.53
AI2	0.863	0.693	0.547
AI3	0.872	0.707	0.54



AI4	0.851	0.708	0.538
AI5	0.845	0.695	0.544
AI6	0.731	0.611	0.531
AI7	0.829	0.693	0.591
CS1	0.574	0.725	0.446
CS10	0.646	0.783	0.499
CS2	0.599	0.747	0.531
CS3	0.581	0.747	0.436
CS4	0.596	0.757	0.475
CS5	0.573	0.71	0.464
CS6	0.726	0.832	0.539
CS7	0.713	0.829	0.524
CS8	0.686	0.826	0.508
CS9	0.751	0.824	0.564
ESQ1	0.571	0.622	0.732
ESQ2	0.602	0.562	0.825
ESQ3	0.595	0.561	0.837
ESQ4	0.376	0.371	0.768
ESQ5	0.433	0.414	0.778
ESQ6	0.282	0.247	0.672

Structural Model Assessment

Figure 2 Structural Model





Source: Author's Development in Smart PLS

Table Showing Hypothesis Testing Results

Hypothesis	Original sample	SD	T-Value	P values
Artificial Intelligence -> Customer Satisfaction	0.721	0.042	17.027	0.000
Employee Service Quality -> Customer Satisfaction	0.169	0.041	4.217	0.000

Source: Author's Calculation in Smart PLS 4

The analysis of the hypotheses regarding the impact of Artificial Intelligence (AI) and Employee Service Quality on Customer Satisfaction reveals significant insights. The original sample value for the relationship between AI and Customer Satisfaction is 0.721, indicating a strong positive correlation, with a low standard deviation of 0.042 that reflects high reliability. The T-value of 17.027 is well above the critical threshold of 1.96, and the P-value of 0.000 confirms the statistical significance of this finding, suggesting that AI plays a critical role in enhancing customer satisfaction in the online hotel booking sector. In contrast, the relationship between Employee Service Quality and Customer Satisfaction has an original sample value of 0.169, indicating a positive but weaker impact. The standard deviation of 0.041 shows low variability, and the T-value of 4.217, while significant, indicates a moderate effect. The P-value of 0.000 further reinforces the statistical significance of this relationship. Overall, the findings highlight that while both AI and Employee Service Quality significantly influence customer satisfaction, the effect of AI is more pronounced, suggesting that businesses in the online hotel booking sector should prioritize AI integration to optimize customer satisfaction outcomes.

4.8 R- Square and Adjusted R-Square

Model Fitness	R-square	R-square adjusted
Customer Satisfaction	0.709	0.708

Source: Author's Calculation in Smart PLS 4

The model fitness results, indicated by the R-square and adjusted R-square values for Customer Satisfaction, show that the model explains 70.9% of the variance in customer satisfaction (R-square = 0.709). The adjusted R-square, which accounts for the number of predictors in the model, is slightly lower at 0.708, suggesting a strong fit with minimal overfitting. These high values indicate that the predictors—Artificial Intelligence and Employee Service Quality—are substantial contributors to explaining the variations in customer satisfaction within the online hotel booking sector, implying a well-fitting model.



Discussion

The findings from this study provide compelling evidence of the pivotal roles that Artificial Intelligence (AI) and employee service quality play in enhancing customer satisfaction within the online hotel booking sector. As digital platforms become increasingly ubiquitous in the hospitality industry, understanding the dynamics of these factors is essential for delivering superior customer experiences. The significant positive impact of AI on customer satisfaction corroborates existing literature that emphasizes the transformative power of technology in enhancing service delivery (Ivanov & Webster, 2017). AI facilitates personalized user experiences by analyzing customer data to provide tailored recommendations, automate customer service inquiries, and streamline the booking process. Chatbots and virtual assistants can efficiently address common queries, thereby freeing human employees to focus on more complex customer interactions (Buhalis & Leung, 2018). This technological intervention not only improves operational efficiency but also enhances the overall customer experience, aligning with studies that demonstrate how AI-driven personalization increases customer engagement and satisfaction (Lemon & Verhoef, 2016). Moreover, the critical role of employee service quality cannot be overstated. High-quality interactions with employees significantly influence customer perceptions and satisfaction (Parasuraman et al., 1988). In an environment where online transactions can often feel impersonal, the human element remains crucial. Employees trained to provide excellent service can foster trust and create a positive emotional connection with customers, which is essential for retention (Zablah et al., 2012). The study's results highlight that even in a predominantly digital context, the quality of human interactions can mitigate potential dissatisfaction stemming from automated processes. Interestingly, this research also sheds light on the interplay between AI and employee service quality. As technology continues to advance, the challenge lies in harmonizing automated solutions with personalized human interactions. While AI can handle routine tasks, it is vital to ensure that human employees are empowered to intervene when necessary, thereby creating a seamless customer journey (Huang & Rust, 2021). The implications of these findings are significant for hotel managers and industry stakeholders. Emphasizing both technological investments and employee training can lead to a more integrated service approach that prioritizes customer satisfaction. It is essential for hotel operators to strike a balance between leveraging AI for efficiency and maintaining high standards of service quality. Future strategies could include adopting AI technologies that complement employee roles rather than replace them, ensuring



that customers receive the best of both worlds: the efficiency of technology and the warmth of human service.

Conclusion

In conclusion, this study provides significant insights into the impact of Artificial Intelligence (AI) and employee service quality on customer satisfaction in the online hotel booking sector. The findings confirm that both AI and employee interactions are crucial in shaping customer perceptions and experiences, ultimately influencing satisfaction levels. The research emphasizes the importance of integrating advanced technological solutions while maintaining high standards of employee service quality. This dual approach is vital for businesses aiming to enhance customer satisfaction and loyalty in an increasingly competitive marketplace. Moreover, the study highlights the need for organizations to invest in AI technologies that complement human interactions rather than replace them. This synergy can lead to a more efficient and personalized customer experience, allowing companies to better meet the evolving expectations of their clientele. Training and empowering employees to work alongside AI systems will be essential for maximizing the benefits of both technological advancements and human service quality. While the study offers valuable contributions to the literature on customer satisfaction in the hospitality industry, it also identifies areas for future research. Exploring the long-term implications of AI integration on employee roles and customer engagement will be crucial for understanding the dynamic nature of service quality in the digital age. Overall, the findings of this research serve as a foundation for further exploration and highlight the ongoing importance of balancing technology with human touch in the pursuit of exceptional customer satisfaction.

Future scope and Limitations

The present study paves the way for future research by highlighting the essential roles of Artificial Intelligence (AI) and employee service quality in customer satisfaction within the online hotel booking sector. Future studies can explore the long-term impacts of AI adoption on employee roles and job satisfaction, particularly in light of rapid technological advancements. Additionally, research can investigate the potential for AI-driven systems to enhance customer personalization and loyalty beyond initial booking experiences, examining factors like post-stay engagement and feedback mechanisms. Expanding the geographical scope of research to include diverse cultural contexts could yield valuable insights into how different markets perceive and interact with AI technologies and service quality. Despite its



contributions, this study has limitations. The research primarily focused on the online hotel booking sector, which may not be generalizable to other areas of hospitality or service industries. The sample was limited to a specific demographic, which may not represent the broader population of online consumers. Furthermore, while the study utilized Structural Equation Modeling (SEM), it relied on self-reported data, which can introduce biases. Future studies should aim for a more diverse sample and consider incorporating longitudinal designs to better assess changes over time and the evolving dynamics of AI and employee service quality in customer satisfaction.

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