The adoption of the Metaverse in cultural tourism: Immersive experience or wishful thinking?

Journal:	*Consumer Behavior in Tourism and Hospitality*
Manuscript ID	CBTH-09-2024-0324.R2
Manuscript Type:	Research Paper
Keywords:	metaverse, virtual reality, augmented reality, cultural tourism, awareness, immersive experience

The adoption of the Metaverse in cultural tourism: Immersive experience or wishful thinking?

Abstract

Purpose: This study explores the potential of the Metaverse in cultural tourism, explicitly examining whether it offers truly immersive experiences or remains an unrealistic ambition. The research aims to assess the effectiveness of the Metaverse in authentically conveying cultural narratives and enhancing tourists' engagement with virtual environments.

Design: Data collection was done using the survey method, which was analyzed using structural equation modelling (SEM) to evaluate the effects of awareness, cultural sensitivity, and immersive experiences in cultural tourism. The sample included individuals familiar with virtual tourism platforms and their potential applications in the Metaverse.

Findings: The study highlights the significant role of awareness and cultural elements in improving immersive experiences within the Metaverse. The results indicate that cultural sensitivity and authenticity in virtual environments influence tourists' behavioural intentions to revisit physical sites and engage in tourist activities. The findings underscore that immersive experiences are a key factor in driving future tourism behavior in both virtual and physical realms.

Originality/value: This research advances the understanding of the intersection between emerging technologies and cultural tourism, applying the Theory of Planned Behavior (TPB) to predict tourist engagement with virtual platforms. The study contributes new insights into how the Metaverse can transform tourist experiences. It comprehensively evaluates its immersive potential and its ability to enhance cultural tourism through digital innovation.

Keywords: Metaverse, Virtual Reality, Augmented Reality, Cultural tourism, Awareness, Immersive experience.

1. Introduction

The Metaverse is ushering in a new phase of digital transformation, characterized by persistent, interactive, and shared virtual spaces that already shape education, healthcare, retail, and entertainment (Mystakidis, 2022; Dwivedi et al., 2023). Recent scientometric reviews show that metaverse ecosystems accelerate cross-sector innovation by creating dense knowledge and

value networks (Lee, Lee & Choi, 2023). Experiential simulations and remote diagnostics blur physical–to–digital boundaries in these domains, offering deeper engagement and broader participation (Han et al., 2022; Flavián et al., 2023).

Tourism—an industry built on sensory immersion and storytelling—is experiencing a similar shift (Godovykh et al., 2022; Buhalis, 2023). Metaverse-enabled platforms now deliver 360-degree heritage tours, gamified encounters, and AI-assisted guides that open destinations otherwise distant, fragile, or crowd-constrained (Siddiqui et al., 2022; Vinnakota et al., 2023). Experimental studies link metaverse presence and flow to a stronger destination image, higher willingness to pay, and increased conservation support (Tussyadiah & Wang, 2023; Jung & Dieck, 2023). The COVID-19 pandemic accelerated adoption, turning virtual festivals and reconstructed historic cities from curiosities into mainstream substitutes for physical travel (Gössling et al., 2020; Buragohain et al., 2024) and reframing motivation around experiential presence rather than physical mobility (Yung et al., 2021). Post-2022 investment by destination-marketing organizations and global brands confirms that virtual presence is now a strategic—rather than stop-gap—channel (Buhalis, Leung & Lin, 2023).

Yet critical knowledge gaps persist. First, we know little about how two cognitive precursors—awareness of immersive technology and cultural sensitivity toward heritage content—jointly shape perceived presence and authenticity inside metaverse experiences (Kim & Hall, 2019; Rickly, 2022). Second, the affective–motivational construct of wishful thinking, proposed as a bridge from virtual engagement to real-world behavior, remains untested mainly in tourism (Stylidis, 2022). Third, authenticity dilemmas are amplified in emerging markets, where complex narratives risk digital simplification or stereotyping (Chen & Quoquab, 2024), and design guidelines for culturally respectful metaverse experiences are still missing (Neuhofer & Magnini, 2022).

Addressing these lacks is pivotal for theory and practice. Theoretically, integrating affective pathways such as wishful thinking extends the Technology-Acceptance lineage by adding an emotional bridge that links attitudes to behavioral intent—an approach consistent with affect-augmented TPB models (Bagozzi, 1992). Destination managers require evidence-based principles that balance technological novelty with cultural integrity when they craft metaverse products for marketing, education, and crowd-management purposes.

Guided by the Theory of Planned Behaviour (TPB) (Ajzen, 1991), this study proposes that (a) awareness and cultural sensitivity positively influence immersive experience, (b) immersive experience heightens both wishful thinking and the intention to revisit physical sites, and (c) immersive experience mediates the effects of awareness and cultural sensitivity on these outcomes. We test the framework using survey data collected between July and November 2023 from 324 metaverse users in India—a setting with one of the world's fastest-growing XR consumer bases and multiple UNESCO sites threatened by over-tourism (Kaur, 2023). Participants were recruited through purposive and snowball sampling, and were eligible if they had used XR technologies (e.g., VR/AR platforms or Metaverse environments) to engage with cultural tourism experiences within the previous 12 months.

Partial Least Squares Structural Equation Modelling (PLS-SEM) assesses direct and mediation paths. We focus on India because, despite the increasing global interest in metaverse-based tourism, most empirical research has predominantly focused on technologically advanced and Western markets (e.g., South Korea, Japan, USA, and select EU countries), overlooking the specific socio-cultural and infrastructural dynamics of emerging economies (Tussyadiah & Wang, 2023; Jung & Dieck, 2023). This is particularly problematic, as cultural tourism in emerging economies often represents a key pillar of economic development, identity reconstruction, and international visibility (UNWTO, 2022).

Additionally, recent calls in the literature emphasize the need to understand better how digital transformation unfolds in tourism sectors characterized by limited resources, infrastructural gaps, and culturally embedded practices (Bahulis, 2023; Zhang & Quoquab, 2023). For instance, Laachach et al. (2024) show how technological readiness and cultural representation issues in North African cultural sites critically affect the potential for immersive tourism via metaverse platforms. Therefore, addressing the digital–cultural interplay in under-researched regions is essential to avoid universalizing findings and to develop context-sensitive frameworks for immersive cultural experiences.

The study contributes in three ways. Conceptually, it uncovers the cognitive (awareness, cultural sensitivity) and affective (wishful thinking) mechanisms that translate virtual immersion into real-world tourism intentions. Empirically, it offers user-level evidence from an emerging-economy context, complementing research centered on high-income destinations. Practically, it provides actionable design recommendations—such as embedding local storytellers in virtual scripts and layering authenticity cues—for developers and destination

managers seeking culturally sensitive, ethically grounded metaverse experiences capable of stimulating sustainable visitation to physical heritage sites.

The paper proceeds as follows: Section 2 reviews the relevant literature; Section 3 outlines the research methodology; Section 4 presents the findings; Section 5 discusses key insights and implications; and Section 6 concludes with future research directions.

2. Literature Review

2.1 Metaverse in Cultural Tourism

Cultural tourism is a blend of exploring and interacting with the arts, traditions, and heritage of a specific culture or community and is evolving rapidly, pulling the attention of various researchers, academicians, and professionals (Richards, 2018). The economic implications of cultural tourism include creating jobs and revenue generation (Richards, 2007). For a long time, cultural tourism has focused on striking a balance between contemporary visitors' needs and preserving cultural legacy (Buhalis et al., 2015). Experiences of cultural tourism have been improved by technologies like AR and VR (Hobson and Williams, 1995). However, these technologies do not reach the immersive and interactive capabilities that the Metaverse promises. Kim and Hall (2019) emphasized the need for authenticity in cultural tourism. They highlighted the knowledge vacuum regarding the interaction between cultural tourism and the Metaverse as technology enhances displays of images of everyday life in the real world (Dwivedi et al., 2022). Together, these studies highlight the evolution of cultural tourism toward more immersive and technologically mediated experiences, setting the stage for understanding how the Metaverse may transform tourist engagement.

Adel (2023) highlighted the potential of the Metaverse in cultural tourism through its immersive experiences. Furthermore, Bahulis (2023) shed light on the need to balance the tourists" expectations with cultural preservation. Fan et al. (2022) add to the existing research on VR and AR and how they affect travel experiences. Murtia et al." s (2023) study also explores the impact of immersive metaverse experiences on business and tourism. This multidisciplinary approach enhances understanding the possible commercial and economic consequences of including the Metaverse in cultural tourism. These studies collectively suggest that the Metaverse is not merely a technological tool, but a cultural interface that shapes both economic outcomes and experiential authenticity.

Recent studies further expand these insights by examining how the Metaverse fosters persistent, co-creative, and emotionally engaging cultural interactions (Mystakidis, 2022; Gretzel, Xiang & Koo, 2022). While high-fidelity digital environments can deepen cultural learning, scholars like Chen and Quoquab (2024) stress the importance of grounding such experiences in local narratives to avoid algorithmic flattening cultural nuance (Rickly, 2022). This underscores that technological advancement must be matched by cultural sensitivity to avoid oversimplified or distorted representations.

Moreover, Tussyadiah and Wang (2023) link the feeling of presence in metaverse environments with stronger intentions for cultural conservation, while Jung and Dieck (2023) highlight that AI-guided narration improves engagement and knowledge retention. This link between immersive engagement and conservation attitudes highlights how the Metaverse may influence not only experiences but also behavioral intentions—an essential step toward hypothesis development.

While the growing body of literature underscores the integration and evolving role of the Metaverse in cultural tourism, there is room for more studies to understand how the Metaverse can authentically convey cultural experiences and narratives in a tourism context. There is a growing need for more research to guide sustainable management techniques, promote meaningful cultural interactions, and combat new issues as cultural tourism develops in the modern tourism scenario (Richards, 2018), such as Metaverse (Gursoy et al., 2022). Specifically, two main gaps emerge: first, how tourists' awareness of immersive technology and their cultural sensitivity jointly shape perceived authenticity in virtual environments, and second, the need to investigate these dynamics in emerging-economy contexts, where digital representations may risk simplification or stereotyping (Chen & Quoquab, 2024). Addressing these gaps is crucial to developing inclusive, responsible, and impactful forms of cultural tourism in the Metaverse. To capture these aspects, this study builds on the Theory of Planned Behavior as the most suitable theoretical approach to capture how individual perceptions and social dynamics influence tourists' behavioral intentions in immersive, digitally mediated contexts.

2.2 Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) explains and predicts human behaviors by focusing on three main variables: attitudes toward the behavior, subjective norms, and perceived

behavioral control (Ajzen, 1985; Zhuang et al., 2021). Introducing TPB allows us to anchor the fragmented evidence from prior studies into a structured behavioural framework.

TPB has been extensively used to understand tourists" behaviors, including location selection, trip planning, and activity participation. It is influenced by destinations, subjective standards, societal factors, and perceived behavioral control (Mariani and Predvoditeleva, 2019). TPB also provides insights into tourists" intentions and behaviors regarding cultural events and activities, influenced by their perception of authenticity (Wang et al., 2021), subjective standards, and perceived behavioral control (Xu et al., 2023). The other perspective highlighted in previous studies is that the Metaverse is perceived as easy to use; it fosters a sense of efficiency (Jafar et al., 2023) by helping users quickly access relevant information and enjoy seamless learning or exploration. Its usefulness - such as delivering accurate facts, immersive storytelling, and virtual tours - enhances its effectiveness in meeting users" specific needs and preferences (Pyae et al., 2023). When users recognize these functional benefits (Torres et al., 2022), their attitude toward using the Metaverse becomes more positive.

In line with TPB, such technological affordances contribute to forming positive behavioral beliefs, strengthening tourists' attitudes toward engaging in virtual heritage experiences (Yoo, Lee & Gretzel, 2022). Moreover, immersive narratives and social interaction features align with subjective norms by shaping perceived social expectations and increasing psychological involvement (Cheong et al., 2023).

In this regard, metaverse applications extend TPB in two directions. First, platform ease of use and usefulness are antecedents of favorable attitudes by boosting hedonic and utilitarian motivations. Second, immersive storytelling and avatar co-presence positively affect subjective norms and users' perceived control over cultural exploration (Chung et al., 2018; Buhalis & Karatay, 2022). Integrating immersive technologies like VR and AR in cultural tourism experiences might greatly influence their behavior intentions (Buhalis and Karatay, 2022). It can also affect the tourists' desire to engage in cultural tourism using Metaverse (Chung et al., 2018). This is particularly evident when tourists perceive themselves as capable of navigating the virtual environment, which enhances perceived behavioral control—a key predictor of intention in the TPB model (Ajzen & Fishbein, 2005; Kim & Hall, 2020). Tourists" intentions to engage in cultural tourism in the Metaverse can also be affected by their awareness of the technology and immersive experiences and if they find metaverse technologies easy to use, which further can influence their participation in such activities (Lee et al., 2023). Lee, Lee & Choi (2023) found that intuitive interfaces raise metaverse adoption among first-time users,

while Neuhofer and Magnini (2022) argue that culturally respectful design enhances the moral legitimacy of virtual experiences—an emerging attitudinal factor in cultural consumption. Such design considerations also shape descriptive and injunctive norms by influencing what users perceive as appropriate or expected behavior in digital heritage spaces (Choe, Jang & Park, 2021). Taken together, these studies show that TPB offers a solid explanatory lens to connect tourists' cognitive beliefs (awareness), cultural values (sensitivity), and behavioral outcomes (intentions).

Building on this, we position "awareness" and "cultural sensitivity" as key antecedents shaping TPB attitudes and introduce "wishful thinking"—an affective-motivational bias (Bagozzi, 1992; Stylidis, 2022)—as an additional mechanism that may translate immersive enjoyment into revisit intention. This conceptual extension strengthens the theoretical bridge between immersive experiences and behavioral intentions, paving the way for hypothesis development. This inclusion acknowledges that, beyond rational planning, emotional and aspirational drivers can mediate intention formation in virtual tourism, aligning with calls for extending TPB to include affective and symbolic dimensions (Han et al., 2019; Jiang, Ramkissoon & Mavondo, 2023). In the TPB, attitudes are influenced by awareness as a cognitive belief and by cultural sensitivity as value alignment; subjective norms stem from perceived social approval of using the Metaverse for cultural tourism, particularly through avatar co-presence and AI-based narratives that shape what users think others expect of them; perceived behavioral control is enhanced by ease of use, digital literacy, and moral legitimacy when heritage is represented authentically; and wishful thinking functions as an affective forecast that modulates both attitude and perceived behavioral control.

2.3 Awareness

Perceived authenticity relates to the degree to which travelers think that what is presented through the cultural imagery and stories lived within the Metaverse is valid, respectful, and authentic relative to the true culture (Kim and Hall, 2019; Wang et al., 2021). Perception is essential in cultural tourism, where tourists crave entertainment and valid and sincere encounters with other cultures. From the TPB perspective, awareness of the technological environment can be seen as a key antecedent influencing tourists' attitudes toward using immersive tools in cultural contexts. The more knowledgeable and digitally literate users are, the more favorable their attitudes become toward metaverse-enabled cultural tourism experiences. This aligns with TPB's emphasis on cognitive beliefs as the foundation of

attitudinal formation, positioning awareness as a direct driver of how tourists evaluate immersive experiences.

Chen (2025) discusses how the Metaverse continues beyond geographical confines to produce immersive, interactive, and customizable tourism spaces, highlighting the ability to amplify cultural narratives and engagement. Zhang and Quoquab (2023) provide evidence from urban China, highlighting how metaverse applications can enhance destination branding, tourist decision-making, and experiential authenticity, thereby directly influencing attitude formation —a core TPB construct. Their research aligns with the assumption that digital presence and awareness influence tourists' perceptions and revisit intentions. Furthermore, Laachach, Mumtaz, and Andaloussi (2024) provide a qualitative examination of the opportunities and challenges in metaverse tourism, including technological constraints, issues of cultural representation, and user preparedness—topics relevant to the present study's constructs of cultural sensitivity and wishful thinking. Recent studies further underscore how users' awareness of digital affordances—such as co-presence, interactivity, and sensory richness—influence their ability to perceive metaverse environments as culturally meaningful (Tussyadiah and Wang, 2023). Enhanced digital literacy and familiarity with immersive platforms have also been found to elevate perceived authenticity and flow experiences, thereby shaping revisit intentions (Gretzel, Xiang, & Koo, 2022; Kim, Kim, & Hall, 2023). The presented studies clarify how awareness functions as a cognitive gateway, shaping both the interpretation of digital cultural experiences and the subsequent attitudinal and behavioral responses

Thus we propose:

H1: Awareness significantly impacts Immersiveness

2.4 Culture

Cultural sensitivity, which involves awareness, understanding, and respect for diverse cultures and their practices, values, and beliefs, is crucial in research on indigenous peoples and effective emergency responses (Schuler et al., 1999). Cultural sensitivity is crucial for providing authentic experiences and fostering strong relationships between tourists and cultural sites (Viken et al., 2021). It also significantly shapes tourists" immersive experiences in cultural tourism. In the Metaverse, cultural sensitivity extends into virtual spaces, ensuring authentic and respectful interactions among users from diverse backgrounds. From a TPB perspective,

cultural sensitivity plays a pivotal role in shaping both subjective norms and attitudes toward virtual cultural tourism. Individuals with high cultural sensitivity are more likely to internalize socially expected behaviors in immersive environments, perceiving respectful interaction and preservation of heritage as socially endorsed values (subjective norms). Moreover, they tend to form more favorable attitudes toward the use of immersive technologies when these are perceived as culturally inclusive and respectful. This positioning clarifies cultural sensitivity as a normative and value-based driver, complementing awareness in influencing user engagement and immersive perceptions.

Immersive technology blurs the boundary between the real and virtual worlds, providing users with a deep sense of presence (Slater and Wilbur, 1997). Tourists' awareness and perception play a critical role in their immersive experiences in tourism settings. These immersive experiences can enhance awareness of lesser-known tourist destinations. Vishwakarma et al. (2020a) investigated how awareness and perception impact tourist immersive experiences in India, highlighting the role of information and knowledge in shaping visitor interactions with tourist destinations. The likelihood of visiting a tourist destination increases, and perceptions are more positive (Hyun and O'Keefe, 2012) when tourists feel a strong sense of presence. Tourism experiences are positively impacted by presence through the mediation of psychological reactions and value perception, making it a crucial component of immersive technology (Fan et al., 2022). Increased exposure enhances perceptions over time (Slikker and Koens, 2015; Vishwakarma et al., 202b). One of the main factors enriching immersive experiences is the involvement of the culture (Shin, 2018). According to Flavián et al. (2019), immersive technology significantly heightens the level of presence, with immersion being a precursor to presence depending on the technology used. In metaverse tourism, cultural sensitivity enhances perceived behavioral control by providing users with confidence and preparedness to navigate intercultural content and ethical dilemmas. When tourists feel morally aligned with the content and its presentation, they are more likely to perceive the interaction as manageable and appropriate—strengthening their behavioral intention through a higher sense of control. Recent studies emphasize that cultural sensitivity enhances presence and fosters moral legitimacy and respect for heritage, both of which are pivotal to immersive engagement (Neuhofer & Magnini, 2022). This moral legitimacy can reinforce both subjective norms (perceived social approval) and attitudes (value alignment), contributing to tourists' intention to engage and revisit. AI-driven customization in metaverse cultural spaces enables users to tailor narratives that align with their values and background, thereby improving cross-cultural

understanding and perceived realism (Jung & Dieck, 2023). Collectively, these studies highlight how cultural sensitivity shapes both the affective and normative dimensions of TPB, reinforcing its role as a determinant of immersive experiences. Thus, we hypothesize that:

H2: Culture significantly impacts Immersiveness

2.5 Perceived Immersiveness

Perceived immersiveness indicates the degree to which people feel fully engaged and immersed in a virtual environment. In the Metaverse, this encompasses the sensory, emotional, and cognitive investment tourists experience when interacting with virtual cultural environments (Fan et al., 2022; Slater and Wilbur, 1997). Immersive technologies, such as AR and VR, provide a sense of presence, which is regarded as a prerequisite for immersiveness (Flavián et al., 2019). From a TPB perspective, perceived immersiveness is a powerful driver of both attitudinal and control beliefs. First, when users experience high levels of narrative engagement, spatial presence, and sensory realism, they tend to evaluate the activity more favorably (positive attitude toward behavior). Second, immersive features may increase tourists' perceived behavioral control, particularly their confidence in navigating, understanding, and benefiting from metaverse-based cultural experiences. This dual cognitive–experiential pathway positions immersiveness as the bridge between pre-existing beliefs (awareness and culture) and behavioral intentions, aligning closely with TPB's sequential logic. These positive evaluations, in turn, strengthen their behavioral intentions—such as revisiting the physical site. Based on the TPB model, perceived immersiveness may affect attitude toward behavior, as a highly immersive experience can stimulate more positive evaluations of cultural tourism within the Metaverse. Visitors who experience high engagement and presence are likely to form positive attitudes toward engaging in such experiences.

Furthermore, perceived behavioral control—perceived belief in one's ability to use and enjoy metaverse technologies—can be enhanced by positive immersive experiences, confirming behavioral intentions to visit the site physically. As proposed by Tussyadiah and Wang (2023), immersive cultural simulations promote self-efficacy and reflective engagement, both of which contribute to a higher perceived ability to act upon the intention—core to the TPB model. This is particularly relevant when users move from virtual engagement to real-world action, such as visiting a physical site. Additional studies show that presence and spatial co-location with avatars increase emotional connectedness and support stronger memory encoding, making the experience not only engaging but also more enduring (Wang & Huang, 2023). In particular,

multisensory feedback and narrative immersion have been identified as critical enablers of psychological investment in heritage-based VR environments (Tussyadiah et al., 2023). Neuhofer and Magnini (2022) also emphasize that moral and emotional resonance, when elicited through immersive storytelling, can drive more ethically grounded attitudes and longer-term behavior, such as repeat visitation and cultural support. Consistent with Ajzen's (1991) logic, we conceptualize immersiveness as the immediate experiential outcome of exposure to metaverse content. It follows the cognitive beliefs (awareness and cultural sensitivity) but precedes—and partly triggers—the TPB's evaluative beliefs (Attitude) and control beliefs (Perceived Behavioural Control). In other words, immersiveness operates as an experiential "bridge" that is post-cognitive yet pre-evaluative. This theoretical positioning justifies testing immersiveness as a mediator linking individual perceptions to revisit intentions.

H3: Immersiveness significantly impacts physical site revisit intentions.

2.6 Wishful Thinking

The immersive experiences offered to tourists play a significant role in shaping their behavioral intentions to revisit physical and cultural sites. Rasoolimanesh et al. (2021) found that visitor engagement, authenticity, and destination image significantly influence heritage tourists" intentions to revisit and spread electronic word of mouth (WOM), with Memorable Tourism Experiences (MTE) acting as a mediator. Tsai (2022) further explored how the perception of holistic presence and happiness impacts visit intentions. Similarly, Wang et al. (2022) investigated the connections between virtual reality tourism involvement (VRTI), place attachment, and behavioral intentions using involvement theory. They found VRTI positively influenced place attachment, with pleasure and sign positively affecting behavioral intentions. Yuan et al. (2023) explored the impact of virtual reality (VR) on tourism experiences and behavioral intentions, highlighting VR's potential to enhance engagement and co-creation within an interactive environment. These studies collectively demonstrate how immersive experiences can shape emotional and motivational states that precede behavioral action, aligning with TPB extensions that incorporate affective forecasting.

Wishful thinking has been described as a cognitive bias in which judgments and expectations are influenced by what people want, rather than by rational reasoning (Price, 2000). Wishful thinking appears in tourism, particularly in virtual and immersive settings, when people develop idealized expectations of a destination through emotion-based immersion and anticipated satisfaction (Henning and Vorderer, 2001). Virtual metaverse experiences—

through the richness of senses, depth of story, and escapist allure—can psychologically blur the distinction between reality and desire, leading to an overestimation of the prospects of realizing one's cultural or travel dreams. From the lens of the TPB, wishful thinking can be viewed as an affective-cognitive antecedent that subtly modifies both attitudes and perceived behavioral control. That is, emotionally rich simulations enhance users' favorable evaluations of the behavior (e.g., traveling to the destination) while increasing their confidence in realizing the experience, even if irrationally so. This results in elevated behavioral intentions despite objective constraints. This "motivated reasoning" (Kruglanski, 1996) is particularly salient in virtual tourism, where perceived presence and involvement generate effectively rich travel simulations. By integrating wishful thinking, we address a critical affective dimension that traditional TPB models often overlook, offering a more comprehensive view of intention formation. VR devices facilitate escapism into virtual worlds, creating stronger emotional connections (Henning and Vorderer, 2001). This form of escapism can intensify immersive experiences as individuals imagine and hope for desired outcomes, thereby deepening customer engagement. In this context, Stylidis (2022) identifies wishful thinking as a key mediator linking affective immersion and projected visit intentions. Recent work by Bagozzi et al. (2023) conceptualizes wishful thinking as a form of affective forecasting in virtual heritage, showing that anticipated enjoyment predicts post-immersion satisfaction. Similarly, Neuhofer & Magnini (2022) argue that emotional congruence between visitor identity and immersive cultural content fosters exaggerated expectations, especially among inexperienced users. Given these considerations, we propose the following hypotheses:

H4: Immersiveness significantly impacts Wishful Thinking

3. Methodology

This study adopts a quantitative approach (Fan et al., 2022), which includes Structural Equation Modelling (SEM) and the survey method. SEM proves to be a strong statistical method for investigating complex interactions between latent variables. This research uses SEM to evaluate a model proposed to include both direct and mediation effects. Confirmatory factor analysis (CFA) to assess the validity and reliability of the measurement scales (Hu & Bentler, 1999).

The study employed a purposive sampling strategy (Patton, 1990), complemented by snowball sampling (Biernacki & Waldorf, 1981), to identify respondents with relevant experience in digital and cultural tourism. The inclusion criteria targeted users engaged with metaverse

technologies or VR experiences in tourism contexts. The study sample consisted of 324 respondents who are 18+ and were recruited through digital platforms (LinkedIn, Whats app, and tourism-focused online communities) between July 2023- November 2023. Participants were eligible if they had used XR technologies—such as Metaverse platforms or VR applications—for cultural tourism activities within the previous 12 months. This approach allowed the research to focus on participants most likely to provide informed and meaningful insights, ensuring that respondents possessed sufficient familiarity with immersive technologies. The combination of purposive and snowball techniques allowed for the recruitment of information-rich cases, particularly individuals actively engaged with virtual cultural environments. A random sampling strategy was deliberately avoided, as it might have included respondents unfamiliar with the topic, thereby compromising data depth and quality.

The survey instrument was developed based on previously validated scales (Vishwakarma et al., 2020a; Rasoolimanesh et al., 2021; Viken et al., 2021; Wang et al., 2022; Vinnakota et al., 2023; Jarutkamolpong et al., 2024; Sepe et al., 2024; Li & Huang, 2021), and tailored to the metaverse and cultural tourism context. The self-administered questionnaire was distributed online via email, WhatsApp, and LinkedIn, resulting in 324 responses. Digital platforms enabled access to a geographically and professionally diverse sample of individuals interested in advanced technology applications in tourism.

Ethical considerations were carefully addressed throughout the research process. All participants were informed about the purpose of the study and assured that their responses would remain strictly anonymous. No personally identifiable data were collected. Informed consent was obtained electronically before the questionnaire could be accessed, and participants were free to withdraw at any point without any consequences. Data were securely stored and analyzed in aggregate form, in full compliance with ethical research standards and data protection guidelines.

4. Results

4.1 Descriptive statistics

The majority of the participants in the study were male respondents (51.23%), compared to female participants (48.77%). Regarding occupation, most respondents were students (35.19%), followed by businessmen (3.09). When examining the frequency of engagement in cultural tourism, a notable 44.75% of respondents reported they engage rarely, while 28.09%

do so often. Most of the participants were graduates (67.28%) and were aware of cultural tourism (98.77%) (Table 1).

4.2 Assessment of measurement model

A confirmatory factor analysis (CFA) was done to verify the strength of the questionnaire. Internal consistency was assessed using Cronbach's alpha and composite reliability. The values of Cronbach's alpha were higher than the recommended values of 0.7 (Hair et al., 2012) (refer to Table 3). Composite reliability measures the internal consistency of a set of items. The composite reliability values were between 0.7 and 0.9 (Hair et al., 2012); hence, internal consistency was observed.

Factor loadings indicate the strength of the relationship between the measured items and the underlying factor. The factor loading was higher than the recommended value of 0.6 (Hair et al., 2012)

Discriminant validity was established by evaluating cross-loadings and the Fornell (1981) criterion. The factors had higher loadings on their parent construct than other constructs. The AVE values (diagonal) were higher than the values of squared correlations with other constructs (non-diagonal numbers). Therefore, discriminant validity was established. The Fornell-Lacker criterion method compares the square roots of one construct's AVE with the correlations to other constructs. In contrast, the square root of a construct's AVE should be greater than any correlation coefficients to other constructs to consider that the discriminant exists. For HTMT Criterion, as per Franke and Sarstedt (2019), if the HTMT value is significantly below the critical value of 0.9, it establishes the discriminant validity, as depicted in Table 4 and 5.

4.3 Assessment of Structural model

The model was tested for collinearity. Since VIF values were below 5, there was no multicollinearity issue. The model was tested using PLS-SEM run with bootstrapping at 5000 subsamples (Hair et al., 2012).

The results of a study suggest that H1 is supported, i.e., awareness positively affects immersion ($\beta = 0.486$, $t= 8.716$, $p=0.000$), affirming the statistical significance of the relationship. H2 was supported by reflecting culture significantly impacts immersiveness ($\beta = 0.449$, $t= 8.434$, $p = 0.0000$. There is a significant impact of immersion on the intention to revisit intention ($\beta= 0.603$, $t= 15.515$, $p= 0.000$ level). Lastly, immersiveness significantly impacts wishful thinking ($\beta = 0.641$, $t= 11.756$, $p = 0.000$), as depicted in Figure 2.

The indirect effect of awareness on wishful thinking through immersion was significant (β = 0.312, t = 8.345, p = 0.000). Cultural factors" influence on wishful thinking was mediated by immersion (β = 0.288, t = 5.949, p = 0.000). The immersive nature of the Metaverse significantly mediates the relationship between culture and revisit intention (β = 0.270, t = 7.561, p = 0.000). Further, immersiveness mediates the relationship between awareness and revisit intention (β = 0.293, t = 7.298, p = 0.000). Thus, immersion is a significant mediator in the relationships between awareness and culture, as well as the desire to engage in cultural tourism and the intention to revisit cultural tourism destinations.

The R-square values represent the proportion of variance in the dependent variables that the independent variables in the model can explain. The R-square value for immersiveness is high (0.718), indicating that the model explains 71.8% of the variance in the immersion construct. The R-square value for wishful thinking is 0.411, explaining 41.1% of the variance in the wish to engage in cultural tourism, followed by the R-square value of revisit intention as 0.363.

F-square values indicate the effect sizes of the independent variables on the dependent variables. Awareness has an f-square effect size of 0.492 on immersiveness, culture has an f-square effect size of 0.419 on Immersion, Immersiveness has an f-square effect size of 0.571 on Revisit and 0.699 on Wishful thinking, indicating considerable effects on the dependent variables.

This study employed a variance-based Partial Least Squares Structural Equation Modeling (PLS-SEM) approach using SmartPLS; traditional model fit indices such as GFI, CFI, and NFI—commonly used in covariance-based SEM—are not applicable. Following established PLS-SEM procedures, the model was evaluated using internal consistency reliability (Cronbach's alpha, Composite Reliability), convergent validity (AVE), and discriminant validity (Fornell-Larcker and HTMT), as suggested by Hair et al. (2012).

5. Discussion

The findings of this study highlight the connection between awareness, cultural factors, immersive experiences, and tourists" intentions regarding cultural tourism within the Metaverse. Most participants were young and educated, indicating a responder base with high awareness and interest in cultural tourism. These results validate the importance of awareness and cultural aspects in forming immersive metaverse experiences. This suggests that younger cohorts may act as early adopters of cultural metaverse technologies, shaping new digital cultural engagement social norms (Mariani & Predvoditeleva, 2019).

According to the TPB, attitudes toward behavior, subjective norms, and perceived behavioral control shape individuals" intentions and actions (Ajzen, 1985). Under the lens of TPB, findings show that awareness about the Metaverse and its capabilities in cultural tourism significantly affects the immersive experiences of tourists. Awareness of digital affordances—such as co-presence, interactivity, and narrative depth—not only enhances users' perceived behavioral control but also positively shapes their attitudes toward engaging with virtual cultural content (Tussyadiah & Wang, 2023; Gretzel et al., 2022).

Authentic cultural representations in virtual experiences are crucial, as shown by the positive effect of cultural elements on immersion. This extends previous research that underscores the importance of authenticity in cultural tourism (Rickly, 2022). Cultural sensitivity enhances perceived immersion by fostering respect and relevance—two dimensions that increase attitudinal salience and align with moral-based subjective norms (Neuhofer & Magnini, 2022). Immersive experiences result in repeated visits by tourists, demonstrating a strong positive relationship between immersion and tourists" intentions to revisit cultural destinations, thus highlighting the link between immersive experiences and tourist satisfaction (Jafar and Ahmed, 2024). In TPB terms, perceived immersion acts as a central experiential factor that strengthens the intention–behavior link, especially when users perceive high ease of access, emotional value, and narrative coherence (Wang & Huang, 2023; Lee et al., 2023).

In the context of cultural tourism within the Metaverse, the significant mediating effects of immersion between awareness, cultural aspects, and visitors' intentions emphasize the crucial importance of immersive experiences in developing tourists attitudes and behaviors. This finding reinforces recent calls to extend TPB with affective and experiential constructs, recognizing that emotional engagement and sensory richness can modulate traditional predictors of behavior (Bagozzi et al., 2023; Stylidis, 2022). This mediating role of immersion, as proposed by TPB, shows how perceived behavioral control and subjective norms influence tourists" behavior through immersive experiences. Thus, the immersive Metaverse can be seen as both a technological and psychosocial space where cultural tourism intentions are co-produced by individual perceptions and socio-cultural framing.

6. Implications and contributions

6.1 Theoretical Implications

This research adds to tourism theoretical development by combining the TPB with applications of immersive technology within cultural tourism. This extends TPB by showing that immersive experiences—through the Metaverse—are an important mediator between cognitive antecedents (cultural sensitivity and awareness) and behavioral outcomes (wishful thinking and revisit intentions). The study offers a significant expansion of TPB's scope in technology-mediated tourism behavior by considering immersive technology as an experiential mechanism that enhances perceived behavioral control and affective attitudes. In particular, by empirically demonstrating the mediating role of immersion, the study extends TPB beyond traditional settings, incorporating virtual environments as novel contexts in which tourists form attitudes, intentions, and behavioral responses. This builds on standard TPB models by adding virtual interaction as a proxy for perceived behavioral control and affective attitudes. This study builds a theoretical framework linking tourist awareness, cultural factors, immersion, and tourists" intentions. It adds to the literature on cultural tourism by providing empirical evidence (Dwivedi et al., 2023). In the context of cultural tourism within the Metaverse, this validation improves our theoretical understanding of the critical factors influencing visitor behavior (Rickly, 2022). Specifically, the findings extend prior studies that call for expanding the TPB model to incorporate technological affordances and emotional engagement in digital tourism contexts (e.g., Neuhofer & Magnini, 2022; Flavián et al., 2019). The study also examines the mediating role of immersion in the relationships between these factors, showing that immersive experiences significantly influence tourists" intentions in virtual contexts (Jafar and Ahmed, 2024). By integrating the principles of TPB, this study elucidates how attitudes towards the Metaverse, subjective norms, and perceived behavioral control collectively shape tourists" intentions and behaviors, thereby enhancing the theoretical foundation of cultural tourism research.

More in detail, this study contributes significantly to understanding consumer behavior in cultural tourism by integrating the TPB with the adoption of immersive technologies like the Metaverse. This research highlights how attitudes, subjective norms, and perceived behavioral control shape tourists" intentions to engage in cultural tourism experiences in virtual environments. The results demonstrate that awareness of immersive technologies and cultural authenticity positively influence tourists" perceptions of immersion, significantly impacting

their intentions to revisit physical sites and their wishful thinking about virtual engagement. Such evidence suggests that awareness—linked to the TPB component of subjective norms—plays a dual role: first, by shaping social expectations of digital competence in tourism and second, by enhancing the perceived usefulness of immersive engagement. Moreover, cultural sensitivity strengthens attitudinal predispositions by emphasizing moral legitimacy, authenticity, and value alignment in virtual interactions (Viken et al., 2021). Demonstrating that immersive experiences mediate between awareness, cultural sensitivity, and behavioral outcomes, this study adds depth to the TPB framework, providing empirical evidence supporting its application in predicting consumer behavior in emerging digital platforms. This bridges the gap between behavioral psychology and technological innovation, offering a contemporary lens to analyze consumer intentions in virtual tourism environments. The integration of perceived immersiveness as a central experiential variable within the TPB model represents a conceptual innovation, showing how immersion influences not only emotional engagement but also reinforces intention through presence, co-presence, and affective memory encoding (Slater & Wilbur, 1997; Tussyadiah et al., 2023). The research underscores the importance of perceived authenticity and immersive engagement in shaping consumers" post-experience behavior, offering valuable insights for both academia and practitioners in tourism and hospitality. This study advances the theoretical understanding of how technological innovations affect consumer behavior in tourism and suggests strategic opportunities for businesses to enhance customer satisfaction and loyalty through immersive experiences. The concept of *wishful thinking* introduces a new psychological perspective, highlighting tourists" aspirations and imaginative involvement in virtual cultural experiences, and opens new avenues for studying motivation and emotional engagement in digital tourism. In doing so, it connects affective forecasting and place attachment theories with behavioral intention models, thus providing a richer, multi-dimensional understanding of the psychological processes underpinning cultural tourism in the Metaverse (Bagozzi et al., 2023; Wang et al., 2022).

6.2 Practical Implications

The findings of this research are particularly useful for tourism marketers, destination managers, and policymakers. To begin with, it shows that raising awareness and cultural sensitivity in virtual spaces maximally boosts user immersion, which can find expression in increased intent to visit or return to physical destinations. This suggests that digital cultural experiences must go beyond aesthetic appeal and integrate locally grounded narratives,

languages, rituals, and symbolic elements that reflect the real heritage of the site. Doing so not only enhances immersion but builds trust and legitimacy in the eyes of the user, particularly among culturally conscious audiences. Hence, tourism stakeholders must prioritize authentic, culturally sensitive content when crafting metaverse-based experiences. Second, immersive technologies must be strategically employed in pre-travel promotion, enabling consumers to connect emotionally and cognitively with destinations via high-fidelity simulations, boosting satisfaction and actual visitation intent. This calls for a shift from static promotion to experiential pre-engagement strategies, where VR/AR modules serve as 'emotional previews' that activate tourists' attitudes and self-efficacy beliefs—as posited by TPB—thus increasing actual travel intentions. Destination marketing organizations (DMOs) can embed such immersive modules into websites, booking platforms, and social media campaigns. Third, findings indicate wishful thinking—though not necessarily reality-based—can act as an effective engagement tool, increasing users" emotional involvement in destinations. While traditionally considered a cognitive bias, wishful thinking may actually stimulate imaginative investment and dream-driven planning, offering a powerful entry point for tourism promotion. Practitioners can think of adding aspects of narrative storytelling, gamification, and sensory richness to enhance such effects. This includes personalized virtual pathways, avatar-based role-play, and multisensory simulations (e.g., soundscapes, tactile feedback) that turn passive viewing into active, emotionally resonant participation.

Furthermore, tourism operators may collaborate with local artists and cultural institutions to co-create digital replicas that remain faithful to local values, ensuring ethical representation and fostering innovation. Ultimately, the study suggests that destination management in the Metaverse is not merely about digital replication but curating immersive, emotionally compelling cultural journeys that reinforce real-world visitation, loyalty, and cultural appreciation. This opens up new strategic avenues for virtual tourism development—particularly for under-visited or geographically remote cultural sites—making them more accessible, engaging, and sustainable. Finally, this study is particularly relevant for emerging economies, where immersive technologies may serve as a strategic enabler to overcome infrastructural and visibility gaps. Virtual cultural experiences can democratize access to global audiences, allowing underrepresented or remote destinations to showcase their heritage and traditions without requiring immediate physical infrastructure upgrades. In these contexts, metaverse-based tourism strategies can support local development goals, empower cultural communities, stimulate economic participation, and preserve fragile cultural sites through

virtual visitation. Thus, immersive technologies offer a scalable and inclusive tool for destination development across digitally transforming economies.

7. Conclusion

This study pioneers a novel integration of the TPB with cutting-edge immersive technologies, shedding light on how tourists interact with cultural heritage within the Metaverse—an area that earlier research has only briefly mentioned. Unlike previous investigations that focused on virtual-reality applications in tourism or applied TPB to understand tourist decision-making, our work combines these two strands. We demonstrate that tourists' awareness of immersive tools and their cultural sensitivity lay the groundwork for a deeply felt sense of presence. This sense of presence gives rise to wishful thinking and fosters a genuine desire to revisit the physical heritage sites they explore virtually. Our findings reveal a richly layered psychological journey linking virtual engagement to tangible real-world actions. When virtual experiences are crafted with authentic cultural elements and accompanied by clear guidance for users, they evoke strong emotional responses and inspire concrete behaviors—such as planning a trip to the heritage site or supporting its preservation efforts. By weaving emotional and symbolic dimensions into the TPB framework, this research offers practitioners a sophisticated roadmap for designing metaverse experiences that are both culturally respectful and commercially viable.

Despite these promising insights, certain limitations temper our conclusions and point to avenues for further inquiry. Because our survey targeted urban populations in India—where digital technologies are widely adopted—the findings may not fully reflect the perspectives of rural inhabitants or international audiences with different cultural and infrastructural backgrounds. Moreover, relying on self-reported data introduces the risk of social-desirability bias or other distortions, suggesting that future work might benefit from combining survey responses with more objective measures, such as in-app engagement logs or booking records. The cross-sectional nature of our study offers only a snapshot in time, leaving unanswered questions about how tourists' attitudes might shift over more extended periods or as they become more familiar with immersive platforms. As the Metaverse rapidly evolves—incorporating extended reality, AI companions, and haptic feedback—subsequent research should investigate how these emerging features reshape users' sense of presence, perceptions of authenticity, and inclination to support real-world heritage.

Additionally, this study did not record respondents' geographical distribution and collected only coarse occupational information; moreover, the sample includes a sizable share of students due to the recruitment channels used. While these design choices align with our focus on psychological and experiential mechanisms rather than subgroup comparisons, they limit the granularity of demographic analyses and the breadth of generalizability. Future research should incorporate stratified sampling and finer-grained demographic measures (e.g., geography and profession) to test the robustness of the proposed relationships across subpopulations.

Finally, while immersive tourism promises to democratize access to cultural sites, it also risks deepening digital divides and increasing energy consumption if hardware demands remain high. Attention to carbon footprints, low-bandwidth solutions, and inclusive design practices—especially for users with disabilities—will be crucial to ensure that virtual heritage experiences remain sustainable and accessible. By tackling these challenges, future studies can refine the theoretical framework we have proposed and equip destination managers with practical, evidence-based guidance for responsibly scaling immersive cultural tourism.

References

Adel, M.A. (2023), "The role of Metaverse to create an interactive experience for tourists", *Journal of Association of Arab Universities for Tourism and Hospitality*, Vol. 24 No. 1, pp. 242–269.

Ajzen, I. (1985), "From intentions to actions: a theory of planned behavior", in Kuhl, J. and Beckmann, J. (Eds.), *Action Control: From Cognition to Behaviour*, Springer Berlin Heidelberg, Berlin and Heidelberg, pp. 11–39.

Bagozzi, R.P. (1992), "The self-regulation of attitudes, intentions, and behavior", *Social Psychology Quarterly*, Vol. 55 No. 2, pp. 178–204.

Bagozzi, R.P., Dholakia, U.M. and Basuroy, S. (2023), "Affective forecasting in virtual heritage: anticipated enjoyment and post-immersion satisfaction", *Journal of Travel Research*, Vol. 62 No. 4, pp. 567–582.

Buhalis, D. (2023), "Digital transformations in emerging-market tourism: challenges and strategic implications", *Journal of Destination Marketing and Management*, Vol. 21, 100675.

Biernacki, P. and Waldorf, D. (1981), "Snowball sampling: problems and techniques of chain referral sampling", *Sociological Methods & Research*, Vol. 10 No. 2, pp. 141–163.

Buhalis, D. (2023), *Tourism Marketing in the Metaverse*, 2nd ed., Routledge, London.

Buhalis, D. and Karatay, N. (2022), "Mixed reality (MR) for Generation Z in cultural heritage tourism towards metaverse", in Neidhardt, J. and Wörndl, W. (Eds.), *Information and Communication Technologies in Tourism 2022: Proceedings of the ENTER 2022 eTourism Conference*, Springer International Publishing, Cham, pp. 16–27.

Buhalis, D., Leung, D. and Lin, M. (2023), "Metaverse as a disruptive technology revolutionising tourism management and marketing", *Tourism Management*, Vol. 97, pp. 1–11.

Buragohain, D., Meng, Y., Deng, C., Li, Q. and Chaudhary, S. (2024), "Digitalizing cultural heritage through metaverse applications: challenges, opportunities, and strategies", *Heritage Science*, Vol. 12 No. 1, p. 295.

Chen, Z. (2025), "Perceived authenticity and digital storytelling in Metaverse tourism", *International Journal of Contemporary Hospitality Management*, forthcoming.

Chen, Z. and Quoquab, F. (2024), "Beyond boundaries: exploring the Metaverse in tourism", *International Journal of Contemporary Hospitality Management*, Vol. 36 No. 2, pp. 205–225.

Cheong, R., Jang, H. and Park, S. (2023), "Social norms and virtual co-presence: their influence on Metaverse adoption in cultural tourism", *Tourism Economics*, Vol. 29 No. 3, pp. 415–432.

Chi, W. (2024), "Comparison of Chinese and foreign museum operation strategies from the perspective of e-commerce—The example of the Palace Museum and the British Museum", *Journal of Humanities, Arts and Social Science*, Vol. 8 No. 5.

Choe, J., Jang, H. and Park, S. (2021), "Descriptive and injunctive norms in digital heritage spaces: moderating effects on user engagement", *Journal of Travel Research*, Vol. 60 No. 7, pp. 1432–1448.

Chung, N., Lee, H., Kim, J.Y. and Koo, C. (2018), "The role of augmented reality for experience-influenced environments: the case of cultural heritage tourism in Korea", *Journal of Travel Research*, Vol. 57 No. 5, pp. 627–643.

Dwivedi, Y.K., Hughes, L., Alalwan, A.A., Ahn, S.J., Balakrishnan, J., Baabdullah, A.M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M.M. and others (2023), "Metaverse marketing: how the metaverse will shape the future of consumer research and practice", *Psychology and Marketing*, Vol. 40 No. 4, pp. 750–776.

Dwivedi, Y.K., Hughes, L., Baabdullah, A.M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M.M. and others (2022), "Metaverse beyond the hype: multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy", *International Journal of Information Management*, Vol. 66, 102542.

Fan, X., Jiang, X. and Deng, N. (2022), "Immersive technology: a meta-analysis of augmented/virtual reality applications and their impact on tourism experience", *Tourism Management*, Vol. 91, 104534.

Flavián, C., Ibáñez-Sánchez, S. and Orús, C. (2019), "Integrating virtual reality devices into the body: effects of technological embodiment on customer engagement and behavioral intentions toward the destination", *Journal of Travel and Tourism Marketing*, Vol. 36 No. 7, pp. 847–863.

Fornell, C. (1981), "A comparative analysis of two structural equation models: LISREL and PLS applied to market data", *Proceedings of the American Marketing Association*, pp. 28–34.

Franke, G. and Sarstedt, M. (2019), "Heuristics versus statistics in discriminant validity testing: a comparison of four procedures", *Internet Research*, Vol. 29 No. 3, pp. 430–447.

Godovykh, M., Baum, T. and Nazneen, S. (2022), "The role of storytelling and immersive technologies in sustainable tourism recovery", *Sustainability*, Vol. 14 No. 3, 1602.

Gössling, S. and Schweiggart, N. (2022), "Two years of COVID-19 and tourism: what we learned, and what we should have learned", *Journal of Sustainable Tourism*, Vol. 30 No. 4, pp. 915–931.

Gössling, S., Scott, D. and Hall, C.M. (2020), "Two years of COVID-19 and tourism: what we learned, and what we should have learned", *Journal of Sustainable Tourism*, Vol. 30 No. 4, pp. 915–929.

Gretzel, U., Xiang, Z. and Koo, C. (2022), "Metaverse as a facilitator of cultural learning: opportunities and considerations", *Computers in Human Behavior*, Vol. 133, 107290.

Gursoy, D., Malodia, S. and Dhir, A. (2022), "The metaverse in the hospitality and tourism industry: an overview of current trends and future research directions", *Journal of Hospitality Marketing and Management*, Vol. 31, pp. 1–8.

Hair, J.F., Ringle, C.M. and Sarstedt, M. (2012), "Partial least squares: the better approach to structural equation modeling?", *Long Range Planning*, Vol. 45 Nos. 5–6, pp. 312–319.

Han, K., Yoo, K. and Gretzel, U. (2019), "Expanding TPB: the role of symbolic motives in virtual tourism environments", *Journal of Travel Research*, Vol. 58 No. 2, pp. 210–223.

Han, S. and Kai, T. (2015), "Audience's telepresence to advertisement and attitude on tourist destination: experiment based on website banner and online video advertisements", *Tourism Tribune*, Vol. 30 No. 12, pp. 66–73.

Henning, B. and Vorderer, P. (2001), "Psychological escapism: predicting the amount of television viewing by need for cognition", *Journal of Communication*, Vol. 51 No. 1, pp. 100–120.

Hobson, J.S.P. and Williams, A.P. (1995), "Virtual reality: a new horizon for the tourism industry", *Journal of Vacation Marketing*, Vol. 1 No. 12, pp. 124–135.

Hu, L. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No. 1, pp. 1–55.

Hyun, M.Y. and O'Keefe, R.M. (2012), "Virtual destination image: testing a telepresence model", *Journal of Business Research*, Vol. 65 No. 1, pp. 29–35.

Ijsselsteijn, W. and Riva, G. (2003), "Being there: the experience of presence in mediated environments", *Virtual Reality*, Vol. 7 No. 3, pp. 149–156.

Jafar, R.M.S. and Ahmad, W. (2024), "Tourist loyalty in the metaverse: the role of immersive tourism experience and cognitive perceptions", *Tourism Review*, Vol. 79 No. 2, pp. 321–336.

Jafar, R.M.S., Ahmad, W. and Sun, Y. (2023), "Unfolding the impacts of metaverse aspects on telepresence, product knowledge, and purchase intentions in the metaverse stores", *Technology in Society*, Vol. 74, 102265.

Jarutkamolpong, S., Nankhantee, A. and Mikhama, K. (2024), "Development of a metaverse model to enhance Renu Nakhon Phu-Thai cultural tourism in Nakhon Phanom Province, Thailand", *Humanities, Arts and Social Sciences Studies*, Vol. 6 No. 6, pp. 662–672.

Jiang, Y., Ramkissoon, H. and Mavondo, F.T. (2023), "Affective and symbolic drivers of metaverse tourism intentions: extending the theory of planned behavior", *Journal of Travel Research*, Vol. 62 No. 6, pp. 945–962.

Jung, T. and Dieck, M.C.T. (2023), "AI-guided storytelling in virtual heritage: effects on engagement and knowledge retention", *Tourism Management*, Vol. 94, 104674.

Nazare, A.K., Moldoveanu, A. and Moldoveanu, F. (2024), "Virtual journeys, real engagement: analyzing user experience in a virtual traveling social platform", *Information*, Vol. 15 No. 7, 396.

Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C. and others (2020), "The socio-economic implications of the coronavirus pandemic (COVID-19): a review", *International Journal of Surgery*, Vol. 78, pp. 185–193.

Patton, M.Q. (1990), *Qualitative Evaluation and Research Methods*, 2nd ed., Sage Publications, Thousand Oaks, CA.

Payntar, N.D. (2022), "Archaeological heritage 'on-the-rise': detecting emerging tourist attractions in Peru using machine learning and geotagged photographs", *Journal of Heritage Tourism*, Vol. 17 No. 2, pp. 222–244.

Price, P.C. (2000), "Wishful thinking in the prediction of competitive outcomes", *Thinking and Reasoning*, Vol. 6 No. 2, pp. 161–172.

Pyae, A., Ravyse, W., Luimula, M., Pizarro-Lucas, E., Sanchez, P.L., Dorado-Diaz, I.P. and Thaw, A.K. (2023), "Exploring user experience and usability in a metaverse learning environment for students: a usability study of the Artificial Intelligence, Innovation, and Society (AIIS)", *Electronics*, Vol. 12 No. 20, p. 4283.

Rancati, E. and D'Agata, A. (2022), "Metaverse in tourism and hospitality: empirical evidence on Generation Z from Italy", *ESI Preprints*, Vol. 10, p. 800.

Rasoolimanesh, S.M., Seyfi, S., Hall, C.M. and Hatamifar, P. (2021), "Understanding memorable tourism experiences and behavioural intentions of heritage tourists", *Journal of Destination Marketing and Management*, Vol. 21, 100621.

Richards, G. (2007), *Cultural Tourism: Global and Local Perspectives*, Psychology Press, London.

Richards, G. (2018), "Cultural tourism: a review of recent research and trends", *Journal of Hospitality & Tourism Management*, Vol. 36, pp. 12–21.

Rickly, J.M. (2022), "A review of authenticity research in tourism: launching the Annals of Tourism Research curated collection on authenticity", *Annals of Tourism Research*, Vol. 92, 103349.

Schuler, S., Aberdeen, L. and Dyer, P. (1999), "Sensitivity to cultural difference in tourism research: contingency in research design", *Tourism Management*, Vol. 20 No. 1, pp. 59–67.

Sepe, F., Luongo, S., Di Gioia, L. and Della Corte, V. (2024), "Cultural heritage experiences in the metaverse: analyzing perceived value and behavioral intentions", *European Journal of Innovation Management*, forthcoming.

Shin, D. (2018), "Empathy and embodied experience in virtual environment: to what extent can virtual reality stimulate empathy and embodied experience?", *Computers in Human Behavior*, Vol. 78, pp. 64–73.

Siddiqui, M.S., Syed, T.A., Nadeem, A., Nawaz, W. and Alkhodre, A. (2022), "Virtual tourism and digital heritage: an analysis of VR/AR technologies and applications", *International Journal of Advanced Computer Science and Applications*, Vol. 13 No. 7.

Siepmann, M.M. (1999), *Disbelieved Beliefs: Subjective Estimates of Bias in Probabilistic Beliefs and Their Relationships to Desire*, Doctoral dissertation, University of Pennsylvania.

Slater, M. and Wilbur, S. (1997), "A framework for immersive virtual environments (FIVE): speculations on the role of presence in virtual environments", *Presence: Teleoperators and Virtual Environments*, Vol. 6 No. 6, pp. 603–616.

Slikker, N. and Koens, K. (2015), "'Breaking the silence': local perceptions of slum tourism in Dharavi", *Tourism Review International*, Vol. 19 Nos. 1–2, pp. 75–86.

Stylidis, D. (2022), "Wishful thinking in virtual heritage: antecedents of affective forecasting in immersive tourism", *Tourism Management*, Vol. 95, 104747.

Torres, P., Augusto, M. and Neves, C. (2022), "Value dimensions of gamification and their influence on brand loyalty and word-of-mouth: relationships and combinations with satisfaction and brand love", *Psychology and Marketing*, Vol. 39 No. 1, pp. 59–75.

Tsai, S.P. (2022), "Investigating Metaverse marketing for travel and tourism", *Journal of Vacation Marketing*, DOI: 10.1177/13567667221145715.

Tussyadiah, I. and Wang, D. (2023), "Presence, self-efficacy, and reflective engagement: drivers of behavior from Metaverse cultural simulations", *Tourism Management*, Vol. 94, 104700.

Udommala, W., Ayudhya, P.S.N., Klomsuwan, K. and Insaad, T. (2023), "Metaverse with culture tourism in Thailand", *The 2022 International Academic Multidisciplines Research Conference in Munich*, pp. 354–362.

Um, T., Kim, H., Kim, H., Lee, J., Koo, C. and Chung, N. (2022), "Travel Incheon as a Metaverse: smart tourism cities development case in Korea", *ENTER22 E-Tourism Conference Proceedings*, pp. 226–231.

Viken, A., Höckert, E. and Grimwood, B.S. (2021), "Cultural sensitivity: engaging difference in tourism", *Annals of Tourism Research*, Vol. 89, 103223.

Vinnakota, S., Mohan, M.D., Boda, M.J., Askarzai, W., Devkota, M.P., Shetty, M.S. and Choden, M.T. (2023), "Venturing into virtuality: exploring the evolution, technological underpinnings, and forward pathways of virtual tourism", *International Journal of Multidisciplinary and Contemporary Research*, Vol. 5 No. 6, pp. 8–49.

Vishwakarma, P., Mukherjee, S. and Datta, B. (2020a), "Antecedents of adoption of virtual reality in experiencing destination: a study on Indian consumers", *Tourism Recreation Research*, Vol. 45 No. 1, pp. 42–56.

Vishwakarma, P., Mukherjee, S. and Datta, B. (2020b), "Travelers' intention to adopt virtual reality: a consumer value perspective", *Journal of Destination Marketing and Management*, Vol. 17, 100456.

Wang, F., Huang, S., Morrison, A.M. and Wu, B. (2022), "The effects of virtual reality tourism involvement on place attachment and behavioral intentions: virtual reality tourism of the Yellow Crane Tower in Wuhan", *Asia Pacific Journal of Tourism Research*, Vol. 27 No. 3, pp. 274–289.

Wang, L., Wong, P.P.W. and Zhang, Q. (2021), "Travellers' destination choice among university students in China amid COVID-19: extending the Theory of Planned Behavior", *Tourism Review*, Vol. 76 No. 4, pp. 749–763.

Xu, H., Cheung, L.T., Lovett, J., Duan, X., Pei, Q. and Liang, D. (2023), "Understanding the influence of user-generated content on tourist loyalty behavior in a cultural World Heritage Site", *Tourism Recreation Research*, Vol. 48 No. 2, pp. 173–187.

Yuan, A. and Hong, J. (2023), "Impacts of virtual reality on tourism experience and behavioral intentions: moderating role of novelty seeking", *Journal of Hospitality and Tourism Research*, https://doi.org/10.1177/10963480231171301.

Yung, R., Khoo-Lang, L., Law, R. and Xie, J. (2021), "Reframing tourist motivation in the age of COVID-19: emphasis on experiential presence over physical mobility", *Journal of Travel Research*, Vol. 60 No. 5, pp. 925–944.

Zhang, J. and Quoquab, F. (2023), "Digital presence and awareness: drivers of revisit intention in Metaverse cultural tourism in urban China", *International Journal of Contemporary Hospitality Management*, Vol. 35 No. 7, pp. 1870–1892.

Zhang, J., Quoquab, F. and Mohammad, J. (2024), "Metaverse tourism and Gen-Z and Gen-Y's motivation: will you, or won't you travel virtually?", *Tourism Review*, Vol. 79 No. 2, pp. 304–320.

Zhang, S.N., Li, Y.Q., Ruan, W.Q. and Liu, C.H. (2022), "Would you enjoy virtual travel? the characteristics and causes of virtual tourists' sentiment under the influence of the COVID-19 pandemic", *Tourism Management*, Vol. 88, 104429.

Zhuang, X., Hou, X., Feng, Z., Lin, Z. and Li, J. (2021), "Subjective norms, attitudes, and intentions of AR technology use in tourism experience: the moderating effect of millennials", *Leisure Studies*, Vol. 40 No. 3, pp. 392–406.

Appendix

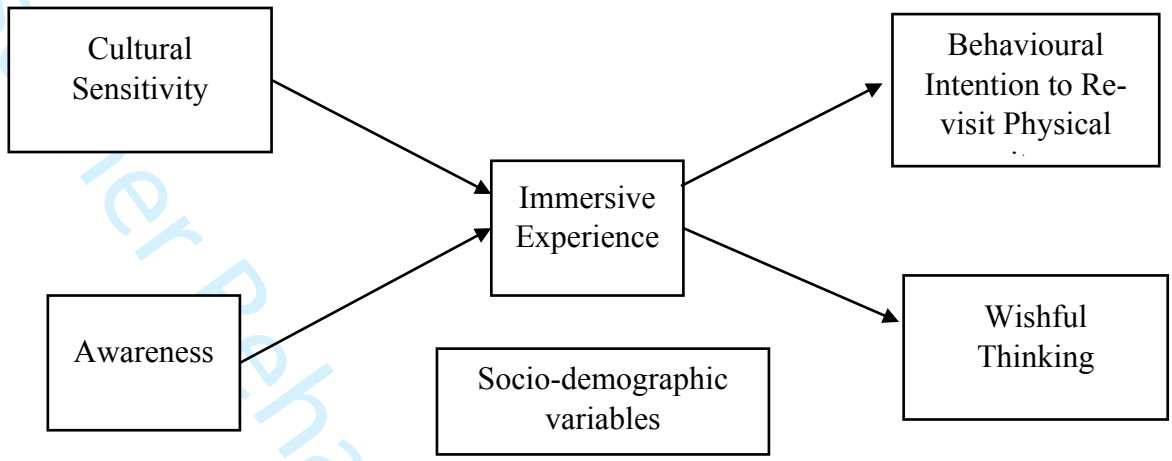

Figure 1. Conceptual model (Source: Author's elaboration)

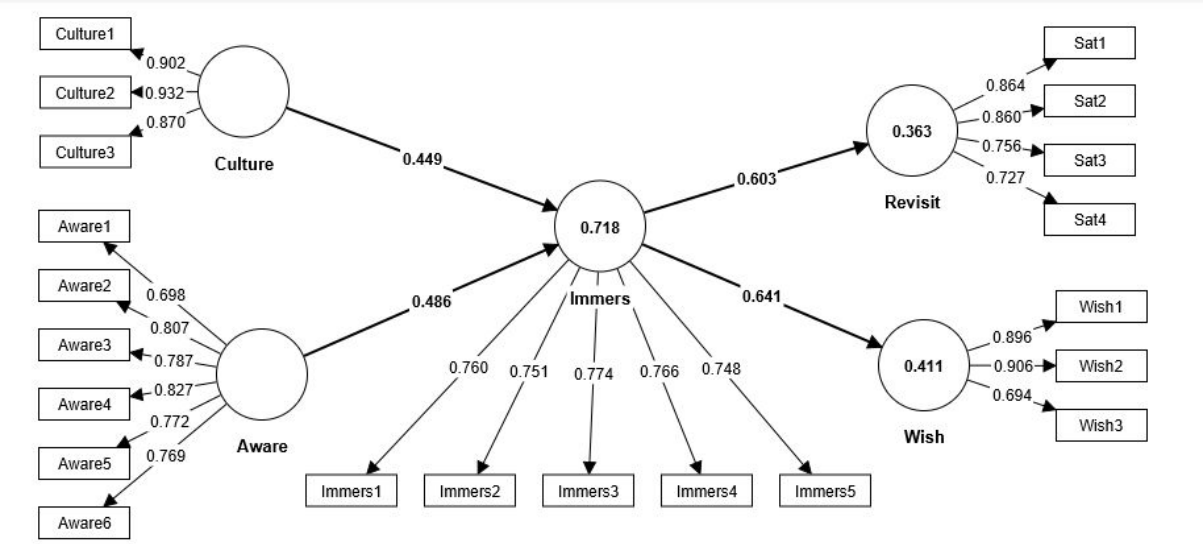

Figure 2: PLR Run 1

(Source: Authors' elaboration)

Table 1. Descriptive Statistics

Category	Sub- Category	Frequency	Percentage
Gender	Female	158	48.77
	Male	166	51.23
Occupation	Business	10	3.09
	Government Job	2	0.62

	Private Job	8	2.47
	Student	114	35.19
How frequently do you engage in cultural tourism?	Always	30	9.26
	Occasionally	58	17.90
	Often	91	28.09
	Rarely	145	44.75
Education	Doctorate	14	4.32
	Graduation	218	67.28
	Others	15	4.32
	Post-Graduation	49	15.12

Source: Authors" elaboration

Table 2. Reliability and validity

Construct	Code	Items	Factor Loadings	CR	Alpha	AVE
Awareness of the Metaverse in Cultural Tourism	Aware1	The term "metaverse" in cultural tourism is much familiar.	0.698	0.869	0.876	0.605
	Aware2	The virtual or augmented reality is very common while exploring cultural destinations.	0.807			
	Aware3	Tourists are keenly interested in using the Metaverse for cultural tourism experiences.	0.787			
	Aware4	The role of the Metaverse is very important in preserving and promoting lesser-known cultural destinations in India.	0.827			
	Aware5	The usage of a metaverse application will be more for cultural tourism if it offered real-time interactions with local guides or experts	0.772			

	Aware6	The integration of the Metaverse in enhancing cultural tourism experiences in India will be more in future.	0.769			
Immersive Experiences	Immers1	The immersive experience in cultural tourism is much important for me.	0.760	0.819	0.822	0.577
	Immers2	Tourists are interested in using virtual reality (VR) or augmented reality (AR) to explore cultural sites before planning a visit.	0.751			
	Immers3	Tourists are well versed to use a metaverse-enhanced cultural tourism Application.	0.774			
	Immers4	Immersion of users in the virtual world of cultural tourism within the Metaverse, indicating a shift towards more immersive experiences.	0.766			
	Immers5	Metaverse-based cultural tourism offers a unique and captivating environment that participants describe as more immersive than traditional forms of cultural exploration.	0.748			
Cultural Sensitivity and Authenticity	Culture1	It very important for virtual experiences to authentically represent the cultural heritage of a destination.	0.902	0.885	0.888	0.813
	Culture2	Metaverse applications can accurately capture the essence of Indian cultural destinations.	0.932			
	Culture3	Metaverse developers need to ensure that their representations of cultural destinations accurately reflect the traditions, customs, and values of the	0.870			

		communities they represent.				
Wishful thinking	Wish1	If virtual tours could accurately replicate cultural and religious practices, I would consider doing my prayers through a virtual tour as a substitute for an actual visit?	0.896	0.782	0.815	0.702
	Wish2	I think people will derive satisfaction without physically visiting cultural or religious sites in the near future.	0.906			
	Wish3	Would you be more likely to use a metaverse application for cultural tourism if it offered real-time interactions with local guides or experts?	0.694			
Intention to revisit	Sat1	I intend to participate the Metaverse in the future.	0.864	0.824	0.872	0.646
	Sat2	I would like to visit cultural sites in virtual environment.	0.860			
	Sat3	I intend to visit cultural sites online in the near future.	0.756			
	Sat4	I intend to visit cultural sites virtually in the near future.	0.727			

Source: Authors" elaboration

Table 3. Fornell-Larcker criterion

	Aware	Culture	Immersiveness	Revisit	Wish
Awareness	0.778				
Culture	0.643	0.902			
Immersiveness	0.775	0.761	0.760		

Revisit	0.524	0.537	0.603	0.804	
Wishful thinking	0.498	0.762	0.641	0.558	0.838

Source: Authors' elaboration

Table 4. HTMT Criterion

	Awareness	Culture	Immersiveness	Revisit	Wishful thinking
Awareness	0.684				
Culture	0.733	0.743			
Immersiveness	0.908	0.866	0.801		
Revisit	0.583	0.590	0.688	0.621	
Wishful thinking	0.601	0.903	0.769	0.698	0.705

Table 5. Hypothesis testing

Hypothesis	Beta	T statistics	P values
H1: Awareness significantly impacts Immersiveness	0.486	8.716	0.000
H2: Culture significantly impacts Immersiveness	0.449	8.434	0.000
H3: Immersiveness significantly impacts physical site revisit intentions	0.603	15.515	0.000
H4: Immersiveness significantly impacts Wishful Thinking	0.641	11.756	0.000

Table 6. Mediation Effects

Hypothesis	Beta	T statistics	P values
Aware -> Immers -> Wish	0.312	8.345	0.000
Culture -> Immers -> Wish	0.288	5.949	0.000

Culture -> Immers -> Revisit	0.270	7.561	0.000
Aware -> Immers -> Revisit	0.293	7.298	0.000