Metaverse as a booster of tourism transformation towards virtual management strategies

1. Introduction

Digital transformation in the tourism industry has given way to the growth of concepts related to Metaverse, a 3D virtual space (Buhalis *et al.*, 2023a), because of its potential application in the tourism industry. Metaverse, as a concept, refers to an immersive digital environment in which users can interact with each other through different advanced technologies, such as virtual reality (VR) and Augmented Reality (AR). In tourism practice, this provides an opportunity for people to visit virtual destinations and enjoy experiences anywhere. An example is the possibility of taking a virtual tour of a museum through Metaverse, which can provide a unique and immersive experience. Another example is reality goggles can help transport users on a virtual tour of a historic city or offer a new way to experience tourist destinations.

Previous studies have shown opportunities for the Metaverse in the tourism industry. According to Barrera and Shah (2023), the most promising trends related to Metaverse in the field of marketing are immersion, social interaction, and user experience, giving Metaverse a transformative potential for experiential tourism from the end consumer's point of view. This raises numerous research questions in areas such as data intelligence, innovation, communication, user experience, consumer behaviour and policy formulation related to ownership and privacy. In the realm of hospitality, Metaverse empowers consumers to personalise virtual experiences, offering a promising yet untapped opportunity. To capitalise on this potential, collaboration between tourism and technology companies is essential (Dwivedi et al., 2022, 2023). From a marketing and consumer behaviour perspective, Metaverse offers opportunities for innovative strategies and highly personalised experiences in tourism (Buhalis et al., 2023a). Moreover, according to Correia Loureiro et al. (2020), three themes can be identified that will determine the future from a Metaverse research point of view: the use of mobile devices for sustainable tourism, the application of the Technology Acceptance Model (TAM) in AR/VR research, and the exploration of the potential to create immersive, inclusive, and accessible tourism experiences, especially for individuals with disabilities and for the preservation of heritage sites (Wang et al., 2023). Other studies have analysed the purchase intention (Liu and Sun, 2023) of these virtual experiences.

Despite the growing academic literature in recent years, there are still gaps in the understanding of the implications of these technologies from a management perspective. From a management and user experience perspective, Metaverse has the potential to transform the tourism industry. On the management side, the integration of technologies, including Metaverse, is crucial for optimising operational efficiency and customer satisfaction (Buhalis *et al.*, 2023b). However, at the same time, it is key to address challenges such as data security and the ethical behaviour of the industry (Jo, 2023). From a user experience perspective (Jafar and Ahmad, 2023), research is required to support the design of personalised immersive experiences to ensure user acceptance (Jafar *et al.*, 2023). Therefore, the theoretical support of this research in areas such as technology adoption and strategic management will provide relevant frameworks for understanding technology and maximising benefits for the tourism sector.

To fill this gap and improve the literature review analysed in this study, a systematic review is used to further explore the issues addressed. To this end, the following research questions were posed.

(RQ1) What is the intellectual structure of the literature on Metaverse in the tourism sector and its implications for management and the end consumer?

(RQ2) What theoretical frameworks have been used and which are proposed to study the Metaverse in the tourism sector and its implications for management and the end consumer?

(RQ3) What are the future avenues of research in relation to the Metaverse in the tourism sector and its implications for management and the end consumer?

This study investigates the Metaverse concept, focusing on the implications for business management in terms of consumer behaviour and decision-making. These research findings can benefit stakeholders in the tourism sector and provide relevant information for inclusive tourism. Bibliometric techniques were used to conduct the analysis, with the results presented and conclusions, limitations, future research directions, and recommendations from a business management perspective derived through a systematic review.

2. The evolution and context of the Metaverse in tourism

Traditionally, technological advances have been key to the evolution of the tourism industry, generating new business models and modernising the distribution of tourism services (Standing et al., 2014). These innovations are fundamental to addressing the growing concern for sustainability in tourism (Go and Kang, 2023) and their implications for tourism demand and environmental impact (Puertas Medina et al., 2022). In this respect, the concepts of virtual reality and Metaverse promise to revolutionise the tourism industry by offering realistic immersive experiences without the need for physical presence (Ball, 2022). These technologies offer the opportunity to access tourist destinations and attractions through immersive experiences, without the need for the aforementioned physical. Virtual tourism has become a global trend in recent years, as is evident throughout this paper, based on redefining the way people experience tourist destinations, allowing users to explore places and attractions, bringing benefits ranging from experiencing destinations from home without the aforementioned physical and economic limitations (Hollensen et al., 2022). New technical advances have enabled close-to-reality immersion through the development of digital environments. The advent of virtual reality, augmented reality and mixed reality (MR) technologies has transformed the customer experience by offering new hybrid experiences that integrate physical (Yang et al., 2023) and virtual objects.

The promise of Metaverse in the tourism industry is to revolutionize the way end-users jump physical and economic limitations by offering travellers the possibility of exploring destinations in exciting ways (Accenture, 2022). Major industry leaders expect a positive impact on revenue generation opportunities and improvements in the customer experience. The interaction between consumers and brands in Metaverse raises interesting discussions and debates in the marketing field, addressing the challenges and areas of transformation in the tourism sector. In addition, Metaverse has emerged as a fertile ground for marketing and understanding consumer behaviour in tourism (Zhang *et al.*, 2023).

Companies harness their immersive potential to influence travellers' decisions and deliver personalised offers, which in turn increases customer satisfaction and brand loyalty in this new digital reality. For example, the hotel company Leven ventured into Metaverse through its Levenverse, an immersive virtual hotel environment located in Decentraland's Fashion District (Leven, 2023). This innovative extension of Leven's physical spaces offers a visually stunning and creatively designed environment in which traditional hotel areas such as lobbies, rooms, and lifts have been reinvented. It represents a facet of the hospitality industry influenced by Metaverse and virtual reality, where travellers can fully immerse themselves in digital experiences (Casais and Ferreira, 2023). These experiences range from visiting remote destinations to exploring historical and cultural sites using virtual reality technology (Tasi L.-L., 2022).

3. Methodology

The Web of Science (WoS) database was chosen as the primary resource for this systematic analysis during the initial phase. This indexing source is the most extensive collection of scholarly publications worldwide (Zhu and Liu, 2020). Peer-reviewed articles, mainly written in English, were analysed, as they are considered the most legitimate academic source (Elvik, 1998), published up to 18 September 2023. A Boolean approach was used, where the keywords chosen were "Metaverse tourism" and "virtual reality tourism". The use of the fields' titles, abstracts, and keywords is justified by the specificity of the subject matter analysed, as it is necessary to be specific to the breadth of the keywords used. Utilising the Prisma Statement methodology (Page et al., 2021, 2021) and following the guidelines of prominent authors in the field of bibliometric analysis and literature review (Kraus et al., 2022), data were extracted from WoS sources until the aforementioned date. Only published and early access articles published in English and in research areas related to Hospitality Leisure Sport Tourism, Management and Business were considered. The dataset obtained from WoS contains 162 documents after carrying out the above-mentioned exclusions. The Biblioshiny software tool was used for analysis (Aria and Cuccurullo, 2017).

The researchers selected five pertinent documents that were not previously examined and deemed relevant to the objectives of the study. These were websites and blog entries. The process utilised in this study, as depicted in Figure 1, has been substantiated by multiple scientific investigations. An initial assessment of the bibliographic information was carried out on the first set of 162 documents, suitable for description and visualisation through bibliometric techniques. Verification of the research questions is illustrated using the 167 documents detailed in the Supplementary Material (Table S1). This culminated in the discussion and conclusions of the documents in the final phase.

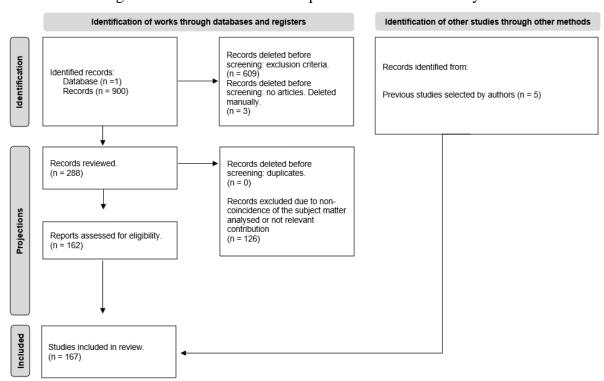


Figure 1. Exclusion criteria and protocols used in the analysis.

Source: Authors' elaboration based on the Prima 2020 Declaration.

4. Results of the descriptive analysis

4.1. Overview and production trends

After analysing data from 1995 to 2023 across 52 sources, including 162 documents, the average annual growth rate was found to be 12.57% (Figure 2). This indicates a constantly evolving research field. On average, each paper received 37.9 citations, demonstrating its influence and relevance. There were 453 authors involved in the analysis, with 13 single-author papers and significant international collaboration of 38.89%.

Documents Annual Growth Rate 1995:2023 52 162 12.57 % Authors of single-authored docs ternational Co-Authorship Co-Authors per Doc Authors 453 13 38.89 % 3.35 Author's Keywords (DE) 605 2.21 37.9

Figure 2. Data characteristics.

Source: Authors' elaboration based on Bibliometrix software.

As shown in Figure 3, the field of research has experienced a significant change in the annual production of articles over time. Only two articles were published from 1995 to 2000. However, since 2010, production has steadily increased with notable growth in recent years, particularly in 2018. The year 2022 marked a turning point with 42 articles published, and by 2023, the output peaked at 55 articles, indicating growing interest and increased research activity in this field.

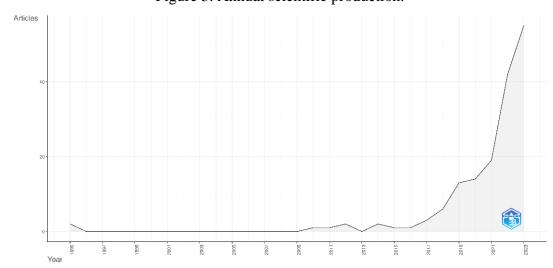


Figure 3. Annual scientific production.

Source: Authors' elaboration based on Bibliometrix software.

4.2. Trend of the annual citations

As depicted in Table 1 and in line with the above, from 2018 onwards, there has been remarkable growth in article production, with a steady increase in the number of publications per year. This period is also characterised by a significant increase in the average number of

citations per article per year, indicating an increase in the influence and impact of research in the field.

Table 1. Annual citations evolution.

Year	N 1	MeanTCperArt ²	MeanTCperYear ³	Citable Years
2018	6	115.67	23.13	5
2019	13	111.23	27.81	4
2020	14	65.79	21.93	3
2021	19	31.47	15.74	2
2022	42	18.52	18.52	1
2023	55	5.64	-	0

¹ N, number of documents. ² MeanTCperArt, mean total citations per document. ³ MeanTCperYear, total citations per year.

Source: Authors' own elaboration

4.3. Most influential documents

According to Table 2, the three most cited papers in this dataset have a significant influence on the research field. First, the paper by "Guttentag DA" published in 2010 in Tourism Management with a total of 588 citations and a robust annual citation rate of 42, stands out as the most cited, demonstrating its continued relevance over time. Supplementary Table S2 provides further information on the journals of publication, context, key concepts, applied methodology, and theoretical foundations.

Table 2. Most cited documents.

Author	Year	Title	Total Citations	Total Citations per Year	Context
Guttentag	2010	Virtual Reality: Applications and	588	42.00	VR
DA		implications for tourism			applications in tourism
Tussyadiah IP	2018	Virtual Reality, presence, and attitude change: Empirical evidence from tourism	389	64.83	Impact of VR on attitudes in tourism
Kim MJ	2020	Exploring Consumer Behavior in Virtual Reality Tourism Using an Extended Stimulus-Organism- Response Model	371	92.75	Consumer behaviour in VR tourism
Flavian C	2019	The impact of virtual, Augmented and mixed reality technologies on the customer experience	360	72.00	Impact of VR/AR technologies on clients
Buhalis D	2019	Technological disruptions in services: lessons from tourism and hospitality	242	48.40	Technologica 1 disruptions in tourism and hospitality
Correia Loureiro SM	2020	20 years of research on Virtual Reality and Augmented Reality in tourism context: A text-mining approach	195	48.75	Evolution of VR and AR in tourism

Bogicevic V	2019	Virtual Reality presence as a preamble of tourism experience: The role of mental imagery	171	34.20	VR as a preliminary tourist experience
Hudson S	2019	With or without you? Interaction and immersion in a Virtual Reality experience	152	30.40	Social interaction in VR experience

Source: Authors' own elaboration

4.4. The Most Influential Countries

According to Table 3, the most influential countries in this field of research, based on the number of articles and the average number of citations per article, the most influential countries in this field of research are notable for their contribution to the advancement of knowledge. The United States leads the list with 18 articles and 1,115 citations, with an average of 61.94 citations per article. It is followed by the United Kingdom, with 14 articles and 893 citations, with an impressive average of 63.79 citations per article.

Table 3. Nationalities of the analysed authors.

Country	Articles	Average Article Citations
USA	18	61.94
United	14	63.79
kingdom		
Korea	9	82.00
Canada	4	155.50
Spain	9	69.00
China	37	13.86
Australia	9	45.22
Italy	8	41.50
France	2	80.50
Norway	5	29.80

Source: Authors' own elaboration

4.5. Thematic map analysis

As shown in Figure 4, thematic analysis of the documents revealed the presence of several emerging themes and areas of interest in the field of virtual reality and technology applied to tourism. Among emerging themes, "gamification in online environments" (Ahmed and Sutton, 2017) stands out, suggesting a focus on creating theoretical and practical frameworks for gamification in virtual contexts. This theme reflects the importance of developing pedagogical strategies and typologies for online educational content, indicating a concern for virtual education and training in the digital age. This area has also been studied from a tourism perspective (Wei et al., 2023), analysing how the virtual tourism experience can be enhanced by gamification to introduce fatigue-reduction factors. Another relevant emerging theme is "user acceptance", which encompasses a wide variety of terms related to technology adoption (Talwar *et al.*, 2022), user motivation (Buhalis et al., 2023), and quality of technological solutions (Martins *et al.*, 2017). This suggests a significant interest in understanding how users

interact with information technology and how technological experiences can be improved to ensure their acceptance and success, as reflected in other tourism studies.

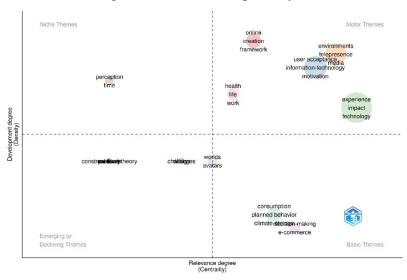


Figure 4. Thematic maps analysis

Source: Authors' elaboration based on Bibliometrix software.

4.6. Thematic map evolution

With regard to the evolution of the subject matter (Figure 5), the documents analysed show a significant change in the research focus over time. Prior to 2023, the main areas of interest included concepts such as intention behaviour, consumption, user acceptance, and experience. However, in 2023, there will be a shift towards more specific topics related to decision-making, technology, co-creation, and the quality of user experience. The concept of "**intention behaviour**" has been transformed into "**decision making**" (Escandon-Barbosa and Salas-Paramo, 2022; Maaiah *et al.*, 2019; Skard *et al.*, 2021; Tan *et al.*, 2023), suggesting a shift towards understanding how users' decisions are influenced by technology and information; in line with Technology Acceptance Theory (Davis, 1989). Moreover, the 'consumption' perspective has been extended to address 'behavioural planning' (Elkhwesky *et al.*, 2023; Hamid *et al.*, 2023; Huang, 2023; Iftikhar *et al.*, 2022; Lu *et al.*, 2022), implying a concern with understanding how individuals plan and make consumption-related decisions. User acceptance remains a relevant topic, as discussed in the evolution of this subject.

children

consumption

determinants

technology

behavioral intention

experience

experience

model

media

user acceptance

health

image

Figure 5. Thematic maps evolution

Source: Authors' elaboration based on Bibliometrix software.

4.7. Bibliographical coupling

Different clusters were identified, revealing a wide variety of relevant topics based on the keywords that make them up and in accordance with the previous section. The results are presented in Table 4. The themes of each cluster are detailed below.

Table 4. Theoretical frameworks provided.

Cluster	Thematic	Key Terms			
1	Virtual tourism and user	User experience in virtual environments			
		Impact on user satisfaction			
1	experience in virtual environments	Engagement			
	environments	Involvement			
	User experience in tourist	Quality of user experience in tourism contexts			
2	destinations and	Technology adoption in tourism destinations			
	technology	User attitudes towards technology in tourism			
3	Information technology	Adoption of information technology			
	adoption	Factors influencing adoption			
	Co-creation and	Co-creation of tourism experiences			
4	accommodation in the	Collaboration between providers and users			
	tourism industry				
5	Consumption and	Consumption decisions			
	behaviour	Purchase intention behaviours			
	Impact, travel and	Impact of (previous) trips on user acceptance			
6	Augmented Reality on	Augmented Reality experiences during travel			
U	user acceptance	User motivation to engage in Augmented Reality			
	user acceptance	experiences			
7	Quality and flow of	Quality of experience			
	experience	Optimal flow state			
8	Attitudes	s Perception of technology in specific contexts			
9	Uaritaga	Preservation of cultural heritage			
9	Heritage	Appreciation of culture and history			
	Source: Authors' own alghoration				

Source: Authors' own elaboration

Figure 6 highlights the importance of understanding the dynamics driving changes in tourism today, where technology plays a fundamental role in shaping travellers' experiences and the way they interact with tourism destinations. Technology adoption, co-creation of experiences, quality of user experience, and heritage preservation are relevant areas for researchers and tourism managers to consider in an increasingly digitised world. These clusters open the door to new opportunities and challenges in the quest to offer remarkable and culturally enriched tourism experiences in the modern era.

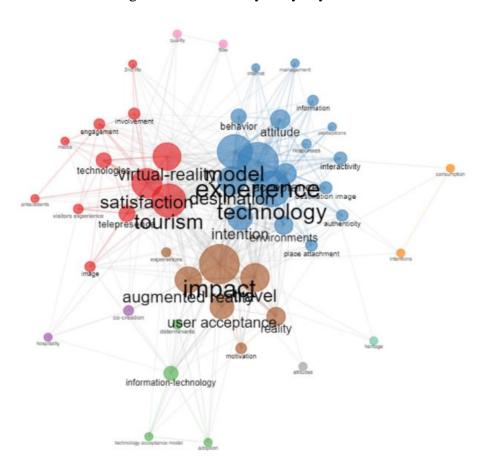


Figure 6. Cluster analysis by keywords

Source: Authors' elaboration based on Bibliometrix software.

4.8. Theorical framework's contributions

This section discusses different theoretical frameworks, represented as novel or modifications of the existing frameworks. The article "Investigating Metaverse Marketing for Travel and Tourism" (Tsai S., 2022) discusses concepts related to enactive cognition and positive psychology that attempt to shed light on the implications of the Metaverse from the point of view of the user's prior experience with such technology and with respect to decision-making by companies that manage travel and tourism services. Another article, "Metaverse in Tourism" (Chen *et al.*, 2023), presents and analyses a modified conceptual model that draws on destination competitiveness and stakeholder theory to analyse the key drivers and barriers faced by the tourism industry in implementing Metaverse-based solutions. Another example is the article "Rethinking Metaverse tourism" (Yang and Wang, 2023) which analyses a classification

called "4Is" to classify Metaverse experiences from a tourism perspective, proposing an interdisciplinary research plan. The paper "The Metaverse in the hospitality and tourism industry" (Gursoy *et al.*, 2022) addresses the development of experiences in the context of the hospitality industry. These theoretical frameworks reflect the complexity and scope of research on Metaverse in the tourism industry, highlighting the importance of considering multiple perspectives and approaches that could be used in the future to understand the complexity of the analysed field of study and its impact on the tourism industry. Finally, the study "Exploring Consumer Behaviour in virtual reality Tourism Using an Extended Stimulus-Organism-Response Model" aims to provide insights into the impact of virtual reality on the tourism industry. By extending the traditional stimulus-organism-response (SOR) model (Morrison *et al.*, 2023), this study examines consumer behaviour within virtual reality tourism contexts.

5. Future research findings and limitations

5.1. Intellectual structure

The findings derived from the thematic analysis confirm that there is increasing interest from a scientific research point of view, as shown in Figure 4. One of the major themes is "gamification in online environments" (Wei et al., 2023), underlining the importance of formulating pedagogical strategies for online educational content and reflecting on the latter for virtual education and training in the digital age (Ji *et al.*, 2023). Another relevant issue is the concept of "user acceptance". It encompasses various terms related to technology adoption, user motivation, and quality of technological solutions (Baker *et al.*, 2023).

It reflects the interest in understanding how users interact with technology and the need to optimise and personalise experiences to ensure user acceptance. The theme of "user experience" (Jo, 2023; Wei et al., 2019) stands out as one of the most relevant, including a wide range of topics related to perception and satisfaction (An *et al.*, 2021), and the influence of virtual reality on user experience in the tourism sector. There is great interest in the literature reviewed in understanding how technology associated with the Metaverse, such as virtual reality and augmented reality, affects tourist perception and satisfaction. Furthermore, it also affects loyalty to tourism destinations (Geng et al. 2023). There is a need to understand how people plan their trips and make tourism-consumption decisions. In this sense, Metaverse, in its function of promoting tourist destinations, can be key to influencing users' decision-making.

5.2. Contribution to theoretical frameworks

As outlined in Table 7, different Different theoretical frameworks are being applied in Metaverse research applied to the travel and tourism industry. An example of this is the paper "Investigating Metaverse Marketing for Travel and Tourism" (Tsai S., 2022), where concepts of active cognition and positive psychology are applied to explore the implications of the Metaverse on user experience decision-making before and during the trip. Another paper, "Metaverse in Tourism: drivers and hindrances from stakeholders' perspective" (Chen et al., 2023), works on a modified conceptual construct of tourism destination competitiveness, combined with stakeholder theory to analyse the drivers of technology in tourism and hindrances from multiple perspectives. At the other extreme, the paper "Rethinking Metaverse (Yang and Wang, 2023) introduces a classification called "4Is" to categorise experiences in the Metaverse and their application in the tourism sector. Finally, "The Metaverse in the Hospitality and Tourism Industry" (Gursoy et al., 2022) highlights the importance of creating Metaverse-based tourism experiences. These theoretical approaches reflect the complexity and scope of current research in the research area analysed, highlighting the importance and necessity of considering diverse perspectives and theoretical approaches to comprehensively understand the impact of Metaverse and its potential on the tourism industry.

5.3. Conclusions

It reveals a marked increase in article production since 2010, highlighting the growing academic and business interest in technology implied by the metaverse concept. Different theoretical frameworks have been identified and analysed as fundamental to understanding the role of Metaverse within the tourism sector. These frameworks have facilitated a deeper understanding of the implications of the Metaverse for business management and its impact on end-consumer behaviour. They highlight its potential to enhance travel experiences and offer companies new ways of engaging with customers in a more competitive and immersive environment, enabling the co-creation of experiences and the optimisation of business segmentation strategy. It is possible to enrich tourism experiences and offer innovative interaction channels between companies and users, leading to better positioning strategies and new business niches in the sector.

The identified trends and theoretical perspectives outline the current landscape and point to future research directions in the analysed field, emphasising the need to explore the full potential of Metaverse in the field of tourism. Particularly relevant is the role of these technologies in sustainability and the integration of cultural narratives in different platforms, formats, and digital platforms. In addition, there is a debate on the adoption of this technology and the security of data in Metaverse. This study lays the foundations for future academic research and practical business applications, with the aim of maximising the benefits offered by Metaverse for tourism users and companies involved in the tourism value chain, considering the possibilities of combining these technologies with others, such as blockchain or artificial intelligence (AI).

5.4. Future research and limitations

Additional research areas include the sustainability of virtual tourism, such as reducing the carbon footprint and conserving cultural heritage in the tourism industry. Investigating how cultural narratives can be integrated in Metaverse and how they affect user perception and experience is also of interest. Incorporating multisensory experiences such as simulated smells and textures for greater immersion and authenticity in virtual tourism also holds promise. From a security and privacy perspective, data management within Metaverse is crucial. In this sense, the future integration of other technologies, such as blockchain and artificial intelligence, can guarantee a secure, private and total user experience. Technology adoption is a determining factor for the success of these initiatives, and models such as the TAM and the Unified Technology Acceptance and Usage Model (UTAUT) can provide valuable results in future research. Briefly, the TAM can help to identify the propensity profiles and willingness to pay, exploring variables such as perceived usefulness and ease of use that may influence the adoption of Metaverse technologies. On the other hand, UTAUT, which has a more complex structure and considers additional variables such as performance expectancy, effort expectancy, social influence, and enabling conditions, provides a broader framework for understanding how and why users and communities adopt, or resist adopting, the Metaverse, and its associated technologies. Understanding these dynamics through the application of models such as TAM and UTAUT can enable more effective implementation of security and privacy measures associated with the systems that comprise the Metaverse, as well as a well-structured technology adoption strategy that can mitigate barriers that users might encounter when interacting in the Metaverse. These models can help stakeholders and business decisions to design more inclusive and accessible experiences, aligning Metaverse technologies with the expectations and needs of users in the context of the tourism sector. In this sense, it would be beneficial to consider future longitudinal research incorporating primary data as important for understanding the long-term effects of Metaverse on the tourism sector. When evaluating the effectiveness of Metaverse-based solutions for the tourism sector in the companies involved, studies incorporating the Analytical Hierarchical Process (AHP) methodology could be considered, as it could help decision-making structures in the business value chain.

This work is based on a comprehensive analysis of the subject matter analysed, based on technological and user experience aspects, containing a limited exploration from the point of view of the sociocultural and ethical implications of Metaverse in the tourism sector (Figure 7). From a future improvement point of view, it would be useful to consider future longitudinal research to understand the long-term implications of the use of Metaverse in the tourism industry and how user perceptions and experiences evolve over time with the continued use of such immersive technology. Finally, the exclusive use of the WoS database may mean that some relevant documents were left behind. Extending this study to other databases in the future may increase our knowledge of the phenomenon analysed. Finally, future research could explore a broader set of keywords to expand the scope of the analysed topic.

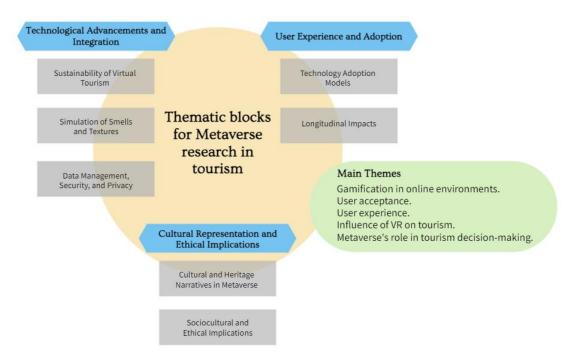


Figure 7. Mapping the Intellectual Landscape.

Source: Authors' own elaboration

6. Theoretical implications.

The implications for the management of Metaverse integration in the tourism sector are manifold, ranging from comparative studies of different platforms for optimal user engagement to addressing ethical challenges related to privacy and data security and exploring collaboration strategies within virtual environments. This involves the integration of technologies such as blockchain and artificial intelligence and the need to create new metrics for evaluating the impact of investments and incorporating theoretical frameworks into marketing strategies to understand the drivers and barriers to the growth of technology in the tourism sector. The development of a robust technology infrastructure and the prioritisation of data security, which entails public-private collaboration, is essential. Gradual adoption of Metaverse in the tourism industry is recommended, suggesting a mix of physical and virtual experiences through hybrid models. Strategies for managing user resistance to immersive experiences and fostering user acceptance are fundamental and future research is proposed in this regard.

7. Implications for management.

Further research is required, as shown in Figure 8. These include the exploration of how different Metaverse platforms influence user engagement and user experience, which requires comparative studies for a better theoretical understanding. Ethical and security concerns within Metaverse, especially with regard to privacy, trust, and security, also point to the need for theoretical exploration in these areas. Underlying this is an interest in understanding the factors that influence the adoption of technology in the tourism sector and how the proposed theoretical frameworks can be included and developed in tourism product marketing strategies to understand consumer behaviour and strategic decision-making. Highlighting the impact of these theoretical frameworks on the development and implementation of effective marketing strategies in the dynamic tourism industry.

Comparative Studies and Regulations **Risk Assessment and Collaboration Strategies** Impact Measurement, Complementary Integration of Technologies, and ROI Frameworks and **Technological** Strategic Reorientation Infrastructure and Data Gradual adoption and Security implementation of Comprehensive hybrid models customer service and interface Managing resistance to immersive experiences Collaboration with retailers and other stakeholders

Figure 8. Implications for management: main action points.

Source: Authors' own elaboration

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