Technologically Influential Hospitality: Recognizing the Drivers of Smart Hotel Visitation

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ABSTRACT

Objectives: *Following the concept of smart hotels, this study aims to analyze the relationship between technology readiness, amenities, perceived usefulness (PU), perceived ease of use (PEOU), and visiting intentions. In addition, this study seeks to identify specific elements of technology amenities that significantly influence guests' intention to visit. Thus, this study is expected to fill a gap in the literature and propose a more comprehensive conceptual framework for understanding guest behavior in the context of smart hotels.*

Methodology: *This study used quantitative research methods with the unit of analysis being visitors to five-star hotels in Jakarta. Purposive sampling was used to select participants who met the research criteria, resulting in a total of 290 respondents. Data collection was conducted using an online questionnaire distributed through social media. Data analysis techniques used in this study included Partial Least Squares - Structural Equation Modeling (PLS-SEM) to test the relationship between variables.*

Finding: *The results indicate that technology amenities significantly affect PEOU, PU, and visiting intention. Meanwhile, technology readiness affects PEOU and PU but does not directly influence visiting intention. PU and PEOU mediate the influence of TR and TA on visiting intention, indicating that perceptions of ease and usefulness are the main mechanisms that bridge the relationship between technological factors and consumer behavior.*

Conclusion: *This study concludes that technology amenities have a significant effect on PEOU, PU, and visit intention. Meanwhile, technologyl readiness affects PEOU and PU but does not directly affect visit intention. PU and PEOU become mediating variables of the effect of TR and TA on visit intention.*

Keywords: *Perceived Ease of Use; Perceived Usefulness; Technology Readiness; Technology Amenities; Visiting Intentions.*

INTRODUCTION

Travel and hospitality media reports suggest that the advent of smart hotels signifies a paradigm shift in the continuously evolving hospitality sector, providing customers with an innovative, technologically enhanced lodging experience. Several studies support this claim by highlighting the transformative nature of smart hospitality (Galeone & Sebastiani, 2021; Mavitha & Kushe Shekhar, 2025). For instance, a study on smart hospitality and tourism synthesized existing knowledge and identified key opportunities for the future, emphasizing the need for smart hotels to overcome technological barriers to provide enhanced guest experiences (Buhalis et al., 2022).

The matter about smart hotel. Smart hotels are a novel concept in the hospitality industry, leveraging innovative technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and big data to deliver improved, personalized experiences (Agustina et al., 2016; Yang et al., 2021). The idea of "smartness," which encompasses the structural and transformative revolution in business, has been associated with smart hospitality, signaling a notable change in the sector. The notion of smart hotels integrates cutting-edge technologies to improve visitor experiences, going beyond the traditional hospitality framework (Buhalis et al., 2022).

The notion of smart hotels signifies a noteworthy transition in the hospitality sector, as it merges contemporary technology with traditional hospitality to offer innovative amenities and customized experiences (Nanu, 2025). The literature supports this idea by emphasizing the revolutionary potential of smart hospitality. Smart hotels use big data, AI, and the IoT to provide networked guest experiences. Guests can use their smartphones and other devices to control environmental conditions and room amenities (Talukder, 2025). These businesses redefine hospitality by fusing technology with elegance, comfort, and convenience, going beyond traditional lodging. Smart hotels are designed to provide customers with better stays and to enable optimal management of capacity, security, and efficiency (Hassan & Eassa, 2025; Yang et al., 2021).

Due to rapid technological advances, smart hotels need to develop new features, services, and innovations that are valuable to their patrons (Akel & Noyan, 2024). Extra materials or amenities offered to guests for free, either in their rooms or elsewhere, are referred to as a hotel's technology amenities. The accessibility of technology amenities is increasing and changing quickly. The literature lists numerous categories of technology amenities employed in smart hotels (Tymoshchenko, 2024). These include face or voice recognition, free Wi-Fi, service robots, smart TVs, smart room keys, and virtual reality headsets. Hotel customers can adjust their curtains, music, temperature, and lighting with touchscreen screens. Customers can use mobile apps for convenient self-service, and mobile devices can facilitate correct check-in and check-out procedures to improve their hotel stay experience. The hotel industry benefits greatly from smart devices, which can provide guests with a more personalised stay (Tymoshchenko, 2024). Examples of these devices include rollable TVs, smart mirrors, and shower glasses. Using occupancy, infrared, and motion sensors to maximise energy savings is crucial for the hotel industry. Staying up to date with emerging technologies is essential (Erdem & Barakazı, 2023).

Research Gap. A study on enhancing hotel guests' acceptance of experience with smart hotel technology found that technology amenities and services are essential for future visit intentions among hotel consumers (Yang et al., 2021). Another study examined the criteria for a green and smart hotel and found that smart technologies can enhance hotel service quality and

provide personalized experiences, thereby fostering customer loyalty (Akel & Noyan, 2024). The technology acceptance model (TAM) is a well-established psychological theory that assesses user acceptance of technology by evaluating perceived ease of use (PEOU) and perceived usefulness (PU) as key determinants of users' attitudes and intentions (Ikhsan et al., 2025; Li et al., 2024). The model has evolved into a key framework for understanding predictors of human behaviour toward the potential acceptance or rejection of technology (Hamdani et al., 2024). It originated in the psychological theories of reasoned action and planned behaviour (Wardhani & Chen, 2021) and has been widely used across disciplines, including information systems management, marketing, and advertising. The model has been extended and refined over the years to address its limitations and applied across a wide range of contexts and geographical locations. Research on TAM has identified two primary constructs that predict technology acceptance: PU and PEOU (Dewi et al., 2021; Solihin & Ahyani, 2024).

The exploration of PEOU and PU takes centre stage in our investigation, as these constructs are pivotal in shaping consumer perceptions of technology amenities in smart hotels (Du et al., 2024; Yang et al., 2023). The study uncovers compelling correlations, indicating that consumers' PEOU of technology and the PU of technology amenities are significantly associated with their attitudes toward technology amenities in smart hotels (Yang et al., 2021). However, the intricate dynamics of technology readiness present a notable divergence from these patterns, as our findings suggest that PEOU and PU are not correlated with it. This intriguing revelation prompts a deeper examination of the distinct role technology readiness plays in shaping consumers' intentions (Khan & Khan, 2024). Additionally, the concepts of technology readiness, technology amenities, and visiting intention play pivotal roles in comprehending the dynamics of smart hotel preferences.

This study aims to evaluate the relationship between technology readiness, technology amenities, PEOU, PU, and visiting intentions in the context of smart hotels, identify the specific factors within technology amenities that significantly impact guests' visiting intentions, provide insights into the empirical gaps in existing research and propose a more comprehensive framework for understanding guest behaviour in smart hotels. This research offers a holistic examination of guest preferences in smart hotels, emphasizing the often-overlooked dimensions of technology readiness and amenities.

LITERATURE REVIEW

Technology has changed value creation so that it is now centred on the customer. Because conceptualising consumer behaviour can be challenging, most research uses proxy measures such as intentions (Solihin & Ahyani, 2024). Intentions are widely understood as consumers' plans to engage in behaviours related to their intended visits, and they have become essential theoretical concepts in the field of smart technology (Tavitiyaman et al., 2024). TAM is regarded as one of the most important models for predicting users' behavioural intentions and technology adoption (Ikhsan et al., 2025).

PEOU and PU are two key constructs in the TAM, which reflect individuals' perceptions of technology (Marikyan et al., 2023). PU refers to the extent to which the use of a system is considered capable of improving performance, while PEOU describes the extent to which the system is perceived to be easy to use. The relationship between PEOU and PU has been well documented in the context of smart hotels. One study found that PEOU significantly influences PU, indicating that when guests find smart hotel technologies easy to use, they also perceive them as more useful (Alma Çallı et al., 2023; Dianawati et al., 2024; Yang et al., 2021). It aligns

with the TAM, which posits that ease of use enhances perceived technology utility. The impact of PEOU on visiting intentions is less straightforward. At the same time, some studies suggest that PEOU positively influences guests' intentions to use smart hotel services (Dianawati et al., 2024; Khan & Khan, 2024). There is robust evidence supporting the positive impact of PU on visiting intentions. Studies consistently show that when guests perceive smart hotel technologies as useful, they are more likely to intend to visit and use these services (Alma Çallı et al., 2023; Dianawati et al., 2024; Soliman et al., 2025; Yang et al., 2021). This relationship underscores the importance of ensuring that smart hotel technologies provide tangible benefits to guests. Therefore, this study hypothesizes that:

H1. PEOU positively influences PU in smart hotel settings.

H2. PEOU positively influences the intention to visit smart hotels.

H3. PU positively influences the intention to visit smart hotels.

Technology readiness. It refers to the degree to which individuals are prepared and open to adopting new technologies. It gauges users' willingness and capability to embrace technological advancements (Rahman et al., 2023; Uren & Edwards, 2023). The term "technology readiness" describes people's inclination to accept and use technology (Uren & Edwards, 2023). It includes a range of psychological characteristics and dispositions that affect an individual's propensity to accept and utilise technological advancements. These characteristics may include a positive attitude towards technology, inventiveness, unease with it, and apprehension about its proper application (Chen & Chang, 2023; Mohan et al., 2023).

The TAM, which suggests that people are more likely to accept a technology if they believe it is easy to use, relies heavily on PEOU (Ajina et al., 2024). In other words, people are more likely to adopt a technology if they believe it will require little effort and be easy to use. Technology readiness affects PEOU because people who are better prepared for new technologies are more likely to be flexible and receptive to them, thereby increasing their perception of how simple they are to use (Papagiannidis & Davlembayeva, 2022).

The degree to which a person feels that utilising a specific technology would improve their performance or productivity is known as PU (Tahar et al., 2020). PU has a significant impact on technological intention in the TAM (Khwaldeh et al., 2020). If people believe a technology will help them with their duties or produce better results, they are more likely to accept it. Technology readiness can affect PU by shaping people's perceptions of technology's value and benefits (Anh et al., 2024). More technologically literate people might be more likely to recognize the benefits of technology and be more eager to embrace it. Based on the literature review, the following hypotheses are proposed:

H4. Technology readiness positively affects perceived ease of use in smart hotel settings.

H5. Technology readiness positively affects perceived usefulness in smart hotel settings.

H6. Technology readiness positively affects intention to visit smart hotels.

Technology amenities: Covering a range of advanced services and features, technology facilities refer to innovative offerings provided by smart hotels, such as smart system-based room control, IoT devices, and personalized digital experiences (Mauroudis et al., 2023; Xinyan Zhang et al., 2023). Technology amenities are features, services, or tools offered by a digital platform or technology that aim to improve user comfort and experience (Verma & Thakur, 2022). It can include features that make technology easier and more enjoyable to use, such as personalized recommendations, fast navigation tools, responsive customer service, and user-friendly interfaces.

This study extends the classic TAM by positing that technology amenities can directly influence visit intention. In the context of modern hospitality, technology amenities not only

serve as instruments that enhance PEOU and PU but also become an integral part of the value of the guest experience and comfort, which directly drives visit behavior.

Several studies show that the availability and quality of technology amenities—such as in-room technology, internet access, and service automation—positively influence consumers' intention to visit hotels (Yang et al., 2023; X. Zhang et al., 2023). The PEOU and PU of these facilities are important factors that influence visitation intentions by improving the overall guest experience and satisfaction (Yang et al., 2021; Zhang et al., 2022). Furthermore, the presence of advanced technologies such as AI-based services and smart tourism technologies has also been shown to enrich the tourist experience, thereby increasing satisfaction and the likelihood of repeat visits (Pham et al., 2024; Xiong et al., 2023; Zhang et al., 2022).

Other findings indicate that prior experiences with smart hotel technology facilities can moderate the relationship between these facilities and visit intention, such that guests who have had positive experiences are more likely to return (Yang et al., 2023). Thus, integrating technology amenities into hotel services not only supports the basic principles of TAM but also underscores their strategic role as direct determinants of increased visit intention. Thus, technological facilities play a role not only in improving PEOU and PU but also in directly influencing the intention to visit smart hotels. Therefore, this study hypothesizes.

H7. Technology amenities positively affect perceived ease of use in smart hotel settings.
H8. Technology amenities positively affect perceived usefulness in smart hotel settings.
H9. Technology amenities positively affect intention to visit smart hotels

Visiting intention. This concept encompasses guests' preferences and motivations in choosing smart hotels, including factors such as comfort, technological advancement, and overall satisfaction (Yang et al., 2023). Understanding guests' acceptance of technology, technology readiness, and the influence of technology facilities is crucial for smart hotels.

Technology readiness components, such as optimism and innovation, positively influence perceptions of ease of use, which, in turn, shape users' intentions to interact with technology-based services (Van Huy et al., 2019). In the context of smart hotels, research shows that technology readiness can indirectly increase visit intention through PEOU (Yang et al., 2021). In a study on self-service technology, technology amenities and PEOU were significant predictors of users' intention to adopt the system (Thamaraiselvan et al., 2019). Integrating technology readiness into the TAM framework confirms that PEOU and PU fully mediate its influence on usage intention (Lin et al., 2007). These findings confirm that PEOU serves as an important mechanism that bridges the relationship between technology readiness and the intention to visit. Thus, increasing users' technology readiness can strengthen the perception of PEOU, which ultimately encourages a higher intention to visit smart hotels.

Meanwhile, technology amenities in the hospitality industry also play an important role in influencing the intention to visit by increasing PU. The TAM framework is particularly relevant for explaining this relationship, in which PU serves as the primary pathway linking technological experience to behavioral intention. Research indicates that technology amenities, such as AI, robotics, and automated systems, have a positive impact on PU, which in turn strengthens guests' intention to visit hotels (Tavitiyaman et al., 2022; Yang et al., 2023; X. Zhang et al., 2023).

Several empirical evidence support the mediating role of PU in the relationship between technology amenities and visit intention. In the context of smart hotels, technology amenities significantly influence PU, which, in turn, positively affects visit intention (Yang et al., 2023). Another study on the use of virtual reality in tourism also found that PU directly influences
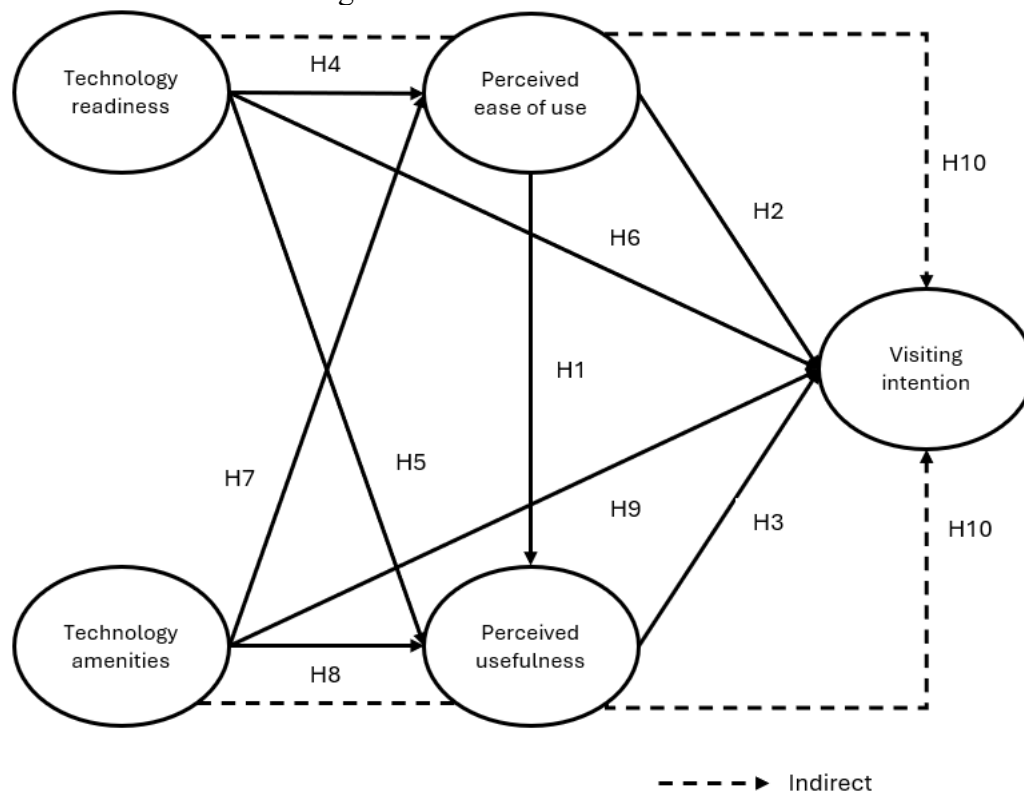
behavioral intention, confirming its position as a key mediator (Dacko & Shora, 2024). Thus, technological facilities enhance perceived usefulness, which indirectly strengthens guests' intention to visit. These findings underscore the importance of integrating advanced technological features into hospitality services, not only to enhance operational efficiency but also to improve the guest experience and encourage repeat visits. Therefore, this study proposes the following hypothesis:

H10. Technology readiness mediated the relationship between perceived ease of use and intention to visit smart hotels.

H11. Technology amenities mediated the relationship between perceived usefulness and intention to visit smart hotels.

The research model is as follows.

Figure 1. Theoretical Framework

METHOD

Research Approach

This study employs a quantitative approach to test the relationship between the proposed constructs empirically. Data collection was conducted cross-sectionally using a structured online questionnaire. The questionnaire was distributed via various social media platforms to respondents who met the criteria (Schretzlmaier et al., 2022). Social networks were utilized as a sampling frame, as this method allows for broader geographical coverage and higher response rates compared to conventional methods (Vicente, 2023).

Population, Sample, and Sampling Technique

The population in this study consisted of visitors who had stayed at five-star hotels in Jakarta over the last three years. This study chose five-star hotels because they are considered to have the highest level of technology adoption and service innovation in the hospitality industry, including contactless check-in/check-out systems, IoT-based room control, and concierge services supported by AI.

The sample size was determined to be 290 respondents, which is within the recommended sample size range for partial least squares – structural equation modeling (PLS-SEM) analysis (Hair Jr et al., 2022). Therefore, the sampling technique used was purposive sampling.

Measurement and Scale

The research instrument was a structured questionnaire consisting of six sections to measure the constructs: technological facilities, technology readiness, PEOU, PU, and visit intention. Most of the measurement items were adapted from previous research (Yang et al., 2021) with some minor adjustments to suit the research context. Overall, there were 18 measurement indicators, consisting of five items for technology readiness, four for PEOU, four for PU, three for visit intention, and two for technological facilities. All items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Data Analysis Method

Data analysis was performed using PLS-SEM because it is suitable for predictive research models and can handle small to medium sample sizes. The PLS-SEM analysis process consists of two stages: (1) measurement model evaluation to test the reliability and validity of the construct, and (2) structural model evaluation to test the hypotheses and relationships between variables in the research model (Hair Jr et al., 2022).

RESULTS AND DISCUSSION

Profile respondent

All respondents (100%) reported visiting Jakarta in the last three years and stayed at a five-star hotel during their visit. The gender distribution shows that 52% of respondents were male and 48% were female. In terms of nationality, most respondents were foreign nationals (71%), while the rest were Indonesian citizens. The marital status of respondents was dominated by unmarried individuals (60%), while 40% were married.

In terms of education level, 42% of respondents had a bachelor's degree, 28% had a diploma, 25% had a master's degree, and 5% had a doctorate. The primary purpose of visiting Jakarta was dominated by business trips (67%), while the rest (33%) were for personal reasons. Regarding hotel selection patterns, from the list of five-star hotels provided in the survey (The Langham, Grand Hyatt Hotel, The Mandarin Oriental, The Kempinski, The Ritz-Carlton Pacific Place, and Four Seasons), most respondents who stayed more than three times a year chose The Langham (56%) and Four Seasons (33%). Respondents who stayed twice a year mainly chose The Langham (44%) and The Ritz-Carlton Pacific Place (25%). Meanwhile, for those who stayed once a year, the most popular hotels were The Langham (57%) and Grand Hyatt Hotel (30%).

Measurement Model Evaluation

Evaluation of the measurement model, consisting of validity and reliability. This evaluation aims to ensure that each construct in the research model exhibits a level of internal consistency and accurately measures the concepts it represents. Convergent validity is assessed through factor loading and average variance extracted (AVE), while internal consistency is measured by Composite Reliability (CR) and Cronbach's Alpha (CA). The threshold values used follow the recommendations of Hair et al. (2019): factor loading ≥ 0.70, CR ≥ 0.70, CA ≥ 0.70, and AVE ≥ 0.50 (Hair Jr et al., 2022).

Table 1 Outer Model Result

Items	Code	Factor Loading	CR	CA	AVE
Variable: TR					
I can typically figure out new high-tech items without assistance from others.	TR1	0.873	0.898	0.901	0.715
I stay up to date on technological advancements in my field of expertise.	TR2	0.893			
I appreciate the challenge of understanding high-tech devices.	TR3	0.879			
I find it easier to utilise technology than others.	TR4	0.720			
I am among the early adopters of new technology in my social network.	TR5	0.852			
Variable: TA					
Contactless	TA1	0.901	0.798	0.806	0.832
Value-added	TA2	0.923			
Variable: PEOU					
A smart hotel will provide clear and easy-to-understand directions for its amenities.	PEOU1	0.908	0.878	0.88	0.733
Using smart hotel amenities requires minimal effort.	PEOU2	0.864			
Smart hotels offer user-friendly amenities.	PEOU3	0.826			
Smart hotel amenities ensure easy access to desired information.	PEOU4	0.823			
Variable: PU					
Smart hotel amenities will be efficient.	PU1	0.806	0.849	0.852	0.689
Staying at a smart hotel will be more convenient with its amenities.	PU2	0.782			
My travel demands will be met with smart hotel amenities.	PU3	0.855			
Overall, smart hotel amenities are beneficial.	PU4	0.874			
Variable: VI					
When travelling, I am willing to stay in smart hotel.	VI1	0.805	0.782	0.791	0.696
When travelling, I aim to stay in a smart hotel.	VI2	0.877			
When travelling, I prefer to stay at a smart hotel.	VI3	0.819			

Source: Primary Data, 2024

Referring to Table 1, all constructs have factor loading, CR, CA, and AVE values that exceed the recommended threshold values. Thus, this research instrument is declared valid and

reliable and is suitable for further analysis using the Partial Least Squares Structural Equation Modeling (PLS-SEM) model.

Next, discriminant validity is evaluated to ensure that each construct in the research model shows apparent differences from one another and that there is no overlap in measurement between constructs. One method commonly used to assess discriminant validity is the Fornell-Larcker Criterion, with the condition that the square root of AVE for each construct must be greater than the correlation between other constructs in the model (Hair Jr et al., 2022).

Table 2 Discriminant Validity - Fornell-Larcker Criterion

	PEOU	PU	TA	TR	VI
Perceived ease of use	**0.856**				
Perceived usefulness	0.850	**0.830**			
Technology amenities	0.791	0.750	**0.912**		
Technology readiness	0.724	0.706	0.792	**0.846**	
Visiting intention	0.807	0.815	0.801	0.723	**0.834**

Source: Primary Data, 2024

Referring to Table 2, each construct has adequate discriminant ability, meaning that the construct better represents its own indicators than other constructs.

Structural Model Evaluation

The next step is to evaluate the structural model to assess the goodness of the research model. The measure of model goodness refers to the R-squared (R^2) value, which indicates how much the independent variables can explain the variability of the dependent variables, and f^2 (effect size), which measures the magnitude of the contribution of each construct to the endogenous variables (Hair et al., 2019). In general, f^2 values are categorized as no effect (<0.02), weak (0.02–0.14), moderate (0.15–0.34), and substantial (>0.35).

Table 3 R–Square (R^2) and F-Square (f^2)

	R^2	f^2	Decision
PEOU – PU		0.715	Substantial
TR – PU	0.771	0.009	No effect
TA – PU		0.042	Weak
TR – PEOU		0.102	Weak
TA – PEOU	0.633	0.280	Moderate
PEOU – VI		0.058	Weak
PU – VI		0.131	Weak
TR – VI	0.775	0.007	No effect
TA – VI		0.098	Weak

Source: Primary Data, 2024

Based on the test results (Table 3), the PEOU, technology readiness, and technology constructs collectively contributed 71.5% (R^2 = 0.715) to PU, with effect sizes (f^2) varying across the constructs. The technology readiness and technology amenities constructs also contribute to PEOU, accounting for 63.3% of the variance with an R^2 value of 0.633. The effect of technology readiness is classified as moderate (f^2 = 0.280), while technology amenities exhibit a weak influence (f^2 = 0.102). Furthermore, the visiting intention is jointly explained by technology readiness, technology amenities, PEOU, and PU, accounting for 77.5% of the variance (R^2 = 0.775). However, the individual effects are mostly weak to moderate, indicating a significant relationship but with varying degrees of influence between constructs.
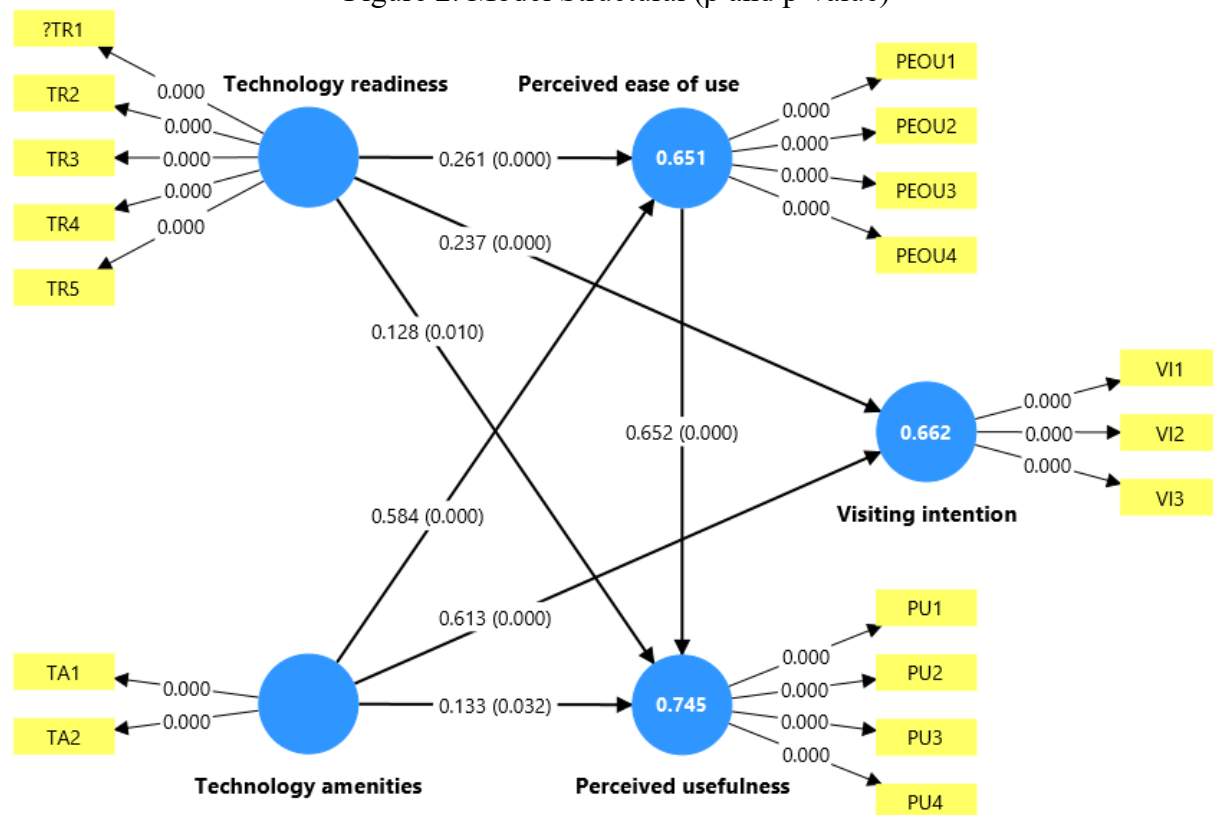
This study conducted two hypothesis testing models: direct and indirect in the structural model. Direct and indirect hypothesis testing refer to the path coefficient and p-value of the relationship between latent variables. The testing criterion used is p-value < 0.05, which indicates a significant effect at a 95% confidence level.

Table 4 Hypotheses Direct

Path	STD	STDEV	T statistics	P values	Decision
H1. PEOU → PU	0.650	0.047	13.801	0.000	Accepted
H2. PEOU → VI	0.203	0.064	3.169	0.002	Accepted
H3. PU → VI	0.382	0.066	5.831	0.000	Accepted
H4. TR → PEOU	0.264	0.064	4.105	0.000	Accepted
H5. TR → PU	0.127	0.050	2.545	0.011	Accepted
H6. TR → VI	0.069	0.053	1.311	0.190	Rejected
H7. TA → PEOU	0.582	0.053	10.997	0.000	Accepted
H8. TA → PU	0.137	0.062	2.226	0.026	Accepted
H9. TA → VI	0.299	0.046	6.505	0.000	Accepted

Source: Author, 2024

Figure 2. Model Structural (β and p-value)

Referring to Table 4 and Figure 2, the analysis results indicate that most of the relationships between constructs are statistically significant, except for the relationship between technology readiness and visiting intention (β = 0.069; p = 0.190), which is not significant. Therefore, H6 is rejected. More specifically, PEOU has a positive and significant effect on PU (β = 0.650, p = 0.000) and visiting intention (β = 0.203, p = 0.002), thus supporting H1 and H2.

Furthermore, PU also has a positive and significant effect on visiting intention (β = 0.382; p = 0.000), which supports the acceptance of H3.

Additionally, technology amenities have a positive and significant effect on PEOU (β = 0.582; p = 0.000), PU (β = 0.137; p = 0.026), and visiting intention (β = 0.299; p = 0.000), thus supporting H7, H8, and H9. On the other hand, technology readiness has a significant effect on PEOU (β = 0.264; p = 0.000) and PU (β = 0.127; p = 0.011), confirming the acceptance of H4 and H5.

Table 5 Hypotheses Indirect

	STD	STDEV	T statistics	P values	Decision
Technology amenities → PU → visiting intention	0.052	0.024	2.196	0.028	Accepted
Technology readiness → PEOU → visiting intention	0.054	0.026	2.099	0.036	Accepted

Source: Author, 2024

Furthermore, this study tests the indirect effect hypothesis to identify the mediating relationship between constructs. The analysis results show that technology amenities have an indirect effect on visiting intention through PU (β = 0.052; p = 0.028). Similarly, technology readiness has an indirect effect on visiting intention through PEOU (β = 0.054; p = 0.036). Thus, H10 and H11 are accepted.

Both mediation paths are significant at the 95% confidence level, indicating that the influence of technology amenities and technology readiness on visiting intention is mediated by users' perceptions of PEOU and PU. Thus, this mediation test concludes that increasing technology readiness and the quality of hotel technology facilities do not directly increase visiting intention but rather work through increasing perceptions of the ease and benefits of using smart hotel technology.

PLS-predict

The predictive power of the model was evaluated using PLSpredict, as recommended by Shmueli et al. (2019), to assess the performance of *out-of-sample prediction* in the PLS-SEM model. This method allows testing the predictive validity of the model by comparing the prediction error rate between the PLS-SEM model and the linear comparison model. As emphasized by Sharma et al. (2023), prediction testing plays a crucial role in ensuring that PLS-SEM models not only possess explanatory power but also adequate predictive power.

Table 6 PLS-predict

Item	Q²predict	RMSE			MAE		
		PLS-SEM	LM	PLS-SEM < LM	PLS-SEM	LM	PLS-SEM < LM
PEOU1	0.559	0.604	0.582	0.022	0.461	0.436	0.025
PEOU2	0.424	0.705	0.642	0.063	0.525	0.487	0.038
PEOU3	0.423	0.662	0.638	0.024	0.537	0.506	0.031
PEOU4	0.473	0.647	0.632	0.015	0.494	0.486	0.008
PU1	0.295	0.771	0.763	0.008	0.605	0.599	0.006
PU2	0.349	0.814	0.785	0.029	0.612	0.588	0.024
PU3	0.560	0.619	0.610	0.009	0.507	0.487	0.020
PU4	0.406	0.671	0.649	0.022	0.528	0.520	0.008
VI1	0.456	0.712	0.695	0.017	0.570	0.565	0.005
VI2	0.549	0.570	0.545	0.025	0.452	0.425	0.027
VI3	0.345	0.621	0.578	0.043	0.488	0.432	0.056

Source: Primary Data, 2024

Referring to Table 6, the results of the PLSpredict test show that all indicators have a positive Q^2-predict value (0.295–0.560), indicating that the model exhibits minimum predictive validity, i.e., it provides better predictions than the naïve model based on the average of the indicators. However, the RMSE and MAE values of the PLS-SEM model are consistently higher than those of the linear model (LM), which means that this model has not demonstrated strong predictive power. Thus, this research model meets the basic predictive validity criteria but does not meet the strong predictive validity criteria, as suggested by (Shmueli et al., 2019) and (Sharma et al., 2023).

DISCUSSION

The Influence of PU and PEOU on visiting intention

This study demonstrates that PEOU significantly impacts PU, and together they substantially affect visitors' intention to use smart hotel technology. These findings reinforce TAM (Davis, 1989), which asserts that perceptions of ease of use and usefulness are two key factors shaping the attitudes and intentions of smart hotel visitors. In this study, when smart hotel visitors perceive the technology as easy to use and providing tangible benefits, they tend to develop a positive attitude toward the technology and increase their intention to visit and use smart hotel services.

The findings of this study align with previous studies that emphasize the central role of PEOU and PU in explaining technology adoption behavior in the service sector (Dianawati et al., 2024; Hamid et al., 2020; Yang et al., 2021). PEOU significantly influences PU. For instance, in the context of online booking for homestay services, ease of use directly impacts perceived usefulness (Chouykaew et al., 2024). Thus, this study not only reconfirms the basic assumptions of TAM but also extends its application to the context of the smart technology-based hospitality industry, where visitors' decisions to interact with or visit hotels are greatly influenced by their perceptions of the ease and usefulness of the systems offered.

From a theoretical perspective, these findings enrich the literature on technology adoption by emphasizing that behavioral intent in the context of high-tech services is determined not only by the technological innovation itself, but also by users' cognitive perceptions of its benefits and ease of use. Thus, these results extend the external validity of TAM in the realm of tourism and hospitality, demonstrating that the model remains relevant in explaining the adoption behavior of new-generation technologies, such as smart hospitality systems.

The influence of technology amenities on PU, PEOU and visiting intentions at smart hotels

The results indicate that technology amenities play an important role in increasing PU and PEOU in the context of smart hotel use. Within the framework of the TAM, these findings expand our understanding of how the physical and digital characteristics of technology implemented in a service environment influence users' cognitive perceptions of the ease and usefulness of the technology. The presence of various facilities such as the IoT, AI, automatic sensors, and application-based control systems not only improves operational efficiency but also reinforces guests' perceptions that smart hotel technology provides real value in supporting their comfort and personalizing their experience (Dianawati et al., 2024; Talukder et al., 2024; Yang et al., 2021).

Furthermore, this study confirms that PU is not solely influenced by functional factors, but also by hedonic and affective aspects arising from users' interactions with enjoyable and accessible technology. In line with the findings of Li et al. (2025), perceived enjoyment and ease of use contribute positively to increased PU, reinforcing the view that the emotional

experience of interacting with technology is an important element in the adoption of digital innovations. Thus, in the context of smart hotels, the use of technology that provides a sense of convenience, control, and comfort (such as automatic check-in systems, app-based room services, or voice control devices) has the potential to strengthen guests' perceptions of the overall benefits of technology.

In addition to increasing PU, technology amenities also contribute to PEOU. The design of smart hotel technology, which is user-friendly, intuitive, and easy to learn, encourages positive interactions between guests and the digital systems provided. Previous studies show that technologies such as AI-based virtual assistants and smart hotel mobile applications are considered easy to use and efficient in helping guests access services, schedule facilities, or set room preferences (Li et al., 2025; Sha & Marafa, 2025; Talukder et al., 2024). Visitors' interactions with advanced systems reinforce their belief that technology is not complex, which ultimately increases users' acceptance and psychological comfort with smart hotels.

Furthermore, the results prove that technology amenities significantly and directly influence visiting intention. These findings indicate that sophisticated, interactive, and integrated technological facilities not only influence users' cognitive perceptions of convenience and usefulness but also directly shape their desire to visit smart hotels. In other words, positive experiences with technology can create a perception of added value that drives interest in visitation, without being fully mediated by PEOU and PU.

These results expand the understanding within the TAM framework by showing that external factors, such as technology amenities, not only function as belief antecedents (determinants of belief in PEOU and PU) but also as direct stimuli for visiting intention behavior. In the context of smart hotels, the presence of technology that provides convenience, efficiency, and personalized services has been proven to increase customers' intention to visit, even before they have fully formed a cognitive perception of its ease or usefulness. These findings align with the research by Hamid et al. (2020) and Sha and Marafa (2025), which confirm that the perceived value of digital experiences and the quality-of-service technology can be direct drivers of customer behavioral intent in the context of smart technology-based services.

Thus, this study expands the application of TAM in the context of smart service environments by showing that the role of technology amenities is not only instrumental but also functions as a cognitive stimulus that shapes users' perceptions of the ease and benefits of technology. These findings enrich the technology adoption literature by emphasizing that technology acceptance in the digital hospitality sector depends not only on the existence of the facilities themselves but also on users' psychological perceptions of the value, convenience, and control offered by the technology. Thus, the theoretical contribution of this study lies in integrating technological environment factors into the TAM framework, which broadens the understanding of how smart technology, in the context of services, influences behavioral intentions through the mechanism of users' cognitive perceptions.

The influence of technology readiness on PU, PEOU and visiting intentions at smart hotels
The results prove that technology readiness plays a crucial role in influencing PU and PEOU. Within the TAM framework, these findings expand our understanding of how visitors' psychological attributes shape their cognitive evaluation of technological innovations. Visitors with higher levels of technology readiness tend to view digital innovations more positively,

perceiving smart hotel technology as valuable and easy to use, which enhances their overall stay experience.

In line with Van Huy et al. (2019), the dimensions of optimism and creativity in technology readiness contribute positively to increased PU. Visitors who are optimistic about technology are more likely to recognize the advantages of digital implementation in hotels, such as better service efficiency, responsiveness, and personalized comfort. Similarly, creative visitors can explore and maximize the functions of smart systems, thereby strengthening the aspects of perceived usefulness and added value of smart hotel technology. It is also supported by Kim et al. (2020).

Furthermore, technology readiness has a significant influence on PEOU, as visitors who are more optimistic and confident in technology tend to feel more comfortable and capable of using new systems. Visitors with higher technology readiness are generally more open, confident, and enthusiastic in interacting with digital interfaces, making their interactions with smart hotel technology smoother and less intimidating (Li et al., 2025; Van Huy et al., 2019). Therefore, technology readiness can be considered a key psychological prerequisite in the TAM framework, as it shapes users' beliefs about ease of use and indirectly increases technology acceptance.

However, contrary to theoretical expectations, this study found that technology readiness had no direct effect on visitors' intention to visit smart hotels. Although visitors' optimism and trust in technology positively influence their perceptions of usefulness and ease of use, readiness alone is not sufficient to directly motivate visit intentions. This finding aligns with the results of (Yang et al., 2021) who emphasize that psychological readiness serves more as a cognitive enabler than a direct behavioral driver in the adoption of smart hospitality technology.

Theoretically, these results contribute to the refinement of TAM by clarifying the role of technology readiness as an indirect antecedent rather than a direct predictor of behavioral intention. Although the traditional TAM framework primarily focuses on system-related factors, this study highlights the importance of human factors as catalysts that influence cognitive judgments (PU and PEOU), which in turn shape behavioral outcomes. Consequently, technology readiness enriches TAM by linking individual psychological tendencies with technology-related beliefs, reinforcing that successful technology adoption in smart hospitality depends more on how effectively the technology translates user enthusiasm into functional benefits and perceived experiences.

Mediating effect: PEOU

The results of this study indicate that PEOU mediates the relationship between technology readiness and intention to visit smart hotels. This finding extends the TAM framework by confirming that technology readiness affects visit intention indirectly. The effect occurs through the formation of cognitive perceptions of technological ease. Visitors with a high level of technology readiness, who are more likely to use technology effectively, tend to assess smart hotel technology as an easy-to-use system. This positive perception ultimately strengthens their intention to visit and utilize smart hotel services (Hamid et al., 2020; Kim & Han, 2022).

From a theoretical perspective, these mediation results reinforce the cognitive mechanisms in TAM, which explain that external factors such as technology readiness influence behavioral intention not directly, but through a key perception variable: PEOU. Thus, technology readiness acts as an antecedent determinant that shapes visitors' beliefs about the ease of technology. At the same time, PEOU functions as a mediator that translates visitors' psychological readiness into actual behavior or behavioral intention. This mediation model

expands the basic assumptions of TAM by incorporating the psychological dimensions of visitors as the main drivers of attitude and intention formation toward technology adoption.

Overall, this study makes a theoretical contribution by confirming that PEOU serves as the primary cognitive mediation mechanism that bridges the influence of technology readiness on adoption behavior. The integration of the concept of technology readiness into the TAM mediation pathway enriches the technology adoption literature by showing that adoption success depends not only on system characteristics but also on visitors' psychological readiness, cognitive perceptions, and affective experiences toward smart technology.

Mediating effect: PU

The results of this study indicate that PU acts as a significant mediator in the relationship between technology amenities and the intention to visit. This finding makes an important contribution to strengthening and expanding the TAM framework by confirming that the influence of technology amenities on user behavior intention is not direct but occurs through a cognitive perception mechanism regarding the extent to which the technology is considered helpful in improving the comfort, efficiency, and quality of the user experience.

In the context of smart hotels, these findings suggest that when visitors perceive technology amenities as applicable, they are more likely to develop the belief that the technology provides significant added value to their stay experience. It further strengthens the intention to visit hotels that offer similar facilities (Yang et al., 2021; Yang et al., 2023). Thus, PU serves as a conceptual bridge that connects perceptions of the technological environment with actual behavior in the context of digital innovation-based services.

From a theoretical perspective, these results confirm the cognitive mediation mechanism in TAM, where visitors' PU become a key element that translates external attributes of technology (such as facility completeness and system interactivity) into behavioral intention. This finding extends the basic assumptions of TAM, which generally focus on personal or organizational information systems, by showing that the exact mechanism also applies in the context of interactive services involving direct consumer experiences, such as in the smart technology-based hospitality industry.

Furthermore, these findings support the view that PU is not merely a cognitive variable but also acts as an affective predictor of satisfaction and the desire to interact with the technology again. When technological facilities enhance perceptions of efficiency and convenience, consumers associate them with functional and emotional value, which in turn drives repeat intentions such as the desire to stay again, recommend the hotel, or increase brand loyalty. This finding aligns with the results of Rubiyanti et al. (2023) and Li et al. (2024), which demonstrate that PU is a primary factor in explaining the adoption of digital technology in the hospitality and tourism sector.

From a theoretical development perspective, these results provide empirical evidence that technology amenities can be conceptually integrated into TAM as an external variable that influences PU and, through the mediation of PU, influences consumer behavioral intention (visiting intention). Thus, this study extends the classic TAM model by incorporating the technological service dimension as an initial determinant of perceived usefulness. These findings enrich the technology adoption literature by confirming that consumer acceptance and behavioral intentions in the context of smart hotels are influenced not only by internal factors (such as user experience or attitudes toward technology) but also by the objective characteristics of the technological environment itself.

MANAGERIAL IMPLICATIONS

The findings provide strategic guidance for hotel management in optimizing smart technology applications. First, hotel managers need to ensure the quality and ease of use of technological facilities—such as automatic check-in systems, room service applications, and IoT-based room controls—to provide clear functional value to guests. Second, management must communicate the tangible benefits of technology through promotion, demonstrations, or user education to reinforce the perception of usefulness and convenience in interacting with digital systems. Third, efforts are needed to improve technology readiness for both guests and staff through training and hands-on experience, so that they are more confident in using smart hotel technology. Ultimately, hotels must develop engaging and personalized digital experiences by leveraging AI and customer data to deliver adaptive and emotionally valuable services. This approach not only enhances perceptions of ease and usefulness but also strengthens visit intent and customer loyalty toward smart hotels.

CONCLUSION

The results indicate that technology amenities significantly affect PEOU, PU, and visiting intention. Meanwhile, technology readiness affects PEOU and PU but does not directly influence visiting intention. PU and PEOU mediate the influence of TR and TA on visiting intention, indicating that perceptions of ease and usefulness are the main mechanisms that bridge the relationship between technological factors and consumer behavior. Thus, the intention to visit a smart hotel is primarily influenced by how guests assess the benefits and ease of use of the technology offered. Overall, this study confirms that the success of smart hotel adoption depends not only on technological sophistication but also on the hotel's ability to build perceptions of technological ease and usefulness in the eyes of users, which is crucial for forming visit intentions and customer loyalty.

LIMITATION AND FUTURE RESEARCH

This study has several limitations that need to be considered and can serve as guidance for future research. First, the study's sample coverage was limited to five-star hotels, so the results obtained may not be fully generalizable to other hotel categories with different levels of technology adoption and customer characteristics. To broaden the generalizability of the findings, future research is recommended to test this model in mid-range or economy hotels, comparing patterns of technology adoption behavior across different segments of the hospitality industry.

Second, the cross-sectional design of this study only captures respondents' perceptions at a specific point in time. It limits the ability to understand the dynamics of changes in perceptions and technology adoption behavior in line with the development of digital innovation. Therefore, future longitudinal or mixed-methods studies would be highly beneficial for examining long-term changes in perceptions, user experiences, and technology adaptation factors.

Third, although the analysis results show that the model has minimum predictive validity, this indicates room for improvement of the research model. Further studies are recommended to add new variables or approaches, such as organizational factors, customer experience, or technological characteristics, to improve the overall predictive ability of the model.

Additionally, this research model can incorporate psychological and cultural factors, such as trust in technology, digital literacy, innovation orientation, and sustainability awareness. The integration of these factors will provide a more comprehensive understanding of the

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mechanisms underlying technology adoption in the hospitality industry, particularly in the context of the shift toward smart hospitality, which focuses on personalization, efficiency, and the customer's digital experience.

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