

## **The influence of Metaverse Virtual Tourism on traveler loyalty to virtual destinations: A Systematic Literature Review**

### ***(Pengaruh Pariwisata Virtual Metaverse terhadap Loyalitas Wisatawan pada Destinasi Virtual: Systematic Literature Review)***

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#### **Abstract**

*This research aims to explore the influence of Metaverse Virtual Tourism on traveler loyalty to virtual destinations and how technologies such as Virtual Reality (VR) and digital twin can enhance tourism experiences in virtual worlds. Using the PRISMA 2020-based Systematic Literature Review (SLR) approach, this research analyzes articles from the Scopus database using the Watase Uake tool that examine the application of Metaverse in the tourism industry. The results show that the immersive experience created by Metaverse, through VR and digital twin technologies, has a positive impact on tourists' intention to visit physical destinations. In addition, the digital era strengthens the effectiveness of Metaverse Virtual Tourism by using social media, e-commerce, and digital content personalization, which increases tourist engagement and loyalty. However, key challenges in the implementation of Metaverse Virtual Tourism include the acceptance of technology among certain age groups, especially older generations, as well as greenwashing issues in destination promotion. This study suggests that further research be conducted to optimize the design elements in Metaverse Virtual Tourism and overcome existing obstacles related to technology adoption and non-uniform regulations.*

**Keywords:** *Metaverse, Virtual Tourism, Traveler Loyalty, Digital Twin, Immersive Experience, Digital Age.*

#### **Abstrak**

Kajian ini bertujuan untuk mengeksplorasi pengaruh Pariwisata Virtual Metaverse terhadap loyalitas wisatawan pada destinasi virtual, serta bagaimana teknologi seperti Realitas Virtual (VR) dan kembaran digital (digital twin) dapat meningkatkan pengalaman pariwisata di dunia virtual. Menggunakan pendekatan Systematic Literature Review (SLR) berdasarkan PRISMA 2020, penelitian ini menganalisis artikel dari basis data Scopus dengan bantuan perangkat Watase Uake yang mengkaji penerapan Metaverse dalam industri pariwisata. Hasil kajian ini menunjukkan bahwa pengalaman imersif yang diciptakan oleh Metaverse, melalui teknologi VR dan kembaran digital, memiliki dampak positif pada niat wisatawan untuk mengunjungi destinasi fisik. Selain itu, era digital memperkuat efektivitas Pariwisata Virtual Metaverse dengan memanfaatkan media sosial, e-commerce, dan personalisasi konten digital, yang meningkatkan keterlibatan dan loyalitas wisatawan. Namun, tantangan utama dalam implementasi Pariwisata Virtual Metaverse meliputi penerimaan teknologi di kalangan kelompok usia tertentu, khususnya generasi yang lebih tua, serta isu greenwashing dalam promosi destinasi. Studi ini menyarankan agar penelitian lebih

lanjut dilakukan untuk mengoptimalkan elemen desain dalam Pariwisata Virtual Metaverse dan mengatasi hambatan yang ada terkait adopsi teknologi dan regulasi yang tidak seragam.

**Kata Kunci:** Metaverse, Pariwisata Virtual, Loyalitas Wisatawan, Kembaran Digital, Pengalaman Imersif, Era Digital

## **I. Introduction**

In recent years, advances in digital technology have opened up new opportunities in the tourism industry [1]. Metaverse-a virtual world that offers immersive experiences through technologies such as Virtual Reality (VR) and Augmented Reality (AR)-has become an important part of this industry transformation [2]–[4]. Virtual Tourism, which allows travelers to visit tourist destinations without leaving their homes, is one of the fastest growing trends [5]. This trend is triggered by the changing needs and preferences of tourists who prioritize convenience and accessibility in planning trips. In addition, the COVID-19 pandemic accelerated the adoption of digital technology in various sectors, including tourism, which made virtual tourism increasingly popular as an alternative to physical travel [6]. This phenomenon is driven by a growing awareness of sustainability and a desire to reduce the negative impact of tourism on the environment.

One of the factors contributing to the success of Metaverse Virtual Tourism is the implementation of strategies that build traveler loyalty to virtual tourism destinations [7]–[9]. Travelers who have an immersive and satisfying experience in a virtual world are more likely to physically visit the destination or even participate more frequently in other virtual tours [10]. In this context, trust in the destination brand becomes very important. Consistent and engaging experiences in the Metaverse can create stronger relationships between travelers and destination brands, ultimately contributing to long-term loyalty. The Metaverse offers a more personalized and accessible experience, providing opportunities for stakeholders in the tourism industry to strengthen their relationships with travelers and create more value for customers [11], [12].

The digital age has strengthened and accelerated the growth of Metaverse Virtual Tourism. Digital platforms such as social media, e-commerce, and influencer marketing have become important tools for promoting tourism destinations in the Metaverse [13]. The use of social media to share virtual tourism experiences increases user engagement and helps introduce destinations that may have previously been unknown to a wider audience [14]. In addition, the use of digital technologies to customize traveler content, such as offering personalized experiences in virtual worlds, improves interactions with customers and deepens their engagement. The personalization of digital content allows tourists to feel a sense of closeness to the tourist destination and makes the virtual experience more interesting and memorable [15].

While there is research investigating the use of Metaverse in tourism, studies that systematically link Metaverse Virtual Tourism with traveler loyalty in the digital age are limited [16]. Further research investigating the relationship between Metaverse technology and its influence on tourists' behavior and their loyalty to virtual tourism destinations is needed. This gap is important to address, given the huge potential that the Metaverse has in changing the way travelers interact with destinations, as well as how digital technologies can enhance experiences and strengthen customer relationships in the tourism context.

The purpose of this study is to understand the effective Metaverse Virtual Tourism strategy in increasing tourist loyalty to tourist destinations. This research aims to answer the following questions:

- **RQ1:** How is the Metaverse Virtual Tourism strategy applied in the tourism industry?
- **RQ2:** What factors contribute to traveler loyalty in Metaverse Virtual Tourism?

- **RQ3:** How does the digital era increase the effectiveness of Metaverse Virtual Tourism in increasing traveler loyalty?
- **RQ4:** What are the main challenges in implementing Metaverse Virtual Tourism in the digital era?

## **II. Method**

This research uses the PRISMA 2020-based Systematic Literature Review (SLR) method to examine how Metaverse Virtual Tourism can influence tourist behavior and increase their loyalty to virtual tourism destinations. This method was chosen because it provides a systematic and transparent approach to evaluate and synthesize relevant research [17]–[19]. Using PRISMA-based SLR, this study aims to understand the trend of Metaverse application in the tourism industry, factors that contribute to tourists' loyalty to virtual destinations, and how digitalization strengthens the tourism experience in the Metaverse. A literature search was conducted in the Scopus database. The keywords used in the search included: "Metaverse AND Experience". The use of Boolean operators, such as AND and OR, was applied to filter out more relevant articles and eliminate studies that only discussed physical tourism or digital technologies that were not directly related to the Metaverse or traveler loyalty.

Inclusion criteria in this study include peer-reviewed articles published in the last 5 years (2020 - 2025), focusing on the application of Metaverse in virtual tourism and its effect on traveler loyalty. Relevant articles in English and Indonesian will also be considered. Articles should address topics related to Metaverse Virtual Tourism and traveler loyalty, and should not be limited to discussions on physical tourism or digital technology without a link to the travel experience in the Metaverse. Exclusion criteria include non-peer-reviewed articles, studies that only discuss VR technology without linkage to the tourism experience, as well as articles that do not discuss the influence of digitization in the Metaverse or virtual tourism. The article selection process followed the PRISMA diagram, which includes several stages:

1. Identification: Determining the number of articles found in relevant databases.
2. Screening: Removes duplicate and irrelevant articles based on title and abstract.
3. Feasibility: Assessed the full-text to ensure it matched the inclusion criteria of this study.
4. Inclusion: Articles that met the criteria and were used in further analysis. The results of the article selection will be displayed in a PRISMA Diagram to visualize the literature screening process.

Once relevant articles are selected, key information from the articles will be extracted for further analysis. The extracted data includes the author, year of publication, methodology used, study focus, as well as key findings relevant to Metaverse Virtual Tourism and traveler loyalty. This data will be organized to facilitate comparison between studies. The analysis method used in this research is Thematic Analysis to identify emerging patterns and themes related to Metaverse Virtual Tourism and traveler loyalty. Thematic Analysis allows researchers to identify key themes in the literature and understand the relationships between relevant variables in the analyzed studies. In addition, the quality of the studies will be assessed using methods such as the Critical Appraisal Skills Program (CASP), which ensures that only articles with high validity and relevance are analyzed further. This process will ensure that the findings are reliable and provide deeper insights into the factors that

influence traveler loyalty to virtual destinations in the Metaverse and how digitalization enhances traveler engagement.

### III.Results and Discussion

In this study, a Systematic Literature Review (SLR) using the PRISMA 2020 method was used to examine the influence of Metaverse Virtual Tourism on tourist behavior and their loyalty to virtual tourism destinations. The literature search process was conducted in the Scopus database using the Watase Uake tool, with the keywords "Metaverse AND Experience". The initial search results identified a number of relevant articles from various databases, which were then screened using the PRISMA selection stages:

1. Identification: A total of 139 articles were found from the above-mentioned databases. Three articles were removed as they did not have abstracts to screen, and nine articles were flagged as not meeting the year criteria (2020-2025).
2. Screening: After screening, 127 articles remained, and 108 articles were excluded because they were not relevant to the research topic or did not meet the inclusion criteria.
3. Feasibility: After full-text evaluation, 16 articles were considered for eligibility, and two articles were excluded for specific reasons, which did not meet further criteria.
4. Inclusion: A total of 14 final articles were selected and used for further analysis, which were included in the review.

A PRISMA diagram illustrating the number of articles at each selection stage is shown in **Figure 1**. This figure provides a comprehensive overview of the systematic screening process applied in this review. It outlines the flow of information through the phases of identification, screening, eligibility, and inclusion. Meanwhile, the final selection of articles that met the established criteria is presented in **Table 1**. These data support the transparency and rigor of the literature review methodology conducted in this study.

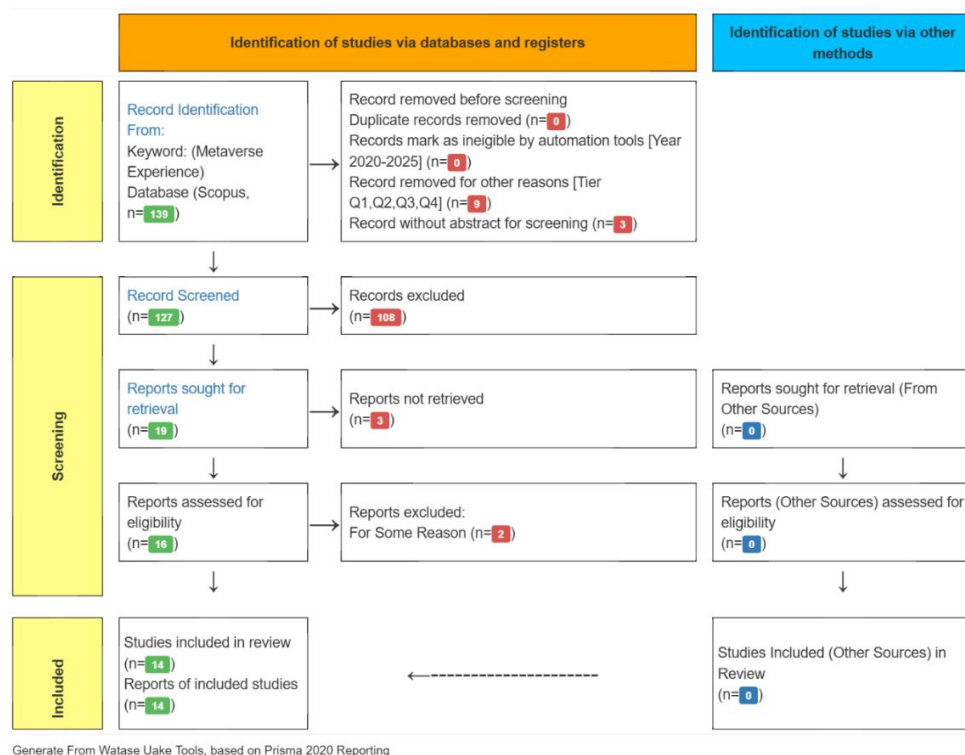


Figure 1. Prisma Reporting Metaverse Virtual Tourism

Once relevant articles were selected, key data was extracted for comparative analysis. The extracted data included the author, year of publication, methodology used, study focus, as well as key findings relevant to Metaverse Virtual Tourism and traveler loyalty. The results of the data extraction showed that most studies used quantitative methods, with surveys as the main instrument. Some common patterns found in the analyzed studies include the use of VR technology in creating immersive tourism experiences, as well as the influence of virtual experiences on tourists' intention to visit physical destinations.

One of the interesting trends found was the increased use of social media and influencer marketing in promoting travel destinations within the Metaverse. Many articles also pointed out that personalization of digital content, which enables travel experiences that are more tailored to travelers' personal preferences, can increase engagement and loyalty to virtual travel destinations. In addition, digital twins are often used to create replicas of physical destinations in the virtual world, deepening travelers' experiences and strengthening their loyalty to the places visited.

Table 1. Review of Research on Metaverse Experiences and Tourist Behavioral Intentions

No.	Author, Article Title, Country, Journal Name	Research Topic	Research Methods	Key Findings
1	Shin et al. (2024), "Virtual-to-Physical Tourism: The Influence of Metaverse Experience", South Korea, Journal of Digital Tourism	Metaverse Experience and Travelers' Behavioral Intentions	Generalized Learning Model (GLM), Social Cognitive Theory	Virtual experiences increase travelers' intention to visit physical destinations through avatars and virtual worlds.
2	Deng et al. (2023), "The Role of Digital Twin in Virtual Tourism", Tiongkok, Journal of Digital Tourism	The Role of the Digital Twin in Metaverse Experience Design	Case Study, Digital Twin Analysis	Digital twin enhances travelers' experience in the Metaverse by creating digital replicas of physical sites.
3	Baker et al. (2023), "UX in Heritage Tourism in Metaverse", Inggris, International Journal of Heritage Tourism	User Experience in Heritage Tourism in the Metaverse	User Experience (UX) Analysis, Survey	User experience in heritage tourism is influenced by the quality of VR content, interactivity, and presence design.
4	Çolakoğlu et al. (2023), "VR Technology Acceptance in the Hospitality Industry ", Turki, Journal of Hospitality and Technology	Travelers' Acceptance and Experience of VR Technology in the Hospitality Industry	Survey, Technology Acceptance Analysis	Acceptance of VR technology is higher among Generations Y and Z, with challenges among Baby Boomer and X Generations.

No.	Author, Article Title, Country, Journal Name	Research Topic	Research Methods	Key Findings
5	Çolakoglu et al. (2023), "Evaluation of VR Experience in the Hospitality and Tourism Industry ", Turki, Journal of Virtual Tourism	Evaluation of Virtual Reality Experiences in the Transition to the Metaverse	Case Study, Observation and Interview	VR experience as an effective promotional tool to increase travelers' decision to visit physical destinations.
6	Baker et al. (2023), " Experience Design in Heritage Tourism in the Metaverse", UK, Journal of Cultural Tourism	Experience Design in the Metaverse for Heritage and Cultural Tourism	Survey, Case Study	Content quality, interactivity, and presence increase emotional and social engagement in the heritage tourism experience.
7	Shin et al. (2024), "Avatar Similarity and Its Effect on Tourist Behavior", South Korea, Journal of Digital Experience	Influence of Avatar Resemblance on Tourist Behavior	Survey, Technology Acceptance Analysis, Observation	Resemblance of avatar to physical appearance increases traveler engagement and intention to visit physical destinations.
8	Deng et al. (2023), "Impact of VR Experiences on Tourist Decision Making", Tiongkok, Tourism Studies Review	Impact of VR Experience on Travelers' Behavioral Intentions	Survey, Case Study	VR experiences create a strong sense of presence and motivate travelers to visit physical destinations.
9	Shin et al. (2024), "Servicescape Similarity and Its Role in Virtual Tourism", South Korea, Journal of Virtual Hospitality	Effect of Service Similarity between Physical and Virtual Worlds	Case Study, Observation and Interview	Service similarity in the virtual world strengthens travelers' intention to visit physical destinations based on virtual experience.



No.	Author, Article Title, Country, Journal Name	Research Topic	Research Methods	Key Findings
10	Çolakoglu et al. (2023), "Generational Differences in VR Acceptance for Tourism", Turki, Journal of Technology in Society	Older Generation's Acceptance of VR Technology in Tourism	Survey, Interview	The Baby Boomer and X generations are more skeptical of the use of VR technology compared to the Y and Z generations.
11	Deng et al. (2023), "Transforming Virtual Tours to Physical Travel: Insights from Metaverse", Tiongkok, Journal of Tourism Innovation	Transformation of Travel Experience from Virtual Tour to Physical Tour	Case Study, Survey	Virtual tours reduce travelers' doubts and help them decide to physically visit the destination.
12	Deng et al. (2023), "Leveraging Digital Twin for Immersive Tourism Experience", Tiongkok, Journal of Immersive Experiences	Digital Twin Influence in Travel Experience Design	Case Study, Digital Twin Analysis	The digital twin increases engagement and helps travelers understand the destination better, encouraging them to visit.
13	Baker et al. (2023), "Immersive Experiences in Heritage Tourism through Virtual Reality ", Inggris, Journal of Heritage and Digital Tourism	Immersive Experience in Heritage Tourism at Metaverse	Case Study, User Experience (UX)	Interactivity and presence in virtual worlds significantly enhance the heritage tourism experience.
14	Shin et al. (2024), "Metaverse as a Sustainable Alternative for Traditional Tourism", South Korea, Journal of Sustainable Tourism	Metaverse's Potential in Reducing the Impact of Traditional Tourism	Case Study, Survey	Metaverse can reduce the negative impact of physical tourism by providing an equivalent experience without physical travel.

From the analysis of the selected articles, several key themes emerged related to Metaverse Virtual Tourism and traveler loyalty. First, immersive tourism experiences through VR and digital twin technologies are effective in creating emotional engagement that strengthens travelers' loyalty to virtual destinations, as found by Shin et al. [16] and Deng et

al. [20]. Second, avatar resemblance and service similarity between the physical and virtual worlds can increase tourists' intention to visit physical destinations [16], [21]. Third, digitalization, including the use of social media and digital twins, strengthens the tourist experience and increases tourist engagement with virtual destinations [20]. Finally, challenges related to the acceptance of VR technology among older age groups and greenwashing issues in destination promotion are still the main obstacles in the development of Metaverse Virtual Tourism [4], [20]. These results will be used to answer the research questions and explore the role of Metaverse in enhancing traveler loyalty in the digital era.

## **Discussion**

The purpose of this research is to explore how Metaverse Virtual Tourism can influence traveler loyalty to virtual destinations, as well as how technologies such as VR and digital twin enhance the travel experience in virtual worlds. In this section, the main findings that have been presented in the Results section will be discussed further. Each subsection in this discussion aims to answer the Research Question (RQ) that has been formulated, namely: (RQ1) how the Metaverse Virtual Tourism strategy is implemented, (RQ2) what factors contribute to tourist loyalty, (RQ3) how the digital era enhances the effectiveness of Metaverse Virtual Tourism, and (RQ4) what are the main challenges in implementing Metaverse Virtual Tourism in the digital era.

### **RQ1: How is the Metaverse Virtual Tourism strategy implemented?**

Based on the studies analyzed, the most effective Metaverse Virtual Tourism strategy is the use of immersive technologies such as VR and digital twin to create an immersive tourism experience. Research by Shin et al, [16] shows that by providing virtual experiences similar to the real world, such as through avatars that resemble tourists and virtual worlds connected to physical destinations, Metaverse increases tourists' intention to physically visit the place. Other strategies found were the use of social media and influencer marketing to promote virtual tourism experiences to a wider audience. Eco-branding, transparency, and sustainability-based communication are key elements in creating a positive image of the destination in the Metaverse, which in turn helps increase traveler loyalty to the place.

### **RQ2: What factors contribute to customer loyalty in Metaverse Virtual Tourism?**

A key factor contributing to traveler loyalty in Metaverse Virtual Tourism involves trust in the quality and authenticity of the experience offered by the virtual destination. Interactive and personalized experiences, as described by [22], increase traveler engagement and make them more likely to show long-term loyalty to the destination. Another factor is the active engagement of travelers in the virtual tour, which encourages them to return to the destination for further experiences. Product sustainability values, such as the promotion of tourism that reduces negative environmental impacts, also play an important role in building traveler trust and loyalty. For example, the use of a digital twin to create a sustainable replica of a physical destination invites more travelers to visit physically.

### **RQ3: How does the digital age enhance the effectiveness of Metaverse Virtual Tourism?**

The digital age provides a great opportunity to strengthen the effectiveness of Metaverse Virtual Tourism. The use of social media, e-commerce, and personalization of digital content allows virtual tourism experiences to be more accessible to consumers. As found in a study by [23], social media and influencer marketing play a big role in attracting a wider audience to virtual tourism destinations. The digital age also allows tourists to get



faster and easier information about the destinations they are interested in, as well as access personalized content based on their individual preferences. These digital technologies enhance the travel experience by creating an emotional connection between travelers and the destinations they visit virtually, which in turn increases their loyalty to the place.

#### **RQ4: What are the main challenges in implementing Metaverse Virtual Tourism in the digital era?**

While Metaverse Virtual Tourism offers many opportunities, the main challenge faced is the issue of technology adoption, especially among older generations, who are often more skeptical of new technologies such as VR. Research by Dhalmahapatra, et al [24] shows that Baby Boomer and X generations face difficulties in understanding and accessing Metaverse technology, while Y and Z generations are more open to it. In addition, greenwashing issues and the lack of clear regulations in virtual tourism promotion are also barriers to wider adoption of the Metaverse. To overcome these challenges, companies must increase transparency and educate consumers on the benefits and sustainability of the experiences offered by the Metaverse. Environmental certification and increased consumer awareness through educational programs can help create more sustainable experiences and minimize the negative impacts of using digital technology.

#### **IV. Conclusion**

This research explores how Metaverse Virtual Tourism influences traveler loyalty to virtual destinations, using technologies such as VR and digital twin to create immersive and authentic tourism experiences. The results show that immersive virtual experiences, including the use of avatars that resemble visitors and virtual worlds that mirror the real world, play an important role in increasing tourists' intention to visit physical destinations. In addition, digitalization through social media, e-commerce, and personalization of digital content strengthens tourists' engagement and loyalty to virtual destinations. However, the main challenges faced are the acceptance of technology by older age groups and issues related to greenwashing in destination promotion. This study suggests that further research be conducted to explore how the design elements in Metaverse Virtual Tourism can be further optimized to enhance the tourism experience, as well as to address the existing obstacles in technology adoption among different age groups and in setting clearer regulations related to virtual tourism.

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