

Enhancing Memorable Tourist Experiences Among Young Travelers Through Smart Tourism Technologies in Kuala Lumpur, Malaysia

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ABSTRACT

This study investigates the impact of Smart Tourism Technologies (STTs) on Memorable Tourist Experiences (MTEs) in Kuala Lumpur, Malaysia, an emerging smart tourism destination in Southeast Asia. The study examines how four key dimensions of STTs; accessibility, informativeness, interactivity, and personalization, enhance the social, emotional, and cognitive aspects of tourist experiences. A quantitative approach was employed, with data collected from 301 young travelers who visited eight major smart tourism attractions. The findings provide empirical evidence revealing a strong positive relationship between STTs and MTEs ($r = 0.720$, $p < 0.001$), with the model explaining 51.8% of the variance ($R^2 = 0.518$). Among the dimensions, personalization emerged as the most influential predictor, followed by informativeness and interactivity, while accessibility was not statistically significant. The current evidence provides empirical evidence of the strategic role of STTs in shaping a sustainable and competitive smart tourism environment, and offering valuable insights for destination managers and policymakers in advancing Malaysia's Smart Tourism 4.0 initiative.

Keywords: Smart Tourism Technologies (STTs), Memorable Tourist Experiences (MTEs), Personalization, Interactivity, Smart Destinations, Kuala Lumpur

INTRODUCTION

The rapid advancement of digital technologies has transformed the tourism industry, reshaping both destination management and tourist experiences. In recent years, Smart Tourism Technologies (STTs) have become increasingly important in supporting digital tourism ecosystems through the integration of real-time information, intelligent systems, and interactive services. Kuala Lumpur provides a relevant setting to examine these developments, as the city functions as a major urban tourism hub where technologically enhanced attractions and digital infrastructure are highly concentrated.

The COVID-19 pandemic has further accelerated the adoption of digital solutions across the tourism sector. As destinations entered the post-pandemic recovery phase, technologies such as artificial intelligence (AI), augmented and virtual reality (AR/VR), the Internet of Things (IoT), mobile applications, and big data analytics became important tools for improving safety, personalization, and visitor engagement (Jeong & Shin, 2020; Thong et al., 2022). Tourism experiences are increasingly influenced by digital interactions that allow young travelers to access information, customize activities, and engage with destinations more efficiently (García-Maroto et al., 2025; Gretzel et al., 2015). Recent studies also indicate that AI-driven systems support personalized recommendations and real-time decision-making, enhancing the overall travel experience.

Recent tourism research has shifted beyond operational efficiency toward understanding how STTs contribute to experiential outcomes. Technologies such as AR/VR, interactive platforms, and AI-enabled applications have been shown to enhance engagement, immersion, and emotional connection, which are important elements in the formation of Memorable Tourist Experiences (MTEs) (Kim & Ritchie, 2014; Seyfi et al., 2020; Tiwari et al., 2024). Nevertheless, concerns related to data privacy, technological reliability, and unequal access remain important challenges that may influence young travelers' perceptions and overall experience quality.

Despite growing academic interest, empirical research on STTs remains concentrated primarily in Western and East Asian contexts, with comparatively limited attention given to Southeast Asia (Azis et al., 2020; Elshaer & Marzouk, 2024). Existing studies often emphasize operational performance and service satisfaction, while fewer studies examine how specific technological dimensions contribute to young travelers' emotional and cognitive experiences. This limitation is particularly relevant in emerging smart tourism destinations undergoing rapid digital transformation.

In Malaysia, digital tourism development has become a strategic priority under the Smart Tourism 4.0 initiative. Kuala Lumpur reflects this transformation through the integration of digital applications and immersive technologies at attractions such as the National Planetarium, Petrosains Discovery Centre, and KL Tower (Eizamly et al., 2021; Shanmugam et al., 2024). These developments provide a valuable context for examining how STTs influence memorable tourist experiences in an emerging Southeast Asian smart tourism destination where empirical evidence remains limited (Afzal et al., 2024; Matyusupov et al., 2024).

Research Gap and Contribution of the Study

Although the global literature on smart tourism continues to expand, existing empirical research remains predominantly concentrated in developed regions such as Western Europe, South Korea, and China (Azis et al., 2020; Liu et al., 2023). In contrast, Southeast Asia, particularly Malaysia, remains underrepresented, despite actively advancing digital tourism initiatives under the Malaysia Smart Tourism 4.0 framework (Tourism Malaysia, 2023). This geographical imbalance highlights a research limitation in understanding how Smart Tourism Technologies (STTs) influence Memorable Tourist Experiences (MTEs) within emerging smart destinations.

Within the Southeast Asian context, recent studies reveal uneven levels of technological integration and effectiveness. For instance, research conducted in Indonesia indicates limited implementation of advanced technologies such as artificial intelligence (AI) and augmented reality (AR), resulting in lower user engagement (Wahyuni et al., 2024). Conversely, Singapore demonstrates a more advanced smart tourism ecosystem, where digital technologies are effectively integrated into tourist experiences; however, these developments are largely concentrated in premium market segments (Tan et al., 2025). These contrasting findings suggest that while STTs are increasingly adopted across the region, their ability to generate meaningful and memorable experiences remains context-dependent.

Existing studies have largely focused on the operational and functional benefits of STTs, including service efficiency and destination competitiveness. However, there is limited empirical evidence examining how specific dimensions of STTs namely accessibility, informativeness, interactivity, and personalization, influence young travelers' emotional, cognitive, and experiential responses. This represents an under-explored area, as these attributes form the core mechanisms through which smart technologies shape memorable tourist experiences.

Kuala Lumpur provides a relevant empirical context to address this gap. As a rapidly developing smart tourism destination, the city has integrated various digital applications across major attractions, including mobile platforms, location-based services, interactive exhibits, and AI-driven systems. Despite these advancements, there is limited research examining how young travelers engage with these technologies and how such interactions contribute to the formation of memorable experiences. Understanding these relationships is essential for enhancing visitor satisfaction and supporting Malaysia's broader digital transformation and tourism recovery strategies.

Furthermore, in response to recent scholarly and reviewer recommendations, it is important to adopt a more critical perspective on STTs. While these technologies offer significant benefits, challenges such as data privacy concerns, digital inequality, and inconsistent technological implementation may influence young travelers' perceptions and experiences. Addressing both the opportunities and limitations of STTs contributes to a more comprehensive and balanced understanding of their role in tourism development.

Contribution of the Study

The empirical findings provide empirical evidence that makes several important contributions to the growing body of knowledge on Smart Tourism Technologies (STTs) and Memorable Tourist Experiences (MTEs). Theoretically, the study extends the Smart Tourism Experience Framework proposed by Torabi et al. (2023) by applying it within the context of an emerging Southeast Asian urban destination. By focusing on four key STT dimensions; accessibility, informativeness, interactivity, and personalization, the study broadens the understanding of how smart tourism technologies influence young travelers' emotional and cognitive experiences in a multicultural smart tourism environment such as Kuala Lumpur.

Empirically, the study addresses the limited research on STTs and MTEs in Malaysia and Southeast Asia, where existing literature remains comparatively underdeveloped. The findings provide localized evidence on how young travelers interact with smart tourism technologies in Kuala Lumpur, contributing valuable regional insights to the broader smart tourism literature. In particular, the study identifies personalization, informativeness, and interactivity as important drivers of memorable tourist experiences, highlighting the growing importance of experience-oriented digital tourism strategies.

From the practical and policy perspective, the findings offer useful guidance for destination managers, tourism businesses, and policymakers involved in Malaysia's Smart Tourism 4.0 initiative. The study emphasizes the need for integrated, inclusive, and user-centered smart tourism systems that enhance visitor engagement, satisfaction, and destination competitiveness. Simultaneously, it highlights the importance of addressing challenges related to digital inequality, technological accessibility, and user trust to ensure sustainable and effective smart tourism development.

Research Objectives

Building on the identified research gaps, the current work aims to examine how Smart Tourism Technologies (STTs) influence Memorable Tourist Experiences (MTEs) in Kuala Lumpur. Specifically, the study focuses on four key dimensions of STTs; accessibility, informativeness, interactivity, and personalization, proposed in the conceptual framework.

Accordingly, the present research is guided by the following research objectives:

RO1: To examine the overall relationship between Smart Tourism Technologies (STTs) and Memorable Tourist Experiences (MTEs).

RO2: To assess the influence of accessibility on Memorable Tourist Experiences (MTEs).

RO3: To evaluate the influence of informativeness on Memorable Tourist Experiences (MTEs).

RO4: To analyse the influence of interactivity on Memorable Tourist Experiences (MTEs).

RO5: To investigate the influence of personalization on Memorable Tourist Experience (MTEs).

Research Questions

RQ1: Is there a significant relationship between Smart Tourism Technologies (STTs) and Memorable Tourist Experiences (MTEs) in Kuala Lumpur?

RQ2a: How does accessibility influence MTEs?

RQ2b: How does informativeness influence MTEs?

RQ2c: How does interactivity influence MTEs?

RQ2d: How does personalization influence MTEs?

Development of Hypotheses

H1: Smart Tourism Technologies (STTs) have a significant positive relationship with Memorable Tourist Experiences (MTEs).

H2: Accessibility has a significant positive influence on Memorable Tourist Experiences (MTEs).

H3: Informativeness has a significant positive influence on Memorable Tourist Experiences (MTEs).

H4: Interactivity has a significant positive influence on Memorable Tourist Experiences (MTEs).

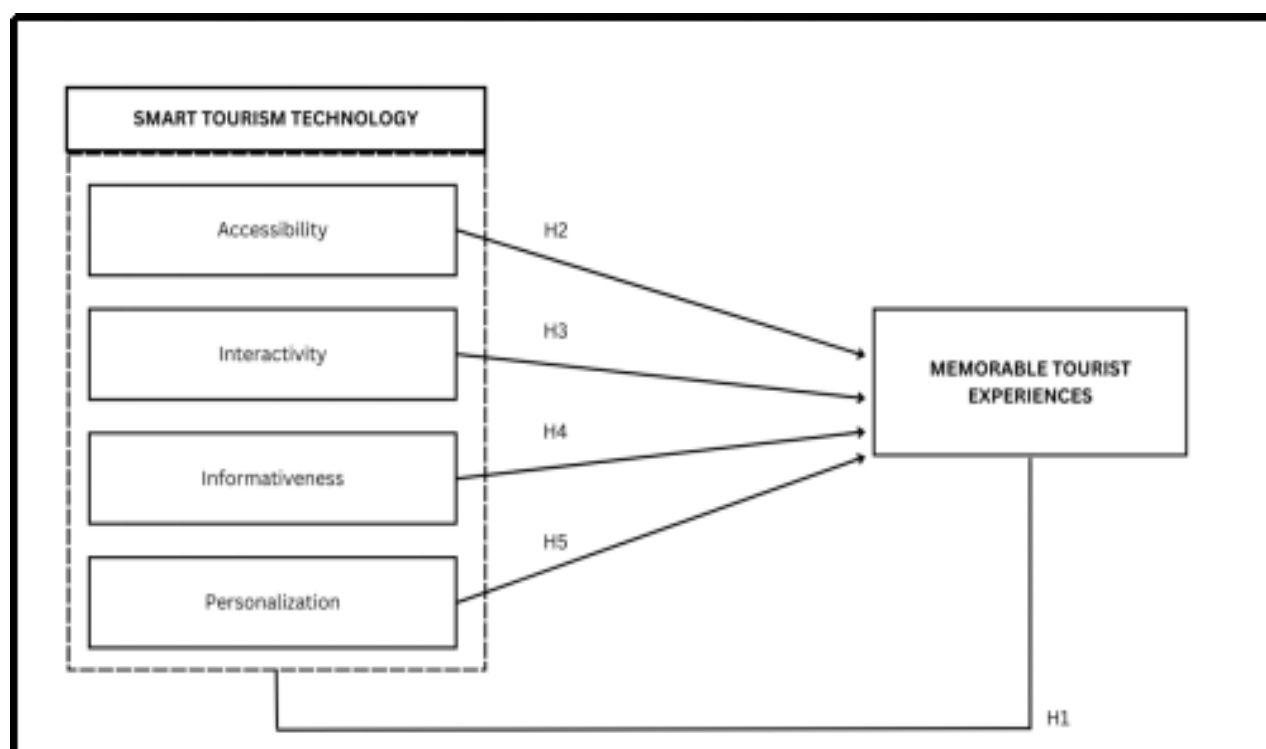
H5: Personalization has a significant positive influence on Memorable Tourist Experiences (MTEs).

THEORETICAL FRAMEWORK

This study adopts the Smart Tourism Experience Framework, adapted from Torabi et al. (2023), which combines STT dimensions and MTE features as depicted in Figure 1. It proposes that the four main aspects of STTs; accessibility, informativeness, interactivity, and personalization, have a positive impact on seven MTE sub-dimensions: hedonism, involvement, meaningfulness, refreshment, knowledge, novelty, and social interaction. This theoretical lens enables a thorough examination of how digital facilitators influence both the emotional and cognitive aspects of the tourist experience.

By applying this model to Kuala Lumpur Smart destinations, the present research situates a globally recognized framework within a Southeast Asia urban context, thereby testing its applicability in a multicultural environment where digital infrastructures are uneven but rapidly developing. This approach not only extends existing theory but also provides localized insights into how STTs influence tourist experiences in Malaysia's capital city.

Figure 1. Conceptual framework adapted from Torabi et al. (2023)



LITERATURE REVIEW

The increasing integration of digital technologies into tourism has significantly reshaped how destinations are experienced and managed. In the post-pandemic landscape, Smart Tourism Technologies (STTs) have become central to tourism development strategies, enabling destinations to provide real-time, interactive, and personalized services that enhance visitor engagement and satisfaction (Jeong & Shin, 2020; Thong et al., 2022). While existing research acknowledges the transformative potential of STTs, there remains a need to better understand how specific technological attributes contribute to deeper experiential outcomes, particularly in emerging smart tourism destinations such as Kuala Lumpur.

This section reviews the literature in three parts. First, it examines the concept and dimensions of STTs, focusing on accessibility, informativeness, interactivity, and personalization. Second, it discusses the nature of memorable tourist experiences (MTEs) as the key outcome in tourism research. Third, it synthesizes prior studies on the relationship between STTs and MTEs, highlighting areas of agreement, divergence, and unresolved gaps that inform the direction of this study.

Smart Tourism Technologies (STTs)

Smart Tourism Technologies refer to digital tools and intelligent systems that facilitate young travelers' access to information, services, and experiences across the travel journey. These technologies-ranging "from mobile applications and artificial intelligence (AI) to augmented and virtual reality (AR/VR)-enabled destinations to deliver more efficient, interactive, and personalized services (Gretzel et al., 2015; Torabi et al., 2023).

A common perspective across the literature is that STTs enhance tourism by reducing uncertainty, improving decision-making, and increasing engagement. For example, Jeong and Shin (2020) found that young travelers' interactions with smart technologies significantly influence their behavioral intentions, while Thong et al. (2022) highlighted their role in supporting tourism recovery in the post-COVID-19 era. These studies align with the current research in recognizing STTs as a key driver of tourism value creation. However, they tend to examine STTs as a broad construct, without consistently distinguishing between their underlying dimensions or linking them directly to memorable experiences.

To address this limitation, the present study adopts a multidimensional perspective, focusing on four core attributes; accessibility, informativeness, interactivity, and personalization, which are widely recognized as the critical components of STTs and form the basis of the proposed framework.

Accessibility

Accessibility refers to the ease with which young travelers can access and use digital services and information. It encompasses factors such as system availability, ease of navigation, and compatibility across platforms. Prior studies consistently show that accessible technologies reduce effort and uncertainty, allowing young travelers to plan and navigate their journeys more efficiently (Sustacha et al., 2023; Arbidane et al., 2023).

Research conducted in developed regions suggests that seamless accessibility, through features such as integrated ticketing systems, multilingual interfaces, and location-based services, enhances visitor satisfaction. However, studies in Malaysia highlight a contrasting reality, where fragmented systems and uneven infrastructure can limit the effectiveness of these technologies (Shanmugam et al., 2024). This contrast suggests that while accessibility is a necessary foundation for smart tourism, its impact on experience quality may depend on the consistency and reliability of the implementation. This insight is particularly relevant to the current study, which examines whether accessibility alone is sufficient to influence memorable experiences.

Informativeness

Informativeness refers to the quality, accuracy, and relevance of information provided through digital platforms. It plays a central role in shaping young travelers' perceptions, as reliable and timely information supports better decision-making and enhances confidence during travel (Jeong & Shin, 2020; Orden-Mejía & Huertas, 2022).

Empirical evidence consistently indicates that informativeness contributes positively to tourist satisfaction and perceived value. In the Malaysian context, digital platforms that provide real-time and context-specific information have been shown to enhance overall visitor experiences (Azis et al., 2020; Eizamly et al., 2021). The current empirical findings are consistent with the current study, which positions informativeness as a key determinant of memorable experiences.

However, much of the existing literature focuses on its role in functional outcomes such as satisfaction and trust, rather than its influence on deeper experiential constructs such as memorability. The present study extends this perspective by examining how informativeness contributes not only to informed decision-making but also to cognitive and emotional engagement that shapes long-term memory.

Interactivity

Interactivity refers to the extent to which young travelers can actively engage with digital systems through two-way communication and immersive features. This includes technologies such as chatbots, augmented reality experiences, virtual tours, and interactive kiosks.

Recent studies show strong agreement that interactivity enhances engagement and immersion. For instance, interactive features have been found to increase young travelers' involvement and emotional connection to destinations, thereby strengthening memory retention (Gao et al., 2024; Singh et al., 2025). Similarly, immersive technologies allow young travelers to co-create their experiences, making them more meaningful and memorable.

Despite these positive findings, the literature also suggests that the effectiveness of interactivity depends on how it is implemented. Poorly designed or overly complex systems may reduce usability and detract from the experience. This highlights an important consideration for the current study: interactivity is not inherently beneficial but must be aligned with user expectations and technological readiness. In Kuala Lumpur, where attractions vary in their level of digital sophistication, this dimension warrants closer examination.

Personalization

Personalization refers to the ability of smart technologies to tailor content, recommendations, and services based on individual user preferences and behaviors. It is widely regarded as one of the most influential dimensions of STTs, as it enables young travelers to receive experiences that are relevant and meaningful to them.

Empirical findings demonstrate the positive role of personalization in enhancing tourist engagement, satisfaction, and loyalty. Personalized recommendations, such as customized itineraries and targeted promotions, have been shown to create a sense of recognition and connection, thereby strengthening the overall experience (Semwal et al., 2024; Azmadi et al., 2023).

However, the literature also highlights important challenges. Concerns related to data privacy, trust, and unequal access to technology may limit the effectiveness of personalized services (Ruslan et al., 2023). Additionally, cultural differences in attitudes toward data sharing may influence how personalization is perceived. These contrasting perspectives suggest that while personalization has strong potential, its impact may vary across contexts. This study builds on this insight by examining its role within the specific context of Kuala Lumpur.

Memorable Tourist Experiences (MTEs)

Memorable Tourist Experiences (MTEs) are widely recognized as a critical outcome in tourism research, reflecting experiences that leave lasting impressions on young travelers' memories. Unlike immediate satisfaction, MTEs capture the emotional, cognitive, and social dimensions of travel that influence future behavior, including revisit intention and word-of-mouth recommendations (Kim & Ritchie, 2014; Seyfi et al., 2020).

The literature identifies several key dimensions of MTEs, including hedonism, involvement, meaningfulness, refreshment, knowledge, novelty, and social interaction. These dimensions highlight that memorability is shaped by both emotional engagement and cognitive enrichment.

While previous studies generally agree on the importance of MTEs, there is less consensus on how they are formed in technology-mediated environments. Some research suggests that smart technologies enhance novelty and engagement, thereby strengthening memorability. Others argue that excessive reliance on digital tools may reduce authenticity or limit spontaneous exploration, which are also the important aspects of meaningful travel experiences.

This contrast underscores the complexity of MTE formation and suggests that the role of technology is not uniform. Rather, its impact depends on how it interacts with young travelers' expectations, preferences, and cultural backgrounds. The current study adopts this perspective by examining how specific STT dimensions contribute to MTEs in a real-world urban context.

Relationship Between STTs and MTEs

Recent evidence suggests a positive relationship between Smart Tourism Technologies and Memorable Tourist Experiences. Studies have shown that digital technologies enhance engagement, facilitate exploration, and enable personalized interactions, all of which contribute to more meaningful and memorable experiences (Torabi et al., 2023; Afzal et al., 2024).

Among the four STT dimensions, personalization and informativeness are consistently identified as the strongest predictors of positive outcomes, including satisfaction, engagement, and loyalty. Interactivity is also recognized as an important factor in enhancing immersion and emotional connection. In contrast, accessibility, while important, is often viewed as a baseline requirement rather than a distinguishing factor in experience creation.

Despite these insights, several gaps remain. First, much of the existing literature focuses on developed regions, with limited empirical evidence from Southeast Asia. Second, many studies examine STTs in general terms, without clearly distinguishing between their individual dimensions. Third, there is a lack of integrative studies that link these dimensions directly to MTEs as a comprehensive outcome.

The present study addresses these gaps by examining the influence of accessibility, informativeness, interactivity, and personalization on MTEs within the context of Kuala Lumpur. By doing so, it provides a more nuanced understanding of how different aspects of STTs contribute to memorable experiences in an emerging smart tourism destination.

Development of Hypotheses

Building on the preceding literature review, this study proposes that Smart Tourism Technologies (STTs) play a significant role in shaping Memorable Tourist Experiences (MTEs). Prior studies consistently suggest that STTs enhance tourist engagement, satisfaction, and decision-making through their technological capabilities (Jeong & Shin, 2020; Torabi et al., 2023). However, their influence on deeper experiential outcomes, particularly memorability, remains underexplored in Southeast Asia contexts.

In line with the proposed framework, STTs are conceptualized as a multidimensional construct comprising accessibility, informativeness, interactivity, and personalization. These dimensions represent the key mechanisms through which digital technologies influence young travelers' cognitive and emotional engagement during their travel experiences.

Accessibility enables young travelers to easily obtain and use digital services, thereby reducing uncertainty and facilitating smoother travel experiences. Informativeness provides relevant and timely information that enhances decision-making and perceived value. Interactivity allows young travelers to actively engage with digital platforms, fostering immersion and participation. Personalization tailors experiences to individual preferences, strengthening emotional connection and memorability.

Based on these theoretical and empirical insights, the following hypotheses are proposed:

H1: Smart Tourism Technologies (STTs) have a significant positive relationship with Memorable Tourist Experiences (MTEs).

H2: Accessibility has a significant positive influence on Memorable Tourist Experiences (MTEs).

H3: Informativeness has a significant positive influence on Memorable Tourist Experiences (MTEs).

H4: Interactivity has a significant positive influence on Memorable Tourist Experiences (MTEs).

H5: Personalization has a significant positive influence on Memorable Tourist Experiences (MTEs).

METHODOLOGY

This section outlines the research design, data collection procedures, and analytical techniques employed to examine the relationship between Smart Tourism Technologies (STTs) and Memorable Tourist Experiences (MTEs) in Kuala Lumpur. The methodological approach is designed to ensure consistency with the study's conceptual framework and hypotheses while providing reliable and valid empirical evidence.

A quantitative research design was adopted, as it allows for the systematic measurement of relationships between variables and supports hypothesis testing. Structured questionnaires were used to collect data from young travelers visiting selected smart tourism attractions in Kuala Lumpur. This approach enables the analysis of young travelers' perceptions, attitudes, and experiences related to STTs, providing a comprehensive understanding of how these technologies influence memorable experiences.

The methodology focuses on examining the extent to which the four dimensions of STTs, accessibility, informativeness, interactivity, and personalization, affect MTEs. Statistical techniques, including correlation and regression analysis, were employed to test the proposed hypotheses and evaluate the strength of these relationships.

Sampling and Data Collection

This study employed a convenience sampling technique, targeting young travelers who interacted with smart tourism technologies at selected attractions in Kuala Lumpur. A total of 301 valid responses was collected, ensuring sufficient data for statistical analysis. The study primarily reflects the perspectives of young tourists, as the majority of respondents were between 18 and 25 years old.

Data were collected at eight major smart tourism attractions in Kuala Lumpur, including the National Planetarium, Petrosains Discovery Centre, KL Tower, Islamic Arts Museum, National Science Centre, Telekom Museum, Petronas Twin Towers (KLCC), and the National Art Gallery, all of which integrate digital technologies into their visitor experiences. These locations were selected due to their active use of smart technologies such as mobile applications, interactive displays, and digital information systems.

To enhance data diversity, questionnaires were distributed both on-site (face-to-face) and online. This mixed approach allowed the study to capture a broader range of tourist perspectives. Prior to data collection, ethical approval was obtained, and all respondents provided informed consent, ensuring compliance with research ethics standards.

Instrumentation

Data were collected using a structured questionnaire consisting of 14 items, while the MTE construct comprised 24 items, adapted from validated scales developed by Torabi et al. (2023) and Mahdzar (2019). The questionnaire was designed to ensure alignment with the study's conceptual framework and variables.

The instrument comprised four sections, including screening questions to confirm respondent eligibility, demographic information, perceptions of Smart Tourism Technologies (STTs), and Memorable Tourist Experiences (MTEs). MTEs were measured using seven established dimensions namely hedonism, novelty, involvement, knowledge, refreshment, meaningfulness, and social interaction.

All items were assessed using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This scale allows respondents to express varying degrees of agreement and the empirical findings demonstrates robust statistical analysis. The use of validated measurement scales enhances the reliability and validity of the study, while the structured format ensures consistency across responses and facilitates comparison.

RESEARCH FINDING

This section presents the empirical findings of the study, including reliability analysis, demographic profile, regression results, and correlation analysis. The results are structured to align with the study's research objectives and hypotheses, ensuring clarity and consistency in interpretation.

Reliability Analysis

The reliability of the measurement scales was assessed using Cronbach's alpha. According to Sekaran and Bougie (2013), a coefficient value of 0.60 or above is considered acceptable for exploratory research. Table 1 presents the reliability results for all constructs examined in this study.

Table 1: Reliability Analysis

Variable	No. of Items	Cronbach's Alpha
Accessibility	3	0.66
Interactivity	3	0.67
Informativeness	4	0.75
Personalization	4	0.60
Memorable Tourist Experiences (MTEs)	24	0.79

All constructs exceeded the minimum threshold of 0.60, indicating acceptable internal consistency. The MTE construct demonstrated the highest reliability ($\alpha = 0.79$), while personalization, although at the threshold ($\alpha = 0.60$), remained acceptable for analysis. These results confirm that the measurement scales are suitable for subsequent statistical testing.

Demographic Analysis

A total of 301 valid responses were analyzed. The demographic profile indicates that 61.8% of respondents were female, while 38.2% were male. The majority of respondents were Malaysian (97%), reflecting the dominance of domestic tourism in Kuala Lumpur during the post-pandemic recovery phase.

In terms of age distribution, 86.4% of respondents were between 18 and 25 years old, suggesting that younger, digitally literate individuals are the primary users of smart tourism technologies. This aligns with prior research indicating that younger travelers are more inclined to adopt digital and immersive technologies (Gretzel et al., 2015).

Regarding education level, 48.2% of respondents held a bachelor's degree, followed by 29.9% with a diploma. This supports the assumption that higher education levels are associated with greater acceptance and use of technology-based services.

In terms of visitation patterns, more than half of the respondents (54.8%) had visited the attractions four times or more, indicating a high level of engagement and repeat visitation. Among the attractions, Petronas Twin Towers (79.1%), Petrosains Discovery Centre (66.4%), and KL Tower (57.5%) were the most visited, likely due

to their integration of interactive and smart technologies. Conversely, the Islamic Arts Museum recorded lower visitation (28.2%), reflecting a broader trend of younger travelers showing great preference for technology-enhanced attractions.

Overall, the demographic profile suggests that the primary users of smart tourism technologies in Kuala Lumpur are young and educated domestic travelers, which is consistent with global tourism technology adoption patterns. Table 2 highlighted the demographic analysis results.

Table 2: Demographic Analysis

Category	Demographic	Frequency	Percentage
Gender	Male	115	38.2
	Female	186	61.8
Age	12 - 17	40	13.3
	18 - 25	260	86.4
Nationality	Malaysian	292	97.0
	Non-Malaysian	9	3.0
Education Level	Diploma	90	29.9
	Bachelor's degree	145	48.2
Time Visited	Others	9	3.0
	One time	40	13.3
	Two times	57	18.9
	Three times	39	13.0
	Four times and above	165	54.8
Attraction Visited	Islamic Art Museum Malaysia	85	28.2
	National Planetarium	101	33.6
	National Science Centre	114	37.9
	Petrosains, The Discovery Centre	200	66.4
	Telekom Museum	66	21.9
	KL Tower	173	57.5
	Petronas Twin Towers (KLCC)	238	79.1
	National Art Gallery	135	44.9

Multiple Regression Analysis

Multiple regression analysis was conducted to examine the influence of Smart Tourism Technologies (STTs) on Memorable Tourist Experiences (MTEs), focusing on four dimensions: accessibility, informativeness, interactivity, and personalization. The regression model was statistically significant, explaining 51.8% of the variance in MTEs ($R^2 = 0.518$, $F(4,296) = 79.899$, $p < 0.001$). This indicates that STTs are strong predictors of memorable tourist experiences in Kuala Lumpur. Table 3 summarizes the multiple regression analysis results.

Table 3: Multiple Regression Analysis

Predictor	Standardized β	t	Sig. (p)	Interpretation
Accessibility	0.082	1.896	0.059	Not significant
Informativeness	0.256	4.276	0.000	Significant
Interactivity	0.179	3.423	0.001	Significant
Personalization	0.358	5.926	0.000	Strongest predictor

Among the predictors, personalization emerged as the most influential factor ($\beta = 0.358$, $p < 0.001$), followed by informativeness ($\beta = 0.256$, $p < 0.001$) and interactivity ($\beta = 0.179$, $p = 0.001$). The present evidence indicates that tailored experiences, relevant information, and interactive features significantly enhance young travelers' memorable experiences.

In contrast, accessibility was not a statistically significant predictor ($\beta = 0.082$, $p = 0.059$), suggesting that while access to technology is important, it does not independently contribute to memorability unless combined with richer, more engaging features.

Additionally, the overall relationship between STTs and MTEs was confirmed through a separate regression analysis ($\beta = 0.720$, $p < 0.001$), supporting the primary hypothesis (H1) that STTs significantly influence memorable tourist experiences.

Correlation Analysis

Correlation analysis was conducted to examine the strength and direction of relationships between STT dimensions and MTEs. The results indicate a strong positive relationship between overall STTs and MTEs ($r = 0.720$, $p < 0.001$), suggesting that higher engagement with smart technologies is associated with more memorable tourist experiences. Table 4 summarizes the correlation analysis results.

Table 4: Correlation Analysis

Variable	r-value
STTs $\rightarrow$ MTEs	0.720
Personalization	0.701
Informativeness	0.672
Interactivity	0.662
Accessibility	0.596

At the dimensional level, personalization showed the strongest correlation ($r = 0.701$), informativeness demonstrated a strong correlation ($r = 0.672$), interactivity showed a strong positive relationship ($r = 0.662$), and accessibility showed a moderate relationship ($r = 0.596$). The current evidence reinforces the regression results, indicating that while all dimensions contribute positively to MTEs, personalization and informativeness play more prominent roles in shaping memorable experiences.

SUMMARY OF FINDINGS

The findings are summarized in relation to the study's research objectives and hypotheses.

1. **H1** was supported, confirming a strong positive relationship between STTs and MTEs.
2. **H2** was not supported, as accessibility did not significantly predict MTEs in the regression model.
3. **H3, H4, and H5** were supported, indicating that informativeness, interactivity, and personalization significantly influence MTEs.

DISCUSSION

The findings of this study provide important insights into how Smart Tourism Technologies (STTs) influence Memorable Tourist Experiences (MTEs) within the urban tourism context of Kuala Lumpur. The regression results demonstrate that STTs significantly predict MTEs, with the model explaining 51.8% of the variance ($R^2 = 0.518$, $p < 0.001$). This indicates a strong explanatory power and confirms the central role of digital technologies in shaping contemporary tourist experiences.

Consistent with the proposed framework, the results reveal that not all dimensions of STTs contribute equally to memorable experiences. Among the four dimensions examined, accessibility, informativeness, interactivity, and personalization, the latest emerged as the most influential predictor. This finding suggests that young travelers place greater value on experiences that are tailored to their individual preferences, needs, and behaviors. Personalized recommendations, adaptive content, and customized itineraries appear to strengthen both emotional engagement and cognitive involvement, thereby enhancing the memorability of the experience. This aligns with

previous studies (Torabi et al., 2023; Semwal et al., 2024), which emphasize the role of personalization in creating meaningful and user-centric tourism experiences.

Informativeness was identified as the second most significant factor influencing MTEs. The provision of accurate, timely, and relevant information through smart platforms enhances young travelers' confidence, supports decision-making, and reduces uncertainty during travel. This finding reinforces earlier research (Jeong & Shin, 2020; Orden-Mejía & Huertas, 2022), which highlights the importance of information quality in shaping tourist satisfaction. However, the current study extends this understanding by demonstrating that informativeness also contributes to deeper experiential outcomes, particularly by enriching young travelers' cognitive engagement and perception of value.

Similarly, interactivity showed a significant positive effect on MTEs, indicating that technologies enabling real-time engagement, participation, and immersion play a meaningful role in enhancing tourist experiences. Features such as augmented reality (AR), virtual tours, and interactive kiosks allow young travelers to actively engage with the destination, transforming them from passive observers into active participants. This supports prior findings (Gao et al., 2024; Singh et al., 2025), which suggest that interactive elements enhance involvement and emotional connection, ultimately contributing to stronger memory formation.

In contrast, accessibility was found to be statistically non-significant, despite showing a positive relationship with MTEs. This result suggests that accessibility, while necessary, may no longer serve as a distinguishing factor in influencing memorable experiences. In digitally advanced environments such as Kuala Lumpur, young travelers may perceive access to technology (e.g., mobile apps, Wi-Fi, digital services) as a basic expectation rather than a value-adding feature. This finding is consistent with Jeong and Shin (2020), who argue that as technology becomes more ubiquitous, its accessibility is increasingly taken for granted. Consequently, it is the quality and depth of digital interactions, rather than mere access, that determine the memorability of the experience.

Overall, the findings highlight a shift in tourist expectations - from basic technological functionality toward more personalized, informative, and interactive experiences. While earlier studies often emphasized accessibility as a key driver of technology adoption (Azis et al., 2020), the present study suggests that young travelers now prioritize experiential value over functional convenience. This shift reflects the evolving role of STTs from operational tools to experiential enhancers.

At the same time, the findings also point to important contextual considerations. Although personalization and interactivity significantly enhance experiences, their effectiveness depends on factors such as technological infrastructure, user trust, and digital literacy. Issues such as privacy concerns, data security, and unequal access to technology may influence how young travelers perceive and engage with smart tourism services. These challenges suggest that the benefits of STTs are not universally experienced and must be carefully managed to ensure inclusive and sustainable tourism development.

CONCLUSION

This study provides empirical evidence that Smart Tourism Technologies significantly enhance Memorable Tourist Experiences in Kuala Lumpur, particularly through personalization, informativeness, and interactivity. The findings confirm that while accessibility forms the foundation of smart tourism, it is not sufficient on its own to create meaningful and lasting experiences.

The findings of this study offer a strategic road map for both tourism managers and policymakers, particularly as Malaysia advances its Smart Tourism 4.0 initiative. Given that Smart Tourism Technologies (STTs) explain 51.8% of the variance in Memorable Tourist Experiences (MTEs), it is clear that digital integration is no longer optional but a central pillar of destination competitiveness. However, the data reveals that stakeholders must move beyond providing basic digital access and focus on the "quality of interaction". Since personalization emerged as the most powerful predictor ($\beta = 0.358$), tourism managers should prioritize the deployment of AI-driven "experience curators". These systems can move beyond static apps to offer real-time, tailored recommendations-such as suggesting a specific gallery at the National Art Gallery based on a visitor's previous

interest in science at Petrosains and creating the sense of acknowledgement that drives deep, lasting memories. To optimize these technologies across diverse contexts, destination managers at less-visited sites, such as traditional art museums, should leverage interactivity to bridge the engagement gap. By implementing augmented reality (AR) storytelling or gamified "digital scavenger hunts", managers can transform passive observation into active participation, which this study proves is vital for memory retention.

Furthermore, because informativeness is a critical driver of satisfaction ($\beta = 0.256$), managers must ensure that digital content is not just ubiquitous but context-aware. This means providing "just-in-time" information via push notifications or location-based services that answer a tourist's needs at the exact moment of discovery, effectively reducing search effort and enhancing the perceived value of the visit.

At the policy level, the findings provide important guidance for Malaysia's Smart Tourism 4.0 initiative. Policymakers and urban planners should move beyond simply expanding digital infrastructure and instead focus on enhancing the quality, integration, and inclusivity of smart tourism systems. In particular, establishing unified data-sharing frameworks across key sectors such as, transport, hospitality, and tourist attractions can enable seamless data exchange and support the high level of personalization increasingly expected by young travelers.

In addition, addressing issues of digital inequality remains critical. While Kuala Lumpur demonstrates strong urban implementation of STTs, policymakers should ensure that smart tourism strategies are adaptable to rural and nature-based destinations, where technological infrastructure may be limited. Investments in solutions such as edge computing and offline-capable digital services can help extend the benefits of accessibility and informativeness to less connected areas, promoting more balanced and inclusive tourism development.

Furthermore, attention must be given to data privacy and user trust, as these factors influence young travelers' willingness to engage with personalized technologies. By adopting a holistic approach that integrates infrastructure development with ethical and inclusive practices, policymakers can maximize the long-term effectiveness and sustainability of smart tourism initiatives.

Overall, this study contributes to the growing body of knowledge on smart tourism by demonstrating that the effectiveness of STTs lies not in their availability but in their ability to deliver meaningful, engaging, and personalized experiences. By situating the analysis within Kuala Lumpur, the study also provides valuable insights for emerging smart tourism destinations in Southeast Asia.

Practical Implications

The findings suggest that tourism stakeholders in Malaysia should prioritize the development of personalized, interactive, and data-driven smart tourism services to enhance visitor engagement and memorability. Destination managers should invest in AI-driven recommendation systems, immersive technologies such as AR/VR, and real-time information platforms that support meaningful tourist interactions. At the policy level, integrated and inclusive digital infrastructure is essential to ensure that the benefits of smart tourism technologies are accessible across diverse tourism settings, thereby supporting sustainable tourism development and destination competitiveness.

Limitations of the study

Despite its contributions, this study has several limitations. First, the research focuses on an urban context (Kuala Lumpur), which may limit the generalization of the findings to rural or nature-based tourism destinations where technological infrastructure and tourist expectations differ.

Second, the study primarily captures responses from young and digitally literate young travelers, which may not fully represent the perceptions of older or less technologically experienced visitors. This demographic concentration may influence the strength of relationships observed between STTs and MTEs. Therefore, the findings should be interpreted within the context of young and digitally literate travelers.

Third, the study does not explicitly account for moderating variables such as cultural background, travel motivation, or length of stay, which may affect how young travelers interact with smart technologies. Future research could incorporate these variables to provide a more comprehensive understanding of the STT–MTE relationship.

Finally, the use of a cross-sectional design limits the ability to capture changes in tourist experiences over time. A longitudinal approach could offer deeper insights into how repeated exposure to smart technologies influences memorability and destination loyalty.

Future Research

Building on the limitations identified, several directions for future research are recommended. First, future studies should explore comparative analyses between urban and rural tourism destinations to better understand how variations in technological infrastructure and context influence the effectiveness of STTs.

Second, adopting a longitudinal research design would allow researchers to examine how young travelers' interactions with smart technologies evolve over time, particularly in relation to memory formation, satisfaction, and revisit intentions.

Third, future research should incorporate demographic and behavioral variables, such as age, digital literacy, cultural background, and travel motivation, to provide a more nuanced understanding of how different groups perceive and utilize STTs.

Finally, cross-country comparative studies within Southeast Asia would be valuable in identifying regional differences and similarities in smart tourism adoption. Such research could enhance the generalization of findings and contribute to the development of more context-sensitive smart tourism strategies across diverse destinations.

REFERENCES

1. Afzal, I., Majid, M. B., Tariq, M. I., & Nasir, A. (2024). Investigating the impact of smart tourism technologies on tourist satisfaction, engagement, and image with the mediation of memorable tourist experience. *Pakistan Journal of Humanities and Social Sciences*, 12(1), 164–177. <https://doi.org/10.52131/pjhss.2024.v12i1.1942>
2. Arbidane, I., Puzule, A., Znotina, D., Narkuniene, R., & Daubariene, J. (2023). Accessibility and smart tourism: Tourism for all and reducing inequalities: A tourism agenda 2030. *Worldwide Hospitality and Tourism Themes*, 15(5), 497–506. <https://doi.org/10.1108/WHATT-06-2023-0078>
3. Azis, N., Amin, M., Chan, S., & Aprilia, C. (2020). How smart tourism technologies affect tourist destination loyalty. *Journal of Hospitality and Tourism Technology*, 11(4), 603–625. <https://doi.org/10.1108/JHTT-01-2020-0005>
4. Azmadi, A. S. A., Abdul Hamid, M., Hanafiah, M. H., Hariani, D., & Mior Shariffuddin, N. S. (2023). Measuring tourist preferences and behavior toward smart tourism destination planning. *Planning Malaysia*, 21(30). <https://doi.org/10.21837/pm.v21i30.1405>
5. Eizamly, N. U. E. N., Paramasivam, S., & Bhattacharyya, E. (2021). Let's go for a tour... the smart way. *International Journal of Academic Research in Business and Social Sciences*, 11(11). <https://doi.org/10.6007/ijarbss/v11-i11/11585>
6. Elshaer, A. M., & Marzouk, A. M. (2024). Memorable tourist experiences: The role of smart tourism technologies and hotel innovations. *Tourism Recreation Research*, 49(3), 445–457. <https://doi.org/10.1080/02508281.2022.2027203>
7. Gao, J., Xu, D., & Pan, Y. (2024). Configurational paths to arouse young travelers' positive experiences in smart tourism destinations: A fsQCA approach. *SAGE Open*, 14(2), 1–15. <https://doi.org/10.1177/21582440241248226>
8. García-Maroto, I., Higuera-Castillo, E., Muñoz-Leiva, F., & Liébana-Cabanillas, F. (2025). Determinants of the intention to recommend a socially responsible destination with smart tourism

- technologies. *Current Issues in Tourism*, 28(13), 2136–2152. <https://doi.org/10.1080/13683500.2024.2355565>
9. Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart tourism: Foundations and developments. *Electronic Markets*, 25(3), 179–188. <https://doi.org/10.1007/s12525-015-0196-8>
10. Ho, R. C., Amin, M., Ryu, K., & Ali, F. (2021). Integrative model for the adoption of tour itineraries from smart travel apps. *Journal of Hospitality and Tourism Technology*, 12(2), 372–388. <https://doi.org/10.1108/JHTT-09-2019-0112>
11. Jeong, M., & Shin, H. H. (2020). Young travelers' experiences with smart tourism technology at smart destinations and their behavior intentions. *Journal of Travel Research*, 59(8), 1464–1477. <https://doi.org/10.1177/0047287519883034>
12. Kim, J.-H., & Ritchie, J. R. B. (2014). Cross-cultural validation of a memorable tourism experience scale (MTES). *Journal of Travel Research*, 53(3), 323–335. <https://doi.org/10.1177/0047287513496468>
13. Lin, K. J., Ye, H., & Law, R. (2022). Conceptualizing accessible tourism with smart technologies. *Journal of Smart Tourism*, 2(2), 5–14. <https://doi.org/10.52255/smarttourism.2022.2.2.2>
14. Liu, Y., Yu, S., Zheng, B., & Yuan, J. (2023). Research on the upgrading of Shenzhen smart tourism network service system. In *Proceedings of ICBDS 2023*. Atlantis Press. https://doi.org/10.2991/978-94-6463-276-7_18
15. Matyusupov, B., Bande, B., & Castro-González, S. (2024). The influence of smart tourism technologies on tourist engagement, memorable experience, and destination loyalty: The moderating role of place identity. *Services Marketing Quarterly*, 45(4), 458–484. <https://doi.org/10.1080/15332969.2024.2424045>
16. Niyas, K. K. M., Jacob, R., Thomas, T. K., Vipin, R., Raju, J. S., Najjim, M., & Saju, V. (2025). Augmented reality's impact on visitor engagement and experiential management in religious heritage sites. In *Technology and religious tourism: Emerging trends, cases and futuristic perspectives*. Emerald Publishing. <https://doi.org/10.1108/978-1-83662-260-420251005>
17. Orden-Mejía, M., & Huertas, A. (2022). Analysis of the attributes of smart tourism technologies in destination chatbots that influence tourist satisfaction. *Current Issues in Tourism*, 25(17), 2854–2869. <https://doi.org/10.1080/13683500.2021.1997942>
18. Ruslan, N., Ying, K. P., Abu Hassan, F., Abdul Halim, A. M., Arba'ain, A. F., Muazam, F. N. I., Rashidi, I. F. F., Valerience, N. W. I., & Jasni, J. (2023). Does the smart tourism experience in Malaysia increase local young travelers' happiness and revisit intentions? *Journal of Sustainable Natural Resources*, 3(2), 41–49. <https://doi.org/10.30880/jsunr.2022.03.02.005>
19. Semwal, R., Tripathi, N., Rana, A., Dafouti, B. S., Bairwa, M. K., & Mathur, V. (2024). AI-powered personalization and emotional intelligence integration for enhanced service marketing in transformative tourism experiences. In *2024 International Conference on Communication, Computer Sciences and Engineering (IC3SE)* (pp. 1851–1856). <https://doi.org/10.1109/IC3SE62002.2024.10592909>
20. Seyfi, S., Hall, C. M., & Rasoolimanesh, S. M. (2020). Exploring memorable cultural tourism experiences. *Journal of Heritage Tourism*, 15(3), 341–357. <https://doi.org/10.1080/1743873X.2019.1639717>
21. Shanmugam, K., Rana, M. E., & Kong, Z. Y. (2024). A comprehensive analysis of technological advancements and smart tourism strategies in Malaysia's post-pandemic tourism industry. In *2024 ASU International Conference in Emerging Technologies for Sustainability and Intelligent Systems (ICETISIS)* (pp. 909–916). <https://doi.org/10.1109/ICETISIS61505.2024.10459443>
22. Sustacha, I., Baños-Pino, J. F., & Del Valle, E. (2023). The role of technology in enhancing the tourism experience in smart destinations: A meta-analysis. *Journal of Destination Marketing & Management*, 30. <https://doi.org/10.1016/j.jdmm.2023.100817>
23. Thong, C. L., Chaw, L. Y., Cherukuri, A. K., Jalil, A., Chit, S. M., & Lee, C. Y. (2022). The effectiveness of smart tourism in Malaysia in the COVID-19 post-pandemic era: A case study. In G. Salvendy & J. Wei (Eds.), *Design, operation and evaluation of mobile communications* (pp. 60–73). Springer.
24. Tiwari, A. V., Bajpai, N., & Pandey, P. (2024). The measurement model of novelty, memorable tourism experience, and revisit intention in young travelers. *Leisure/Loisir*, 48(1), 103–121. <https://doi.org/10.1080/14927713.2023.2187864>

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25. Torabi, Z. A., Pourtaheri, M., Hall, C. M., Sharifi, A., & Javidi, F. (2023). Smart tourism technologies, revisit intention, and word-of-mouth in emerging and smart rural destinations. *Sustainability*, 15(14), 10911. <https://doi.org/10.3390/su151410911>
 26. Yuksel, F., Kement, U., Dogan, S., Erkol Bayram, G., Bayar, S. B., & Cobanoglu, C. (2024). Effect of smart tourism technology experience (STTE) on tourist satisfaction and happiness: The mediation role of self-gratification. *International Journal of Tourism Cities*. <https://doi.org/10.1108/IJTC-06-2024-0119>