

Igor Mavrin*
 Damir Šebo**
 Jerko Glavaš***

JEL classification: Z3, Z1, I15, O3
 Preliminary communication
<https://doi.org/10.32910/ep.73.5.4>

IMMERSIVE CULTURAL TOURISM IN THE CONTEXT OF COVID-19 PANDEMIC – GLOBAL PERSPECTIVES AND LOCAL IMPACTS

The crisis caused by the COVID-19 pandemic has strongly affected tourism projections for 2020 and has temporarily halted the global tourism and travel industry. The economic impact on the global economy could have lasting consequences, with the temporary pandemic regime hitting tourism the hardest. The paper provides an overview of tourism perspectives during and after the COVID-19 crisis, with an emphasis on cultural tourism and related facilities (cultural heritage, cultural attractions). The paper also examines the possibilities of using technology in redefining cultural tourism and creating a new – immersive cultural tourism model. The purpose of this paper is to point out the changes that modern technologies, with an emphasis on some of the immersive technologies, has on the trends in cultural tourism. Methods of analysis and synthesis, survey method and descriptive method were used in the creation of the paper. The research proved a significant trend of increasing interest in the concepts of virtual tourism and immersive cultural tourism, particularly in the context of reduced travel opportunities during the COVID-19 pandemic. The limitations of the research relate to the

* I. Mavrin, PhD, Postdoctoral Researcher, Josip Juraj Strossmayer University of Osijek, Academy of Arts and Culture in Osijek (e-mail: imavrin@aukos.hr).

** D. Šebo, PhD, Assistant Professor, Josip Juraj Strossmayer University of Osijek, Academy of Arts and Culture in Osijek (e-mail: dsebo@aukos.hr).

*** J. Glavaš, PhD, Full Professor, Josip Juraj Strossmayer University of Osijek, Faculty of Economics in Osijek (e-mail: jerko.glavas@efos.hr). The paper was received on 03.10.2020. It was accepted for publication on 24.11.2020.

relatively small survey sample, lack of Generation Z respondents as digital natives, and accelerated technological changes, as well as new trends that are emerging due to technological advances. The scientific contribution is visible in the contribution to the discussion on the use of augmented reality technologies in cultural tourism and the promotion of cultural heritage. Also, the contribution is visible in setting up a conceptual model of immersive cultural tourism.

Keywords: *immersive technologies, extended reality (XR), COVID-19, cultural tourism, cultural heritage*

1. INTRODUCTION

Pandemic of SARS-Cov-2 coronavirus, causing COVID-19 disease, has paralyzed the world in March 2020, including the complete tourism and creative industries sectors, which have been hit the hardest with the introduction of partial or complete quarantines worldwide. Global economy made a strong shift to online business, with classic office model, temporarily or in some cases permanently, replaced with virtual offices. Air traffic, the key driver of global tourism, plummeted to unprecedented low levels, with the fall of 41 percent in March 2020 when compared to March 2019, and 89 percent less air traffic in April 2020 in accordance to April 2019. The slow recovery began in May 2020, but the numbers in June 2020 were still 79 percent lower than in June 2019 (Eurocontrol, 2020). The impact of the COVID-19 pandemic on tourism base sector was massive, with projections of 100 to 120 million of jobs at risk, 910 billion to 1.2 trillion US\$ lost in exports and 850 million to 1.1 billion less international tourists (UNWTO, 2020a).

According to OECD, there will be "...60% decline in international tourism in 2020. This could rise to 80% if recovery is delayed until December". However, OECD also projects that specific geographic regions could recover more quickly in terms of international tourism, i.e. the European Union. Worldwide, domestic tourism could be the first one to recover. "Domestic tourism, which accounts for around 75% of the tourism economy in OECD countries, is expected to recover more quickly. It offers the main chance for driving recovery, particularly in countries, regions and cities where the sector supports many jobs and businesses" (OECD, 2020).

Cultural tourism as specific touristic niche has also suffered due to the pandemic. Due to the lockdown the touristic subsector strongly connected to museums, heritage sites and cultural and creative industries in general, has not been able to rely on its driving forces. "Cultural tourism makes up nearly 40% of world

tourism revenues with World Heritage sites and museums often serving as the focus for visitors. At the height of the global lockdown (...) 95% of the museums had closed and 9 out of 10 countries had closed down their World Heritage properties” (UNESCO, 2020:1).

The world went into isolation because of the COVID-19, with social distancing as the new norm for personal contacts. Digitalization has become the bridge for the gaps left by shutdowns and social distancing measures. Without digital technologies, the humanity would not have been able to practice regular daily activities, like business or virtual school attendance (BDO, 2020). COVID-19 crisis accelerated the process of digitalization worldwide in 2020, with very high prospects that some of the new business models emerged will become the new norm. It is yet to be seen how the tourism will cope with the pandemic and will the digital innovations in this sector have a lasting effect on the future of leisure traveling. One of the possibilities within digital innovations for tourism lies in virtual reality (VR), defined as “...the use of computer modeling and simulation that enables a person to interact with an artificial three-dimensional (3-D) visual or other sensory environment. VR applications immerse the user in a computer-generated environment that simulates reality through the use of interactive devices, which send and receive information and are worn as goggles, headsets, gloves, or body suits”. While VR concepts can be used as temporary or permanent tourism supplement, concepts like augmented reality (AR), “...a process of combining or ‘augmenting’ video or photographic displays by overlaying the images with useful computer-generated data”, or general extended reality (XR), an umbrella term combining existing and emerging immersive technologies that extend the reality experience by blending real world with virtual ones, or creating a complete immersive experience (Marr, 2019). Earlier research shows that extended reality is expected to have a significant impact in the tourism sector, with 28 percent business representatives believing tourism will be impacted by XR technologies, and 30 percent of the consumers anticipating impact of XR on tourism sector (Scribani, 2019). It is clear that extended reality, including the most popular and present VR, but also AR, MR (mixed reality) and immersive technologies that are yet to come, shall make a mark in tourism sector, with a potential of becoming a game changer. Because of its specific nature, the cultural tourism could be the leader of the digital transformation in the tourism sector.

This paper aims to detect the difficulties caused by COVID-19 pandemic in tourism, particularly in the cultural tourism sector. It also brings the proposal of immersive cultural tourism model as the solution for security related tourism problems, not only connected to COVID-19 pandemic, but also to visitor security issues caused by terrorism and erosion of heritage sites caused by overtourism phenomenon.

The research is focused on recent trends concerning the usage of technology in cultural tourism, especially on usage of extended reality (XR) concepts, like virtual reality (VR), augmented reality (AR) and mixed reality (MR). Emerging phenomena of virtual tourism and immersive cultural tourism will especially be monitored from the perspective of COVID-19 pandemic and its impact on technology implementation in touristic experiences. To achieve that, scientific papers, research papers and touristic trends' reports will be consulted, along with newspaper articles from media specialized in economics, tourism, and technological trends. At the end of the paper, the conceptual immersive cultural tourism model will be set in the Conclusion chapter as both the foundation and landmark for future research.

2. CULTURAL TOURISM AND TECHNOLOGY – LITERATURE REVIEW

In the past two decades (from 2000 to 2020), scientists from various scientific fields have thematized technology application possibilities for tourism and cultural heritage in their research papers and publications, with VR as the most common term or specific field of interest in the first decade (2000 – 2010), with AR overtaking the researchers interest with the technological improvements (especially after 2015).

Mosaker (2001) is focused on VR reconstruction possibilities for historical sites. Cho, Wang, and Fesenmaier (2002) focus on web based virtual tours for destination marketing, as trend at the beginning of millennium. Lepouras and Vassilakis (2005) discuss the possibilities of 3D video games technology in museums, while Berger, Dittenbach, Merkl, Bogdanovych, Simoff, and Sierra (2007) introduce e-tourism environment offering 3D visualization through 3D game-like application. Huang, Backman, Backman and Moore (2013) research use of 3D virtual environments in tourism sector. Whittington (2014) recognizes the impact of VR technology on future of family tourism, and Khourothanassis, Boletsis, Bardaki and Chasanidou (2015) investigate how AR travel guide impact pleasure of users. Trojan (2016) develops prototype connecting geolocation technology and AR experiences, while tom Dieck and Jung (2017) and Tussyadiah, Jung and tom Dieck (2018) suggest that AR provides an innovative way for both preserving heritage and enhancing visitor experiences. Richards (2020) focuses on the future perspectives of cultural tourism development, in the 2020 – 2095 period, suggesting that cultural offering will be dominated by AR and VR technology.

The continuous progress of digital technology has been strongly influencing every aspect of human lives, with (cultural) tourism and cultural and creative in-

dustries as one of the professional sectors with significant impact. As Wei (2019) suggests, both tourism and hospitality industries try to keep up with VR and AR technology applications in diverse functional units, but also for different purposes, and that encourages constant innovations for maintaining competitive advantages of involved business subject. Some authors implicate that "...possibilities of valuing tangible and intangible cultural heritage can be maximized by improving their knowledge and expanding their dissemination among citizens through the design and implementation of heritage information systems that, thanks to the use of ICTs, provide updated information, facilitate access to citizens and even consider their active participation in the collection and dissemination of relevant material" (Guilarte, González, Quintá and Carlos, 2020:19).

Virtual reality, augmented reality and extended reality concepts have stepped into the touristic offer, with both hardware and software. Han, Weber, Bastiaansen, Mitas and Lub (2019) propose a conceptual framework for AR/VR impact on the learning experience of cultural tourism visitors, seeing AR/VR technology in terms of both visitor engagement and reflecting observation, resulting with learning experience as part of overall cultural tourism experience. They imply that the touristic experience could be measured with the use of EEG technology and physiology. AR in tourism, related to the smartphone applications, can have significant impact on touristic experiences. As Kounavis, Kasimati, and Zamani (2012) suggest, information integrated in AR application is delivered using various multimedia formats. Such formats include sound and image, video, 3D models and Internet links for research of further information. Some authors introduce the concepts of immersive heritage tourism (Bec et al., 2019) and immersive cultural tourism (Mavrin, Mesić and Šebo, 2020), suggesting that AR, VR but also serious video games could strongly impact the future of cultural tourism and heritage interpretation and experience. VR usage in tourism could be seen both as addition to existing offer, but also the paradigm shift (Taufer and Ferreira, 2019), where VR could potentially substitute the real travel with the virtual one. The problem that could emerge from implementation of VR as tourism substitute relate to authenticity of touristic experience, with users' individual perception as the factor of acceptance (Guttentag, 2010).

Technological interventions at heritage sites, museums and other locations attracting cultural tourists provide added touristic value and could significantly improve visitor experiences. The question remains if the significant technological breakthrough in AR, VR and XR could partially or completely replace real in situ experiences, or can simply be an addition to physical objects at heritage sites, museums, and other locations for cultural and touristic experiences.

3. CULTURAL TOURISM IN COVID-19 CONTEXT

COVID-19 pandemic had a strong impact on complete tourism sector in 2020, with vague idea on how tourism shall be affected in the long term. Previous security crisis with impact on travel, tourism and hospitality sectors was terrorism. First two decades of the 21st century, and especially the first ten years, were marked by this challenge. “Some terrorist attacks have permanently changed the way in which tourist activity is taking place within the affected areas/countries. It has been noticed the need for higher security measures within the tourist areas, especially in those countries whose economy depends on the tourist industry, such as Spain, France, Greece, Italy, Egypt, Tunisia (...)” (Albu, 2016:7). These events changed the security protocols in public spaces and in the airline industry, and these adjustments created the ground for uninterrupted tourism (and cultural tourism) growth between 2010 and 2019. COVID-19 pandemic opens the space for new security and safety innovations in travel, tourism, and hospitality sectors.

3.1. Global cultural tourism in pre-pandemic conditions – the decade of continuous growth

Worldwide touristic numbers in the pre-pandemic conditions reached new record levels. International tourist arrivals at global level grew 4 percent in 2019 and reached 1.5 billion. Although it grew at rates slower than in 2017 and 2018 it was the 10th consecutive year of sustainable touristic growth (UNWTO, 2020b). Europe was leading the way in cultural tourism with its cultural heritage including cultural institutions, archaeological sites, historical cities, and industrial sites, but also cultural events and intangible heritage (i.e. music and gastronomy). “It is estimated that cultural tourism accounts for 40% of all European tourism 4 out of 10 tourists choose their destination based on its cultural offering” (European Commission). Numbers are similar on global level, according to 2018 cultural tourism study from UNWTO, with average of cultural tourists among overall touristic population set at 35.8 percent. This percentage is derived from surveyed countries estimates, with two specific clusters – lower of up to 20 percent cultural tourism, and another cluster, between 40 and 60 percent, (UNWTO, 2018).

The rise of global tourism lead to concerns of the negative impacts it could have on cities, regions, and planet itself. Problems like overtourism, tourism related urban sprawl, pollution caused by air traffic and traffic in general and other tourism related issues resulted with the concept of sustainable tourism development (UNWTO, 2005), with goals of optimal use of environmental resources,

respect for socio-cultural authenticity of host communities, and ensuring viable economic operations, which provide socio-economic benefits for all stakeholders included. Tourism related issues, however, existed until 2020, when the year was marked by COVID-19 pandemic that temporarily paralyzed all touristic activities, with transnational and national governing bodies and governments tackling the accumulated sustainability problems.

3.2. (Cultural) tourism and COVID-19 – coping with the pandemic

Novel coronavirus, causing COVID-19 with pneumonia symptoms, was first recorded in China, in Wuhan state, in December 2019, with World Health Organization recognizing the virus in January 2020 and declaring the global pandemic on March 11, 2020. Countries all over the world went into lockdown day by day, stopping social and economic activities, including tourism (WHO, 2020). Although it emerged in China, COVID-19 made first significant impact in Europe, with Italy, one of the global cultural touristic destinations on the frontlines. The early strong spread of the novel COVID-19 was strongly connected to touristic activities, with winter tourism in Austria. “Between 9 and 16 March, increasing numbers of COVID-19 cases were detected at University Hospital Münster (UKM), a tertiary care center in northwestern Germany. Of 90 patients, 36 had recently visited Ischgl (39.6%) (...), a popular ski town in the Austrian Alps. With 22,626 beds for visitors, 492,798 tourists arrived in the 2018/2019 season, including guests from over 20 different countries. American tourists represented the most relevant group of non-European guests, with 6,886 overnight stays” (Correa-Martinez, Kampmeier, Kümpers, Schwierzeck, Hennies, Hafezi, Kühn, Pavenstädt, Ludwig, and Mellmanna; 2020). In March and April 2020, the world went in lockdown, setting up traveling restrictions with immediate negative impact on touristic movements. As some sectors reacted with immediate impact (i.e. commerce shifting to online shopping and immediate delivery or schools and universities moving to online learning platforms and teaching through Zoom application), tourism will also adapt, using innovations, technical solutions, and better hygiene in public spaces and transport. Some other issues could emerge, such as making some of the temporary barriers permanent (The Economist, 2020), with problems especially in non-democratic or post-democratic regimes around the world, with some of them in areas and countries attractive for tourists.

Tourism helped the rapid spread of COVID-19 infections but was also hit the hardest of all global industries. Not all the impacts were completely disastrous for the travel sector. Globally extremely popular destinations, overburdened

with visitors and tourists, like Venice in Italy, Barcelona in Spain or Dubrovnik in Croatia had a mini break from hordes of people rambling their urban heritage. The pause, however, had a huge financial cost for the cities' economies. Venice touristic economy records 10.2 million mostly international guests in the city and region in terms of hotel accommodation. The estimate shows 20 million visitors per year, contributing with 3 billion euros but mostly burdening area with only 50,000 inhabitants (ISTAT, 2019). In opposition with sustainable tourism, Venice is pressed with one-day visitors, including the ones from the cruise ships. The COVID-19 pause could now be utilized to economic shift towards high-profile tourism, university-based economy, with sustainable principles in focus (Momigliano, 2020).

New ideas and concepts for recovery of the tourism sector emerged, some of them including use of virtual reality. Some authors suggested that "...the tourism industry will take on a 'new normal,' where virtual reality will likely play two pivotal roles: a powerful destination marketing tool to entice people to travel again, and a temporary escape for those who are not yet willing to travel" (Moorhouse, 2020). Destinations using virtual reality in the pandemic could even show themselves more resilient to the problem, sustaining the existing and opening new markets for their services.

3.3. Cultural tourism and cultural heritage management in digital transformation

One of the key components and travel reasons within cultural tourism concept are museums and heritage sites, and both can have significant positive impact from the integration of XR (AR, VR, MR or emerging concepts) in their offer. As Jung et al. (2017) propose, social presence in mixed realities (VR and AR environments) is a strong predictor of the four realms of experience economy – entertainment, education, esthetic and escapist realm. Their research shows that both VR and AR are a useful tool for improvement of tourists' experience, and it can ultimately encourage intention to visit actual destination, while VR can itself be regarded as a substitute for touristic experience. European Network for Accessible Tourism study ran in the global lockdown period, in April and May 2020, focused on tourist guides opinions on VR, AR and overall technology in touristic presentation. As ENAT global survey (with emphasis in tourist guides in Europe) showed that: 90 percent of respondents were interested for training program in VR content creation, and 73 percent of them are ready for one-time investment if opportunity occurs for having a revenue from tourism based on VR (ENAT, 2020). Earlier study (ENAT, 2019, according to ENAT, 2020) focused on traveler opin-

ions in immersive experiences tourism (or XR based tourism) showed that more than 60 percent of the respondents are ready to have VR based tourism at a cost of less than 5 percent of the travel cost per person, if they actually travelled to the destination. Pre-COVID-19 opinions and surveys, such as the global traveler survey from Italy4Real (Italy4Real, 2017), showed low level of traveler enthusiasm for use of VR technology in tourism. Main results showed the following: 81 percent have not believed VR could ever take over from real travel, 90 percent said they would miss full sensory experience. They also said that they would mostly miss gastronomic experience (77 percent), as well as meeting new people and locals (69 percent). However, the 2017 survey showed more belief in replacing travel agents by artificial intelligence. AI replacing guides and hotel staff, on the other hand, was not a scenario they believed in. Invest Bristol and Bath conducted a survey on perceptions of VR impact on future of different industries and fields of human activities. As the study showed (IBB, 2016), only 12 percent of respondents expected VR could significantly impact travel industry in the future. But the travel experts showed more enthusiasm in VR in tourism context, because young adults spend more time with technology. VR technology could be a catalyst for the next generation of travelers (Murison, 2016).

Potential of VR in travel industry is enormous, even putting aside COVID-19 impact on tourism. Using VR technology at their homes or specialized distant touristic agencies, future travelers could experience the location and explore accommodation possibilities, which could lead to successful management of their expectations. Based on realistic display of the locations, tourists of tomorrow can decide on location they shall visit or the hotel they will chose. At the very location, tourist could experience the heritage and history of location using augmented and extended reality concepts, enhancing their experience. However, as the 2020 COVID-19 pandemic shows, constant improvement of VR technology could be helpful in the manner of tourism surrogate, when locations are unavailable. Except of the pandemic reasons, when all the traveling is suspended, VR tourism could thrive from other situations also. Some of the arguments for VR tourism without actual travel could also be connected to traveler safety, when locations are unavailable due to terrorism, war conditions, or when some of the heritage sites are closed due to dilapidated conditions of the architecture. VR tourism could also substitute traveling to locations temporarily or permanently closed due to overtourism conditions or for presentation of heritage, including historic and prehistoric locations, especially endangered heritage sites. Generation Z, people born since 1997, represent a potential specific niche for VR tourism, together with generations born in 2010s and future generations of 2020s. The representatives of Gen Z are digital natives, defined by social networks, mobility, and multiple realities (Francis and Hoefel, 2018). People born from 2010s are even more immersed into digital technology and the ways it impacts reality. Creating a specific VR tours for people belonging

to these generations could have a great economic potential worth exploring in both tourism and ICT industries.

4. METHODOLOGY

The research on habits and preferences of Croatian native tourists and visitors was conducted online, with 228 people responding to the survey. The focus of the research were general touristic habits, impacts of COVID-19 on traveling in 2020, and perceptions on use of XR (especially VR and AR), and video games in cultural tourism. The aim of the research was to find out how is the COVID-19 pandemic impacting touristic habits, with special emphasis on accepting the technological solutions as supplement and addition for cultural touristic experiences. The following research hypothesis was set:

***Main hypothesis:** COVID-19 pandemic is making tourists and travelers from Republic of Croatia more open for the concept of virtual tourism.*

Two additional hypotheses were also set:

***Additional hypothesis 1:** Extended reality technologies are well known to general population and have a great potential in cultural tourism development.*

***Additional hypothesis 2:** Historical and heritage video games can encourage the interest and motivate the travel on the heritage sites and actual locations.*

5. RESULTS FROM RESEARCH OF TOURISTIC PREFERENCES: CULTURAL TOURISM IN THE REPUBLIC OF CROATIA – THE CONTEXT AND PERSPECTIVES FOR VIRTUALIZATION

The research on habits and preferences of Croatian native tourists and visitors was conducted online in the period between 22nd and 28th of July 2020, with 228 people responding to the survey. The focus of the research were general touristic habits, impacts of COVID-19 on traveling in 2020, and perceptions on the use of XR (especially VR and AR), and video games in cultural tourism.

5.1. Demographic distribution of respondents (age, region, size of the residential place, education, and employment parameters)

Generation X provided the most respondents – 39.5 percent of people who answered the survey were born between 1965 and 1980, followed by Generation Y (born between 1981 and 1996) with 39 percent of total respondents. Generation Z (people born after 1997) made 10.5 percent of the respondents, while baby boomers (born between 1946 and 1946) made 10.1 percent of the respondents. People born on or before 1945 made 0.9 of the respondents.

28,5 percent of the respondents came from Osijek-Baranja County, followed by City of Zagreb (14 percent of the respondents), Split-Dalmatia (9.2%) Zagreb County (5.7%) and Istria County (5.7%). 5.3 percent of respondents were Croatian residents currently living overboard. Representatives of other Croatian counties were represented with less than 5 percent of collected answers per county. Answers on the survey came from all 21 Croatian counties (20 counties and the City of Zagreb), but also from Croatian residents living outside of Croatia.

29.4 percent of the respondents live in villages, towns, or cities that have between 1,000 and 10,000 residents, and 23.2 percent of them are living in cities with more than 100,000 residents. 20.6 percent live in towns and cities between 10,001 and 50,000 inhabitants, 15.8 percent in towns and cities with 50,001 and 100,000 inhabitants, and 11 percent lived in places with less than 1,000 inhabitants.

High school is the maximum level of current education for 46.1 percent of respondents, 40.4 percent of them have a college degree, 12.7 percent have MSc or PhD level of education, with only 0.9 percent of them have elementary school. 25.9 percent were employed in public or civic service, with 23.2 working in private sector. 18.4 percent were unemployed, and 11.4 percent are still in education system (students). 10.1 percent were self-employed, 6.6 percent retired, and 4.4 percent temporarily employed (precarious workers).

5.2. Touristic habits and impact of COVID-19 on travel in 2020

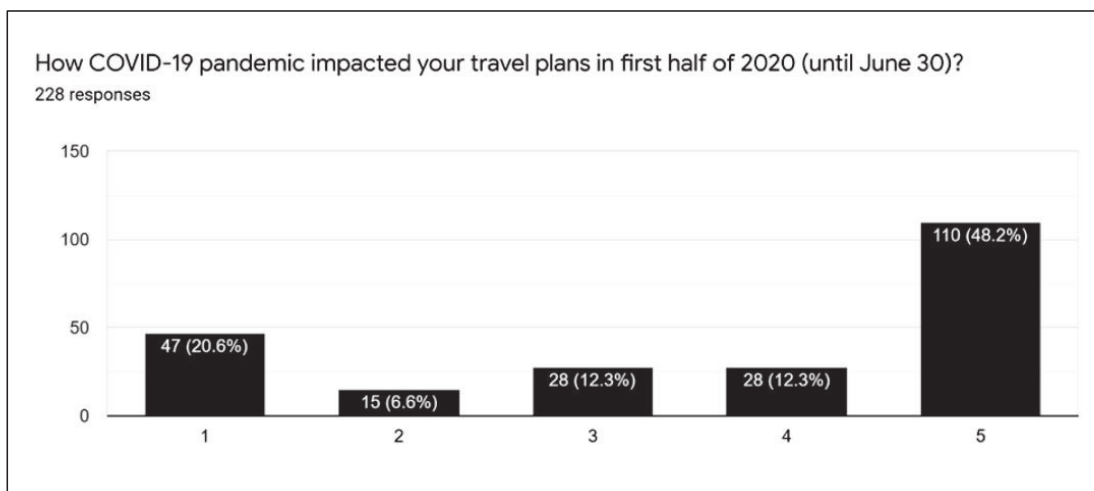
Concerning traveling habits of the respondents, 56.1 percent of them had one to three travels with at least one overnight stay, a quarter of them (25.4%) did not travel and 18.4 percent had four or more travels with overnight stays in 2019. In the manner of one-day trips, without overnight stays, survey showed the following: 43.4 percent had from one to three trips in 2019, 32.9 percent had four or more

trips, while 23.7 percent had no one-day trips in 2019. Concerning the travel within country or outside borders, 49.4 percent had more domestic trips and 25 percent had equally visited both domestic and foreign locations (both travels and trips included). 10.1 percent visited more foreign locations in 2019, and 15.4 percent have not traveled at all in 2019.

COVID-19 had very high (48.2%) or high (12.3%) impact on travel plans of the respondents in first six months of 2020, while it had no impact for 20.6 percent, low impact on 6.6 percent and neutral effect on 12.1 percent of the respondents (Figure 1).

Figure 1

LEVEL OF IMPACT ON TRAVEL IN FIRST SIX MONTHS OF 2020
(JANUARY 1 TO JUNE 30)¹



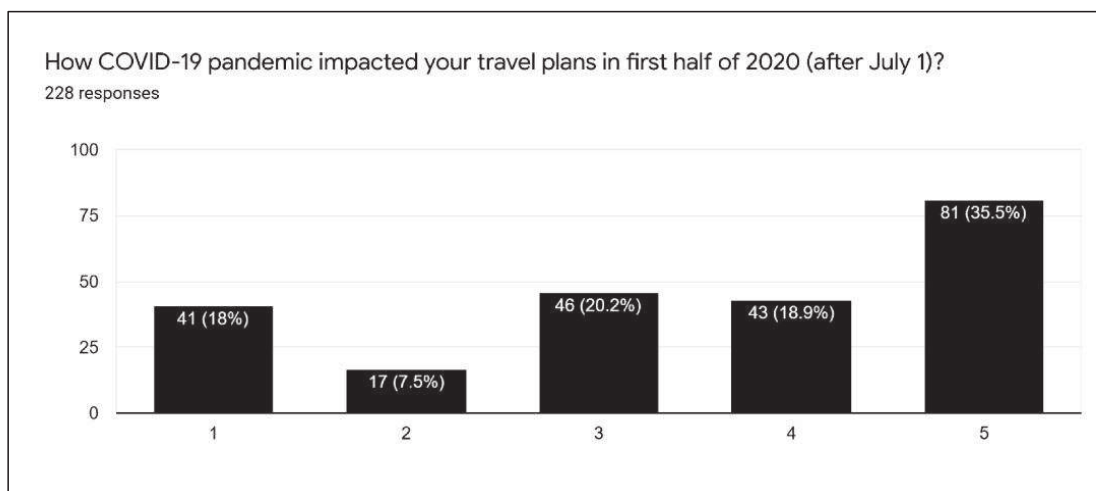
Source: Edited by authors

When the research was conducted in July of 2020, the perception of COVID-19 impact on personal travel plans until the end of 2020 was still high – 35.5 percent expected very high and 18.9 percent high impact, meaning more than half of the travelers believe COVID-19 will shape their traveling habits in 2020 (Figure 2).

¹ Likert scale offered 5 possible options of agreement with the claims: 1 – strongly disagree; 2 – somewhat disagree; 3 – neither agree nor disagree; 4 – somewhat agree; 5 – strongly agree

Figure 2

LEVEL OF IMPACT ON TRAVEL IN THE SECOND HALF OF 2020
(AFTER JULY 1)

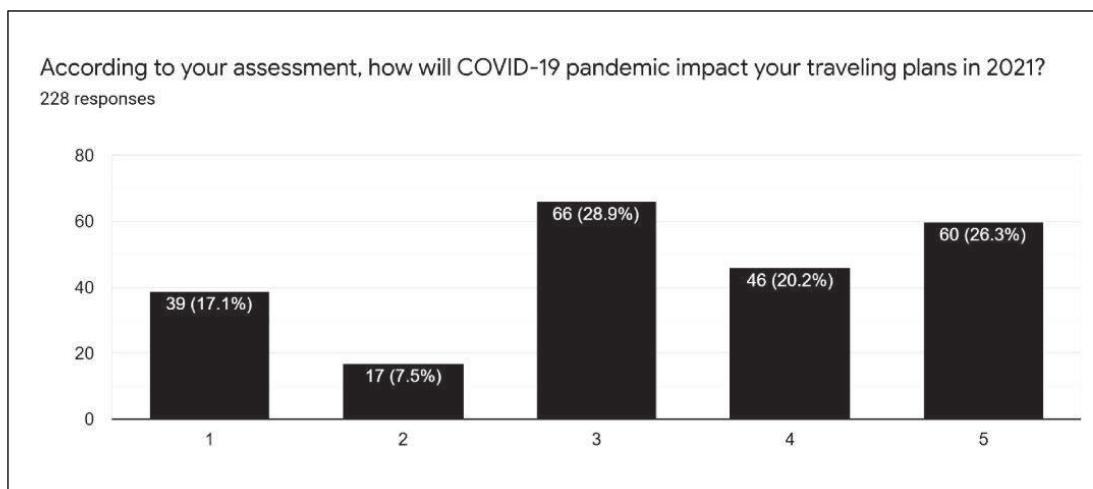


Source: Edited by authors

Respondents were pessimistic in terms of the impact of COVID-19 on their travel plans in 2021. 26.3 percent of them believed that the COVID-19 pandemic will have very high impact, and 20.2 percent believed it will have high level of impact on their traveling plans in the year after the pandemic breakthrough (Figure 3).

Figure 3

PERCEPTIONS ON LEVEL OF COVID-19 IMPACT ON TRAVELING
PLANS IN 2021



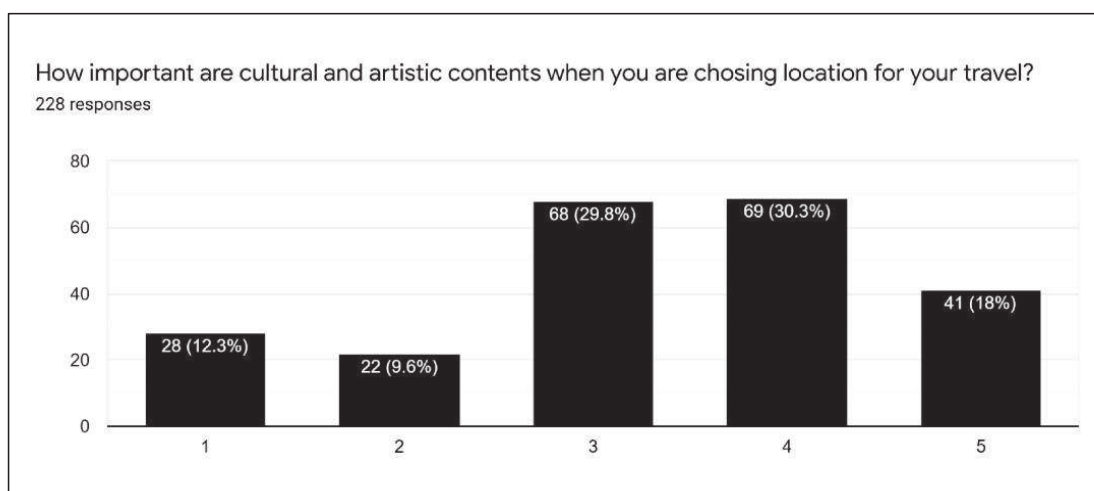
Source: Edited by authors

5.3. Cultural tourism as motive for travel

Primary motives for travel of the respondents were vacation/holiday (74.8%) and visiting relatives and friends (48.2%). Explorations of cultural content was important for 28.8 percent of the respondents, so we could consider them as cultural tourists. Other significant motives for travel include business trips (18.6%), sports, recreation, and adventure (16.8%) and other motives (12.8%). In spite of the fact that only 28.8 percent gave culture as important motive of their travel, almost half of the respondents claimed culture and arts are important (30.3%) or very important (18%) when choosing location for travel (Figure 4).

Figure 4

IMPORTANCE OF CULTURE AND ARTS WHEN CHOOSING TRAVEL LOCATION



Source: Edited by authors

But, more than two thirds of the respondents could be considered cultural tourist, because 68.9 percent of them visited any kind of cultural content during their travel, regardless of the motive for the travel itself.

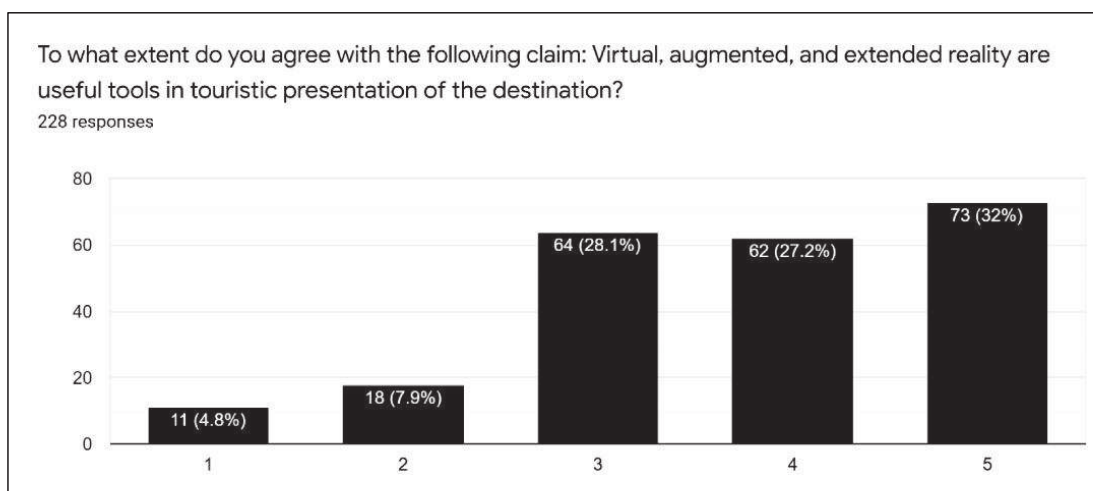
5.4. VR, AR, XR and video games in (cultural) tourism

Virtual reality (VR) is a concept known to 83.8 percent of respondents of the survey, 32.5 percent heard of augmented reality (AR), and 25.9 percent is familiar with extended reality. 13.6 percent of respondents have not heard of neither VR, AR, nor XR. 36.4 percent of respondents play video games and 17.1 percent of them played historical video games or video games that are set in historical or heritage context. 14.5 percent of the respondents felt the need to visit the location they saw in historical video game they were playing. That makes 85 percent of those playing historical games. 5.7 percent of the respondents actually visited the location they experienced in the historical or heritage video game, or one third of those playing that kind of video games.

Almost 60 percent of the respondents think that VR, AR and XR can contribute to touristic presentation (Figure 5). 32 percent strongly agree and 27.2 agree on that claim. Over 60 percent of them think VR, AR and XR can help in presentation of cultural heritage (Figure 6), with 31.6 percent strongly agreeing and 29.8 percent agreeing.

Figure 5

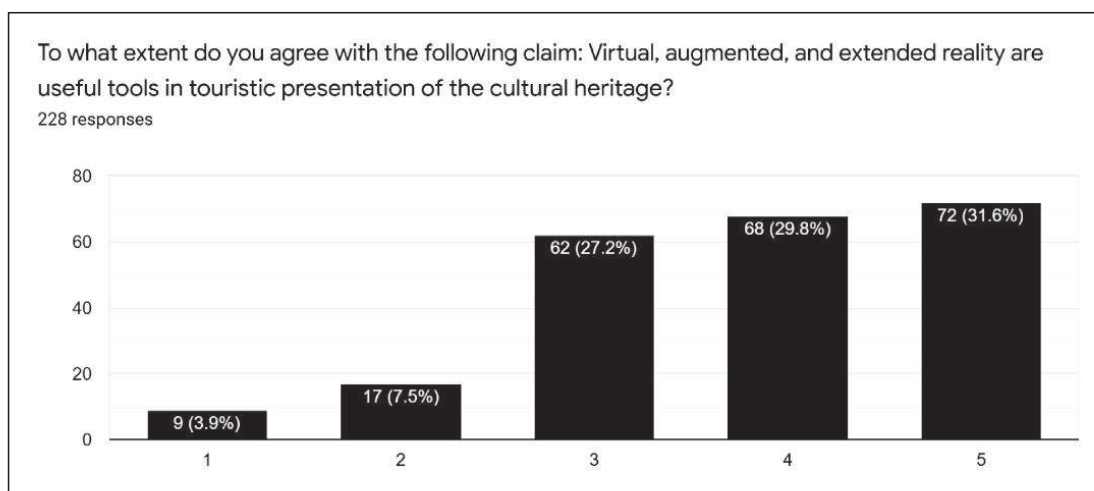
VR, AR, AND XR IN THE PRESENTATION OF TOURISTIC DESTINATION – PERCEPTIONS



Source: Edited by authors

Figure 6

PERCEPTIONS ON USE OF VR, AR AND XR IN PRESENTATION OF CULTURAL HERITAGE

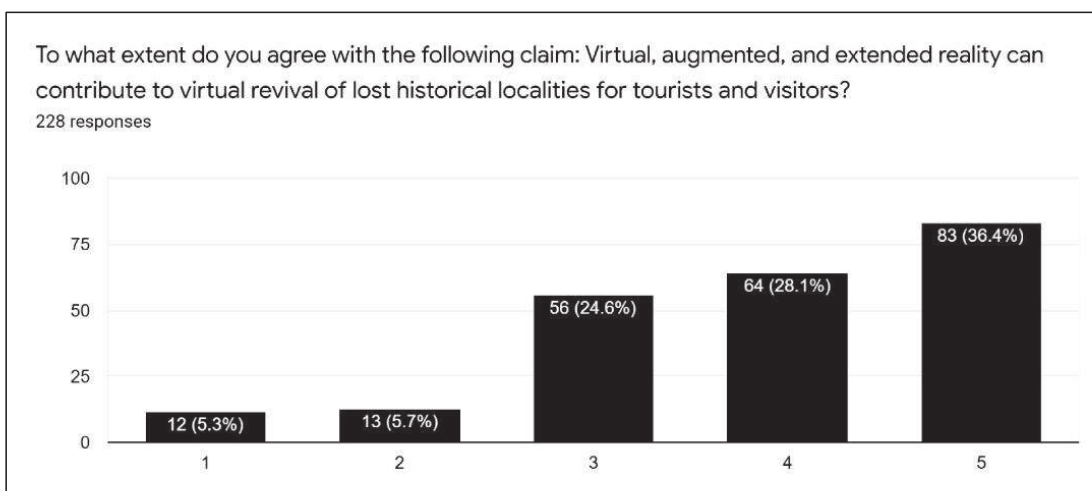


Source: Edited by authors

Reviving lost historical destinations through VR, AR and XR seems acceptable for 64.5 respondents (36.4% strongly agree and 28.1% agree, Figure 7). 58.3 percent of the respondents think that mobile applications based on VR, AR and XR can contribute to visitor safety during COVID-19 pandemic (34.6% strongly agree and 23.7% agree, Figure 8).

Figure 7

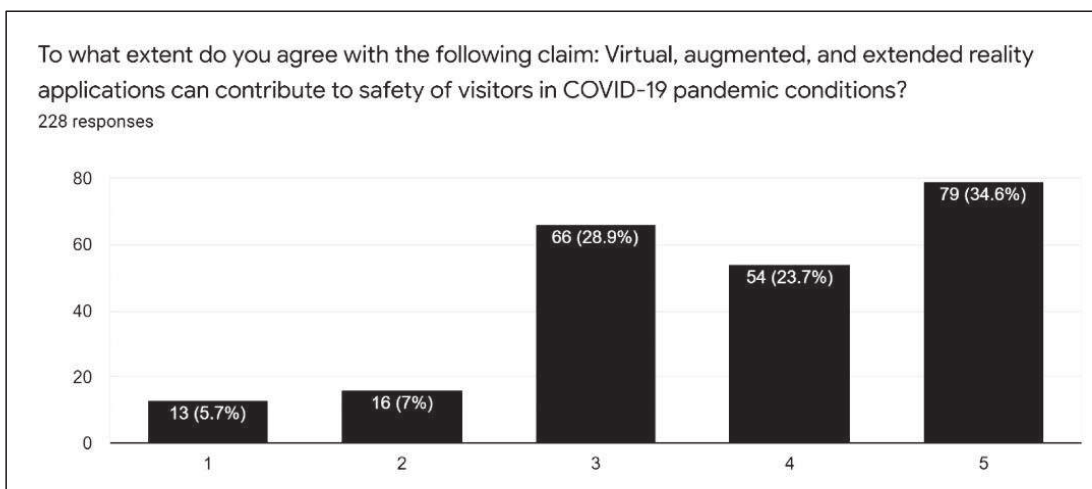
VR, AR AND XR IN REVIVING LOST HISTORICAL LOCALITIES – PERCEPTIONS



Source: Edited by authors

Figure 8

PERCEPTIONS ON VR, AR AND XR IN SAFETY OF VISITORS DURING COVID-19 PANDEMIC

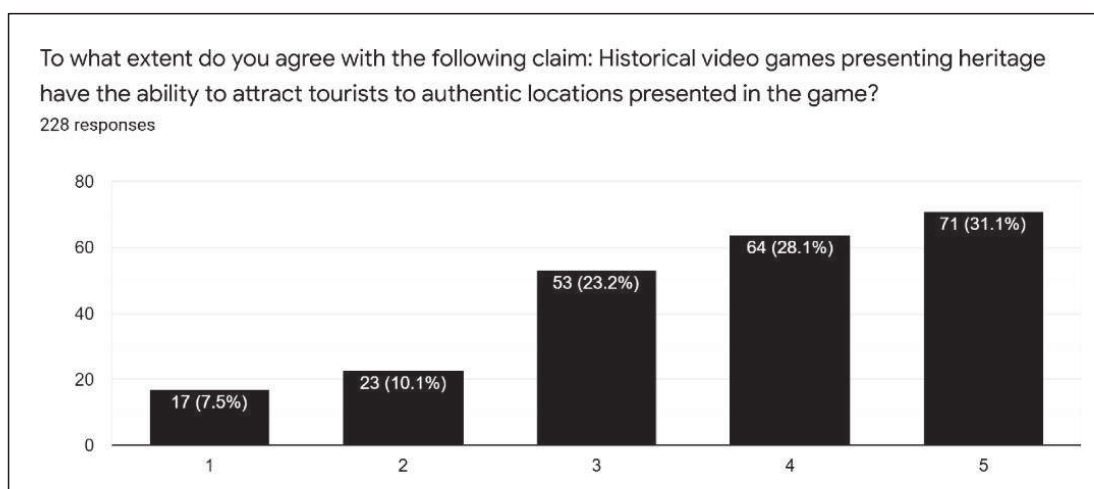


Source: Edited by authors

59.2 percent of the respondents think that video games with historical locations and cultural heritage can contribute to attracting tourists to authentic locations (Figure 9), where 31.1 percent strongly agree, and 28.1 percent agree. 47.4 percent of the respondents think that historical and heritage video games can temporarily replace cultural tourism at authentic locations, which are unavailable due to COVID-19 pandemic (Figure 10).

Figure 9

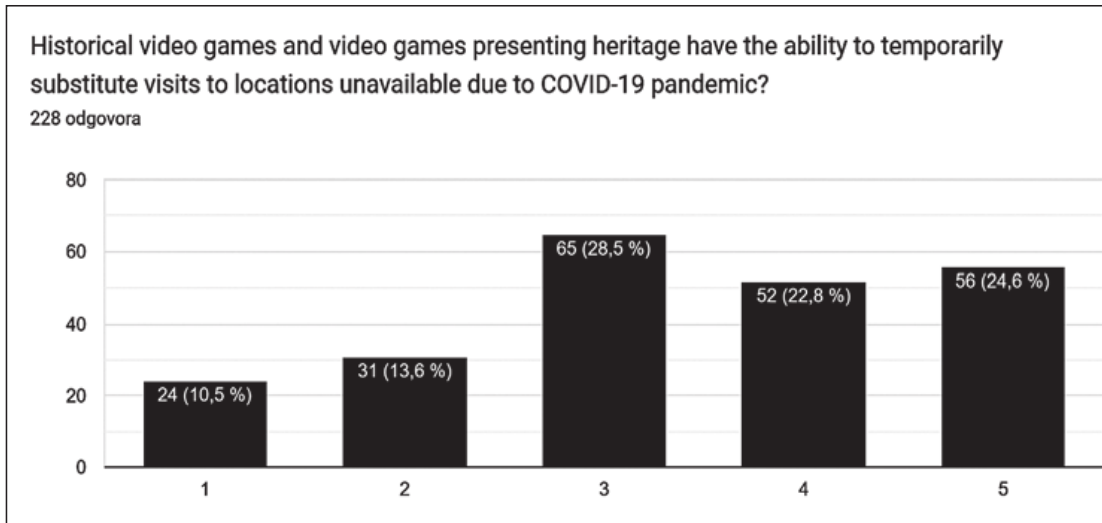
PERCEPTIONS ON HISTORICAL VIDEO GAMES IN ATTRACTING TOURISTS TO DESTINATIONS



Source: Edited by authors

Figure 10

PERCEPTIONS ON VIDEO GAMES AS SUBSTITUTE FOR TOURISTIC DESTINATIONS UNAVAILABLE DUE TO COVID-19 PANDEMIC



Source: Edited by authors

5.5. Main conclusions from the research

As the research shows, the main hypothesis: *'COVID-19 pandemic is making tourists and travelers from Republic of Croatia more open for the concept of virtual tourism.'* was accepted, because most of the respondents (partially or completely) agree that XR technologies and historical video games could provide (temporary) sanctuary for travelers motivated by culture.

Additional hypothesis 1: *'Extended reality technologies are well known to general population and have a great potential in cultural tourism development.'* was partially accepted, because audiences mostly recognize the concept of virtual reality (VR), but are less familiar with other technological concepts based on altering reality by technology. Additional hypothesis 2: *'Historical and heritage video games can encourage the interest and motivate the travel on the heritage sites and actual locations.'* was also accepted, because most of the respondent (85 percent) playing historical and heritage video games felt the need the location they

experienced virtually. Though, small part of them (5,7 percent) actually visited the location they experienced in the video game.

The research leads to the following main conclusions regarding the habits and attitudes of Croatian tourists in general, in context of COVID-19 pandemic, and in terms of the use of technology:

- Cultural reasons are the third motive for Croatian travelers, favorable to both domestic and foreign travels, and seven out of ten of them visited cultural or artistic content during their trip, regardless of the motive of the travel in 2019. This leads us to the conclusion that seven out of ten Croatian travelers in 2019 were cultural tourists (including accidental cultural tourist).
- VR, AR, XR, and video games have strong support in public opinion in terms of exploitation in cultural tourism and cultural heritage presentation. Most of the video game players playing historical or heritage related video games felt the need to visit the location, and one third of the players within specific group visited the locations presented in the game(s).
- VR, AR, XR, and video games are considered as useful substitution or safety net for (cultural) tourism during COVID-19 pandemic.

Continuous technological progress and content development for virtual cultural tourism could result in both more VR, AR and XR enthusiasts in general, but also more conservative reaction of visitors relying more on available senses.

5.6. Limitations of the research

The limitations of the conducted research are in relatively small sample of respondents (total of 228), and in continuous change of tourist habits due to the COVID-19 pandemic. Therefore, the research represents the opinions of the respondents at the end of July 2020. Another limitation to the research is the fact that user experiences with immersive technologies were not included in the research – it was the research of familiarity of immersive technologies in general. There were also lack of Generation Z respondents to the survey, as one of the most prone to technology.

6. CONCLUSION

Cultural tourism is a form of tourism with very high potential to become the first branch of the global industry making a shift towards immersive technologies in designing and creating specific products.

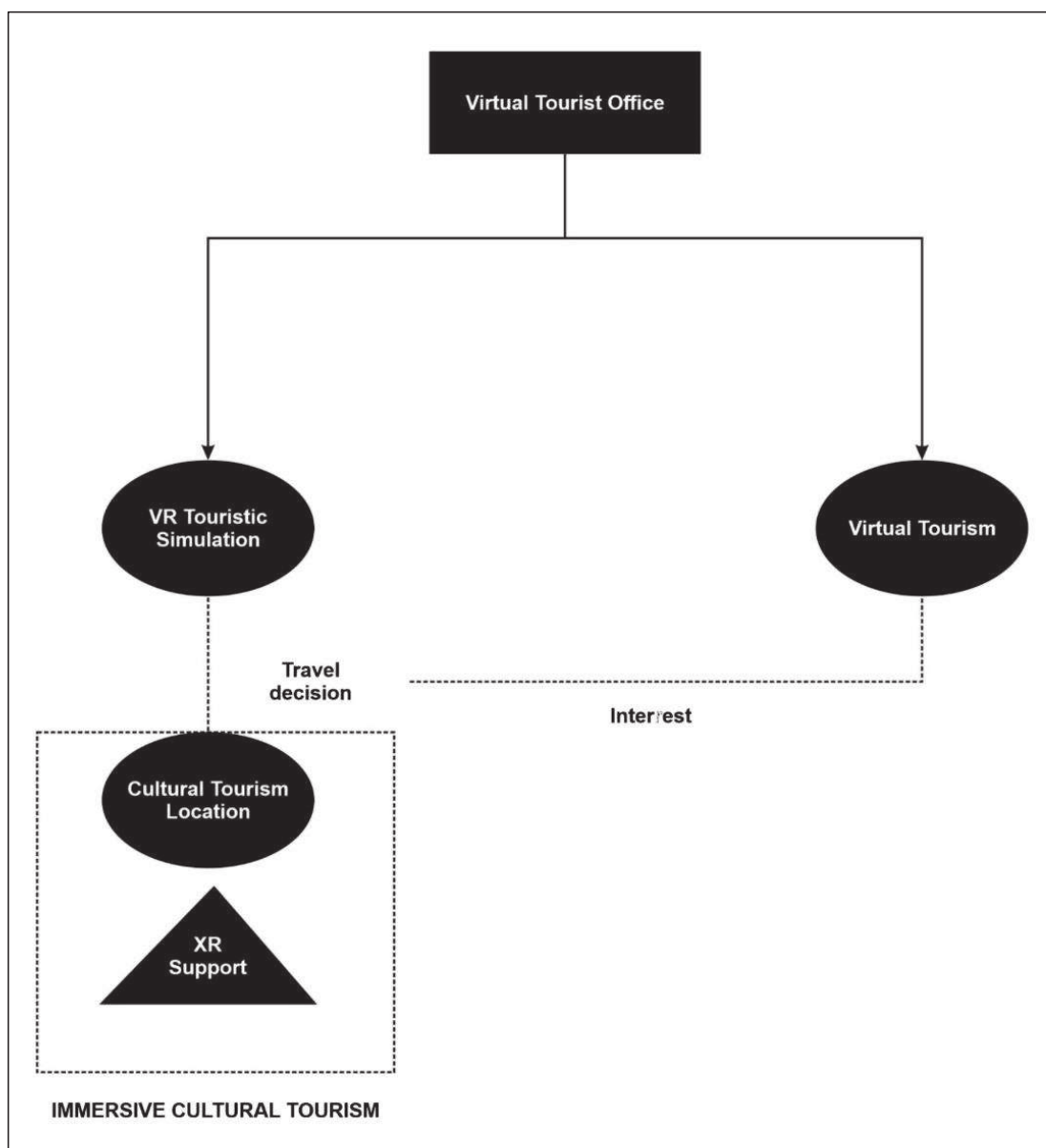
Extended reality, with virtual and augmented reality as its most common forms, could have a significant impact on the future development of sustainable cultural tourism and sustainable tourism overall. The arguments for the sustainability of virtual tourism, or immersive technologies' supported tourism are as follows:

- VR could be used as sustainable substitute for cultural tourism in the conditions of lockdown during the pandemic, when the museums and heritage sites are closed or unavailable due to suspension of travel (virtual tourism).
- VR could also be used as cultural tourism substitute in other security issues (war conditions, terrorism), or as sustainable substitute for visiting endangered heritage sites.
- VR can also be used as strong marketing tool for attracting tourists to heritage and other culture related locations, providing a preview for real locations with full *in situ* experience.
- AR and XR could support visitor experiences and develop new visitors for cultural tourism as one of the most sustainable forms of tourism.

In relation to these facts and conclusions, we suggest a theoretical model of immersive technology supported cultural tourism, based on the concept of virtual tourism office.

Figure 11

VIRTUAL TOURISTIC OFFICE AS THE FUTURE OF IMMERSIVE CULTURAL TOURISM



Source: Edited by authors

In this hypothetical model, the virtual touristic office becomes the reference point for future activities in cultural tourism. Either as physical office equipped

with immersive technologies and XR simulations, or as virtual place for the ones equipped with their own technology, virtual tourist office gives an opportunity for:

1. Buying virtual tourism product, with full immersive experience of the location, enabling virtual travel to the location without the actual travel. It can have gamification elements integrated within the simulation, allowing the consumer to navigate, explore and experience to the full the historical or heritage location in the bought virtual travel. Monetization potential also lies within the possibilities of buying additional products within the simulation. This can also be achieved with gamification elements in the simulation, but also with allowing virtual tourists to buy virtual souvenirs or other integrated products. This virtual experience could encourage the tourist to visit the physical location of cultural heritage or other cultural tourism hotspots.
2. Second option is to have a short experience of actual location, an immersive preview of the location where the potential visitors enter the virtual tourist office without buying the full product, and can have a short, 5 to 10 minute VR based preview after which they can decide on traveling location.

At the very location, tourists can also be entertained and educated with immersive content, this time mostly based on AR, MR or other emerging XR concepts combining physical reality with available immersive technology. This model enhances cultural tourists' experience of location, allowing them to revive the actual past of the visited place.

Future research should focus more on the development of Croatian tourists' preferences in terms of technological implementations in the touristic offer, comparison of Croatian travelers with the ones from surrounding countries and within European Union, and also the opinions on virtual tourism – tourism without the actual travel. Specific research should focus on Generation Z as more prone to technology and also on the experiences of respondents that actually used immersive technologies.

REFERENCES

1. Albu, C. E. (2016), "Tourism and Terrorism: A Worldwide Perspective", CES Working Papers, Centre for European Studies, Iasi, Vol. 8, No. 1, available at: <https://www.econstor.eu/handle/10419/198440> (Accessed on: July 10, 2020)
2. BDO (2020), "COVID-19 Is Accelerating the Rise of the Digital Economy", BDO United States, available at: <https://www.bdo.com/insights/business-financial-advisory/strategy,-technology-transformation/covid-19-is-accelerating-the-rise-of-the-digital-e> (Accessed on July 3, 2020)
3. Bec, A., Moyle, B., Timms, K., Schaffer, V., Skavronskaya, L., Little, C. (2019), "Management of immersive heritage tourism experiences: A conceptual model"; *Tourism Management*, Vol. 72, pp. 117-120.
4. Berger, H., Dittenbach, M., Merkl, D., Bogdanovych, A., Simoff, S. and Sierra, C. (2007), *Opening new dimensions for e-tourism; Virtual Reality*, Vol. 11 Nos 2/3, pp. 75-87.
5. Britannica.com: Augmented reality (AR), Encyclopaedia Britannica, available at: <https://www.britannica.com/technology/augmented-reality> (Accessed on: July 3, 2020)
6. Britannica.com: Virtual reality (VR), Encyclopaedia Britannica, available at: <https://www.britannica.com/technology/virtual-reality> (Accessed on: July 3, 2020)
7. Cho, Y.H., Wang, Y. and Fesenmaier, D.R. (2002), Searching for experiences: the web-based virtual tour in tourism marketing; *Journal of Travel and Tourism Marketing*, Vol. 12 No. 4, pp. 1-17.
8. Correa-Martínez, C. L., Kampmeier, S., Kümpers, P., Schwierzeck, V., Hennes, M., Hafezi, W., Kühn, J., Pavenstädt, H., Ludwig, S., Mellmanna, A. (2020), "A Pandemic in Times of Global Tourism: Superspreading and Exportation of COVID-19 Cases from a Ski Area in Austria", *Journal of Clinical Microbiology*, Vol. 58, No. 6.
9. *Creativity*, Vol. 12 No. 1, pp. 15-25.
10. Eurocontrol (2020), "COVID-19 impact on the European air traffic network", available at: <https://www.eurocontrol.int/covid19> (Accessed on: July 13, 2020)
11. European Commission, "Cultural Tourism", available at: https://ec.europa.eu/growth/sectors/tourism/offer/cultural_en (Accessed on: July 1, 2020)
12. European Network for Accessible Tourism (2020), "COVID-19 and opportunities for VR based tourism economy", ENAT, available at: <https://www.accessibletourism.org/?i=enat.en.news.2176> (Accessed on: July 2, 2020).

13. Francis, T., Hoefel, F. (2018), “‘True Gen’: Generation Z and its implications for companies”, McKinsey & Company, available at: <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/true-gen-generation-z-and-its-implications-for-companies#> (Accessed on: July 16, 2020).
14. Guilarte, Y. P., González, R. C. L., Quintá, F. X. A., Carlos M. (2020), “Heritage Information System to Promote Cultural Tourism and the Use of Digital Mapping in Primary and Secondary Schools”, in Katsoni, V, Spyriadis, T. (Eds.), *Cultural and Tourism Innovation in the Digital Era*, Sixth International IACuDiT Conference, 2019, Athens, pp. 17-36.
15. Guttentag, D. A. (2010), “Virtual reality: Applications and implications for tourism”, *Tourism Management*, Vol. 31, No. 5, pp. 637-651.
16. Han, D., Weber, J., Bastiaansen, M., Mitas, O., Lub, X. (2019), “Virtual and Augmented Reality Technologies to enhance the visitor experience in cultural tourism”, in tom Dieck, M. C., Jung, T. (Eds.), *The Power of Augmented and Virtual Reality for Business*, Springer, Cham, pp. 113-128.
17. Huang, Y.C., Backman, S.J., Backman, K.F. and Moore, D. (2013), Exploring user acceptance of 3D virtual worlds in travel and tourism marketing, *Tourism Management*, Vol. 36, pp. 490-501.
18. Invest Bristol and Bath (2016), “IBB VR Survey”, available at: <https://www.usurv.com/Cu9KaAACu> (Accessed on July 16, 2020).
19. Istituto Nazionale di Statistica (2019), “Movimento turistico in Italia / Anno 2018 – Turismo ancora in crescita: presenze +2%, arrivi negli esercizi ricettivi +4%”, available at: <https://www.istat.it/it/files/2019/11/Movimento-turistico-in-Italia-2018.pdf> (Accessed on: July 14, 2020).
20. Italy4Real, available at: <https://italy4real.com/> (Accessed on: July 15, 2020).
21. Jung, T., tom Dieck, M. C., Lee, H., Chung, N. (2016), “Effects of Virtual Reality and Augmented Reality on Visitor Experiences in Museum”, in Inversini, A., Schegg, R. (Eds.), *Information and Communication Technologies in Tourism*, Springer International Publishing, Wien, New York, pp. 621-635.
22. Kounavis, C. D., Kasimati, A. E., Zamani, E. D. (2012), “Enhancing the Tourism Experience through Mobile Augmented Reality: Challenges and Prospects”, *International Journal of Engineering Business Management*, Vol. 4, No. S.
23. Kourouthanassis, P., Boletsis, C., Bardaki, C. and Chasanidou, D. (2015), Tourists responses to mobile augmented reality travel guides: the role of emotions on adoption behavior; *Pervasive and Mobile Computing*, Vol. 18, pp. 71-87.
24. Lepouras, G. and Vassilakis, C. (2005), Virtual museums for all: employing game technology for edutainment; *Virtual Reality*, Vol. 8 No. 2, pp. 96-106.

25. Marr, B. (2019), "What Is Extended Reality Technology? A Simple Explanation For Anyone", Forbes.com, available at: <https://www.forbes.com/sites/bernardmarr/2019/08/12/what-is-extended-reality-technology-a-simple-explanation-for-anyone/#cf7066572498> (Accessed on: July 3, 2020).
26. Mavrin, I., Mesić, H., Šebo, D. (2020), "Towards the New Model of Heritage Management – Potentials of ICT in Interpretation and Presentation of Urban Legacy", in IMR 2020, Interdisciplinary Management Research XVI; The Josip Juraj Strossmayer University of Osijek, Faculty of Economics in Osijek – Postgraduate Doctoral Study Program in Management, Hochschule Pforzheim University, Croatian Academy Of Sciences And Arts, Opatija, pp. 894-911.
27. Momigliano, A. (2020), "Venice Tourism May Never Be the Same. It Could Be Better", New York Times, available at: <https://www.nytimes.com.cdn.ampproject.org/c/s/www.nytimes.com/2020/07/02/travel/venice-coronavirus-tourism.amp.html> (Accessed on: July 14, 2020).
28. Moorhouse, N. (2020), "Can virtual reality help tourism destinations recover from COVID-19?", PhocusWire, available at: <https://www.phocuswire.com/can-virtual-reality-help-tourism-destinations-recover-covid-19> (Accessed on: July 14, 2020).
29. Mosaker, L. (2001), Visualising historical knowledge using virtual reality technology; Digital
30. Murison, M. (2016), "Are Virtual Reality and Tourism on a Collision Course?"; Travelshift; available at <https://travelshift.com/blog/virtual-reality-tourism-collision-course/> (Accessed on July 16, 2020).
31. OECD (2020), "Tourism Policy Responses on the coronavirus (COVID-19)", available at: <https://www.oecd.org/coronavirus/policy-responses/tourism-policy-responses-to-the-coronavirus-covid-19-6466aa20/> (Accessed on: July 13, 2020).
32. Richards, G. (2020): Culture and tourism: natural partners or reluctant bed-fellows? A perspective paper. *Tourism Review*; vol. 75 no. 1 2020, Emerald Publishing Limited, ISSN 1660-5373; pp. 232-234
33. Scribani, J. (2019), "What is Extended Reality (XR)?", Visual Capitalist, available at: <https://www.visualcapitalist.com/extended-reality-xr/> (Accessed on: July 3, 2020).
34. Taufer, L., Ferreira, L. T. (2019), "Realidade Virtual no Turismo: Entretenimento ou uma mudança de paradigma?", *Rosa dos Ventos – Turismo e Hospitalidade*, Vol. 11, No. (4), pp. 908-921.
35. The Economist (2020), "How tourism will survive the pandemic", *The Economist*, May 28th Edition, available at: <https://www.economist.com/lead->

- ers/2020/05/28/how-tourism-will-survive-the-pandemic (Accessed on: July 8, 2020).
36. tom Dieck, M.C. and Jung, T.H. (2017), Value of augmented reality at cultural heritage sites: a stakeholder approach; *Journal of Destination Marketing and Management*, Vol. 6 No. 2, pp. 110-117.
 37. Trojan, J. (2016), Integrating AR services for the masses: geotagged POI transformation platform; *Journal of Hospitality and Tourism Technology*, Vol. 7 No. 3, pp. 254-265.
 38. Tussyadiah, I.P., Jung, T.H. and tom Dieck, M.C. (2018): Embodiment of Wearable Augmented Reality Technology in Tourism Experiences. *Journal of Travel Research*; vol. 57, issue 5, 2018. <https://doi.org/10.1177%2F0047287517709090>
 39. UNESCO (2020), “Culture & COVID-19: Impact & Response Tracker”, Issue 11, June 24, 2020.
 40. UNWTO (2005). *Making Tourism More Sustainable – A Guide for Policy Makers*. Madrid: World Tourism Organization.
 41. UNWTO (2018). *Tourism and Culture Synergies*. Madrid: World Tourism Organization.
 42. UNWTO (2020a), “Global Guidelines to Restart Tourism”, available at: <https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2020-05/UNWTO-Global-Guidelines-to-Restart-Tourism.pdf>, (Accessed on: July 13, 2020).
 43. UNWTO (2020b), “World Tourism Barometer N°18 January 2020”, UNWTO, available at: <https://www.unwto.org/world-tourism-barometer-n18-january-2020> (Accessed on: July 1, 2020).
 44. Wei, W. (2019), “Research progress on virtual reality (VR) and augmented reality (AR) in tourism and hospitality: A critical review of publications from 2000 to 2018”, *Journal of Hospitality and Tourism Technology*, Vol. 10, No. 4, pp. 539-570.
 45. Whittington, A. (2014), Family vacation 2050: socially and technologically-driven scenarios of the future of family travel, recreation and tourism; *Tourism Recreation Research*, Vol. 39 No. 3, pp. 379-396.
 46. World Health Organization (2020), “Timeline of WHO’s response to COVID-19”, available at: <https://www.who.int/news-room/detail/29-06-2020-covid-timeline> (Accessed on: July 2, 2020).

IMERZIVNI KULTURNI TURIZAM U KONTEKSTU PANDEMIJE COVID-19 – GLOBALNE PERSPEKTIVE I LOKALNI UTJECAJI

Sažetak

Kriza uzrokovana COVID-19 pandemijom snažno je utjecala na turističke projekcije za 2020. godinu i privremeno zaustavila globalnu turističku industriju i industriju putovanja. Ekonomski utjecaj na globalno gospodarstvo mogao bi imati trajne posljedice, pri čemu će privremeni pandemijski režim najviše pogoditi turizam. Rad daje pregled perspektiva turizma tijekom i nakon krize uzrokovane koronavirusom, s naglaskom na kulturni turizam i srodne sadržaje (kulturna baština, kulturne atrakcije). U radu se također ispituju mogućnosti korištenja tehnologije u redefiniranju kulturnog turizma i stvaranju novog poslovnog modela – imerzivnog kulturnog turizma. Svrha rada jest ukazati na promjene koje suvremene tehnologije, s naglaskom na pojedine imerzivne tehnologije, utječu na trendove u kulturnom turizmu. U kreiranju rada korištene su metode analize i sinteze, metoda anketiranja te deskriptivna metoda. Istraživanje je dokazalo značajan trend porasta interesa za koncepte virtualnog turizma i imerzivnog kulturnog turizma, posebice u kontekstu smanjenih mogućnosti putovanja tijekom pandemije COVID-19. Ograničenja istraživanja odnose se na relativno mali anketni uzorak, izostanak odgovora pripadnika Generacije Z kao nativnih korisnika digitalnih tehnologija, uz ubrzane tehnološke promjene, kao i nove trendove koji nastaju zahvaljujući tehnološkom napretku. Znanstveni doprinos vidljiv je u doprinosu raspravi o korištenju tehnologija proširene stvarnosti u kulturnom turizmu te promociji kulturne baštine. Također, doprinos je vidljiv i u postavljanju konceptualnog modela imerzivnog kulturnog turizma.

Ključne riječi: imerzivne tehnologije, proširena stvarnost (XR), COVID-19, kulturni turizam, kulturna baština