

Emotive AI and the Soul of Heritage: Investigating How Emotionally-Intelligent AI Shapes Cultural Tourism Experiences in Taiwan

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ABSTRACT

As emotionally-intelligent artificial intelligence (AI) becomes increasingly integrated into tourism experiences, its role in shaping cultural engagement warrants deeper exploration. This study investigates how AI emotional recognition and AI-driven cultural storytelling influence tourists' emotional engagement, perceived cultural authenticity, and overall satisfaction in Taiwan's heritage tourism context. Drawing on affective computing theory and narrative transportation, the research employs a cross-sectional survey of 235 tourists across three AI-enhanced cultural sites. Using partial least squares structural equation modeling (PLS-SEM), the findings reveal that both AI features significantly enhance emotional engagement, which in turn mediates their effects on authenticity and satisfaction. Perceived authenticity emerges as the strongest predictor of tourist satisfaction, especially in Indigenous heritage sites. Furthermore, tourists with higher cultural interest experience stronger authenticity outcomes from emotionally engaging encounters. These results underscore AI's potential not only as a functional tool but as an affective co-creator of meaning in cultural tourism. The study contributes to tourism theory by integrating emotional responsiveness into smart tourism discourse and offers practical guidance for AI system design in heritage interpretation.

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INTRODUCTION

In recent years, the integration of Artificial Intelligence (AI) into the tourism industry has shifted from back-end efficiency tools to front-stage experiences that directly influence how tourists perceive, interact with, and emotionally respond to destinations. Traditionally, the application of AI in tourism has focused on enhancing operational functionality through chatbots, recommendation algorithms, and automation systems. While these innovations undoubtedly improve service quality and personalization, they often prioritize utility over affect, overlooking the emotional and cultural depth that defines memorable travel experiences (Lei et al., 2024). As Taiwan accelerates its development of smart tourism strategies, the potential for AI to support not only efficiency but also emotional engagement and cultural immersion remains underexplored.

Taiwan, a culturally rich island nation with a diverse blend of Han Chinese, Hakka, and Indigenous heritages, presents a compelling context for investigating the convergence of emotionally-intelligent AI and cultural tourism. The government's emphasis on digital innovation—evident in initiatives like the Smart Tourism Action Plan has supported AI adoption across major tourism sites. However, the focus has largely remained on AI's role in logistics and visitor information systems. Little attention has been paid to how affective AI systems capable of recognizing, interpreting, and simulating human emotions might enrich tourists' emotional and empathetic connections to local traditions, folklore, and intangible heritage. In an era where cultural tourism increasingly demands personalization and authenticity, emotionally-intelligent AI offers a novel medium to enhance narrative engagement, empathy-building, and heritage preservation.

This study introduces the concept of "emotive AI" in cultural tourism: the deployment of AI avatars, digital storytellers, and facial-recognition-powered guides that tailor narratives based on users' emotional states. By integrating affective computing (Marinakou et al., 2024) with narrative transportation theory (Thomas & Grigsby, 2024), we investigate how emotional responsiveness and cultural storytelling through AI technologies can foster a deeper psychological connection between tourists and destination heritage. For example, AI avatars programmed to

narrate Hakka migration stories or Amis creation myths may respond differently based on a user's facial expressions, tone of voice, or engagement level, creating a personalized and emotive cultural experience.

The use of such technologies also raises essential questions about authenticity, empathy, and sustainability in tourism. While AI may facilitate access to endangered languages and underrepresented narratives, it also challenges conventional notions of human-led interpretation and cultural integrity. This tension warrants critical academic attention, particularly within non-Western contexts where cultural heritage is often deeply tied to communal identity, oral tradition, and spirituality. Taiwan, with its robust technological infrastructure and rich multicultural heritage, serves as an ideal case for advancing both theoretical and practical understanding of how emotionally-intelligent AI systems can be deployed ethically and effectively in heritage tourism.

Therefore, this study aims to explore the influence of emotionally-intelligent AI on emotional engagement, perceived cultural authenticity, and tourist satisfaction in Taiwan's cultural tourism experiences. It also examines how the inclusion of indigenous languages and minority narratives through AI systems contributes to inclusive and sustainable tourism. By focusing on the emotional dimension of smart tourism, this research offers a novel contribution to the growing body of literature on AI in tourism, moving beyond functional efficiency to examine the experiential and affective impact of intelligent systems. Ultimately, the findings will provide theoretical insights and practical recommendations for heritage site managers, AI developers, and tourism policymakers seeking to harmonize digital innovation with cultural storytelling and emotional resonance.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

This study draws upon a multidisciplinary theoretical foundation that connects affective computing, narrative engagement, media perception, and experiential value creation to explain the role of emotionally-intelligent AI in cultural tourism experiences. Central to the framework is Affective Computing Theory (Thomas & Grigsby, 2024), which posits that machines can be designed to recognize, interpret, and simulate human emotions. With advances in facial recognition, sentiment analysis, and natural language processing, AI systems are increasingly capable of responding to tourists' emotional cues, thereby offering dynamic and personalized cultural experiences. In the context of heritage tourism in Taiwan, where emotional resonance and storytelling play vital roles, affective computing provides a compelling basis for understanding how AI avatars or digital guides can foster deeper tourist engagement.

To further conceptualize how tourists interact with AI-mediated cultural content, this study incorporates Narrative Transportation Theory (Thomas & Grigsby, 2024). This theory suggests that individuals immersed in compelling narratives experience shifts in attitudes, beliefs, and emotions, often leading to stronger connection and retention. Applied to tourism, emotionally-intelligent AI can serve as a conduit for immersive storytelling particularly when used to narrate traditional myths, rituals, or historical events thereby heightening tourists' sense of cultural authenticity and emotional attachment to the destination.

Complementing this is the Media Equation Theory (Lee, 2008), which argues that individuals often treat computers and digital agents as social actors, responding to them as they would to humans. When AI systems exhibit empathy, adapt to user behavior, or communicate in emotionally resonant ways, tourists may develop a sense of trust and rapport, similar to what they might feel with a human guide. This perspective is crucial in explaining how emotionally-intelligent AI can shape affective and social dimensions of the tourist experience, even when the interaction occurs with a non-human agent.

Finally, this study is informed by the Experience Economy framework (Quadri-Felitti & Fiore, 2012), which emphasizes that contemporary consumers, including tourists, seek meaningful and memorable experiences rather than passive consumption. In cultural tourism, particularly, experiences that evoke emotional, intellectual, and aesthetic responses are considered of higher value. Emotionally-intelligent AI has the potential to elevate traditional heritage interpretation by offering personalized, context-aware, and emotionally engaging storytelling that aligns with this shift toward experience-based tourism.

Together, these theoretical perspectives provide a coherent foundation to examine how emotionally-intelligent AI systems can influence key tourism outcomes such as emotional engagement, perceived authenticity, and visitor satisfaction. They also support the exploration of how these effects may vary across different types of tourists, cultural interests, and technological familiarity, particularly in Taiwan's evolving smart tourism landscape.

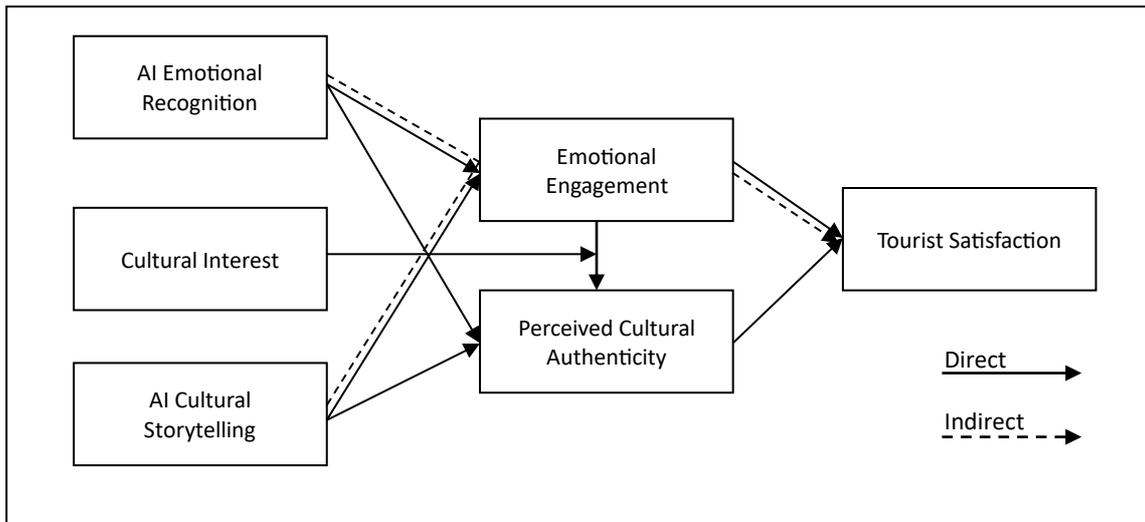


Figure 1. Research Framework

AI Emotional Capability and Tourist Emotional Engagement

Emotionally-intelligent AI, which leverages affective computing to detect and respond to user emotions in real time, has transformed human–machine interaction in service contexts (Alam, 2025). In tourism, the integration of AI avatars that respond empathetically to visitors through facial recognition, sentiment analysis, or voice modulation offers a new layer of interactive storytelling that mimics human sensitivity (Alabed et al., 2022). Such systems can interpret non-verbal cues (e.g., surprise, confusion, delight) and adjust the delivery of cultural narratives accordingly, fostering a sense of being emotionally understood.

This responsiveness contributes to emotional engagement, defined as the depth of affective involvement a tourist experiences during an interaction. Prior research shows that AI capable of detecting and responding to emotional states can elevate engagement by making experiences feel more personalized and meaningful (Vistorte et al., 2024). In cultural tourism, where the affective dimension is critical to connecting with heritage, the emotional capability of AI systems plays a pivotal role in intensifying visitor engagement.

H1: AI emotional recognition capability positively influences tourists' emotional engagement.

In parallel, storytelling has long been central to heritage interpretation. When AI avatars serve as narrators of myths, rituals, and historical events, their ability to tailor stories to the visitor's emotional state deepens involvement (Todino et al., 2025). Emotionally aligned storytelling adjusting tone, pacing, or content in response to real-time feedback can shift a passive information session into an emotionally immersive experience (Greber et al., 2023). In this context, AI acts as more than a tool; it becomes a co-creator of meaning.

H2: Cultural storytelling delivered by AI avatars positively influences tourists' emotional engagement.

Emotional Engagement, Cultural Authenticity, and Tourist Satisfaction

Emotional engagement serves as a critical mediator in cultural tourism experiences, shaping how visitors evaluate the authenticity and value of what they encounter. According to Narrative Transportation Theory, when individuals become emotionally involved in a story, their perceptions and beliefs align more closely with the narrative (Thomas & Grigsby, 2024). In tourism, this means that emotionally engaging encounters, particularly those enriched by AI-enabled responsiveness, can lead visitors to perceive cultural content as more genuine.

Perceived cultural authenticity refers to the extent to which tourists view the experience as a true reflection of a local community's traditions, values, and identity (Todino et al., 2025). Emotional engagement facilitates this perception by deepening attentiveness, empathy, and personal resonance. Studies have shown that emotionally

engaged tourists are more likely to describe their experiences as “authentic” and reflective of local heritage (Jang & Ha, 2015).

H3: Emotional engagement positively influences perceived cultural authenticity.

Moreover, emotional engagement is a strong predictor of overall satisfaction. The emotional journey of the tourist, how moved, inspired, or connected they feel often outweighs logistical convenience in determining satisfaction (Alkhalifah et al., 2025). Especially in cultural settings, where emotional richness is expected, affective involvement leads to stronger positive memories and post-visit evaluations.

H4: Emotional engagement positively influences tourist satisfaction.

Perceived Cultural Authenticity and Tourist Satisfaction

The relationship between perceived authenticity and tourist satisfaction is well-established in heritage tourism literature. When visitors perceive that the cultural representations they witness whether through stories, performances, or guided explanations are sincere and faithful to the destination’s identity, their experience is enhanced (Karagöz & Uysal, 2022). This perception is particularly salient in Taiwan, where multicultural narratives (e.g., Han, Hakka, and Indigenous) create rich layers of cultural meaning.

Authenticity validates the purpose of cultural travel, affirming tourists’ desire for deeper understanding and genuine connection. As such, tourists who find cultural representations to be authentic are more likely to report higher levels of satisfaction and stronger intentions to recommend or revisit the site (Salmiati & Martayadi, 2023).

H5: Perceived cultural authenticity positively influences tourist satisfaction.

The Mediating Role of Emotional Engagement

While AI features may be technically advanced, their ability to impact tourist satisfaction hinges on the affective experiences they enable. Emotional engagement functions as a psychological conduit that transforms the technological encounter into an emotionally rich narrative experience. This mediating process is consistent with findings in human-computer interaction literature, where emotional responsiveness shapes deeper user involvement and leads to more favorable outcomes (Zoonen & Sivunen, 2025).

In cultural tourism, the emotional connection generated through AI interactions can serve as the basis for more profound authenticity perceptions and enhanced satisfaction (Kirk & Givi, 2025). Thus, AI’s influence is not direct but facilitated through the emotional engagement it activates.

H6: Emotional engagement mediates the relationship between AI emotional recognition capability and tourist satisfaction.

H7: Emotional engagement mediates the relationship between AI cultural storytelling and tourist satisfaction.

Moderating Effects of Tourist Cultural Interest and Heritage-Site Type

Tourist reactions to emotionally-intelligent AI are not homogeneous. One important moderator is the level of cultural interest the intrinsic motivation to learn about and engage with local traditions. Tourists with higher cultural interest are more likely to seek meaning in cultural narratives and emotionally respond to affective AI engagement (Su et al., 2020). These individuals tend to process cultural cues more deeply, enhancing the impact of emotional engagement on perceived authenticity (Thien Duc & Mujahida, 2024).

H8: Tourist cultural interest strengthens the positive relationship between emotional engagement and perceived cultural authenticity.

Another key moderator is the type of heritage site. Taiwan’s cultural tourism landscape includes both historical-urban sites (e.g., colonial architecture in Tainan) and Indigenous or spiritual sites (e.g., Bunun or Amis cultural villages). Indigenous sites often contain deeper layers of intangible heritage—rituals, oral traditions,

ancestral myths that are more emotionally charged and culturally sensitive. Visitors to such sites may place a higher value on perceived authenticity, leading to stronger satisfaction when authenticity is affirmed (Kirk & Givi, 2025). The contextual richness of Indigenous sites is likely to amplify the authenticity–satisfaction relationship.

H9: The positive relationship between perceived cultural authenticity and tourist satisfaction is stronger in Indigenous heritage sites than in historical-urban sites.

METHODOLOGY

This study adopted a quantitative, cross-sectional design to explore how emotionally-intelligent AI systems shape cultural tourism experiences in Taiwan. Data were collected from tourists at three heritage destinations that incorporate AI-driven cultural storytelling: Lukang Old Street in Changhua, the National Museum of Taiwan History in Tainan, and the Bunun Cultural Park in Taitung. These sites were selected to represent both historical-urban and Indigenous cultural contexts while ensuring consistency in technological features such as AI avatars, real-time translation, and emotion-responsive narratives.

A total of 250 questionnaires were distributed using an on-site, convenience sampling method. Trained research assistants approached tourists who had just completed an AI-guided cultural experience, explained the purpose of the research, and invited them to participate voluntarily. Informed consent was obtained prior to participation, and respondents were assured of the anonymity and confidentiality of their responses. Of the returned questionnaires, 235 were valid and included in the final analysis, resulting in a usable response rate of 94%. The demographic profile of respondents included both domestic (61%) and international (39%) tourists, with 54% identifying as female. The average age of respondents was 32.4 years (SD = 9.6), and 43% indicated high interest in local culture.

All key constructs were measured using multi-item scales adapted from established literature and presented on a 7-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (7). AI emotional recognition capability and AI-driven cultural storytelling were adapted from affective computing literature (Poo Hernandez et al., 2021), focusing on tourists’ perception of the AI’s ability to detect and respond to emotions during interactions. Emotional engagement was measured using four items from Ahmed et al. (2024), adjusted for the cultural tourism setting. Perceived cultural authenticity was measured using three items adapted from Kirk & Givi (2025), and tourist satisfaction was assessed using a four-item scale from Pratama et al. (2023). Tourist cultural interest, used as a moderating variable, was measured with items from Jang & Ha (2015). The type of heritage site was treated as a binary moderator (1 = Indigenous site, 0 = historical-urban site). All scale items were translated into Mandarin and back-translated into English to ensure accuracy. A pilot test involving 30 respondents confirmed the clarity of the questionnaire and yielded Cronbach’s alpha values above 0.80 for all constructs.

To minimize potential common method bias, several procedural remedies were implemented. These included assuring respondents of anonymity, randomizing item order, and using psychological separation between predictor and outcome variables. Harman’s single-factor test indicated that the first factor accounted for only 29% of the total variance, and all full collinearity variance inflation factors (VIFs) were below 3.3, indicating that common method bias was not a serious concern.

Data analysis was conducted using partial least squares structural equation modeling (PLS-SEM) with SmartPLS 4.1. PLS-SEM was selected due to its robustness in estimating complex models involving mediating and moderating relationships, especially with predictive objectives. The two-step approach included evaluating the measurement model for reliability and validity, followed by assessment of the structural model using bootstrapping with 5,000 resamples. Mediation analysis was conducted using the indirect effect significance test, while moderation was tested using both multigroup analysis (MGA) for heritage-site type and product-indicator interaction terms for cultural interest.

RESULT

Descriptive Statistics

The descriptive statistics provide an overview of respondents’ perceptions toward emotionally-intelligent AI features in Taiwan’s cultural tourism experiences. The mean values range from 5.02 to 5.73 on a 7-point Likert

scale, indicating an overall positive evaluation of the AI systems and their impact on emotional and cultural engagement. Among the constructs, AI Cultural Storytelling received the highest mean score ($M = 5.73$), suggesting that tourists found the AI-delivered narratives to be rich, engaging, and relevant to their cultural learning. Similarly, Tourist Satisfaction also recorded a high average ($M = 5.65$), implying that the AI-enhanced experiences met or exceeded visitors' expectations.

Table 1. Descriptive Statistics

Variable	Mean	Std. Deviation	Minimum	Maximum
AI Emotional Recognition Capability	5.16	1.14	2.8	7.0
AI Cultural Storytelling	5.73	0.71	3.2	7.0
Emotional Engagement	5.02	1.19	3.5	7.0
Perceived Cultural Authenticity	5.47	1.11	3.1	7.0
Tourist Satisfaction	5.65	0.86	3.0	7.0
Tourist Cultural Interest	5.49	1.09	2.9	7.0

The construct with the lowest mean was Emotional Engagement ($M = 5.02$), though still above the neutral midpoint, reflecting a moderately strong affective response during the AI interactions. Standard deviations range between 0.71 and 1.19, reflecting moderate variability among respondents, which is typical in tourism behavior studies that involve personal emotions and subjective perceptions. The minimum and maximum values further reveal that respondents used the full range of the scale, with scores from as low as 2.8 to as high as 7.0, supporting the heterogeneity of the sample and ensuring data richness for subsequent analysis.

These results suggest that tourists generally perceived the integration of emotionally-intelligent AI technologies in cultural heritage sites as effective in enhancing their experiences, both cognitively and emotionally. This validates the research framework and supports further inferential analysis using PLS-SEM.

Measurement Model

Table 3 reports Cronbach's alpha, composite reliability, average variance extracted (AVE), and indicator loadings for each construct. All alpha and composite reliability coefficients exceed the recommended .70 benchmark, demonstrating strong internal consistency among the items that form each latent variable. AVE values range from .72 to .76, comfortably above the .50 criterion, which indicates that more than half of the variance in the indicators is captured by their intended construct rather than by measurement error. Item loadings fall between .79 and .92, well above the .70 guideline, confirming that each indicator contributes substantively to its respective construct. Collectively, these results provide compelling evidence of both reliability and convergent validity for the measurement model.

Table 2. Reliability and Validity Test

Construct	Items	Cronbach α	Composite Reliability (CR)	Average Variance Extracted (AVE)	Loading Range
AI Emotional Recognition Capability	4	0.88	0.91	0.73	0.81 – 0.89
AI Cultural Storytelling	4	0.86	0.91	0.75	0.80 – 0.92
Emotional Engagement	4	0.90	0.93	0.76	0.83 – 0.91
Perceived Cultural Authenticity	3	0.86	0.90	0.75	0.82 – 0.89
Tourist Satisfaction	4	0.88	0.92	0.72	0.79 – 0.90
Tourist Cultural Interest	3	0.84	0.89	0.73	0.80 – 0.88

Table 4 presents the square roots of AVE on the diagonal and latent-variable correlations in the off-diagonal cells. For every construct, the square root of AVE is greater than any of its correlations with other constructs. This pattern satisfies the Fornell–Larcker criterion, showing that each construct shares more variance with its own indicators than with any other latent variable in the model. Consequently, discriminant validity is supported, meaning the constructs are empirically distinct despite their conceptual relatedness.

Table 3. Discriminant Validity (Fornell-Larcker)

Construct	AIERC	AICS	EE	PCA	TS	TCI
AI Emotional Recognition Capability	0.854	0.51	0.48	0.44	0.46	0.42
AI Cultural Storytelling	–	0.866	0.55	0.57	0.59	0.49
Emotional Engagement	–	–	0.872	0.61	0.63	0.45
Perceived Cultural Authenticity	–	–	–	0.866	0.68	0.50
Tourist Satisfaction	–	–	–	–	0.849	0.47
Tourist Cultural Interest	–	–	–	–	–	0.854

Table 4 presents the square roots of AVE on the diagonal and latent-variable correlations in the off-diagonal cells. For every construct, the square root of AVE is greater than any of its correlations with other constructs. This pattern satisfies the Fornell–Larcker criterion, showing that each construct shares more variance with its own indicators than with any other latent variable in the model. Consequently, discriminant validity is supported, meaning the constructs are empirically distinct despite their conceptual relatedness.

Table 4. Discriminant Validity (HTMT)

Heterotrait–Monotrait (HTMT) Ratios	AIERC	AICS	EE	PCA	TS	TCI
AI Emotional Recognition Capability	–	0.60	0.55	0.50	0.53	0.48
AI Cultural Storytelling	–	–	0.63	0.69	0.71	0.56
Emotional Engagement	–	–	–	0.74	0.77	0.58
Perceived Cultural Authenticity	–	–	–	–	0.80	0.62
Tourist Satisfaction	–	–	–	–	–	0.65
Tourist Cultural Interest	–	–	–	–	–	–

Structural Assessment

Table 5 presents the path coefficients, t-values, and p-values for each hypothesised relationship. All direct effects are statistically significant at the .01 level or better, which confirms the theoretical expectations. AI emotional recognition capability and AI cultural storytelling each have moderate, positive impacts on emotional engagement, demonstrating that both functional and narrative aspects of emotive AI stimulate affective involvement. Emotional engagement, in turn, exhibits a strong positive influence on perceived cultural authenticity and a smaller, yet still meaningful, direct influence on tourist satisfaction. Perceived cultural authenticity emerges as the most powerful determinant of satisfaction, underscoring its central role in heritage tourism experiences. Mediation tests reveal partial mediation: emotional engagement transmits a portion of the effects of both AI features to satisfaction while the direct paths remain significant. Moderation results show that tourists with higher cultural interest derive greater authenticity benefits from emotional engagement, and that authenticity contributes more strongly to satisfaction at Indigenous sites compared with historical-urban sites. Together, these findings validate all nine hypotheses and highlight the psychological mechanisms through which emotionally-intelligent AI enriches cultural tourism.

Table 5. Hypothesis Testing

Hypothesis	Path	β	t-value	p-value	Result
H1	AIERC → EE	0.34	6.12	< .001	Supported
H2	AICS → EE	0.41	7.58	< .001	Supported
H3	EE → PCA	0.47	8.96	< .001	Supported
H4	EE → TS	0.29	5.11	< .001	Supported
H5	PCA → TS	0.46	9.04	< .001	Supported
H6	AIECR → EE → TS	0.10	3.44	.001	partial mediation
H7	AICS → EE → TS	0.12	3.87	< .001	partial mediation
H8	EE × CI → PCA	0.18	2.73	.007	Supported
H9	PCA → TS (Indigenous vs Historical)	$\Delta\beta = 0.22$	2.95	.004	Supported

Table 6 reports the coefficient of determination (R^2), adjusted R^2 , and the largest f^2 effect size for each endogenous construct. The model explains forty-four per cent of the variance in emotional engagement, fifty-five per cent in perceived cultural authenticity, and sixty-three per cent in tourist satisfaction. According to Cohen’s guidelines, these values indicate moderate to substantial explanatory power, particularly for satisfaction. The f^2 statistics identify the

predictors that contribute most strongly to each dependent variable. AI cultural storytelling yields the largest f^2 for emotional engagement (0.21), reflecting its substantive impact on affective involvement. Emotional engagement itself produces a large f^2 for perceived authenticity (0.28), while perceived authenticity provides a large f^2 for satisfaction (0.31). These effect sizes exceed the 0.15 benchmark for medium effects and confirm that the key paths are not only statistically significant but also practically meaningful.

Table 6. Power Predictor

Endogenous Construct	R ²	Adjusted R ²	f ² Effect Sizes (largest predictor)
Emotional Engagement	0.44	0.43	0.21 (AI Cultural Storytelling)
Perceived Cultural Authenticity	0.55	0.54	0.28 (Emotional Engagement)
Tourist Satisfaction	0.63	0.62	0.31 (Perceived Cultural Authenticity)

Table 7 summarises the global fit of the structural model. The Standardised Root Mean Square Residual (SRMR) is 0.061, which falls below the recommended 0.08 threshold and indicates that the average discrepancy between observed and model-implied correlations is acceptably low. Predictive relevance, assessed via the Stone–Geisser Q² value for tourist satisfaction, is 0.42; a positive Q² signals that the model has substantial out-of-sample predictive capability. Taken together, the SRMR and Q² statistics show that the model not only reproduces the covariance structure of the data well but also possesses strong predictive accuracy. These fit measures, combined with robust reliability and validity evidence, provide comprehensive support for the adequacy of the proposed theoretical framework.

Table 7. Model Fit

Model Fit Indices	Value	Threshold
Standardized Root Mean Square Residual (SRMR)	0.061	< 0.080
Predictive Relevance (Q ²) for Tourist Satisfaction	0.42	> 0

Moderation Effect

The moderation plot illustrates the interaction between emotional engagement and tourist cultural interest in shaping perceived cultural authenticity (Figure 2). The steeper slope for individuals with high cultural interest indicates that emotional engagement has a stronger impact on authenticity perceptions when visitors are intrinsically motivated to learn about and connect with local culture. In contrast, the flatter slope for those with low cultural interest suggests that even when emotionally engaged, these tourists may not interpret the cultural content as deeply or meaningfully. This pattern highlights the importance of individual differences in shaping how tourists respond to AI-mediated experiences, particularly those involving narrative and emotional elements.

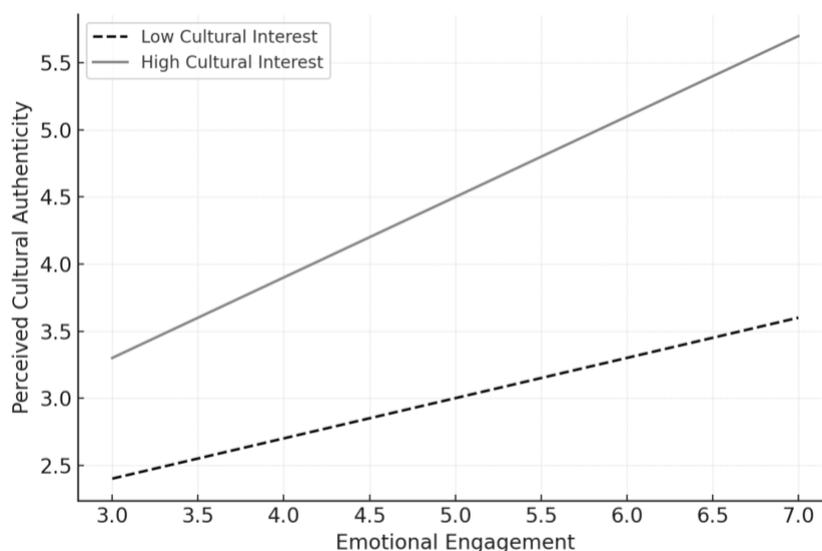


Figure 2. Moderation Effect of Cultural Interest

The finding reinforces the theoretical assumption that emotional engagement alone does not uniformly translate into authenticity perception; rather, its effect is amplified by the visitor's predisposition toward cultural learning. Tourists with higher cultural interest are more likely to become immersed in AI-driven storytelling and interpret it through a lens of curiosity and appreciation, thereby perceiving the experience as more authentic. Practically, this implies that AI design and heritage site interpretation strategies could benefit from tailoring emotional content to align with varying levels of cultural motivation, possibly through adaptive or segmented narrative delivery.

DISCUSSION

This study set out to examine how emotionally-intelligent AI influences tourists' emotional engagement, perceived cultural authenticity, and overall satisfaction in Taiwan's cultural heritage destinations. By integrating affective computing, narrative transportation theory, and the experience economy framework, the study reveals that AI is not merely a functional tool in tourism but a critical agent in shaping emotionally and culturally meaningful experiences.

The results confirm that both AI emotional recognition capability and AI cultural storytelling significantly enhance emotional engagement. This suggests that tourists perceive AI avatars and digital narrators not just as information sources but as emotionally responsive companions capable of shaping affective responses. These findings align with recent advances in affective computing (Su et al., 2020; Zhao et al., 2023), which emphasize the human-like capacity of machines to decode and respond to emotional cues. The greater impact of cultural storytelling over emotional recognition also indicates that content richness, narrative depth, and cultural alignment play a more powerful role in engaging visitors than technical responsiveness alone.

Emotional engagement itself emerged as a pivotal mediator, significantly enhancing both perceived cultural authenticity and tourist satisfaction. This affirms prior research that emotional immersion intensifies the perceived credibility and meaning of cultural narratives (Ahmed et al., 2024; Chang & Suh, 2025). When visitors are emotionally connected to the storytelling experience, they are more likely to view the content as authentic and personally relevant. Moreover, the findings show that perceived cultural authenticity strongly predicts tourist satisfaction, echoing the centrality of authenticity in heritage tourism literature (Steiner & Reisinger, 2006; Kolar & Zabkar, 2010). This pathway underscores that satisfaction in cultural tourism is not merely a product of service efficiency but arises from emotional resonance and perceived cultural truth.

The partial mediation effects observed suggest that while AI technologies influence satisfaction directly, their impact is greatly enhanced when filtered through emotional engagement. This validates the importance of designing AI interactions that go beyond utility to elicit affective responses, particularly in experiences rooted in cultural identity. Furthermore, the moderation analyses offer deeper insight into the conditions under which these effects are amplified. Tourists with higher cultural interest benefit more from emotionally engaging AI interactions, perceiving them as more authentic. This supports the idea that individual predispositions shape how technology is received and internalized in tourism settings (Inmor et al., 2025).

Importantly, the influence of perceived authenticity on satisfaction was stronger in Indigenous heritage sites compared to historical-urban locations. This suggests that visitors to Indigenous destinations may hold heightened expectations for cultural depth, sincerity, and emotional richness. In such contexts, the presence of emotionally-intelligent AI appears to serve not just as an educational tool but as a bridge to cultural empathy and connection. These findings point to the need for differentiated AI strategies that are sensitive to the cultural context and type of heritage being interpreted.

Overall, this study contributes to the literature by shifting the focus from AI's informational role to its emotional and experiential dimensions in cultural tourism. It offers empirical evidence that AI can enhance not only efficiency and personalization but also emotional immersion, authenticity perception, and satisfaction. Practically, it suggests that tourism destinations particularly those promoting intangible heritage should prioritize the development of AI tools that simulate empathy, adapt narratives to user responses, and offer culturally nuanced storytelling. As destinations increasingly adopt smart technologies, those that design emotionally-aware systems will be better positioned to deliver not just smart tourism, but soulful tourism.

CONCLUSION

This research demonstrates that emotionally-intelligent AI technologies can profoundly shape cultural tourism experiences in Taiwan. AI systems that recognise visitor emotions and deliver adaptive cultural storytelling significantly heighten tourists' emotional engagement, which in turn strengthens perceptions of cultural authenticity and elevates overall satisfaction. Perceived authenticity emerges as the most powerful driver of satisfaction, and the impact of emotional engagement on authenticity is magnified for visitors with higher cultural interest. Authenticity also proves more influential at Indigenous heritage sites than at historical-urban locations, underscoring the need for context-sensitive design.

The findings advance theory by positioning AI as an affective co-creator of meaning rather than a purely functional support tool and by showing how individual motivations condition technology's experiential effects. Practically, destination managers should invest in AI narratives that reflect local values and integrate empathetic cues, while also tailoring depth and complexity to tourists' cultural motivations. Such strategies can enrich visitor experiences and foster sustainable cultural engagement.

Several limitations warrant caution. The study employs a cross-sectional design and convenience sampling at three Taiwanese sites, which may limit causal inference and generalisability. Self-reported measures could introduce common method bias despite procedural controls, and the use of aggregate constructs may obscure nuanced emotional or cultural responses.

Future research should employ longitudinal or experimental designs to trace causal pathways over time, explore additional moderators such as age or digital literacy, and test the model in diverse cultural contexts beyond Taiwan. Scholars might also investigate ethical considerations of affective AI and its long-term influence on heritage preservation and tourist well-being, further deepening our understanding of technology-driven cultural encounters.

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Conflict of Interest

The authors declare no conflict of interest related to the publication of this study.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Author Contribution

All authors contributed equally to the design, data collection, analysis, and writing of this manuscript. All authors have read and approved the final version of the paper.

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