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Tourist Experience at Cultural Destinations: An Empirical Study on the Role of Smart Tourism Technologies

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Abstract - This study examines the relationship between Smart Tourism Technologies (STTs) and Overall Tourist Experience at cultural destinations. It further considers tourist experience through five dimensions: Satisfaction, Engagement, Learning and Knowledge, Convenience, and Emotional Experience. A quantitative, descriptive-analytical design was adopted. Primary data were collected through a structured questionnaire using a five-point Likert scale and convenience sampling. Data from 61 valid responses were analysed using descriptive statistics, Pearson's correlation, exploratory factor analysis, and linear regression in SPSS. The findings indicate a positive and statistically significant relationship between STTs and Overall Tourist Experience ($\beta = .590$, $R^2 = .349$, $p < .001$). Significant positive relationships were also observed across all five dimensions, with the strongest relationship found for Satisfaction ($\beta = .592$, $p < .001$) and the weakest for Convenience ($\beta = .376$, $p = .003$). The study provides empirical evidence for understanding technology-enhanced tourist experiences in cultural destinations. Drawing on the technology-enhanced tourism experience perspective, the findings suggest that the role of smart technologies extends beyond functional convenience to include tourists' evaluative, engaging, cognitive, and emotional experiences.

1. INTRODUCTION

The tourism industry has undergone a substantial digital transformation as technologies have become increasingly embedded in destination operations and tourist activities. Smart Tourism Technologies (STTs), including mobile applications, social media, cloud computing, artificial intelligence, and the Internet of Things (IoT), have expanded the ways in which tourists access information, communicate with destinations, make decisions, and interact with tourism environments (Gretzel et al., 2015; Buhalis & Amaranggana, 2015). The increasing use of digital platforms for travel planning, navigation, information

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search, and experience sharing has consequently made technology an important part of contemporary tourism practices (Buhalis & Law, 2008; Law et al., 2010). Beyond operational efficiency, the growing integration of these technologies has also drawn attention to their role in shaping tourists' perceptions and experiences.

Smart tourism represents a broader transformation of tourism systems in which digital infrastructure, connected services, data, and technological applications are brought together to create more responsive tourism environments (Gretzel, 2018; Wu et al., 2024). Technologies can provide tourists with timely information, facilitate interaction, and support more personalised forms of destination engagement. Mobile technologies can also mediate tourists' interactions with destinations by influencing how information and experiences are accessed during travel (Wang et al., 2013). This development has gradually shifted attention from technology as a means of service delivery towards technology as part of the tourism experience itself. Previous research has consequently examined the role of digital technologies in areas such as accessibility, interaction, personalisation, satisfaction, and experiential value (Buhalis & Amaranggana, 2015; Liberato et al., 2018; Alnawafleh et al., 2025).

This shift is particularly relevant to cultural tourism, where the value of the destination is closely connected with history, heritage, traditions, identity, and cultural expression. Cultural tourism encompasses experiences associated with both tangible resources, such as monuments, buildings, museums, and artefacts, and intangible elements, including traditions, rituals, customs, and other cultural expressions (Dela Santa & Tiatco, 2019). Cultural destinations also contribute to local economic development, employment, destination identity, and the preservation and presentation of cultural resources (Shankar, 2015; Irandu & Shah, 2016). At the same time, cultural heritage is not simply a collection of physical resources. Its interpretation and representation can vary according to institutional, social, and cultural perspectives, making the visitor experience an important part of how heritage is encountered and understood.

The application of smart technologies provides new possibilities for this experience. Augmented reality (AR), virtual reality (VR), mobile applications, QR-based information systems, and digital interpretation tools can provide additional information and alternative ways of engaging with cultural resources (Fadli et al., 2022; Pervolarakis et al., 2023). Such technologies can allow visitors to access information at the point of experience, explore historical narratives, and interact with destination content through digital interfaces. Consequently, technology can extend the ways in which tourists encounter cultural resources beyond conventional forms of interpretation. However, the value of such technologies cannot be understood solely in terms of their technical functionality; their relevance also depends on how they become incorporated into the tourist experience.

This experiential dimension has received increasing attention in tourism technology research. Neuhofer et al. (2012) conceptualised technology-enhanced destination experiences around two important developments: tourists increasingly participate in the co-creation of their experiences, while technology increasingly mediates those experiences. Their subsequent typology further demonstrated that the nature of technology-enhanced tourism experiences varies according to the degree of technology implementation and tourist co-creation (Neuhofer et al., 2014). This perspective provides a useful basis for

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understanding Smart Tourism Technologies as more than functional tools and for examining their relationship with different dimensions of tourist experience. Recent empirical synthesis also provides evidence of a positive relationship between smart technology and tourism experience, while identifying informativeness and interactivity as particularly important attributes (Sustacha et al., 2023).

Despite these developments, smart tourism and cultural tourism have often been examined through partially separate research streams. Smart tourism research has frequently concentrated on technological capabilities, destination management, connectivity, and service-related outcomes, whereas cultural tourism research has placed greater emphasis on heritage, authenticity, interpretation, and experiential meaning. Recent work on smart tourism technology in heritage tourism has begun to address this intersection, but empirical attention to tourists' experiences in cultural settings remains limited (Balakrishnan et al., 2023).

The present study addresses this gap by examining the relationship between Smart Tourism Technologies and Overall Tourist Experience at cultural destinations. Overall Tourist Experience is considered as a multidimensional construct comprising Satisfaction, Engagement, Learning and Knowledge, Convenience, and Emotional Experience. Drawing on the technology-enhanced tourism experience perspective, the study examines whether tourists' engagement with Smart Tourism Technologies is associated with their overall experience and with these individual dimensions. By bringing together smart tourism technology, cultural tourism, and a multidimensional understanding of tourist experience, the study seeks to provide empirical evidence on the role of technology in shaping experiences within culturally significant tourism environments.

2. LITERATURE REVIEW

2.1 Smart Tourism Technologies

The increased use of digital technologies has significantly transformed the tourism industry, contributing to the emergence of smart tourism as an important area of research. Smart tourism destinations utilise advanced technologies to improve connectivity, operational efficiency and overall destination performance. These developments reflect the growing importance of digital infrastructure in optimising tourism resources and enhancing service delivery (Koo et al., 2016). In this context, the integration of smart tourism technologies such as mobile applications, cloud computing, and the Internet of Things has enhanced destinations' competitiveness by improving tourist engagement and service efficiency (Buhalis & Amaranggana, 2013; Lamsfus et al., 2015).

The role of technology in tourism has grown beyond just operational support. It now shapes how tourists plan, experience, and perceive their travel. More travellers are using digital platforms, especially mobile devices and the internet, to get real-time information during their trips. This change has made the internet a key source of travel information. It greatly affects destination choices and decisions, while also reducing uncertainty in travel planning (Buhalis & Law, 2008; Law et al., 2010). In cultural tourism, access to real-time information can help tourists better understand the historical and cultural significance of the places they visit.

2.2 Tourist Experience in Smart Tourism

Recent studies have further detailed how smart tourism technologies affect tourist behaviour. People now see smarter technologies as tools that not only make things easier and more efficient but

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also change how tourists view value, decide to use services, and what benefits they get from their experience. While the functionality of technology remains essential, recent research shows that the quality of experience is becoming increasingly important. This quality centres on how user interact with the technology and their satisfaction while using it (Gretzel et al., 2015; Buhalis & Amaranggana, 2015). The experiential dimension of smart tourism has gained increasing importance in recent studies. Existing literature suggests that experiential dimensions exert a stronger influence on tourists' perceptions and attitudes, as modern tourists increasingly seek meaningful and engaging experiences rather than purely functional efficiency (Buonincontri & Micera, 2016). In this regard, tourist engagement, satisfaction, and co-creation have become important elements in understanding tourism experiences. Visitor engagement has also been examined as a distinct experiential construct in tourism research (Taheri et al., 2014).

The concept of memorable tourism experience has also gained considerable attention in tourism research. Tourist satisfaction is often associated with the extent to which tourism experiences meet tourists' expectations and perceived experiential value (Oliver, 2014). Tourists increasingly seek experiences that are emotionally engaging, meaningful, and personally enriching (Kim et al., 2012; Mehmetoglu & Engen, 2011). These experiential dimensions are particularly relevant in cultural tourism, where emotional connection and experiential richness are central to tourist satisfaction.

2.3 Smart Technologies in Cultural Tourism

Cultural tourism has emerged as one of the rapidly growing segments within global tourism. Tourists are increasingly moving away from mass tourism and toward more meaningful, experience-oriented travel. Cultural heritage tourism, which involves engaging with the traditions, history, and identity of destinations, has gained considerable importance in contemporary contemporary tourism studies (Nyaupane et al., 2006; Sethi, 2005). Heritage itself is a complex and evolving concept that includes both tangible artefacts and intangible cultural expressions, and its interpretations often differ among stakeholders (Dela Santa & Tiatco, 2019). In the changing tourism landscape, the integration of smart technologies into cultural destinations has created new opportunities to enhance interpretation, accessibility, and visitor engagement. Technologies such as augmented reality (AR) and virtual reality (VR) allow tourists to visualise historical settings, access layered information, and interact with heritage resources in a more immersive way (Fadli et al., 2022; Pervolarakis et al., 2023). These technologies transform traditional methods of heritage interpretation into more engaging and participatory experiences, thereby enriching tourist interaction with cultural destinations.

However, the development and promotion of cultural tourism also involve several challenges. Conflicts often arise among governments, local communities, and tourism stakeholders regarding the representation and utilisation of cultural resources. In many cases, state-driven narratives dominate heritage interpretation, resulting in selective representations of culture and the marginalisation of alternative community perspectives. This reflects the ideological nature of heritage, in which cultural representation is often linked to social identity and power structures (Lowenthal, 2015; Smith, 2006). Despite the increasing integration of smart technologies within tourism, existing smart tourism frameworks largely reflect an urban bias. Most smart tourism concepts have been developed within the context of smart cities, where infrastructure, mobility systems, and digital connectivity are comparatively advanced

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(Gretzel, 2018). This creates limitations when applying smart tourism concepts to culturally distinct destinations, many of which are located in heritage-sensitive or infrastructure-constrained environments.

2.4 Theoretical Foundation

The growing integration of digital technologies into tourism has changed the way destination experiences are created and experienced. Neuhofer et al. (2012) proposed the concept of Technology-Enhanced Destination Experiences to explain this development, emphasising that tourists are increasingly active participants in creating their own experiences, while technology has become an important medium through which these experiences are shaped. From this perspective, technology is not limited to supporting the delivery of tourism services; it can also contribute to creating richer, more interactive destination experiences.

The perspective was further developed by Neuhofer et al. (2014), who demonstrated that technology and tourist involvement can combine in different ways to produce technology-enhanced tourism experiences. Their typology highlights the importance of technology implementation and co-creation in understanding how experiences are enhanced. This provides a useful theoretical basis for examining the relationship between Smart Tourism Technologies and tourists' experiences, particularly when digital tools provide information, facilitate interaction, enhance convenience, and support tourists' engagement with a destination.

For cultural destinations, this perspective suggests that Smart Tourism Technologies can become part of the tourist experience rather than serving only as functional support. The experience is examined through five dimensions: Satisfaction, Engagement, Learning and Knowledge, Convenience, and Emotional Experience, which represent different aspects through which tourists may evaluate and experience their visit. Accordingly, the study proposes that the use of Smart Tourism Technologies is positively associated with Overall Tourist Experience and examines this relationship empirically using Pearson's correlation and linear regression analysis.

2.5. Research Gap

Existing studies on smart and cultural tourism have primarily developed through different research streams, with comparatively less attention to their integration. While smart tourism research has focused strongly on technological functionality, connectivity, and destination management, cultural tourism research has given greater attention to authenticity, heritage interpretation, and experiential value (Gretzel, 2018; Balakrishnan et al., 2023). Although recent research has begun to connect smart technologies with heritage tourism, empirical evidence concerning their relationship with tourists' experiences in cultural destinations remains comparatively limited (Balakrishnan et al., 2023; Sustacha et al., 2023).

2.6. Conceptual Framework

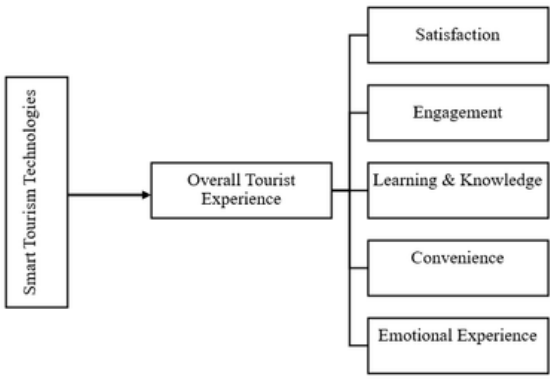

Figure 1. Conceptual Framework of the Study (Developed by the researcher based on Neuhofer et al. (2012, 2014) and relevant literature)

Figure 1 presents the conceptual framework developed for the study. The framework proposes a

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positive relationship between Smart Tourism Technologies and Overall Tourist Experience at cultural destinations. In the model, Smart Tourism Technologies constitute the independent variable.

Overall Tourist Experience is conceptualised as a multidimensional construct comprising Satisfaction, Engagement, Learning and Knowledge, Convenience, and Emotional Experience. These five dimensions represent different aspects through which tourists may experience and evaluate their visit to a cultural destination. Satisfaction reflects the extent to which the visit meets tourists' expectations; Engagement represents their active involvement and interest during the experience; Learning and Knowledge captures the extent to which the visit contributes to their understanding of the culture and heritage; Convenience reflects the ease of accessing information and completing activities during the visit; and Emotional Experience represents the feelings of enjoyment, connection, and memorability associated with the destination.

The framework is informed by the technology-enhanced tourism experience perspective, which views technology as an element that can become integrated into the tourism experience and contribute to the way tourists interact with and experience a destination (Neuhofer et al., 2012, 2014). Accordingly, the study proposes that Smart Tourism Technologies are positively associated with Overall Tourist Experience. This proposed relationship is examined empirically using Pearson's correlation and linear regression analysis. The five dimensions are used to operationalise the broader Overall Tourist Experience construct and are additionally examined at the dimension level to provide a more detailed understanding of the relationship.

2.7. Objectives

- To examine the use of Smart Tourism Technologies at cultural destinations.
- To assess tourists' Overall Tourist Experience at cultural destinations in terms of Satisfaction, Engagement, Learning & Knowledge, Convenience, and Emotional Experience.
- To examine the relationship between Smart Tourism Technologies and Overall Tourist Experience at cultural destinations.
- To examine the relationship between Smart Tourism Technologies and the individual dimensions of Overall Tourist Experience.

3. METHODOLOGY

The study adopted a quantitative approach to examine tourists' perceptions of Smart Tourism Technologies and their relationship with Overall Tourist Experience at cultural destinations. Primary data were collected through a structured questionnaire using five-point Likert-scale items from tourists who had visited a cultural destination. A quantitative approach was considered appropriate because it enables systematic measurement of respondents' perceptions and the statistical examination of relationships among study variables using numerical data (Creswell, 2014). The collected data were analysed using descriptive and inferential statistical techniques, with the methodology covering the research design, data collection, sampling, instrument development, measurement of constructs, and data analysis.

3.1 Research Design

The study follows a descriptive and analytical research design. The descriptive component summarises respondents' characteristics and their perceptions of Smart Tourism Technologies and Overall Tourist Experience using frequencies, percentages, means, and standard deviations, while the analytical component examines relationships

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among the study variables (Veal, 2018). The analytical component examines the relationships between Smart Tourism Technologies and Overall Tourist Experience using Pearson's correlation and linear regression analysis. Additional regression analyses are conducted to examine the relationships between Smart Tourism Technologies and each of the five dimensions of Overall Tourist Experience: Satisfaction, Engagement, Learning and Knowledge, Convenience, and Emotional Experience.

3.2 Data Collection

Primary data were collected using a structured questionnaire administered through Google Forms. The questionnaire was distributed online to respondents who had visited a cultural destination. The online mode facilitated the distribution of the questionnaire and collection of responses within the study period. Respondents were provided with information about the purpose of the study, and the collected responses were used for statistical analysis of Smart Tourism Technologies and tourist experience.

3.3 Sampling Technique and Sample Size

The study adopted a convenience sampling technique for collecting responses. The technique was considered suitable due to accessibility and time limitations associated with the data collection process. To ensure that the responses were relevant to the study's focus, participants were first screened for their recent experience visiting a cultural destination. Among the 67 responses received, 61 respondents reported having visited a cultural destination, whereas 6 respondents reported no such visit. Since direct experience of a cultural destination was considered necessary to assess the role of smart tourism technologies in the tourist experience, the six responses were excluded from the analysis. The final analysis was therefore based on 61 eligible responses.

3.4 Instrument Design

The research instrument was a structured questionnaire developed to collect information on respondents' use and perceptions of Smart Tourism Technologies and their experience at cultural destinations. The questionnaire was developed with reference to the study objectives and relevant literature on smart tourism and technology-enhanced tourism experiences. The instrument included demographic and visit-related questions followed by Likert-scale items measuring Smart Tourism Technologies and the dimensions of Overall Tourist Experience.

The questionnaire included a screening question to determine whether respondents had visited a cultural destination, followed by questions relating to respondents' demographic characteristics and the measurement of the study constructs. The measurement section initially comprised 24 Likert-scale statements. Seven items measured the use of smart tourism technologies (STT1–STT7). Tourist Experience was represented through five dimensions: Satisfaction (three items), Engagement (three items), Learning and Knowledge (three items), Convenience (two items), and Emotional Experience (two items). A further four items (IMP1–IMP4) initially assessed the perceived impact of smart tourism technologies.

All measurement items were assessed using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The responses were subsequently examined for reliability and construct validity before the variables were used in the main statistical analysis.

3.5. Measurement Items

The measurement section comprised 24 Likert-

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scale statements covering the use of smart tourism technologies, tourist experience and the perceived impact of smart tourism technologies. Tourist Experience was operationalised through five dimensions: Satisfaction, Engagement, Learning and Knowledge, Convenience, and Emotional Experience. The instrument initially also included four items intended to assess the perceived impact of smart tourism technologies.

The measurement items were developed by the researcher based on the study objectives and the conceptual dimensions identified in prior research on smart tourism technology, visitor engagement and tourist experience. Since the study focuses specifically on tourists' experiences of smart tourism technologies at cultural destinations, the items were worded to reflect the context of technology-enabled cultural visits rather than being directly adopted from a single existing scale.

Table 1. Measurement item

Construct	Code	Measurement Item
Use of Smart Tourism Technologies	STT 1	I use mobile applications for travel planning.
	STT 2	I rely on digital maps/navigation during my visit.
	STT 3	I use online platforms for booking tickets/services.
	STT 4	I access information through QR codes or digital displays.
	STT 5	I use social media for travel-related information.
	STT 6	Smart technologies make travel planning easier.
	STT 7	Digital interpretation tools at the destination (e.g., displays, information centres) enhanced my experience.
Satisfaction	SAT 1	I am satisfied with my visit to the cultural destination.
	SAT 2	The experience met my expectations.
	SAT 3	I would rate my overall experience as satisfactory.
Engagement	ENG 1	I felt actively engaged during my visit.
	ENG 2	The experience was interactive and interesting.
	ENG 3	I felt interested and motivated to explore more at the destination.
Learning and Knowledge	LEARN 1	I learned new things about culture and heritage.
	LEARN 2	The information provided enhanced my understanding.
	LEARN 3	The visit increased my knowledge about the destination.
Convenience	CONV 1	Technology made my visit more convenient.
	CONV 2	Information was easily accessible.
Emotional Experience	EMO 1	I felt emotionally connected to the destination.
	EMO 2	The visit was enjoyable and memorable.
Impact of Smart Tourism Technologies	IMP 1	Smart tourism technologies improved my overall experience.
	IMP 2	I prefer destinations with advanced technological facilities.
	IMP 3	Technology increases my satisfaction during travel.
	IMP 4	I am willing to revisit destinations that use smart technologies.

The measurement items were developed by the researcher based on the study objectives and the conceptual dimensions identified in prior research on smart tourism technology, visitor engagement and tourist experience. Since the study focuses specifically on tourists' experiences of smart tourism technologies at cultural destinations, the items were worded to reflect the context of technology-enabled cultural visits rather than being directly adopted from a single existing scale.

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4. DATA ANALYSIS AND INTERPRETATION

The collected responses were coded and organised before statistical analysis. The data were analysed using IBM SPSS Statistics, with descriptive and inferential procedures applied to examine the measurement constructs and their relationships (Field, 2013). The analysis was conducted in several stages. First, respondent eligibility was assessed using the cultural-destination-visit criterion. The eligible responses were then subjected to reliability and validity assessment of the measurement constructs. Descriptive statistics were used to examine respondents' perceptions of smart tourism technologies and the dimensions of tourist experience. Pearson's correlation analysis was employed to examine the associations among the principal constructs. Finally, linear regression analysis was conducted to examine the relationship between smart tourism technologies and overall tourist experience, followed by separate regression models for the five dimensions of tourist experience.

A screening criterion was applied to determine whether respondents had visited a cultural destination. Of the 67 responses received, 61 respondents reported having visited a cultural destination, whereas 6 respondents indicated they had not. The six responses were excluded from the subsequent statistical analysis. Accordingly, the final analytical sample consisted of 61 eligible respondents.

Table 2. Demographic and travel profile of respondents

Characteristics	Category	Frequency (N)	Percentage (%)
Gender	Male	32	52.5
	Female	29	47.5
	Total	61	100
Educational Level	Undergraduation and Below	22	36.1
	Post Graduation	27	44.3
	PhD	12	19.7
	Total	61	100
Type of Cultural Destination Visited	Religious site	26	42.6
	Historical monument	22	36.1
	Heritage city	6	9.8
	Museum	5	8.2
	Traditional/folk cultural site	2	3.3
	Total	61	100
Frequency of Travel	Once a year	19	31.1
	2-3 times a year	29	47.5
	More than 3 times a year	13	21.3
	Total	61	100

Source: Primary Data

Table 2 presents the demographic and travel characteristics of the 61 respondents included in the study. The gender distribution is relatively balanced, although male respondents constitute a slightly larger share of the sample, with 32 respondents (52.5%), compared with 29 female

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respondents (47.5%). This indicates that the study did not have a pronounced imbalance between male and female participants.

In terms of educational level, postgraduate respondents form the largest group (44.3%, n = 27), followed by respondents in the undergraduate and below category (36.1%, n = 22). A further 19.7% (n = 12) of the respondents hold a Ph.D. qualification. The educational distribution, therefore, shows that a substantial proportion of the respondents had higher educational qualifications, which is relevant to a study examining perceptions and use of technology at cultural destinations.

The type of cultural destination visited shows a clearer concentration. Religious sites were the most frequently reported destination type, accounting for 42.6% (n = 26) of the responses. This was followed by historical monuments at 36.1% (n = 22). Heritage cities represented 9.8% (n = 6), while museums accounted for 8.2% (n = 5). Traditional or folk cultural sites constituted the smallest category, with 3.3% (n = 2) of respondents. Thus, the sample mainly represents visitors to religious sites and historical monuments, with comparatively fewer respondents from the other types of cultural destinations.

With regard to travel frequency, nearly half of the respondents, 47.5% (n = 29), reported travelling 2–3 times a year. Those travelling once a year accounted for 31.1% (n = 19), while 21.3% (n = 13) reported travelling more than three times a year. Overall, the distribution suggests that most respondents had some regular travel experience, with the largest proportion travelling two to three times annually.

Taken together, the profile indicates that the sample comprises respondents with varied demographic backgrounds and travel patterns, while the destination experience represented in the data is concentrated particularly around religious sites and historical monuments. This profile provides important context for interpreting the subsequent findings concerning smart tourism technologies and tourist experience.

4.3 Reliability Analysis

The internal consistency of the measurement scales was assessed using Cronbach's alpha coefficient, with reliability examined separately for each construct (Pallant, 2020). Reliability was examined separately for each construct to assess the consistency of the items representing the respective dimensions. The results of the reliability analysis are presented in Table 3.

The Cronbach's alpha coefficients ranged from .739 to .921, indicating satisfactory to high internal consistency across the measured constructs. The Smart Tourism Technologies scale

Table 3. Reliability

Construct	No. Items	Cronbach's α
Smart Tourism Technologies	7	0.921
Satisfaction	3	0.900
Engagement	3	0.860
Learning and Knowledge	3	0.859
Convenience	2	0.739
Emotional Experience	2	0.759
Impact of Smart Tourism Technologies	4	0.829

Source: Primary Data

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recorded the highest reliability coefficient (α = .921), followed by Satisfaction (α = .900), Engagement (α = .860), Learning and Knowledge (α = .859), Impact of Smart Tourism Technologies (α = .829), Emotional Experience (α = .759), and Convenience (α = .739). The item-level reliability statistics did not indicate that any item needed to be removed to improve the internal consistency of its respective construct.

4.4 Exploratory Factor Analysis

The suitability of the data for exploratory factor analysis (EFA) was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The KMO value was .802, indicating satisfactory sampling adequacy, while Bartlett's test was statistically significant, $\chi^2(276) = 1128.997$, $p < .001$, confirming sufficient interrelationships among the items for factor analysis. EFA was conducted using Principal Axis Factoring with Promax rotation, allowing the extracted factors to correlate. A four-factor empirical structure was obtained. The seven Smart Tourism Technology items showed strong and consistent loadings on a common factor, and the Learning and Knowledge items displayed a relatively clear factor pattern. However, some overlap was observed among the originally specified dimensions. In particular, the four Impact of Smart Tourism Technologies items did not form a distinct factor and loaded alongside the Convenience items, while the Satisfaction and Engagement items also showed empirical overlap.

The factor structure was therefore considered alongside the conceptual content of the measurement items. The four Impact of Smart Tourism Technologies items represented distinct concepts: overall experience, destination preference, satisfaction, and revisit intention. These concepts either overlap with the dimensions of Tourist Experience or represent distinct behavioural outcomes, making their retention as a separate construct conceptually problematic. Accordingly, the Impact of Smart Tourism Technologies was excluded from the final analytical model to avoid conceptual overlap between the predictor and the tourist experience outcome. The original responses were retained in the dataset for transparency, but the four items were excluded from the subsequent regression analysis. The EFA therefore provided exploratory evidence for the measurement structure while also identifying areas of conceptual overlap that informed the final model specification.

4.5 Descriptive Statistics

Descriptive statistics were used to summarise the respondents' perceptions of Smart Tourism Technologies and the dimensions of Overall Tourist Experience. The mean and standard deviation for each construct are presented in Table 4.

The descriptive results indicate generally favourable perceptions of smart tourism technologies and tourist experience. Smart Tourism Technologies recorded a mean score of 3.6698 (SD = 1.0260). Among the five dimensions of Tourist Experience, Learning and Knowledge recorded the highest mean (M = 4.0273, SD = .6973), followed by Convenience (M = 3.9508, SD = .7784) and Satisfaction (M = 3.8907, SD = .7739). Emotional Experience recorded a mean of 3.8279 (SD = .7353), while Engagement recorded 3.8361 (SD = .7996). The overall Tourist Experience score was 3.9066 (SD = .6109), indicating a generally positive experiential assessment among the respondents.

4.6 Correlation Analysis

Pearson's correlation analysis was conducted to examine the relationships between Smart Tourism Technologies and the dimensions of Tourist

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Table 4. Descriptive statistics

Construct	N	Mean	SD
Smart Tourism Technologies	61	3.6698	1.0260
Satisfaction	61	3.8907	0.7739
Engagement	61	3.8361	0.7996
Learning and Knowledge	61	4.0273	0.6973
Convenience	61	3.9508	0.7784
Emotional Experience	61	3.8279	0.7353
Overall Tourist Experience	61	3.9066	0.6109

Source: Primary Data

Experience. The results indicated statistically significant positive relationships between Smar Tourism Technologies and Satisfaction ($r = .592$, $p < .01$), Engagement ($r = .478$, $p < .01$), Learning and Knowledge ($r = .453$, $p < .01$), Convenience ($r = .376$, $p < .01$), and Emotional Experience ($r = .482$, $p < .01$). Smart Tourism Technologies was also positively correlated with overall Tourist Experience ($r = .590$, $p < .01$).

The five dimensions of Tourist Experience were also positively associated with one another. The strongest relationship was observed between Satisfaction and Engagement ($r = .734$, $p < .01$). Although the dimensions were related, the observed correlations did not indicate extreme correlation-based redundancy among the principal constructs.

Table 5. Correlation

Variables	STT	Satisfaction	Engagement	Learning & Knowledge	Convenience	Emotional Experience	Overall Tourist Experience
STT	1000	0.592	0.478	0.453	0.376	0.482	0.590
Satisfaction	0.592	1000	0.734	0.507	0.590	0.625	0.862
Engagement	0.478	0.734	1000	0.503	0.509	0.565	0.828
Learning & Knowledge	0.453	0.507	0.503	1000	0.550	0.529	0.756
Convenience	0.376	0.590	0.509	0.550	1000	0.509	0.786
Emotional Experience	0.482	0.625	0.565	0.529	0.509	1000	0.798
Overall Tourist Experience	0.590	0.862	0.828	0.756	0.786	0.798	1000

***Correlation is significant at the 0.01 level (2-tailed). N = 61.*
Source: Primary Data

Pearson correlation analysis showed that Smart Tourism Technologies (STT) had positive and statistically significant relationships with all dimensions of Tourist Experience. The strongest association was observed between STT and Satisfaction ($r = .592$, $p < .01$), followed by Emotional Experience ($r = .482$, $p < .01$), Emotional Experience ($r = .798$, $p < .01$), Engagement ($r = .478$, $p < .01$), Learning and Knowledge ($r = .453$, $p < .01$), and Convenience ($r = .376$, $p < .01$). STT was also positively associated with Overall Tourist Experience ($r = .590$, $p < .01$).

The five dimensions of Tourist Experience were also positively correlated with Overall Tourist Experience, with correlations ranging from .756 to

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.862. Satisfaction showed the strongest association with Overall Tourist Experience ($r = .862$, $p < .01$), followed by Engagement ($r = .828$, $p < .01$), Emotional Experience ($r = .798$, $p < .01$), Convenience ($r = .786$, $p < .01$), and Learning and Knowledge ($r = .756$, $p < .01$). The positive correlations between Smart Tourism Technologies and the five dimensions provide initial evidence of the relationships examined in the subsequent regression analyses.

4.7 Regression Analysis

To examine the relationship between Smart Tourism Technologies and Tourist Experience, linear regression analysis was conducted with Smart Tourism Technologies as the independent variable and Tourist Experience as the dependent construct. Since Tourist Experience was theoretically specified as a multidimensional construct comprising Satisfaction, Engagement, Learning and Knowledge, Convenience, and Emotional Experience, separate regression models were additionally estimated for each dimension.

4.7.1 Overall Tourist Experience

The regression model examining the relationship between Smart Tourism Technologies and overall Tourist Experience was statistically significant, $F(1,59) = 31.561$, $p < .001$. The model produced an R^2 of .349, indicating that Smart Tourism Technologies explained approximately 34.9% of the variance in Tourist Experience. The standardised regression coefficient was positive and statistically significant ($\beta = .590$, $t = 5.618$, $p < .001$). The finding indicates that higher levels of Smart Tourism Technology use were associated with higher overall Tourist Experience.

4.7.2 Dimension Level Regression Analysis

Regression analysis was conducted to examine the relationship between Smart Tourism Technologies and each dimension of Tourist Experience. The results for the overall construct and its five dimensions are presented in Table 6.

Table 6. Regression

Dependent Variable	R	R^2	Adjusted R^2	β	t	p
Overall Tourist Experience	0.590	0.349	0.337	0.590	5.618	<.001
Satisfaction	0.592	0.351	0.340	0.592	5.649	<.001
Engagement	0.478	0.228	0.215	0.478	4.175	<.001
Learning & Knowledge	0.453	0.205	0.192	0.453	3.905	<.001
Convenience	0.376	0.141	0.127	0.376	3.115	0.003
Emotional Experience	0.482	0.232	0.219	0.482	4.225	<.001

***β = standardised regression coefficient; N = 61.*
Source: Primary Data

The dimension-level regression results show that Smart Tourism Technologies were positively and significantly associated with all five dimensions of Tourist Experience. Satisfaction recorded the strongest predictive relationship ($\beta = .482$, $R^2 = .232$, $p < .001$) and Engagement ($\beta = .478$, $R^2 = .228$, $p < .001$) also showed significant positive relationships with Smart Tourism Technologies. Learning and Knowledge were significantly predicted by Smart Tourism

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Technologies (β = .453, R^2 = .205, $p < .001$). Although the relationship with Convenience was comparatively weaker, it remained statistically significant (β = .376, R^2 = .141, p = .003).

Overall, the results indicate that Smart Tourism Technologies are positively associated with Tourist Experience both at the aggregate level and across its five specified dimensions.

4.8 Regression Diagnostic

Regression assumptions were examined using residual diagnostics, including the histogram, normal probability plot, and standardised residual-versus-predicted-value plot. The residuals showed an approximately normal pattern, and the scatterplot did not indicate a pronounced nonlinear or funnel-shaped pattern. One observation produced a standardised residual of approximately −3.96 and was examined as a potentially unusual observation. The case was retained because there was no evidence that the response was invalid or resulted from a data-entry error. The final analysis, therefore, retained all 61 eligible respondents.

5. FINDINGS AND DISCUSSION

The results provide consistent evidence of a positive relationship between Smart Tourism Technologies and Overall Tourist Experience at cultural destinations. Smart Tourism Technologies were moderately and positively associated with Overall Tourist Experience ($r = .590$, $p < .01$), and the regression model was statistically significant ($F(1,59) = 31.561$, $p < .001$). Thus, technology-related experiences accounted for a meaningful proportion of the variation in tourists' overall experience, although the remaining variation indicates that tourist experience is also shaped by factors beyond technology.

This finding can be understood through the Technology-Enhanced Tourism Experience perspective proposed by Neuhofer et al. (2012). The perspective suggests that tourism experiences are increasingly mediated by technology and that tourists participate more actively in creating their experiences. Technology, therefore, becomes part of the experience-creation process rather than remaining merely a functional support mechanism. The positive relationship found in the present study is consistent with this proposition. It suggests that at cultural destinations, digital maps, online platforms, QR-based information, social media, and digital interpretation tools can be part of how tourists access, understand, and interact with the destination. The finding is also consistent with Neuhofer et al. (2014), who conceptualised technology-enhanced tourism experiences according to the interaction between technology implementation and tourist co-creation.

The dimension-level results provide further support for this interpretation. Smart Tourism Technologies showed significant positive relationships with Satisfaction (β = .592, $p < .001$), Emotional Experience (β = .482, $p < .001$), Engagement (β = .478, $p < .001$), Learning and Knowledge (β = .453, $p < .001$), and Convenience (β = .376, p = .003). Satisfaction produced the strongest predictive relationship, while Convenience showed the weakest, although it remained statistically significant. This pattern is important because it suggests that the role of technology in the present study is not restricted to making a visit easier. Its relationship with engagement, learning and emotional experience indicates that digital resources may also become part of how tourists interact with and interpret cultural destinations.

The relatively strong relationship with Learning and Knowledge is particularly relevant to cultural tourism. The mean score for this dimension was the highest among the five experience

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experience dimensions (M = 4.0273, SD = .6973). Cultural destinations depend substantially on visitors' ability to access and interpret historical and cultural information, and digital technologies can provide additional channels through which such information is encountered. The present finding, therefore, supports the view that technology can complement, rather than simply replace, conventional forms of cultural interpretation. The findings concerning Emotional Experience also require a cautious interpretation. Although it had the lowest mean among the five dimensions (M = 3.8279, SD = .7353), its relationship with Smart Tourism Technologies was statistically significant ($\beta = .482$, $p < .001$). This suggests that technology can be associated with tourists' emotional responses, but it should not be assumed that technology alone produces those emotions. At cultural destinations, emotional responses may also arise from the heritage resource itself, the physical setting, personal memories, cultural meanings and the visitor's direct encounter with the site. In this respect, the findings are compatible with the technology-enhanced tourism experience perspective: technology can mediate and enrich an experience without becoming a substitute for the destination itself. Neuhofer et al. (2012) specifically position technology as part of experience co-creation rather than as the experience in isolation.

Overall, the findings provide empirical support for applying the technology-enhanced tourism experience perspective to cultural destinations. The theory helps explain why Smart Tourism Technologies can be associated not only with functional aspects such as Convenience, but also with evaluative, behavioural, cognitive and emotional dimensions of the tourist experience. At the same time, the R2values show that technology does not explain the entirety of the tourist experience. The present findings should therefore be interpreted as evidence of a meaningful positive association, rather than evidence that technology alone determines the quality of a cultural tourism experience.

6. CONCLUSION

The study examined the relationship between Smart Tourism Technologies and Overall Tourist Experience at cultural destinations. The findings indicate a significant positive relationship between the two constructs, with Smart Tourism Technologies also showing significant relationships with Satisfaction, Engagement, Learning and Knowledge, Convenience, and Emotional Experience. The results suggest that technology can contribute to tourists' experiences beyond functional convenience by supporting engagement, learning and the overall evaluation of cultural visits. The study therefore provides empirical support for the relevance of the technology-enhanced tourism experience perspective in understanding tourist experiences within cultural destinations. Given the relatively small sample and convenience sampling approach, the findings should be interpreted within the scope of the study rather than generalised to all cultural destinations. Future research could use larger and more diverse samples across specific cultural and heritage destinations, employ probability or destination-based sampling where feasible, and examine additional factors such as authenticity, perceived value, technology acceptance and behavioural intentions to develop a more comprehensive understanding of technology-enhanced cultural tourism experiences.

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