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Augmented Reality For Smart Tourism: A Systematic Review

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ABSTRACT

AR applications, commonly known as "smart tourism," offer considerable potential in the tourism industry. They provide a fundamental change in the way travelers discover, acquire knowledge, and engage with destinations. This analysis forms the foundation for offering well-informed suggestions for future research endeavors in the field of tourism enhanced by augmented reality (AR). In order to carry out this systematic review, an extensive search was performed on various electronic databases, such as Scopus, Web of Science, and Google Scholar. The search methodology employed the utilization of pertinent keywords such as "augmented reality," "smart tourism," and "tourism experience." After the initial search, a substantial amount of articles were obtained, and subsequently, they were refined using predetermined criteria for inclusion and exclusion. This systematic review has presented a thorough and detailed summary of the current research progress on augmented reality in the field of smart tourism. The findings emphasize the diverse uses of augmented reality (AR) in boosting tourist experiences, enhancing access to information, fostering greater involvement, and advocating for sustainable tourism practices. Nevertheless, in order to fully use the potential of augmented reality (AR) in the tourism sector, it is imperative to tackle obstacles pertaining to technical constraints, user approval, integration, and privacy apprehensions.

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INTRODUCTION

The tourist sector is currently undergoing substantial changes as a result of the advent of new technology. Augmented reality (AR) is identified as a pivotal technology for improving the visitor experience(Chung, 2022). Augmented reality, also known as AR, fundamentally transforms the manner in which digital content merges with the tangible world (Botao & Iskandar, 2024). Augmented Reality (AR) enhances user experiences by superimposing text, images, videos, and 3D models onto the real-world environment, resulting in immersive and engaging encounters (Han et al., 2021).

The implementation of augmented reality (AR), also referred to as "smart tourism," has a significant amount of promise in the tourism industry (Demir & Karaarslan, 2018; Egger & Neuburger, 2020; Huang & Liu, 2021). They bring about a significant shift in the manner in which tourists discover new places, gain new information, and interact with the places they

visit. The application of this technology has the potential to completely transform the exploration process, making it more fascinating and illuminating than it has ever been before(Kontogianni et al., 2022; Siang et al., 2019; Sousa et al., 2022). Imagine that tourists would be able to view historical figures superimposed over ancient ruins or that they would be able to interact with guides that provide up-to-the-minute information on local landmarks.

An in-depth investigation was carried out in order to acquire a comprehensive understanding of the current research environment concerning augmented reality (AR) in the field of smart tourism(Zhang et al., 2022; Zhou & Lee, 2021). The purpose of this analysis is to investigate the various applications, inherent benefits, and inherent challenges that are associated with this rapidly emerging field. Augmented reality (AR) is being used to revolutionize the way people experience travel by enhancing sightseeing tours and enabling deeper cultural interaction(F. Yin et al., 2022; yu & li, 2021). This article investigates the impact that AR is having on the tourism sector, specifically how it is reinventing the way people experience tourism(Tussyadiah et al., 2018; Wei, 2019; Wijesooriya et al., 2023; Xu et al., 2024).

One of the key objectives of this research is to identify certain areas that are ready for further investigation and development. By analyzing the data that is already available, researchers make an effort to locate areas of knowledge that are lacking as well as possible paths for advancement. The purpose of this analysis is to lay the groundwork for the provision of well-informed recommendations for future research endeavors in the realm of tourism that is enhanced by augmented reality (AR).

It is anticipated that the findings that are produced from this exhaustive investigation would provide scholars and stakeholders in the industry with viewpoints that are of great value. Researchers have the opportunity to make use of these findings in order to conduct additional research into particular aspects of augmented reality (AR) technology and its applications in the tourism industry. While this is going on, businesses in the sector can implement practical ways to incorporate augmented reality (AR) into their products or services, which will allow them to preserve their competitiveness in a field that is becoming increasingly saturated. From a fundamental standpoint, the purpose of these activities is to further the development of intelligent tourism, with the ultimate goal of improving the travel experience for future generations.

RESEARCH METHOD

For the purpose of carrying out this systematic review, a comprehensive search was carried out on a number of different electronic databases, including Scopus, Web of Science, and Google Scholar, among others. In order to do the search, the method utilized pertinent terms such as "augmented reality," "smart tourism," and "tourism experience." In the beginning, a significant number of articles were obtained from the search, and after that, they were checked against a set of specified criteria to determine whether or not they should be included.

Publications that were published in scientific journals or conference proceedings, works that particularly addressed the application of augmented reality (AR) in the tourism industry, and articles written in the English language were the criteria that were used to determine which publications were appropriate for inclusion. Documents that were not relevant to augmented reality (AR) or tourism, publications that were published previous to 2018 (to ensure that the evaluation focuses on current advancements), and duplicate articles were the criteria that were used to exclude the papers from consideration.

RESULTS AND DISCUSSIONS

Augmented reality applications implemented in the field of intelligent tourism Based on the findings of a comprehensive analysis, there are a number of applications of augmented reality (AR) in the tourism business. These applications can be loosely categorized into the following industries:

1. The preservation of cultural items and customs, as well as points of interest for tourists who are visiting the area(Egger & Neuburger, 2020; Gaberli, 2019; Garbani-Nerini et al., 2022; Gek-Siang et al., 2020).

The use of augmented reality (AR) has become increasingly widespread in order to improve the overall experiences that visitors have at a variety of cultural heritage sites and tourist destinations. By superimposing digital information onto real-world monuments, Augmented Reality (AR) makes the experience of visiting a destination more enjoyable for tourists. It is possible for travelers to acquire a more profound comprehension and enjoyment of the destinations through the utilization of this technology, which provides contextual information, historical data, and interactive narratives.

2. Directional and navigational counseling and assistance (Wijesooriya et al., 2023; Xu et al., 2024; C. Z. Y. Yin et al., 2021; F. Yin et al., 2022; Zeng et al., 2022).

The programs that provide augmented reality (AR) navigation and directional assistance have proven their worth as useful aids for visitors, particularly when they are in new environments. These applications make use of global positioning system (GPS) and real-time data to provide passengers with step-by-step directions, highlight significant locations, and offer augmented reality maps. As a result, they assist tourists in navigating and exploring their surroundings.

3. The development of travel itineraries and the administration of reservations (Punzon, 2021; Rahman & Hassan, 2021; Zhang et al., 2022; Zhou & Lee, 2021).

Additionally, augmented reality (AR) has been applied in the process of event planning and reservation services. Through the use of augmented reality (AR) technology, prospective tourists are able to explore locations and preview hotel rooms. This gives them the opportunity to make decisions that are well-informed, which in turn improves customer satisfaction.

4. Interpretation and Translation (Mavragani & Dionysios, 2022; P J, 2020; Pulla Pesantez et al., 2021).

Augmented reality (AR) can be of assistance to travelers in overcoming language barriers by providing translation and interpretation services in real time. Using the camera on their smartphone to collect translation information simply by pointing it at writing or products is a great way for tourists to improve their awareness of and connection to the culture of the specific location they are visiting. In the context of smart tourism, the advantages of augmented reality

The systematic review sheds light on a multitude of benefits that can be gained by implementing Augmented Reality (AR) in the tourism industry, including the following :

1. Enhanced Tourism Experience (Olya et al., 2020; Panagiotakopoulos et al., 2021; Pasquinelli & Trunfio, 2023; Punzon, 2021)

Augmented reality (AR) offers tourists the opportunity to participate in experiences that are both immersive and engaging. This gives them the opportunity to interact with their surroundings in a manner that is both more profound and more memorable.

2. Enhanced Information Accessibility (Naramski, 2020; Neuburger et al., 2018; Zeng et al., 2022)

Augmented Reality (AR) technology enables passengers to instantaneously access relevant information, such as historical facts, cultural knowledge, and practical specifics, which enriches their understanding of diverse sites and strengthens their appreciation for them.

3. Enhanced Engagement and Interactivity (Are, 2024; Arenas et al., 2019; Avci, 2019; Azis et al., 2020; Baggio et al., 2020; Zhou & Lee, 2021)

Augmented Reality (AR) encourages dynamic interaction and connection with the environment, which ultimately results in a travel experience that is more fascinating and delightful.

4. Individualized suggestions and Experiences (Are, 2024; Botao & Iskandar, 2024; Sears & Weatherbee, 2023; Shuxratovna et al., 2023; Sia et al., 2023; Srinivasan et al., 2024; Tandafatu et al., 2024; Vaz Serra et al., 2024; Yang et al., 2023)

Augmented reality (AR) applications have the capability to be customized according to the preferences and interests of each user, thereby delivering individualized suggestions and experiences. The application of Augmented Reality (AR) has the potential to successfully boost the transmission of information regarding sustainable tourism practices and inspire tourists to behave in a conscientious manner.

Strict limitations and impediments

Although augmented reality (AR) in smart tourism presents a multitude of opportunities and benefits, the systematic examination also identifies a number of challenges and constraints, including the following:

1. The effectiveness of apps that utilize augmented reality (AR) is dependent on the capabilities of the device, the connectivity of the network, and the accurate positioning and tracking systems, all of which might be challenging in certain situations.
2. User acceptability and adoption are essential components that must be present in order for augmented reality (AR) to be successfully implemented in the tourism business. It is possible for these elements to be modified by the ease of usage, perceived benefits, and privacy issues that are linked with augmented reality.
3. When we talk about integration and interoperability, we are referring to the process of merging various systems or components so that they may function together without any problems and successfully share information about themselves. The process of integrating augmented reality (AR) applications with the existing tourism infrastructure and ensuring compatibility across a variety of platforms and devices can be considered a complex and difficult task.
4. Creation of content and maintenance of it: The development and maintenance of augmented reality (AR) content that is of high quality, accurate, and up to date while catering to a variety of locales and sites of interest requires a significant amount of resources and effort.

5. There is a potential for privacy and security issues to occur when employing augmented reality (AR) in the tourism industry, notably in connection to the collection and tracking of data, as well as the possibility that personal information could be exploited.

Prospects for Research in the Near Future

The findings of this exhaustive investigation indicate that there are a number of potential areas that could be the subject of more research, including the following suggestions : In order to get insights into user preferences, habits, and issues experienced when utilizing augmented reality (AR) applications in tourism surroundings, user experience and usability studies are being conducted. Combining Our Technologies with Those of Others: We are doing research into the possibility of combining augmented reality (AR) with other cutting-edge technologies, such as the Internet of Things (IoT), artificial intelligence (AI), and blockchain, in order to build innovative and intelligent solutions for the tourism industry. It is important to conduct research on ways to improve the accessibility and inclusivity of augmented reality (AR) applications for people who have disabilities or special requirements. This will ensure that the benefits of smart tourism are available to everyone.

The purpose of this study is to investigate the potential of Augmented Reality (AR) to promote environmentally responsible tourism practices and increase awareness of environmental issues, while simultaneously analyzing the environmental impacts that are linked with the use of AR technology. Business Models and Commercialization: The process of developing viable business models and strategies for introducing augmented reality (AR) applications into the tourist sector, with the goal of ensuring the apps' continued viability and possibility for expansion over the long term.

CONCLUSION

This systematic review has provided a comprehensive overview of the current state of research on augmented reality in smart tourism. The findings highlight the diverse applications of AR in enhancing the tourist experience, improving access to information, increasing engagement, and promoting sustainable tourism practices. However, challenges related to technical limitations, user acceptance, integration, and privacy concerns must be addressed to fully realize the potential of AR in the tourism industry.

As the adoption of AR continues to grow, further research is needed to explore user experiences, integrate AR with other emerging technologies, address accessibility and inclusivity issues, promote sustainable tourism practices, and develop viable business models.

By addressing these areas, the tourism industry can leverage the full potential of AR to create more immersive, personalized, and sustainable travel experiences for visitors worldwide.

REFERENCES

Are, R. La. (2024). Analysis of the effect of smart tourism technology and memorable tourist experience on tourist loyalty with tourist satisfaction as a mediating variable. International Journal Multidisciplinary Science, 3(1), 27–35. https://doi.org/10.56127/ijml.v3i1.1215

Arenas, A. E., Goh, J. M., & Urueña, A. (2019). How does IT affect design centricity approaches: Evidence from Spain's smart tourism ecosystem. International Journal of Information Management, 45, 149–162. https://doi.org/10.1016/j.ijinfomgt.2018.10.015

Avci, E. (2019). Enhancing the cultural tourism experience through augmented reality. In Co-Editors (pp. 215–230). digitalcommons.usf.edu. https://www.academia.edu/40712736/Enhancing_the_Cultural_Tourism_Experience_Through_Augmented_Reality

Azis, N., Amin, M., Chan, S., & Aprilia, C. (2020). How smart tourism technologies affect tourist destination loyalty. Journal of Hospitality and Tourism Technology, 11(4), 603–625. https://doi.org/10.1108/JHTT-01-2020-0005

Baggio, R., Micera, R., & Del Chiappa, G. (2020). Smart tourism destinations: A critical reflection. Journal of Hospitality and Tourism Technology, 11(3), 407–423. https://doi.org/10.1108/JHTT-01-2019-0011

Botao, Q., & Iskandar, Y. H. P. (2024). Tourism augmented reality in China. Proceeding National & International. http://journalgrad.ssru.ac.th/index.php/8thconference/article/view/4538

Chung, C. (2022). Measuring the economic value of smart tourism content. Knowledge Management Research, 133–148. https://koreascience.kr/article/JAKO202210459451100.page

Demir, Ö. F., & Karaarslan, E. (2018). Augmented reality application for smart tourism: GökovAR. Proceedings - 2018 6th International Istanbul Smart Grids and Cities Congress and Fair, ICSG 2018, 164–167. https://doi.org/10.1109/SGCF.2018.8408965

Egger, R., & Neuburger, L. (2020). Augmented, virtual, and mixed reality in tourism. Handbook of E-Tourism, 1–25. https://doi.org/10.1007/978-3-030-05324-6_19-1

Gaberli, Ü. (2019). Tourism in digital age: An explanation for the impacts of virtual, augmented and mixed reality technologies on tourist experiences. Journal of Tourism Intelligence and Smartness, 2(2), 61–69. https://dergipark.org.tr/en/pub/jtis/issue/47411/596201

Garbani-Nerini, E., Korkut, S., & De Ascaniis, S. (2022). Better: Digital media can make tourism experiences at heritage destinations better. Handbook on Heritage, Sustainable Tourism and Digital Media. https://doi.org/10.4337/9781788970082.00018

Gek-Siang, T., Aziz, K. A., & Ahmad, Z. (2020). Augmented reality: The game changer of travel and tourism industry in 2025. The Palgrave Handbook of Corporate Sustainability in the Digital Era, 169–180. https://doi.org/10.1007/978-3-030-42412-1_9

Han, S., Yoon, J. H., & Kwon, J. (2021). Impact of experiential value of augmented reality: The context of heritage tourism. Sustainability (Switzerland), 13(8). https://doi.org/10.3390/su13084147

Huang, T. L., & Liu, B. S. C. (2021). Augmented reality is human-like: How the humanizing experience inspires destination brand love. Technological Forecasting and Social Change, 170. https://doi.org/10.1016/j.techfore.2021.120853

Kontogianni, A., Alepis, E., & Patsakis, C. (2022). Smart tourism and artificial intelligence: Paving the way to the post-COVID-19 era. Learning and Analytics in Intelligent Systems, 22, 93–109. https://doi.org/10.1007/978-3-030-80571-5_7

Mavragani, E., & Dionysios, P. (2022). Gen "Z" and tourism destination: A tourism perspective of augmented reality gaming technology. International Journal of Innovation and Technology Management, 19(5). https://doi.org/10.1142/S0219877022410012

Naramski, M. (2020). The application of ICT and smart technologies in Polish museums—towards smart tourism. Sustainability (Switzerland), 12(21). https://doi.org/10.3390/su12219287

Neuburger, L., Beck, J., & Egger, R. (2018). The "phygital" tourist experience: The use of augmented and virtual reality in destination marketing. In Tourism Planning and Destination Marketing (pp. 183–202). https://doi.org/10.1108/978-1-78756-291-220181009

Olya, H., Jung, T. H., Tom Dieck, M. C., & Ryu, K. (2020). Engaging visitors of science festivals using augmented reality: Asymmetrical modelling. International Journal of Contemporary Hospitality Management, 32(2), 769–796. https://doi.org/10.1108/IJCHM-10-2018-0820

P J, S. (2020). Scope of information communication technology in enriching tourist experience. ICT in Education, 163–184. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3696238

Panagiotakopoulos, D., Christodoulou, M., Mountzouri, A., Konstantinou, P., Nomikou, M. G., Metzitakos, R., Stathakis, G., & Papapostolou, A. (2021). Augmented reality and intelligent packaging for smart tourism: A systematic review and analysis. Augmented Reality in …, 69–93. https://doi.org/10.1007/978-3-030-70198-7_4

Pasquinelli, C., & Trunfio, M. (2023). Smart technologies for sustainable tourism development: Exploring practices in European destinations. Tourism on the Verge, Part F1053, 111–143. https://doi.org/10.1007/978-3-031-33677-5_4

Pulla Pesantez, S. P., Ortega Echeverria, A. L., & Castro Pacheco, K. P. (2021). Disruptive tourism: Smart tourism routes. Smart Tourism, 2(2). https://doi.org/10.54517/st.v2i2.1704

Punzon, J. G. (2021). Augmented reality in shopping tourism: Boosting tourism development through innovation in Barcelona. European Journal of Tourism, Hospitality and Recreation, 11(1), 1–10. https://doi.org/10.2478/ejthr-2021-0001

Rahman, M. K., & Hassan, A. (2021). Tourist experience and technology application in Bangladesh. Technology Application in the Tourism and Hospitality Industry of Bangladesh, 319–332. https://doi.org/10.1007/978-981-16-2434-6_19

Sears, D., & Weatherbee, T. G. (2023). The future of the wine tourism experience: The potential of smart(er) winescapes? In Technology Advances and Innovation in Wine Tourism: New Managerial Approaches and Cases (pp. 135–150). https://doi.org/10.1007/978-981-19-8277-4_9

Shuxratovna, M. N., Kiran, P., & Erdogan, E. (2023). Smart tourism triggers tourist minds-do you have the mind to mind it? International Journal Vallis Aurea, 9(1), 19–36. https://doi.org/10.2507/ijva.9.1.2.99

Sia, P. Y. H., Saidin, S. S., & Iskandar, Y. H. P. (2023). Smart mobile tourism app featuring augmented reality and big data analytics: An empirical analysis using UTAUT2 and PCT models. Journal of Science and Technology Policy Management. https://doi.org/10.1108/JSTPM-05-2022-0088

Siang, T. G., Aziz, K.