Exploring the Virtual Reality in Tourism Marketing for Improving Efficiency and Better Consumer Experience

Raghib Abid
Graduate Student, Department of Marketing, Faculty of Business Studies, Begum Rokeya University, Rangpur, Bangladesh
Email: raghibabid2002@gmail.com

Citation: Abid, R. (2025). Exploring Virtual Reality in Tourism Marketing in Improving Efficiency and Better Consumer Experience. *Business Perspective Review 7(1),* 15-31. https://doi.org/10.38157/bpr.v7i1.664.

Research Article

Abstract

Purpose: *This study examines the transformative potential of Virtual Reality (VR) in tourism marketing, emphasizing its role in enhancing efficiency and sustainability. It aims to bridge the gap between theoretical advancements and practical applications of VR in tourism.*

Methods: *A PRISMA-based systematic literature review was conducted, analyzing studies from 2021 onwards. The study explores various VR applications in tourism marketing, such as dynamic pricing, customer segmentation, and real-time personalization, while addressing challenges like data privacy and algorithmic bias.*

Results and Discussion: *Findings indicate that VR enhances consumer engagement, improves travel decision-making, and fosters immersive destination branding. VR-driven marketing strategies, including virtual tours, interactive campaigns, and personalized experiences, have significantly influenced consumer behavior and increased booking conversion rates. However, challenges remain, such as accessibility barriers, high implementation costs, and potential discrepancies between virtual and real-world experiences.*

Implications: *VR presents a strategic advantage for tourism marketers by offering immersive previews, enhancing customer trust, and supporting sustainability initiatives. Policymakers and industry leaders must address infrastructure and ethical concerns to maximize VR's potential.*

Originality: *This study provides a comprehensive overview of VR's role in tourism marketing, integrating insights into its technological applications and market impact, which remain underexplored in current literature.*

Keywords: Virtual Reality, Tourism Marketing, Predictive Analysis, Consumer Engagement in VR, Sustainable Tourism Innovation.

1. Introduction

The post-COVID pandemics and their many preventive measures and procedures have temporarily hurt the tourism industry in numerous countries. In recent years, tourism has acquired international recognition as an important and relatively green industry, demonstrating its continued expansion (Burbano & Meredith, 2021). Academicians and researchers are focusing their attention on tourism and hospitality industries and innovation in various tools and elements (Bhuiyan et al., 2024). Fresh emerging graduates are shaping their careers in the field of tourism and hospitality management. According to estimates, the tourism sector employs approximately 9.9% of all workers worldwide (Sun et al., 2022). According to all of these facts,

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

the tourism industry's enormous demand and service capacity can serve as its cornerstone, helping to create a competitive climate in which tourism service providers can operate (Bhuiyan et al., 2024). Meanwhile, due to the increasing amount of Internet adoption among Gen Z, the growth of electronic commerce, and the increasing acceptance of online purchasing in recent decades (e-commerce), there has been a consistent upward trend globally. In this regard, although tourism has traditionally been demonstrated as a "brick-and-mortar" industry (Ponte & Sergi, 2024). E-commerce has helped to make the tourist sector a more competitive market by meeting the diverse needs of travelers (Yang & Lin, 2022). Today, the growth and expansion of ICTs have had a tremendous impact and altered the tourism industry in terms of providing users with access to data and information about and selling travel-related products online (Bhuiyan, 2023). Thus, in the context of multi-channel commerce, marketers in the tourist sector have been continuously considering and investigating potential strategies for adding value in order to draw in, hold on to, and engage their clientele.

Virtual reality (VR) has been regarded as one of the most promising technical components in a variety of application sectors due to its increasing affordability and accessibility each year. In order to give their clients a unique and innovative experience, sectors like video games, medical education, education, television, and entertainment are working to integrate virtual reality (VR) technology into their traditional business and service structures. (Pratama & Putra, 2024). VR research and development in the travel sector is still in its early phases, nevertheless (Bhuiyan et al., 2024). Few studies have examined the use of virtual reality (VR) to provide remote telepresence in the twenty-first century, allowing users to visit heritage sites and view items like antiques in museums while preventing harm. (Kim et al., 2023). This perspective differs from that of tourism e-commerce, where the use of virtual reality (VR) is designed to draw in as many tourists as possible and give users (or prospective tourists) an alternative way to experience the tourist attractions.

This increases the conversion rate of purchasing tourism products for actual travel (e.g., flying to Cox's, Bazar, and sampling local cuisine) rather than just in virtual reality. There might be additional difficulties in integrating VR into the tourism industry. While developing and implementing realistic virtual reality experiences in the tourism industry continues to be difficult, novel combinations merit more research (Bhuiyan, 2024). Effectively combining the most promising digital technology with aspects of human psychology would aid in the development of marketing plans and systems that would successfully draw in travelers (Buhalis et al., 2023). Consequently, motivated by the vast majority of gamification (because a game-like experience has been identified as one of the key components in generating pleasant and constructive feelings in online education) (Kashive & Mohite, 2023). The purpose of this study is to:

(1) To investigate how and why younger generations of prospective tourists accept the marketing information in the creation of virtual reality experiences.
(2) To determine whether integrating VR into tourism marketing can understand the intention of potential tourists to visit the destination in this digital world.
(3) To measure the benefits of VR facilities in the regular marketing of tourism websites and social media in the e-tourism environment.

2. Literature Review

2.1 Virtual Reality

The definitions of "virtual" and "reality" are where the phrase "virtual reality" originates. The term "virtual" is close to reality, which is what we as humans encounter on a daily basis. Essentially, "virtual reality" refers to "near-reality." Naturally, this might signify anything, but it typically alludes to a certain kind of reality replication (Faggiano & Fasanella, 2022). Innovation is particularly important for the tourism industry because of the growing demand from consumers for outstanding service and memorable experiences, the need for suppliers to boost efficiency and profitability, and social factors like sustainability (Cao et al., 2022).

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

Consumers gather experiences through senses such as taste, touch, smell, sight and hearing and perception systems. These sensory inputs are utilized in the consumption of virtual realistic features (Amin et al., 2024). In a nutshell, sensory information and the sense-making mechanisms in our brains combine to form our perception of reality. The senses with made-up data, perception of reality would change in response to it (De Paolis & De Luca, 2022). Virtual reality entails presenting in customer senses with a computer-generated virtual environment exploration. Virtual reality is basically used to demonstrate a three-dimensional, an environment created by a computer that can be explored and engaged with customers (Korkut & Surer, 2023).

The relationship between AR/VR experience and destination image (DI) has begun to receive significant attention in the ever-changing field of tourism research. Several studies directed by researchers suggest that A more thorough, multimodal awareness of the place is possible with increased use of AR and VR, which can also significantly improve the immersive experience by giving them a more positive and distinct mental image of the place, this affects potential travelers' travel preferences (Bhuiyan et al., 2024). VR applications enhance a destination's appeal and attraction, according to an expanding body of study.

In today's Tourism World, Intelligent virtual cities are being created with the help of several cutting-edge technologies, such as AR and VR, and could eventually become well-liked tourist destinations (Javed et al., 2022). Users who engaged with virtual reality representations of a destination reported a more approachable image than those who depended on traditional promotional materials available in the market (Bhuiyan et al., 2024). The multimodal and interactive aspects of virtual reality significantly contributed to the creation of a more efficient and enticing destination image. Notwithstanding its advantages, there are various risks and uncertainties associated with the use of virtual reality (VR) in the travel sector. The discrepancy between virtual representation and actual experience may lead to unrealistic expectations and, eventually, dissatisfaction among customers.

2.2 VR in Tourism

In the 21st century Tourism Industry is recognized to be information intensive to a larger extent. This necessity for data and information is intensified by certain features of the tourism offering. The Tourism Marketers are applying various strategies and implementing tools to improve the servqual among their potential customers.

2.3 VR in Tourism Marketing

VR is used in a variety of fields, such as management and planning, marketing and information sharing, entertainment, education, accessibility, and heritage conservation. Using virtual reality (VR) in tourism allows travelers to access protected or hazardous locations that are otherwise inaccessible (Samaddar & Mondal, 2024), to visit places and attractions that are no longer there, or even to enter places that are completely nonexistent, such dream realms where people are stimulated and feel as though they are there from real-world dimensions (Hossain et al., 2024). Additionally, VR lowers accessibility hurdles for those with disabilities or senior folks. Individual travelers' receptivity is a major factor in the use of VR as a tourism alternative like AI and the Internet of Things, might produce even more complex experiences (Zikria et al., 2021).

Tourists can use a headset, sometimes known as a head-mounted display (HMD), to interact with virtual reality. With two displays—one for each eye—an HMD is worn on the head in front of the eyes like a helmet. To get a 360-degree panorama, move your head like you would if you were looking around in a real place. The helmet-mounted display (HMD) provides a first-person view of the virtual world in all directions by sensing the user's head rotation and displaying visuals appropriately (Feng et al., 2022).

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

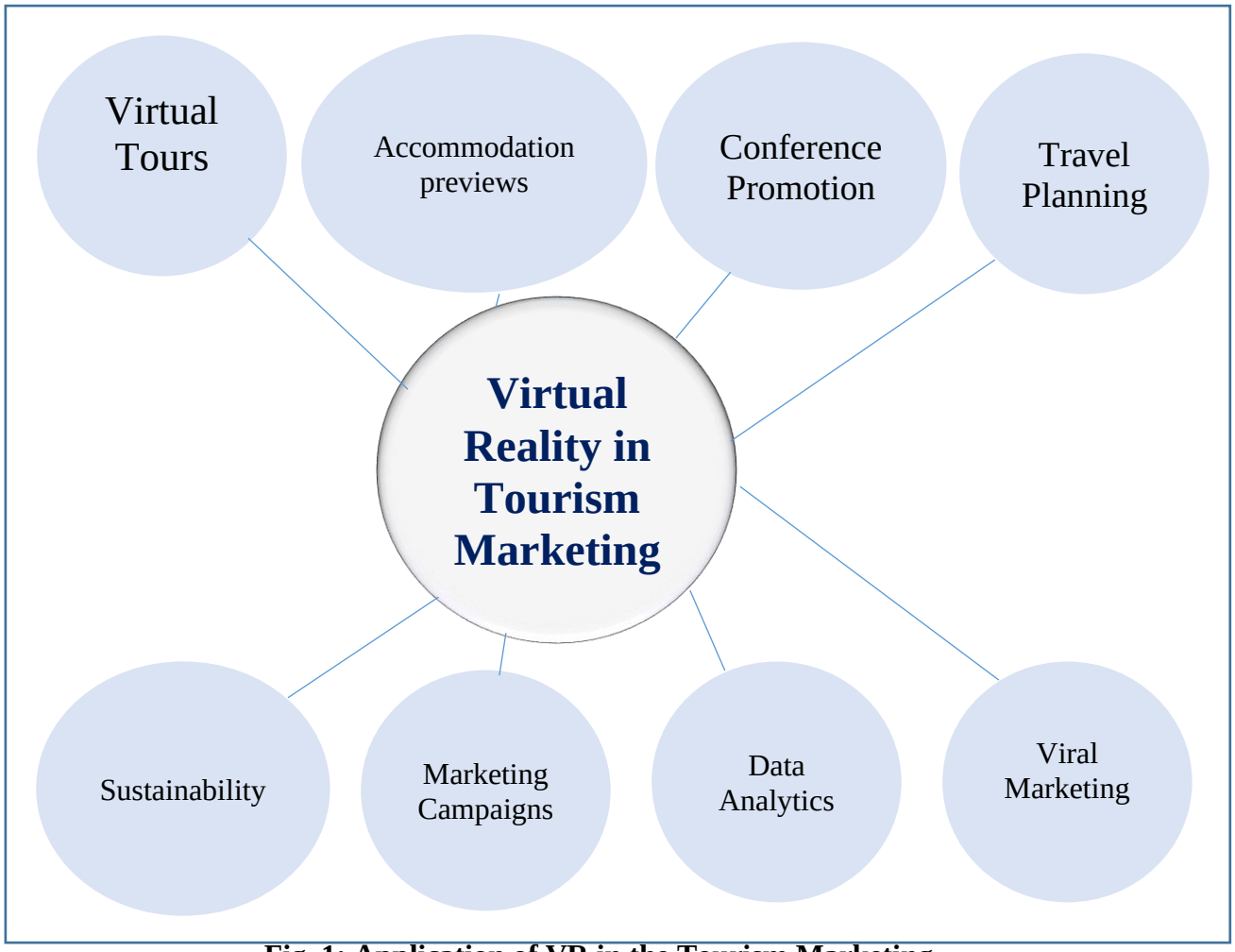

Fig. 1: Application of VR in the Tourism Marketing

Table 1: A list of Segments

Segments	Description	Reference
Virtual Tours of Attractions and Destinations	VR allows potential tourists to consume immersive virtual tours of destinations before booking their trips and itineraries. They can explore iconic landmarks, nature trails, city streets, and even local attractions in 360 degrees. Tourists can interact with these environments, providing an engaging and sensory-rich experience.	Oncioiu & Priescu (2022)
Hotel and Accommodation Previews	Hotels and resorts can implement VR to offer potential guests immersive hotel room tours rather than static images or traditional videos. VR allows users to experience the layout, view, and amenities of rooms and facilities from their individual perspectives.	Slevitch et al. (2022)
Interactive Marketing Campaigns	VR allows tourists to experience activities, local community cultural engagement, or local sites, such as hiking a trail while staying at their homes. Marketers can deliver interactive VR games where users can unlock rewards, discounts, and virtual experiences related to a destination.	Bec et al. (2021)
Conference Promotion	VR can be implemented to promote virtual tourism conferences and expos without geographical location and presence constraints. Tourism businesses can offer a platform of virtual stands at trade shows by showcasing partners and customers to interact with 3D content, watch videos, and have live discussions.	Xia et al. (2023)

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

Customized Travel Planning	With the help of VR, travel agencies can provide immersive consultations, where users can experience the suggested trips firsthand, increasing the likelihood of conversion and an efficient scope for their travel planning.	Szczepańska et al. (2021)
Sustainability and Eco-Tourism	Virtual reality can be optimized to raise awareness about environmental pollution impacting tourist destinations, such as coral reef degradation, deforestation, or wildlife protection. VR allows tourists to experience ecologically sensitive locations without contributing to over-tourism.	Scurati et al. (2021)
Marketing Campaigns	VR platforms can collaborate with CRM to provide more personalized recommendations based on individual users' tourist behavior and preferences. After analyzing tourist buying perception and psychological behavior, tourism marketers can forecast which destinations or activities are likely to be popular in the coming season or peak seasons.	Yang et al., (2024)
Data Analytics	After analyzing customer data and information such as: past behavior, preferences, demographics, tourism companies can tailor VR experiences to individual preferences. For example, a VR tour could highlight archaeological sites that connect with a traveler's attraction.	Shamim et al. (2024)
Viral Marketing	Marketers implementing data analytics to segment potential customers allow for personalized viral marketing campaigns. For example, analyzing social media platform data to understand where potential tourists' behaviors, interests, and social perceptions.	Liao & Yang (2021)

There is an evident lack of literature on a comprehensive composition of how these technologies work together to create seamless, integrated experiences for tourists, even though previously published research has examined the individual applications and potential of VR in the tourism sector. Furthermore, most research has focused on pre-travel and on-site experiences, paying little attention to the post-travel phase, where similar technologies can significantly improve tourism experiences (Eletxigerra et al., 2021).

The purpose of this study is to offer a thorough analysis of the potential of virtual reality (VR) in transforming the travel experience at every stage—pre-, on-, and post-travel—in order to fill the identified vacuum in the literature. This study aims to provide a more thorough knowledge of these technologies' possible effects on the travel and tourism sector by considering their synergies. Additionally, more investigation into the elements influencing consumer acceptability and VR uptake in the travel industry can yield insightful information for travel agencies, tech developers, and marketers (Fan et al., 2022).

Fig 2: VR headsets in exploration of Tourist Attraction

1. Methodology

The importance of international travel has increased in the modern tourism paradigm, dramatically impacting several global issues, such as the COVID-19 epidemic. This has given travel agencies and businesses new problems and competitive advantages (Kahveci, 2023). According to the study, virtual reality is a possible option because of its capacity to create immersive surroundings, boost interactivity, and establish a sensation of presence. Its use in tourism marketing is not without considerations, though. Issues

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

like retention rate, tourism-driven economy, and system integration highlight the necessity for a complete solution, even though virtual reality can improve organizational coordination. This study sheds light on the potential of virtual reality to revolutionize tourist marketing. This study emphasizes the incorporation of technology and its alignment with the organization's objectives, tourist demands, and the broader digital tourism ecosystem. This research opens the door for more studies, like making VR training materials, looking into the Sustainable Tourism Economy 4.0, and doing quantitative studies of how VR affects tourism worldwide (Verma et al., 2022).

The methodology was carried out in four main stages: identification, screening, eligibility assessment, and data extraction (Masud et al., 2024). Primarily, a thorough search was performed across multiple academic databases such as Emerald Insight, Jstor, and Google Scholar to identify relevant studies. 5,173 records were retrieved using keywords related to VR and tourism marketing. After removing duplicates, 3,691 unique records remained for further screening (Mani, 2024). These records were then reviewed based on titles and abstracts to determine their relevance to the research question.

Google Scholar, Emerald Insight, and Jstor were among the databases chosen for this SLR. Exclusion criteria (duplicate, non-relevant, etc.) and inclusion criteria (articles with the string included in the abstract, articles published in English, etc.) were used. 50 publications were gathered through a collaborative method, and a database search was conducted in January 2025 with a primary focus on data from 2021 onwards.

Themes	Theories	Studies
Models	1. Attention–interest–evaluation–desire–action model (AIEDA) 2. SOR Model 3. TAM Model	1. Weng et al. (2021) 2. Kim et al. (2021), Schiopu et al. (2022) 3. Schiopu et al. 2021, Fan eta al. (2023)
Media	1. CATLM 2. Media richness theory	1. Leung et al. 2022 2. Lee et al.2021
Presence	1. Presence Theory 2. PEI framework	1. Aldossary & McLean (2022) 2. Yung et al. (2021)
Consumer behavior	1. Theory on consumer learning 2. Expectancy theory 3. Self-brand connection 4. Spillover theory	1. Martínez-Moleset al. (2022) 2. Talwar et al. (2022) 3. Bogicevic et al. (2021) 4. Leung & Huang (2023)
Other theories	1. Optimal–arousal theory 2. Theory of embodied cognition	2. Wei et al. (2023) 3. Wen & Leung (2021)

Table 2 Used theories in VR Tourism Research from 2021 to 2023

Out of the 3,691 records, 1,482 articles were considered potentially relevant and were assessed further through full-text evaluations. Articles were included if they focused on VR technologies in tourism marketing, particularly experiences and their influence on consumer behavior and tourism promotion. Studies not related to VR in tourism, articles focusing on unrelated industries or underdeveloped countries, and those not published in English were excluded (Khatun et al., 2025).

After the full-text assessment, 23 articles were selected for inclusion in the review. These articles underwent a detailed data extraction process, focusing on VR's effectiveness in tourism marketing campaigns, consumer engagement, and the overall impact of VR technology in the tourism industry. Both qualitative and quantitative analyses were conducted (Ghose et al., 2025). The qualitative analysis identified recurring themes and trends, while quantitative data, such as engagement rates and conversion statistics, were analyzed where available.

However, several assumptions were made during the review process due to certain constraints in accessing some studies and limitations in data availability. For example, in cases where detailed data was not provided, assumptions about consumer behavior trends and VR effectiveness were inferred based on similar

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

studies or industry reports. These assumptions helped fill gaps where primary data could not be accessed, though the limitations were acknowledged and considered when concluding (Rahman et al., 2024).

The findings were synthesized to provide insights into VR's current applications in tourism marketing, its effectiveness in consumer engagement, and its potential for future growth. By applying the PRISMA framework and making necessary assumptions due to constraints, this study ensures a transparent, methodologically sound review process that contributes valuable knowledge to the evolving field of VR in tourism marketing.

3.1 PRISMA Framework for VR in Tourism Marketing

This study followed the PRISMA framework (Tugwell & Tovey, 2021), ensuring a systematic and transparent approach to reviewing the literature on Virtual Reality (VR) in Tourism Marketing.

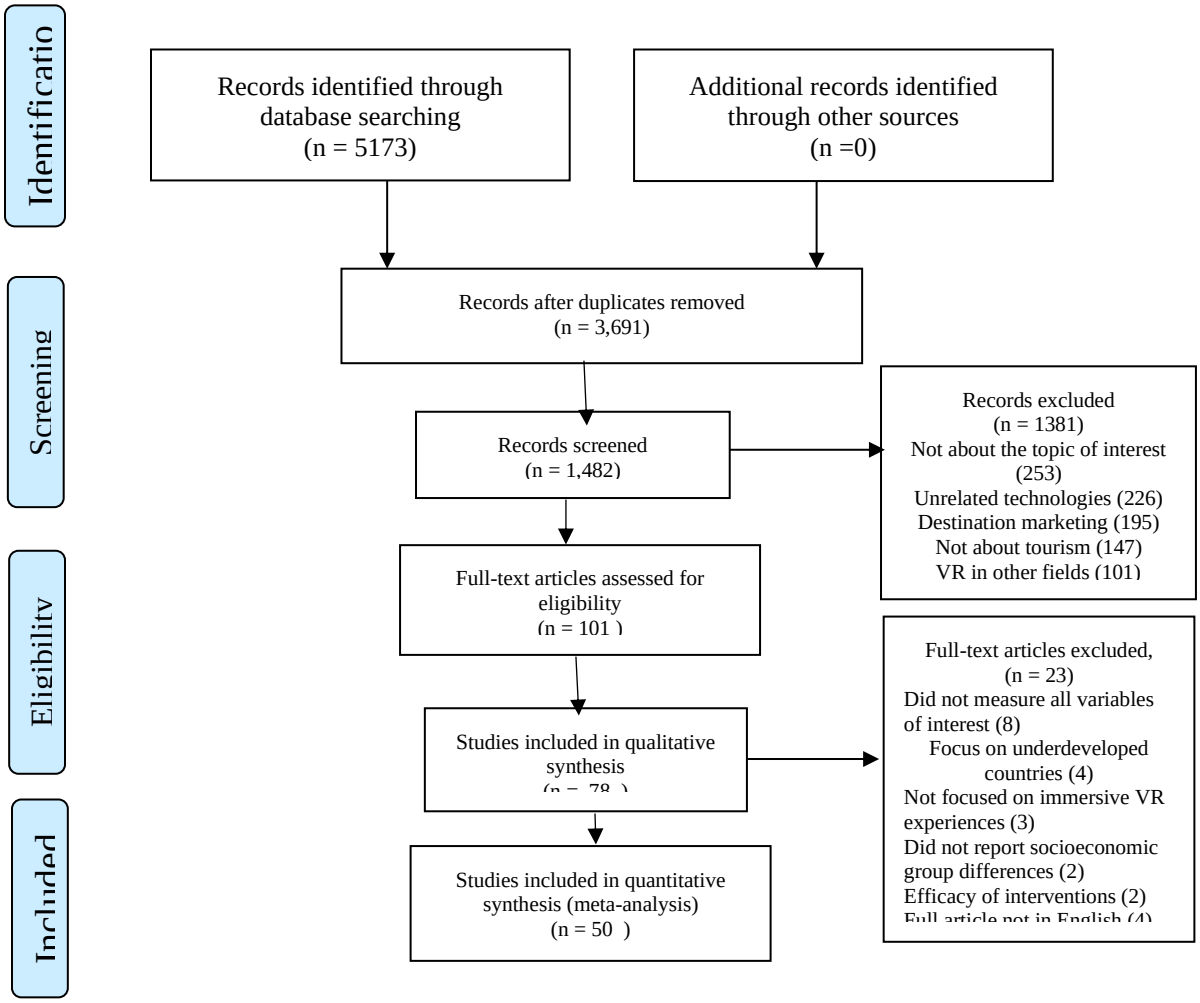

Fig. 3: PRISMA-Based Research Methodology

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

3.2 Article Screening of VR in Tourism Marketing

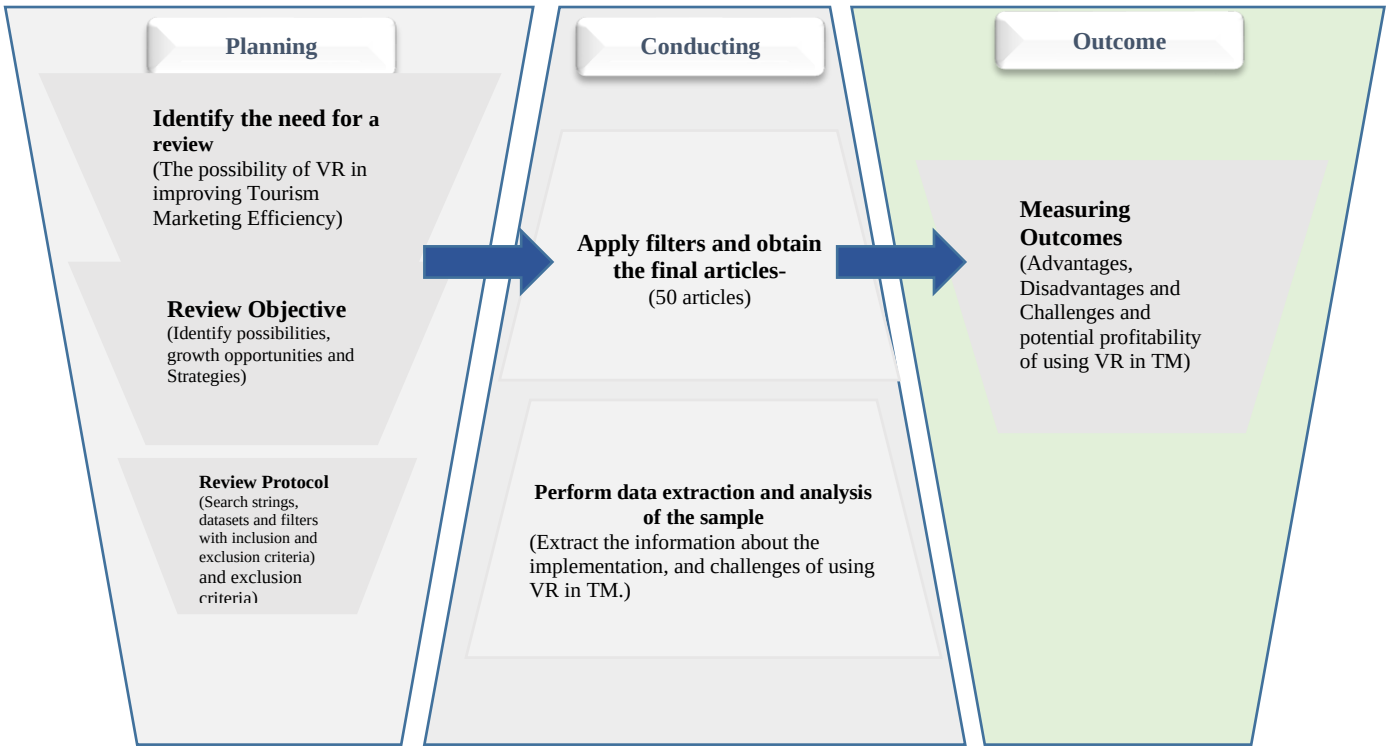

Fig 4: Steps of the methodology performed for Article Screening
Source: Author's Work

Table 3: String with the keywords used in the SLR 2

Strings	("VR" OR "VR in Tourism" OR "VR in Tourism Marketing" OR "virtual working" OR "Virtual World" OR "Virtual Tourism" OR "Marketing Application" OR "VR application" OR "telework" OR "teleworking" OR "VR tool" OR "Tourism 4.0" AND ("virtual reality")

4. Results and Discussion

Based on the literature search, several relevant research findings have been identified to support the focus and objective of this study. Important aspects include (1) VR in the Profitability of Tourism Business in Six Stages, (2) Virtual Reality as a Tool for Immersive Destination Branding, and (3) Metaverse Tourism.

.

4.1.VR in the Profitability of Tourism Business

In the fourth industrial revolution, virtual reality (VR) was introduced in many different fields, such as research, automotive, sports, military, aeronautics, and educational sectors. With the help of VR, tourism marketing strategies will open more ways to reach long-term goals in the hospitality and tourism industry, both in terms of improving performance and customer service (Uddin et al., 2024). This will lead to higher productivity, which will make the industry profitable (Bhuiyan et al., 2025). For people who are not digital nomads, working remotely usually means working from home, sometimes in a room, bedroom, or office. However, virtual reality makes the virtual workspace infinitely flexible, allowing workers to select a location that best suits their needs and the task at hand. This location could be a beach, a rural area, a mountain, an office, the outskirts of a town, etc. (Latini et al., 2021). Aside from the room's aesthetics, the user can now have several screens in the sizes he desires based on his own preferences, and the physical devices' limitations, like the computer screen, are no longer a problem.

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

Table 4: VR in the Profitability of Tourism Business

Stage	Action	Impact	Outcome
Pre-Visit Engagement	VR simulations of tourist attractions and destinations, hotels, and participations.	Improved customer interest and tourist engagement	Significantly raise booking conversion rates
On-Trip Experience	VR guides immersive experiences provides educational content during tours	Maximized customer satisfaction, enriching experiences	Positive reviews, repeat visits, and referrals for future
Customization	Personalized VR application to help tourists select travel preferences.	More tailored, personalized experiences	Higher RPC (revenue per customer) through premium packages
Operational Efficiency	Staff training through VR simulations	Increased customer service, reduced various errors, and more efficient operations in business	Lower operational costs, improved service quality, and efficient OPS (Operational Management System).
Marketing & Branding	VR advertising and campaigns	Increased brand recognition, differentiation in the market	more engagement and bookings through unique marketing methods and strategies
Revenue Streams	Monetizing VR experiences (e.g., virtual tours, VR content)	Producing new income sources	Increased revenue through value-added services and tourism products

Source: Author's Work

Virtual Reality (VR) significantly maximizes the profitability of tourism businesses across multiple dimensions. Pre-visit engagement allows customers to experience immersive virtual tours, increasing conversion rates and encouraging more bookings (Alam et al., 2022). During the On-Trip Experience, VR enriches tourist experiences with interactive simulations, boosting customer satisfaction and retention (Torabi et al., 2022). Customization enables personalized travel preferences, allowing businesses to offer premium packages that cater to individual preferences (Islam et al., 2024). Regarding Operational Efficiency, VR streamlines staff training, increasing service quality and reducing operational costs. Through Marketing and branding, VR introduces innovative, immersive campaigns that distinguish a business in a highly competitive market (de Regt et al., 2021). Lastly, Revenue streams are expanded as businesses monetize VR experiences, generating new income sources through exclusive content and efficiently tailored services (Bhuiyan et al., 2023).

4.2. Virtual Reality as a Tool for Immersive Destination Branding

Virtual Reality (VR) is revolutionizing tourism marketing by offering diverse experiences. VR destination travel allows tourists to explore locations virtually, influencing their travel decisions (Bhuiyan et al., 2023). VR hotel tours provide interactive previews of accommodations, boosting booking confidence. Time travel experiences offer virtual visits to historical sites, attracting cultural tourists. Lastly, VR social media content engages audiences with 360-degree videos, increasing interaction and interest in exploring various destinations (Holmes et al., 2021).

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

Fig. 5: VR in Tourism Marketing
Source: Author's Work

Table 5: A list of VR Tourism Categories

Types	Description	Reference
VR Travel to Geographical Locations	Travelers can explore places and attractions virtually via virtual reality, which offers an entertaining and interactive method of seeing places before visiting.	(Alyahya & McLean, 2022)
VR-simulated hotel room explore	VR hotel room tours provide potential guests with a preview of rooms and amenities, allowing them to explore virtually before booking.	(McLean & Barhorst, 2022)
VR Social Media Contents	VR social media content for tourism marketing allows brands to create immersive 360-degree videos or virtual experiences to enhance online interaction, attracting potential tourists and encouraging them to explore destinations.	(Dutta et al., 2024)
Visiting VR-controlled archaeological sites	VR time travel allows users to experience historical events, ancient civilizations, or past eras in an interactive environment to explore history from a virtual perspective in a different way.	(Buhalis et al., 2023)

4.3 Metaverse Tourism

The term "metaverse" was used by N. Stephenson in his science fiction book Snow Crash (Ioannıdıs & Kontıs, 2023). Realistic avatars were supposed to meet in realistic 3D buildings and other virtual 70 reality settings in the story. The idea of the metaverse dates back even further to E. M. Foster's 1909 short science fiction storybook Machine Stops. In Machine Stops, nearly everyone is forced to live underground in separate pods after a natural disaster renders the planet uninhabitable. All of humanity's needs and desires are met by a sophisticated worldwide machine in his fictitious society, ranging from 75 fundamental demands (such as clean air, light, food, and shelter) to more upscale ones (such as entertainment, literature, music, and social contact) (Bhuiyan et al., 2024).

Avatar Flight of Passage by Disney, Digital Waterfall by the Pacific Visions Center of the Aquarium of the Pacific, escape rooms, and other tourist destinations that offer metaverse tourism experiences have all improved their virtual reality (VR) rooms over the last five years to draw in a new generation of customers, particularly GEN-Z (Bilińska et al., 2023).

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

Fig 6: Metaverse Tourism

5. Implications

This research has numerous practical implications for consumers, tourist boards (policymakers), and tourism providers. The results show that virtual reality influences consumer spending patterns, improves travel agents' efficiency, and applies VR to future sustainable tourism (Bhuiyan et al., 2024). People should consider holidays associated with personal development, a sense of purpose and direction in life, rather than just fun, for example, if they want to have a longer-lasting effect on wellness. This is going to have a beneficial effect on eudaimonic well-being before, during, and after the journey. Managers should take note of the research's findings, which support the idea that more sensory information cues create a stronger sense of presence in the virtual world, giving users the impression that they have arrived at the tourist destination (Bhuiyan et al., 2023). This, in turn, improves attitudes toward the destination and raises the likelihood that people will visit. Thus, 360° visuals, tactile sensation (for navigating and locating points of interest inside

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

the VR experience), superimposed text information, and audio information about the destination are all examples of visual, haptic, and aural cues that travel marketers should take into account (Santoso et al., 2022). Using high-resolution 360° photos to produce virtual reality content is one tactic that can make the customer feel more present (Spielmann & Orth, 2021). Adding background sounds like wind or running water can help customers feel more immersed and make the experience more authentic (Bhuiyan et al., 2024).

6. Conclusion

The structure of tourism has changed, and technological advancements such as the Internet, social media, smartphone apps, and virtual reality are impacting how people view and interact with tourist locations (Torous et al., 2021). Because VR has so many beneficial applications and ramifications for the travel industry, researchers and experts studying tourism should give it more consideration. Planning and management, marketing, entertainment, education, and accessibility are some of these applications (Jagatheesaperumal et al., 2024). A well-designed virtual environment can meet this demand for on-demand access, and a VR tool should be user-friendly, intuitive, and well-organized (Wu et al., 2025). Everyone who watched a VR film demonstrated a more extraordinary flow experience, a better assessment of the image of the tourist destination, and a higher level of advertising effects (Bhuiyan et al., 2024). However, the results of the two-way ANOVA indicated that the individuals' ability to accept new technologies tempered the effects (Classen et al., 2024). VR has the potential to be helpful and advantageous for marketing travel destinations to people who enjoy trying out new technologies (Oncioiu & Priescu, 2022). Nowadays, tourist attractions are becoming increasingly competitive, and to draw visitors, they must employ a range of information technology (Harahap et al., 2023). However, not everyone is receptive to new technologies or believes virtual reality is useful for gathering travel-related data (Sia et al., 2023). Virtual reality tools can satisfy visitors' on-demand needs if they are readily available, easy to use, comfortable, and well-structured from the perspectives of users/travelers with or without technological experience (Griffin & Muldoon, 2022). Nowadays days' tourism has become an emerging sector all over the world (Alam et al., 2020), and VR has a wide range of capabilities to focus and widespread the innovative upbringing approach in the development of sustainable tourism and more data-driven services (Talwar et al., 2023) providing by the Tourism Marketers including Hospitality Marketers in Bangladesh (Faisal-E-Alam et al., 2025) and digital transformation strategies and technological platforms (Rakib et al., 2022).

7. Limitations and Directions for Future Research

There are certain restrictions on the current investigation. Academic papers' data sources were limited to journals. This analysis excluded a few reports about innovation that might have appeared on other reputable websites. In order to have a more thorough overview of the innovation literature, future research might incorporate more online articles. Additionally, we limited the scope of this study to review academic journal studies on virtual reality in tourism marketing (Bhuiyan, 2024). Furthermore, the quality of keywords and terms, as well as database coverage, may have an impact on the validity and accuracy of co-word analysis. The models are not entirely comprehensive because keywords that appeared less than three times were excluded. In future studies, co-words may be combined with other review techniques, including integrative, semi-systematic, narrative, and systematic reviews. Future efforts should also try to broaden the scope of innovation research to include both public and private hospitality and tourist enterprises at the organizational level (Gürlek & Koseoglu, 2021) and the personal level. Examining the factors that encourage, hinder, and enable enterprises to use virtual reality (VR) and how it complements their current strategies may be beneficial (Sipatchin et al., 2021). Furthermore, it is worthwhile to research ways to preserve the human element, which is crucial for the customer experience while using virtual reality (Han

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

et al., 2022). Future studies could look at the user experience, the efficacy and efficiency of robots, and how they affect jobs in hospitality and tourism when working with virtual reality (Ivanov et al., 2022).

VR applications in additional domains, including conferences, incentive travel, festivals and events, meetings, tourist intermediaries, and tourism education and training (Cao et al., 2022). Specifically, the provider perspective was the primary focus of most of the existing VR investigations (Bhuiyan, 2024). Thirdly, future studies that consider the customer's viewpoint can look at how to use 360° cameras in conjunction with VR to improve the immersive experience of visitors (Beverly et al., 2022). Fourthly, it will be fascinating to observe if the results hold up when comparing devices because there are many kinds of VR, such as fully immersive and semi-immersive (Kshetri et al., 2024).

Conflict of Interest: The author declares no conflict of interest.

REFERENCES

Aldossary, M., & McLean, G. (2022). Prolonging the influence of a vacation experience on consumers' well-being. Is there a role for virtual reality? *Annals of Tourism Research, 97*, 103500. https://doi.org/10.1016/j.annals.2022.103500

Alyahya, M., & McLean, G. (2022). Examining Tourism Consumers' Attitudes and the Role of Sensory Information in Virtual Reality Experiences of a Tourist Destination. *Journal of Travel Research, 61*(7), 1666-1681. https://doi.org/10.1177/00472875211037745

Kshetri, N., Rahman, M. M., Rana, M. M., Osama, O. F., & Hutson, J. (2024). algoTRIC: Symmetric and asymmetric encryption algorithms for Cryptography--A comparative analysis in AI era. *arXiv preprint arXiv:2412.15237*.

An, S., Choi, Y., & Lee, C.-K. (2021). Virtual travel experience and destination marketing: Effects of sense and information quality on flow and visit intention. *Journal of Destination Marketing & Management*, *19*, 100492. https://doi.org/10.1016/j.jdmm.2020.100492

Amin, A., Bhuiyan, M. R. I., Hossain, R., Molla, C., Poli, T. A., & Milon, M. N. U. (2024). The adoption of Industry 4.0 technologies by using the technology organizational environment framework: The mediating role to manufacturing performance in a developing country. Business Strategy & Development, 7(2), e363. https://doi.org/10.1002/bsd2.363

Bec, A., Moyle, B., Schaffer, V., & Timms, K. (2021). Virtual reality and mixed reality for second chance tourism. *Tourism Management, 83*, 104256. https://doi.org/10.1016/j.tourman.2020.104256

Beverly, E., Rigot, B., Love, C., & Love, M. (2022). Perspectives of 360-Degree Cinematic Virtual Reality: Interview Study Among Health Care Professionals. *JMIR Medical Education*, *8*(2), e32657. https://doi.org/10.2196/32657

Bilińska, K., Pabian, B., Pabian, A., & Reformat, B. (2023). Development Trends and Potential in the Field of Virtual Tourism after the COVID-19 Pandemic: Generation Z Example. *Sustainability*, *15*(3). https://doi.org/10.3390/su15031889

Bogicevic, V., Liu, S. Q., Seo, S., Kandampully, J., & Rudd, N. A. (2021). Virtual reality is so cool! How technology innovativeness shapes consumer responses to service preview modes. *International Journal of Hospitality Management*, *93*, 102806. https://doi.org/10.1016/j.ijhm.2020.102806

Buhalis, D., Leung, D., & Lin, M. (2023). Metaverse as a disruptive technology revolutionising tourism management and marketing. *Tourism Management*, *97*, 104724. https://doi.org/10.1016/j.tourman.2023.104724

Burbano, D. V., & Meredith, T. C. (2021). Effects of tourism growth in a UNESCO World Heritage Site: Resource-based livelihood diversification in the Galapagos Islands, Ecuador. *Journal of Sustainable Tourism*, *29*(8), 1270–1289. https://doi.org/10.1080/09669582.2020.1832101

Cao, A., Shi, F., & Bai, B. (2022). A comparative review of hospitality and tourism innovation research in academic and trade journals. *International Journal of Contemporary Hospitality Management*, *34*(10), 3790–3813. https://doi.org/10.1108/IJCHM-11-2021-1443

Chang, H. H. (2022). Virtual reality, YouTube, or social media? Assessing promotional effects on tourism destinations. *Journal of Vacation Marketing*, *28*(2), 211–227. https://doi.org/10.1177/13567667211038960

Sherrilene Classen, B. M., Virginia P. Sisiopiku, Justin R. Mason, Wencui Yang, Seung-Woo Hwangbo, & Li, Y. (2024). Experience of drivers of all age groups in accepting autonomous vehicle technology. *Journal of Intelligent Transportation Systems*, *28*(5), 651–667. https://doi.org/10.1080/15472450.2023.2197115

Davis, D. Z., & Stanovsek, S. (2021). The machine as an extension of the body: When identity, immersion, and interactive design serve as both resource and limitation for the disabled. *Human-Machine Communication*, *2*, 121–135. https://doi.org/10.3316/INFORMIT.100090654035368

De Paolis, L. T., & De Luca, V. (2022). The effects of touchless interaction on usability and sense of presence in a virtual environment. *Virtual Reality*, *26*(4), 1551–1571. https://doi.org/10.1007/s10055-022-00647-1

Bhuiyan, M.R.I., Husain, T., Islam, S. and Amin, A. (2025), "Exploring the prospective influence of artificial intelligence on the health sector in Bangladesh: a study on awareness, perception and adoption", Health Education, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/HE-10-2024-0125

Regt, A. de, Plangger, K., & Barnes, S. J. (2021). Virtual reality marketing and customer advocacy: Transforming experiences from story-telling to story-doing. *Journal of Business Research*, *136*, 513–522. https://doi.org/10.1016/j.jbusres.2021.08.004

Dutta, S., Dixit, S., & Khare, A. (2024). Examining 360° video tourist experiences and adoption in a developing country. *Qualitative Market Research: An International Journal*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/QMR-12-2021-0152

Eletxigerra, A., Barrutia, J. M., & Echebarria, C. (2021). Tourist expertise and pre-travel value co-creation: Task-related processes and beyond. *Tourism Management Perspectives*, *37*, 100772. https://doi.org/10.1016/j.tmp.2020.100772

Faggiano, M. P., & Fasanella, A. (2022). Lessons for a digital future from the school of the pandemic: From distance learning to virtual reality. *Frontiers in Sociology*, *7*. https://doi.org/10.3389/fsoc.2022.1101124

Latini, A., Giuseppe, E. D., D'Orazio, M., & Perna, C. D. (2021). Exploring the use of immersive virtual reality to assess occupants' productivity and comfort in workplaces: An experimental study on the role of walls colour. *Energy and Buildings*, *253*, 111508. https://doi.org/10.1016/j.enbuild.2021.111508

Fan, X., Jiang, X., & Deng, N. (2022). Immersive technology: A meta-analysis of augmented/virtual reality applications and their impact on tourism experience. *Tourism Management*, *91*, 104534. https://doi.org/10.1016/j.tourman.2022.104534

Fan, X., Jiang, X., & Deng, N. (2023). Imagination Versus Telepresence: Consumer Patronage Intention Toward Peer-to-Peer Accommodations in Photo-Enhanced Imaginative Conditions and Virtual Reality Contexts. *Journal of Travel Research*, *62*(8), 1647–1666. https://doi.org/10.1177/00472875221141879

Feng, Y., Duives, D. C., & Hoogendoorn, S. P. (2022). Wayfinding behaviour in a multi-level building: A comparative study of HMD VR and Desktop VR. *Advanced Engineering Informatics*, *51*, 101475. https://doi.org/10.1016/j.aei.2021.101475

Griffin, T., & Muldoon, M. (2022). Exploring virtual reality experiences of slum tourism. *Tourism Geographies*, *24*(6–7), 934–953. https://doi.org/10.1080/14616688.2020.1713881

Gürlek, M., & Koseoglu, M. A. (2021). Green innovation research in the field of hospitality and tourism: The construct, antecedents, consequences, and future outlook. *The Service Industries Journal*, *41*(11–12), 734–766. https://doi.org/10.1080/02642069.2021.1929930

Han, D.-I. D., Bergs, Y., & Moorhouse, N. (2022). Virtual reality consumer experience escapes: Preparing for the metaverse. *Virtual Reality*, *26*(4), 1443–1458. https://doi.org/10.1007/s10055-022-00641-7

Harahap, M. A. K., Almaududi Ausat, A. M., Rachman, A., Riady, Y., & Azzaakiyyah, H. K. (2023). Overview of ChatGPT Technology and its Potential in Improving Tourism Information Services. *Jurnal Minfo Polgan*, *12*(1), 424–431. https://doi.org/10.33395/jmp.v12i1.12416

Holmes, M. R., Dodds, R., & Frochot, I. (2021). At Home or Abroad, Does Our Behavior Change? Examining How Everyday Behavior Influences Sustainable Travel Behavior and Tourist Clusters. *Journal of Travel Research*, *60*(1), 102–116. https://doi.org/10.1177/0047287519894070

Ioannıdıs, S., & Kontıs, A. P. (2023). The 4 Epochs of the Metaverse. *Journal of Metaverse*, *3*(2), 152–165. https://doi.org/10.57019/jmv.1294970

Ivanov, S., Webster, C., & Berezina, K. (2022). Robotics in Tourism and Hospitality. In Z. Xiang, M. Fuchs, U. Gretzel, & W. Höpken (Eds.), *Handbook of e-Tourism* (pp. 1873–1899). Springer International Publishing. https://doi.org/10.1007/978-3-030-48652-5_112

Jagatheesaperumal, S. K., Ahmad, K., Al-Fuqaha, A., & Qadir, J. (2024). Advancing Education Through Extended Reality and Internet of Everything Enabled Metaverses: Applications, Challenges, and Open Issues. *IEEE Transactions on Learning Technologies*, *17*, 1120–1139. https://doi.org/10.1109/TLT.2024.3358859

Javed, A. R., Shahzad, F., Rehman, S. ur, Zikria, Y. B., Razzak, I., Jalil, Z., & Xu, G. (2022). Future smart cities: Requirements, emerging technologies, applications, challenges, and future aspects. *Cities*, *129*, 103794. https://doi.org/10.1016/j.cities.2022.103794

Kahveci, E. (2023). Business strategies for small- and medium-sized tourism enterprises during COVID-19: A developing country case. *Journal of Hospitality and Tourism Insights*, *6*(4), 1569–1593. https://doi.org/10.1108/JHTI-08-2021-0232

Kashive, N., & Mohite, S. (2023). Use of gamification to enhance e-learning experience. *Interactive Technology and Smart Education*, *20*(4), 554–575. https://doi.org/10.1108/ITSE-05-2022-0058

Bhuiyan, M. R. I. (2024). Examining the digital transformation and digital entrepreneurship: A PRISMA based systematic review. *Pakistan Journal of Life and Social Sciences*, 22(1), 1136-1150. http://dx.doi.org/10.57239/PJLSS-2024-22.1.0077

Kim, H., So, K. K. F., Mihalik, B. J., & Lopes, A. P. (2021). Millennials' virtual reality experiences pre- and post-COVID-19. *Journal of Hospitality and Tourism Management*, *48*, 200–209. https://doi.org/10.1016/j.jhtm.2021.06.008

Kim, K., Kwon, O., & Yu, J. (2023). Evaluation of an HMD-Based Multisensory Virtual Museum Experience for Enhancing Sense of Presence. *IEEE Access*, *11*, 100295–100308. https://doi.org/10.1109/ACCESS.2023.3311135

Bhuiyan, M. R. I. (2023). The Challenges and Opportunities of Post-COVID Situation for Small and Medium Enterprises (SMEs) in Bangladesh. *PMIS Review*, 2(1), 141-159. http://dx.doi.org/10.56567/pmis.v2i1.14

Korkut, E. H., & Surer, E. (2023). Visualization in virtual reality: A systematic review. *Virtual Reality*, *27*(2), 1447–1480. https://doi.org/10.1007/s10055-023-00753-8

Lee, S. A., Lee, M., & Jeong, M. (2021). The role of virtual reality on information sharing and seeking behaviors. *Journal of Hospitality and Tourism Management*, *46*, 215–223. https://doi.org/10.1016/j.jhtm.2020.12.010

Leung, X. Y., Chen, H., Chang, W., & Mhlanga, L. (2022). Is VR game training more effective for hospitality employees? A longitudinal experiment. *Tourism Management Perspectives*, *44*, 101020. https://doi.org/10.1016/j.tmp.2022.101020

Hossain, R., Sohag, H. J., Hasan, F., Ahmed, S., Amin, A., & Islam, M. M. (2024). Prospective Artificial Intelligence (AI) Applications in the University Education Level: Enhancing Learning, Teaching and Administration through a PRISMA Base Review Systematic Review. *Pakistan Journal of Life and Social Sciences, (2024)*, *22*(2), 9173-9191.

Leung, X. Y., Shi, X. (Crystal), & Huang, X. (2023). How virtual reality moderates daily negative mood spillover among hotel frontline employees: A within-person field experiment. *Tourism Management*, *95*, 104680. https://doi.org/10.1016/j.tourman.2022.104680

Masud, S. B., Rana, M. M., Sohag, H. J., Shikder, F., Faraji, M. R., & Hasan, M. M. (2024). Understanding the Financial Transaction Security through Blockchain and Machine Learning for Fraud Detection in Data Privacy and Security. Available at SSRN 5164958.

Martínez-Molés, V., Jung, T. H., Pérez-Cabañero, C., & Cervera-Taulet, A. (2022). Gathering pre-purchase information for a cruise vacation with virtual reality: The effects of media technology and gender. *International Journal of Contemporary Hospitality Management*, *34*(1), 407–429. https://doi.org/10.1108/IJCHM-04-2021-0500

McLean, G., & Barhorst, J. B. (2022). Living the Experience Before You Go. . . But Did It Meet Expectations? The Role of Virtual Reality during Hotel Bookings. *Journal of Travel Research*, *61*(6), 1233–1251. https://doi.org/10.1177/00472875211028313

Oncioiu, I., & Priescu, I. (2022). The Use of Virtual Reality in Tourism Destinations as a Tool to Develop Tourist Behavior Perspective. *Sustainability*, *14*(7). https://doi.org/10.3390/su14074191

Ponte, D., & Sergi, D. (2024). E-grocery delivery channels: Acceptance of the click and collect solutions. *Technology Analysis & Strategic Management*, *36*(10), 2833–2845. https://doi.org/10.1080/09537325.2022.2163890

Bhuiyan, M. R. I., Faraji, M. R., Rashid, M., Bhuyan, M. K., Hossain, R., & Ghose, P. (2024). Digital Transformation in SMEs Emerging Technological Tools and Technologies for Enhancing the SME's Strategies and Outcomes. *Journal of Ecohumanism*, 3(4), 211-224. https://doi.org/10.62754/joe.v3i4.3594

Pratama, D. P., & Putra, P. O. H. (2024). Exploring Sustainable VR Use Cases for Startup Business Models: A Customized Customer Development Approach. *Sustainability*, *16*(14). https://doi.org/10.3390/su16146254

Bhuiyan, M. R. I., Ullah, M. W., Ahmed, S., Bhuyan, M. K., & Sultana, T. (2024). Information Security for An Information Society for Accessing Secured Information: A PRISMA Based Systematic Review. *International Journal of Religion*, 5(11), 932-946. https://doi.org/10.61707/frfnr583

Rahman, M. M., Bhuiyan, M. R., & Alam, S. M. (2024). The Empirical Study on the Impact of the COVID-19 on Small and Medium Enterprises (SMEs) in Bangladesh. *Journal of Information Systems and Informatics*, 6(1), 527-547. https://doi.org/10.51519/journalisi.v6i1.686

Bhuiyan, M. R. I., Islam, M. T., Alam, S. A., & Sumon, N. S. (2023). Identifying Passengers Satisfaction in Transportation Quality: An Empirical Study in Bangladesh. *PMIS Review*, 2(1), 27-46.

Samaddar, K., & Mondal, S. (2024). AR and VR-based travel: A responsible practice towards sustainable tourism. *International Journal of Tourism Cities*, *10*(1), 105–128. https://doi.org/10.1108/IJTC-05-2022-0135

Santoso, H. B., Wang, J.-C., & Windasari, N. A. (2022). Impact of multisensory extended reality on tourism experience journey. *Journal of Hospitality and Tourism Technology*, *13*(3), 356–385. https://doi.org/10.1108/JHTT-01-2021-0036

Uddin, K. S., Bhuiyan, M. R. I., & Hamid, M. (2024). Perception Towards the Acceptance of Digital Health Services among the People of Bangladesh. *WSEAS Transactions on Business and Economics*, 21, 1557-1570 https://doi.org/10.37394/23207.2024.21.127

Bhuiyan, M. R. I., Milon, M. N. U., Hossain, R., Poli, T. A., & Salam, M. A. (2024). Examining the Relationship between Poverty and Juvenile Delinquency Trends in a Developing Country. *Academic Journal of Interdisciplinary Studies*, 13(6), 255-274. https://doi.org/10.36941/ajis-2024-0193

Alam, S. A., Bhuiyan, M. R. I., Tabassum, S., & Islam, M. T. (2022). Factors affecting users' intention to use social networking sites: A mediating role of social networking satisfaction. *Canadian Journal of Business and Information Studies*, 4(5), 112–124. https://doi.org/10.34104/cjbis.022.01120124

Bhuiyan, M. R. I., Uddin, K. S., & Milon, M. N. U. (2023). Prospective Areas of Digital Economy: An Empirical Study in Bangladesh. https://doi.org/10.20944/preprints202307.1652.v1

Schiopu, A. F., Hornoiu, R. I., Padurean, A. M., & Nica, A.-M. (2022). Constrained and virtually traveling? Exploring the effect of travel constraints on intention to use virtual reality in tourism. *Technology in Society*, *71*, 102091. https://doi.org/10.1016/j.techsoc.2022.102091

Schiopu, A. F., Hornoiu, R. I., Padurean, M. A., & Nica, A.-M. (2021). Virus tinged? Exploring the facets of virtual reality use in tourism as a result of the COVID-19 pandemic. *Telematics and Informatics*, *60*, 101575. https://doi.org/10.1016/j.tele.2021.101575

Scurati, G. W., Bertoni, M., Graziosi, S., & Ferrise, F. (2021). Exploring the Use of Virtual Reality to Support Environmentally Sustainable Behavior: A Framework to Design Experiences. *Sustainability*, *13*(2), 943. https://doi.org/10.3390/su13020943

Shamim, N., Gupta, S., & Shin, M. M. (2024). Evaluating user engagement via Metaverse environment through immersive experience for travel and tourism websites. *International Journal of Contemporary Hospitality Management*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/IJCHM-10-2023-1590

Torabi, Z. A., Shalbafian, A. A., Allam, Z., Ghaderi, Z., Murgante, B., & Khavarian-Garmsir, A. R. (2022). Enhancing Memorable Experiences, Tourist Satisfaction, and Revisit Intention through Smart Tourism Technologies. *Sustainability*, *14*(5), 2721. https://doi.org/10.3390/su14052721

Sia, P. Y.-H., Saidin, S. S., & Iskandar, Y. H. P. (2023). Systematic review of mobile travel apps and their smart features and challenges. *Journal of Hospitality and Tourism Insights*, *6*(5), 2115–2138. https://doi.org/10.1108/JHTI-02-2022-0087

Sipatchin, A., Wahl, S., & Rifai, K. (2021). Eye-Tracking for Clinical Ophthalmology with Virtual Reality (VR): A Case Study of the HTC Vive Pro Eye's Usability. *Healthcare*, *9*(2), 180. https://doi.org/10.3390/healthcare9020180

Slevitch, L., Chandrasekera, T., & Sealy, M. D. (2022). Comparison of Virtual Reality Visualizations With Traditional Visualizations in Hotel Settings. *Journal of Hospitality & Tourism Research*, *46*(1), 212–237. https://doi.org/10.1177/1096348020957067

Bhuiyan, M. R. I. (2024). Industry Readiness and Adaptation of Fourth Industrial Revolution: Applying the Extended TOE Framework. Human Behavior and Emerging Technologies, 2024(1), 8830228. https://doi.org/10.1155/hbe2/8830228

Bhuiyan, M. R. I., Faraji, M. R., Tabassum, M. N., Ghose, P., Sarbabidya, S., & Akter, R. (2024). Leveraging Machine Learning for Cybersecurity: Techniques, Challenges, and Future Directions. *Edelweiss Applied Science and Technology*, 8(6), 4291-4307. https://doi.org/10.55214/25768484.v8i6.2930

Spielmann, N., & Orth, U. R. (2021). Can Advertisers Overcome Consumer Qualms with Virtual Reality? *Journal of Advertising Research*, *61*(2), 147–163. https://doi.org/10.2501/JAR-2020-015

Sun, Y.-Y., Li, M., Lenzen, M., Malik, A., & Pomponi, F. (2022). Tourism, job vulnerability and income inequality during the COVID-19 pandemic: A global perspective. *Annals of Tourism Research Empirical Insights*, *3*(1), 100046. https://doi.org/10.1016/j.annale.2022.100046

Szczepańska, A., Kaźmierczak, R., & Myszkowska, M. (2021). Virtual Reality as a Tool for Public Consultations in Spatial Planning and Management. *Energies*, *14*(19). https://doi.org/10.3390/en14196046

Talwar, S., Kaur, P., Escobar, O., & Lan, S. (2022). Virtual reality tourism to satisfy wanderlust without wandering: An unconventional innovation to promote sustainability. *Journal of Business Research*, *152*, 128–143. https://doi.org/10.1016/j.jbusres.2022.07.032

Tugwell, P., & Tovey, D. (2021). PRISMA 2020. *Journal of Clinical Epidemiology*, *134*, A5–A6. https://doi.org/10.1016/j.jclinepi.2021.04.008

Verma, S., Warrier, L., Bolia, B., & Mehta, S. (2022). Past, present, and future of virtual tourism-a literature review. *International Journal of Information Management Data Insights*, *2*(2), 100085. https://doi.org/10.1016/j.jjimei.2022.100085

Alam, S. M. S., Rahman, M. F., Huq, S. M., & Kamruzzaman, M. (2020). Measuring the Tourist Satisfaction Towards the Man-made Theme Park in Bangladesh: A Comprehensive Study on Some Selective Sites. *International Journal of Hospitality & Tourism Management*, 4(1), 8–14. https://doi.org/10.11648/j.ijhtm.20200401.12

Faisal-E-Alam, M., Begum, Z. A., & Islam, A. R. M. T. (2025). Unveiling training effectiveness through behavior and performance evaluations: A case from developing country. *Evaluation and Program Planning*, 110, 102553. https://doi.org/10.1016/j.evalprogplan.2025.102553

Rakib, M. R. H. K., Pramanik, S. A. K., Amran, M. A., Islam, M. N., & Sarker, M. O. F. (2022). Factors affecting young customers' smartphone purchase intention during Covid-19 pandemic. *Heliyon*, 8(9), e10599. https://doi.org/10.1016/j.heliyon.2022.e10599

Bhuiyan, M. R. I., Hossain, R., Rashid, M., Islam, M. M., Mani, L., & Milon, M. N. U. (2024). Gravitating the components, technologies, challenges, and government transforming strategies for a Smart Bangladesh: A PRISMA-based review. *Journal of Governance & Regulation*, 13(3), 177–188. https://doi.org/10.22495/jgrv13i3art15

Wei, Z., Zhang, J., Huang, X., & Qiu, H. (2023). Can gamification improve the virtual reality tourism experience? Analyzing the mediating role of tourism fatigue. *Tourism Management*, 96, 104715. https://doi.org/10.1016/j.tourman.2022.104715

Khatun, M., Hossain, R., Bhuiyan, M. R. I., Tabassum, M. N., & Riaj, M. A. J. (2025). Green Entrepreneurship and Digital Transformation for Sustainable Development: A Systematic Review. Digitizing Green Entrepreneurship, 153-180.

Wen, H., & Leung, X. Y. (2021). Virtual wine tours and wine tasting: The influence of offline and online embodiment integration on wine purchase decisions. *Tourism Management*, 83, 104250. https://doi.org/10.1016/j.tourman.2020.104250

Weng, L., Huang, Z., & Bao, J. (2021). A model of tourism advertising effects. *Tourism Management*, 85, 104278. https://doi.org/10.1016/j.tourman.2020.104278

Islam, Z., Bhuiyan, M. R. I., Poli, T. A., Hossain, R., & Mani, L. (2024). Gravitating towards Internet of Things: Prospective Applications, Challenges, and Solutions of Using IoT. *International Journal of Religion*, 5(2), 436-451. https://doi.org/10.61707/awg31130

Wu, P., Liu, Y., Chen, H., Li, X., & Wang, H. (2025). VR-empowered interior design: Enhancing efficiency and quality through immersive experiences. *Displays*, 86, 102887. https://doi.org/10.1016/j.displa.2024.102887

Ghose, P., Bhuiyan, M. R. I., Hasan, M. N., Rakib, S. H., & Mani, L. (2025). Mediated and moderating variables between behavioral intentions and actual usages of fintech in the USA and Bangladesh through the extended UTAUT model. International Journal of Innovative Research and Scientific Studies, 8(2), 113-125. http://dx.doi.org/10.53894/ijirss.v8i2.5130

Xia, Q., Wang, S., & Wong, J. W. C. (2023). The use of virtual exhibition to promote exhibitors' pro-environmental behavior: The case study of Zhejiang Yiwu International Intelligent Manufacturing Equipment Expo. PLOS ONE, 18(11), e0294502. https://doi.org/10.1371/journal.pone.0294502

Mani, L. (2024). Gravitating towards the Digital Economy: Opportunities and challenges for transforming smart Bangladesh. Pakistan Journal of Life and Social Sciences, 22(1), 3324-3334. https://doi.org/10.57239/PJLSS-2024-22.1.00241

Yang, W., & Lin, Y. (2022). Research on the interactive operations research model of e-commerce tourism resources business based on big data and circular economy concept. Journal of Enterprise Information Management, 35(4/5), 1348–1373. https://doi.org/10.1108/JEIM-12-2020-0520

Yang, X., Zhang, L., & Feng, Z. (2024). Personalized Tourism Recommendations and the E-Tourism User Experience. Journal of Travel Research, 63(5), 1183–1200. https://doi.org/10.1177/00472875231187332

Yung, R., Khoo-Lattimore, C., & Potter, L. E. (2021). VR the world: Experimenting with emotion and presence for tourism marketing. Journal of Hospitality and Tourism Management, 46, 160–171. https://doi.org/10.1016/j.jhtm.2020.11.009

Zikria, Y. B., Ali, R., Afzal, M. K., & Kim, S. W. (2021). Next-Generation Internet of Things (IoT): Opportunities, Challenges, and Solutions. Sensors, 21(4), 1174. https://doi.org/10.3390/s21041174