

Virtual Reality in Tourism Research: A Thematic Literature Review

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Abstract

This study presents a comprehensive thematic and evolutionary review of 158 peer-reviewed journal articles and conference proceedings published over the past 25 years (2000–2024), examining the role of Virtual Reality (VR) in tourism research. Using a thematic literature review approach, the study identifies six core themes: virtual travel and sustainability, VR applications and system development, tourist experience and engagement, technology acceptance and behavioral intentions, destination marketing and promotion, and cultural heritage and virtual tourism. The findings reveal a significant shift from early conceptual explorations to practical implementations of VR in enhancing tourist experiences, destination branding, and post-pandemic recovery strategies. By synthesizing prevailing theoretical frameworks and methodological trends, the review maps the 25-year trajectory of VR in tourism and identifies key research gaps. This study offers valuable insights for scholars, developers, and industry stakeholders seeking to understand and advance the role of VR in shaping the future of tourism.

Keywords: *Virtual Reality, Tourism Research, Marketing Strategies, Tourist Behavior, Technology Adoption;*

1. Introduction

Virtual Reality (VR) has significantly transformed a variety of industries by enabling the simulation of real-life environments and interactions, fostering innovation in how services and experiences are conceptualized and delivered. Sectors such as manufacturing, education, healthcare, architecture, and entertainment have embraced VR to enhance visualization, training, planning, and user engagement (Akinola et al., 2020; Fakahani et al., 2022; Long et al., 2024; Schina et al., 2016). Among these, the tourism and hospitality industries which closely interlinked service sectors, have emerged as particularly fertile ground for VR applications.

The adoption of VR in tourism is reshaping the industry's landscape by enabling virtual simulations of travel experiences, enhancing destination marketing strategies, preserving cultural heritage, and elevating customer satisfaction through immersive and emotionally engaging content (Akinola et al., 2020; Lhotska et al., 2019; Oyedokun et al., 2024). This shift marks a broader transformation in how tourism services are delivered, where technology not only facilitates exploration but also redefines customer interaction and service personalization.

As a result, academic interest in VR's role in tourism has surged. Recent studies have explored how VR influences consumer expectations, service design, and travel behavior. For example, Kim et al. (2020) examined consumer behavior in VR tourism, while Tussyadiah et al. (2018) investigated how immersive VR experiences affect tourists' attitudes. This growing interest is further fueled by technological advancements that have made VR platforms and devices more accessible to the public, democratizing virtual tourism experiences.

Importantly, the COVID-19 pandemic accelerated the need for alternative tourism experiences. Researchers such as Alyahya & McLean (2022) as well as El-Said & Aziz (2022) emphasized VR's potential in sustaining destination appeal and consumer engagement during travel restrictions. Virtual tours and immersive digital content emerged as innovative tools for maintaining relevance and connection with potential travelers during times of crisis. Beyond marketing, VR is also being explored for its potential to revolutionize the core tourism experience itself. Cham et al. (2024) and Yung et al. (2021a) demonstrated that VR can enhance destination visit intentions by offering interactive and emotionally resonant experiences. These studies suggest that VR not only attracts tourists but also fosters deeper engagement that influences decision-making.

This evolution of VR in tourism has also introduced new strategic avenues for enhancing customer experiences. As Buhalis & Karatay (2022) and Leung et al. (2022) argued, immersive tools that blend virtual and real-world elements can create memorable experiences, which in turn influence tourists' behavioral intentions. These hybrid environments serve as powerful touchpoints for experience co-creation and personalization. However, with these opportunities come challenges. The rapid advancement of VR technologies demands continuous optimization to keep pace with evolving consumer expectations. Researchers like Canio et al. (2022) and Wei (2019) have highlighted the importance of VR immersion quality in shaping customer satisfaction and influencing travel decisions. High-quality, device-independent experiences are essential to maximizing VR's potential as a tool for tourism development.

Overall, VR is reshaping the interaction between tourists and destinations, offering new methods for engagement, personalization, and experience delivery. This thematic literature review synthesizes academic articles and conference proceedings published between 2000 and 2024 to provide a structured overview of VR's impact on the tourism and hospitality industries.

By identifying emerging themes and gaps, this review aims to offer insights into the current state of VR in tourism while outlining potential pathways for future research and innovation. To contextualize this investigation, it is essential to first review the existing body of scholarly work that explores the multifaceted applications and implications of VR within the tourism domain.

2. Literature Review

The evolving body of literature in tourism studies highlights the growing role of Virtual Reality (VR) as a transformative tool that redefines how tourists explore, interact with, and form perceptions of destinations. Scholars have extensively examined the diverse applications of VR within tourism, particularly its capacity to enhance user engagement, simulate immersive environments, and serve as a compelling promotional medium (El-Said & Aziz, 2022; Huang et al., 2021; Kim et al., 2020; Li et al., 2021; Tussyadiah et al., 2018).

During the COVID-19 pandemic, research began to focus more sharply on digital tourism's potential to complement or even temporarily replace traditional travel, offering safe and accessible alternatives amid global restrictions (Akhtar et al., 2021; Pahlevi et al., 2021; Szabo, 2022). Virtual tours and immersive simulations have proven especially effective in maintaining tourist interest and destination visibility when physical visitation is not feasible (El-Said & Aziz, 2022; Pahlevi et al., 2021).

Beyond crisis management, VR has demonstrated its versatility across various tourism domains. Studies have highlighted its applications in education, accessibility, marketing, heritage preservation, and entertainment, showcasing its potential to enhance multiple facets of the tourism experience. Moreover, VR has been recognized as a tool for sustainable tourism development, particularly in the context of ecotourism and regional cultural integration. Through its immersive qualities and often augmented by AR, VR helps improve tourist satisfaction and fosters deeper engagement (Băltescu, 2021).

As tourism businesses navigate an increasingly complex environment, VR is becoming a key component of broader digital transformation strategies. Its adoption now spans across hospitality services, destination management, and cultural heritage promotion, reflecting a shift toward more adaptive and consumer-centric practices (Elshaer & Abdo, 2014; Markopoulos et al., 2021). According to Gregorić (2022) this trend signals a move toward the integration of innovative solutions that align with evolving tourist expectations. Stakeholders can now harness VR to craft interactive, multisensory experiences that cater to modern travelers and contribute to the continued growth of the tourism sector.

The growing body of literature has also been shaped by key theoretical perspectives. For instance, Kim et al., (2020) developed a consumer behavior model for VR tourism grounded in the Stimulus-Organism-Response (SOR) framework, while Tussyadiah et al. (2018) addressed the presence theory explaining the effects of VR experiences on the change in attitude in tourism. Yung & Khoo-Lattimore (2019), in their systematic literature review, identified significant theoretical gaps in VR and AR research in tourism, emphasizing the need for more grounded frameworks in future studies.

Methodologically, VR tourism research spans a wide spectrum of approaches. Scholars have employed experimental, qualitative, and mixed-method designs to better understand the effects of VR on tourists. For example, Gao et al. (2022) extended authenticity theory using a

postmodernist lens, while Rather et al. (2024) explored VR-based brand engagement through the lens of Uses-and-Gratifications theory. These studies demonstrate the increasing relevance of diverse theoretical and methodological approaches in this field.

Recent studies illustrate the growing use of both quantitative and qualitative methods in VR tourism research. For instance, Huang et al. (2021) applied a psycho-physiological approach grounded in flow theory to investigate children's experiences with VR travel, highlighting the role of quantitative analysis. In contrast, Alkhaliel (2022) adopted a qualitative lens to explore how VR interactivity shapes memorable tourism experiences. Morrison et al. (2024) demonstrated the value of a mixed-methods approach by using VR to examine tourist behaviors. These examples reflect a broader trend in the field, where researchers increasingly integrate multiple methodologies to capture the complexity of virtual tourism experiences. Moreover, the application of various theoretical frameworks such as presence theory, authenticity theory, and cross-sensory compensation enriches our understanding of how VR influences tourist perception and behavior. Together, these diverse theoretical and methodological approaches contribute to a more comprehensive understanding of VR's impact on the tourism industry. Building on these theoretical foundations and methodological advancements, the present study systematically examines the academic discourse surrounding VR in tourism through a thematic literature review.

3. Methodology

This study adopts a thematic literature review approach to identify, classify, and synthesize academic contributions related to Virtual Reality (VR) in tourism, spanning from 2000 to 2024. The thematic review method was selected to uncover key trends, recurring concepts, and research gaps across diverse publications (Braun & Clarke, 2006; Nowell et al., 2017).

3.1. *Data Sources and Search Strategy*

To ensure a comprehensive review, several databases were used, including Scopus, Google Scholar, and ResearchGate, as they provide broad coverage of peer-reviewed articles and conference proceedings in the field. The following search terms were applied in titles, abstracts, and keywords: "Virtual Reality", "VR in Tourism", and "Virtual Reality in Tourism". Boolean operators (e.g., AND/OR) were employed to refine the queries and minimize irrelevant results (Kitchenham, 2004; Tranfield et al., 2003). All the proposed document typologies have been included in the analysis (i.e., articles, conference papers, conference reviews, literature reviews) by applying the above string on their title, abstract, and keywords (see Table 1). The step-by-step process followed in conducting the literature review, including keyword selection, database sourcing, article screening, and final paper selection, is summarized in Figure 1.

Table 1. Criteria used for selecting literature

Selection Criteria	
Keyword	“Virtual Reality” AND “VR in Tourism” AND “Virtual Reality in Tourism”
Database	Scopus; Google Scholar; ResearchGate
Subject areas	All
Source	Article title; Abstract; Keyword
Time frame	2000–2024
Document typology	Article; Conference paper; Conference review; Literature review

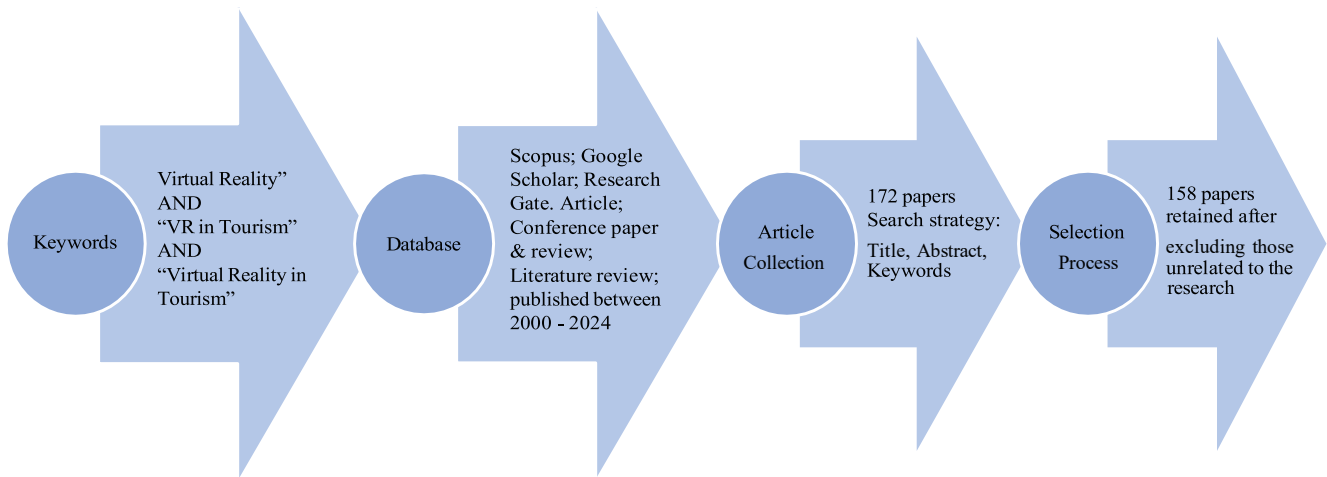


Figure 1. Key stages of the literature review process

3.2. Inclusion and Exclusion Criteria

Documents included in the analysis were empirical studies, conceptual papers, and case studies that specifically addressed the application of VR in the tourism sector. Only articles published in English and appearing in peer-reviewed journals or recognized conference proceedings were retained. The relevance of articles was initially judged based on titles and abstracts, followed by full-text screening to confirm eligibility. Studies unrelated to VR or not focused on tourism were excluded.

3.3. Thematic Categorization and Analysis

A total of 172 publications were initially identified based on their relevance to the research focus. After a rigorous screening process, 158 documents were retained and subsequently subjected to thematic analysis, following the six-phase approach proposed by Braun

and Clarke (2006): (1) Familiarization with data, (2) Generating initial codes, (3) Searching for themes, (4) Reviewing themes, (5) Defining and naming themes, and (6) Producing the report. Articles were coded and categorized into unifying themes such as: tourist behavior, marketing strategies, technological adoption, VR user experience, and post-pandemic adaptation. This inductive process enabled the identification of dominant research streams and conceptual patterns (Hanelt et al., 2021; Snyder, 2019).

2.4 Synthesis and Quality Assurance

To ensure the robustness of the review, each selected study was cross-checked for its methodological approach (qualitative, quantitative, or mixed methods), sample context, and contribution to the thematic categories. The triangulation of findings across methodological types helped mitigate potential bias and supported a more holistic understanding of VR's impact on tourism (Nowell et al., 2017). This structured yet flexible approach is particularly suited to the evolving and interdisciplinary nature of VR tourism research.

4. Findings

4.1. Descriptive Results

As shown in Figure 2, the trend in scholarly publications on VR tourism from 2000 to 2024 reveals a clear and consistent upward trajectory, particularly in the past decade. Between 2000 and 2014, research output remained low, with only one or two studies published in most years. This period likely represents the exploratory phase of VR technology, when its applications in tourism were still nascent and largely experimental.

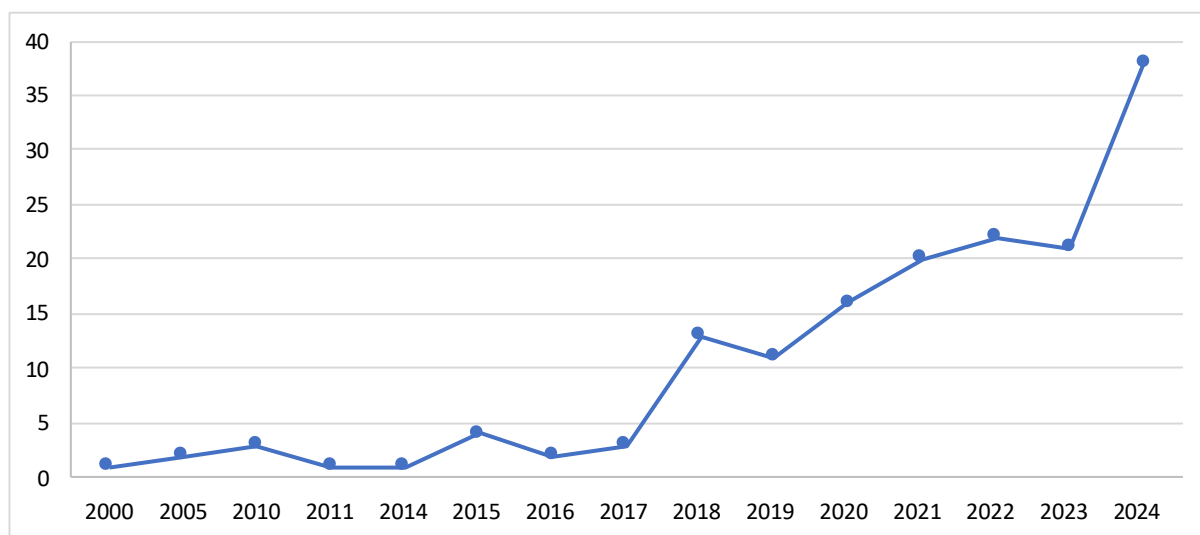


Figure 2. Study Number Per Year

Beginning in 2015, the number of publications started to rise gradually, with a noticeable spike occurring in 2018. This period marks the growing awareness of VR's potential to enhance tourism experiences, coinciding with technological advancements and increasing accessibility of VR devices. The trend continued with steady growth from 2019 to 2023, suggesting a growing academic interest driven in part by the COVID-19 pandemic, which accelerated the need for immersive, non-physical tourism solutions.

The most significant increase occurs in 2024, which saw a dramatic peak of 38 studies, by far the highest number recorded in the 25-year span. This surge suggests a renewed or intensified academic focus, potentially reflecting expanded research on post-pandemic recovery, integration with other technologies (e.g., AI, the metaverse), or new consumer behaviors shaped by immersive media.

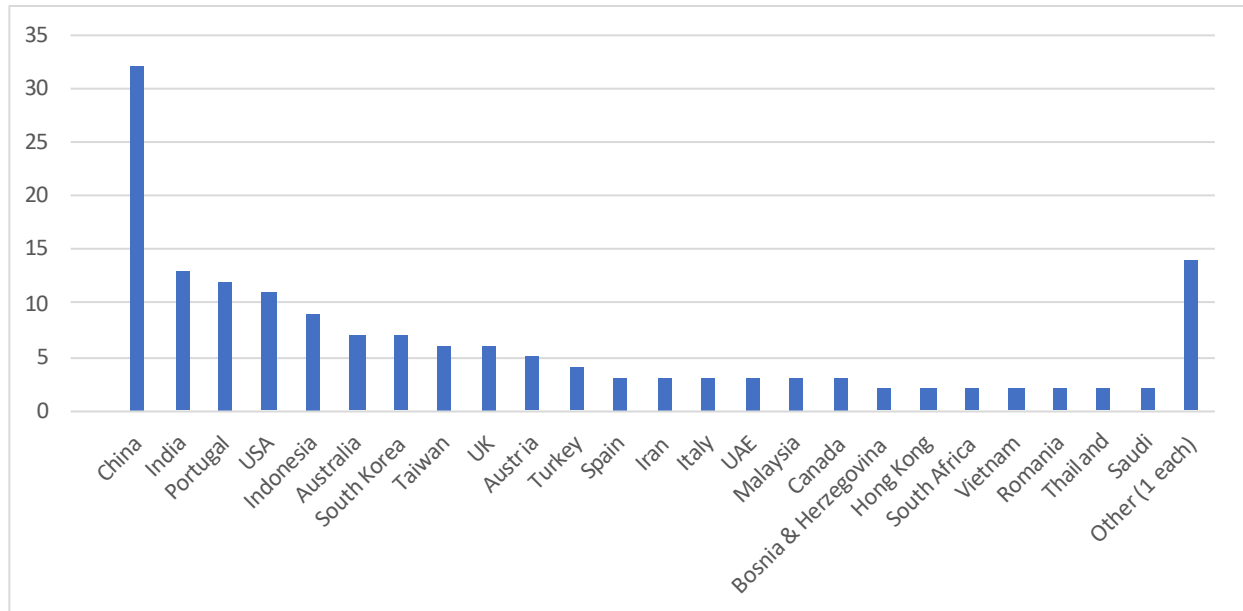


Figure 3. Commonly Applied Countries

Figure 3 illustrates the geographical distribution of VR tourism research, with China leading significantly, contributing 32 publications. This is followed by India (13), Portugal (12), and the USA (11), reflecting strong academic and industry interest in VR applications within these countries. China’s dominance may be attributed to its rapid technological advancement, substantial investment in digital innovation, and strategic focus on smart tourism development. Countries such as Indonesia, Australia, South Korea, and Taiwan also show notable engagement, each contributing between 6 to 9 studies. This suggests a growing interest in VR tourism across Asia-Pacific regions, particularly in emerging markets where VR is being embraced as a tool for economic and cultural development.

Meanwhile, the presence of countries with fewer studies such as UAE, Malaysia, and Romania, indicates early-stage involvement or limited research capacity in this field. The ‘Others’ category, which aggregates countries with only one publication each (e.g., Switzerland, Chile, Greece), shows that interest in VR tourism is globally dispersed, though not yet evenly developed. These countries may witness future growth in this area as VR technologies become more accessible and tourism sectors seek innovative recovery and promotion strategies. Overall, the chart reflects not only a concentration of research in technologically advanced nations but also a growing global diffusion of VR tourism scholarship. This highlights the universal potential of VR to reshape tourism experiences across diverse cultural and economic contexts.

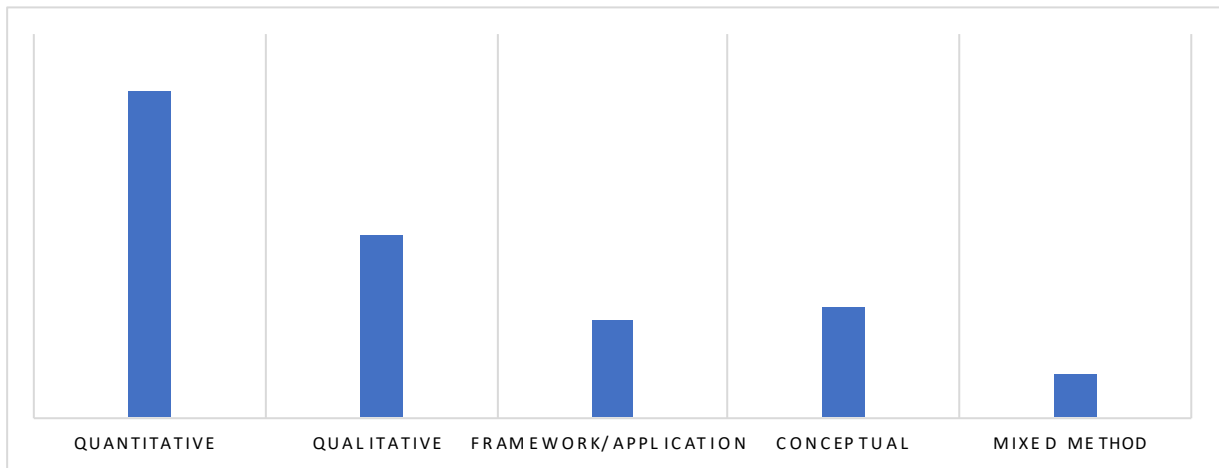


Figure 4. Methods Applied

The distribution of research methodologies employed in VR tourism studies, as illustrated in Figure 4, reveals a predominant reliance on quantitative methods, with 68 studies utilizing statistical and empirical techniques to investigate user behavior, experience, and the broader impact of VR. This highlights a strong preference for data-driven approaches in the field. Qualitative methods follow, with 38 studies emphasizing narrative depth through interviews, focus groups, and case-based analysis, offering valuable insights into user perceptions and emotional engagement. Conceptual studies (23) contribute to theory development by proposing models or frameworks without empirical testing, while framework or application-based research (20) bridges theoretical models with practical VR implementations in tourism contexts. Mixed-method approaches, though least represented with 9 studies, demonstrate the value of combining qualitative and quantitative insights for a more holistic understanding. The methodological diversity observed in Figure 4 underscores the multi-dimensional nature of VR research in tourism, reflecting the field’s evolving maturity and commitment to methodological rigor and innovation.

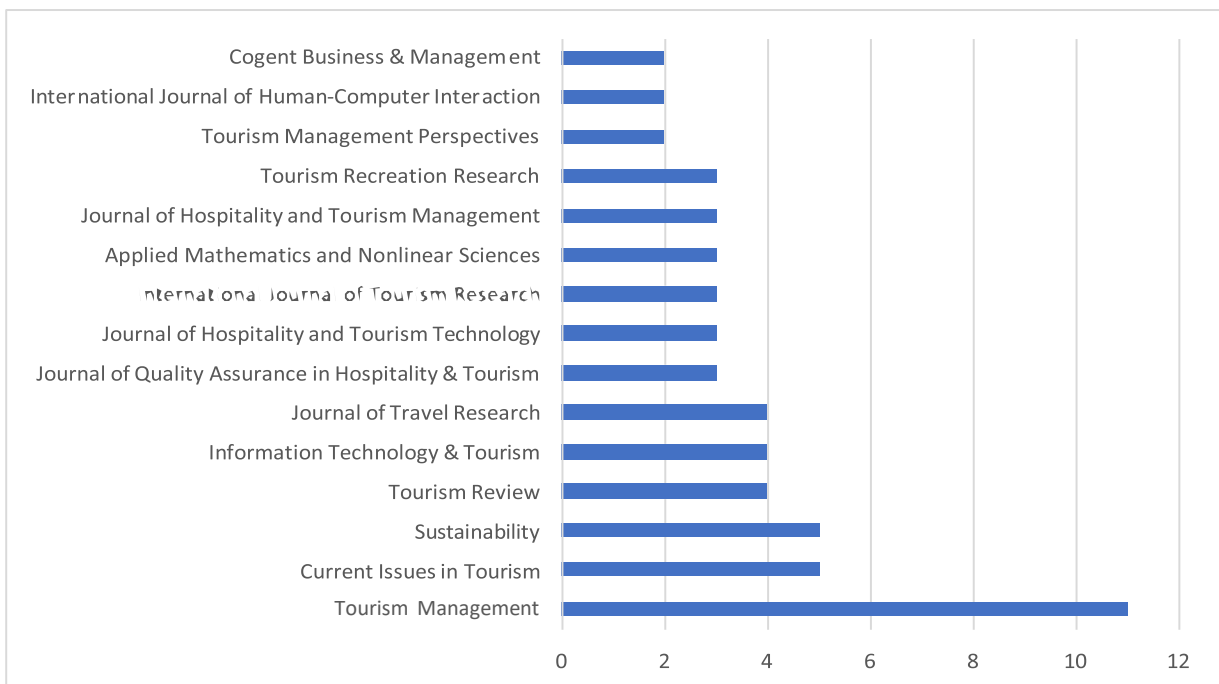


Figure 4. Top 15 Journals Commonly Publishing VR Tourism Research

Tourism Management leads with the highest number of publications (11), as shown in Figure 4, underscoring its pivotal role in shaping scholarly discourse on technology and innovation in the tourism sector. This prominence reflects the journal's commitment to publishing cutting-edge research, particularly on emerging technologies like Virtual Reality (VR) and their transformative effects on tourism operations and experiences. Closely following are *Current Issues in Tourism and Sustainability*, each with 5 publications. Their notable contributions demonstrate a growing interest in how VR intersects with evolving tourism dynamics and sustainability agendas. *Tourism Review*, *Information Technology & Tourism*, and the *Journal of Travel Research* each contributed 4 papers, signaling their consistent engagement in the advancement of digital innovation and immersive technologies in tourism studies.

Journals such as the *Journal of Quality Assurance in Hospitality & Tourism*, *Journal of Hospitality and Tourism Technology*, and the *International Journal of Tourism Research*, each with 3 papers, further emphasize the broad academic commitment to exploring VR's applications. While many journals in the dataset contribute only one or two publications, the overall distribution illustrates the interdisciplinary reach of VR research in tourism. The inclusion of journals from various fields including hospitality, environmental sciences, technology, and education reflects the expansive interest in VR's role across different aspects of tourism and hospitality. This diversity not only enriches academic inquiry but also highlights the widespread recognition of VR as a transformative force in the industry.

The analysis of the most influential publications in the field of virtual reality (VR) in tourism is presented in Table 2, which ranks the top ten contributions based on citation counts. These highly cited works have shaped foundational discussions and empirical directions within the academic discourse. Leading the list is Guttentag (2010), whose article "Virtual reality: Applications and implications for tourism" has accumulated over 2,300 citations. This early work provided a comprehensive overview of the potential applications of VR in tourism and has become a seminal reference point for subsequent research. The second most cited paper is by Tussyadiah et al. (2018), which explored the impact of VR on presence and attitude change. This study empirically confirmed that immersive VR experiences can significantly influence tourists' perceptions and behavioral intentions, offering strong support for the role of VR in marketing and engagement. Closely following is Huang et al. (2016), whose integrated research framework contributed to shaping the academic conversation around VR marketing applications in tourism.

Loureiro et al. (2020) and Bogicevic et al. (2019) also feature prominently, offering contributions that examine the psychological and experiential dimensions of VR. Their work emphasizes the mental imagery and presence effects that virtual environments evoke, further bridging the gap between technology use and consumer behavior in tourism contexts. Several other entries in Table 2, such as Lee et al. (2020) and Wei et al. (2019), highlight immersive experiences in specific contexts like museums and theme parks. These studies reinforce the experiential strength of VR by showing how it can enhance learning, enjoyment, and engagement across different tourism settings. Additionally, recent contributions by Fan et al. (2022), Bec et al. (2019), and Lu et al. (2022) reflect evolving interests, including meta-analyses, conceptual models for heritage tourism, and the role of VR in post-pandemic recovery strategies.

Title	Source	No. of Citations	Author(s)
Virtual reality: Applications and implications for tourism	Tourism management	2388	Guttentag (2010)
Virtual Reality, Presence, and Attitude Change: Empirical Evidence from Tourism	Tourism Management	1343	Tussyadiah et al. (2018)
Exploring the Implications of Virtual Reality Technology in Tourism Marketing: An Integrated Research Framework	International Journal of Tourism Research	827	Huang et al. (2016)
20 Years of Research on Virtual Reality and Augmented Reality in Tourism Context: A Text-Mining Approach	Tourism Management	710	Loureiro et al. (2020)
Virtual Reality Presence As A Preamble of Tourism Experience: The Role of Mental Imagery	Tourism Management	597	Bogicevic et al. (2019)
Experiencing Immersive Virtual Reality in Museums	Information & Management	500	Lee et al. (2020)
Effects of Virtual Reality on Theme Park Visitors' Experience and Behaviors: A Presence Perspective	Tourism Management	465	Wei et al. (2019)
Immersive Technology: A Meta-Analysis of Augmented/Virtual Reality Applications and Their Impact on Tourism Experience	Tourism Management	411	Fan et al. (2022)
Management of Immersive Heritage Tourism Experiences: A Conceptual Model	Tourism Management	402	Bec et al. (2019)
The Potential of Virtual Tourism in The Recovery of Tourism Industry During The COVID-19 Pandemic	Current Issues in Tourism	390	Lu et al. (2022)

Table 2. Ranking of contributions per citations (Top-ten)

4.2. *Thematic Results*

The thematic categorization of the reviewed literature offers a comprehensive overview of the focal areas that dominate scholarly discourse in VR tourism research. As illustrated in Table 2, the most prominent theme is Destination Marketing & Promotion, accounting for 36 papers (23%). This demonstrates the strong interest in how VR technologies are reshaping promotional strategies and enhancing destination image and branding. The next significant theme is Technology Acceptance & Behavioral Intentions with 31 studies (20%), reflecting scholars' attention to psychological and behavioral models that explain tourists' adoption and usage of VR tools. Closely following are Tourist Experience & Engagement via VR (30 papers, 19%) and VR Applications & System Development (25 papers, 16%), both of which emphasize the technological advancements and user interaction within immersive environments. These studies focus on the design, usability, and practical deployment of VR systems, as well as how these experiences emotionally and cognitively engage users.

Table 2. Thematization of Literature

Theme	Frequency (n=158)	Frequency (%)	Author(s)
Destination Marketing & Promotion	36	23%	Adachi et al. (2022); Alyahya & McLean (2022); Bogicevic et al. (2019); Chigozie Jude (2020); Cooper & Macneil (2005); Ezekiel et al. (2018); Hadianfar et al. (2021); Hasanudin & Akbar (2015); Huang et al. (2016); Idris et al. (2021); Kokkhangplu (2024); Lee et al. (2020); Lo & Cheng (2020); Loureiro et al., 2020; Mascho & Singh (2014); Melo et al. (2024); Nayyar et al. (2018); Ouerghemmi et al. (2023); Pestek & Sarvan (2021); Putra et al. (2021); Rainoldi et al. (2018); Rather et al. (2024); Sabari Shankar et al. (2022); Shukla et al., (2024); Sousa et al. (2024b, 2024a, 2024c); Subawa et al. (2021); Talafubieke et al. (2021); Tussyadiah et al. (2017, 2018); Tyagi et al. (2023); Voronkova (2018); Yasin et al. (2022); Yung et al. (2021a, 2021b)
Technology Acceptance & Behavioral Intentions	31	20%	Cham et al. (2024); Charista et al. (2023); Choi et al. (2024); Disztinger et al. (2017); Geng et al. (2022); Godovykh et al. (2022); Iftikhar et al. (2023); Isock Isock et al. (2024); Kim et al. (2020); Kokash et al. (2024); Leung et al. (2023); Martins et al. (2020); Nguyen et al. (2024); Polishchuk et al. (2023); Schiopu et al. (2021); Shao et al. (2020); Shen et al. (2022); Sousa et al. (2023, 2024d, 2024e); Teng et al. (2024); Tsimakis et al. (2024); Wagler & Hanus (2018); Wang et al. (2022); Wang (2024); Wibisono et al. (2023); Wismantoro et al. (2023); Yuan & Hong (2024); Zhang & Xiong (2024); Zhu et al. (2024); Zhu et al. (2025)
Tourist Experience & Engagement via VR	30	19%	Beck et al. (2019); Beck & Egger (2018); Bretos et al. (2024); Fan et al. (2022); Gao et al. (2022); Griffin & Muldoon (2022); Hashim & Jusof (2010); Huang et al. (2024); Hung et al. (2024); Jeco et al. (2019); Katkuri et al. (2019); Kim & Hall (2019); Kusdibyo et al. (2021); Lee & Kim (2021); Lin & Yeh (2023); Marchiori et al. (2017); McLean et al. (2023); Merckx & Nawijn (2021); Mou et al. (2024); Omran et al. (2024); Ortet et al. (2022); Pantelidis et al. (2018); Rauscher et al. (2020); Saneinia et al. (2022); Sousa et al. (2024); Trindade et al. (2018); Wei (2019); Wei et al. (2019); Wei et al. (2023); Wu et al. (2019)
VR Applications & System Development	25	16%	Anwar & Hamilton (2005); Balogun et al. (2010); Bastian et al. (2019); Castro et al. (2018); Editor (2016); Ercan (2020); Guttentag (2010); Hassani & Bastenegar (2020); He (2024); Holt (2023); Kulakoglu-Dilek et al. (2018); Lee et al. (2021); Li et al. (2024); Lin et al. (2023); Mallikarjuna et al. (2024); Sui et al. (2022); Thakur et al. (2024); Vaishnavi & Ajit (2024); Verma et al. (2022); Wang (2011); Wang et al. (2024); Wut & Ng (2024); Yung & Khoo-Lattimore (2019); Zhu et al. (2023); Zhu (2024)

Cultural Heritage & Virtual Tourism	22	14%	Atzeni et al. (2022); Baker et al. (2023); Bec et al. (2019, 2021b); Bideci & Bideci (2023); Gaberli (2019); Guo et al. (2024); Hu et al. (2024); Iacovino et al. (2020); Lee et al. (2020); Leotta & Ross (2018); Li et al. (2024); Marasco (2020); Nam, Baker et al. (2023); Nam, Dutt et al. (2023); Park et al. (2018); Guerra et al. (2015); Shafiee Roodposhti & Esmaelbeigi (2024); Tseng et al. (2015); Wang et al. (2024); Zeng et al. (2022); Zhang (2016)
Virtual Travel & Sustainability	14	9%	Atsiz (2021); Caciora et al. (2021); Hoang et al. (2023); Li et al. (2021); Lin et al. (2020); Lu et al. (2022); Peštek & Savan (2020); Roman et al. (2022); Samaddar & Mondal (2024); Sarkady et al. (2021); Sharma et al. (2024); Sussmann et al. (2000); Talwar et al. (2022, 2023)
	158	100%	

The remaining themes, Cultural Heritage & Virtual Tourism (22 papers, 14%) and Virtual Travel & Sustainability (14 papers, 9%), highlight VR's contribution to preserving cultural heritage and promoting sustainable alternatives to physical travel. These areas, though smaller in frequency, point toward the innovative roles VR can play in educational and conservation efforts within tourism. This distribution underscores a balanced yet evolving research landscape in which marketing, psychological acceptance, and experiential design dominate scholarly focus, while sustainability and heritage applications are emerging as vital complementary themes.

5. Discussion

Over the past two decades, virtual reality (VR) has evolved from a futuristic novelty into a multifaceted tool within tourism research. This review identified six core themes: Destination Marketing and Promotion, Virtual Travel and Sustainability, VR Applications and System Development, Tourist Experience and Engagement via VR, Technology Acceptance and Behavioral Intentions, and Cultural Heritage and Virtual Tourism. These themes are deeply interrelated and have progressed in parallel with technological innovation and changing global conditions.

In the early stages, VR's most visible role was in destination marketing, which remains the dominant theme in the literature. Scholars were quick to recognize VR's ability to simulate destinations in vivid, immersive ways, making it a compelling tool for promotional campaigns. At the same time, some researchers envisioned VR as a vehicle for virtual travel, particularly from a sustainability perspective. Virtual travel was proposed as a way to reduce the pressure of overtourism and preserve fragile sites by offering eco-friendly alternatives to physical visits. This early debate focused on whether VR would function primarily as a complement to tourism, enhancing pre-visit experiences, or as a substitute that might replace certain types of travel. In the 2000s, such questions were largely theoretical, given the limited technological capacity and minimal adoption of VR in the tourism industry. However, these discussions laid the conceptual foundation for future research, especially within marketing and sustainability domains.

Technological advances in the 2010s, including the affordability of headsets and improvements in 360-degree video, propelled VR into a more practical and widely applied tool. Researchers began focusing on system development and experimental applications of VR in tourism. Studies from this period investigated the design of virtual tours and interactive digital environments, often drawing from Guttentag's (2010) early work, which had forecast the potential of VR in marketing, heritage conservation, education, and travel planning. As predicted, destination marketing soon became a central focus of VR tourism research. Numerous empirical studies demonstrated that VR experiences could significantly influence tourist perceptions, particularly when they fostered a high sense of presence. The sensation of "being there" in a virtual destination was shown to produce more favorable attitudes toward actual travel. High-quality VR content has been associated with increased engagement and greater intent to visit, signaling a shift in tourism marketing from static promotional tools to dynamic, multisensory experiences.

This overlap between marketing and user engagement naturally led to the emergence of another key theme: Tourist Experience and Engagement. Here, scholars explored how immersive, interactive VR experiences shape emotional responses, cognitive evaluations, and memory formation. Tussyadiah et al. (2018), among others, provided early empirical evidence that rich VR content could enhance enjoyment and interest, ultimately influencing travel intentions. The experience of VR was increasingly seen not just as informative, but as hedonic and entertaining. This transformation in content delivery positioned VR as a powerful experiential marketing medium that moves beyond mere persuasion, actively influencing consumer decision-making through engagement.

Alongside these developments, research into Technology Acceptance and Behavioral Intentions gained momentum. Scholars recognized that even the most advanced VR systems would have limited impact without user acceptance. Models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) were adapted to assess how tourists perceive and adopt VR technologies. A recurring insight was that enjoyment plays a central role in influencing adoption. When users find VR experiences engaging, easy to use, and enjoyable, they are more likely to accept and trust the technology. Conversely, technical barriers such as device cost, interface complexity, or unfamiliarity were shown to limit adoption. Some tourists also questioned the practical value of VR, especially when compared with the depth and richness of real-world travel. These studies highlighted that while VR is often appreciated as an enhancement to traditional tourism, it is rarely viewed as a full substitute. In most cases, virtual tours are seen as valuable additions that may inspire future travel rather than replacing it altogether.

The convergence of these themes became even more evident during the COVID-19 pandemic. As international travel came to a halt, VR emerged as a crucial tool for maintaining tourist engagement. Between 2020 and 2022, destinations and tourism organizations increasingly turned to virtual platforms to offer remote access to experiences such as museum visits, guided tours, and even hospitality training. During this period, Destination Marketing and Virtual Travel were closely intertwined, as VR was reframed not only as a promotional tool but also as a temporary solution for safe, sustainable travel. Researchers seized this opportunity to study consumer attitudes under crisis conditions. Some studies found that people with stronger environmental values or health-related travel anxieties were more open to using VR as a long-term substitute. Others treated VR as a temporary fix, expressing a desire to return to physical travel as soon as possible. This divergence revealed how context and individual

values shape VR acceptance. It also demonstrated that pro-environmental attitudes can drive greater willingness to adopt VR tourism experiences, particularly when framed as alternatives to environmentally damaging trips.

Simultaneously, research into Cultural Heritage and Virtual Tourism gained prominence. Even before the pandemic, heritage sites and museums had begun offering virtual exhibits to expand access and protect fragile locations. This stream of research often overlaps with both experience and marketing themes. Studies found that high-quality virtual reconstructions of cultural landmarks can increase appreciation for history and even stimulate greater interest in visiting the actual sites. Importantly, VR also serves conservation goals by minimizing physical wear and dispersing tourist flows. This alignment with sustainability objectives reinforces the connection between cultural heritage and responsible tourism management. VR enables institutions to balance accessibility with preservation, making cultural experiences available to a wider audience while protecting vulnerable sites.

Across all six themes, the integration of VR into tourism research has become increasingly holistic. Many contemporary studies cut across multiple thematic areas. For example, a project might examine the effectiveness of a VR-based marketing campaign while also exploring user acceptance and behavioral intention. Another study might evaluate how virtual engagement with cultural heritage enhances learning and influences travel decisions. At the foundation of all these inquiries is the development of advanced systems and applications. The growth in technological sophistication ranging from lifelike graphics to haptic feedback continues to enhance VR's capabilities and impact. Scholars such as Buhalis & Karatay (2022) have advocated for hybrid models that combine physical and virtual experiences, potentially leading toward an interconnected metaverse of tourism services.

6. Conclusion

This comprehensive thematic analysis of 158 academic publications from 2000 to 2024 demonstrates that Virtual Reality (VR) has evolved from a conceptual innovation into a versatile and applied tool that significantly shapes both tourist experiences and tourism industry practices. As VR technologies have matured and become more accessible, their role in the tourism sector has diversified moving beyond theoretical discussions toward practical, multi-dimensional applications. The review identified six dominant research themes. The most prominent is Destination Marketing & Promotion (36 papers, 23%), which reflects how VR has been widely adopted as a tool to enhance promotional strategies and transform destination branding. These studies highlight VR's ability to deliver immersive previews of tourism sites, influence destination image, and strengthen tourists' intention to visit. As destinations seek competitive advantages in an increasingly saturated market, VR emerges as a compelling platform for sensory-rich and emotionally resonant marketing campaigns.

Closely following this is the theme of Technology Acceptance & Behavioral Intentions (31 papers, 20%), which centers on how tourists adopt and respond to VR technologies. Research under this theme often employs psychological models such as the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and expectancy theory to explain factors like perceived ease of use, enjoyment, and usefulness in driving tourist engagement with VR. This body of work underscores that technological appeal alone is insufficient and users' perceptions as well as motivations must align with VR's experiential offerings. The third and fourth themes, Tourist Experience & Engagement (30 papers,

19%) and VR Applications & System Development (25 papers, 16%), delve into how VR can deliver meaningful, emotionally engaging, and technically seamless experiences.

These studies examine factors such as immersion, presence, interactivity, and content realism. They also investigate the development of VR systems and applications, exploring usability, interface design, and content optimization. Together, these themes affirm that both experiential quality and technical robustness are critical for the success of VR in tourism. The remaining themes, while less dominant in frequency, reveal the broader societal and cultural implications of VR. Cultural Heritage & Virtual Tourism (22 papers, 14%) examines how VR contributes to the preservation, interpretation, and global accessibility of cultural heritage. Virtual reconstructions of archaeological sites, museums, and historical landmarks allow users to engage with heritage in new & interactive ways, enhancing education while reducing physical wear-and-tear on fragile sites. Virtual Travel & Sustainability (14 papers, 9%) explores VR's potential as an eco-friendly alternative to physical travel.

This includes studies on how VR can reduce environmental impacts, alleviate overtourism, and offer inclusive travel options for individuals with limited mobility or budget constraints. While the themes vary in focus and frequency, they collectively reveal a multifaceted research landscape. VR serves not only as a marketing instrument but also as a behavioral influence, a technological challenge, a sustainability strategy, and a heritage preservation tool. The interlinkages between these themes suggest a field that is increasingly integrated, where marketing effectiveness depends on user experience quality, and where sustainability goals intersect with technological development. VR in tourism research is balanced yet dynamic. It continues to be shaped by innovations in technology, shifts in consumer behavior, and the expanding scope of sustainable and inclusive travel practices. The field has moved beyond isolated case studies toward a more holistic understanding of how VR transforms the way tourism is imagined, promoted, experienced, and preserved.

7. Future Direction

Future research on Virtual Reality (VR) in tourism must move beyond fragmented insights to develop more integrated and robust theoretical frameworks. Although existing studies have employed well-established models such as the Stimulus-Organism-Response (SOR) framework, Technology Acceptance Model (TAM), and presence theory, these are often applied in isolation. As Yung & Khoo-Lattimore (2019) noted, significant theoretical gaps persist, particularly in fully capturing the multidimensional nature of VR tourism experiences. There is a pressing need to synthesize constructs from diverse models to reflect both the cognitive and affective mechanisms at play. For instance, future conceptual frameworks could examine how perceived presence, immersion, and enjoyment mediate the relationship between VR system quality and tourist attitudes or behavioral intentions. An integrative model that merges hedonic motivation, presence theory, SOR, and TAM/UTAUT variables would offer a more nuanced understanding of VR adoption and its downstream effects.

In addition to theoretical integration, methodological advancement is essential. Much of the current literature relies on cross-sectional survey designs, limiting causal inference. Future studies should adopt interdisciplinary and longitudinal approaches, bringing together expertise from tourism, psychology, information systems, and environmental science. Longitudinal panel studies or experimental designs could illuminate how repeated exposure to VR environments influences travelers' internal states such as satisfaction, perceived authenticity, or environmen-

tal concern and how these evolve into behavioral outcomes like destination choice, revisit intentions, or sustainable travel preferences. Such designs would clarify causal pathways and temporal dynamics, providing a more rigorous foundation for theory-building.

Another key direction is the empirical validation of causal models derived from these theories. Structural equation modeling, randomized experiments, and mixed-methods designs are particularly well-suited for testing the complex relationships proposed in integrative frameworks. For example, researchers can empirically test how immersive VR content (stimulus) influences emotional and cognitive reactions (organism), and how these, in turn, drive outcomes like willingness to pay or the intention to visit (response). These analyses would not only validate theoretical assumptions but also improve the predictive power of VR tourism models.

Finally, while theoretical refinement is critical, future research must remain anchored in practical relevance. For instance, the increasing attention to Virtual Travel and Sustainability highlights VR's potential to reduce the environmental impact of tourism by offering substitutes for high-emission travel experiences. Similarly, design insights from Tourist Experience and Engagement studies can inform the development of effective immersive marketing campaigns for destinations. Yet even applied research should be grounded in theoretically meaningful constructs, ensuring that findings contribute to the cumulative knowledge base of the field.

In sum, the future of VR tourism research lies in a more integrated, interdisciplinary, and empirically rigorous agenda. By bridging theoretical models, employing longitudinal and experimental methods, and maintaining strong ties to practical application, scholars can better explain how virtual experiences shape tourist perceptions, decisions, and the broader dynamics of the tourism industry. This comprehensive approach will not only enhance academic understanding but also inform sustainable and innovative practices in an increasingly digitized tourism landscape.

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Appendix

No	Author(s)	Year	Title	Theme
1	Silvia Sussmann, Hugo Vanhegan	2000	Virtual Reality and the Tourism Product: Substitution or Complement?	Virtual Travel & Sustainability
2	Sajid Anwar and John Hamilton	2005	Tourism into the Future - Towards 2020, and Beyond	VR Applications & System Development
3	Malcolm Cooper and Neil J. MacNeil	2005	Virtual Reality Mapping: IT Tools for the Divide between Knowledge and Action in Tourism	Destination Marketing & Promotion
4	V.F. Balogun, A.F. Thompson, O.A. Sarumi	2010	A 3D Geo-Spatial Virtual Reality System for Virtual Tourism	VR Applications & System Development
5	Khairul Hazrin bin Hashim, Muhammad Jafni bin Jusof	2010	Spherical High Dynamic Range Virtual Reality for Virtual Tourism: Kellie's Castle, Malaysia	Tourist Experience & Engagement via VR
6	Daniel A. Guttentag	2010	Virtual reality: Applications and implications for tourism	VR Applications & System Development
7	Wang Chunli	2011	Application of Virtual Reality Technology in Digital Tourism	VR Applications & System Development
8	Erin Mascho and Neha Singh	2014	Virtual tourism: use of 'second life' for destination marketing	Destination Marketing & Promotion
9	Shih-Pang Tseng, Mei-Wen Huang, Hsu-Jung Liu, Chao-Cheng Chung, and Chun-Mei Chiu	2015	A Virtual Reality Based Training System for Cultural Tourism	Cultural Heritage & Virtual Tourism
10	Yu Chih Huang, Kenneth Frank Backman, Sheila J. Backman, Lan Lan Chang	2015	Exploring the Implications of Virtual Reality Technology in Tourism Marketing: An Integrated Research Framework	Destination Marketing & Promotion
11	José Paulo Guerra, Miguel Moreira Pinto, Cláudia Beato	2015	Virtual Reality - Shows a New Vision for Tourism and Heritage	Cultural Heritage & Virtual Tourism
12	Amir Hasanudin Fauzi, Alfian Akbar Gozali	2015	Virtual Reality to Promote Tourism in Indonesia	Destination Marketing & Promotion
13	Liu Yuan, Liu Hong, Choi Chris, Chen Rukai	2016	An Exploration of Digital Tourism Design Based on Virtual Reality	Cultural Heritage & Virtual Tourism
14	Pan Li-xin	2016	The Application of Virtual Reality Technology to Digital Tourism Systems	VR Applications & System Development

15	Elena Marchiori, Evangelos Niforatos, Luca Preto	2017	Measuring the Media Effects of a Tourism-Related Virtual Reality Experience Using Biophysical Data	Tourist Experience & Engagement via VR
16	Peter Disztinger, Stephan Schlögl, Aleksander Groth	2017	Technology Acceptance of Virtual Reality for Travel Planning	Technology Acceptance & Behavioral Intentions
17	Iis P. Tussyadiah, Dan Wang, Chenge (Helen) Jia	2017	Virtual Reality and Attitudes Toward Tourism Destinations	Destination Marketing & Promotion
18	Adam Wagler and Michael D. Hanus	2018	Comparing Virtual Reality Tourism to Real-Life Experience: Effects of Presence and Engagement on Attitude and Enjoyment	Technology Acceptance & Behavioral Intentions
19	Julia Beck and Roman Egger	2018	Emotionalise Me: Self-reporting and Arousal Measurements in Virtual Tourism Environments	Tourist Experience & Engagement via VR
20	Christos Pantelidis, M. Claudia tom Dieck, Timothy Jung, Amanda Miller	2018	Exploring Tourist Experiences of Virtual Reality in a Rural Destination: A Place Attachment Theory Perspective	Tourist Experience & Engagement via VR
21	Nyane Ezekiel Macdonald Mofokeng, Thapeli Kenny Matima	2018	Future tourism trends: Virtual Reality based tourism utilizing Distributed Ledger Technologies	Destination Marketing & Promotion
22	Hyerim Park, Jungi Kim, Sunyoung Bang, Woontack Woo	2018	The Effect of Applying Film-induced Tourism to Virtual Reality Tours of Cultural Heritage Sites	Cultural Heritage & Virtual Tourism
23	Alfio Leotta and Miriam Ross	2018	Touring the 'World Picture': virtual reality and the tourist gaze	Cultural Heritage & Virtual Tourism
24	Yanick Trindade, Francisco Rebelo, Paulo Noriega	2018	Tourism and Virtual Reality: User Experience Evaluation of a Virtual Environment Prototype	Tourist Experience & Engagement via VR
25	Anand Nayyar, Bandana Mahapatra, DacNhuong Le, G. Suseendran	2018	Virtual Reality (VR) & Augmented Reality (AR) technologies for tourism and hospitality industry	Destination Marketing & Promotion
26	Juan C. Castro, Mauricio Quisimalin, Víctor H. Córdova, Washington X. Quevedo, Cristian Gallardo, Jaime Santana, Víctor H. Andaluz	2018	Virtual Reality on e-Tourism	VR Applications & System Development

27	Nur Kulakoğlu-Dilek, İsmail Kızıllırmak, Sebahattin Emre Dilek	2018	Virtual Reality or Just Reality? A SWOT Analysis of the Tourism Industry	VR Applications & System Development
28	Iis P. Tussyadiah, Dan Wang, Timothy H. Jung, M. Claudia tom Dieck	2018	Virtual reality, presence, and attitude change: Empirical evidence from tourism	Destination Marketing & Promotion
29	Mattia Rainoldi, Veronika Driescher, Alina Lisnevska, Daria Zvereva, Anna Stavinska, Jennifer Relota, and Roman Egger.	2018	Virtual Reality: An Innovative Tool in Destinations' Marketing	Destination Marketing & Promotion
30	L P Voronkova	2018	Virtual Tourism: on the Way To the Digital Economy	Destination Marketing & Promotion
31	Myung Ja Kim, C. Michael Hall	2019	A hedonic motivation model in virtual reality tourism: Comparing visitors and non-visitors	Tourist Experience & Engagement via VR
32	Ade Bastian, Tri Ferga Prasetyo, and Nanda Juanda Dipura Atmaja.	2019	An Application of Virtual Reality with Android Device for Tourism Assistant	VR Applications & System Development
33	Liza Jego, Ismael Gallardo, and Felipe Besoain	2019	Developing a Virtual Reality Experience with Game Elements for Tourism: Kayak Simulator	Tourist Experience & Engagement via VR
34	Wei Wei, Ruoxi Qi, and Lu Zhang	2019	Effects of virtual reality on theme park visitors' experience and behaviors: A presence perspective	Tourist Experience & Engagement via VR
35	Pavan Kumar Katkuri, Archana Mantri, Srilakshmi Anireddy	2019	Innovations in Tourism Industry & Development Using Augmented Reality (AR), Virtual Reality (VR)	Tourist Experience & Engagement via VR
36	Alexandra Bec, Brent Moyle, Ken Timms, Vikki Schaffer, Liubov Skavronskaya, Chris Little	2019	Management of immersive heritage tourism experiences: A conceptual model	Cultural Heritage & Virtual Tourism
37	Ryan Yung & Catheryn Khoo-Lattimore	2019	New Realities: A Systematic Literature Review on Virtual Reality and Augmented Reality in Tourism Research	VR Applications & System Development
38	Wei Wei	2019	Research progress on virtual reality (VR) and augmented reality (AR) in tourism and hospitality: A critical review of publications from 2000 to 2018	Tourist Experience & Engagement via VR

39	Ümit Gaberli	2019	Tourism in Digital Age: An Explanation for the Impacts of Virtual, Augmented and Mixed Reality Technologies on Tourist Experiences	Cultural Heritage & Virtual Tourism
40	Julia Beck, Mattia Rainoldi, Roman Egger	2019	Virtual Reality in Tourism: A State-of-the-Art Review	Tourist Experience & Engagement via VR
41	Vanja Bogicevic, Soobin Seo, Jay A. Kandampully, Stephanie Q. Liu, Nancy A. Rudd	2019	Virtual Reality Presence as a Preamble of Tourism Experience: The Role of Mental Imagery	Destination Marketing & Promotion
42	Sandra Maria Correia Loureiro, João Guerreiro, Faizan Ali	2020	20 years of research on virtual reality and augmented reality in tourism context: A text-mining approach	Destination Marketing & Promotion
43	Fatih Ercan	2020	An Examination on the Use of Immersive Reality Technologies in the Travel and Tourism Industry	VR Applications & System Development
44	Alessandra Marasco	2020	Beyond Virtual Cultural Tourism: History-Living Experiences with Cinematic Virtual Reality	Cultural Heritage & Virtual Tourism
45	Li-Pin (Lynn) Lin, Shu-Chun (Lucy) Huang, Yao-Chun Ho	2020	Could virtual reality effectively market slow travel in a heritage destination?	Virtual Travel & Sustainability
46	Wai Han Lo, Ka Lun Benjamin Cheng	2020	Does virtual reality attract visitors? The mediating effect of presence on consumer response in virtual reality tourism advertising	Destination Marketing & Promotion
47	Hyunae Lee, Timothy Hyungsoo Jung, M. Claudia tom Dieck, and Namho Chung	2020	Experiencing immersive virtual reality in museums	Cultural Heritage & Virtual Tourism
48	Myung Ja Kim, Choong-Ki Lee, and Timothy Jung	2020	Exploring Consumer Behavior in Virtual Reality Tourism Using an Extended Stimulus-Organism-Response Model	Technology Acceptance & Behavioral Intentions
49	Jun Shao, Heting Bai, Shujin Shu, Marion Joppe	2020	Planners' Perception of Using Virtual Reality Technology in Tourism Planning	Technology Acceptance & Behavioral Intentions
50	José Martins, Ramiro Gonçalves, Manuel Au-Yong-Oliveira, Fernando Moreira, and Frederico Branco.	2020	Qualitative analysis of virtual reality adoption by tourism operators in low-density regions.	Technology Acceptance & Behavioral Intentions

51	Minwoo Lee, Seonjeong Ally Lee, Miyoung Jeong, Haemoon Oh	2020	Quality of virtual reality and its impacts on behavioral intention	Destination Marketing & Promotion
52	Alisia Iacovino, Lucio Tommaso De Paolis, Valentina Ndou	2020	Technologies to Support Tourism Innovation and Cultural Heritage: Development of an Immersive Virtual Reality Application	Cultural Heritage & Virtual Tourism
53	Odum Jude Chigozie, Ukekwe Chike	2020	Tourism and Virtual Reality (VR) in Developing Nations	Destination Marketing & Promotion
54	Almir Peštek and Maida Sarvan	2020	Traveling Before Traveling: Virtual Reality Marketing in Support of Greater Tourism Sustainability	Virtual Travel & Sustainability
55	Almir Pestek and Maida Sarvan	2020	Virtual Reality and Modern Tourism	Destination Marketing & Promotion
56	Hung-Che Wu, Chi-Han Ai, Ching-Chan Cheng	2020	Virtual reality experiences, attachment and experiential outcomes in tourism	Tourist Experience & Engagement via VR
57	Ali Hassani, Mehrnoosh Bastenegar	2020	Virtual Tourism Misunderstood	VR Applications & System Development
58	Yu Li, HakJun Song, Rui Guo	2021	A Study on the Causal Process of Virtual Reality Tourism and Its Attributes in Terms of Their Effects on Subjective Well-Being during COVID-19	Virtual Travel & Sustainability
59	Arman Syah Putra, Dona, Pas Mahyu Akhrianto, and Nurul Aisyah.	2021	Designing A Virtual Jakarta Tourism Application On Android OS And Virtual Reality Tools	Destination Marketing & Promotion
60	Idris Idris, Khofifatu Rohmah Adi, Rizky Firmansyah, Ardhina Nadhianty, Mokhammad Husni Mobarq, Pangestu Gusti Putri, Adam Satriya Pratama, Efrina Rizkya Wahono	2021	Developing Smart Tourism Using Virtual Reality as a Tourism Promotion Strategy in Indonesia	Destination Marketing & Promotion
61	Won-jun Lee and Yong Hee Kim	2021	Does VR Tourism Enhance Users' Experience?	Tourist Experience & Engagement via VR
62	Marcello Atzeni, Giacomo Del Chiappa, Jessica Mei Pung	2021	Enhancing visit intention in heritage tourism: The role of object-based and existential authenticity in non-immersive virtual reality heritage experiences	Cultural Heritage & Virtual Tourism

63	Manati Talafubieke, Sheng Mai, Nuermila Xialifuhan	2021	Evaluation of the Virtual Economic Effect of Tourism Product Emotional Marketing Based on Virtual Reality	Destination Marketing & Promotion
64	Mansour Alyahya and Graeme McLean	2021	Examining Tourism Consumers' Attitudes and the Role of Sensory Information in Virtual Reality Experiences of a Tourist Destination	Destination Marketing & Promotion
65	Nyoman Sri Subawa, Ni Wayan Widhiasthini, I. Putu Astawa, Christantius Dwiatmadja, Ni Putu Intan Permatasari	2021	The practices of virtual reality marketing in the tourism sector, a case study of Bali, Indonesia	Destination Marketing & Promotion
66	Seonjeong Ally Lee, Minwoo Lee, and Miyoung Jeong.	2021	The role of virtual reality on information sharing and seeking behaviors	VR Applications & System Development
67	Tudor Caciora, Grigore Vasile Herman, Alexandru Ilies, Stefan Baias, Dorina Camelia Ilies, Ioana Josan, and Nicolaie Hodor.	2021	The Use of Virtual Reality to Promote Sustainable Tourism: A Case Study of Wooden Churches Historical Monuments from Romania	Virtual Travel & Sustainability
68	Alexandra Bec, Brent Moyle, Vikki Schaffer, Ken Timms	2021	Virtual reality and mixed reality for second chance tourism	Cultural Heritage & Virtual Tourism
69	Ryan Yung, Catheryn Khoo-Lattimore, Leigh Ellen Potter	2021	Virtual reality and tourism marketing: conceptualizing a framework on presence, emotion, and intention	Destination Marketing & Promotion
70	Daniel Sarkady, Larissa Neuburger, and Roman Egger	2021	Virtual Reality as a Travel Substitution Tool During COVID-19	Virtual Travel & Sustainability
71	Lusianus Kusdiby, Anthony Brien, Rivan Sutrisno, and Dwi Suhartanto	2021	Virtual Reality Experience in Tourism: A Factor Analysis Assessment	Tourist Experience & Engagement via VR
72	Marion Rauscher	2021	Virtual Reality in Tourism: Is it 'Real' Enough?	Tourist Experience & Engagement via VR
73	Ozan Atsız	2021	Virtual reality technology and physical distancing: A review on limiting human interaction in tourism	Virtual Travel & Sustainability
74	Niloufar Hadianfar and Abdolhadi Darzian Azizi	2021	Virtual Reality Technology in Tourism Destination Marketing	Destination Marketing & Promotion

75	Celine Merckx, Jeroen Nawijn	2021	Virtual reality tourism experiences: Addiction and isolation	Tourist Experience & Engagement via VR
76	Andreea F. Schiopu, Remus I. Hornoiu, Mihaela A. Padurean, Ana-Maria Nica	2021	Virus tinged? Exploring the facets of virtual reality use in tourism as a result of the COVID-19 pandemic	Technology Acceptance & Behavioral Intentions
77	Ryan Yung, Catheryn Khoo-Lattimore, Leigh Ellen Potter	2021	VR the world: Experimenting with emotion and presence for tourism marketing	Destination Marketing & Promotion
78	Sharifah Nurulhikmah Syed Yasin; Hayati Adilin Mohd. Abd. Majid; Siti Nurul Hayatie Ishak; Siti Salbiah Hamzah; Ummu Fatimah Mohd Bahrin; Rajeswari Raju	2022	A Systematic Literature Review of Virtual Reality Utilization in Tourism During COVID-19 Pandemic	Destination Marketing & Promotion
79	Cláudia Pedro Ortet, Ana Isabel Veloso, Liliana Vale Costa	2022	Cycling through 360° Virtual Reality Tourism for Senior Citizens: Empirical Analysis of an Assistive Technology	Tourist Experience & Engagement via VR
80	Talwar, S., Kaur, P., Nunkoo, R., & Dhir, A	2022	Digitalization and sustainability: virtual reality tourism in a post pandemic world	Virtual Travel & Sustainability
81	Hung, P. K., Liang, R. H., Ma, S. Y., & Kong, B. W	2022	Exploring the Experience of Traveling to Familiar Places in VR: An Empirical Study Using Google Earth VR	Tourist Experience & Engagement via VR
82	Shiwei Shen, Kexin Xu, Marios Sotiriadis, Yuejiao Wang	2022	Exploring the factors influencing the adoption and usage of Augmented Reality and Virtual Reality applications in tourism education within the context of COVID-19 pandemic	Technology Acceptance & Behavioral Intentions
83	Tom Griffin and Meghan Muldoon	2022	Exploring virtual reality experiences of slum tourism	Tourist Experience & Engagement via VR
84	Saneinia S, Zhou R, Gholizadeh A and Asmi F	2022	Immersive Media-Based Tourism Emerging Challenge of VR Addiction Among Generation Z	Tourist Experience & Engagement via VR
85	Xiaojun Fan, Xinyu Jiang, Nianqi Deng	2022	Immersive technology: A meta-analysis of augmented/virtual reality applications and their impact on tourism experience	Tourist Experience & Engagement via VR
86	Bo Wendy Gao, Chris Zhu, Hongmei Song, Ianthe M. Belisle Dempsey	2022	Interpreting the perceptions of authenticity in virtual reality tourism through postmodernist approach	Tourist Experience & Engagement via VR

87	Sanjeev Verma, Lekha Warrior, Brajesh Bolia, Shraddha Mehta	2022	Past, present, and future of virtual tourism—a literature review	VR Applications & System Development
88	Qiao Sui, Li Sui, Zhenzhen Dong, Kai Lu	2022	Research on the Design of VR Tourism Service System Based on Deep Learning and Emotional Experience	VR Applications & System Development
89	Yanfang Zeng, Lihua Liu, Rui Xu	2022	The Effects of a Virtual Reality Tourism Experience on Tourist's Cultural Dissemination Behavior	Cultural Heritage & Virtual Tourism
90	Fang Wang, Shanhui Huang, Alastair M. Morrison, Bihu Wu	2022	The effects of virtual reality tourism involvement on place attachment and behavioral intentions: virtual reality tourism of the Yellow Crane Tower in Wuhan	Technology Acceptance & Behavioral Intentions
91	Junyu Lu, Xiao Xiao, Zixuan Xu, Chenqi Wang, Meixuan Zhang, Yang Zhou	2022	The potential of virtual tourism in the recovery of tourism industry during the COVID-19 pandemic	Virtual Travel & Sustainability
92	Renan Adachi, Emily M. Cramer, Hayeon Song	2022	Using virtual reality for tourism marketing: A mediating role of self-presence	Destination Marketing & Promotion
93	Lin, L. Z., & Yeh, H. R.	2022	Using ZMET to explore consumers' cognitive model in virtual reality: take the tourism experience as an example	Tourist Experience & Engagement via VR
94	Roman, M., Kosiński, R., Bhatta, K., Niedziółka, A., & Krasnodębski, A	2022	Virtual and Space Tourism as New Trends in Travelling at the Time of the COVID-19 Pandemic	Virtual Travel & Sustainability
95	R. Sabari Shankar 1, Elizabeth Renju Koshy, Sonia Katherin Mathew	2022	Virtual Reality in Tourism : A Research Note	Destination Marketing & Promotion
96	Iftikhar, R., Khan, M. S., & Pasanchay, K.	2022	Virtual reality tourism and technology acceptance: a disability perspective	Technology Acceptance & Behavioral Intentions
97	Shalini Talwar, Puneet Kaur, Octavio Escobar, Sai Lan	2022	Virtual reality tourism to satisfy wanderlust without wandering: An unconventional innovation to promote sustainability	Virtual Travel & Sustainability
98	Maksim Godovykh, Carissa Baker, Alan Fyall	2022	VR in Tourism: A New Call for Virtual Tourism Experience amid and after the COVID-19 Pandemic	Technology Acceptance & Behavioral Intentions

99	Geng, L., Li, Y., & Xue, Y.	2022	Will the Interest Triggered by Virtual Reality (VR) Turn into Intention to Travel (VR vs. Corporeal)? The Moderating Effects of Customer Segmentation	Technology Acceptance & Behavioral Intentions
100	Baker, J., Nam, K. & Dutt, C.S	2023	A user experience perspective on heritage tourism in the metaverse: Empirical evidence and design dilemmas for VR	Cultural Heritage & Virtual Tourism
101	Sousa, N., Jorge, F., Teixeira, M. S., Losada, N., Melo, M., & Bessa, M.	2023	An Exploratory Study about the Effect of COVID-19 on the Intention to Adopt Virtual Reality in the Tourism Sector	Technology Acceptance & Behavioral Intentions
102	María A. Bretos, Sergio Ibáñez-Sánchez, Carlos Orús	2023	Applying virtual reality and augmented reality to the tourism experience: a comparative literature review	Tourist Experience & Engagement via VR
103	Kichan Nam, Christopher S. Dutt, and Jeff Baker	2023	Authenticity in Objects and Activities: Determinants of Satisfaction with Virtual Reality Experiences of Heritage and Non-Heritage Tourism Sites	Cultural Heritage & Virtual Tourism
104	Bideci, M., Bideci, C.	2023	Back in Time with Immersive Heritage Tourism Experience: A Study of Virtual Reality in Archaeological Sites	Cultural Heritage & Virtual Tourism
105	Zhenda Wei, Jingru Zhang, Xiaoting Huang, Hanqin Qiu	2023	Can gamification improve the virtual reality tourism experience? Analyzing the mediating role of tourism fatigue	Tourist Experience & Engagement via VR
106	Wang, J., Sun, Y., Zhang, L., Zhang, S., Feng, L., & Morrison, A. M.	2023	Effect of Display Methods on Intentions to Use Virtual Reality in Museum Tourism	Cultural Heritage & Virtual Tourism
107	Graeme McLean, Mansour AlYahya, Jennifer B. Barhorst, Kofi Osei-Frimpong	2023	Examining the influence of virtual reality tourism on consumers' subjective wellbeing	Tourist Experience & Engagement via VR
108	Rather, R. A., Hollebeek, L. D., Loureiro, S. M. C., Khan, I., & Hasan, R.	2023	Exploring Tourists' Virtual Reality-Based Brand Engagement: A Uses-and-Gratifications Perspective	Destination Marketing & Promotion
109	Sinh Duc Hoang, Sandeep Kumar Dey, Zuzana Tučková, Tien Phat Pham	2023	Harnessing the power of virtual reality: Enhancing telepresence and inspiring sustainable travel intentions in the tourism industry	Virtual Travel & Sustainability
110	Aixiang Yuan and Jinhwan Hong	2023	Impacts of Virtual Reality on Tourism Experience and Behavioral Intentions: Moderating Role of Novelty Seeking	Technology Acceptance & Behavioral Intentions

111	Yohan Wismantoro; M.G. Westri Kekalih Susilowati; Heribertus Himawan	2023	Investigating the Tourist Visit Intention During Covid 19 Pandemic Using Mood Management Theory (MMT) of Virtual Reality (VR) Tourism	Technology Acceptance & Behavioral Intentions
112	Nono Wibisono, Wahyu Rafdinal, Lina Setiawati, and Widi Senalasar	2023	Predicting the Adoption of Virtual Reality Tourism in the Post COVID-19 Pandemic Era	Technology Acceptance & Behavioral Intentions
113	Vivien Lin, Neil E. Barrett, Gi-Zen Liu, Nian-Shing Chen, Morris Siu-Yung Jong	2023	Supporting dyadic learning of English for tourism purposes with scenery-based virtual reality	VR Applications & System Development
114	Jiaji Zhu, Yanling Jiang, Yushi Jiang, Yedi Wang, Qiang Yang	2023	The effectiveness of social elements in virtual reality tourism: A mental imagery perspective	VR Applications & System Development
115	Ouerghemmi, C., Ertz, M., Bouslama, N., & Tandon, U.	2023	The Impact of Virtual Reality (VR) Tour Experience on Tourists' Intention to Visit	Destination Marketing & Promotion
116	Eunike Charista; Nicholas Christopher; Anderes Gui; Richard Wijaya	2023	The Influence of Virtual Reality on User Intention in Indonesia Tourism Industry	Technology Acceptance & Behavioral Intentions
117	Polishchuk, E., Bujdosó, Z., El Archi, Y., Benbba, B., Zhu, K., & Dávid, L. D.	2023	The Theoretical Background of Virtual Reality and Its Implications for the Tourism Industry	Technology Acceptance & Behavioral Intentions
118	Pankaj Kumar Tyagi; Ajit Kumar Singh; Priyanka Tyagi; Shweta Kapure	2023	Using virtual reality for tourism marketing : A mediating role of self - Presence	Destination Marketing & Promotion
119	Shirley Holt	2023	Virtual reality, augmented reality and mixed reality: For astronaut mental health; and space tourism, education and outreach	VR Applications & System Development
120	Wilson K.S. Leung, Man Kit Chang, Man Lai Cheung, Si Shi	2023	VR tourism experiences and tourist behavior intention in COVID-19: an experience economy and mood management perspective	Technology Acceptance & Behavioral Intentions
121	Akkhaporn Kokkhangplu	2024	A new generation behavior intention to visit tourism destinations in perspective of post-COVID-19	Destination Marketing & Promotion

122	Yun Li, Cuixia Li, Jianfeng Cui and Yuan Gao	2024	Application and Reflection of Virtual Reality in Digital Tourism Development	VR Applications & System Development
123	Kaushik Samaddar, Sanjana Mondal	2024	AR and VR-based travel: a responsible practice towards sustainable tourism	Virtual Travel & Sustainability
124	Sousa, N., Alén, E., Losada, N. & Melo, M	2024	Breaking Barriers: Unveiling Challenges of Introducing Virtual Reality for Managers in the Tourism Industry	Technology Acceptance & Behavioral Intentions
125	Thi Bich Thuy Nguyen, Quoc Vinh Pham-Le, Ngoc Tuan Chau	2024	Dataset of the relationship between authentic virtual reality experiences and tourists' visiting intentions	Technology Acceptance & Behavioral Intentions
126	Hongru He	2024	Design of Immersive VR Tourism Analysis Model Based on Fuzzy Logic Algorithm	VR Applications & System Development
127	Yuqing Guo, Shizhu Lu, Min Shen, Wei Huang, Xiaolie Yi, Jifa Zhang	2024	Differences in Heritage Tourism Experience between VR and AR: A Comparative Experimental Study Based on Presence and Authenticity	Cultural Heritage & Virtual Tourism
128	Nam, K., Baker, J. & Dutt, C.S.	2024	Does familiarity with the attraction matter? Antecedents of satisfaction with virtual reality for heritage tourism	Cultural Heritage & Virtual Tourism
129	Nuno Sousa, Filipa Jorge, Mário Sérgio Teixeira, Nieves Losada, Elisa Alén, Daniel Guttentag	2024	Does Technological Innovativeness Influence Users' Experiences With Virtual Reality Tourism?	Tourist Experience & Engagement via VR
130	Hyunjun Choi, Junghyun Park, Eun Ae Oh, Jongsik Yu	2024	Elderly Tourism Using Virtual Reality: Verification of Strategies to Build Loyalty Using the Loyalty Chain Stages Theory	Technology Acceptance & Behavioral Intentions
131	Zhu, Y., Li, J., Han, X., Wang, R., Wang, C., & Pu, C.	2024	Embracing the Future: Perceived Value, Technology Optimism and VR Tourism Behavioral Outcomes Among Generation Z	Technology Acceptance & Behavioral Intentions
132	Huang, HW., Tiangco, J.A.N.Z., Du, X., Tao, J., Wu, S.	2024	Enhancing Tourist Experiences: Integrating ChatGPT and 360 VR Videos in Tourism and Tourist Psychology	Tourist Experience & Engagement via VR
133	Vishal Shukla, Sudhir Rana, Sanjeev Prashar	2024	Examining the potential of virtual and augmented reality in enhancing tourism experiences	Destination Marketing & Promotion

134	Tong Zhang, Shaowei Xiong	2024	Exploring the influence of expectancy, valence, and instrumentality on VR tourism intention: A framework based on TAM and expectancy theory	Technology Acceptance & Behavioral Intentions
135	Issock Issock, P. B., Jacobs, A., & Koopman, A.	2024	Immersive escapes: examining the impact of personality traits, perceived enjoyment, flow and trust on virtual reality technology adoption intentions in an emerging market	Technology Acceptance & Behavioral Intentions
136	Yupeng Mou, Jiao Fan, Zhihua Ding, Inayat Khan	2024	Impact of virtual reality immersion on customer experience: moderating effect of cross-sensory compensation and social interaction	Tourist Experience & Engagement via VR
137	Nuno Sousa, Elisa Alén, Nieves Losada, Miguel Melo	2024	Influencing wine tourists' decision-making with VR: The impact of immersive experiences on their behavioural intentions	Destination Marketing & Promotion
138	Vaishnavi S, Ajit I	2024	Journeying Beyond Classroom Walls: Investigating the Impact of 360-Degree VR Videos in Fostering Experiential Learning in Tourism Education	VR Applications & System Development
139	Ning Wang, Ping Zhao, Xing Wang and Yixuan Wang	2024	Modeling the Impact of Virtual Reality Technology Integration for Snow and Ice Sports on Enhancing Regional Sports Tourism Economy	VR Applications & System Development
140	Minglong Li, Xiaoyang Sun, Yu Zhu, Hailian Qiu	2024	Real in virtual: the influence mechanism of virtual reality on tourists' perceptions of presence and authenticity in museum tourism	Cultural Heritage & Virtual Tourism
141	Huibo Hu; Zhibin Su; Yujian Jiang; Lingxi Qu	2024	Research on Comfort Perception and Evaluation of Immersive Experience Equipment in Cultural Tourism	Cultural Heritage & Virtual Tourism
142	Jinjin Wang	2024	Research on factors influencing tourists' adoption of virtual reality technology based on VAM	Technology Acceptance & Behavioral Intentions
143	Zhu Zhu	2024	Research on innovative methods of virtual reality course content for tourism education	VR Applications & System Development

144	Jiaji Zhu, Yushi Jiang, Yedi Wang, Qiang Yang, Wei Li	2024	Richness and Dynamics: How to Improve Virtual Reality Tourism Adoption with Virtual Social Clues	Technology Acceptance & Behavioral Intentions
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