

# VIRTUAL REALITY: ENHANCING INCLUSIVE TOURISM EXPERIENCES

Almir Peštek<sup>57</sup>  
Amra Banda<sup>58</sup>  
Belma Durmišević<sup>59</sup>  
Amila Pilav-Velić<sup>60</sup>  
Selma Rizvić<sup>61</sup>  
Nadija Hadžijamaković<sup>62</sup>

DOI: 10.35666/25662880.2024.10.173

UDC: 338.48:004.946

**Abstract:** Virtual reality (VR) represents an innovative tool increasingly utilized in tourism, allowing users to explore and experience tourist destinations in a completely different way. While the application of VR in tourism is still in its early stages, it holds significant potential for creating a more immersive and inclusive tourist experience. The aim of this research is to identify and analyze the practical aspects of applying VR in tourism sector and to emphasize the critical role of VR technology in promoting inclusive tourism by broadening access for diverse audiences, including individuals with disabilities and those who may face barriers to travel. The methodological approach involved qualitative research based on focus groups with representatives from the private, public, and civil sectors, aiming to explore perceptions and potential applications of VR in tourism promotion, with a special focus on enhancing accessibility and providing equal tourist experiences for all. The results revealed strong awareness of VR technologies in tourism among participants, alongside an interest in leveraging these tools to promote tourism and foster inclusivity. It was found that VR can be used as a mean to overcome physical barriers, enabling individuals with disabilities and older adults to access tourist experiences that would otherwise be unavailable to them. This study can serve as a basis for future research of the role of VR technology and modalities of its use for inclusive tourism.

**Keywords:** virtual reality, tourism development, tourism experience, inclusive tourism

---

<sup>57</sup> Full Professor, School of Economics and Business, University of Sarajevo, Trg oslobođenja – Alija Izetbegović, 71000 Sarajevo, almir.pestek@efsa.unsa.ba

<sup>58</sup> Assistant Professor, Department of Geography, Faculty of Science, University of Sarajevo, Zmaja od Bosne 33 – 35, 71000 Sarajevo, amra.banda@pmf.unsa.ba

<sup>59</sup> Teaching Assistant, Department of Geography, Faculty of Science, University of Sarajevo, Zmaja od Bosne 33 – 35, 71000 Sarajevo, belma.durmisevic@pmf.unsa.ba

<sup>60</sup> Full Professor, School of Economics and Business, University of Sarajevo, Trg oslobođenja – Alija Izetbegović, 71000 Sarajevo, amila.pilav-velic@efsa.unsa.ba

<sup>61</sup> Full Professor, Faculty of Electrical Engineering, University of Sarajevo, Zmaja od Bosne bb, 71000 Sarajevo, srizvic@etf.unsa.ba

<sup>62</sup> Teaching Assistant, School of Economics and Business, University of Sarajevo, Trg oslobođenja – Alija Izetbegović, 71000 Sarajevo, nadija.hadzijamakovic@efsa.unsa.ba

## INTRODUCTION

Virtual reality (VR) is a powerful tool which allows the creation of authentic experiences, even when displaying completely imaginary and fantastical content (Slater & Sanchez-Vives, 2016). This type of technology refers to the utilization of a computer-generated 3D environment, known as a "virtual environment," in which users can move and potentially interact, creating a real-time simulation that engages one or more of the user's senses (Guttentag, 2010). Three elements distinguish VR experiences from others: 1) visualization – the ability to look around, typically through a head-mounted display; 2) immersion – the degree to which participants forget they are in a simulation; 3) interactivity – the control participants have over the experience using sensors, joysticks, and graphical manipulations, creating a sense of presence (Cruz-Neira et al., 1994; Williams & Hobson, 1995). Immersion is crucial to the VR experience (Rose et al., 2018;) as it represents the process by which the environment becomes temporarily closer (Cowan et al., 2023), or the level of detachment from the reality (Disztinger et al., 2017). Thanks to the development of VR technology, users experience greater immersion through authentic visuals (Jang & Park, 2019). Immersion becomes complete when the user can manipulate 3D resources, fostering empathy between the user and the virtual experience (Castro et al., 2018). Another concept, often conflated with immersion, is presence (Egger & Neuburger, 2020). Unlike immersion, which involves an objective description of the technology used, presence refers to the psychological experience where users subjectively feel that they are truly in the virtual environment (Gutierrez et al., 2008; Slater & Sanchez-Vives, 2016). While presence denotes the feeling of "being there," psychological immersion focuses on the experience of "being surrounded" (Slater & Wilbur, 1997; Fan et al., 2022). High physical immersion technologies can evoke a high level of presence (Rauscher et al., 2020), and the most notable effect of increased presence is enjoyment (Yung et al., 2020).

Given that tourism products are intangible and consumers cannot test them in advance (Yung & Khoo-Lattimore, 2017), VR has become a highly popular tool for enhancing visitor experiences and promoting destinations (Wang et al., 2022). Initially, VR technology was used to promote tourism products as a marketing tool, but it has now become crucial in the context of new digital alternatives in tourism (Baran & Baran, 2022). In a VR journey, the key characteristic of real tourism is absent – the person does not change their environment or physically move through space (Voronkova, 2018). The COVID-19 pandemic and travel restrictions have amplified the significance of digitalization in tourism. With the help of VR and virtual tours, users create realistic experiences, allowing potential travelers to familiarize themselves with destinations before actual travel and sparking their desire to visit (Williams & Hobson, 1995; Yung et al., 2020; Voronkova, 2018; Zeng et al., 2022). Although it can complement existing tourism experiences, Suprpto et al. (2023) noted that VR cannot fully replace everything that physical travel provides. With additional information and more immersive content (Wan et al., 2007; Vishwakarma et al., 2019), VR can supplement existing attractions (Rácz & Zilizi, 2019; Coghlan & Carter, 2020), serve as an alternative

to real experiences (Lee & Gretzel, 2012), and assist in decision-making (Buhalis & Law, 2008). In this way, it influences the creation of a positive destination image (Tussyadiah et al., 2018; Zeng et al., 2022).

Virtual tourism enables visits to protected locations as well as places that are otherwise inaccessible, such as space (Wagler & Hanus, 2018). In addition to its applications in planning and management, marketing, entertainment, education, and accessibility, VR also has significant uses in heritage preservation (Guttentag, 2010). The deterioration of natural attractions, cultural landmarks, infrastructure, artifacts, and the environment presents a serious challenge for all tourist destinations, which is why their preservation has started to attract increasing attention (Bec et al., 2021). Many monuments have been destroyed due to the effects of time, wars, natural disasters, and human factors. With the help of computer technologies, ancient monuments can be accurately reconstructed and displayed in digital formats. Research in this field not only enables the restoration of actual models but also brings significant value to the history, culture, and science of human civilization (Van Nguyen et al., 2022). VR contributes to education, raising ecological awareness, and promoting sustainability, offering tourists the experience of a destination in a virtual way, without the need for physical presence. In this way, the direct impact of tourists on the natural and cultural resources of the destination is significantly reduced (Yuen et al., 2022).

## **THEORETICAL FRAMEWORK**

It is estimated that around 1.3 billion people, or 16% of the global population, have some degree of disability (World Health Organization, 2023), and more than 46% of people over the age of 60 experience disability. Unfortunately, individuals with disabilities face many barriers, such as negative attitudes, environmental, and institutional obstacles, which make it difficult for them to fully and equitably participate in various areas of life (United Nations, n.d.). Inclusion, disability, aging populations, and tourism are increasingly attracting the attention of researchers due to their impact on both tourism supply and demand (Buhalis & Darcy, 2010). Although "Inclusive Tourism" is often referred to as "Accessible Tourism" or even "Disabled Tourism" (Münch & Ulrich, 2011), these terms should be distinguished. Accessibility enables the development of products, services, and environments that are available to everyone, giving them the ability to use and benefit from them (Gillovic & McIntosh, 2020). Accessible tourism is a type of tourism that includes collaboration among different stakeholders to ensure access for individuals with disabilities, including mobility, vision, hearing, and cognitive dimensions of accessibility, with the aim of functioning independently, with equality and dignity, through the provision of universally designed tourism products, services, and environments (Darcy & Dickson, 2009). From this, it can be concluded that the development of inclusive destinations and accessible tourism experiences benefits a broader segment of the community, thereby contributing to the social sustainability of the industry (Michopoulou et al., 2015). Accessible tourism is just one part of inclusive tourism, as inclusive tourism encompasses all forms of social and economic

exclusion and division. Inclusive tourism is described as "transformative tourism in which marginalized groups are engaged in ethical production or consumption of tourism and the sharing of its benefits" (Scheyvens & Biddulph, 2017). Inclusive tourism goes beyond issues of accessibility and represents an ideal that involves the active participation of all relevant stakeholders, including individuals with disabilities, in the policy, planning, and management of accessible tourism development (Nyanjom et al., 2018). It contributes to improving the quality of life, socio-psychological adaptation, and rehabilitation of individuals with disabilities (Strelnikova et al., 2023).

A large number of individuals with disabilities have never participated in tourism activities, despite their desire to do so (Moura et al., 2023). Tourists face certain barriers when participating in leisure activities; however, individuals with disabilities are particularly affected by these limitations to a significantly greater extent (Kennedy et al., 1987). Therefore, it is essential to recognize the diverse needs of users and provide accurate information about available services. Tourism professionals must take these needs into account when planning and promoting tourism activities (Loi & Kong, 2015). Due to various physical barriers, such as the inability to access certain locations for wheelchair users due to the width of doors or stairs, individuals with disabilities may be restricted in their ability to travel. In addition, they may face challenges such as difficulties in reading signs and other indicators (Lee et al., 2021; Reindrawati et al., 2022). Smith (1987) identified the barriers and challenges faced by individuals with disabilities when traveling. These barriers were divided into intrinsic, environmental, and interactive. Given that technology is becoming increasingly prevalent in the tourism industry, it is evident that accessibility is not just a formality, but a key principle that must be incorporated into the design and application of technological solutions in tourism (Stankov et al., 2024). Technology has long been helpful to individuals with disabilities, assisting them in living and working independently (Germann et al., 2003). The Fourth Industrial Revolution offers solutions to overcome significant inequalities and limited access to tourism and hospitality for older individuals and people with disabilities (Ramukumba, 2024).

## **METHODOLOGY**

VR technology has significant potential for application in various aspects of tourism, including the development of new tourism products, enhancement of tourist experiences, destination promotion, sustainability, and increased inclusivity. In this context, the primary purpose of this research is to identify both the opportunities and obstacles for the future application of VR technologies in the development of more inclusive tourism.

The research employs a qualitative approach, drawing on the methodology used in the study by Peštek et al. (2024). Since inclusion in tourism in Bosnia and Herzegovina is an under-researched topic, the focus group method proved to be the most suitable for gathering the opinions and perspectives of various tourism stakeholders. Focus groups were conducted

during March and April 2024 in Sarajevo and Mostar, with a total of 18 participants (11 in the first group and 7 in the second). The participants included representatives of institutions at various levels of government, the non-governmental sector, tourist guides, tourism business owners, and other relevant stakeholders.

The discussions during the focus groups were recorded with the participants' consent and subsequently transcribed. The main research questions, based on relevant literature, focused on the following:

1. The experience and knowledge that tourism professionals have regarding VR technology.
2. The potential of VR technology to contribute to the development of inclusive and sustainable tourism.

## RESULTS AND DISCUSSION

Participants expressed very positive experiences with VR, emphasizing its potential as an innovative tool for promoting tourist attractions. For most of the focus group participants, augmented and virtual reality technologies became familiar through the use of mobile phones, gaming platforms, and visits to tourism fairs (Peštek et al., 2024).

*"At tourism fairs around the world, the most attractive booths are those offering VR experiences. We had to buy tickets in advance because those had the longest queues".*

Virtual reality experiences are often highlighted as some of the most immersive user experiences that can be encountered, excluding real-world situations (Dombrowski et al., 2019). Inclusive design does not entail creating a single solution for all, but rather creating various opportunities for participation, ensuring that everyone can feel a sense of belonging (Holmes, 2018). Tolvanen (2023) concluded that VR headsets can be useful for individuals with autism, but are not recommended for all members of the target group. VR headsets can serve as assistive tools for individuals of all ages and with various impairments, including those with illnesses, injuries, vision and hearing impairments, as well as mental disorders such as dementia and autism, as they facilitate access to education, employment, healthcare, and social inclusion, supporting independence and active participation.

VR helps people lead dignified and meaningful lives, contributing to inclusion and productivity (GREAT Summit, 2018; The Lancet, 2020; in Tolvanen, 2023). Shukla et al. (2024) highlighted the potential of VR in promoting inclusive tourism, which benefits individuals with different limitations. Participants emphasized that VR can make different destinations accessible for certain groups.

*"Through this approach, individuals with certain difficulties can be made happy".*

*"The key advantage of VR is inclusion, that is, tourism for all".*

Iftikhar et al. (2022) and Voronkova (2018) argue that VR will benefit people with disabilities the most, especially at cultural heritage destinations where full accessibility is often limited (Marasco & Balbi, 2019). "Virtual accessibility" of tourist destinations is improved through virtual tourism (Lu et al., 2021), which, by allowing visits to more difficult-to-access natural and cultural landmarks, promotes inclusivity (Stankov et al., 2024). VR, by offering an alternative for people with disabilities who wish to experience tourism (Perry Hobson & Williams, 1995), helps overcome physical barriers and provides interactive participation (Ford, 2001), ensuring accessible tourism for all (Ozdemir, 2021). Sussman & Vanhegan (2000) confirmed in their research that virtual vacations present a good opportunity for tourists with disabilities. Virtual spaces provide museums with an opportunity to enhance the visitor experience through educational and entertaining content. To be inclusive, these spaces must ensure equal access and equal cultural and educational opportunities for all (Caldarelli et al., 2022). In indoor spaces, there are barriers that exclude certain visitors, so virtual tourism will create access to artistic and architectural heritage that is otherwise unavailable (Minucciani & Garnero, 2015). Immersive virtual reality technology has significant potential for evaluating architectural designs, as it allows navigation through designed spaces and interaction with their elements, making them feel real (Lach et al., 2020). Shaker et al. (2019) demonstrated that VR can positively impact individuals with intellectual and developmental disabilities (IDDs). VR tours showed potential in helping IDDs, as they enjoy the experience of freely exploring locations with easy access to information. Participants, both with and without disabilities, noted that the VR tour was immersive and enjoyable. They also suggested that the technology could be useful in other situations.

VR has proven to be an effective tool for assessing the accessibility of tourist destinations, giving users the opportunity to explore them from the comfort of their homes (Epuran et al., 2020). It helps parents and children with developmental disabilities explore a destination, identify attractions and barriers, and gain a better understanding of the places they want to visit, bridging the gap between perceptions of a destination before the visit and the actual experience at that destination (Tecău et al., 2019). One participant stated that VR could be very helpful for elderly individuals with limited mobility.

*"There is an increasing number of tourists who belong to the older age group, or those with limited mobility. With the help of VR, they can explore different locations that are otherwise more difficult for them to access".*

Hao et al. (2024), investigating the impact of VR on engagement and travel decisions of older adults, with a specific focus on the importance of emotional and informational content, found that emotionally engaging virtual tours significantly contribute to increased confidence in travel and reduced stress among older adults, while simultaneously increasing their travel intentions.

## **CONCLUSION**

VR represents a technology that significantly contributes to the development of tourism by providing access to tourist experiences for a wide range of users, including people with disabilities and older adults. This research emphasizes the potential of VR to enhance the tourism industry, making it more accessible and inclusive. The advancement of VR technology in the future will undoubtedly play an even more important role in this context, as it allows for interactive exploration of destinations, creating a sense of presence and immersion. As a key tool for increasing accessibility, VR enables the promotion of destinations in a way that fosters emotionally engaging experiences that encourage future travel.

Considering the specific challenges faced by people with disabilities, VR offers significant potential for their inclusion in tourism activities, overcoming physical barriers and enabling them to experience destinations that would otherwise be inaccessible. One of the key aspects of VR's application in tourism is the ability for people with disabilities to explore tourist destinations in advance, gain useful information, familiarize themselves with the environment, and plan their trips without stress. This is especially useful for those facing physical challenges or psychological barriers related to travel.

Moreover, VR allows older adults with limited mobility to visit destinations, reducing the need for physically demanding or risky travel. The role of VR in promoting inclusive tourism is not only about providing access but also creating a sense of belonging. Virtual tours enable people with disabilities and older adults to actively participate in tourist activities, making them interactive, enjoyable, and educational experiences. The development of these technologies can further improve tourism accessibility by offering more detailed and personalized virtual tours tailored to the needs of users. While VR cannot fully replace the physical travel experience, it significantly expands its potential through innovative digital formats.

## **Acknowledgement**

The research for this paper was conducted with the support of the Federal Ministry of Education and Science.

## REFERENCES

1. Baran, Z., & Baran, H. (2022). The future of digital tourism alternatives in virtual reality. *Handbook of Research on Digital communications, internet of things, and the future of cultural tourism*, IGI Global, pp. 58-84.
2. Bec, A., Moyle, B., Schaffer, V., & Timms, K. (2021). Virtual reality and mixed reality for second chance tourism. *Tourism Management*, 83, 104256.
3. Buhalis, D., & Darcy, S. (2010). Accessible tourism: Concepts and issues. *Channel View Publications*.
4. Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet – The state of eTourism research. *Tourism management*, 29(4), pp. 609-623.
5. Caldarelli, A., Di Tore, S., Ceccacci, S., Todino, M. D., Campitiello, L., & Giaconi, C. (2022). Co-designing Immersive and Inclusive Virtual Museum with children and People with Disabilities: a Pilot Study. In *2022 International Conference on Computational Science and Computational Intelligence (CSCI)*, IEEE, pp. 1964-1969.
6. Castro, J. C., Quisimalin, M., Córdova, V. H., Quevedo, W. X., Gallardo, C., Santana, J., & Andaluz, V. H. (2018). Virtual reality on e-Tourism. In *IT Convergence and Security 2017*, 2, Springer Singapore, pp. 86-97.
7. Coghlan, A., & Carter, L. (2020). New Product Design: Creating a Digital VR Game to Promote the Conservation of Nature-based Tourism Attractions, The Emerald Handbook of ICT in *Tourism and Hospitality*, pp. 167–179.
8. Cowan, K., Ketron, S., Kostyk, A., & Kristofferson, K. (2023). Can you smell the (virtual) roses? The influence of olfactory cues in virtual reality on immersion and positive brand responses. *Journal of retailing*, 99(3), pp. 385-399.
9. Cruz-Neira, C., Sandin, D. J., Defanti, T. A., Kenyon, R. V., & Hart, J. C. (1994). The cave: audio visual experience automatic virtual environment. *Communications of the ACM*, 35 (6), pp. 65-72.
10. Darcy, S., & Dickson, T. J. (2009). A whole-of-life approach to tourism: The case for accessible tourism experiences. *Journal of Hospitality and Tourism Management*, 16(1), pp. 32-44.
11. Disztinger, P., Schlögl, S., & Groth, A. (2017). Technology acceptance of virtual reality for travel planning. *Information and Communication Technologies in Tourism 2017: Proceedings of the International Conference in Rome, Italy, January 24-26, 2017*, pp. 255-268.
12. Dombrowski, M., Smith, P. A., Manero, A., & Sparkman, J. (2019). Designing inclusive virtual reality experiences. In *Virtual, Augmented and Mixed Reality. Multimodal Interaction: 11th International Conference, VAMR 2019, Held as Part of the 21st HCI International Conference, HCII 2019, Orlando, FL, USA, July 26–31, 2019, Proceedings, Part I* 21, Springer International Publishing, pp. 33-43.

13. Egger, R., & Neuburger, L. (2020). Augmented, virtual, and mixed reality in tourism. *Handbook of e-Tourism*, pp. 1-25.
14. Epuran, G., Tecau, A. S., Constantin, C. P., Tescasiu, B., & Chitu, I. B. (2020). Opportunities of Using New Technologies (VR/AR) in Order to Facilitate the Access of Persons with Disabilities to Tourism Products. *Bulletin of the Transilvania University of Brasov. Series V: Economic Sciences*, pp. 55-64.
15. Fan, X., Jiang, X., & Deng, N. (2022). Immersive technology: A meta-analysis of augmented/virtual reality applications and their impact on tourism experience. *Tourism Management*, 91, 104534.
16. Ford, P. J. (2001). Paralysis lost: Impacts of virtual worlds on those with paralysis. *Social Theory and Practice*, 27(4), pp. 661–680.
17. Gillovic, B., & McIntosh, A. (2020). Accessibility and inclusive tourism development: Current state and future agenda. *Sustainability*, 12(22), 9722.
18. GREAT Summit (2018). Assistive technology policy: a position paper from the first global research, innovation, and education on assistive technology (GREAT) summit, Disability and Rehabilitation: Assistive Technology.
19. Gutierrez, M., Vexo, F., & Thalmann, D. (2008). *Stepping into Virtual Reality*. 1st ed.; Springer Science & Business Media: Lausanne, Switzerland
20. Guttentag, D. A. (2010). Virtual reality: Applications and implications for tourism. *Tourism management*, 31(5), pp. 637-651.
21. Hao, F., Back, K.-J., & Chon, K.K.S.K.-S. (2024). Age-inclusive hospitality and tourism: navigating the metaverse travel with avatar. *International Journal of Contemporary Hospitality Management*
22. Holmes, K. (2018). *Mismatch: How inclusion shapes design*. MIT Press.
23. Iftikhar, R., Khan, M. S., & Pasanchay, K. (2023). Virtual reality tourism and technology acceptance: a disability perspective. *Leisure Studies*, 42(6), pp. 849-865.
24. Jang, Y., & Park, E. (2019). An adoption model for virtual reality games: The roles of presence and enjoyment. *Telematics and Informatics*, 42, 101239.
25. Kennedy, D. W., D. R. Austin, & R. W. Smith (1987). *Special Recreation: Opportunities for Persons with Disabilities*. Philadelphia: Saunders College Publishing.
26. Lach, E., Benek, I., Zalewski, K., Skurowski, P., Kocur, A., Kotula, A., ... & Wyrobek, T. (2020). Immersive virtual reality for assisting in inclusive architectural design. In *Man-Machine Interactions 6: 6th International Conference on Man-Machine Interactions, ICMMI 2019, Cracow, Poland, October 2-3, 2019*, Springer International Publishing, pp. 23-33.
27. Lee, B., An, S., Suh, J. (2021). How Do Tourists with Disabilities Respond to Service Failure? An Application of Affective Events Theory. *Tour. Manag. Perspect.* 38, 100806.
28. Lee, W., & Gretzel, U. (2012). Designing persuasive destination websites: A mental imagery processing perspective. *Tourism Management*, 33(5), pp. 1270–1280.

29. Loi, K. I., & Kong, W. H. (2015). People with disabilities (PwD) in the tourism industry-concepts and issues.
30. Lu, J., Xiao, X., Xu, Z., Wang, C., Zhang, M., & Zhou, Y. (2021). The potential of virtual tourism in the recovery of tourism industry during the COVID-19 pandemic. *Current Issues in Tourism*, pp. 1–17.
31. Marasco, A., & Balbi, B. (2019). Designing accessible experiences for heritage visitors through virtual reality. *E-review of Tourism Research*, 17(3).
32. Michopoulou, E., Darcy, S., Ambrose, I., & Buhalis, D. (2015). Accessible tourism futures: the world we dream to live in and the opportunities we hope to have. *Journal of Tourism Futures*, 1(3), pp. 179-188.
33. Minucciani, V., & Garnero, G. (2015). Pressure of Tourism on Heritage and Technologies for an inclusive society. In *Fabbrica della Conoscenza numero 56*. La scuola di Pitagora editrice. pp. 1671-1674.
34. Moura, A., Eusébio, C., & Devile, E. (2023). The ‘why’ and ‘what for’ of participation in tourism activities: travel motivations of people with disabilities. *Current Issues in Tourism*, 26(6), pp. 941-957.
35. Münch, H., & Ulrich, R. (2011). Inclusive tourism: Accessible tourism. In *The Long Tail of Tourism: Holiday Niches and their Impact on Mainstream Tourism*, Wiesbaden: Gabler, pp. 159-169.
36. Nyanjom, J., Boxall, K., & Slaven, J. (2018). Towards inclusive tourism? Stakeholder collaboration in the development of accessible tourism. *Tourism Geographies*, 20(4), pp. 675-697.
37. Ozdemir, M. A. (2021). Virtual reality (VR) and augmented reality (AR) technologies for accessibility and marketing in the tourism industry. In *ICT tools and applications for accessible tourism*. IGI Global. pp. 277-301.
38. Perry Hobson, J. S., & Williams, A. P. (1995). Virtual reality: A new horizon for the tourism industry. *Journal of Vacation Marketing*, 1(2), pp. 124–135.
39. Peštek, A., Rizvić, S., Banda, A., Pilav-Velić, A., Durmišević, B. & Hadžijamaković, N. (2024). Virtual Reality and Promotion of Tourism Destinations: The Case of Federation of Bosnia and Herzegovina. *Interdisciplinary Management Research XX*, Faculty of Economics and Business in Osijek, pp. 568-587.
40. Rácz, A., & Zilizi, G. (2019). Virtual reality aided tourism. In *2019 Smart city symposium Prague (SCSP)*, IEEE, pp. 1-5.
41. Ramukumba, T. (2024). Accessibility and Inclusion of People with Disabilities in the Tourism and Hospitality Industry Within the Fourth Industrial Revolution: A Review. In: Ndhlovu, E., Dube, K., Makuyana, T. (eds) *Tourism and Hospitality for Sustainable Development*, Springer, Cham.
42. Rauscher, M., Humpe, A., & Brehm, L. (2020). Virtual reality in tourism: is it ‘real’ enough?. *Academica Turistica-Tourism and Innovation Journal*, 13(2).
43. Reindrawati, D.Y., Noviyanti, U.D.E., Young, T. (2022). Tourism Experiences of People with Disabilities: Voices from Indonesia. *Sustainability*, 14, 13310.

44. Germann, C., Broida, J. K., & Broida J. M. (2003). Using Computer-Based Virtual Tours to Assist Persons with Disabilities. *Educational Technology & Society*, 6(3), pp. 53-60.
45. Rose, T., Nam, C. S., & Chen, K. B. (2018). Immersion of virtual reality for rehabilitation: Review. *Applied Ergonomics*, 69(1), pp. 153–161.
46. Scheyvens, R., & Biddulph, R. (2017). Inclusive tourism development. *Tourism Geographies*, 20(4), pp. 589-609.
47. Shaker, A., Lin, X., Kim, J. H., Sharma, G., & Devine, M. A. (2019). Design of a virtual reality tour system for people with intellectual and developmental disabilities: a case study. *Computing in Science & Engineering*, 22(3), pp. 7-17.
48. Shukla, V., Rana, S., & Prashar, S. (2024). Examining the potential of virtual and augmented reality in enhancing tourism experiences. *The Bottom Line*
49. Slater, M., & Sanchez-Vives, M. V. (2016). Enhancing our lives with immersive virtual reality. *Frontiers in Robotics and AI*, 3, 74.
50. Slater, M., & Wilbur, S. (1997). A Framework for Immersive Virtual Environments (FIVE): Speculations on the Role of Presence in Virtual Environments. *Presence: Teleoperators and Virtual Environments*, 6(6), pp. 603–616.
51. Smith, R. W. (1987). Leisure of disable tourists. Barriers to participation. *Annals of Tourism Research*, 14(3), pp. 376–389.
52. Stankov, U., Vujičić, M. D., Orero, P., & Gretzel, U. (2024). Accessibility of tourism 4.0—designing more meaningful and inclusive tourist experiences. *Universal Access in the Information Society*, pp. 1-4.
53. Strelnikova, M., Ivanova, R., Skrobotova, O., Polyakova, I., & Shelopugina, N. (2023). Development of inclusive tourism as a means of achieving sustainable development. *Journal of Law and Sustainable Development*, 11(1), e0273-e0273.
54. Suprpto, W., Kempa, S., & Widjaja, W. (2023). Virtual Reality Tourism, can it replace the real tourism experience?. In *Proceedings of the 2023 11th International Conference on Computer and Communications Management*, pp. 90-94.
55. Sussmann, S., & Vanhegan, H. (2000). Virtual Reality and the Tourism Product Substitution or Complement?. *ECIS 2000 Proceedings*. p. 117.
56. Tecău, A. S., Brătucu, G., Tescașiu, B., Chițu, I. B., Constantin, C. P. & Foris, D. (2019). Responsible Tourism—Integrating Families with Disabled Children in Tourist Destinations. *Sustainability*, 11(16), p. 4420.
57. The Lancet (2020). The Digital and Assistive Technologies for Ageing initiative: learning from the GATE initiative.
58. Tolvanen, S. (2023). Inclusion of people on the autism spectrum: accessible virtual tourism services. Thesis. Laurea University of Applied Sciences
59. Tussyadiah, I. P., Wang, D., Jung, T. H., & Tom Dieck, M. C. (2018). Virtual reality, presence, and attitude change: Empirical evidence from tourism. *Tourism management*, 66, pp. 140-154.

60. United Nations (n. d.). Ageing and disability. Department of Economic and Social Affairs -Social Inclusion. Available at <https://social.desa.un.org/issues/disability/disability-issues/ageing-and-disability>
61. Van Nguyen, S., Le, S. T., Tran, M. K., & Tran, H. M. (2022). Reconstruction of 3D digital heritage objects for VR and AR applications. *Journal of Information and Telecommunication*, 6(3), pp. 254-269.
62. Vishwakarma, P., Mukherjee, S., & Datta, B. (2019). Antecedents of adoption of virtual reality in experiencing destination: A study on the Indian consumers. *Tourism Recreation Research*, 45(1), pp. 42-56.
63. Voronkova, L. P. (2018). Virtual tourism: on the way to the digital economy. In *IOP Conference Series: Materials Science and Engineering*, 463, 042096. IOP Publishing.
64. Wagler, A., & Hanus, M. D. (2018). Comparing virtual reality tourism to real-life experience: Effects of presence and engagement on attitude and enjoyment. *Communication Research Reports*, 35(5), pp. 456-464.
65. Wan, C. S., Tsaur, S. H., Chiu, Y. L., & Chiou, W. B. (2007). Is the advertising effect of virtual experience always better or contingent on different travel destinations?. *Information Technology & Tourism*, 9(1), pp. 45–54.
66. Wang, F., Huang, S., Morrison, A. M., & Wu, B. (2022). The effects of virtual reality tourism involvement on place attachment and behavioral intentions: virtual reality tourism of the Yellow Crane Tower in Wuhan. *Asia Pacific Journal of Tourism Research*, 27(3), pp. 274-289.
67. Williams, P., & Hobson, J. P. (1995). Virtual reality and tourism: fact or fantasy?. *Tourism management*, 16(6), pp. 423-427.
68. World Health Organization (2023). Disability. Available at <https://www.who.int/news-room/fact-sheets/detail/disability-and-health>
69. Yuen, K. F., Chua, J., Li, K. X., & Wang, X. (2022). Consumer's adoption of virtual reality technologies for marine conservation: Motivational and technology acceptance perspectives. *Technological Forecasting and Social Change*, 182, 121891.
70. Yung, R., & Khoo-Lattimore, C. (2017). New realities: a systematic literature review on virtual reality and augmented reality in tourism research. *Current issues in tourism*, 22(17), pp. 2056-2081.
71. Yung, R., Khoo-Lattimore, C., & Potter, L. E. (2020). Virtual reality and tourism marketing: Conceptualizing a framework on presence, emotion, and intention. *Current Issues in Tourism*, 24(11), pp. 1505-1525.
72. Zeng, Y., Liu, L., & Xu, R. (2022). The effects of a virtual reality tourism experience on tourist's cultural dissemination behavior. *Tourism and Hospitality*, 3(1), pp. 314-329.