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Tourism, the Metaverse, Artificial Intelligence, and Travel: Striking a Balance between Innovation and Concerns

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Abstract: ***Tourism, the metaverse, AI, and travel have ushered in a new era of exploration. This qualitative study examines how these four concepts affect tourism's future. First, the study addresses the metaverse, a virtual world where people interact with each other and their surroundings via immersive technologies. Travelers can now experience destinations in new and fascinating ways without traveling thanks to the metaverse. Tourism is also changing due to AI. Artifical intelligence technology can make vacation planning easier and more pleasurable by providing individualized recommendations based on massive data sets. AI-powered chatbots can answer questions and resolve difficulties in real time. The research also investigates how AI is developing virtual tour guides who can give guests a customised tour of a destination. These virtual advisors may tailor the experience to each traveller's interests, preferences, and physical ability. These innovations will affect the tourism business overall, the article concludes. Despite their benefits, these improvements raise concerns about employment loss and local economies. Finally, the study discusses how to employ these new technologies to help tourists and locals. Tourism, the metaverse, AI, and travel are extensively studied in this paper. It discusses tourism sector innovation and expansion opportunities and metaverse technology's effects on travel.***

Keywords: ***Metaverse, Augmented Reality Virtual Space, Virtual Reality, Artificial Intelligence.***

1. INTRODUCTION

ICTs (Information and Communication Technologies) have had a huge impact on the tourism Industry, producing significant disruptions and revolutionizing business practices. McKenna

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and Cai (2021a) (Klein, 1999) With the introduction of Global Distribution Systems (GDSs) like as Amadeus and Sabre in the 1980s, travel companies gained a simple platform to receive information from numerous suppliers and book flights, hotels, and railroads for customers. Cai et al. (2021a) With the emergence of the internet in the late 1990s, the tourism sector saw a drastic upheaval, allowing destinations, hotels, airlines, and other suppliers to directly sell their products to foreign travelers. (Chen and colleagues, 2020) This transitions decreased reliance on middlemen while increasing the competitiveness of tourism providers. van Nuenen and Scarles (2021) The growth of vast networks and smartphones has resulted in the development of a smart infostructure, which has changed the travel and tourist business. Cai and McKenna (2021) While technological platforms have enabled tourism producers to sell their products directly and lessen their dependency on intermediaries, the sharing economy has also presented new disruptive concerns. (2022, Gursoy et al.) Platforms such as Airbnb and Uber have put established hotel and transportation businesses under pressure, resulting in increased competition and changes in business models (Narin, 2021). As a result, stakeholders in the tourist business must stay current on technology innovations and successfully apply them in order to remain competitive. (Tyan and colleagues, 2020)

Smartphones and mobile commerce have rapidly evolved, demonstrating their potential to disrupt the tourism industry (Park & Kim, 2022a). Smartphones offer value co-creation in real time and context by providing context relevancy. Scarles and van Nuenen (2021) This potential has been boosted even further by augmented reality (AR) and virtual reality (VR), which have opened up previously unimagined prospects for tourist management, marketing, and immersive stakeholder interaction (Tyan et al., 2020b). Tourists can now preview tourism locations and services before buying them, enhancing their on-site experiences. 2022 (Chi and colleagues) The Metaverse, which has gained popularity after Facebook changed its name to Meta and restructured its company around it, has introduced a new dimension to these possibilities (Glover, 2022; Pew Research Centre, 2022).Finally, with the introduction of smartphones, wide networks, and smart infostructures, the tourism business has seen enormous upheavals. Ai and McKenna (2021b) While technological advances have generated new opportunities for tourism providers, they have also introduced new problems and increased competition. (Doborjeh and colleagues, 2022). As a result, stakeholders in the tourism sector must stay current on technological innovations and efficiently apply them in order to remain competitive and create improved experiences for travellers' Nuenen and Scarles (2021)

Literature Review

The Metaverse is defined in this paper as the seamless merging of physical and digital worlds for objectives such as work, education and training, health, interest exploration, and socializing. (2022, Doborjeh and colleagues) Despite its conceptual character, there is considerable evidence of widespread acceptance by players in the gaming industry (Katz, 2022). Researchers from diverse fields are collaborating to define, structure, organize, and visualize the future of the Metaverse (Dwivedi et al., 2022, 2023; Koohang et al., 2023). Users can build avatars and explore various resources on digital platforms in current versions of Metaverse (van Nuenen & Scarles, 2021). However, there is still a long way to go in terms of creating the Metaverse, and future improvements are likely to affect the tourism industry in unexpected

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ways. (2012) (Gomes et al.) When digital environments provide hyper-realistic virtual dialogues, experiences, and transactions, their full potential can be fulfilled. Park and Kim (2022a) While the COVID-19 epidemic demonstrated the benefits of digitalization,

According to Lundmark (2022), by 2030, every physical device that can be digitally connected will be, and every action in the digital world will affect the real world and vice versa. McKenna and Cai (2021b) Rather than relying exclusively on virtual reality headsets, the metaverse is built on the convergence of complementary technologies such as cloud and edge computing, artificial intelligence, blockchain, the internet of things, virtual reality, augmented reality, and digital twins. 2023a (Buhalis and colleagues) Although the metaverse is still in its early stages, it has already become a reality for many individuals (Cai et al., 2021b). Brands like Fortnite, Meta, and Roblox, according to Pero, are transforming the way we socialize, shop, and play by 2022. There are two distinct populations in There are two types of people in the metaverse: metaverse natives and metaverse colonists. 2023b (Buhalis and colleagues) Individuals under the age of 21 who have grown up with interactive online gaming and feel more at ease socializing in virtual places than in real life comprise the former. 2020b (Tyan and colleagues) According to the latter group, there are only two worlds: digital and physical, with the former being inferior to the latter. Kim and Park (2022a)

The COVID-19 pandemic sparked significant interest in the metaverse concept. People began working from home, and students began attending classes online, necessitating the development of practical strategies or channels to make online contact more attainable (Lu et al., 2022) (Lapointe) 2020 the pandemic heightened its importance among consumers and businesses alike. In 2020, technological corporations began developing this technology and announced their investments. Because of the billion dollars invested by Metaverse (Chang et al., 2020), the year 2021 was a favourable one for Metaverse technology investments. (Facebook). According to experts, the COVID-19 pandemic will catalyse metaverse technologies, and the post-pandemic environment will spark customer interest. The epidemic has hastened the development of virtual online communities as major lifestyle places for users who have been confined due to lockdowns and closures, such as interactive gaming landscapes and the growing use of mixed reality (Young Lee Assistant Professor, 2021b). The COVID-19 pandemic has had a favourable impact on the metaverse business, with several industries potentially benefiting. The popularity of the metaverse is growing due to the emergence of digital assets, blockchain, and Nonfungible Tokens (NFTs). Suh (2022a). (Damar, 2021) Learning will be revamped to incorporate an interactive experience augmented by digital records in the metaverse, rather than just words, images, and lectures available on demand. (Samala and colleagues, 2022)

Overall, this paper examines the relationship between tourism, the metaverse, artificial intelligence, and travel in depth. It highlights the possibilities for tourist industry innovation and expansion while also taking into account the potential issues and ramifications of new technologies

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The Metaverse: An Infinite Variety of Alternative Realities

The Metaverse is a concept that refers to a virtual world shared by millions of individuals worldwide. Cohen and Cohen (2019) are authors. The Metaverse goal is to build a virtual environment where people may socialize, play games, discover new areas, and conduct business (Grieco & Urry, 2012). The concept of the Metaverse has been popularized in science fiction novels and films, but it is becoming more of a reality as technology advances.2023b (Buhalis et al.) The Metaverse is built on virtual reality (VR) and augmented reality (AR) technology, allowing users to interact with virtual environments as if they were real. The technology behind the Metaverse is continually growing, and it is projected to become more immersive and participatory in the future years. n.d. (Aboelmagd) This change is being driven by the development of new technologies such as artificial intelligence (AI) and blockchain.

Fig 1: Source: https://www.emizentech.com/blog/metaverse.html

The Metaverse has the potential to be a financial powerhouse as well. Users may begin to engage in business and trade virtual products and services as they spend more time in the virtual environment. This could open up new prospects for firms and entrepreneurs looking to monetise the Metaverse. However, the Metaverse creates privacy and security problems. As more personal information is shared in the virtual world, the chance of it being hacked or stolen increases. Furthermore, as people spend more time in the virtual world, there are concerns about the possibility of addiction and social isolation. Despite these reservations, the Metaverse is expected to become a more integral part of our life in the coming years. The potential for the Metaverse are limitless as technology advances. It has the potential to serve as a platform for education, entertainment, socialization, and much more. The Metaverse has the potential to change the way we live and work in the future, and it will be intriguing to see how it develops.

A Conceptual Overview of Metaverse

The term Metaverse has been around for several decades, but it has recently gained renewed interest with the rise of virtual reality and blockchain technology (Buhalis et al., 2023b). The Metaverse is a shared virtual space in which users can interact with each other and digital objects in a way that mimics the real world. This article will look at various definitions of the Metaverse offered by various authors. 2020 (Buhalis)

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In his 1992 science fiction novel Snow Crash, Neil Stephenson developed the term Metaverse to depict a virtual reality realm that serves as a worldwide hub for business, entertainment, and social interaction. In Snow Crash, the Metaverse is a completely immersive world where people may connect with one another, conduct commerce, and participate in other activities via their avatars.

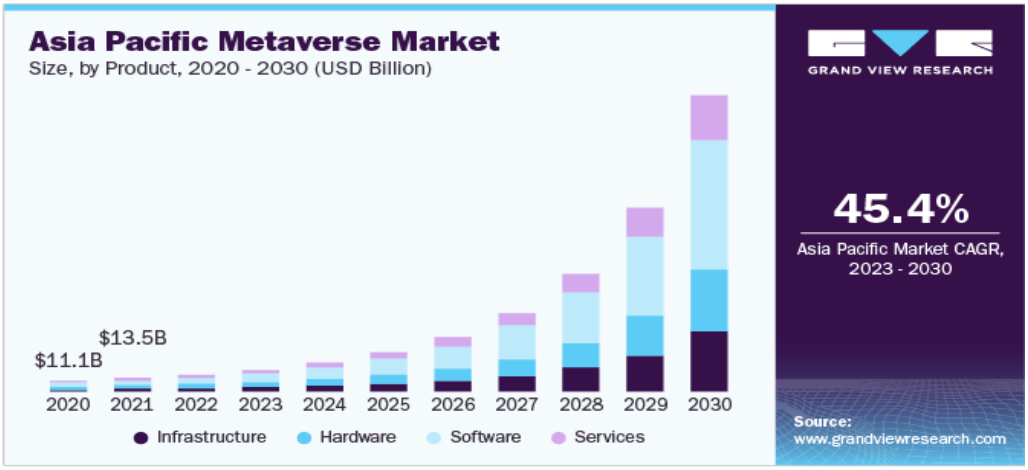

Fig 2 Source: https://www.grandviewresearch.com/industry-analysis/metaverse-market-report

Opportunities and Challenges of the Metaverse for the Tourism Industry

The metaverse is a virtual universe that is being developed using various emerging technologies such as augmented reality, virtual reality, blockchain, and artificial intelligence. (Lu et al., 2022b). That's according to a study (Lu et al., 2022b). Avatars allow users to communicate in real time, bringing the virtual and real worlds closer together. According to a study (Kusuma et al., 2021) The idea of the metaverse is gaining tremendous traction in the travel industry because to the vast possibilities it presents for the development of novel tourist attractions and activities. The development of virtual tours is an important aspect of the metaverse in the tourism industry. according to (Suh & Ahn, 2022b) Virtual reality and 360-degree videos allow potential tourists to get a feel for a place before committing to a trip there. Those with mobility issues or financial constraints may benefit greatly from this. Hard-to-reach cultural events, natural wonders, and historical landmarks can all benefit from virtual excursions. The development of virtual hotels is an additional facet of the metaverse in the hospitality industry. Travelers can get the same luxurious experience at a virtual hotel as they would at a real one. Travelers can enjoy the hotel's ambiance and services without actually staying there by using a virtual reality headset or an augmented reality app. The newest innovations and designs in the hospitality sector can be displayed in virtual hotels as well.

Possibilities for Expanding Tourism and Technological Advancement

Virtual tourism experiences: The metaverse could allow consumers to digitally explore sites without physically traveling there. Suh and Ahn, 2022b; Kye et al., 2021) Virtual tours of sites and attractions, as well as interactive experiences that allow viewers to explore the destination

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in greater depth, could be included. Interactive cultural experiences: The metaverse might offer interactive cultural experiences that allow users to interact with a destination's local culture, such as virtual culinary classes, language lessons, and traditional dance performances. Social connections: The metaverse could allow users to connect in real-time with other travelers and locals, sharing advice and recommendations and creating new social relationships. (Narin, 2021) Immersive marketing: The metaverse could be utilized to develop immersive marketing campaigns that highlight places in novel and interesting ways. This could include interactive virtual events, virtual reality experiences, and other possibilities. Sustainability education: The metaverse could be used to teach tourists about sustainable tourism practices such as ethical travel and environmental conservation.

Fig-3: https://hiphopcanada.com/metaverse-tourism-virtual-travel/

How Artificially Intelligent Chatbots Are Changing the Travel Industry.

Chatbots powered by artificial intelligence (AI) are quickly gaining popularity in a variety of industries, including tourism. One intriguing application of AI chatbots is in metaverse tourism. Park and Kim (2022a) The term "metaverse" refers to a virtual space in which users can interact with one another and engage in activities such as gaming, socialising, and exploring. The metaverse has become an increasingly popular destination for people all over the world as virtual reality and augmented reality technology have advanced. Chatbots are computer programmes that mimic human conversation. They use natural language processing (NLP) and machine learning (ML) algorithms to understand and respond to user queries (Jovanovi & Milosavljevi, 2022b). Tourism companies can improve the user experience and provide a more personalised and engaging journey for users by integrating AI chatbots into the metaverse. One of the primary advantages of using chatbots in metaverse tourism is the ability to provide users with immediate assistance and support. Chatbots can be programmed to respond to frequently asked questions, make recommendations, and guide users through the metaverse. This can help users navigate the virtual environment more easily and make the most of their time in the metaverse.

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In conclusion, AI-powered chatbots have the potential to revolutionize the metaverse tourism industry. By providing instant assistance, personalization, and entertainment, chatbots can enhance the user experience and make the metaverse a more engaging and accessible destination for people around the world. While there are challenges to using chatbots in metaverse tourism, ongoing training and development can help companies overcome these obstacles and create a more seamless and enjoyable virtual environment for users.

Using Artificial Intelligence to Improve Virtual Tourism

As real travel has become more difficult due to constraints and safety concerns, the use of virtual tour guides has grown in popularity in recent years. With the help of AI, virtual tour guides have evolved to provide visitors with a more customized and immersive experience. The capacity to tailor the experience to each unique traveler is a major advantage of using AI to develop virtual tour guides. Virtual tour guides can tailor their services to the individual needs of their clients by analyzing their hobbies, preferences, and travel history with the use of machine learning algorithms. The virtual tour guide can tailor its suggestions to the interests of the user, suggesting relevant museums, historical locations, and cultural events based on the user's preferences. Virtual tour guides also make use of natural language processing (NLP) technology developed by the AI industry. This makes it possible for the virtual tour guide to interpret the queries and requests of visitors and answer accordingly, creating a more personal and dynamic experience. Visitors who aren't fluent in the language can still have a positive experience abroad because to natural language processing (NLP) technology that provides instant translations.

Virtual tour guides have benefited greatly from the advancements in AI that have been made in recent years. Virtual tour guides can provide customized and engaging experiences for tourists by leveraging machine learning algorithms, NLP tools, computer vision, and picture recognition. Artificial intelligence (AI) can also be utilized to design user-friendly interfaces and deliver timely suggestions and notifications, making travel easier for everyone.

Building Digital Markets with the Help of AI.

Because of the ease they provide, virtual marketplaces are growing increasingly popular. With the advancement of AI technology, virtual marketplaces are becoming more complex and user-friendly, offering consumers with a better buying experience. In this essay, we will look at the role of artificial intelligence in the development of virtual marketplaces. To begin, artificial intelligence is utilized to tailor the buying experience. AI algorithms can offer products that are likely to interest a buyer based on their shopping history, search queries, and online behavior. This raises the likelihood of a sale and ensures that the customer will return to the market in the future. Personalization also fosters consumer loyalty and fosters trust between the customer and the marketplace. Pricing is optimized using AI. AI algorithms can identify the best price for a product by analyzing market trends, rival pricing, and client demand. This contributes to the marketplace remaining competitive and lucrative.

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Applying Artificial Intelligence to Improve Virtual Tours

Virtual tours are interactive media that allow users to explore a 3D model of a location in a manner that is strikingly similar to their interactions with the actual thing. They're growing in popularity in fields like real estate, hospitality, and tourism since they allow customers to get a feel for a place before they actually visit. Creating a virtual tour has traditionally been a time-consuming procedure that necessitated the work of trained professionals to gather and assemble photographs or video of a physical location. Artificial intelligence, however, has made this procedure easier and more accessible to the general population. The use of computer vision technology is one use of artificial intelligence in the production of virtual tours. To do this, algorithms are used to decipher visual information, giving machines the ability to interpret what they see. Because it can automatically create 3D models from 2D photographs or movies, computer vision is especially helpful for virtual tours. This paves the way for individuals to construct virtual tours of locations by simply publishing media depicting such locations. Virtual tours are yet another use of artificial intelligence (AI) that makes use of natural language processing (NLP) technology. In order for machines to interact with humans in a way that feels natural and intuitive, they need to be trained to recognize and generate human language. Because it allows for the creation of interactive experiences that may reply to user queries and requests, NLP is particularly useful for virtual tours. NLP may be used in a hotel's virtual tour so that guests could ask inquiries about the amenities and services available to them.

In conclusion, AI has had a profound effect on the development of virtual tours, making the procedure more efficient and available to a wider audience. More interactive and engaging virtual tours that can be personalized to the interests and needs of the individual user have been made possible by the use of computer vision, natural language processing (NLP), machine learning, and other AI technologies. We should expect increasingly high-quality and lifelike virtual tours in the future as AI develops.

The Utilization of Cutting-Edge Technologies is Mutually Beneficial for Tourists and Communities

Because to technological advancements, we can now go places and do things that were previously impossible. (Lapointe, 2020b). Travelers today rely heavily on their electronic devices from the time they begin making plans to their return home. This was found to be the case (Cai et al., 2021a). The effects of these technology, however, are not confined to the travelers themselves. "(Lu et al., 2022b) When utilized properly, they can also help locals and encourage more eco-friendly, considerate vacationers. The sharing economy is one of the most important technological advancements that has benefited both tourists and locals. "(Buhalis, 2020) Airbnb and Uber have revolutionized the way people travel by connecting them with locals and providing them with a more genuine glimpse into the places they visit. Renting a private home, apartment, or even just a spare room from a local is a great alternative to staying in a faceless hotel.

Metaverse experiences could be made more lifelike with the help of AI. Ai-driven avatars, for instance, might be utilized to generate convincing characters that can carry on conversations in real time with their human counterparts. Avatars that can adapt to their users' wants and needs

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would assist provide a more tailored service. Strong privacy norms and regulations governing the use of artificial intelligence in the metaverse are needed to solve these concerns. In addition, developers should be transparent about the information they gather and how they put it to use. Finally, users should be able to access, modify, and delete their own data. Last but not least, the combination of the metaverse and AI might provide users with a richer, more customized experience while also helping local communities. Chatbots, virtual assistants, and AI-powered avatars provide travelers with customized advice and engaging interactions with digital representations of real people. However, it will be necessary to deal with issues like data privacy that may arise as a result of using AI in the metaverse. When combined, the metaverse and AI could lead to a better connected and mutually beneficial environment for tourists and locals alike.

Tourism Challenges and Consequences of These Technologies

There are a number of forthcoming technologies that will likely have a profound effect on the travel and tourism sector. These innovations may significantly alter how trips are organized, booked, and experienced by travelers. However, they do provide new difficulties and consequences for the tourism sector. Some instances are as follows:

Through the use of VR and AR, visitors can have a more interactive and immersive experience of the places they visit. However, virtual and augmented reality's rise could dampen the tourism industry since individuals can virtually visit faraway places without leaving their living rooms. By tailoring its trip suggestions, enhancing its customer service, and optimizing its operations, AI has the ability to completely transform the tourist sector. Concerns have been raised, however, concerning the loss of employment opportunities as AI gradually replaces humans in many workplace roles. The Internet of Things (IoT) allows for the seamless connection of disparate systems, allowing for the development of new, cutting-edge methods for enhancing the traveller's experience.

2. CONCLUSION

With the advent of the Metaverse, the travel industry has a once-in-a-lifetime chance to completely redesign its interactions with its clients. The Metaverse presents both advantages and disadvantages for tourism sites and businesses due to the seamless integration of the real and virtual worlds. The Metaverse may have a major impact on the competitiveness of tourist places and businesses, albeit being in its infancy.

As customers get more used to digital services, technologies, and the digital economy, the Metaverse will undoubtedly gain popularity among tech-savvy users who can partake in virtual tourism experiences before making purchasing selections. To flourish in this new era of blended tourism experiences and improve the user experience, future In conclusion, the Metaverse offers the tourist industry a great chance to improve visitor experiences by removing COVID-19-related barriers and delivering a streamlined service to tech-savvy customers. However, the field of tourist management and promotion faces new problems and risks because of this emerging technology. Therefore, more research on the Metaverse's components is

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necessary to support and empower blended tourism experiences in the real and digital worlds, and to probe the Metaverse's implications on visitor behaviour and experience.. Tourism in the modern day must be managed and marketed in ways that promote eco-friendly, experiential travel. By adapting to the Metaverse, the tourist industry can give visitors more options and enhance their experience. To better manage and advertise tourism in this new period, and to better understand the opportunities and risks presented by the Metaverse, more study is required. By adopting the Metaverse, the tourism sector may develop novel and engaging options for visitors while also fostering eco-friendly and immersive excursions.

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