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Immersive Media Innovation in Cultural Tourism through a Communication-Centered Scoping Review

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ABSTRACT

The rapid advancement of digital technology has fundamentally transformed cultural tourism, particularly through the emergence of immersive media such as Virtual Reality (VR), Augmented Reality (AR), Extended Reality (XR), and metaverse-based platforms. These technologies no longer function merely as promotional tools but increasingly operate as communicative environments that shape how tourists perceive, experience, and interpret cultural destinations. Drawing on communication theory, this study conceptualizes immersive media as media environments that mediate meaning-making processes in tourism experiences.This study employs a scoping literature review to systematically map and synthesize academic research on immersive media in cultural tourism published between 2019 and 2025. Guided by the PRISMA-ScR framework, peer-reviewed articles were analysed to identify dominant technologies, theoretical approaches, and conceptualizations of digitally mediated tourism experiences. The findings show that Virtual Reality (VR) is the most widely used technology in immersive tourism research, particularly for creating pre-visit experiences that allow tourists to explore destinations virtually before traveling. Augmented Reality (AR) is commonly applied in museum and cultural heritage tourism to enrich interpretive experiences by integrating digital information with physical environments. Emerging technologies such as XR and metaverse environments also indicate new possibilities for socially interactive tourism experiences. However, existing studies still largely emphasize technological performance and behavioural outcomes such as engagement and visit intention. This study highlights the importance of a communication-cantered perspective, positioning immersive media not only as technological tools but also as digital communication environments that mediate cultural narratives and tourism experiences. The review identifies key theoretical gaps and proposes future research directions for understanding immersive tourism as a process of cultural communication in digitally mediated environments.

Keywords: *immersive media, cultural tourism, digital transformation, tourist experience*

1. INTRODUCTION

The development of digital technology in the last two decades has brought significant changes to various industrial sectors, including the tourism industry. Digital transformation has not only affected how destinations are promoted or managed, but has also fundamentally changed how tourists search for information, build expectations, and experience a tourist destination. Digital technology has become an integral part of the modern tourism ecosystem, enabling more dynamic interactions between tourists, destinations, and various digital communication platforms [1]. In this context, digitization is no longer just a supporting tool, but has become a structure that shapes the tourist experience itself.

Digital transformation in tourism is further strengthened by technological developments that enable the integration of physical and virtual spaces. Technologies such as artificial intelligence, big data, the Internet of Things (IoT), and experience-based digital platforms have given rise to the concept of smart tourism, which places technology as the main mediator in interactions between tourists and destinations [2]. In this framework, the tourism experience no longer only takes place in physical locations but can also occur through various forms of digital interaction that allow tourists to access, explore, and understand destinations before or even without making a physical trip.

One technological innovation that is gaining attention in tourism studies is immersive media, which includes technologies such as Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR),

Extended Reality (XR), and various metaverse-based platforms. This technology enables the creation of digital experiences that provide a sense *of presence*, allowing users to feel as if they are in a virtually represented environment [3]. In the context of tourism, immersive media allows tourists to explore destinations through visual simulations and digital interactions that resemble real experiences.

The emergence of immersive media has opened up new opportunities for the tourism industry to create more interactive, personalized, and immersive travel experiences. Various tourist destinations around the world have begun to utilize this technology to provide virtual experiences for tourists, whether in the form of virtual museum tours, digital reconstructions of historical sites, or simulations of natural and cultural destination explorations. VR technology, for example, allows tourists to visit cultural sites or museums virtually through realistic three-dimensional environment simulations. Meanwhile, AR technology enables the integration of digital information and the physical environment, allowing tourists to obtain additional narratives about the history or cultural significance of a tourist attraction directly through digital devices [4].

In the context of cultural tourism, the use of immersive media is becoming increasingly relevant because this technology enables the digital representation of complex cultural heritage. Cultural sites that may be difficult to access, vulnerable to damage, or have limited visitor capacity can be digitally represented through immersive technology. Thus, this technology not only serves as a means of promoting destinations but also as a tool for cultural preservation and interpretation [5].

Along with the development of immersive media technology, academic research on this topic has also increased significantly in recent years. A number of studies show that VR and AR technologies can increase tourists' emotional engagement, enrich the travel experience, and increase the intention to visit a destination [6], [7]. Other studies also show that virtual experiences can influence tourists' perceptions of the authenticity of a destination and shape the image of a tourist destination [8].

However, most research on immersive tourism still focuses on technological aspects and consumer behaviour. Many studies emphasize the evaluation of technological quality, such as the level of interactivity, system usability, and its impact on user satisfaction or tourist visitation intent. This approach makes an important contribution to understanding how immersive technology can be effectively implemented in the tourism industry. However, an overly strong focus on technological aspects often neglects the dimensions of communication and meaning that are formed in technology-mediated travel experiences.

From a communication science perspective, digital technology is not only understood as a technical tool, but also as a communication environment that mediates social interaction and the process of meaning construction. Media not only conveys information, but also shapes the way individuals understand social reality through symbolic representations [9]. In this context, immersive media can be understood as a form of digital communication environment that allows tourists to interact with cultural representations through visual experiences, digital narratives, and spatial simulations.

The concept of mediated experience is important in understanding this phenomenon. Mediated experience refers to experiences formed through media intermediaries, where individuals experience a reality through representations presented by communication technology. In the context of digital tourism, the tourist experience is no longer determined solely by physical presence in a place, but also by how technology mediates the representation of that destination [4].

In addition, the concept of presence in communication and media studies is also relevant to understanding immersive tourism experiences. Presence refers to the psychological sensation that a person is in a digitally mediated environment. In VR experiences, users can feel as if they are in a virtual space represented by technology [10]. This sensation of presence can influence how individuals understand the space, cultural objects, and narratives presented in digital tourism experiences.
However, literature that explicitly examines immersive tourism from a communication perspective is still relatively limited. Most studies are still dominated by information technology and tourism marketing approaches [11]. This limitation indicates a conceptual gap in the literature on immersive tourism.

Based on this gap, this study aims to map the development of academic literature on the use of immersive media in cultural tourism using a scoping literature review approach. Specifically, this study seeks to answer several main research questions:

1. What immersive technologies are most commonly used in cultural tourism research within the context of digital transformation?
2. How are immersive tourism experiences conceptualized in the literature, particularly in relation to presence, immersion, engagement, and destination image?
3. 3. How can immersive media be understood as a digital communication environment that mediates cultural interpretation and tourism experience?.

2. LITERATURE REVIEW

2.1 Digital Transformation in Tourism

Digital transformation has become one of the main forces reshaping the global tourism industry. Advances in information technology, internet connectivity, digital platforms, artificial intelligence, and data analytics have significantly changed the way tourists search for information, plan trips, and experience a tourist destination. In this context, tourism is no longer understood merely as physical mobility to a place, but as an experience shaped by complex interactions between

tourists, digital technology, and various communication platforms that mediate information about the destination.

The concept of a smart tourism ecosystem emerged to explain how digital technology is integrated into the modern tourism system. In this ecosystem, technology functions as infrastructure that enables data exchange, service integration, and real-time interaction between tourists, service providers, local governments, and various actors in the tourism industry [12]. This approach emphasizes that the modern tourism experience is shaped through a process of co-creation of value, where the value of the experience is not entirely determined by the destination, but is generated through interactions between tourists, technology, and various digital services.

Digital transformation also encourages a paradigm shift from tourism products to tourism experience design. Tourists now not only consume tourism services, but also interact with digital systems at various stages of their journey, from searching for information, planning trips, exploring destinations, to sharing experiences through social media after their visit is complete [13]. The digital footprints left by tourists enable destination managers to understand tourist preferences in greater depth, so that tourism experiences can be designed in a more personalized and adaptive manner.

Technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), and big data analytics play an important role in the smart tourism ecosystem. IoT enables real-time data collection on tourist mobility, visitor density, and the use of tourist facilities. Meanwhile, AI enables the analysis of this data to generate travel recommendations, personalize tourism services, and manage destinations more efficiently [14]. Thus, digital transformation in tourism can be understood as a socio-technical change that affects how destinations are managed as well as how tourists experience a place.

In the context of this article, digital transformation is an important foundation because it shows that the tourism experience is increasingly mediated by digital technology. Tourists not only interact with destinations physically, but also through various forms of digital representation that influence their perceptions and expectations of tourist destinations.

2.2 Immersive Media and Tourism Technology

One of the most significant developments in the digital transformation of tourism is the emergence of immersive media, which includes technologies such as Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR), and Extended Reality (XR). These technologies are designed to create a more immersive digital experience through a combination of visual stimulation, interactivity, and spatial simulation that allows users to feel as if they are in a virtual environment [15].

In the context of tourism, immersive media allows tourists to experience destinations virtually through three-dimensional environment simulations or the integration of digital information with the physical environment. This technology has been widely used in various tourism contexts, including destination marketing, cultural site interpretation, and tourism education [16].

Virtual Reality (VR) is the most widely used immersive technology in tourism research. VR allows tourists to explore digital environments that realistically represent a tourist destination. Through three-dimensional space simulation, tourists can gain *a pre-visit experience* that helps them build perceptions of the destination before making a physical trip [17].

Meanwhile, Augmented Reality (AR) enables the integration of physical objects and digital information. In the context of cultural tourism, AR can be used to display historical narratives, visualizations of a site's past, or additional information about cultural artifacts without altering the physical structure of tourist objects [18]. This technology is widely used in museums and cultural heritage sites to enhance tourists' interpretive and learning experiences.

Recent developments in the literature also show an increased focus on XR and metaverse tourism, where travel experiences can take place in a fully digital virtual environment. In the metaverse, tourists can explore virtual destinations, interact with other users through digital avatars, and attend virtual cultural events represented in three-dimensional space [19].

Although immersive technology offers various opportunities in the development of tourism experiences, most research still focuses on technological aspects and system performance, such as visual quality, interactivity levels, and ease of use [15], [17]. This approach is important for evaluating the effectiveness of technology, but it does not fully explain how immersive media shapes tourism experiences as processes of communication and cultural meaning-making.

2.3 Communication Perspective on Mediated Tourism Experience

From a communication science perspective, media not only functions as a channel for conveying information, but also as a symbolic environment that shapes how individuals understand social reality through cultural representations and narratives [20]. In the context of digital tourism, communication technology acts as a mediator that connects tourists with representations of tourist destinations.

The concept of mediated experience explains that an individual's experience of a place can be shaped through media representations, even without physical presence at the location. In digital tourism, tourists can experience destinations through virtual tours, environmental simulations, or digital narratives presented through various immersive technology platforms [21].

One important concept in understanding immersive tourism experiences is presence, which is the

psychological sensation that a person is in a digitally mediated environment. Presence allows users to feel an experience that is close to reality when interacting with a virtual environment [22]. In the context of tourism, the sensation of presence can increase tourists' emotional engagement and influence how they understand a destination.

In addition to presence, the digital tourism experience is also influenced by how cultural representations are presented in the digital environment. In cultural tourism, immersive technology allows tourists to interact with historical narratives, cultural symbols, and local identities through digital visualization and spatial reconstruction [23]. Thus, immersive media functions not only as visualization technology but also as a medium of communication that conveys cultural meaning to tourists.

However, the literature shows that research examining immersive tourism from a communication perspective is still relatively limited. Most studies still focus on technological aspects and tourist behaviour, while studies on how immersive technology shapes the construction of cultural meaning in tourism experiences are still rare [24]. Therefore, a stronger communication approach is needed to understand how immersive technology functions as a communicative environment in digital tourism experiences.

3. METHOD

This study uses a scoping literature review approach to map the development of research on the use of immersive media in cultural tourism, with a focus on how technology-mediated tourism experiences are conceptualized in academic literature. The scoping review approach was chosen because it allows researchers to identify research trends, the dominant technologies used, and conceptual gaps in this developing field of study [25]. This method also allows for systematic mapping of the literature without limiting the analysis to only certain empirical studies.

The review process in this study followed the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews) framework, which provides guidelines for the process of identifying, selecting, and analysing literature [26]. This framework was used to ensure that the literature review process was conducted transparently and systematically.

The first stage was to identify literature through searches in several academic databases relevant to the fields of tourism and digital technology. The search was conducted using a combination of keywords related to immersive media and cultural tourism, such as *virtual reality*, *augmented reality*, *immersive tourism*, *cultural tourism*, *heritage tourism*, and *digital tourism*. The publication range was limited to the period 2019–2025 to capture the latest research developments in the field of immersive tourism.

The second stage is literature screening. At this stage, articles obtained from the initial search process are examined based on their titles and abstracts to ensure their relevance to the research focus. Articles that are not relevant to the context of tourism, do not use immersive technology, or do not discuss digital tourism experiences are eliminated from the analysis process.

The third stage is full-text review to determine whether the articles meet the research inclusion criteria. Articles included in this study must meet several criteria, namely:

1. They are *peer-reviewed* scientific publications.
2. Discuss the use of immersive technologies such as VR, AR, MR, or XR in the context of tourism.
3. Contain discussions about travel experiences, user engagement, or cultural interpretation in digital travel experiences.

Articles that only discuss the technical aspects of system development without any connection to travel experiences or the context of tourism were eliminated from the analysis.

After the selection process was complete, articles that met the inclusion criteria were analysed through data charting or data extraction. This process was carried out using a standardized extraction form that included several key pieces of information, such as the year of publication, the context of the tourist destination, the type of immersive technology used, the research method, and the concept of the travel experience analysed in each study.

Literature analysis was conducted through two stages of synthesis, namely descriptive synthesis and thematic synthesis. Descriptive synthesis was used to map the distribution of research based on the type of immersive technology, cultural destination context, and methodological approaches used in the literature. Meanwhile, thematic synthesis was used to identify how technology-mediated tourism experiences were conceptualized in the literature, including concepts such as *presence*, *immersion*, digital narrative, cultural representation, and authenticity of the tourism experience.

The results of the analysis are then presented in the form of a PRISMA flow chart, a table of study characteristics, and a thematic mapping of the literature that shows research trends and conceptual gaps in immersive tourism studies. This approach allows the study to not only identify the technologies used in immersive tourism but also understand how these technologies shape the tourism experience from a communication perspective.

4. Findings and Discussion

4.1 Prisma Flow of Study Selection

The study selection process followed the PRISMA-ScR framework to ensure transparency and systematic reporting. As illustrated in Figure 1, a total of 145 records were initially identified through database searching. After removing duplicate records, 120 articles were screened based on their titles and abstracts.

During the screening stage, 70 articles were excluded due to irrelevance to immersive media, tourism context, or digital tourism experience. The remaining 50 full-text articles were assessed for eligibility. Of these, 19 articles were excluded because they focused solely on technical system development or did not address tourism experience, engagement, or cultural interpretation. Finally, 31 articles met the inclusion criteria and were included in the scoping review analysis.

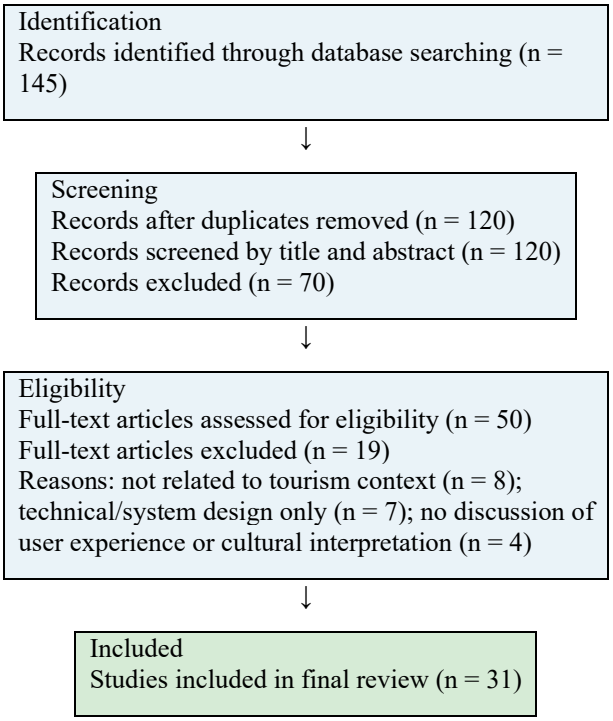


Figure 1. PRISMA Flow Diagram of Study Selection Process

Source: Author's compilation based on the PRISMA-ScR selection process.

4.2 Characteristic of Included Studies

The characteristics of the 31 included studies are presented in Table 1. The table summarizes key information such as authorship, year of publication, type of immersive technology, tourism context, research method, and main focus of each study.

The mapping indicates that immersive tourism research has developed rapidly, particularly after 2020, reflecting the acceleration of digital transformation in the tourism sector and the increasing adoption of immersive technologies in cultural tourism contexts.

Tabel 1. Characteristics of Included Studies

Author(s)	Year	Tech	Method	Focus
Flavián et al.	2019	VR/AR	Review	Experience
Kim & Hall	2019	VR	Survey	Image
Yung & K-L	2019	VR/AR	SLR	Tourism exp.
Guttentag	2019	VR	Review	Application
Beck et al.	2019	VR	Conf	State-of-art
Buhalis & Sinarta	2019	Digital	Concept	Co-creation
Loureiro et al.	2020	VR/AR	Review	Engagement
Radianti et al.	2020	VR	SLR	Design
Tussyadiah	2020	VR/Dig	Review	Mediated exp.
Gretzel et al.	2020	Smart	Concept	Ecosystem
Jung & Dieck	2018	AR/VR	Review	Heritage
Xiang et al.	2019	Smart	Concept	Value
Buhalis et al.	2022	Meta	Concept	Transform
Dwivedi et al.	2022	Meta	Concept	Marketing
Gursoy et al.	2022	Emerging	Review	Impact
Sigala	2018	Digital	Review	Engagement
Li et al.	2018	Big data	Review	Data
Jensen	2020	Comm	Theory	Media
Jensen	2022	Comm	Theory	Method
Slater & S-V	2016	VR	Theory	Presence
Empirical	2020	VR	Exp	Presence
Empirical	2020	AR	Case	Interpretation
Empirical	2021	VR	Exp	Emotion
Empirical	2021	AR	Survey	Learning
Empirical	2021	VR	Survey	Image
Empirical	2022	XR	Mixed	Interaction
Empirical	2022	AR	Qual	Narrative
Empirical	2023	Meta	Mixed	Avatar
Empirical	2023	VR/AR	Mixed	Authenticity
Empirical	2024	XR	Emp	Social
Empirical	2025	Immersive	Review	Trends

4.3 Descriptive Mapping of The Literature

The descriptive analysis reveals several important patterns in immersive tourism research.

First, in terms of publication trends, most studies were published after 2020, indicating a significant increase in scholarly attention following the expansion of digital tourism and virtual experience technologies.

Second, in terms of technology, Virtual Reality (VR) is the most dominant immersive technology discussed in the literature. VR is widely used to create pre-visit experiences, allowing tourists to explore destinations virtually before physically visiting them. These virtual experiences have been shown to influence destination perception, emotional engagement, and visit intention.

Augmented Reality (AR) is also widely used, particularly in museum and cultural heritage tourism. AR enhances interpretive experiences by integrating digital information with physical environments, enabling tourists to better understand historical narratives and cultural contexts.

Meanwhile, Extended Reality (XR) and metaverse-based environments are emerging areas of research. These technologies enable more interactive and socially connected tourism experiences, although empirical studies in this area remain limited.

Third, in terms of methodology, the literature is dominated by quantitative approaches, particularly surveys and experiments that measure variables such as presence, immersion, engagement, and destination image. Conceptual and review-based studies are also prominent, while qualitative approaches remain underrepresented.

4.4 Thematic Analysis of Immersive Tourism Research

Based on the synthesis of the selected studies, four major themes were identified

Theme 1: Technological Dominance in Immersive Tourism

The results of the literature mapping show that Virtual Reality (VR) is the most dominant technology used in immersive tourism research. VR allows tourists to experience destination simulations through a three-dimensional virtual environment that can be accessed via a headset or digital screen. This technology is often used in the context of pre-visit experiences, namely virtual tourism experiences that allow tourists to explore destinations before physically traveling there.

A number of studies show that VR experiences can improve tourists' perceptions of destinations and strengthen the image of destinations they build before traveling. Immersive virtual experiences can influence tourists' emotional evaluation of a place, which ultimately contributes to an increase in *visit intention* [28]. In other words, VR technology not only functions as a medium for visualizing destinations but also as a tool that shapes tourists' expectations of the travel experiences they will have.

Apart from VR, Augmented Reality (AR) technology is also widely used in the context of museum tourism and cultural heritage tourism. Unlike VR, which creates a completely virtual environment, AR works by adding digital elements to a real physical environment . This technology is usually accessed through smartphones or tablets, making it easier for tourists to obtain additional information about cultural objects interactively.

In various museums and cultural heritage sites, AR is used to display historical reconstructions, digital animations, or additional narratives that help visitors understand the cultural context of an artifact or historic building. Research shows that the use of AR in cultural tourism can increase visitor engagement and enrich the interpretive experience of cultural objects [29].

In addition to VR and AR, several recent studies have also begun to discuss the use of Extended Reality (XR) and metaverse environments in tourism. This technology enables the creation of digital tourism experiences that are not only individual but also social in nature. In the metaverse environment, users can interact with other users through digital avatars, attend virtual cultural events, or explore digital destinations represented in the virtual world [30].

In practice, the application of immersive technology in tourism does not always take the form of full VR simulations, but can also be in the form of interactive digital exhibitions, audiovisual storytelling, and historical visualizations that help tourists understand the cultural context of a destination.

One example that can be found in Indonesia is the tourist experience at Garuda Wisnu Kencana (GWK) Cultural Park in Bali. This destination features a monumental statue of the god Wisnu riding the Garuda bird, which is approximately 121 meters high and has become one of Indonesia's cultural tourism icons. In this area, visitors can take the Top of Statue Tour, which takes tourists inside the statue structure to explore an exhibition space that explains the statue's construction process and the mythology behind it.

In the exhibition space, information about the statue's construction and Hindu mythology is presented through audiovisual media, digital animation, and interactive installations that allow visitors to understand cultural stories in a more engaging way. This approach demonstrates that digital technology can serve as a medium for cultural interpretation, where historical narratives and cultural symbols are conveyed through visual and interactive experiences.

When compared to global examples such as VR tours of the Machu Picchu world heritage site or the use of AR in major museums around the world, the approach used at GWK shows that cultural tourist destinations in Indonesia are also beginning to integrate digital technology into their tourist experiences. Although the technology used is not yet fully VR or metaverse-based, the use of audiovisual media and interactive exhibitions has shown how technology can enrich cultural interpretation for visitors.

Theme 2 : Immersive Media as a Communication Environment

Literature analysis also shows that most research on immersive tourism still focuses on user experience and tourist behavior. Many studies evaluate how immersive technology affects tourists' perceptions of destinations, emotional engagement, and visitation intentions [31].

The variables most frequently used in research are presence, immersion, enjoyment, and destination image. Presence refers to the psychological sensation that a person is inside the virtual environment they are experiencing. When tourists feel a high level of presence, they tend to feel more connected to the virtual destination [32].

However, from a communication perspective, immersive media not only functions as a technological tool but also as a digital communication environment that mediates the travel experience. Immersive technology allows tourists to interact with various forms of cultural representation through visual narratives, spatial reconstructions, and cultural symbols displayed in a digital environment.

For example, when tourists explore Borobudur through a virtual tour, they not only see the temple structure visually, but can also understand the stories depicted in the reliefs through accompanying digital narratives. These narratives help tourists understand Buddhist philosophy and the historical context of the temple's construction.

A similar example can be found in the experience at Garuda Wisnu Kencana, where digital visualizations and audiovisual installations are used to convey stories about Hindu mythology and the process of constructing the monumental statue. In this experience, technology not only presents information but also builds cultural narratives that help tourists interpret the symbolic meaning of the destinations they visit.

Based on the results of the literature mapping, several research gaps can be identified. First, most studies still focus on the context of destination marketing and tourist visitation intentions, while studies on tourism experiences as a process of cultural communication are still limited. Second, most studies use a quantitative approach that measures tourist behaviour variables, while studies that explore tourists' interpretations of cultural experiences in a digital environment are still relatively rare.

Third, although the concept of metaverse tourism has begun to appear in tourism literature, empirical research on tourism experiences in the metaverse environment is still very limited [33]. This indicates future research opportunities to explore how tourism experiences, social interactions, and cultural representations take place in more complex virtual spaces.

Considering these gaps, this study emphasizes the importance of a communication-cantered perspective in understanding immersive tourism. This perspective views immersive media not only as technological innovation in the tourism industry but as a medium of communication that shapes how tourists experience, understand, and give meaning to culture in digital tourism experiences.

5. Conclusion

This study examines the development of immersive media in cultural tourism through a scoping literature review. The findings indicate that Virtual Reality (VR) is the most dominant technology used in immersive tourism research, primarily for creating pre-visit experiences that allow tourists to explore destinations virtually before physical travel. Such immersive experiences can shape tourists' perceptions, strengthen destination image, and influence visit intention.

In addition, Augmented Reality (AR) is widely applied in museum and cultural heritage tourism to enrich interpretive experiences by integrating digital information with physical environments. Emerging technologies such as Extended Reality (XR) and metaverse environments further expand the potential of immersive tourism by enabling more interactive and socially connected digital experiences.

The analysis also shows that most existing studies focus on tourist behavior and destination marketing, while research exploring immersive tourism as a process of cultural communication remains limited. Therefore, this study emphasizes the importance of a communication-centered perspective, which views immersive media not only as technological innovation but also as a digital communication environment that mediates how tourists experience, interpret, and construct cultural meaning in tourism contexts.

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