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Kovalenko I.M.¹, Kravtsov S.S.²

¹ Student, State University of Trade and Economics, Kyiv

² PhD in Public Administration, Ass.Prof., State University of Trade and Economics, Kyiv

POSSIBILITIES FOR APPLYING VR/AR IN REVITALIZING TOURISM IN UKRAINE

In the context of Ukraine's post-war reconstruction, an important task is to restore and develop tourism infrastructure, in particular through the introduction of innovative digital technologies. Tourism has always been one of the key sectors of the economy, providing revenue to local communities, contributing to infrastructure development, and promoting cultural heritage. In the context of large-scale

destruction caused by the war, there is an urgent need to apply modern technologies that not only preserve historical and cultural sites but also attract tourists during the physical restoration of cities and regions [1].

Modern digital technologies, in particular virtual reality (VR) and augmented reality (AR), open up new opportunities for the development of tourism and the improvement of the tourist experience. These technologies are particularly relevant for Ukraine, as they allow for the preservation of damaged monuments, the restoration of the historical appearance of cities and complexes, and interactive engagement between tourists and cultural heritage. With VR/AR, you can take virtual tours of museums, historical sites, and cultural objects, which not only increases tourist appeal but also stimulates interest in traveling physically after reconstruction is complete. The introduction of digital technologies into the process of restoring tourism infrastructure becomes not only an innovative tool but also an important factor in the economic and social revival of the country [2].

In the context of Ukraine's post-war reconstruction, one of the key tasks is to restore and develop tourism infrastructure, which is an important component of the country's economic and social revival. Tourism not only helps to attract investment and create jobs, but also promotes national culture and preserves historical heritage. In today's world, the use of innovative technologies that can ensure the effective restoration of cultural and tourism infrastructure, even if some of them have suffered significant damage, is of particular importance.

Such technologies not only contribute to the restoration of tourist flows, but also open up new opportunities for promoting cities and regions, which is important in the post-war period when physical infrastructure has not yet been fully restored. With the help of VR/AR, it is possible to create virtual tours of museums, historical sites, and cultural objects, which increases interest in travel and helps attract both domestic and foreign tourists. In addition, these technologies can be used for educational purposes, allowing schoolchildren, students, and the general public to learn about the history and culture of Ukraine in an interactive format.

The use of VR/AR is particularly relevant in regions that have suffered

significant destruction during the war. Recreating destroyed objects in a virtual environment allows historical memory to be preserved, while interactive presentations help maintain tourist interest and stimulate economic recovery. Thus, the integration of modern digital technologies into the tourism sector is not only a means of promoting culture and history, but also an important tool for the strategic development of Ukraine's tourism infrastructure [3].

Several projects have already been implemented in Ukraine that demonstrate the potential of VR and AR in the tourism sector. One such project is the Kyiv City Portal, which offers virtual tours of the capital's landmarks. With the help of these technologies, users can visit historical and cultural sites such as the Kyiv-Pechersk Lavra, St. Sophia Cathedral, the Museum of Outstanding Figures of Ukrainian Culture, and other important landmarks without leaving their homes. Virtual tours create a fully immersive experience, allowing users to view exhibits from different angles and obtain detailed information about the architecture, historical context, and cultural significance of the sites.

In Kyiv, virtual reconstructions are already being used for the Church of the Tithes, which was destroyed in the 19th century. Thanks to AR applications, tourists can use their smartphones to see what this landmark looked like in ancient times. This initiative is important not only for tourists but also for educational purposes—history students use these materials to study the architecture of Kievan Rus [4].

There are already successful examples of VR technology use in tourism in Ukraine. In particular, the Tustan Nature Reserve (Lviv region) has created a 3D reconstruction of a medieval fortress destroyed in the 15th century. With the help of VR glasses, visitors can see what the structure looked like several centuries ago. This has helped to increase interest in the location — according to the reserve's administration, after the introduction of VR content, the number of tourists increased by about 30% in the first year. The project was funded by the state program “Great Cultural Reconstruction” and local grants [5].

Thanks to the combination of historical reconstruction and VR technologies, the Tustan Reserve has become one of the most visited tourist attractions in the Lviv

region. In June 2025, it was visited by almost 30,000 tourists, which is a record number for the period of full-scale invasion. In the previous year, this figure was 28,168 people, and the Skolivski Beskydy National Nature Park was in second place in terms of popularity with about 16,000 visitors.

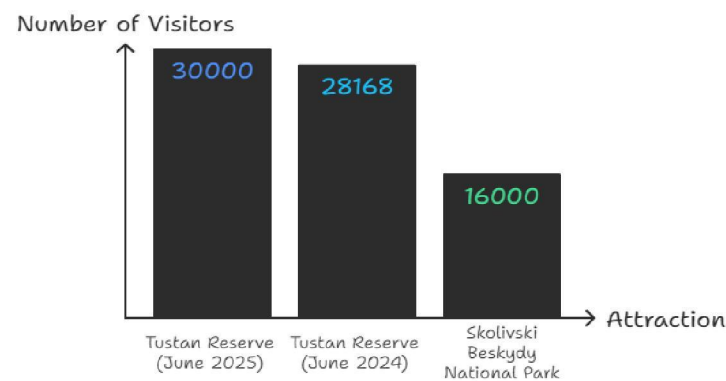


Figure 1. Tourist Visits to Lviv Region Attractions

Source: created by author on the base [6]

The introduction of VR content has not only increased the number of tourists, but also contributed to the development of local infrastructure — expanding the hotel base, increasing demand for excursion services, and creating new jobs. Thus, the digital reconstruction of historical monuments has become an effective tool not only for cultural but also for economic recovery in the region [6].

Other tourist locations in Ukraine, such as Zaporizhzhia Sich and Tarakaniv Fort, also have significant potential for the implementation of VR and AR technologies. In the first case, digital reconstruction could recreate the atmosphere of the Cossack era and allow users to “walk” through the fortress in a 3D tour format, which would increase tourist traffic to the region. In the case of Tarakaniv Fort (Rivne region), VR technologies would help create a safe online tour of the inaccessible underground areas of the structure. This could increase the number of virtual visits and draw attention to the need for restoration [7].

Examples such as Tustan, the Church of the Tithes, and the Zaporizhzhia Sich demonstrate that digital technologies are already effectively promoting Ukrainian tourism. The further spread of VR/AR projects in the regions could be an important

step in restoring the country's tourist appeal after the war.

Such initiatives are of great importance for promoting Ukrainian cultural heritage among domestic and foreign tourists. They also contribute to the development of remote tourism and educational programs, allowing schoolchildren, students, and the general public to learn about the country's history and culture in an interactive format. In addition, such projects stimulate interest in visiting real sites when possible and support the tourism infrastructure in the difficult conditions of post-war reconstruction [8].

The use of virtual reality (VR) and augmented reality (AR) technologies in the tourism sector offers a number of significant advantages. First, these technologies make it possible to recreate destroyed monuments, preserving them for future generations [9]. VR and AR help attract tourists, even during periods of reconstruction. Virtual tours and interactive applications allow potential visitors to familiarize themselves with sites before they are physically restored, which maintains interest and encourages future visits. This also helps to sustain economic activity in regions where physical infrastructure has not yet been restored [10]. VR and AR can be used for educational purposes, spreading knowledge about Ukraine's history and culture among a wide audience. Interactive educational programs, virtual tours, and applications allow users to immerse themselves in the historical context, gaining knowledge in an accessible and engaging way. This contributes to the development of cultural education and raises awareness of national heritage.

The use of VR and AR in Ukraine's tourism sector demonstrates significant potential for preserving cultural heritage and restoring post-war tourism infrastructure. These technologies make it possible to create interactive tours, recreate destroyed monuments, and attract tourists even to sites that are undergoing reconstruction. VR and AR contribute to educational development, raising public awareness, and promoting Ukrainian culture. The introduction of these innovative technologies can be an effective tool for the strategic development of tourism, stimulating economic activity in the regions and supporting tourism infrastructure.

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