

## THE APPLICATION OF AUGMENTED REALITY IN PROMOTING HOTELS AND TOURIST ATTRACTIONS OF THE CITY OF NIȘ

Sonja VUJOVIĆ<sup>1</sup>, Tamara RAĐENOVIĆ<sup>2</sup>, Tanja VUJOVIĆ<sup>3</sup>

<sup>1</sup> *University of Priština temporarily settled in Kosovska Mitrovica, Faculty of Economics, Serbia, Email: sonja.vujovic@pr.ac.rs*

<sup>2</sup> *University of Niš Faculty of Occupational Safety, Serbia, Email: tamara.radjenovic@znr fak.ni.ac.rs*

<sup>3</sup> *University of Priština temporarily settled in Kosovska Mitrovica, Faculty of Economics, Serbia, Email: tanja.vujovic@pr.ac.rs*

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### Abstract

*In the era of digital transformation, especially during the corona virus pandemic, there have been changes in the way the tourist offer is presented to potential buyers. This has been especially contributed by information technologies that enable bringing the tourist destinations and hotel facilities closer to consumers. It is the aim of this study to identify the opportunities and challenges offered by augmented reality in terms of creating personalized consumer experiences, tourism development, and greater visibility of the hotel and its facilities in the global market. The intention of the authors is to fill the gaps in knowledge and raise the awareness of the value of augmented reality for tourism. Based on the research conducted in the City of Niš, it was concluded that the current application of augmented reality in the promotion of hotels and tourist attractions in the City is insufficient and recommendations are given on how to use the benefits of augmented reality in tourism promotion.*

**Keywords:** *augmented reality; promotion; personalized experiences; hotel industry; tourist attractions.*

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**JEL Classification:** M31, O33, Z32, Z33

### Introduction

By adopting a new way of life, work and behavior, during several waves of locks due to the global corona virus pandemic and accepting the new "normality" imposed by the "new" everyday life, which required increased use of ICT, digital technology has been fully integrated into the lives of most global population. As a result of the growing awareness of the intensive use of technology, the tourism sector in the coming period may witness changes in passenger behavior. These changes are specifically related to selecting and deciding on hotel or final destination, searching for information, documenting and sharing experiences, insisting on creating personalized content and services. Especially, as the adoption of advanced digital technologies in the tourism industry over the past decade has already been significantly contributed by the general change in the way of life and communication of consumers. In the time after the COVID crisis, attracting attention and interest, creating and promoting a unique and different tourist experience and provoking positive emotions towards tourist products will become vital factors for the recovery and development of stumbled tourism, but also for increasing the attractiveness of destinations around the world. In such conditions, the orientation towards the comprehensive use of opportunities to improve the visitor experience offered by innovative immersive technology, in the form of augmented reality (AR), contributes to increasing the competitiveness of the tourist attraction and the tourist offer as a whole.

AR increases the sense of engagement and can result in improved perception of the experience and the real environment, offering the ability to visualize objects that are not physically accessible in the real-world context and enriching the content and information available to users. Given that the possibility of "testing" the spatial and material components of the tourist offer in the pre-consumption phase mainly contributes to a higher level of harmonization between expected and perceived value for the user [Kosar *et al.*, 2017], it is realistic to expect that in the post-pandemic period, the interest of tourists in the use of immersive technologies will be more pronounced. Therefore, the growing expectations that "digital" guests have of hotels will significantly influence the trends in the hotel industry, which will transform and reshape the hotel industry as a whole to the level of science fiction. By enhancing information of a particular location and raising awareness of

existing facilities and related services it offers (cafes, shops, gyms, tennis courts), AR is not only aimed at creating added value for tourists, but potentially increases turnover by encouraging revenue generation on the spot [Cranmer, 2018]. Moreover, as a method for creating improved, personalized and unusual tourist experiences, and a fuller understanding of local tourist sites and the destination as a whole, AR can be identified as an effective tool for extending the vacation time and stay of visitors in a particular destination, and encouraging the intention to spend more than planned.

The examples of world-famous hotel chains show that the possibilities of applying AR in the hotel industry are multiple and that over time it becomes part of the standard service in hotels. Thereby, AR not only provides a true picture of the hotel itself, its rooms, services and facilities, but increasingly offers numerous related and useful information that personalizes services and creates authentic exciting experiences, while also contributing to the promotion of local cultural and historical sights, traditional gastronomic specialties, the magnificent beauties of untouched nature, wellness centers, and various elements of the tourist offer of a specific destination.

The aim of this paper is to present, to the academic and business community in the field of tourism and hospitality, the potentials of AR, when creating added value for the user both in the pre-consumer and consumer phase of the tourist product, which are already recognized and widely applied by globally present hotel chains and attractive world-famous tourist destinations. The intention is to point out the need for more intensive acceptance of advanced digital technologies in the promotion of hotel and tourist facilities and designing a differentiated offer in relation to the current competition by raising the awareness of the values of AR for tourism. According to the available data large urban centers are determined as the primary destination to which the largest number of tourists gravitate. However, the City of Niš participates in the total number of tourist arrivals with just over 3.5% at the level of the Republic of Serbia. Therefore, the better understanding of AR, and its role in upgrading the visual world with computer-generated content and creating a personalized experience for visitors, is an opportunity for recovery and further development of the hotel and tourism in the post-pandemic period in the City of Niš. The AR, as a significant component of the promotional mix of this destination of southeastern Serbia, which is rich in tourist contents and attractions, is in the function of designing a different offer, provoking a special unusual user experience, and attracting a significant number of tourists.

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### Theoretical background and literature review

*Virtual Reality* (VR) is often used as an umbrella term for all types of immersive experiences, including many related terms such as *Augmented Reality* (AR), *Mixed Reality* (MR) and *Extended Reality*. When we talk about VR, we generally mean computer-simulated reality that creates a completely new imaginary environment and allows "immersion" in computer-generated worlds (rooms, cities, universes...) completely closed and isolated from the real physical world. The generally accepted definition describes VR as a computer-generated 3D environment, through which the user can move and communicate with it, resulting in the simulation of one or more (out of the existing five) user senses in real time [Guttentag, 2010; Yung & Khoo-Lattimore, 2017].

The virtual world can have similarities with the real world and can be based on existing geographical areas and places, and it can be a completely unreal, imaginary environment in which the laws of physics that regulate gravity, time and material properties do not have to be respected [Milgram *et al.*, 1994] and which exists separately from current physical reality. While virtual reality creates an artificial world in which the interaction with the virtual takes place through direct manipulation of objects, just like in the real world (by simple observation, but also by interactive modification of virtual environment objects), AR offers an interactive experience upgrading the real user environment. In fact, AR is based on adding elements of a virtual environment - computer-generated multimedia content (text, images, graphics) to the real world so that they act as part of the real world. AR is a way of looking at the real world (via a smartphone camera that creates a visual view of the real world) and "enlarging" that visual world using computer-generated inputs such as static images, sound or videos. Unlike VR, AR magnifies the real world by adding scenes, objects, and textual information to the existing world instead of creating some new non-existent worlds from scratch [Mealy, 2018]. In such an understood AR, computer-generated content can be presented as an "overlay" on top of real-world content, so that there is no possibility of communication between one environment and another. With AR, we become part of the computing environment, not just an external, separate observer with limited interaction. Peddie [2017] emphasizes that AR mixes the real with the simulated or synthetic and projects images and information into the user's field of view, while Azuma [1997] observes and describes AR as reality in which 3D virtual objects are integrated into a three-dimensional real-time environment. As part of the 4.0 revolution, AR allows virtual objects to be superimposed into real-life views

without requiring users to "separate" from reality. This creates the illusion of the existence and presence of digital content in a real environment.

While VR blocks real-world sensual experiences, because by removing information from the environment, only computer-generated information reaches the human senses and immerses user in virtual and fun 3D worlds [Bonetti *et al.*, 2017], AR allows users to experience enhanced experiences within the physical space [Papagiannidis *et al.*, 2017]. AR is defined as a combination of "real and computer-generated digital information in the user's view of the physical world in such a way as to appear as a single environment" [Olsson *et al.*, 2013, p. 288]. By integrating and aligning real and virtual objects, this immersive technology results in an improved (extended) physical world [Carmigniani *et al.*, 2011]. The difference for the user is determined by the depth of sensual participation and the level of immersion. With AR, the vast majority of what the user sees is still the real world, while with VR the user is completely immersed in the virtual environment [Yung & Khoo-Lattimore, 2017, p. 6].

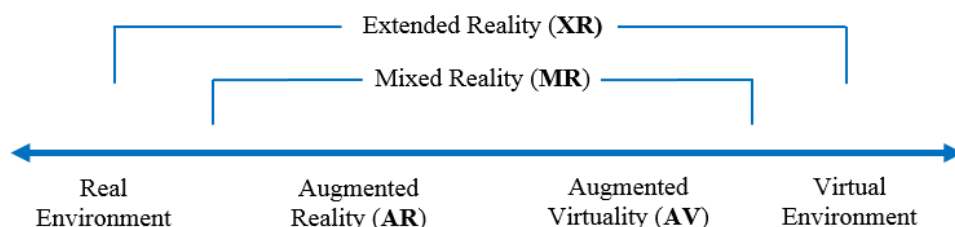
In recent years, a hybrid has been created, called mixed reality, which provides the possibility of interaction between the real world and digitally magnified content. In AR-based MR, the content of the digital world is no longer passively placed on top of the real world. Instead, digital objects appear to be part of real physical space, and one can even communicate with them as if they were actually there. As Schwab simply illustrates [2018], virtual reality (VR), augmented reality (AR) and mixed reality (MR) are versions of an immersive audio-visual set of technologies that allow people to move into a virtual environment or add virtual elements to their real environment. Moreover, their immersive nature blurs the lines between the computer-simulated and the real world.

When dealing with the notions of reality, it is necessary to look at *augmented virtuality* (AV). AV is essentially the reverse of typical AR and represents the advancement of the virtual world with real-world images, texts, and models. Thus, while AR refers to a predominantly real environment enriched with digital objects, AV refers to a predominantly digital environment in which there is some integration of real-world objects [Mealy, 2018, p. 13].

In the context of the concepts of virtual and augmented reality, the division and definition of reality is best illustrated by the Milgram continuum or the *Reality-Virtuality continuum*. The very concept of a continuum represents the scale between the real world on one side and the virtual world on the other, opposite side of the continuum. Milgram and associates, defined augmented reality back in 1994

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as the central part of the continuum between virtual reality (completely synthetic) and a completely real environment. In their paper on mixed reality, the authors (1994) argue that AR and VR should be viewed as lying at different ends of the Reality-Virtuality continuum, where one end consists exclusively of real-world objects and the other end exclusively of synthetic or computer-generated objects (Figure 1).



**Figure 1. Simplified representation of a Reality-Virtuality Continuum**

Source: Milgram, P., Takemura, H., Utsumi, A., & Kishino, F. (1994). Augmented Reality: A class of displays on the reality-virtuality continuum, *Telematic and Telepresence Technologies*, SPIE 2351, p. 283

VR and AR are often called the "fourth wave" of transformative technologies, after the personal computer, the Internet and mobile computing, which have irreversibly reshaped the old life patterns of most people on the Planet so that they can no longer imagine their lives without them. AR has evolved from laboratory experiment to application in the military, industrial and scientific, primarily medical fields, and is increasingly present in education, architecture, retail, tourism, and hospitality. This advanced technology has soared outside the world of games and into the world of marketing, growing into a significant component of the promotional mix of hotels, resorts, and tourist destinations as a whole.

### **The application of augmented reality in tourism and hospitality**

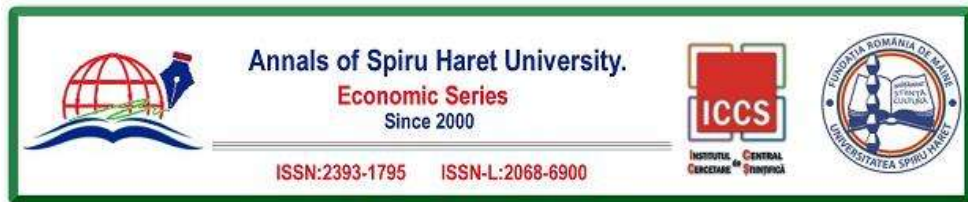
As always when thinking about emerging technologies, and in terms of AR and its impact on future trends and the destiny of tourism and hospitality, the dilemma arises whether the AR revolution will bring significant benefits to the tourism industry or will become its biggest threat. Namely, the essential dilemma is



reflected in the knowledge of whether users will be satisfied with virtual tours of tourist sites or, thanks to the improved perception of the real physical environment, will be inspired to visit new, unknown natural and "produced" tourist attractions and real versions of locations that they have only partially virtually experienced. Can teleporting to any chosen tourist destination in the world and virtual walks through the streets of impressive metropolises or lush, unexplored landscapes of the amazon jungles be a substitute for the experience of actually staying at a particular destination? Although the use of AR technology in the travel and tourism industry is a novelty that initiates new purposes over time, based on past experience it is realistic to predict that the immersive nature of AR and the experience it offers will actually contribute to the future development of tourism and hospitality. Recent studies show that AR is becoming a popular tool to enhance the tourism experience and is reaching a point where it becomes a necessity in creating added value for visitors. In this regard, some authors argue that today many destinations and organizations, if they do not already apply, at least consider the possibilities offered by this new and innovative technology in terms of improving the visitor experience [tom Dieck & Jung, 2017].

By adapting AR applications to the physical and perceptual abilities of users and by offering content with a focus on enriching tourist experiences, the level of visitor satisfaction increases, as well as the probability of positive word-of-mouth propaganda and sharing on social media platforms. Ultimately, this leads to attracting new customers, reaching new target markets, and contributing added value to tourism organizations and hotels. By using the latest technologies, tourists experience an enhanced form of interaction with the attraction offered by the destination, for which it has been found to create unforgettable memories after the experience [tom Dieck *et al.*, 2018]. Thus, by generating exclusive and personalized experiences, AR brings value to both, the end customers and the tourism industry as a whole.

AR enhances navigation applications by adding and integrating digital components (such as arrows) into a real-time real-world environment, creating a special experience and making even travel and walks through the streets of the city where visitors are for the first time attractive and enjoyable. Free navigation applications with detailed instructions make it easier and faster for users to travel to unknown destinations. During the journey to the final destination, the AR *City app* visually displays the travel route at the top of the real-world view via a 3D "cover" of the real environment allowing navigation and exploration of over 300 cities



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around the world using AR. In larger cities and metropolises, the updated content of the map provides additional information about real-world places, including the names of streets, buildings, and other local points of interest to visitors. Thereby, special emphasis should be placed on the navigational and orientation advantages of AR. The company has introduced the possibility of visual search in its application, which allows users to "unlock" information about the object of interest by pointing the camera of their mobile device at the identified object [Mealy, 2018]. In this way, tourists independently, in accordance with their interests, map natural, historical and "produced" sights that they want to get to know and create a personalized tour map. Moreover, AR as the best tourist guide, allows tourists to access information on the go (in real time) and make an on-site decision about what to visit next. Without the need to blindly follow the crowd, as in the case of guided tourist tours, the user can point the smartphone camera at the restaurant and immediately get reviews or insight into the menu with a rich selection of different types of local and national dishes or point the tablet at a historical landmark that caught his attention while touring the city and find out the story it is hiding in a short time. Thus, the *Historic Cities of England app* is a virtual tour guide that, along with visuals, "compensates" for information on various tourist destinations and artifacts that users can explore while on site.

The instructions, computer-generated in a real physical environment, also solve the language problems that many people face in an unknown location. *Google Translate* is a powerful example of an AR application that translates characters, menus, and other text-based items into more than 30 different languages. It is enough that, after simply opening the downloaded application, direct the camera of the device to the text you want to translate, and you get the current translation digitally placed on top of the original block of text [Mealy, 2018]. Signposts, signs, and menus that were nothing more than strings of unrecognizable, incomprehensible and obscure hieroglyphs become immediately readable in the language of choice of the user of the application. *Google Translate* also enables automatic translation of audio into the language of the destination visitor. In this way, the visually and audio "magnified" physical reality makes tourists feel comfortable during the trip, and language barriers become a thing of the past.

Art galleries and museums are also constantly striving to keep pace with the coming technological changes, finding new and interesting ways to enrich museum exhibits housed in a real physical environment with digital objects and textual information. Some museums have offered additional "background" stories for the



exhibited paintings, along with information about the lives of the creators of the works of art or the historical figures who are on them. One of the interesting applications for AR is the *Museum of Stolen Art (MOSA)* in Hertogenbosch in the south of the Netherlands. The exhibits in the museum are on the list of the most precious stolen artifacts of human civilization, and the artistic initiative was to give people the opportunity to enjoy art that was deprived to the world and to become acquainted with the circumstances under which the exhibited "artifacts" were stolen. Similarly, the permanent exhibition of the *Legacy of sculptor Nikola Koka Janković* in Kragujevac, in 2020, in an innovative and unusual way, by applying AR, brought the audience closer to the content through a virtual narrative about the artist's creative beginnings, his inspirations, and famous people who he immortalized in his works [Rebronja, 2020].

Even some hotel restaurants have not remained immune to AR. Namely, in 2017, the Michelin-starred restaurant and bar, located on the 24th floor of *Tower 42* in London, *City Social*, introduced revolutionary changes in the way cocktails are consumed by launching the world's first AR cocktail menu, *MIRAGE*. With the digital reincarnation of cocktails, this application immerses guests in a vibrant world in which excellent tasted cocktails, made from top alcoholic beverages from the world's leading companies, "become interactive art". Inspired by the style and spirit of different artistic epochs, each of the 12 cocktails is dedicated to a specific artist or age, with the basic idea of presenting "art through the centuries" with this specific menu. Hence, *Van Gogh* (1853-1890), *Warhol* (1928-1987) and *Banksy* (1974) are reflected in the innovative menu of this bar. The dedicated app, which can be downloaded from the *Apple* or *Google app* store, aims to transform the perception of cocktails, coloring surroundings with vivid animations in a futuristic take on mixology [WBB, 2021]. Interactive artistic animations that offer a unique visual experience, while enjoying the consumption of your favorite delicious cocktail, can be captured with a photo or video and shared on social networks.

The world-famous hotel chains, *Starwood*, *Marriot Hotels & Resorts* and *Holiday Inn*, by using extensive AR technology, have managed to differentiate their offer from the competition. However, investing in AR could bring revolutionary changes in business, revenue, and shaping a personalized user experience for small hoteliers as well. The application of AR contributes to the improvement of the user experience of potential consumers in the pre-consumer and consumer phase of the tourist product. In the pre-consumption phase with a virtual demonstration of architectural design, a visual and aesthetic image of the hotel product, a virtual tour

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of the hotel interior (starting from the reception lobby, layout of bedrooms, restaurants and social rooms, and recreational opportunities offered by the hotel (pool, spa, gym)), as well as the presentation of the manner and conditions of food preparation, the awareness of potential guests increases. Also, they acquire a more realistic idea of the facility, its content and services, and finally, all these have a positive effect on increasing the level of reservations. Of course, it is not only about the faithful representation and presentation of the hotel itself, layout, dimensions and design of its rooms and apartments, services and accompanying facilities. It is also about providing location information, which as an integral part of the overall hotel offerings, contributes to affordability and availability of existing tourist resources, traffic infrastructure, sports and recreation centers, and other catering facilities important for creating a personalized experience of the potential consumer, and making their final decision regarding the reservation in the hotel. With the help of the Portal to *Paradise app*, *Marriott Caribbean & Latin America Resorts* provide consumers with the opportunity to explore and "visit" eight beautiful resorts in one of the most exclusive locations in the Caribbean and Mexico, that they may not have thought of before or the ones they have always wanted to see. Going beyond the typical image gallery on the resort's website, this AR app "puts" consumers directly to their desired destination in such a realistic way that they can almost smell the ocean and hear the sound of the waves in front of the hotel window. The opportunity to "step" into accessible resorts, "walk" on sandy beaches, rooms, restaurants and swimming pools and experience immersive experiences, encourages potential consumers to decide, from the level of planning and simple dreaming of vacation, to book a trip and discover by themselves the exclusivity of the hotel's facilities and the exotic beauty of the Caribbean and Mexico [Taylor, 2018]. Similarly, *Marriott Hotels* combine futuristically redesigned hotel lobbies with futuristic AR ads in *Wired* magazine. When consumers scan an ad with the *Blippar app*, the AR function impressively enlivens the page with a video that in an innovative way offers an intriguing view of the places to visit and the top catering offer of this hotel chain [Borison, 2021].

Since the need and search for data and information does not stop even after the arrival of tourists at their final destination and in the selected hotel facility, AR applications can also contribute to the improvement of the user experience in the consumption phase of the tourist product. After downloading the hotel application, AR ensures the availability of most necessary information (24/7), in terms of solving the issue of service and maintenance of rooms and instructions to facilitate

navigation and smooth circulation within the hotel: to restaurants, swimming pools, exchange offices, souvenir shops, gyms, conference halls, laundries, etc. In this way, it enables turning every moment of the stay in the hotel into an interesting and unforgettable experience, which is sometimes the most relevant for creating a unique and personalized experience. In this way, hotels and resorts have the opportunity to provide their guests with more information on request, improving their overall experience, which they are likely to share and recommend to others.

AR applications allow tourists, even outside the hotel environment, to be exposed to useful information that, as computer-generated content, improves the perception of physical location and tourist attractions. So, for example, The *Hub Hotel* from the British resort *Premier Inn* has made AR compatible with the wall maps it places in hotel rooms. When viewed via a smartphone or tablet, wall maps include additional information about some local places of interest, which serve as a kind of information tool for tourists. The hub has its own *iPhone* and *Apple Watch app*, which in addition to serving as a room key for hotel tenants, includes climate control, TV and light control, breakfast ordering and accommodation unit maintenance [Killham, 2015].

Imagine one being able to walk the streets of *Naissus*, the birthplace of the Roman emperor Constantine the Great (*Constantinus Magnus*) located on the river banks of the Nišava, not far from its confluence with the southern Morava; or exploring the remains of the unique imperial residence of the *archeological site of Mediana*, without actually leaving the comfort of a home; or to peek into the picturesque remains of the turbulent history of Niš, inside the massive stone walls and the *Stambol Gate* of the imposing *Fortress*, located in the very center of the City. Imagine that by traveling into the past one can revive the antique baths of the former *Naissus* and in preserved part of the street with the basilica of that time “municipium” stop in front of the luxurious *Palace with an octagon* whose magnificence is spoken of by richly decorated floor mosaics; or to step into the era of the Ottoman Empire at the very entrance to the *Fortress*, and with digitally added textual information, photographs and videos about *Bali Bey's mosque, hammam* or *gunpowder warehouses*, by revealing traces of oriental ornamentation and architecture, learn all about their creators and donators; or to witness, next to the *Ossuary Memorial* and the *Gate of Death*, about the heroic struggle of one nation for liberty from the worldwide conquerors and occupiers. Imagine that by traveling to some ancient, past epochs, one can get to know different countries and empires to which Niš belonged during its long history. Imagine that at the

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beginning of *Kazandžijsko sokače*, the only preserved street of the former Niš bazaar, that has retained the spirit of old architecture, one can get acquainted with the life and work of *Stevan Sremac* and *Kalča*, the hero from his book *Ivkova slava*; or that on *Čegar*, *The Skull Tower*, *Bubanj Memorial Park*, *Monument to the Liberators of Niš*, one can reconstruct the past, understand the significance of historical sites and events that took place there, and thus enrich its knowledge and experience. Imagine one being able to enjoy the beauties of Niš monuments of the nature by discovering the under-explored underground world, the extraordinary beauty of rare cave jewelry and the secrets of the *Cerjan Cave* or exploring habitats with great diversity of plant and animal species (37 bird species, 226 vascular plant species, 5 amphibian species, and 7 reptiles species) in the area of *Lalinačka slatina*; or to take a pedestrian zone along *Obrenovićevea Street* to visit shopping malls and in one of the many bars at the end of a dying day on the Niš quay feel the atmosphere of nightlife and discover the soul of one of the oldest cities in the Balkans. Imagine that with a virtual visit to the hotel one can get a realistic idea of the object, design, style and dimensions of its rooms, the proximity of existing tourist sites of its interest, restaurants, museums, galleries, theaters or riding grounds, hiking, extreme sports, and create a personalized tour of the City in accordance with its own preferences. These are the possibilities that AR provides.

### Data and methodology

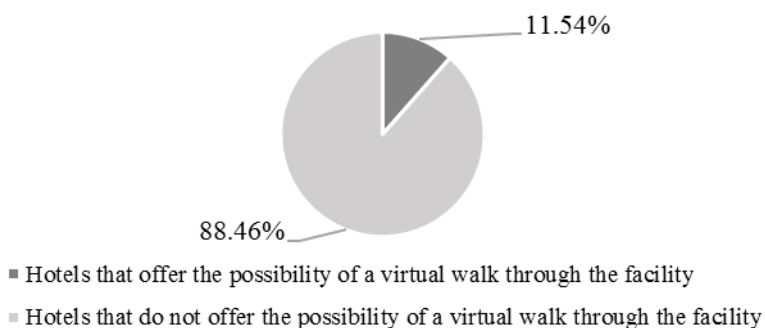
Since the data on the number and structure of accommodation facilities and hotels in the City of Niš are different depending on the data source, for the purposes of this research, the data of the Tourism Organization of Niš (*TON*) are used, according to which there is one 5-star hotel (*Ambasador*) with 165 beds, 7 4-star hotels (*New City Hotel*, *Best Western Hotel My Place*, *Hotel Ideo Lux*, *Art Loft*, *Garni Hotel Zen*, *Niški Cvet*, *Tami Residence*) with a total of 610 beds, 10 3-star hotels with accommodation capacity of up to 769 people (*Crystal Light*, *Complex Vidikovac*, *Crystal Ice*, *Hotel 018 In*, *Garni Hotel Eter*, *Garni hotel DuoD*, *Garni hotel Panorama Lux*, *Garni hotel Sole*, *The Regent Club*, *Hotel Marica*), and 4 hotels with 2 (*Uni Elita Lux*, *Garni hotel Consul accommodation*, *Garni hotel Svriljižanka*, *Zeleni Vir*) and one star (*Extra Lion MD*, *Garni hotel Lotos*, *Rile Men*, *Konak DuoD*) with a maximum capacity of 171 and 232 beds, respectively [TON, 2021].

In order to determine whether and to what extent the technologies based on virtual and augmented reality are applied, for the purpose of this study the websites

of 26 hotels in Niš are analyzed. Additionally, as regards methodology, the representatives of TON were interviewed by phone. Further, a survey questionnaire was applied to examine the AR in the hotel industry in the City of Niš, to which the contacted respondents answered by phone. The interview was conducted on a sample of 26 managers in the analyzed hotels.

### Results and discussion

Based on the conducted research, it is noticed that only three hotels offer a virtual tour through the facility (these are 4 \* hotels) or 11.54% of all hotels that are on the list of the Tourism Organization of the City (Figure 2). The obtained research results lead to the conclusion that the AR is still not sufficiently represented in hotels in the City of Niš and indicate the lack of application of immersive technologies in the promotion and attraction of potential consumers of hotel content. This conclusion is also referred by the fact that by contacting TON representatives, the interview revealed that the City of Niš in terms of "improving" visibility and additional provision of information about local attractions, does not currently apply AR which would provide tourists with the opportunity to personalize content and experiences during, tourist or business, stay in the City.



**Figure 2. The structure of Niš hotels based on the application of a virtual visit to the facility in %**

When hotel managers were asked about the way of advertising, they answered that so far all hotel promotion took place through their own websites and the website of the Tourism Organization of Niš, through social networks, which were



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mostly directly linked to hotel websites (*Instagram, Facebook, Twitter, LinkedIn*), local television, and radio stations. In this regard, it has been revealed that the managers of the three hotels, following global trends in the hotel industry and keeping pace with emerging technologies, in promoting the content and offer of "their" hotels, provide the opportunity for a virtual walk and virtual presentation of the aesthetic appearance of the facility, environment, and interior.

When asked about new technologies (VR and AR), all respondents emphasized that they are familiar with the mentioned technologies, and as a reason for "ignoring" their implementation, all respondents agreed that the biggest problem is actually the limited budget they have, especially in the situation when social distancing and restriction of movement brought into question the operation and survival of the tourism industry on a global scale. However, since none of the respondents had the opportunity to "try" and experience the immersive experience of AR, it remains unknown whether the corona virus pandemic affected the delay in the application of advanced innovative technologies or the level of awareness of the possibilities offered by AR, both in the pre-consumption and in the consumption phase of the tourist product, is still at a low level when it comes to Niš hotels and the City in general.

The ability to concentrate attractions, facilities and services in a convenient, accessible place is essential to create a competitive tourist destination and attract a significant number of tourists [Kotler, 2014]. However, the availability of attractiveness without their tourist valorization is no longer sufficient, nor it is crucial for creating competitive success. Moreover, in order to successfully position and create a competitive advantage, "a tourist destination must offer tourists greater value than its rivals, and for the same efforts that tourists invest, or the same value with less invest effort" [Mrkaić Ateljević, 2019, p. 4]. Tourist destinations, hotels or restaurants, become obsolete, uninteresting and undesirable over time for modern, increasingly sophisticated and informed travelers. "Rejuvenation" of the destination is a necessity and points to the importance of continuous introduction of innovations that in tourism can not only represent a "cosmetic change" or expansion of the product line, but a way to increase the value of tourism products and tourist experiences while maintaining profitability in tourism and hospitality [Milićević, 2016]. It is evident that AR in the tourism sector of the City of Niš is not recognized as an innovation worth investing in and that the key economic benefits of applying the concept of AR have not been identified when designing the tourist offer.



Based on the aforementioned, it is obvious that the City of Niš has not used the comparative advantages at its disposal for the development of various types of tourism, like city, congress, transit, rural, eco, adrenaline, and adventure tourism. It is clear that the Tourism Organization of Niš, City authorities, the Office for Local Economic Development, hoteliers and the entire business community in the tourism sector should make significant efforts in the forthcoming period to raise the perception of Niš as an attractive tourist destination. Additionally, they should raise awareness of the potentials of advanced immersive technologies in the form of AR in the tourism industry, and by its implementation contribute to the promotion of rich cultural and historical heritage, local tourist attractions, and local gastronomy.

### Conclusion

The futuristic technologies of the fourth industrial revolution forced all stakeholders in tourism to change the way they become and remain competitive. With AR, new ways of competition have been established, which are reflected in the offer of fully personalized, authentic, exciting and educational experiences, which ultimately leads to higher attendance of tourist destinations and hotels and increased consumer satisfaction with the offered tourist content. Therefore, it is necessary for the tourist and hotel industry in Niš to realize the importance of applying AR to create unique and different websites and design a unique offer tailored to the various interests and preferences of potential tourists. By embracing the latest advanced technologies and implementing them, hotels and tourist destinations are becoming more visible to a growing number of digital guests who, thanks to a digitally enhanced perception of the real physical environment, can be inspired to visit real versions of locations they have only partially virtually experienced. Hence, investing in AR should not be viewed as a cost, but as a profitable investment, which by creating added value for tourists potentially increases turnover, encouraging the generation of income on the spot.

Transforming conventional print media and common image galleries on the websites of the hotel and the Tourism Organization of Niš into interactive multimedia and entertainment AR platforms is certainly in the function of attracting new, but also repeated arrivals of tourists to the hotel websites and facilities. Additionally, AR is intended to motivate digital guests to replace the previous virtually shaped experiences with the direct consumption of the tourist offer of the City and its surroundings. At the same time, the accessibility and ease of use of AR applications contributes to creating unforgettable experiences.

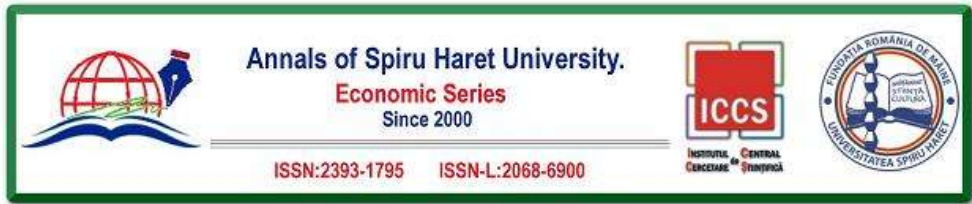
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The lack of readiness for changes and walking on well-trodden paths certainly will not contribute that Niš, as an attractive and promising destination, enters the tourist map of the Balkans and Europe. Given that the accelerated development and diffusion of digital technologies will eventually intensify the benefits and values offered by the AR to the hotel and tourism industry, it becomes clear that its role in promoting hotels and local tourist attractions at the City level must not be ignored. Especially, as the immersive nature of AR, and unusual experiences which offer, contribute to the "rejuvenation" of the destination, and hence to the increased attraction of tourists and improved attractiveness of the tourist offer of the City and nearby localities. Therefore, our main recommendation is that in future tourism development strategies of the City of Niš, the concept of AR should be recognized as a significant component of the promotional mix capable of creating a basis for transforming existing resources into attractive and popular tourist destinations.

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