ผลกระทบของปัญญาประดิษฐ์และมิติของโมเดล SERVQUAL ต่อความพึงพอใจของลูกค้าในโรงแรมหรูในประเทศไทย

The Effect of Artificial Intelligence on the dimensions of SERVQUAL model and Customer Satisfaction in Luxury Hotels in Thailand

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Received : 22 มีนาคม 2567

Revised : 10 กันยายน 2567

Accepted : 27 กันยายน 2567

บทคัดย่อ

งานวิจัยนี้ต้องการวิเคราะห์บทบาทของปัญญาประดิษฐ์ (AI) ในฐานะ "ตัวกลั่นกรอง" โดยศึกษาว่า AI เข้าไปมีอิทธิพลต่อความสัมพันธ์ระหว่างมิติคุณภาพการบริการตามโมเดล SERVQUAL ความคาดหวังที่มีต่อ AI ด้านความพยายาม ประสิทธิภาพ อิทธิพลทางสังคม และความพึงพอใจของลูกค้า ในบริบทของโรงแรมหรูในประเทศไทย การวิจัยเชิงปริมาณรวบรวมข้อมูลจาก 400 คน ที่เคยเข้าพักโรงแรมหรูนับตั้งแต่ช่วงหลังการระบาดของโรค ใช้วิธีสุ่มตัวอย่างตามความสะดวก สำรวจแบบออนไลน์ โดยใช้มาตรวัด SERVQUAL (17 รายการ) ใช้ค่าสหสัมพันธ์ของเพียร์สัน และการวิเคราะห์การถดถอยพหุคูณเพื่อทดสอบสมมติฐาน

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ผลการวิจัย พบว่า ปัจจัยสำคัญ คือ ความมั่นใจ ความน่าเชื่อถือ และความเห็นอกเห็นใจเป็นปัจจัยหลักที่บ่งชี้ถึงความพึงพอใจของลูกค้า AI ทำหน้าที่เป็นตัวกลั่นกรองต่อผลกระทบของ "การจับต้องได้" ที่มีต่อความพึงพอใจของลูกค้า ผลการวิจัยนี้ ขัดแย้งกับสมมติฐานที่ตั้งไว้ว่าผลลัพธ์ (การกลั่นกรองของ AI) จะเป็นไปในเชิงลบ ซึ่งหมายความว่า AI อาจไม่ได้ลดทอนผลกระทบของ Tangibles อย่างที่คาดไว้แต่แรก ผู้บริหารโรงแรมหรูสามารถใช้ผลวิจัยนี้เพื่อวางแผนและกำหนดกลยุทธ์การนำ AI มาใช้ เพื่อปรับปรุงคุณภาพการบริการและความพึงพอใจของลูกค้า การศึกษานี้ช่วยเติมเต็มช่องว่างความรู้เกี่ยวกับบทบาทของ AI ที่มีต่อโมเดล SERVQUAL และความพึงพอใจของลูกค้าในบริบทโรงแรมหรูของไทย งานวิจัยนี้จะได้รับประโยชน์มากขึ้นหากมีขนาดกลุ่มตัวอย่างที่ใหญ่ขึ้นขยายขอบเขตไปศึกษาโรงแรมราคาประหยัด และใช้วิธีวิจัยเชิงคุณภาพหรือแบบผสมผสานเพื่อให้ได้มุมมองเชิงลึกด้านการบริหารจัดการ

Keywords : โรงแรมหรู คุณภาพการบริการ โมเดล SERVQUAL ความพึงพอใจของลูกค้าประเทศไทย

Abstract

This research aimed to analyse the role of Artificial Intelligence (AI) as a moderator, examining its influence on the relationship between the SERVQUAL model’s service quality dimensions, AI-related expectations effort expectancy, performance expectancy, social influence, and customer satisfaction within the context of luxury hotels in Thailand. This quantitative study collected data from 400 individuals who have stayed in luxury hotels since the post-pandemic period, utilizing a convenience sampling method via an online survey. The study employed the 17-item SERVQUAL scale, with

Pearson correlation and multiple regression analysis used to test the hypotheses.

The findings indicate that Assurance, Reliability, and Empathy are the primary factors predicting customer satisfaction. AI was found to function as a moderator on the impact of 'Tangibles' on customer satisfaction. This result contradicts the initial hypothesis, which posited a negative moderating effect, implying that AI may not diminish the impact of Tangibles as originally anticipated. Luxury hotel managers can utilize these findings to plan and formulate strategies for AI implementation to enhance service quality and customer satisfaction. This study contributes to the literature by filling a knowledge gap regarding the role of AI in relation to the SERVQUAL model and customer satisfaction within the Thai luxury hotel context. The research would benefit from a larger sample size, an expanded scope to include budget hotels, and the adoption of qualitative or mixed methods approaches to gain deeper managerial insights.

Keywords : luxury hotels, service quality, SERVQUAL Model, customer satisfaction, Thailand

Introduction

For many countries of the world, their hospitality sector is important for their economic progress (Martínez-Martínez et al., 2019). Likewise, in Thailand, the tourism industry is a key pillar in the nation’s economy. In 2019, Thailand’s tourism sector generated 300 trillion THB in revenue for the country. However, the travel and social distancing restrictions associated

with the pandemic resulted in catastrophic losses in the tourism and hospitality industry (Promnil & Polnyotee, 2023; Vithayaporn, 2020). Even after the pandemic, the decreased investment in fixed assets and reduced household consumption have continued to affect the hospitality value chain (Chancharat & Meeprom, 2021). Since the hospitality industry is based on service, customer satisfaction is paramount for the success of hotels. Amid the uncertainty and complexity of travel in the post-pandemic world, the parameters of customer satisfaction have changed drastically (Zygiaris et al., 2022). One of the prominent by-products of the pandemic was the increased implementation of technologies in the hospitality sector (Rahimizhian & Irani, 2020). Since customer satisfaction is at the core of a service business and service quality, transforming and expanding the services to meet the needs and expectations of the consumers will help improve the customer experience in the post-pandemic world. The reemergence of hospitality in the post-pandemic world will depend on its evolution and adaptation. Technological novelties that were considered optional innovations must now become obligations (Rahimizhian & Irani, 2020), and as indicated by Promnil and Polnyotee (2020), strategic changes need to be made. Leveraging robots, artificial intelligence, and service automation in hospitality has the potential to improve corporate and financial performance, redefine the competitiveness of the hotel, and present opportunities for service innovation. Moreover, because it is easier to see luxury in goods rather than in services (Wirtz et al., 2020), technology can help luxury hotels personalize their guest experiences and streamline their operations (Al-Hyari et al., 2023) to increase the proactive visibility of luxury

and communicate it in a distinct manner. The potential capabilities of AI can be used to augment the dynamics of price-luxury-exclusivity towards creating a memorable guest experience (Lukanova & Ilieva, 2019). Yanan (2023) said that "the higher the hotel's star rating, the greater its capacity and ability to implement intelligence technology" (p. 2). However, only a limited number of luxury hotels have adopted AI and robotics for strategic enhancement, and this needs to change to provide differentiated and customized services (Nam et al., 2020) in the future. Tong-On et al. (2021) suggested AI as one of the worthwhile topics for investigation in the future.

In their study on perceptions of service quality, Parasuraman et al. (1988) proposed the SERVQUAL model to assess competitive differentiation via the quality of services and to better understand the service expectations, perceptions, and predictions of consumers with the aim of improving service quality. Although previous studies such as Limna (2023), Cheunkamon et al. (2023), and Sangpikul (2022) have studied service quality and customer satisfaction in Thailand, Chen et al. (2021) said that the existing SERVQUAL dimensions are limited in their scope to explain AI capabilities and contribution to service quality. The current study attempts to fill this gap.

Luxury hotels provide services that have symbolic value where customers feel the sense of differentiation and uniqueness (Gonçalves et al., 2024). Luxuries play a social symbolic role in East Asian societies (Lu et al., 2015), and it would be helpful to explore if AI is able to understand and accommodate the preferences of this specific group in the future of traveling. Besides, Thailand's economy is highly dependent on tourism, and based on Lu et al. (2015) and Nguyen (2021), there are significant cultural

differences regarding which factors affect service quality and customer satisfaction. The patterns of expectations for services are also varied amongst the culturally and linguistically diverse customers in Thailand (as seen in Sann & Lai, 2021). To provide multisensory experiences to the customers (Manigandan & Raghuram, 2022), especially in the luxury hotels, it is important to analyze the effects of artificial intelligence (AI) on customer satisfaction in luxury hotels in Bangkok, Thailand. The findings of this study will benefit the management of luxury hotels in providing enhanced service quality and customer experiences and will also provide theoretical support towards factors affecting customer satisfaction in the Thai context.

Objectives

The research objectives are:

1. To explore the relative importance of the five dimensions of service quality (based on the SERVQUAL Model) on customer satisfaction and,

2. To explore the effects of AI (as a moderator) on the relationship between the dimensions of the SERVQUAL model and customer satisfaction.

Literature review

The use of AI can be summarized as “RAISA,” which stands for robots, artificial intelligence, and service automation (Naumov, 2019). AI is capable of handling substantial quantities of data, analysing them to draw patterns, deriving interpretations, and making judgments based on them in a timely and efficient manner (Al-Hyari et al., 2023; Nam et al., 2020). AI has

been implemented widely in hotels, from back-office operations to direct customer interactions. While the implementation of AI has the potential to generate considerable revenue, it could come at the cost of decreased customer satisfaction. Previous studies have identified important ramifications resulting from the adoption of AI in the hotel industry, underlining its potential to be both helpful and threatening at the same time (Ruel & Njoku, 2020). Mariani and Borghi (2023) showed that AI positively affected customer satisfaction, and Wang et al. (2022) indicated that AI positively affected employee creativity. However, Nozawa et al. (2022) showed that AI was perceived negatively by restaurant goers in luxury hotels. van Esch et al. (2022) showed that services featuring human interactions were preferred to AI-enabled interactions, indicating that the adoption of AI must take into consideration the preference for a human touch instead of a sole focus on functional superiority. Limna (2022) highlighted several negative effects of AI, including a loss of control, safety, security, privacy concerns, and job losses, among others. Uncertainty precludes the use of AI because of the potential impacts it could have (Nam et al., 2020). Nevertheless, AI offers numerous opportunities for tourism and the hotel industry (Limna, 2022). Employing technology can enhance the customer experience and business efficiency (Rahimizhian & Irani, 2020) in addition to encouraging the development of new competencies and capabilities (Ruel & Njoku, 2020). However, it is important to manage the ability to use AI towards satisfactory interactions and service encounters (Limna, 2022; Um et al., 2020). Looking at these implications, it is vital to understand the role that AI plays in service quality and customer satisfaction.

Customer satisfaction is an assessment of service encounters and is an indicator of customer loyalty, retention, and repurchase intention. Service quality affects customer satisfaction (Nunkoo et al., 2020, for a detailed review), and good service quality leads to the creation of a competitive advantage for hotels. Services are intangible in nature and are delivered as a process, and therefore, service encounters are particularly important in determining the customer experience (Ali et al., 2021). However, in an experience-based economy, AI brings new implications. Since the advent of AI in hospitality, service quality is no longer dependent solely on service encounters but on the use of technology in facility design, in-room services, and entertainment towards delivering a memorable customer experience (Naumov, 2019).

Parasuraman et al.'s (1988) SERVQUAL model used five dimensions (i.e., tangibility, reliability, responsiveness, assurance, and empathy) to assess service quality. Although previous studies (e.g., Ali et al., 2021; Alzoubi et al., 2021; Anabila et al., 2022; Gogoi, 2020; Margaretha et al., 2022; Nguyen, 2021; Nikou & Khiabani, 2020; Yeong et al., 2022) tested the model in countries such as Vietnam, the UAE, Indonesia, Iraq, Malaysia, Ghana, and India, the current study adds value by analyzing the significance and relative importance of the five dimensions of SERVQUAL in the Thai context. The ensuing paragraphs present a detailed literature review.

SERVQUAL Dimensions

The tangibility dimension refers to the physical facilities, equipment, and appearance of the service personnel. Since the basic nature of services is intangibility, customers consider the physical environment when assessing

service quality. An adequate physical environment leads to a more favourable customer response, affecting the perception of comfort (Ryu et al., 2008). The predominant facets of tangibility are functionality, cleanliness, and usefulness. Previous empirical studies (e.g., Al-Araj et al., 2022; Gogoi, 2020; Nguyen, 2021) have shown that tangibility is positively related to customer satisfaction. Baek et al. (2020) argued that AI enhances the physical environment of guest rooms, and this aspect is especially effective with the increasing number of guests from the millennial generation. AI can alter tangible experiences by incorporating technology and bringing guests a distinct experience. AI can alter the perceived tangibility of the service, leading to customer satisfaction. Therefore, this study proposes:

H1 – Tangibility is positively related to customer satisfaction in luxury hotels.

H6a – AI moderates this relationship so that the use of AI improves the effect of tangibility on customer satisfaction.

The second dimension of the model measures the ability to provide a certain service consistently, accurately, credibly, and in a timely fashion. This includes providing accurate information on the company website (Sumi and Kabir, 2021) and dependability in the resolution of customer service issues with an error-free service (Gabrow, 2021). Of all the SERVQUAL dimensions, reliability holds the highest importance and has a positive correlation with customer satisfaction. Mechanical experiences play an alternative role in the cognitive and emotional perception of guests in terms of the reliability of an organization (Parasureman et al., 2008). Nguyen et al. (2021) concluded that the effect of AI system reliability on customer-brand

identification was significant, and Ameen et al. (2021) stated that AI's ability to engage in unbiased customer interactions enhanced service quality and customer satisfaction. Based on these findings, the current study proposes that:

H2 - In luxury hotels, customer satisfaction positively correlates with reliability.

H6b – AI moderates this relationship such that the use of AI improves the effect of reliability on customer satisfaction.

The third dimension of responsiveness is explained as the willingness and promptness to help customers (Parasuraman et al., 1988). In luxury hotels, guests expect a certain level of responsiveness to their needs and expectations (Al-Hyari et al., 2023), and customer satisfaction depends on how well these needs and expectations are met by personalized service, proactive problem solving, and clear communication regarding queries and requests. Therefore, responsiveness is a significant predictor of service quality and customer satisfaction. With the use of AI, tasks like replying to reviews or answering general queries can be automated towards improved service quality and customer satisfaction (Shahid Iqbal et al., 2018). As a result, hotels have begun implementing AI-powered concierge services (Lukanova & Ilieva, 2019), which guarantee prompt responses. Customers tend to perceive companies that use AI as more innovative, adding to the company's extrinsic value (Chen et al., 2021). Based on the evidence from previous studies (e.g., Anabila et al., 2021; Gabrow, 2021; Gogoi, 2020; Nguyen, 2021; Sumi & Kabir, 2021), the current study proposes that:

H3 – Responsiveness is positively related to customer satisfaction in luxury hotels.

H6c – AI moderates this relationship such that the use of AI improves the effect of responsiveness on customer satisfaction.

The degree of security customers experiences in accessing a service plays an important role in customer satisfaction because humans are naturally drawn to things that offer them a sense of security and comfort. The assurance dimension relates to the technical knowledge, professionalism, communication skills, ability to inspire trust, and courtesy of employees, and the confidence and sense of security in financial transactions (Mohammed and Shahin, 2021; Pakurár et al., 2019). Previous studies such as Ali et al. (2021), Chiang and Trimi (2020), and Devlalikar and Othayoth (2023) indicated that assurance is important when assessing service quality and customer satisfaction. With the assurance of AI, the quality of the services delivered by employees is also measured to a degree by the level of proactivity (Prentice and Nguyen, 2020). Assurance is particularly crucial in the service industry (Ali et al., 2021); consequently, executing tasks with proficiency, courtesy, and trustworthiness is essential when employing AI in customer service (Chiang & Trimi, 2020). Based on previous studies (e.g., Anabila et al., 2021; Gogoi, 2020; Nguyen, 2021), the current study hypothesizes that:

H4 – Assurance is positively related to customer satisfaction in luxury hotels.

H6d – AI moderates this relationship such that the use of AI improves the effect of assurance on customer satisfaction.

The empathy dimension relates to the care and individualized attention paid to the customers, expressed by showing solidarity with customers, listening to them, and helping them find solutions (Bove, 2019). Employees must have compassion, approachability, and understanding. A lack of empathy is extremely detrimental to long-term sustainable guest relations (Umasuthan et al., 2017). Sugiarto and Octaviana (2021) stated that empathy is positively related to customer satisfaction. Although van Esch et al. (2022) opined that skepticism surrounds the use of AI for comprehending, manifesting, and boosting emotions and empathy, Xu et al. (2021) proposed that AI can be an empathy enhancer for a human operator. AI can compensate for the lack of empathy by providing autonomous responses to a failure in the service process. Based on the empirical support for empathy in the previous studies, the current study proposes that:

H5 – Empathy is positively related to customer satisfaction in luxury hotels.

H6e – AI moderates this relationship such that the use of AI improves the effect of empathy on customer satisfaction.

Mariani and Borghi (2023) found that guests who had interacted with a service robot were more likely to leave a higher online review score for the hospitality establishment. AI can be used to help gather information and assist in decision-making (Duan et al., 2019) and can enhance human interaction in building customer relationships and creating memorable experiences (Al-Hyari et al., 2023; Prentice & Nguyen, 2020). Naumov (2019) stated that RAISA offers immense potential, and the role of AI is worth exploring. An empirical analysis will assist in cultivating a more profound

understanding of these dynamics. Based on the review of the literature and the research objectives set for this study, the conceptual framework for this study is shown below in Figure 1.

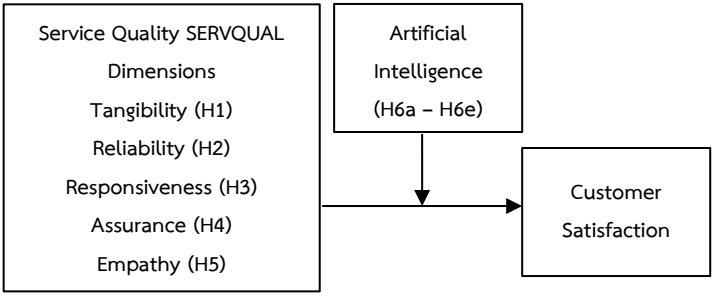

Figure 1 Conceptual Framework for the study

Research Scope

This study used quantitative methodology to collect data from individuals who had visited a luxury hotel in Thailand during the two years since the pandemic. These individuals had experienced AI-rendered services at the hotel at least once during their visits. To ensure that the respondents had experience with luxury hotels, three screening questions were added at the beginning of the survey form. These questions helped to screen respondents who (1) had been to a luxury hotel, (2) had done so in the last two years, and (3) had experienced AI-rendered services, including chatbots, robots, concierge recommendations and front desk services, digital payments, contactless checkout, and smart in-room technology.

Research Methodology

Convenience sampling was used to collect data between November 2023 and December 2023 from 410 Thai respondents using an online survey. These respondents were sourced from the guest list obtained from a hotel operator based in Thailand. The survey questionnaire consisted of a 17-question scale from Parasuraman et al. (1988) for the SERVQUAL model; five items to assess AI-rendered services were based on effort and performance expectancy and social influence (Venkatesh et al., 2003; 2022); and five questions were adapted from Deng et al. (2013) and used to assess customer perceptions and predictions. Deng et al. (2013) indicated satisfactory validity and reliability for the items and suggested that the items held strong explanatory power in measuring customer satisfaction. To ensure the coherence of the data with the hypothesized model, confirmatory factor analysis was conducted. The chi-sq. statistic, comparative fit index (≥ 0.95), SRMR (≤ 0.08), and RMSEA (≤ 0.06) suggested that the model was a good fit and all the factor loadings were within adequate limits. The study hypotheses were tested using regression analysis.

Results

The data screening, missing data, and outlier analysis revealed that a total of exactly 400 respondents were eligible for further analysis. The descriptive statistics revealed the demographic information about the respondents as presented in Table 1.

Table 1 Respondent Demographics

Categories	Sub-Categories	Frequency	Percent
Gender	Male	267	66.8
	Female	133	33.3
Age	18 – 30 Years Old	146	36.6
	31 – 40 Years Old	72	18.2
	41 – 50 Years Old	24	6.0
	51 – 60 Years Old	146	36.5
	Above 60 Years Old	12	3.0
Education Level	High School	82	20.5
	Associate degree	82	20.5
	Bachelor's degree	161	40.3
	Master's degree	59	14.8
	Doctorate	16	4.1
Employment	Self-employed	138	34.0
	Private Sector employee	182	45.5
	Government Sector employee	82	20.5
Monthly Income	1001 to 2000 USD	109	27.3
	2001 to 3000 USD	91	22.8
	3001 to 4000 USD	116	29.0
	4001 to 5000 USD	28	7.0
	Above 5000 USD	56	14.0

The data met the assumptions of normality, linearity, homoscedasticity, autocorrelation, and multicollinearity. Pearson's correlation coefficients and

scale reliabilities were computed for the study variables and are shown in Table 1. AI correlated positively with all five dimensions of service quality. Customer satisfaction correlated strongly with AI ($r = 0.94$, $p < 0.01$). Additionally, all independent variables were positively correlated with the dependent variable. AI was positively correlated with reliability ($r = 0.24$, $p < 0.01$) and assurance ($r = 0.20$, $p < 0.01$).

Table 2 Pearson's Correlation Coefficients and Scale Reliabilities

Study Variables		1	2	3	4	5	6	7
1	Tangibility	**0.62**						
2	Reliability	0.44**	**0.82**					
3	Responsiveness	0.47**	0.76**	**0.86**				
4	Assurance	0.36**	0.65**	0.76**	**0.84**			
5	Empathy	0.43**	0.76**	0.79**	0.69**	**0.73**		
6	Artificial Intelligence	0.64**	0.24**	0.35**	0.20**	0.41**	**0.95**	
7	Customer Satisfaction	0.51**	0.46**	0.48**	0.31**	0.56**	0.94**	**0.63**

Note: **. Correlation is significant at the 0.01 level, reliability coefficients on the diagonal.

A hierarchical multiple regression analysis was conducted to test the significance of AI as a moderator in the relationship between the five dimensions of the SERVQUAL model and customer satisfaction. Hierarchical regression analysis was suitable for the current study because it helped achieve the research objectives of providing insights into the relative

importance of the dimensions of the SERVQUAL model and helped explain the effect of AI-related interaction variables in the relationship between SERVQUAL dimensions and customer satisfaction. All the variables (independent, dependent, and moderator variables) were measured on a continuous scale, and interaction variables were added to the analysis after mean centering them. The five dimensions of the SERVQUAL model were entered in Model 1, and the interactions were added to Model 2. The analysis showed that Model 1 explained 67.6% of the variance in the dependent variable, customer satisfaction. Model 2 explained 72.3% of the variance in the dependent variable with a marginal but significant increase in the variance explained after the interaction terms were added. Table 3 below presents the results of the multiple regression analysis.

Table 3 Results of the Multiple Regression Analysis

Model		Standardized Coefficients Beta	t	Sig.
1	(Constant)		-2.793	.005
	Tangibility	.303	9.188	.000
	Reliability	.214	4.377	.000
	Responsiveness	.007	.130	.897
	Assurance	.189	4.187	.000
	Empathy	.298	5.759	.000
	R^2 = 67.6***, F = 164.229			
2	(Constant)		-3.600	.000

Model	Standardized Coefficients Beta	t	Sig.
Tangibility	.428	11.860	.000
Reliability	.113	2.143	.033
Responsiveness	-.031	-.549	.583
Assurance	.171	4.010	.000
Empathy	.335	6.810	.000
Interaction AI and Tangibility	.212	6.091	.000
Interaction AI and Reliability	.012	.224	.823
Interaction AI and Responsiveness	-.055	-.947	.344
Interaction AI and Assurance	-.131	-3.095	.002
Interaction AI and Empathy	.034	.552	.582
R^2 = 72.3***, ΔR^2 = 0.04, F = 13.270			

Regression analysis Model 1 suggested that four of the five independent dimensions of the SERVQUAL model had a significant relationship with customer satisfaction: tangibility (β = 0.30, $p < 0.001$), reliability (β = 0.21, $p < 0.001$), assurance (β = 0.19, $p < 0.001$), and empathy (β = 0.30, $p < 0.001$). The fifth dimension of responsiveness was insignificant.

Model 2 included the interaction variables and depicted two significant outcomes. In addition to the significant independent variables of tangibility (β = 0.43, $p < 0.001$), reliability (β = 0.11, $p < 0.05$), assurance (β = 0.17, $p < 0.001$), and empathy (β = 0.33, $p < 0.001$), Model 2 showed that the interaction terms of tangibility and AI (β = 0.21, $p < 0.001$) as well as

assurance and AI (β = -0.13, $p < 0.01$) were significant. The difference was that, as hypothesized, the interaction between tangibility and AI had a positive relationship with customer satisfaction, whilst the interaction between assurance and AI had a negative coefficient. The effects are depicted in Figures 2 and 3 below, and Table 4 summarizes the findings of the two figures.

Table 4 Assumptions in Figures 2 and 3

Figure 2	Relationship between Tangibility and Customer Satisfaction	**Figure 2** suggests that the relationship between tangibility and customer satisfaction is weaker at the lower levels of AI and grows stronger as the moderator mean increases.
Figure 3	Relationship between Assurance and Customer Satisfaction	**Figure 3** suggests that increased levels of AI lead to a more negative relationship between assurance and customer satisfaction.

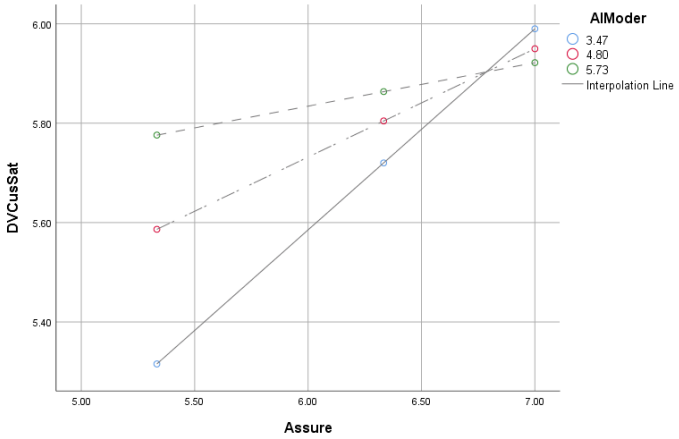

Figure 2 AI as a moderator between tangibility and customer satisfaction

The results of the regression analysis suggest that six out of ten hypotheses, namely H1, H2, H4, H5, H6a, and H6d,, were supported. However, although the interaction term for assurance and AI was significant, the coefficient was opposite to the stated hypotheses. The discussion section will illustrate the significance of these findings in greater detail.

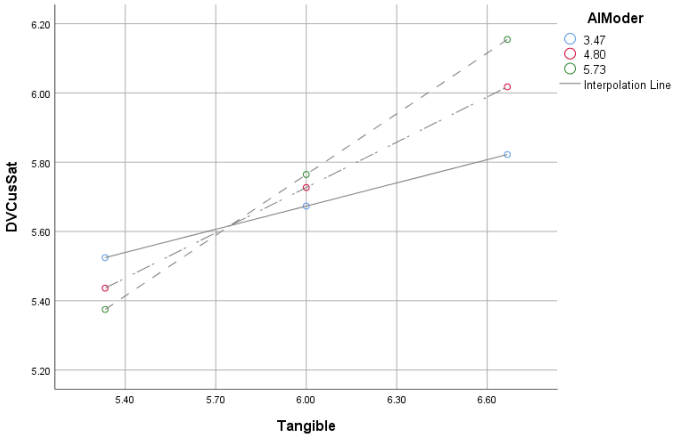

Figure 3 AI as a moderator between assurance and customer satisfaction

Discussion

The study offers some new insights into the five dimensions of the SEERVQUAL model and AI acceptance. The discussion on each of these new insights is as follows:

1. Tangibility—In the current study, tangibility was positively related to customer satisfaction. This finding is in line with previous studies, such as Ali et al. (2021), Nguyen (2021), and Sugiarto and Octaviana (2021). Luxury hotels must develop the association between physical environment and services by developing attractive and clean hotel spaces and facilities and the appearance of their staff to foster customer satisfaction (Yeong et al., 2022).

2. The current study also found support for the reliability dimension of the SERVQUAL model. This finding is in line with the previous studies by Anabila et al. (2021), Sumi and Kabir (2021), and Yeong et al. (2022). Luxury hotels must provide what they promise by being appropriately responsible in terms of understanding and solving problems faced by the customers, leading to an increase in dependability in the eyes of the guests.

3. The study findings also suggested that the assurance dimension was positively related to customer satisfaction. This finding concurs with previous studies, such as Chiang and Trimi (2020) and Nguyen (2021), among others. Alzoubi et al. (2021) and Nikou and Khiabani (2020) indicated that assurance was an important criterion for service quality and performance for four- and five-star hotels.

4. Lastly, the current study also provided support for the fourth dimension of empathy. This finding is also in line with the previous studies such as Alzoubi et al. (2021), Sumi and Kabir (2021), and Sugiarto and Octoviana (2021). For luxury hotels, effective communication, the cultivation of relationships, and personal attention are all key elements in the provision of improved service quality and customer satisfaction.

5. The current study also found that AI moderated the relationship between tangibility and customer satisfaction, with increased use of AI leading to a stronger relationship between tangibility and customer satisfaction. This finding is in line with Al Araj et al. (2022) and Chiang and Trimi (2020), among other studies.

6. Lastly, the current study also found that AI moderated the relationship between assurance and customer satisfaction. However, this

relationship was counterintuitive to the initial assessment. The assurance dimension includes the aspects of professionalism, communication skills, the ability to inspire trust, the courtesy of employees, and confidence and sense of security in financial transactions. Jonkisz et al. (2022) showed that although the problem of communication was the most popularly cited, to increase assurance, improving only one aspect was not effective. Moreover, in their study, Parasuraman et al. (1988) pointed out the transaction-specific nature of satisfaction. Referring to the findings of this study, the use of AI in the perception of assurance or its absence thereof might be linked with a specific transaction or the specific aspect of assurance experienced by the guests. Lastly, Mariani and Borghi (2023) highlight the argument around the unidimensional nature of satisfaction, which might suggest that the use of AI might be one of the factors describing both satisfaction and dissatisfaction. Therefore, luxury hotels must ensure that their use of RAISA is trustworthy, safe, and credible. There are multiple issues with AI adoption and usage (Venkatesh, 2022), and yet, there is potential in its implementation.

New Knowledge and Utilization

Hao (2021) discussed hospitality 5.0 and suggested that functionality is the focus of service using AI. The findings of the current study present some key implications. Based on the case studies from Dubai-based hotels (Nam et al., 2021), AI-powered restaurants (Nozawa et al., 2022), the Kämp Collection Hotels hotel chain from Finland (Ananeva, 2019), and the TripAdvisor study for luxury hotels based in London by Giglio et al. (2019)

and Huang et al. (2022), the current study proposes the following recommendations.

1. Tangibility: Tangibility was positively related to customer satisfaction. Therefore, for this dimension, based on the study of Lu et al. (2015), luxury hotels are advised to develop a culture that represents their history and brand. Using professional designers to develop and maintain architecture and décor that reflect this culture is, therefore, recommended. The high prices of luxury hotels lead to expectations of a prime location with large rooms and a high level of comfort. Apart from the basic requirements and private areas (cleanliness in rooms and restaurants, presenting a pleasant appearance in the form of employees and surroundings, and maintaining equipment and facilities), luxury hotels are also advised to provide large guest rooms, a spacious lobby, and accent pieces such as original paintings, real flowers, natural lighting, state-of-the-art amenities, specific fabrics, bespoke or handmade furniture, pleasing scents, clear sound systems, allowing late check-outs, 24-hour room service, and serving a fresh breakfast suited for different dietary requirements. Overall, Peng and Chen (2019) suggested that to increase the functional value of luxury hotels, the managers should provide a sense of indulgence. Using a butler, maître d', and sommelier in a restaurant are all effective ways to convey luxuriousness.

2. Reliability: This dimension refers to the conveyance of guarantees and was positively related to customer satisfaction in the current study's findings. Allan's (2016) study suggested that customers' expectations of reliability include a flamboyant environment and good relationships.

Luxury hotels should provide guaranteed services in areas such as transport, dealing with guest service problems, and keeping accurate guest records, bills, and orders. Lastly, qualities such as punctuality, flexibility, and dependability will enhance customer perceptions of quality.

3. Assurance: Assurance was also found to be positively related to customer satisfaction. Since pricing is an indicator of luxury, the guests conceptualize satisfaction in terms of the value received for the price they pay (Lu et al., 2015). Feeling that any transactions made with the hotel are secure and feeling safe while staying at the hotel are as important as the delivery of polite, respectful, friendly services. The personal attention of the staff (Peng & Chen, 2019), the confidence and the ability of the staff to avoid mistakes, and the staff's courtesy (Marić et al., 2016) and their knowledge about food and wine, the ingredients, and the preparation process (Wirtz et al., 2020) improve assurance. Apart from this, luxury hotels should promote identification so that guests can recognize individual employees by their names and can get recognition in return, contributing to generating loyal patrons for the hotel and a higher return business ratio.

4. Empathy: Lastly, empathy was also positively related to customer satisfaction. This suggests that delivering empathy is related to individualized attention, addressing the needs of guests, and keeping customers' interests at heart. First, attention should be paid to the purpose of travel because the perceptions and expectations for business travelers are different from those of family travelers, where the former have cognitive thought-based processes, while the latter have emotional responses (Umasuthan et al., 2017). Second, the type of customers might also play a

role in what the guest values. Gonçalves et al. (2024) pointed out that the customer's need for differentiation determined their willingness to embrace AI. Luna-Cortés et al. (2022) suggested the significance of hedonic value and functional value within the luxury and ultra-high net guest segments; however, Lu et al. (2015) indicated that for East Asian societies, hedonic values only have minimal effects. Nevertheless, this is an intriguing aspect for further analysis. Third, guest retention is important because the returning and long-staying customers can generate empathy among employees, leading to empathetic service encounters. Third, managers should avoid long and unplanned work hours and the frequent rotation of shifts to avoid feelings of exhaustion and fatigue.

5. Tangibility and AI: Based on the suggestions from Lu et al. (2015) and Heyes and Lashley (2017) to enhance tangibility in service, frontline service providers need to have a structured and simplified process. With the use of AI, luxury hotels can access organized information for dealing with customized requests and delivering effective solutions. To facilitate accessibility for robots, luxury hotels should design their spaces and facilities and consider the associated costs (as indicated in Ivanov & Webster, 2017). Luxury hotels can plan initiatives such as using robots with humanoid appearances and designing mobile accessibility to help potential customers towards making hotel stay decisions. Lastly, as pointed out in Giglio et al. (2019), luxury hotels can use big data and focus on consumer expectations and quality perceptions on social media, building brand impressions and guest engagement.

6. Assurance and AI: The last finding of the study suggested that the increased use of AI led to negative perceptions of assurance towards service quality. As indicated by Chaing and Trimi (2020), in a human-robot interaction online or face-to-face, safety is an important criterion. When service bots provide poor service because of a malfunction or unexpected issues, guests perceive low assurance in terms of safety and service quality, leading to low customer satisfaction (Ivkov et al., 2020). Therefore, luxury hotels can ensure the availability of human service agents as an available option (Noor et al., 2022). Additionally, luxury hotels should be more forthcoming with their data protection and privacy policies to improve the perception of assurance among guests.

There are some limitations of this study. First, although the study registered a satisfactory sample size, Thailand in its pre-pandemic days had a tourism influx comprising individuals from all over the globe (Chayakul, 2017). However, due to the pandemic, the demographic makeup of the tourists participating in this research was limited. Second, since the study only focused on the luxury segment of hospitality in Thailand, and the sampling was convenience-based, the results of this study cannot be generalized to other segments. This study also limited itself to the guest's point of view and did not include the views of hotel proprietors or employees. Future research should employ larger and more diverse sample demographics, focusing on the perspectives of the hotel employees concerning the benefits of AI. Using a combination of random sampling, stratified sampling, and systematic sampling might help studies eliminate any sampling bias in the future. Future studies can explore the effects of AI

on different segments of customers separately based on their values and their purpose of travel. Using Huang et al. (2021), future studies can analyse the comparative effect of five types of AI applications on service quality. Lastly, in line with the suggestions from Nam et al. (2021), AI can assist in operational enhancement such that AI can help enhance the job performance of current employees without any doubts about their job security. AI has been used in service operations in hotels and has potential in product development, marketing, and sales.

Conclusion

In conclusion, in the context of luxury hotels, this study found that four of five SERVQUAL dimensions were important in affecting customer satisfaction. Moreover, the study reiterated the significance of AI in two specific dimensions, tangibility and assurance. Based on these findings and previous case studies, the current study proposed some actionable managerial implications. Overall, it is notable that AI should not be approached to replace human labour but rather to enhance the perceived capabilities of a human operator. Nevertheless, the current study findings suggest that AI presents a compelling case for luxury hotels. The future of AI in luxury hotels appears bright, but more studies on this topic are desirable.

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