

Review

Scope extension of the metaverse tourism concept: Proposing a research agenda

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Abstract: Given the growing significance of the metaverse in research, it is crucial to understand its scope, relevance in the tourism industry, and the human-computer interaction it involves. The emerging field of metaverse tourism has a noticeable research gap, limiting a comprehensive understanding of the concept. This article addresses this gap by conducting a hybrid systematic review, including a variable-oriented literature review, to assess the extent and scope of metaverse tourism. A scrutiny on Scopus identified a reduced number of relevant documents. The analysis exposes theoretical and empirical gaps, along with promising opportunities in the metaverse and tourism intersection. These insights contribute to shaping a contemporary research agenda, emphasizing metaverse tourism. While this study offers an overview of current research in metaverse tourism, it is essential to recognize that this field is still in its early stages, marked by the convergence of technology and transformations in tourism. This exploration underscores the challenges and opportunities arising from the evolving narrative of metaverse tourism.

Keywords: metaverse tourism; virtual tourism; phygital tourism; metaverse destinations; management; emerging technology; technological advances; systematic review

1. Introduction

In the past decade, rapid technological advancements, notably the metaverse, have transformed the landscape. The fusion of information and communication technologies with tourism has given rise to e-tourism, involving the computerization and virtualization of tourist exchanges throughout the value chain. E-tourism encompasses all stages of the tourist experience, spanning pre-trip, during-trip, and post-trip phases (Gretzel, 2018). Research has predominantly focused on e-destinations, emphasizing the impact of ICTs (Buhalis et al., 2023a, b). However, continuous technological evolution has introduced concepts like smart tourism, Internet of Things (IoT), and cloud computing, revolutionizing tourist destinations. The emergence of Web3 has brought forth the metaverse, considered the next internet revolution. Within this paradigm, “metaverse tourism” has surfaced, denoting a form of digital tourism offering immersive experiences across travel, hospitality, leisure, and business.

The metaverse operates as a shared virtual environment where users, represented by digital avatars, engage in three-dimensional spaces and immersive encounters (Almeida, 2023). This avantgarde approach provides an alternative to physical travel, enabling unique interactive experiences in the digital realm (Go and Kang, 2022). Metaverse tourism extends beyond leisure, impacting decision-making processes and contributing to a new economic model. It has garnered considerable attention for its

potential to revolutionize the tourism industry, presenting both opportunities and intricate challenges (Gursoy et al., 2022; Koo et al., 2022; Almeida and Almeida, 2023).

According to Cardoso et al. (2022), emerging research topics in each area have potential for research and financial investment. The systematic literature review by Crespo-Pereira et al. (2023), a study on the metaverse in the social sciences and marketing, argues that the metaverse applied to tourism, particularly cultural tourism, has high financial potential. However, the authors argue that studies into the application of the metaverse in tourism are still quite limited. The emergence of new technologies has played a transformative role in contemporary times, and the metaverse is no exception (Volchek and Brysch, 2023). However, despite its revolutionary effect, the influence of the metaverse on tourism is still little explored (Buhalis and Karatay, 2022; Dwivedi et al., 2022; Almeida and Almeida, 2023; Almeida, 2023), opening room for new research.

The integration of the metaverse into tourism challenges the traditional understanding of this sector, requiring a review of existing definitions (Volchek and Brysch, 2023). In addition, the growing use of gamification in tourism, especially during and after the Covid-19 pandemic, has created a favorable market for the development of the metaverse, especially among younger consumers who are considered digital natives (Buhalis et al., 2020; Buhalis et al., 2023a). Although still in its early stages, metaverse tourism is emerging as a disruptive future trend, with impacts on the competitiveness of tourist destinations and organizations (Buhalis et al., 2023b). The study made it evident that there is an ambiguity regarding the definition and functions of the metaverse, making the concept not clear enough due to the plethora of diverse definitions so far. Thus, a first research question therefore arises: How can the systematic literature review contribute to the understanding of metaverse tourism, considering the analysis of a limited number of articles?

Moreover, Crespo-Pereira et al.'s (2023) systematic review, focused on the metaverse in social sciences and marketing, only hints at tourism's potential within this theme. According to Cardoso et al. (2020a; 2021; 2022), emerging topics arouse interest and should be mapped, leading to the second research question: To what extent does existing literature capture the potential emergence of metaverse tourism as a research topic? The study's relevance is justified as it views metaverse tourism as a promising future possibility. The success of this type of tourism is intricately linked to factors like accessibility, experience quality, ethical and social implications, public acceptance, and considerations around the sustainability of Web3, encompassing blockchain technology (Almeida, 2023; Netto and Menengola, 2021; Sempere and Moreno, 2021).

For Go and Kang (2022) and Almeida and Almeida (2023), the metaverse plays a pivotal role in expanding the available tourism resources. Metaverse tourism, as highlighted by Go and Kang (2023), has the potential to promote sustainable tourism aligned with the Sustainable Development Goals (SDGs) and the 2030 Agenda. The application of the metaverse in cultural heritage experiences, according to Buhalis and Karatay (2022), leads to interactive immersions between individuals, utilizing digital avatars (Volchek and Brysch, 2023). This understanding of metaverse tourism becomes crucial for guiding the sector and science toward a more conscious and

effective approach to its utilization.

To answer the research questions, a hybrid systematic review was used, which includes a variable-oriented literature review based on the literature available in the Scopus database. Therefore, the innovative contribution of the study lies in the analysis of the growing importance of the metaverse as an area of research, with a specific focus on the tourism sector.

The results show that metaverse tourism is a recent research topic and the Scival Topic prominence reveals that it is a topic of great interest. Thus, 81.9% of all scientific production on the tourism metaverse is clustered in the 99-prominence percentile, which means it is in the top 1% of all topics in the world. The results also emphasize the extensive application of the metaverse to tourism, from tourism management and sustainability to the application of immersive technologies to the tourist experience. It should also be emphasized that the results of this study have the potential to contribute significantly to the development of new strategies for developing tourism products and destinations. Furthermore, the study presents a contemporary research agenda, highlighting metaverse tourism as a key player in a rapidly evolving scenario.

2. Review of literature

2.1. Metaverse

The term “metaverse” was initially used to represent a utopian idea of alternative worlds. It is not just a product that meets specific needs, such as a virtual game or store, but a reconstruction of the ecosystem of relationships that are natural in the real world (Almeida, 2023). As one of the transformational technologies of the current century, the metaverse has the potential to have a revolutionary effect on human life, pushing the boundaries of augmented reality (AR) and virtual reality (VR). This technology offers an innovative experience in a virtual world, enabling large-scale economic, social, and cultural interactions (Baroroh et al., 2023; De Almeida, 2023; Volchek and Brysch, 2023).

Seen as a post-reality universe, the metaverse is characterized as a perpetual and persistent multi-user environment that merges physical and virtual-digital reality. The concept is based on the convergence of technologies that allow multisensory interactions with virtual environments, digital objects, and people, such as virtual reality (VR) and augmented reality (AR). Thus, the metaverse is configured as an interconnected network of immersive social environments, present on persistent multi-user platforms (Mystakidis, 2022; Baroroh et al., 2023; Monaco and Sacchi, 2023).

The metaverse comprises seven crucial layers: infrastructure, human interface, decentralization, spatial computing, creative economy, discovery, and experiences (Samala et al., 2023). Infrastructure ensures virtual structure integrity. The human interface enables natural and immersive interactions. Decentralization distributes power equitably. Spatial computing enhances realistic environments. The creative economy generates value. The discovery layer improves usability. The experience layer offers immersive, boundary-breaking interactions and learning experiences. These layers collectively drive the metaverse’s development and operation.

2.2. Destination metaverse

The metaverse offers two distinct types of environments: real spaces and virtual spaces (Kim, 2021; Um et al., 2022). The real-based one is an extension of an existing physical space, such as a tourist attraction, with the insertion of artificially projected objects or avatars. The virtual metaverse, on the other hand, simulates an alternative digital world, where interactions take place in an environment not linked to the actual physical location. Metaverse destinations synthesize both real and virtual environments (Allam et al., 2022; Bibri and Allam, 2022; Buhalis and Karatay, 2022; Gursoy et al., 2022).

The concept of a tourist destination refers not only to a physical location but to any environment other than everyday life (Monaco and Sacchi, 2023; Volchek and Brysch, 2023), thus including the metaverse. Thus, when applied to tourist destinations, the metaverse challenges traditional notions of tourism, allowing for a disruptive expansion beyond the constraints of time and distance. In this context, people travel via avatars to real or virtual places, going beyond the limits of their usual environments (Volchek and Brysch, 2023). This “metaverse journey” can be carried out for personal, business, or professional purposes. Lee et al. (2022) points out that this phenomenon creates the potential to transform tourist experiences and meet tourists’ needs.

3. Methodology

3.1. Method

In this study, a bibliometric analysis was applied to assess the state of the art of a topic in articles published in a given area (Cardoso et al., 2020a, b; 2021; 2022; Campos et al., 2022). The following subsections deal in detail with the methods used and the procedures. To answer the research questions, the researchers adopted a hybrid review approach, which includes bibliometric and qualitative methods. Additionally, like other fields of research, this type of analysis has been employed in recent tourism studies where studying emerging topics is paramount (Cardoso et al., 2020; 2022). Thus, the first phase of the research used a systematic review focused on analyzing the role of a specific theory in a thematic area, a methodology recommended by several authors (Zupic and Čater, 2014; Paul and Criado, 2020; Campos et al., 2022).

In terms of objectives, this research is classified as descriptive-exploratory (Yin, 2016), to explore the characteristics of the metaverse phenomenon applied to tourism exploratory research is conducted in areas with little accumulated and systematized knowledge, which is appropriate for the context of “metaverse tourism”, considered an emerging and developing theme. To help fill the gap in this research and answer the questions posed, the following specific objectives were adopted:

- 1) Identify the extent and scope of the concept of metaverse tourism.
- 2) Identify the research gaps and future research agendas for metaverse tourism.
- 3) To access the Scival topic prominence and Scival prominence percentile, mapping the emergence of metaverse tourism.

3.2. Data collection

The systematic review was used to identify studies according to the inclusion and

exclusion criteria defined to answer the research questions. PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) was used for a more transparent systematization (Campos et al., 2022). **Figure 1** shows the details of how the data was collected.

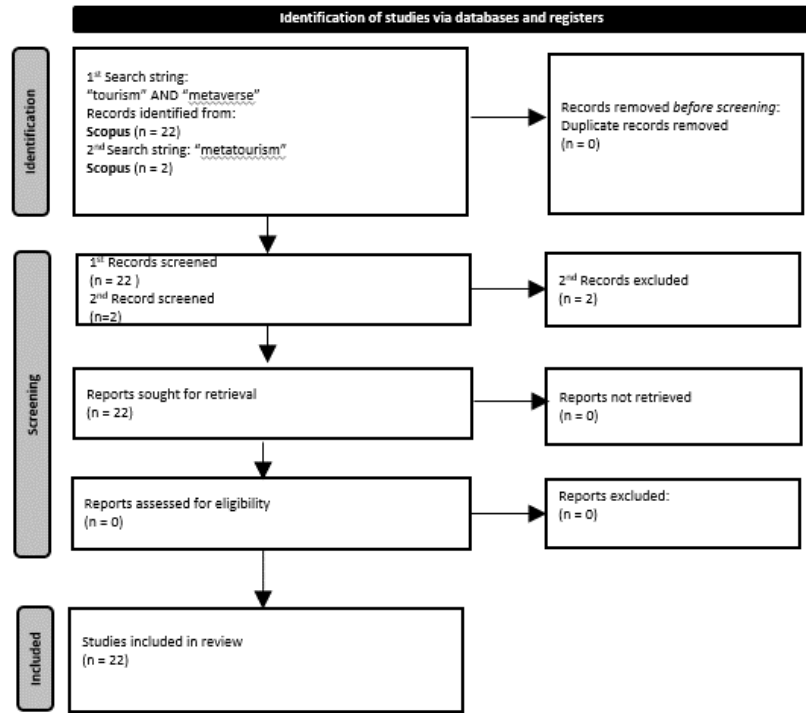


Figure 1. PRISMA diagram.

Source: Adapted from Campos et al. (2022).

The search in the Scopus database took place between July 2022 and July 2023, the search words were applied in English, and the criteria included all types of articles and languages.

A first search was carried out using the terms “tourism” AND “metaverse” applied only to article titles. It should be emphasized that, as these are emerging topics, it was convenient to apply the search only to titles, because according to Whittaker (1989), a title reflects the originality of a research article, and the public assumes that the authors were prudent in selecting the title and keywords for each article. This process resulted in 22 articles, according to Paul et al. (2021), if a small volume of articles is found and the topic does not include any systematic literature review, the topic domain is suitable to be submitted to this analysis. In a second search, the keyword “metatourism” was used, resulting in 2 documents published in the 1990s. However, these documents were excluded because the term “meta” referred only to the scales of tourism and had no direct relation to the metaverse concept of the last two years.

The choice to use the set of keywords “metaverse” AND “tourism” in the search of the Scopus database is based on methodological criteria that aim at the accuracy and relevance of the results for the objectives of this research. The deliberate selection of these keywords reflects the thematic focus on the intersection between the metaverse and tourism, ensuring that the results obtained are directly aligned with the

specific issues addressed in the study. This approach thus aims to avoid the inclusion of tangential works and optimize the use of resources, directing attention to publications that best meet the needs of the research. In addition, searching for this specific combination of keywords seeks to minimize noise in search by focusing on studies that directly contribute to understanding the intersection between metaverse and tourism.

3.3. Data systematization

To systematize the data, tables were created based on the keywords investigated, which gave rise to the research categories. These tables were used as the object of analysis, along with reading the selected articles in their entirety, provided they were available in open access. Each category was then analyzed individually using the inductive content analysis technique (Bardin, 1977; Cardoso et al., 2020). Systematizing the data according to the categories allowed the results to be organized and presented clearly, making it easier to understand and interpret the research findings.

3.4. Data analysis procedures

To analyze the data collected based on the constructs established in the theoretical framework, inductive content analysis was used (Cardoso et al., 2020a). This phase of analysis was conducted in three stages, following the methodology proposed by Bardin (1977):

- 1) Pre-analysis—The first stage involved reading the abstracts and an initial reading of the articles selected according to the PRISMA methodology.
- 2) Exploration of the material—In the second stage, the procedures for coding the registration units were established.
- 3) Treatment/interpretation of results—The third stage involved interpreting the results obtained. The main points of the investigation were highlighted, transforming them into products of scientific significance and validity.

In addition, data triangulation was adopted as a complementary procedure (Figure 2).

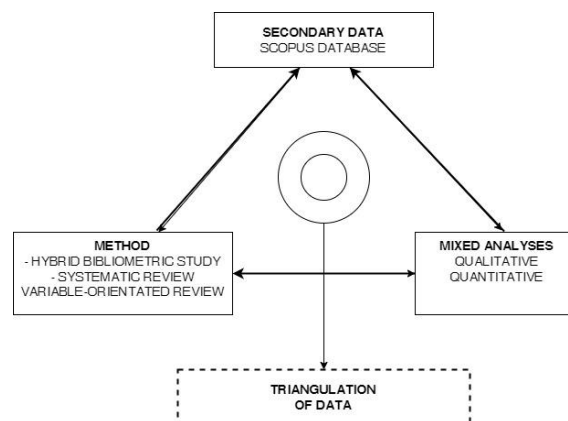


Figure 2. Triangulation of research data.

Source: Authors (2024).

Thus, the data collection and systematization procedures were conducted

rigorously and systematically, ensuring the inclusion of relevant studies published within the established period and the use of triangulation as a strategy to strengthen the reliability of the research findings.

4. Findings and discussion

4.1. Extent and scope of the concept of “metaverse tourism”

The search for the keywords “tourism” AND “metaverse” initially resulted in studies published only between 2022 and 2023. It should be noted that in the two years mentioned, and according to **Table 1**, two articles stand out due to the high number of citations. The study by Gursoy et al. (2022) is the most cited and addresses the metaverse from the concepts of hospitality and the tourism industry. The second most cited, the study by Buhalis et al. (2023), investigated hospitality in the context of the metaverse, but with a focus on tourism management and marketing. By the end of the first half of 2023, this study had received 31 citations. It was noted that both studies tried to understand the metaverse applied to tourism as a contemporary hospitality and leisure phenomenon.

In 2022, 9 articles were published on the subject, of which 2 were restricted access articles with abstracts only (Tsai, 2022; Gursoy, 2022) and 7 were full open access articles. All of them included the term ‘metaverse’ in their titles (**Table 1**). However, only 4 of them made a direct association between the terms “Metaverse” and “tourism” (Fan et al., 2022; Gursoy, 2022; Suanpang et al., 2022; Zhang et al., 2022). The other articles only made an indirect approach to the term “Metaverse” through the themes: “Immersive cultural”, “Metaverse Space Travel”, “Tourism Using Virtual Reality” and “Virtual Spaces”.

Table 1. Year 2022—topic prominence.

N.	Author/Year	Citations	Topic prominence	Scival
1	Fan at al. (2022)	1	Methodology; Photogrammetry; Information Modeling	99.024
2	Suanpang et al. (2022)	8	Virtual Worlds; Computer-Aided Instruction; Virtual Learning Environment	97.894
3	Zhang et al. (2022)	5	Methodology; Photogrammetry; Information Modeling	99.024
4	Wei (2022)	15	Bitcoin; Ethereum; Internet of Things	99.989
5	Zaman (2022)	13	Tourist; Destination Image; Risk Perception	99.872
6	Lee (2022)	18	Technology Acceptance Model; Mobile Payment; E-Learning	99.977
7	Tsai (2022)	3	Virtual Reality Exposure Therapy; Emotion; Social Presence	99.588
8	Filimonau et al. (2022)	2	Carbon Footprint; Life Cycle Assessment; B2C E-Commerce	83.546
9	Gursoy (2022)	72	Virtual Worlds; Computer-Aided Instruction; Virtual Learning Environment	97.894

According to **Tables 1** and **2**, there is no prominent Topic that is positioned in a cluster with the designation “metaverse tourism” or even “metaverse”. What the results show are cluster designations indirectly related to the metaverse theme, such as Bitcoin; Ethereum; Internet of Things, Virtual Reality, Virtual Worlds; Computer-Aided Instruction; and Virtual Learning Environment. This overview is justified because metaverse tourism is a recent/emerging concept that has not yet been considered a relevant cluster by publishing groups. However, the designation of the

clusters relates to the metaverse when it involves virtual reality, immersive environments, and decentralized online connectivity.

For the year 2023, as shown in **Table 2**, 13 “metaverse tourism” articles were found, of which 8 were restricted to abstracts only and 5 were full articles (Go and Kang, 2023; Huang et al., 2023; Monaco and Sacchi, 2023; etc.).

Table 2. Year 2023—prominence topic.

N.	Author	Citations	Topic prominence	Scival
1	Su et al. (2023)	0	Augmented Reality; Education; Online Learning	99.671
2	Zhu et al. (2023)	0	Virtual Reality Exposure Therapy; Emotion; Social Presence	99.588
3	Go & Kang (2023)	7	Destination; Ecotourism; Destination Management	99.801
4	Monaco & Sacchi (2023)	2	Virtual Worlds; Computer-Aided Instruction; Virtual Learning Environment	97.894
5	Buhalis, Lin, Leung (2023)	31	Product-service Systems; Service Economy; Value Co-Creation	99.860
6	Huang et al. (2023)	0	Thermal Comfort; Hot Temperature; Office Buildings	99.749
7	Buhalis, O’Connor, Leung (2023b)	8	Human-Robot Interaction; Robots; Artificial Intelligence	99.349
8	Çolakoglu et al. (2023)	0	Servicescape; Customer Experience; Community Participation	99.508
9	Rameshwar et al. (2023)	0	Virtual Reality Exposure Therapy; Emotion; Social Presence	99.588
10	Sánchez-Amboage et al. (2023)	0	Social Media; Online Reviews; Brand Community	99.964
11	Wei (2022)	0	Human-Robot Interaction; Robots; Artificial Intelligence	99.349
12	Yang & Wang (2023)	0	Virtual Reality Exposure Therapy; Emotion; Social Presence	99.588
13	Ampountolas & Menconi (2023)	1	Bitcoin; Ethereum; Internet of Things	99.989

Except for the study by Monaco and Sacchi (2023), the other authors (**Tables 1 and 2**) had a 99-prominence percentile, highlighting the topicality and relevance of the “metaverse” theme applied to tourism. The topic prominences with the highest Scival were:

- 1) Bitcoin; Ethereum; Internet of Things com Scival 99.989;
- 2) Technology Acceptance Model; Mobile Payment; E-Learning with Scival 99.977;
- 3) Social Media; Online Reviews; Brand Community com Scival 99.964.

The only non-metaverse-related topic in prominence is “Social Media; Online Reviews; Brand Community.” Sánchez-Amboage et al.’s (2023) study doesn’t explicitly delve into the metaverse, except for a potential indirect link mentioned in the abstract using the term “online.” It’s crucial to distinguish that the metaverse, an immersive digital experience in Web3, differs significantly from the concept of “online tourism” associated with Web2. Almeida (2023) emphasizes that Web2 lacks the same immersive characteristics as Web3.

4.2. Extent and scope of the “metaverse tourism” concept

Regarding “metaverse tourism,” Tsai (2022) argues that it creates a sense of presence and immersion for tourists through avatars and virtual environments. This heightened presence correlates with increased intention to visit the physical destination. Buhalis (2022) contends that the metaverse facilitates co-created experiences between hotels and customers, enabling personalized interactions before, during, and after visits. Suanpang et al. (2022) and Wei (2022) suggest developing metaverse platforms to recreate destinations virtually and promote tourism. Go (2022)

asserts that the metaverse supports sustainable tourism aligned with the UN's Sustainable Development Goals, potentially enhancing destination profitability.

However, Ampountolas and Menconi (2023), Monaco and Sacchi (2023), and Zhu et al. (2023) note challenges in the metaverse's adoption, stemming from various stakeholders like governments, industries, tourists, local communities, and educational institutions. Yang and Wang (2023) propose a taxonomy for metaverse tourism, covering digital twins, intensified experiences, individual interactions, and integration of physical and virtual elements. These discussions have spurred research agendas on experience staging, consumer behavior changes, and marketing strategies in the metaverse (Wei, 2022; Buhalis et al., 2023; Ampountolas and Menconi, 2023).

Gursoy (2022) outlines the metaverse's substantial impact on hospitality and tourism, offering a framework for crafting metaverse tourism experiences. Growing interest in the metaverse and "metaverse tourism" is evident in studies focusing on virtual worlds, virtual reality, the future of tourism, marketing, the travel industry, hospitality and leisure, digitalization, and virtual tourism applications. Almeida (2023) raises sustainability concerns, particularly regarding the energy required to sustain the metaverse within the Web3 context.

While the metaverse presents opportunities for tourism growth and development, challenges persist in government, industry, and consumer adoption. The future of metaverse tourism holds promise for diverse experiences, sustainable development, and immersive digital marketing. Authors contributing to this research view the metaverse in various ways, such as an interactive game (Su et al., 2023), cutting-edge technology application (Rameshwar and King, 2023; Zhu et al., 2023; Wei, 2022), a form of sustainable tourism (Go and Kang, 2023), and a means of perpetuating cultural heritage (Suanpang et al., 2022). Other authors explore research agendas, new uses, challenges, and opportunities in the post-COVID-19 pandemic metaverse. Therefore, a universal concept of the metaverse and "metaverse tourism" is yet to be established.

4.3. Extent and scope of the "metaverse tourism" concept—Research agenda

The analyzed articles' objectives, outlined in **Tables 1** and **2**, reveal varying degrees of direct relevance to metaverse tourism. Some articles focus more explicitly on this environment, while others have a broader scope or address specific tourism aspects without direct metaverse engagement.

Notably, Monaco et al. (2023) briefly touched on the issue of energy sustainability, crucial for the existence of a metaverse. Although Go and Kang (2023), and Su et al. (2023) explored sustainable tourism through the metaverse, they did not delve into the associated energy consumption. Considering Almeida's (2023) emphasis on the significant energy requirements of the metaverse, its current state might be considered energetically unsustainable.

Each theme in the investigated articles represents a potential area for future in-depth exploration in metaverse tourism research. After scrutinizing the objectives of the 22 published papers, the following themes were identified:

- 1) Metaverse Potential in Tourism: Several studies (Ampountolas et al., 2023; Buhalis, O'Connor, et al., 2023b; Go & Kang, 2023; Monaco et al., 2023) aim to

- explore opportunities and challenges presented by the metaverse in the tourism sector. They investigate transformative effects on customer experiences, interactions, value co-creation, and analyze specific benefits and challenges, especially in gastronomy and wine tourism.
- 2) Sustainability in Metaverse Tourism: Other works (Go & Kang, 2023; Su et al., 2023) explore the link between sustainable tourism and the metaverse. They discuss how the metaverse contributes to sustainability, examining behavioral influences, service design, and learning effects in developing sustainable tourism. However, none thoroughly address the metaverse's energy sustainability, a critical aspect for sustainable tourism.
 - 3) Tourists' Metaverse Experiences: Another trend in study objectives (Lee, 2022; Zaman et al., 2022; Çolakoğlu et al., 2023; Huang et al., 2023; Rameshwar & King, 2023; Zhu et al., 2023) involves exploring tourists' experiences in the metaverse. These studies analyze virtual reality experiences, the transition to the metaverse, media influence of virtual reality tourism content, and tourists' reactions in terms of perceived usefulness, enjoyment, satisfaction, and intention to visit destinations.
 - 4) Metaverse Technologies and Applications: Certain works (Fan et al., 2022; Suanpang et al., 2022; Wei, 2022; Huang et al., 2023; Rameshwar & King, 2023; Zhu et al., 2023; Yang & Wang, 2023) focus on categorizing and analyzing key metaverse application technologies. They explore metaverse use in specific applications, such as cultural heritage, and develop platforms and technical frameworks to harness the metaverse's potential in various contexts.
 - 5) Future Research and Agenda in the Metaverse: Other papers (Filimonau et al., 2022; Gursoy et al., 2022; Ampountolas et al., 2023; Sánchez-Amboage et al., 2023; Buhalis, Lin, et al., 2023) provide an overview of current metaverse-related research in tourism and hospitality. They propose future study directions, highlight areas needing immediate attention from practitioners, outline research agendas, categorize future research, and suggest propositions for metaverse tourism. Access limitations prevented full exploration of these restricted-access papers.

These trends represent primary research focuses and emerging areas of interest in the “metaverse tourism” study, reflecting the objectives of the surveyed papers (**Table 3**).

The emerging themes encapsulate the primary knowledge derived from the surveyed publications, encompassing diverse facets of “metaverse tourism” ranging from hospitality to technologies, tourist experiences, sustainability, and research agendas. Utilizing inductive content analysis, the analysis of these themes, as depicted in **Table 3**, enables the identification of emerging patterns and themes within the data. This method allows for the recognition of recurring themes, unveiling the predominant research focuses and knowledge generated across these publications concerning “metaverse tourism” in the post-COVID-19 pandemic landscape.

Table 3. Publications’ theme/focus.

Author	Focus of work	Relationship with metaverse tourism	Relation to tourism
Su et al. (2023)	Discuss the influences between service design, behavioral intentions and learning effects in the development of sustainable tourism.	Immersive VR gaming experience in the metaverse.	Leisure activities through gamification with VR.
Zhu et al. (2023)	Identify the antecedents and consequences of telepresence.	*	
Go & Kang (2023)	Define metaverse tourism.	The metaverse tourism is associated with understanding the origin of the metaverse and the technology related to it.	Gamification, cultural heritage, travel, hospitality, entertainment.
Monaco et al. (2023)	Analyze the potential benefits and challenges of the metaverse.	Additional element capable of enriching the tourist offer beyond the physical spaces, being a kind of stationary tourism.	Travel experiences, hospitality and entertainment, local gastronomic culture.
Buhalis, O’Connor et al. (2023b)	Explore the opportunities into metaverse for hospitality and tourism.	*	
Huang et al. (2023)	Examining the effects of the audiovisual conditions of virtual tourism.	Metaverse is a new application of the internet and social form that integrates a multitude of new technologies.	State-of-the-art technology, virtual tourists, tourist space.
Buhalis, Lin et al. (2023)	Explore themes in smart hospitality.	*	
Çolakoglu et al. (2023)	Explore tourists’ virtual reality experiences.	*	
Rameshwar & King (2023)	Caribbean XR project.	Caribbean’s Metaverse (game).	Augmented reality Extended reality VR glasses
Sánchez-Amboage et al. (2023)	Analyze the online tourism communication strategies implemented by 20 European museums in times of COVID-19.	*	----
Wei (2023)	To detail the status of research related to the metaverse in tourism and hospitality.	*	----
Yang & Wang (2023)	Classify the main metaverse application technologies.	Taxonomy “4 Is” of metaverse tourism.	----
Ampountolas et al. (2023)	Present the potential of the metaverse and define three research proposals for further investigation.	*	----
Fan et al. (2022)	Presenting a metaverse-based digital documentation structure for historical figures.	The study deals with immersive digital documentation of cultural heritage and the information service for historical figures.	Historical figures Tourist destination Cultural heritage Attractions, activities, trips.
Suanpang et al. (2022)	Design and develop an “extensible metaverse” platform.	The metaverse is an innovation that has created the recent phenomenon of new tourist experiences from the virtual reality of an intelligent tourist destination.	Virtual reality VR glasses, cutting-edge technology (smart tourism), tourist destination, activities.

Table 3. (Continued).

Author	Focus of work	Relationship with metaverse tourism	Relation to tourism
Zhang et al. (2022)	The use of the metaverse concept for cultural heritage applications.	The concept of metaverse, extended from digital twin and virtual reality continuum.	Cultural heritage, smart tourism, attractions, destinations, tourists, local culture.
Wei (2022)	Addressing to Gemiverse prototype platform.	Metaverse as an aggregator of new technologies and part of blockchain technology.	Cutting-edge technology, smart tourism, smart hospitality.
Zaman et al. (2022)	Explored the effects of COVID-19 travel anxiety on readiness for metaverse space travel.	The metaverse as a digital replica of the physical world, coming from the COVID-19 lockdown.	Smart tourism
Lee (2022)	The media richness of virtual reality tourism content.	Metaverse as being the application of virtual reality technologies.	Virtual reality VR glasses, activities, destinations, attractions.
Tsai (2022)	Applying relevant concepts of enactive cognition and positive psychology	*	-
Filimonau et al. (2022)	Outlining a provisional research agenda on virtual spaces.	Metaverse as a virtual space arising from the Covid-19 lockdown.	Smart tourism
Gursoy et al. (2022)	Explain the concept of the metaverse in general and in the context of the hotel and tourism industry.	*	-

*Restricted Access Paper.

4.4. Proposed research agenda

Drawing from Scopus-published papers on metaverse tourism, a comprehensive research agenda is proposed for future exploration, reflecting key themes and areas of interest identified in this study:

- 1) Sustainability Impact: Explore the influence of metaverse tourism on environmental, social, and economic sustainability.
- 2) Tourist Experience Analysis: Investigate tourists' experiences in the metaverse and its effects on consumer behavior.
- 3) Metaverse Benefits and Challenges: Analyze the metaverse's benefits and challenges in the tourism sector, emphasizing immersive experiences, innovative business models, and specific marketing strategies.
- 4) Cultural and Entrepreneurial Applications: Examine the use of the metaverse for cultural and entrepreneurial applications in tourist destinations.
- 5) Hospitality and Leisure Exploration: Explore opportunities and challenges for the metaverse in hospitality, leisure, destination image, and branding, considering the role of emerging technologies in tourism.
- 6) Digital Application Technologies: Investigate the adoption and impact of metaverse-related digital application technologies in tourism.
- 7) Ethical, Legal, and Privacy Implications: Examine the ethical, legal, and privacy implications of metaverse tourism, including intellectual property, data protection, and user privacy.

- 8) **Metaverse Effects on Tourism Experiences:** Study the effects of the metaverse on virtual and physical tourism experiences and their interaction to understand the dynamics of transition and complementarity.
- 9) **Destination Development in Metaverse Context:** Examine the understanding of destination development applied to the context of metaverse tourism.

This research agenda spans various pertinent topics in metaverse tourism, offering guidance for future studies and areas requiring additional exploration. It's crucial to note that this agenda is not exhaustive or definitive but rather a suggestive framework adaptable to the specific interests and contexts of individual studies. As an adaptable guide, the agenda aims to assist researchers and professionals contributing to the evolving knowledge in the dynamic field of metaverse tourism. The research highlights the increasing academic and industry interest in exploring the “metaverse” concept and its applications in the tourism domain within the Web3 landscape.

4.5. Scival topic prominence and Scival prominence percentile of “metaverse tourism”

Recently, Cardoso et al. (2020a, 2020b, 2021) broadened research mapping by incorporating the qualitative aspect through Scival Topic Prominence and its upper quartile. Scival Topic Prominence is employed to predict the emergence and interest of a research field, indicating whether a topic is growing or shrinking, and foreseeing future growth or decline, thus identifying emerging research topics (Klavans and Boyack, 2017). This type of topic is commonly used to support research endeavors (Cardoso et al., 2021). Topic prominence is expressed in percentiles, with high-impact articles (90th and 95th percentiles) more likely associated with recognized funding compared to low-impact articles. Scopus's Topic Prominence, analyzable on the SciVal platform, integrates three metrics—Citation count, Scopus views, and Average CiteScore—to signify the momentum of the topic. It serves as an indicator supporting research funding, where a higher percentile reflects greater article impact (Cardoso et al., 2021).

According to **Tables 1** and **2**, the Topic Prominence of metaverse tourism is distributed across various topic clusters, with three standing out:

- 1) **Bitcoin; Ethereum; Internet of Things:** Ampountolas and Menconi (2023) superficially explore the metaverse's potential, and Wei (2022) presents a blockchain-based professional certification platform.
- 2) **Technology Acceptance Model; Mobile Payment; E-Learning:** Lee (2022) discusses reactions evoked in virtual reality tourism, focusing on Web2, contrasting the predominantly Web3-located metaverse.

Social Media; Online Reviews; Brand Community: Sánchez-Amboage et al. (2023) analyze online tourism communication strategies by European museums during the Covid-19 pandemic. This cluster lacks a direct association with metaverse characteristics, contrasting with the previous approaches that dealt with the subject indirectly.

However, it should be emphasized that there is no topic prominence directly related to the metaverse in any of the three contexts of the discussions of the publications with the highest Scival prominence. The topic most closely related to the

metaverse, albeit indirectly, is that involving Bitcoin, a technology associated with the metaverse, along with the term Ethereum, which refers to one of the existing metaverses, although it is not the only metaverse currently in existence. According to Almeida (2023), it is estimated that there are more than 100 co-existing metaverses, but they are not interoperable with each other.

Regarding SciVal prominence percentile is operationalized through **Figure 3** which brings together several variables' outputs. The most relevant result is that 81.9% of all scientific production on tourism metaverse is clustered in the 99-prominence percentile, which means it is in the top 1% of all topics in the world, with a high level of CiteScore, citation and views count, people are reading and citing this topic and for these reasons, the topic has a higher funding potential.

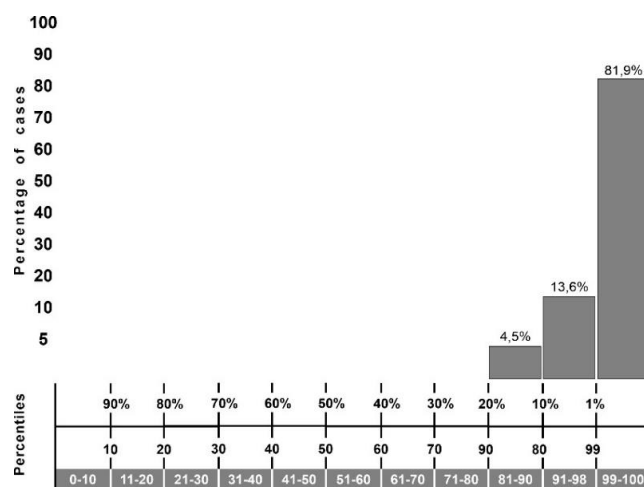


Figure 3. Tourism Metaverse Scival prominence percentile.

Source: Adapted from Cardoso et al. (2020a).

Moreover, 13.6% of the production is in the 90th percentile, and the remaining 4.5% is in the 80th percentile (between the 10% and 20% of topics generating the most interest) (**Figure 3**). This highlights metaverse tourism as a visibly emerging topic with a high Scival prominence percentile, signifying its significant impact on the academic community.

5. Conclusion

The systematic literature review effectively maps the current landscape of metaverse tourism research, offering valuable insights for academics, destination branding professionals, and policymakers. It facilitates informed decision-making and strategy development in this emerging field, encouraging knowledge dissemination and wider researcher participation.

The multifaceted nature of the term metaverse is evident, with studies exploring various aspects, from metaverse tourism to cultural heritage. This diversity reflects the dynamic nature of the research field. Themes identified present opportunities for further exploration, making metaverse tourism an intriguing and promising area with both possibilities and challenges for the industry and academic research.

The first inquiry pertains to the contribution of metaverse tourism, considering the analysis of a limited number of articles. The systematic literature review provides

a methodologically rigorous approach to synthesizing and critically analyzing a restricted yet representative set of articles on metaverse tourism. By systematically examining and contextualizing these studies, patterns, gaps, and emerging trends were identified, contributing to a deeper understanding of the current state of research and delineating potential areas for future investigations.

The second inquiry revolves around the emergence of metaverse tourism as a research topic. Even when limited to a small number of articles, the existing literature offers valuable insights into the potential emergence of metaverse tourism as a research topic. The systematic review seeks to critically assess the scope and depth of these studies, providing a comprehensive view of the current state of the field. Careful analysis of these sources allows for a clearer understanding of the gaps, challenges, and opportunities in the study of metaverse tourism, contributing to the development of a more robust and informed landscape.

These insights garnered from this systematic literature review not only enhance our understanding of metaverse tourism but also lay the groundwork for future research endeavors, offering a nuanced perspective on the evolving dynamics and potential trajectories within this emerging field.

5.1. Contributions

Research contributions include a comprehensive view of the current state of metaverse tourism research and the formulation of a contemporary research agenda. This agenda compiles emerging areas of interest, inspiring interdisciplinary collaboration for addressing fundamental questions about metaverse tourism.

In light of the analysis of the available literature on metaverse tourism, we observe a noteworthy diversity of concepts proposed by researchers, highlighting the evolving nature of this field. While some authors emphasize specific aspects such as augmented, virtual, and mixed reality, others underscore the immersive nature of the metaverse. Given this variety, we propose a comprehensive definition that seeks to synthesize the key elements discussed in the literature, acknowledging, at the same time, the lack of a clear consensus in this early stage of research.

Thus, “Metaverse Tourism” refers to the convergence of tourist experiences with virtual and immersive environments, encompassing a variety of digital interactions in three-dimensional spaces. This concept ranges from playful immersions and simulated travel experiences to commercial and cultural interactions, enabling a broad range of virtual tourism activities. At its core, metaverse tourism represents a transformation in the traditional conception of travel, exploring the virtualization of tourism in all its facets. It is worth noting that, given the emergent nature of this field, this definition aims to synthesize the predominant perspectives in the literature, recognizing the absence of a unified consensus at this early stage of research.

5.2. Implications

a) Theoretical implications involve clarifying the lack of a universally accepted definition, distinguishing “metaverse tourism” from metatourism, and identifying key authors and researchers. The discussion of future trends contributes to a theoretical foundation and informs novel strategies in the tourism sector.

b) Social implications range from sustainability considerations to potential impacts on sedentary lifestyles and local cultures. The industry may need to adjust business strategies, creating opportunities for innovation and job creation. The impact on local identity emphasizes the need for cultural preservation and social responsibility.

c) Practical implications include the creation of immersive experiences for metaverse destinations. This informs marketing strategies for tourism companies, promoting innovative services and products like virtual tours, travel packages, and augmented reality experiences. Policy adjustments may be necessary to address ethical and legal concerns as metaverse tourism evolves.

5.3. Limitations and future research

Research limitations include the Scopus database focus, limiting available articles for analysis. Future research should explore various metaverse platforms, conduct interdisciplinary case studies, and investigate economic and social impacts.

In conclusion, this study provides a comprehensive overview of metaverse tourism research, emphasizing the need for collaboration and continuous exploration in this evolving field. As metaverse tourism shapes global travel and hospitality, staying attuned to sector changes is crucial. This study marks the beginning of an exploration into the potential revolution of travel and exploration in the virtual world.

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