

Application and Implication of Virtual Reality in Tourism : A Systematic Literatur Review

Anggi Dwiyanti¹, Rahmat Priyanto²

Email: anggidwynti30@gmail.com

Abstract

The tourism industry has utilized Virtual Reality (VR) as a technology that facilitates the delivery of engaging experiences for tourists. This study employs a systematic literature review method to explore the applications and implications of Virtual Reality (VR) in tourism, covering aspects of marketing, accessibility, and tourist experience. The search yielded 13 articles selected via the PRISMA chart based on predetermined inclusion and exclusion criteria. The results indicate that VR not only facilitates virtual tours and destination marketing but also enhances emotional engagement, visitor satisfaction, and accessibility. However, challenges remain, including user discomfort, high technology costs, and the need for further technological advancements. This review contributes to a thematic synthesis of VR applications and implications that can inform researchers, tourism practitioners, and technology developers.

Keywords: Virtual Reality, Tourism, Tourist Experience, Systematic Literatur Review.

1. INTRODUCTION

Virtual reality (VR) growth in the tourism industry has experienced a significant surge since 2020, especially in response to the impact of the COVID-19 pandemic. The global virtual tourism market size is expected to reach USD 6.49 billion by 2023, indicating a growing interest in digital tourism experiences. In addition, the projected growth market shows a Compound Annual Growth Rate (CAGR) of 26.9% from 2024 to 2030 (Research, 2024). The COVID-19 pandemic has accelerated the adoption of Virtual Reality (VR) in tourism as an alternative way to communicate destinations and reduce the distance between tourists and attractions during travel restrictions (Florek & Lewicki, 2022). Additionally, Virtual Reality (VR) technology has demonstrated a significant positive impact on consumer online experiences and brand loyalty in the context of travel e-commerce (Xie & Yuan, 2021).

Virtual reality (VR) is used to provide virtual tours of destinations, create interactive maps and guides, and develop simulations of tourist attractions (Podolskaya et al., 2024). Virtual reality (VR) is enhancing the traveler experience and driving innovation in the sector. For example, 360-degree Virtual Reality (VR) tours of food production sites have been shown to influence visitors' enjoyment, satisfaction, and intention to visit the site physically (De Canio et al., 2022). In addition, although Virtual Reality (VR) can make destinations more accessible, there are still concerns about the accessibility of the technology due to its cost and complexity (Shukla et al., 2024).

The current state of Virtual Reality (VR) in tourism covers several key areas, including planning and management, marketing, entertainment, education, accessibility, and heritage preservation (Guttentag, 2010). Virtual Reality (VR) applications in tourism are not limited to pre-trip experiences. Virtual Reality (VR) is also used to enhance on-site experiences, enable post-trip memories, and in some cases, even replace physical travel (Baker et al., 2023). The integration of Virtual Reality (VR) with other technologies, such as Augmented Reality (AR) and Artificial Intelligence (AI), further expands its potential, offering personalized recommendations, real-time language translation, and adaptive trip planning (Tourist et al., 2024). In addition, the development of Virtual Reality (VR) applications raises questions about the future

* Anggi Dwiyanti

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of physical tourism and potential substitutes for virtual travel (Pestek & Sarvan, 2020). Looking to the future, some areas show promise for further development. The metaverse is expected to play an important role in shaping the tourism industry, enabling the creation of virtual worlds, avatars, and digital doubles (Baker et al., 2023). There is also potential for Virtual Reality (VR) to address sustainability issues in tourism, especially in the context of over-tourism and environmental preservation (Geng, 2022). Interestingly, although Virtual Reality (VR) offers many benefits, some studies have reported potential drawbacks. For example, some participants mentioned experiencing discomfort, such as motion sickness and eye strain, when viewing 360° videos (Dutta et al., 2024). In addition, the lack of human resources associated with Virtual Reality (VR) Tourism content creation has led to delays in content updates, potentially undermining the full potential of tourism destinations (Kristanto et al., 2024).

This study examines how VR is transforming the paradigms of destination planning and management as well as the tourism system as a whole, particularly in the context of interactivity and technological innovation to meet the needs of modern travelers. The research also assesses the potential of VR as a substitute for physical travel, along with the challenges and opportunities arising from the integration of this technology.

This topic is critically important to study because virtual reality is increasingly becoming a key element linking technological innovation with tourism experiences that are increasingly personalized, immersive, and meaningful. A systematic review of VR's applications and implications in the tourism sector can provide strategic guidance for the development of more effective and sustainable technology, marketing, and tourism destination management in the future.

The primary objective of such a systematic literature review is to explore the applications and implications of VR in tourism. This includes analyzing VR's potential to revolutionize tourism experiences and marketing strategies, identifying adoption barriers, and proposing integrative models to support the sustainable and effective use of VR technology in tourism development and management. Several other studies discuss the broader implications of VR use in tourism, such as the study "Virtual Reality Tourism Experiences: Addiction and Isolation" (dyson_id: 420c3f65f8a73caf9374fd99fed9628b) and "Immersive Media-Based Tourism: Emerging Challenges of VR Addiction Among Generation Z." Meanwhile, this study focuses on how VR supports marketing, accessibility, and tourism experiences, while identifying sustainability challenges and opportunities.

2. RESEARCH METHOD

The Systematic Literature Review (SLR) method serves as a crucial tool for synthesizing and evaluating existing research across various fields. SLR provides a structured approach to identifying, assessing, and summarizing relevant studies on a specific topic (Reed et al., 2007; Varsha et al., 2024). This study aims to explore the applications and implications in tourism.

Research Question

The questions in this research are divided into two parts to analyze Virtual Reality (VR) in tourism. The questions in this research are as follows: 1). Research Question, What are the Applications of Virtual Reality (VR) in Tourism?; 2). Research Question, What are the Implications of Virtual Reality (VR) in Tourism?

Selecting Database

This research adopted the SLR method as an overview of the research conducted. The database in this systematic literature review research comes from the research database, namely EBSCO. From the research database, a search for various academic journal literature that has a relationship with the theme of the research being carried out is carried out.

Appropriate Search Term

In this SLR, all the literature to be reviewed and overviewed came from 1 academic research database. The keywords used to search the research literature use Boolean syntax with the aim of combining various keywords such as AND and OR. The set of keywords used in this study is as follows:

Tabel 1. Appropriate Search Term

Keywords	Synonyms	Additional Words
"Application"	"Apply" (+OR) "Integration"	+AND
"Implication"	"Impact" (+OR) "Effect" (+OR) "Consequences"	+AND
"Virtual Reality"	"VR"	+AND
"Tourism"	"Tourist" (+OR) "Travel" (+OR) "Holiday" (+OR) "Vacation"	

Source: Compiled by the Researcher

Inclusion/Exclusion Criteria

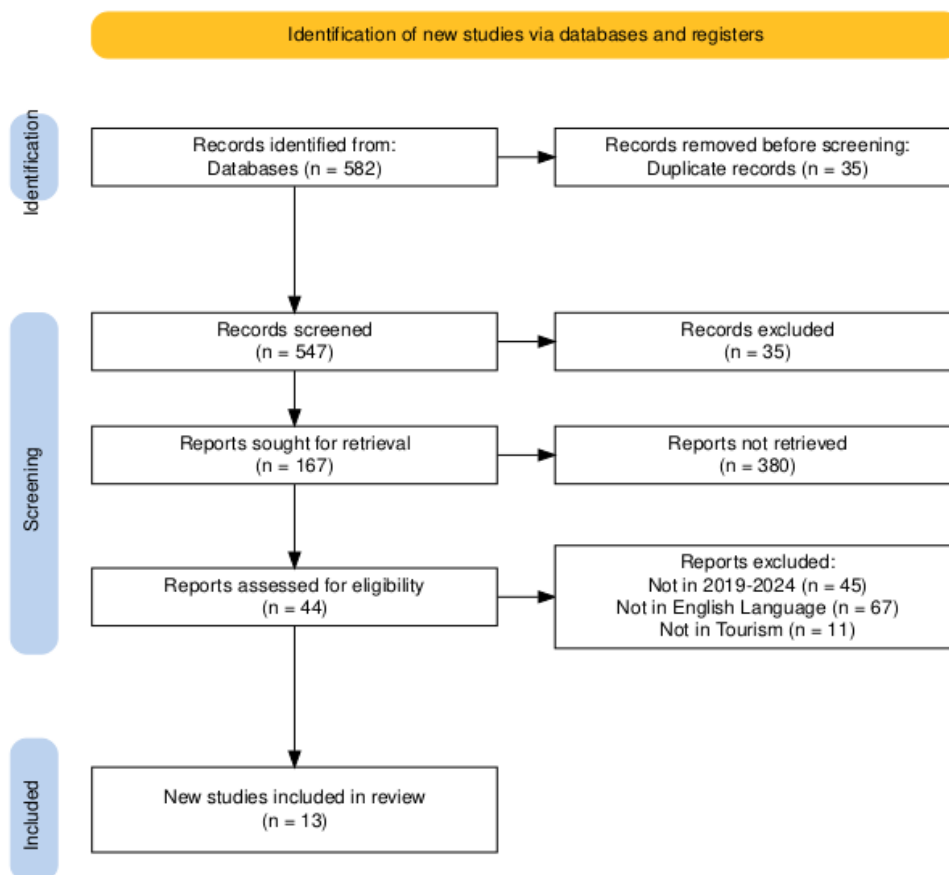
The inclusion criteria in this study consisted of 5 different criteria as follows: 1). The research article focuses on the applications and implications of Virtual Reality (VR) in tourism; 2). The research articles were published from 2019 to 2024; 3). The research articles were published in English; 4). The research articles conduct empirical studies on applications and implications in the context of tourism; 5). The reviewed research articles have relevance to the research questions; 6) Accessible journals

Furthermore, the exclusion criteria in this study consisted of 2 criteria as follows: 1). Studies that are reviews, systematic reviews, or meta-analyses (to avoid secondary synthesis bias); 2). Research articles identified as duplicates were eliminated; 3). Research articles found to be outside the field of tourism were excluded.

Sample selection

The research articles reviewed in this study were obtained through string keyword searches on predefined research databases. The search results on one database identified a total of 582 articles that could potentially be reviewed in this study. Furthermore, a prism methodology was conducted to select 582 research articles that fit the predetermined inclusion and exclusion criteria. The stages and flow of research literature screening can be seen more clearly in the following figure:

Figure 1. PRISMA Flowchart for the Literature Screening Process



Source: Compiled by the Researcher

In the PRISMA flowchart stage, 35 duplicate research articles were removed from the source database. Subsequently, a journal verification process was conducted, including checks on academic journals; as a result of this verification, 380 research articles were excluded, leaving $n = 167$ relevant articles for further review and analysis. The author then conducted an in-depth analysis of these 167 research articles, removing 45 articles not published between 2019 and 2024, 67 articles not in English, and 11 articles not in the field of tourism. As a result of this process, the number of relevant research articles for further review and analysis was reduced to $n = 13$. Data was then extracted from these 13 research articles to determine the country, the theory used, and the journal publisher. The final stage involved analyzing the applications and implications of Virtual Reality (VR) in tourism.

3. RESULTS AND ANALYSIS

Result

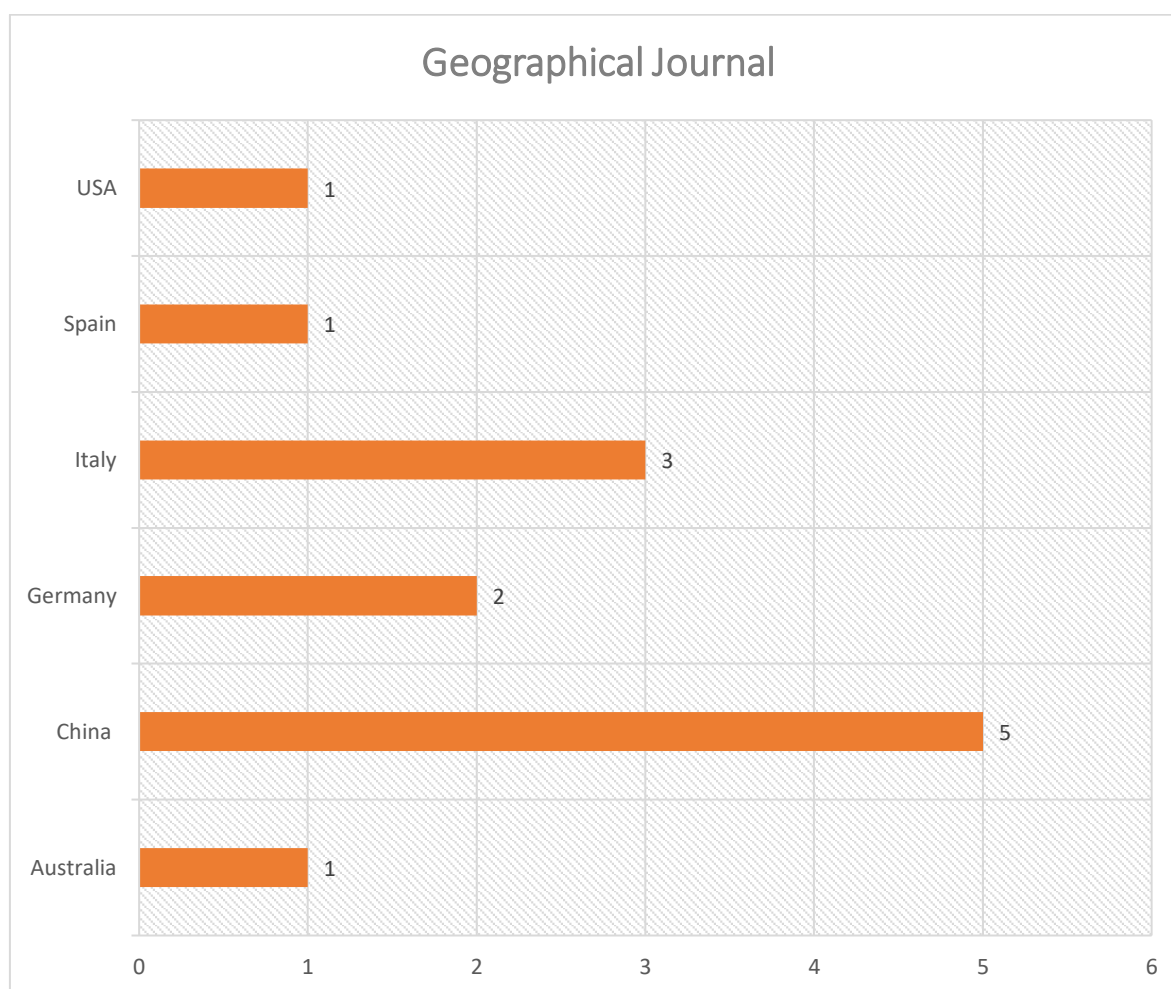
A review of 13 research articles was conducted to determine the applications and implications of Virtual Reality (VR) in tourism. The results of the analysis and review are presented in the following two sections: (1) A quantitative analysis was conducted to understand the geographic distribution and publishers of research journals related to the use of Virtual Reality (VR) in Tourism. (2) Qualitative synthesis analysis was conducted to identify the theories used in research articles related to Virtual

Reality (VR) and tourism. (3) Qualitative synthesis analysis to determine the implications and applications that affect the application of virtual reality (VR) in the tourist experience.

Geographical Context

The geographical context below presents the empirical research activities conducted. In the list of studies, most of the research literature was conducted in Australia with 1 study (Yung et al., 2019). Furthermore, the research literature conducted in China includes as many as 5 studies (Huang et al., 2023; Shao et al., 2020; Shu et al., 2023; Wang et al., 2021; Zeng et al., 2022). The research literature conducted in Germany is 2 studies (Israel et al., 2018; Rauscher et al., 2020). Literature research conducted in Italy, as many as 3 studies (Errichiello et al., 2019; Marasco & Balbi, 2019; Trun & Campana, 2020). Research literature conducted in Spain, as much as 1 study (Rejón-guardia et al., 2020). Finally, one research literature was conducted in the USA (Z. Chen, 2023; Errichiello et al., 2019).

Figure 2. Geographical Context



Source: Author's Analysis

Based on the graph above, China dominates due to the exponential growth of its publications in the latest bibliometric data, supported by massive government and industry policies. China has over 10,000 VR companies (2024), which drive collaborative research and high academic output. VR is revolutionizing research through immersive simulations, reducing the costs of physical experiments by billions of dollars of global GDP by 2030. VR fosters international collaboration, enhances virtual access in the tourism sector, and reduces environmental waste through digital modeling.

Table 2. Geographic Distribution of Reviewed Studies

Country	n	%	Reference
Tiongkok	5	38,5%	Huang et al.; Shao et al.; Shu et al.; Wang et al.; Zeng et al.
Italy	3	23,1%	Errichiello et al.; Marasco & Balbi; Trun & Campana
Germany	2	15,4%	Israel et al.; Rauscher et al.
USA	1	7,7%	Chen, Z.
Spain	1	7,7%	Rejón-guardia et al.
Australia	1	7,7%	Yung et al.
Total	13	100%	

Source: Compiled by the researcher

Implementation Firm

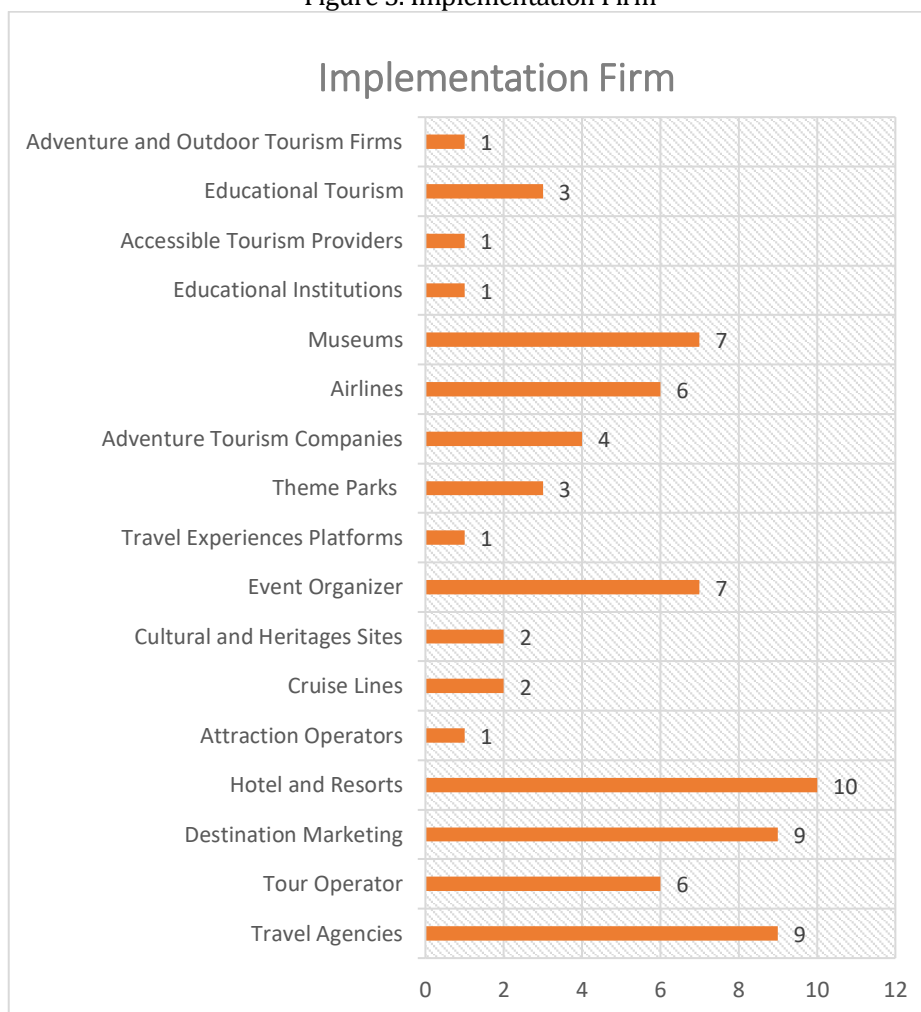
Virtual Reality (VR) is implemented in many Tourism companies. Primarily, virtual reality (VR) is implemented in hotels; High-end hotels can provide virtual tours of their facilities, including rooms, amenities, and surrounding attractions, to entice potential guests and enhance the booking experience. (Shao et al., 2020).

Next is Travel Agencies, which uses virtual reality (VR) to provide virtual tours to various destinations, helping customers visualize their trip before booking (Rauscher et al., 2020). The following implementation of Virtual Reality (VR) is Destination marketing, which can use Virtual Reality (VR) in marketing campaigns to create immersive experiences that showcase destination attractions, culture, and activities, making them more attractive to potential visitors, besides Virtual Reality (VR) can be used to involve local communities in tourism planning and development by allowing them to visualize proposed projects and their impacts (Shu et al., 2023).

The following implementation of Virtual Reality (VR) for Tourism Companies is Event Organizers, namely Virtual Attendance Options, Organizers can offer Virtual Reality (VR) attendance options for remote participants, thus making events more accessible. Interactive Networking, Virtual Reality (VR) can facilitate networking opportunities in a virtual environment, allowing participants to interact as if they were physically present (Y. Zeng et al., 2022).

Museums use Virtual Reality (VR) to create virtual exhibitions and tours. This allows visitors to explore collections and artefacts interactively, making art and history more accessible to a broader audience (Z. Chen, 2023). Furthermore, Airlines can provide VR experiences that allow travellers to explore airport facilities, lounges, and the boarding process, thus enhancing the overall travel experience. (Shu et al., 2023). Tour operators can use VR to simulate guided tours so customers can experience the itinerary virtually. This can be particularly useful for promoting new tours or destinations, as it gives a sense of the experience without physically travelling (Huang et al., 2023).

Figure 3. Implementation Firm



Source: Compiled by the Researcher

Based on the graph, VR is widely used in Hotels and Resorts for virtual tours of rooms, facilities, and the surrounding destination, providing an immersive experience for potential guests before booking.

Thematic categorization of VR implementation in the tourism industry: (1) Hospitality & Booking Experience, including hotels, travel agencies, travel experience platforms, theme parks, educational tourism, educational institutions, cruise lines, attraction operators, accessible tourism providers, and adventure and outdoor tourism firms (focusing on virtual tours for visualization and booking); (2) Marketing & Community Engagement: Destination Marketing (immersive campaigns and local engagement); (3) Events & Networking: Event Organizers (virtual attendance and remote interaction); (4) Cultural & Educational Access: Museums, cultural, and heritage sites (interactive exhibitions for a broad audience); (5) Travel Operations & Simulation, namely Airlines, Tour Operators (facility simulations and guided tours).

Table 3. Summary Table of Implementation Firms

No	Sector	Implementation	Key Benefits
1	Travel Agencies	Virtual destination tours to help customers visualize their trip before booking	Visualize the trip before booking
2	Tour Operator	Virtual guided tour simulations to promote new destinations without physical travel	Promoting new tours/destinations without physical travel
3	Destination Marketing	Immersive marketing campaigns showcasing attractions & culture with local community involvement in tourism project visualizations	Attract visitors by involving the local community
4	Hotel and Resorts	Virtual tours of facilities—rooms, amenities, and nearby attractions—to attract potential guests and enhance the booking experience	Attract guests, enhance the booking experience
5	Attraction Operators	Preview rides, attractions, or tourist experiences	Increase interest in visits and provide a glimpse of the real experience
6	Cruise Lines	Virtual tours of ships, cabins, facilities, and cruise routes	Helping prospective passengers understand the cruise experience
7	Cultural and Heritages Sites	Virtual reconstructions of historical and cultural heritage sites	Preserving, educating, and expanding visitor access
8	Event Organizer	Virtual presence for remote participants, interactive networking in a virtual environment	Remote access, physical-like interaction
9	Travel Experiences Platforms	Virtual destination experiences before travel	Assisting travelers with planning and decision making
10	Theme Parks	Simulations of rides and amusement park areas	Attracting visitors and building excitement before their visit
11	Adventure Tourism Companies	Simulations of adventure activities such as hiking, diving, or rafting	Providing a preview of the experience and boosting prospective tourists' sense of security
12	Airlines	Virtual exploration of airport facilities, waiting areas, and boarding processes to enhance the travel experience	Enhance the travel experience
13	Museums	Interactive virtual exhibitions and tours to explore collections and artifacts more extensively	Interactive access to a wide range of art and history

14	Educational Institutions	VR-based learning and virtual tours	Supporting interactive learning and exploration of educational locations
15	Accessible Tourism Providers	Virtual tourism experiences for users with limited mobility	Enhancing tourism inclusivity and accessibility
16	Educational Tourism	Virtual tours to educational locations such as museums, historical sites, or laboratories	Enriching travelers' learning experiences
17	Adventure and Outdoor Tourism Firms	Terrain simulations, outdoor activities, and destination conditions	Helping travelers understand the challenges and experiences of travel

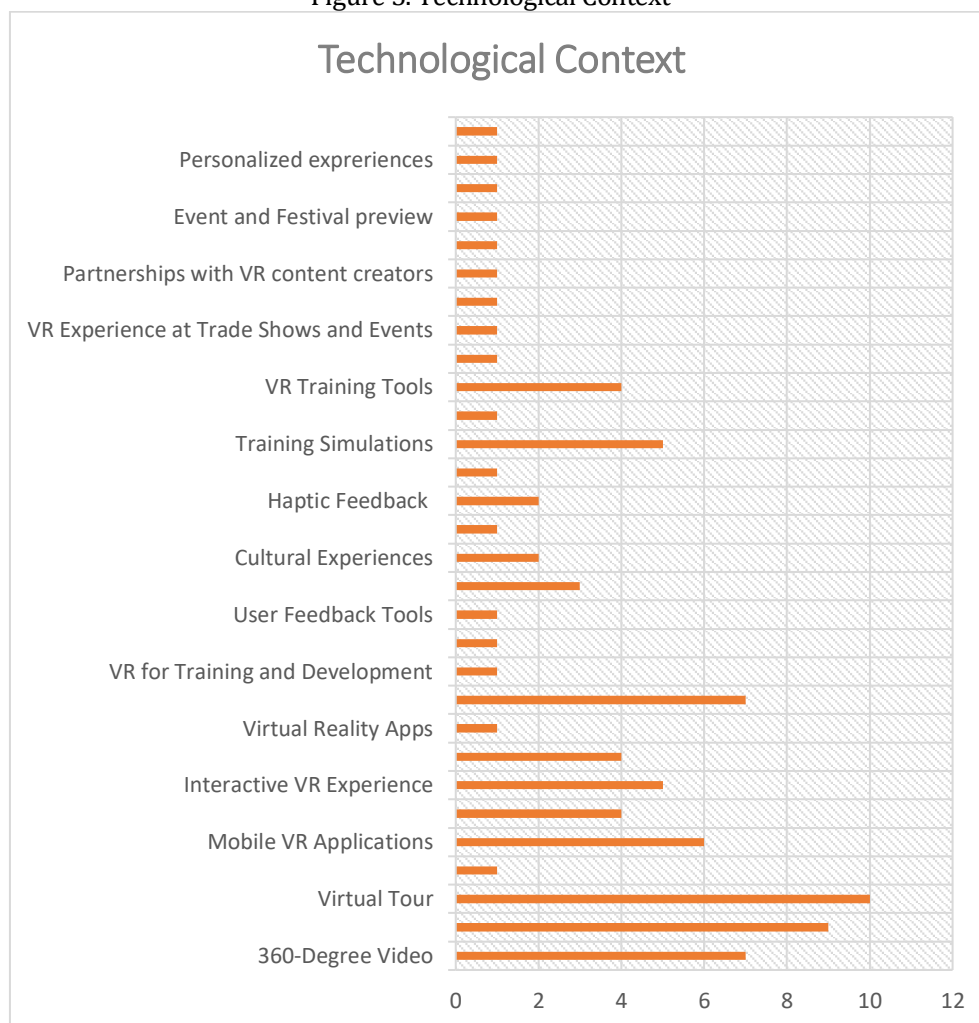
Source: Compiled by the Researcher

Technological Context

Most of the Virtual Reality technology used in tourism is Virtual Tour (VR), which allows users to explore destinations from the comfort of their homes. Virtual tours can showcase attractions, hotels, and landmarks, providing a realistic preview that can influence travel decisions (Wang et al., 2021). Next are VR Headsets, which provide an immersive experience, allowing users to feel physically present in a virtual environment. These devices are especially beneficial for visitors with limited mobility, allowing them to explore heritage sites without physical constraints (Marasco & Balbi, 2019). 360-degree Videos: these videos offer panoramic views of the destination, allowing potential travellers to experience the location from all angles. This format is particularly effective for showcasing attractions and creating a sense of presence (Rejón-guardia et al., 2020). Social VR Platforms allow users to interact with others in a virtual space, enhancing the social experience associated with travel (Rauscher et al., 2020).

Furthermore, VR Technology used in tourism is a Mobile VR Application that allows users to access virtual tourism experiences on their smartphones, making it more accessible and convenient (Huang et al., 2023). Training Simulation, Virtual Reality (VR) trains staff in the tourism sector, providing realistic scenarios for customer service, emergency response, and operational procedures without the risks associated with real-life training (Wang et al., 2021). Next is the Interactive Virtual Reality (VR) Experience, some companies develop interactive VR experiences where users can interact with the environment, make choices, and explore various scenarios. This can include virtual adventures, cultural experiences, or historical reenactments (Shao et al., 2020).

Figure 5. Technological Context



Source: Compiled by the Researcher

Based on the graph, VR is more widely used for Virtual Tours, due to its ability to create realistic immersive experiences, allowing users to explore places without limitations.

Table 4. Summary Table of Technological Context

No	Thematic Category	Key Technology	Findings
1	Immersive Destination Exploration	Virtual Tour, 360-Degree Video, Interactive VR Experience	The most dominant technology in tourism because it provides a realistic and immersive destination exploration experience.
2	Immersive Hardware and Access Technology	VR Headsets, Mobile VR Applications	Facilitates access to virtual tourism and enhances the user experience through more interactive devices.
3	Social and Interactive Engagement	Social Platforms, Gamification, Personalized Experiences	Enhancing social interaction, user engagement, and more personalized travel experiences.

4	Training and Operational Simulation	Training Simulations, VR Training Tools	Used for training tourism staff with safe and realistic simulations.
5	VR Training Tools	Destination Marketing, Event Preview, VR Trade Shows	Helps promote tourist destinations with engaging and persuasive virtual visualizations.

Source: Compiled by the Researcher

Application Virtual Reality In Tourism

Virtual Reality (VR) applications in tourism are becoming increasingly popular for promotion, virtual tours, and immersive experiences, especially in post-pandemic Indonesia.

Virtual Tour

Virtual Reality (VR) allows users to explore destinations from the comfort of their homes. Virtual tours can showcase attractions, hotels, and landmarks, providing a realistic preview that can influence travel decisions (Wang et al., 2021).

Virtual Reality (VR) Headsets

These devices provide an immersive experience, allowing users to feel physically present in a virtual environment. They are particularly beneficial for visitors with mobility limitations, enabling them to explore heritage sites without physical barriers (Marasco & Balbi, 2019).

360-Degree Video

These videos offer panoramic views of destinations, allowing prospective travelers to enjoy locations from all angles. This format is highly effective for showcasing attractions and creating a sense of presence (Rejón-guardia et al., 2020).

Social Virtual Reality (VR)

Platforms This allows users to interact with others in a virtual space, enhancing the social experience associated with travel (Rauscher et al., 2020).

Virtual Reality (VR) Technology

In tourism, this refers to Mobile Virtual Reality (VR) Applications. These applications allow users to access virtual tourism experiences on their smartphones, making them more accessible and convenient (Huang et al., 2023).

Training Simulation

Virtual Reality (VR) trains staff in the tourism sector, providing realistic scenarios for customer service, emergency response, and operational procedures without the risks associated with real-life training (Wang et al., 2021).

Interactive Virtual Reality (VR)

Experience Several companies are developing interactive Virtual Reality (VR) experiences where users can interact with the environment, make choices, and explore various scenarios. This can include virtual adventures, cultural experiences, or historical reenactments (Shao et al., 2020).

Marketing and Promotion

Tourism boards and marketing organizations use Virtual Reality (VR) to create engaging promotional content that showcases a destination's unique features. By providing an immersive experience, they can attract more visitors and generate interest in lesser-known locations (Shao et al., 2020).

Cultural Heritage and Education

Virtual Reality (VR) can be used in museums and cultural heritage sites to provide interactive and educational experiences. Visitors can explore historical sites, artifacts, and cultural (Y. Zeng et al., 2022).

Social Sharing

Virtual Reality (VR) experiences can facilitate social sharing, allowing users to connect with others who share a common interest in heritage and culture. This can increase the sense of community among visitors and encourage discussion about their experiences (Marasco & Balbi, 2019).

Accessibility Enhancement

Virtual Reality (VR) can make tourism more inclusive by providing experiences for individuals who may have mobility challenges or other disabilities. Virtual experiences can allow these people to “visit” places that they may not be able to physically access (Huang et al., 2023).

Enhanced Customer Engagement

By integrating Virtual Reality (VR) into their website or mobile app, tourism businesses can create interactive experiences that engage users and encourage them to share their experiences with others, thus increasing word-of-mouth marketing (Israel et al., 2018).

Table 5. Applications of Virtual Reality in Tourism

No	Application	Description
1	Virtual Tour	Explore destinations, attractions, hotels, and landmarks from home for a realistic preview that influences travel decisions
2	Virtual Reality (VR) Headsets	Immersive experiences for virtual physical presence, beneficial for users with mobility limitations at heritage sites
3	360-Degree Video	Panoramic views of destinations from all angles, effectively building a sense of presence at attractions
4	Social Virtual Reality (VR) Platforms	Social interaction in virtual spaces for shared travel experiences with others
5	Mobile Virtual Reality (VR) Application	Access virtual travel experiences via smartphones—easy and convenient
6	Training Simulation	Train tourism staff using realistic customer service and emergency scenarios without risk
7	Interactive Virtual Reality (VR) Experience	Dynamic interaction with the environment for adventure, cultural, or historical experiences
8	Marketing and Promotion	Immersive content promoting lesser-known destinations to attract visitors
9	Cultural Heritage and Education	Interactive museum experiences to explore artifacts and culture
10	Social Sharing	Sharing VR experiences for community engagement and heritage discussions
11	Accessibility Enhancement	Inclusive for people with disabilities, virtual access without physical barriers
12	Enhanced Customer Engagement	Web/app integration for interaction and word of-mouth marketing

Source: Compiled by the researcher

After visiting a destination, travellers can use Virtual Reality (VR) to revisit their experiences, relive moments and share them with others, increasing their overall satisfaction and relationship with the place (Wang et al., 2021). Virtual reality (VR) can enable participation in cultural events, festivals, or performances from a distance. Virtual reality (VR) allows individuals who cannot travel to experience significant cultural events (Trun & Campana, 2020). During difficult times, such as the COVID-19 pandemic, Stress relief and mental health Virtual Reality (VR) travel experiences have been proven to reduce stress and negative emotions. They offer a form of escapism, allowing users to enjoy the travel experience from the comfort of their homes (Y. Zeng et al., 2022).

Implication Virtual Reality In Tourism

Positive implications of virtual reality (VR) in the context of tourism are enhanced visitor experience. Virtual Reality (VR) technology can significantly enrich the visitor experience by providing immersive and interactive environments that allow tourists to engage with cultural sites in new ways. This can increase satisfaction and emotional engagement, making the visit more memorable (Errichiello et al., 2019).

Marketing and Promotion, Tourism businesses can utilize Virtual Reality (VR) to create engaging marketing campaigns that showcase their services more interactively. Virtual tours and experiences attract customers by giving them an idea of what they can expect, potentially increasing bookings and brand loyalty (Z. Chen, 2023).

Accessibility, Virtual Reality (VR) can provide alternative access to cultural heritage sites for individuals with mobility impairments or other disabilities. By offering immersive experiences that bypass physical barriers, Virtual Reality (VR) can ensure that everyone can engage with and appreciate cultural heritage, thus promoting inclusivity in tourism (Marasco & Balbi, 2019).

Future Research Directions, this study paves the way for further research on the effectiveness of Virtual Reality (VR) in tourism, especially in understanding how different demographics respond to Virtual Reality (VR) experiences and how Virtual Reality (VR) can be optimized for various cultural contexts (Trun & Campana, 2020).

Furthermore, Emotional Engagement is a study that emphasizes the importance of emotional engagement in the Virtual Reality (VR) experience. By fostering a sense of pride and emotional resonance with the displayed culture, Virtual Reality (VR) can deepen travellers' connection with the destination, increasing their overall satisfaction and intention to visit in person (Y. Zeng et al., 2022).

Improved Tourist Experience, By utilizing Virtual Reality (VR), tourism stakeholders can offer potential visitors a preview of a destination, attraction, or experience before they arrive. This can improve the decision-making process for tourists, making them more likely to visit a destination they have experienced virtually (Shao et al., 2020).

Table 6. Positive Implications of Virtual Reality (VR)

No	Positive Implications	Description
1	Enhanced Visitor Experience	Immersive and interactive environments enhance satisfaction and emotional engagement at cultural sites
2	Marketing and Promotion	Interactive VR campaigns increase bookings and brand loyalty through service previews
3	Accessibility	Inclusive access to heritage sites for people with disabilities, overcoming physical barriers
4	Future Research Directions	Encourage research on varying demographic responses and cross-cultural optimization
5	Emotional Engagement	Build cultural pride, strengthen connections with the destination, and enhance visitation intent

6	Improved Tourist Experience	VR previews aid decision-making and increase physical visits
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Source: Compiled by the researcher

Additionally, there are negative implications of Virtual Reality (VR) in the context of tourism, specifically regarding revisit intention. Contrary to previous studies, these findings reveal that the awe experienced at these dark tourist sites does not increase tourists' desire to revisit. This may be due to the negative emotional experiences associated with the site, such as feelings of humiliation and national hatred (Wang et al., 2021).

Challenge and Consideration, While Virtual Reality (VR) offers many benefits, there are some challenges to consider, such as the cost of the technology, the need for adequate training for users, and the perception of authenticity in the virtual experience. Overcoming these challenges is crucial to successfully adopting virtual reality (VR) in tourism (Y. Zeng et al., 2022).

In need of Technological Advancements, these findings suggest that the limitations of current Virtual Reality (VR) technology, especially regarding visual quality and user experience, must be addressed. As technology evolves, improvements in the Virtual Reality (VR) experience may lead to greater acceptance and usage among potential travellers (Rauscher et al., 2020).

Table 7. Positive Implications of Virtual Reality (VR)

No	Negative Implications	Description
1	Revisit Intention	Admiration at dark tourism sites does not increase the intention to revisit due to negative emotions such as feelings of humiliation and hatred
2	Challenges and Considerations	Challenges include high technology costs, user training, and doubts about the authenticity of virtual experiences, which hinder adoption
3	Need for Technological Advancements	Limitations in the visual quality and user experience of current VR need to be addressed for wider acceptance

DISCUSSION

The study shows that virtual reality (VR) in the context of tourism is mainly used in China in the context of tourism. Virtual reality (VR) in tourism in China is proliferating due to several key factors. This growth can be attributed to technological innovation, increased investment, and a growing Virtual Reality (VR) application market. First, the country's Virtual Reality (VR) market is experiencing significant growth, with the projected market value reaching around 100 billion yuan by 2023. Strong technological and infrastructure support, including developing 5G networks, enables better Virtual Reality (VR) experiences. In addition, the response to travel restrictions due to the COVID-19 pandemic prompted many tourist destinations to adopt Virtual Reality (VR) as an alternative solution, allowing people to visit tourist attractions. The interest of the younger generation, especially Gen Z, also contributed to adopting Virtual Reality (VR), where the survey showed that 84.1% of respondents felt that virtual tourism enriched their experience. Finally, government initiatives that support the development of digital technology and innovation in the tourism sector further strengthen China's position as a leader in the application of Virtual Reality (VR) (Q. Zeng et al., 2022).

The immersive experience of virtual reality (VR) can increase traveller engagement and satisfaction, making it a valuable tool for marketers (Huang et al., 2023). The ability to create memorable experiences through VR is particularly relevant in a country with a rich cultural heritage, where virtual tours can attract domestic and international tourists (J. Chen et al., 2023). This application of virtual

reality (VR) serves marketing purposes but also helps preserve cultural sites by providing virtual access to cultural heritage locations (Z. Chen, 2023).

Virtual Reality (VR) is applied to tourism, namely for marketing and promotion, Virtual Reality (VR) is used to create attractive promotional content for a destination (Shao et al., 2020). Next, a Virtual Tour, which is applied to destinations, attractions, and accommodations (Huang et al., 2023). Cultural Heritage and Education Virtual Reality (VR) enhances educational tourism in museums and cultural heritage sites (Y. Zeng et al., 2022). Social Sharing, Virtual Reality (VR) experiences can facilitate social sharing, encouraging discussion about travelers' experiences of interest (Marasco & Balbi, 2019).

Furthermore, Virtual Reality (VR) is applied in tourism as an Accessibility Improvement, Virtual Reality (VR) can make tourism more effective (Huang et al., 2023). Increased consumer engagement, i.e. increased word-of-mouth marketing (Israel et al., 2018). Training and Simulation for hospitality staff to improve the quality of hotel services (Z. Chen, 2023). Virtual Reality (VR) incorporates gamification elements in destinations (Wang et al., 2021).

Post-visit engagement, to relive the traveller moment (Wang et al., 2021). Virtual Reality (VR) can be used to watch an event from a distance (Trun & Campana, 2020). Stress relief and mental health during difficult times, such as the COVID-19 pandemic (Y. Zeng et al., 2022).

Findings highlight key VR applications: marketing/promotion, virtual tours, cultural education, social sharing, improved accessibility, consumer engagement, staff training, gamification, post-visit experiences, and mental relaxation

There are positive implications and negative implications of virtual reality (VR) in tourism. Most of the positive implications of virtual reality (VR) in tourism are increased visitor experience in a tourist destination, attractions and accommodation (Huang et al., 2023). Facilitate Marketing and Promotion of a tourism product (Shao et al., 2020). Improving accessibility in tourism (Rauscher et al., 2020). Future Research Directions, Virtual Reality (VR) brings a positive impact by making tourism more effective (Trun & Campana, 2020). Emotional Engagement, deepening traveller relationships in increasing traveller satisfaction (Y. Zeng et al., 2022). Enhancing the Traveler Experience, which is showing a preview of the destination, attraction, or experience before tourists arrive (Shao et al., 2020).

The negative Implication of Virtual Reality (VR) in the context of Tourism is Revisit Intention does not increase the desire of tourists to visit again (Wang et al., 2021). Challenges and Consideration, Virtual Reality (VR) becomes a challenge and consideration of the costs required (Y. Zeng et al., 2022). Need for Technological Advances Virtual Reality (VR) is increasingly needed for technological advances (Rauscher et al., 2020).

Theoretically, this study integrates the Technology Acceptance Model (TAM) with Experiential Marketing to develop a contextual VR-tourism model for China, filling a gap in the literature with empirical evidence from Gen Z. Practically, a hybrid VR-physical approach is recommended to increase revisit rates, along with government subsidies to mitigate costs. Future directions: AI-VR integration for personalization, pilot testing in Indonesian tourism villages to adapt the Chinese model.

4. CONCLUSION

This systematic literature review examines and analyzes 13 research articles that met strict inclusion criteria (published 2019–2024, in English, with an empirical focus on VR in tourism), prioritizing studies from the EBSCO database to address research questions regarding the application and implications of Virtual Reality (VR) in tourism. Based on the analysis conducted, the application of Virtual Reality (VR) in the tourism industry has a significant impact on how tourists interact with destinations. Although Virtual Reality (VR) offers an immersive experience and a sustainable alternative to physical travel, challenges such as user discomfort and technological accessibility still need to be addressed. This study demonstrates that Virtual Reality (VR) can enhance marketing, accessibility, and the overall visitor experience. In the future, the integration of Virtual Reality (VR) with other technologies could expand its potential applications in tourism. Furthermore, it is important to continue exploring the positive and negative implications of Virtual Reality (VR) usage to ensure that this technology can effectively contribute to the sustainability of the tourism industry.

The analysis reveals VR's significant impact on tourist interactions with destinations, offering immersive and sustainable alternatives to physical travel—such as improved marketing, accessibility, and visitor satisfaction—though challenges like user discomfort (motion sickness) and technological accessibility remain.

This study is limited to a systematic literature review comprising only 13 articles, which are dominated by Chinese perspectives and underrepresent developing countries like Indonesia. The temporal distribution shows a bias toward post-2020 studies, thereby overlooking the pre pandemic evolution of VR. Specific decisions, such as the exclusion of non-empirical studies and non-English language articles, limit generalizability, while the absence of a meta-analysis hinders the quantification of VR effects.

Theoretically, this study synthesizes evidence from 13 articles for an integrative VR-tourism model, confirming the role of the Technology Acceptance Model (TAM) and Experiential Marketing Theory within a China-dominated context. Practically, it provides guidance for industry practitioners on hybrid VR-physical approaches to enhance tourist loyalty and cultural preservation. (1) Empirical testing of VR in Indonesian tourist villages to adapt the Chinese model; (2) Integration of VR with AI/metaverse for personalization; (3) Longitudinal study revisiting post VR intentions; (4) Analysis of VR's impact on tourists with disabilities in developing countries. This research affirms VR as a driver of sustainable tourism, with further exploration of its positive and negative implications to maximize its benefits.

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