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VIRTUAL TOURISM AND THE FUTURE OF TRAVEL: SUBSTITUTE OR COMPLEMENT?

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Abstract: Virtual tourism (VT) using virtual (VR) and augmented reality (AR) technologies are actively developing, offering us new ways to explore the world. This article analyzes whether VT is capable of becoming a full-fledged replacement for traditional travel or will remain a complement to it. The advantages and limitations of VR, along with its impact on the environment, economy, socio-cultural aspects, and the prospects of development taking into account modern trends are considered. Special attention is paid to the Russian context. Based on scientific literature published after 2010 and incorporating the author's original analysis, the article concludes with a critical perspective on the transformative role of VT in the future of the global tourism industry.

Keywords: virtual tourism, virtual reality, augmented reality, travel, sustainable development, digitalization, tourism in Russia.

Introduction

Tourism, one of the most dynamic sectors of the global economy, is undergoing a profound transformation driven by the development of digital technologies. Virtual Tourism (VT), enabled by VR and AR, now allows us to “visit” faraway countries, museums and natural attractions from the comfort of our own homes. These innovations have begun to reshape the tourism industry by making travel more accessible, affordable, and environmentally friendly. The growth of VT became especially noticeable during the COVID-19 pandemic, when restrictions on movement pushed people to look for alternatives. However, the pandemic only accelerated the digitalization of tourism that had already begun. Today, in 2025, VT continues to evolve, raising questions: will it be able to replace traditional travel or will it remain a complement to it? How does BT affect the environment, economy and society? These questions are especially relevant in the context of growing environmental problems, changing consumer preferences and active digitalization in countries like Russia. The aim of the article is to analyze the role of VT in the future of tourism, its potential as a replacement or supplement to real travel, and its impact on various aspects of life. Special attention is paid to the Russian context, including case studies and perspectives on the development of VT.

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Literature review

Virtual tourism is the use of technology to create simulated experiences of real or imagined locations, allowing people to explore and interact with them without physically being present (The Business Research Company, 2025). VR immerses the user in a fully artificial environment, such as a virtual walk through the amphitheatre Colosseum. AR, on the other hand, augments the real world with digital elements, such as historical facts about buildings displayed through a smartphone (IOT Conference, 2019). VT includes online tours, 360-degree videos, interactive maps and apps that make traveling more accessible.

The concept of VT originated back in the 1990s with the introduction of first digital maps and online galleries. However, the real breakthrough came in the 2010s with the release of affordable VR headsets such as the Oculus Rift and HTC Vive. The COVID-19 pandemic was the catalyst, accelerating the adoption of VR. Museums, tour operators and cities began offering virtual tours to compensate for the lack of real tourists (Vedomosti, 2020). For example, the #Moskvastoboy project allowed millions of users to "visit" the Tretyakov Gallery and Red Square. According to the Moscow Innovation Agency, VR solutions help tour operators attract customers by showing hotels and itineraries before booking.

Advantages and Limitations of Virtual Tourism

Virtual tourism offers numerous benefits, opening up new opportunities for people who face limitations such as disabilities, financial or time constraints. For example, a person with limited mobility can enjoy a virtual hike through the Grand Canyon or a walk inside ancient castles that would be extremely difficult or unsafe in real life Traditional travel often requires significant expenses, such as plane tickets, accommodation, meals, entrance fees, etc. VT eliminates most of these costs. With only a one-time investment in a VR headset or smartphone, a user can explore multiple destinations for less. Not everyone has time for a long vacation due to work, family or school commitments. VT allows for flexible and on-demand travel - you can explore the city on your lunch break or go on a museum tour at midnight. For instance, a full-time employee can "drive down" to Tokyo for an hour in the evening, take in the cultural sights, and return to normal life without spending much time on flights and planning.

Although VT allows people to "visit" virtual representations of places, it cannot fully replicate the sensory experience of physical travel. For example, travelers are deprived of the smells, sounds, and tactile sensations associated with being in a particular place. The emotional connection and physical presence that occurs during real travel, such as feeling the texture of a monument or the bustle of a busy marketplace, cannot be fully conveyed in a virtual environment.

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Additionally, traveling often involves social interaction, whether it is meeting new people or interacting with locals. A virtual tour limits these opportunities. While virtual tours may include video chat features or allow interaction with other participants, they cannot replace the authentic, spontaneous social connections that occur during traditional travel. Increased use of virtual tourism may lead to an over-reliance on technology, which in turn may reduce people's desire to travel in the real world. While virtual travel can be an educational tool at school for geography classes or a temporary alternative in times of crisis (e.g. pandemics), there is a risk that it will reduce the motivation to travel in the real world. This has the potential to negatively impact the traditional tourism industry and local economies that depend on the flow of tourists.

Methodology

This study employed a qualitative research design to explore the integration of virtual reality (VR) technologies in the tourism industry and their impact on tourist behavior and preferences. Data were collected from scientific articles, industry reports, and credible online publications published between 2010 and 2025, identified through academic and industry databases using keywords such as "virtual reality," "tourism," "digital travel," "immersive experience," and "technology trends. Sources were selected for their relevance to the intersection of VR and tourism, with a focus on studies and reports on the use of immersive technologies in tourism marketing, virtual tours and consumer engagement. Special attention was paid to materials related to the Russian tourism sector, including data from Rosturizm and major Russian tour operators. The collected data was analyzed using thematic content analysis to identify patterns and emerging themes regarding the impact of VR on travel decision-making, tourist expectations, and digital engagement. In addition, the author included original insights based on personal observations of technology trends and traveler behavior.

Results and discussion

BT as a substitute or a complement for traditional travel

Some experts believe that VT can become a full-fledged alternative to real travel, especially under constraints (Traveldon, 2021). During the pandemic, virtual tours of museums, cities, and natural sites became popular, showing that technology can satisfy travelers' curiosity regardless of the restriction to fly in those times. For example, the Smithsonian Journeys platform offers VR tours of Venice with a personal guide, creating a sense of presence (IOT Conference, 2019). In Russia, the Virtual Moscow project allowed users to “walk” through the city center, attracting more than 1.5 million people in 2020 (Innoagency, 2020). Despite these developments, VT is unlikely to fully replace traveling. Real trips provide unique sensory and emotional experiences:

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the smell of the sea, the taste of local food, chance encounters with people. Alexey Zaretsky from Travelata.ru notes that VT is more often used to choose a destination while booking than as a substitute for travel. This suggests that VT can replace travel in specific cases, for example, for people with disabilities or for short-term “visits” to attractions, but it cannot fully reproduce the magic of real trips.

A more plausible scenario is the use of virtual tourism (VT) as a complement to real-world travel rather than a replacement. Virtual reality (VR) and augmented reality (AR) technologies are increasingly applied by tour agencies into the travel planning process, enabling users to see hotels, tours, or cities prior to booking (Innoagency, 2020). For example, airline Eurostar offers VR glasses on trains so passengers can see virtual scenery to complement the real trip (IOT Conference, 2019). In Russia, the tour operator Intourist employs VR to showcase hotel environments, which has reportedly increased booking conversion rates by 15% according to Profi.Travel, 2024. Augmented reality applications, such as translators and tour guidelines, are also enhancing in-destination experiences, offering practical, real-time support. For example, the Google Translate AR feature allows users to point their camera at signage and receive instant translations into Russian (Developers Sber, 2024), while an AR guide at the Kazan Kremlin provides contextual historical information about the site’s architecture (Profi.Travel, 2024). This may imply advancement in technology has improved traveling to a large extent, making it convenient, engaging and informative.

Impacts of VT on tourism

Environmental Impact

Traditional tourism has a significant environmental impact, contributing about 8% to global CO_2 emissions (RRBusiness, 2021). Virtual tourism (VT) is seen as a greener alternative, allowing users to 'visit' attractions without the need for flights, thereby reducing carbon footprint. For example, virtual tours of nature reserves help to reduce anthropogenic pressure on ecosystems (Bykasov, 2008), and a virtual tour of the Giza pyramids allows a bird's eye view of them without traveling to Egypt (Naked Science, 2016). In Russia, similar initiatives such as virtual tours of Lake Baikal are helping to reduce the impact of mass tourism on sensitive natural areas (RRBusiness, 2021). In this way, VT contributes to sustainable development by reducing the need for air travel, which is a major source of emissions in the tourism industry. However, the environmental benefits of VR are not absolute. The production of VR equipment also requires the use of rare earth metals, and the maintenance of servers for data storage, and transmission is accompanied by significant energy consumption. According to a study by RRBusiness (2021), the

carbon footprint of manufacturing a single VR headset is comparable to several short-haul flights. Therefore, for VR to become truly sustainable, green technologies, including energy-efficient servers and equipment recycling systems, must be developed and implemented.

Economic impact

Virtual Reality (VR) opens new perspectives for the tourism industry, boosting sales through innovative promotion methods for tour operators and hotels. In Russia, the #Moskvastoboy project, a digital platform that hosts a variety of online cultural experiences, attracted over 1 million users, which stimulated interest in real travel to the capital city after restrictions were lifted during pandamic (Innoagency, 2020). In addition, VR is boosting the development of tech startups: for example, Russian company VR Travel is developing virtual tours of the Caucasus, attracting the attention of investors (Developers Sber, 2024). However, VR adoption may reduce demand for traditional tours, especially in smaller cities, where small tour companies risk losing revenue without switching to digital solutions (Zaretsky, Vedomosti, 2020). Government support for the digitalization of small tourism businesses could mitigate this effect by ensuring the availability of VR technologies for regions and balancing the development of the industry.

Sociocultural impact

VT facilitates cultural exchange by allowing people to learn about other countries and traditions without being physically present (Moluch, 2010). For example, virtual tours of temples in Cambodia or museums in Japan familiarize people with their history and values. In Uzbekistan, The official tourism portal of Uzbekistan, uzbekistan.travel, features virtual excursions, 3D panoramas, and immersive videos of the country's attractions to foreigners to explore Uzbek culture and traditions remotely. However, VR can reduce the personal contacts that make traveling unique. Meeting locals, attending festivals or having spontaneous conversations in cafes is something that technology cannot yet replicate. Although virtual tourism is advantageous for educational purposes and trip planning, it cannot substitute for in-person encounters that cultivate a more profound comprehension of a culture.

Cases of using VT in Russia

In Russia, VT is actively developing, especially in large cities. The Hermitage has launched virtual tours of its halls, which were visited by more than 2 million people in 2020, including an international audience (Vedomosti, 2020). The “Russia through the eyes of a tourist” project from Rostourism includes AR applications for exploring sights in real time. For example, in the Russian

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museum in St.Peterburg, visitors can use a mobile to scan QR codes placed near 100 famous artworks and access audio, video, and text information in real time. Another example is educational VR-tours, which are becoming common in southern part of Russia. Schoolchildren in Novosibirsk "visit" Baikal, studying its ecosystem and pollution problems (RRBusiness, 2021). In 2024, Sochi introduced VR-tours around the Olympic Park, which attracted young people and increased interest in the region (Profi.Travel, 2024). Such projects not only popularize tourism, but also foster environmental responsibility. However, access to technology in the regions remains a challenge. Without investments in Internet infrastructure and equipment, VT will remain the privilege of megacities.

The growth of digitalization in Russia is having a significant impact on the development of traditional tourism, with plans to increase tourist trips to 140 million per year by 2030, with virtual tourism (VT) playing a key role in achieving this goal (Developers Sber, 2024). Digital platforms such as Virtual Russia already connect hundreds of travel destinations. Personalization in VT will also evolve thanks to artificial intelligence, such as the Travel Genome service, which creates personalized itineraries based on user preferences, for example, offering VR tours of museums for art lovers or nature parks for environmentalists (IOT Conference, 2019). Social VR, in turn, could include multi-user platforms that allow traveling with others in real time, which is already being tested in South Korea (Profi.Travel, 2025). Integration with real travel would include the use of AR applications that provide real-time information, such as AR glasses that show historical facts or routes while walking. In addition, the gamification of VT will bring elements of games such as quests or quizzes, such as virtual tours of the Kremlin looking for "hidden" artifacts (Developers Sber, 2024).

Conclusion

Virtual tourism is not just a temporary trend, but a technology that is transforming the travel industry. Analysis shows that VT is unlikely to completely replace traditional travel because of its unique sensory, emotional, and social experiences. Instead, VT will become their complement, helping to plan trips, increase accessibility, support sustainability, and enrich real-world travel through AR and AI.

VT has already proven its value in marketing, education, and the environment, but its limitations - high equipment costs, lack of physical experience, and technical barriers - require further improvements. In Russia, VT offers new opportunities, especially for domestic tourism, but its success depends on investments in technology, internet infrastructure and public education.

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In the future, VT will develop as a hybrid tool, combining virtual and real elements. VT is not a competitor, but a partner of traditional tourism, making travel more accessible, informative and environmentally friendly. For Russia, which is striving to grow tourism, VT can be the key to attracting new audiences and preserving natural and cultural heritage.

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