SMART CITY THROUGH SMART TOURISM. THE CASE OF ORADEA CITY, ROMANIA

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Abstract
The commitment of smart cities to technology, sustainability, innovation, or accessibility could become an element of differentiation in the case of urban, cultural, and leisure tourism. An important part of tourists wants to find in these destinations, new things and experiences, as well as modern goods and services, comfortable and familiar, to make easy and inspiring choices. The smart tourism development of cities can also meet the requirements of economic and environmental sustainability - local businesses, sustainable and profitable, respectively, alleviating mass tourism, conservation of environment and heritage, ensuring the quality of life of tourists and residents alike. In the present study, we aimed to build an image of the smart city based on European experiences and best practice in urban tourism. Then, we interpret this knowledge and practices through the efforts made by an EU member state, especially within a city interested in such an option, in this case Oradea, Romania. We assert that the integration of tourism in this city's long-term development strategies considers that technologies implemented in smart tourism destinations respond to important tourism challenges through accessibility, sustainability, digitization, and cultural-creative projects.

Key words: *smart tourism, urban tourism strategy, sustainability, Oradea.*

JEL Classification: *L83, Z32, Q56.*

I. INTRODUCTION

Tourism represents a major strategic sector of the European economy, with a dominant role in economic growth, regional development, and job creation. According to the online statistics portal Statista, Europe is the global leader as regards international tourism, with over 600 million foreign tourists arriving in the region each year (Statista, 2020). Estimates made during 2018 by the World Tourism and Travel Council, based on models both directly and indirectly attributable to tourism and its contributions, show that tourism represents over 10% of EU GDP and almost 12% of the total workforce (Council UE, 2019). Spain and France, which are the two most sought-after destinations (as a matter of personal choice manifested by tourists), have

increasingly started using innovative and smart solutions for sustainable development (Statista, 2020) in order to make effective use of cultural heritage, preserve the environment and for the well-being of local communities (Stanciu et al, 2008: Badulescu & Badulescu, 2014).

On a year-to-year basis, we notice a constant increase in the number of visitors, this surge in as regards their number posing a challenge for many countries and business owners alike, many destinations thus seeking to manage the influx of tourists in a balanced way, by developing innovative approaches such as smart tourism. The digital economy's opportunities and future rewards have encouraged a change of the paradigm, shifting from models focused on quantitative growth to a quality-based approach. Sustainable, innovative, and quality tourism services, combined with the efficient use of

natural and cultural resources, are key factors for European tourism competitiveness.

However, the impact of the coronavirus outbreak is massive, tourism sector being one of the most hardly hit, with huge implications for economies worldwide. According to the World Tourism Organization (UNWTO), due to the COVID-19 pandemic, Europe experienced in the year 2020 a decrease in international tourist arrivals of "only" 70% (compared to the global average of - 74%), from 746 million people in 2019 to 221 million in 2020 (UNWTO 2020a). This is "an unprecedented shock and existential threat to the tourism sector" (UNWTO, 2020b), and even if at the beginning of 2021 there are timid signs of recovery (especially in the case of domestic tourism), most experts consider that a coming back to pre-pandemic 2019 levels will not happen before 2023 or later (UNWTO, 2020a). However, even in these crucial realities, numerous scholars and practitioners assert that smart tourism could be a chance for the return (of course, on other foundations) of international tourism even in dynamic and crowded touristic cities (Trip & Badulescu, 2020).

II. SMART TOURISM. A THEORETICAL OVERVIEW

During his 2008 New York speech in front of the Foreign Relations Council, Sam Palmisano, CEO of IBM, has coined and utilized for the first time the term smart, used through the launch of the Smarter Planet program. This project has been initiated to emphasize the crucial importance of a smarter planet by adopting new generations of much more powerful and accessible systems and technologies (IBM, 2008). This initiative highlighted the need to introduce and use advanced technologies in order to support digitalization and interconnectivity so that industries, services, cities, and communities can be more productive and efficient. Thus, digitization could be applied in any field, ranging from smart public service management systems to smart processes and smart food infrastructure (cultivation, harvesting, processing, packaging, transportation, marketing, consumption, and disposal of food and food-related products), smart health system and smart transportation systems. With so much statistical information that would have been generated more than ever, analyzes and reports would have been done and algorithms would have been developed to provide more clarity regarding decision-making processes. Smarter Planet has become a key project of IBM's growth strategy, and in just one year since its launch, hundreds of IBM customers have developed new business models, with an increasingly positive impact on the company, the community, and the city (IBM, 2009). Leaders and citizens from around the world have been encouraged to consider smart investment

ideas in all areas, fields, and sectors, including tourism.

Smart tourism is quite a new concept, being viewed as an evolution of the traditional one (Gretzel et. al, 2015). In literature, we find the following three terms: e-tourism, mobile tourism, and smart tourism; if at the first glance they seem similar, this could not be further from the truth. The works of Kontogianni sheds light on these differences, and by using his analyses, we shall find out what differences there are between these three terms. E-tourism brings together in a virtual setting the participants in the tourism activity, consumers, tour operators, travel agencies, and accommodation units (Kontogianni, 2020; Nedelea, Balan, 2010). The buying habits of consumers of tourist products have changed given the widespread use of mobile devices, so as to better inform themselves and for better communication, all the while being able to personalize both the information they access voluntarily and also the information they receive. In tourism, mobile applications are widely used for booking activities, purchasing transport tickets and/or tourist tickets, and much more. The sum of these interactions between tourists and mobile devices describes the concept of mobile tourism (Pinheiro et al., 2008 quoted in Beça, 2011).

Smart tourism is a new form of practicing tourism, which allows tourists to access services and information about their trip and related services more easily, thanks to the use of IT&C (Information Technology and Communications). With the help of technology, the needs, wants, and desires of tourists and residents, can more easily be understood (Coban, 2020).

A smart tourist destination has the main purpose of offering tourists rich and personalized experiences by capitalizing upon local heritage and community involvement by facilitating access to tourism services and products through the use of new technologies (Buhalis et. al, 2015). By capitalizing upon local heritage and implementing such innovative solutions, the aim is to achieve the tourism sector's growth and implicitly, the well-being of the involved cities and a better quality of life for its inhabitants (García et. al, 2018).

As per the European Capital of Smart Tourism assessments, the outstanding achievements of European cities as smart destinations are evaluated and recognized by taking into account the basic elements of smart tourism (European Capital of Smart Tourism, 2020). Thus, for a tourist destination to be deemed as being smart, it must meet the following conditions (European Capital of Smart Tourism, 2020):

a) Accessible: such touristic destinations need to be easily accessible for travelers with special access needs (with or without disabilities), regardless of age,

social or economic situation, and the existence of ramps and lifts inside the premise is necessary. The existence of a complex and intelligent urban transport system, through which the entities involved in providing the various forms of transport services can operate together as a whole, is more than evident. The accessibility of a destination also entails efficient ways of communicating information about products, services, and tourist areas, in at least one language of international circulation and in the native language of tourists who are regulars of the area;

b) Sustainable: Operating based on a pro-environmental approach, by implementing good practices designed and aimed towards the conservation of natural resources, in combination with sustainable and innovative tourism services;

c) Digital: to offer innovative tourism, as well as information, products, services, and experiences adapted to the needs of consumers, with the help of IT&C, mobile communications, cloud computing, artificial intelligence, and/or virtual reality. The development and the advancement rate of technology and the fact that it is increasingly accessible to a large number of consumers has led to the expansion of the way that tourists (and future tourists) use smartphones. The data obtained regarding what they are looking for and where, in conjunction with a digital solution that puts the consumer at the centre of the tourism activity is the starting point for the development of personalized tourism services and products;

d) Cultural and creative: to make effective use of its cultural heritage and creative industries to provide rich tourist experiences. Emphasis is placed on how tourism can encourage other sectors, such as crafts and traditions, transport, sports, or education, to ensure the well-being of the community.

Each year, The European Capital of Smart Tourism invites tourist destinations to enroll in the European Capital of Smart Tourism competition. In 2020 the winners were Gothenburg and Málaga, both cities successfully implementing innovative solutions for urban mobility, sustainability, and digitalization. Málaga is also a leader when it comes to involving the local community and academia in developing the skills needed in smart tourism to increase the quality of jobs and competitiveness (European Capital of Smart Tourism, 2020). In addition, four cities received the 2020 European Smart Tourism Awards for their outstanding achievements in one of the categories of the competition: Breda (Accessibility), Gothenburg (Sustainability), Ljubljana (Digitalization), and Karlsruhe (Cultural heritage and Creativity).

III. REVIEWING EUROPEAN BEST PRACTICE

At the European level, the best smart tourism practices are included in the Compendium of Best Practices 2019-2020 (European Commission, 2019):

3.1. Accessibility

Barcelona has developed interactive bus stations which provide tourists with information and bus traffic schedules, but these bus stations have multiple roles, given that they can be used for charging mobile devices through USB port connections. In order to promote environment-friendly city transportation services, the city has developed and is using a bike sharing-system, and travelers can check their location through a mobile app (Gretzel et. al, 2015). Another example comes from the city of Copenhagen. In order to reduce communication barriers with Chinese tourists visiting Copenhagen, the authorities launched the 'Chinavia' project in 2012 to make the city more accessible and attractive to them. Guides, restaurant apps, hotels, shops, and signs have been developed in Chinese to provide these tourists with an extraordinary experience.

3.2. Sustainability

The 'Green Belt' project in Palma de Mallorca is a good example of how investing in the creation of new green spaces can help sustainably grow tourism. As the extreme heat of the summer months could negatively affect tourism in Palma, authorities have decided to plant 4,000 trees along the 400-year-old canal, Torrent de Sa Riera, and pave it with stone to improve permeability. Also, green roofs and irrigation systems have been arranged on the buildings located on the seafront, to which a bicycle path with greenery has been added.

3.3. Digitalization

Helsinki is one of the preferred destinations by Chinese tourists, the number of overnight stays doubling in the last five years. In partnership with Tencent, an internet service provider, and Finnair, a Finnish airline, Helsinki launched the WeChat application, also known as 'China's app for everything' in 2018. It can be used for messaging, social media, and mobile payments, to access weather information, events, tourist sights, how to get emergency medical care and translation services, and all of this is done in Chinese. They can also claim VAT refunds through this application.

Another digitalization project has been developed at Lyon, this project, named ONLYLYON, being the only CRM (Customer Relationship Management) aimed at tourism activities available throughout Lyon. The CRM developed by the city of Lyon is used to better understand the interactions with various tourists and to capitalize on information regarding them by improving the way in which they are guided around the city. Currently, the database contains information collected from almost two million users from various countries, generating the

opportunity to provide relevant information and recommendations, such as route suggestions aimed at reducing traffic congestions during peak hours. The purpose of these messages that are sent to tourists is to improve the tourist experience.

Virtual reality (VR) is helpful for a number of reasons, and it has the potential of being used by people who want to visit tourist attractions but who do not have this possibility, either due to health or financial reasons. Helsinki has developed a VR experience model, Helsinki2020, which allows a person to visit the city throughout various periods. For example, with the help of virtual reality, one can see what the city looked like in the 19th century or what it will look like in the future. A unique model for using virtual reality is offered by the National Museum of Finland, where the virtual tourist can 'enter' paintings and have conversations with the characters represented in them.

3.4. Culture and creativity

In order to conserve its sauna culture, Finland has started building new sustainable saunas, which are powered by wind and solar energy. Löyly is one of such saunas, located in Helsinki, which makes it accessible to tourists as well as to locals. The restaurant there serves organic food and sustainably grown fish. This sauna is the first FSC (Forest Stewardship Council) certified building, which certifies that the wood it is built of comes from responsibly managed forests.

'Library under the Treetops' is a project that is based in Ljubljana, where during the summer, tourists and locals can read books, magazines, and newspapers in the park for free. The bookcases are surrounded by sunbeds, which are placed in the shade of trees; what is more, occasionally, creative workshops and public readings are organized with special guests. Currently, this project has its own reading and creativity festival.

The innovative use of cultural heritage can be witnessed in Lyon through the reinventing of the 'Festival of Lights', which has its origins in the seventeenth century. The local tradition was to put a candle or a light on the window, and currently, the organizers are trying to reduce the environmental impact by using LED lighting video mapping systems (it is said that this event that takes place over the course of four days takes up the same amount of energy as a 120 square meter household does). The festival is organized annually around the 8th of December and attracts over four million visitors.

IV. SMART TOURISM IN ROMANIA. THE CASE OF ORADEA CITY

In Romania, the majority of cities in which we have witnessed the implementation of smart city projects are also tourist destinations; such cities include Alba Iulia, Târgu-Mureș, Brașov, Bucharest, Hunedoara, Iași, Suceava, Oradea, Sibiu, and Timișoara, to name only a few. In all of their cases, the proposed solutions had as main purpose the consolidation of tourism by capitalizing on the natural resources and cultural heritage (Vegacomp Consulting, 2019).

Alba-Iulia is the first city in Romania that has managed to become a smart city, this city having the highest number of implemented projects, projects which have brought forth the following benefits for the city: sustainable development, development of IT&C infrastructure, urban mobility, health benefits, energy efficiency, increased quality of life, capitalizing on the tourist potential and increasing the business environment. The smart solutions implemented to develop the tourism sector are the following: wi-fi hotspots in public areas, intelligent urban mobility solutions (wi-fi access, GPS monitoring), electronic consoles installed at tourist objectives, and tourist promotion solutions (Romanian Smart City, 2018).

4.1. Surveying the potential of a quality, smart tourism in Oradea

Oradea are the subject of our analysis regarding smart tourism and smart cities in Romania. The city benefits from a favorable geographical position, and it is also close to other tourist attractions in the county, such as Stâna de Vale mountain resort, Peștera Urșilor (Bears Cave), Apuseni Natural Park, and the wooden churches in the countryside area. Numerous monumental buildings in the "Art Nouveau" architectural style, and given this, the possibility to develop heritage tourism, defines another facet of efforts to increase the tourist attractiveness of this city. Around 77 monument buildings were registered at the National Commission for Historical Monuments, and the Bihor County Office of the Directorate for Culture, Cults, and National Cultural Heritage indicate around 122 protected objectives in the premises of this city. Most of them have benefited from extensive rehabilitation programs and are used for tourism purposes (Oradea Municipality, 2020).

The touristic strategy targeted two main market segments - the cultural tourism market and the city break market. The evolution of the tourist accommodation capacity and tourist arrivals and overnight stays are presented in Table 1.

Table 1. The evolution of the accommodation capacity and number of tourists in the city of Oradea 2016-2018

Year	Active and available accommodation capacity of operators (places-days)	Tourist arrivals (number of individuals)	Overnight stays (number of individuals)
2015	1019768	163416	360432
2016	1131831	190022	421062
2017	1136373	223362	407225
2018	1087021	250395	459210
2019	915730	236793	384784

Source: adapted by the authors based on information available at National Institute of Statistics (NIS), 2020, http://statistici.insse.ro/

We can assert (with small differences and gaps) the number of tourists visiting Oradea has grown from year to year. Among the factors that stimulated this evolution, we can mention the restoration of the facades of heritage buildings, the extension of pedestrian areas, infrastructure development, the calendar of events, and promotional actions and activities (Agerpres, 2019). According to the Association for the Promotion of Tourism in Oradea and Surrounding Regions, during 2018, Oradea registered an increase in the number of tourists of 12% as compared to 2017, this figure being the highest in the entire country (Agerpres, 2019).

The way in which smart city projects cope with the challenges of urban tourism can be found in the Integrated Digitization Strategy of Oradea Municipality (Oradea Municipality, 2016). The strategic objectives for 2020 include the sustainable development of tourism, as well as the diversification and protection of the resources that aid in the development of the city. The priorities concerning the development of computerization also refer to the development of intuitive related products and services, such as connecting the Oradea City Card to the e-ticketing system (Oradea Municipality, 2016).

4.2. Smart tourism - good case practices in Oradea

The City Walk project has been financed through the Danube Transnational program, through UE – FEDER and IPA funds, this program being implemented in nine countries. The aim of the project is to set up 'pedestrian towns' throughout the Danube region in order to reduce CO2 emissions and noise pollution and to encourage walking and cycling. It involves the creation of pedestrian routes, the installation of signs with tourist information – where the main tourist objectives and attractions are located, the walking distance to them and estimated time necessary to reach these attractions), modernization of the tram park, improvement of public transport in the central area, the development of urban mobility

corridors and green corridors. The Walk'n'Smile mobile app, which was developed within the project, is also available free of charge to the people of Oradea (Oradea Municipality, 2018). This mobile app was developed in order to encourage people to choose a healthier lifestyle, to walk in a fun way. The app has a calorie counter and a pedometer, which allows for the comparison of the number of steps taken here with more known routes, such as Route 66 or Tour de France. It also offers the possibility to calculate how much money a person has saved up, given a choice to walk instead of using a car/personal automated way of transport. With the help of augmented reality, users can take pictures while walking with exotic animals, celebrities such as Christiano Ronaldo, Pink, Einstein, or Chaplin (Interreg, 2018). This project has been finalized, and it has a total value of 718.437,50 RON (Oradea Municipality, 2018).

In order to creatively use the cultural heritage of the city, buildings that have been restored have now become tourist attractions. Such is the case of Darvas House, where areas have been arranged to provide accessibility to people with special needs (elevator), or the case of Oradea Fortress, and the Museum of Freemasonry. All these objectives have been digitized to adapt to the needs of tourists. The initiatives for the promotion of creative entrepreneurship will materialize through the development of the business incubator 'Cresc Oradea Mare' (Build a Bigger Oradea), the value of the project being 16,747,152.33 RON, financed by the Regional Operational Program 2.1 - Business Incubators (Oradea Municipality, 2019).

Urban regeneration involves highlighting the urban areas that find themselves in difficulty by creating a positive image of them (Nae, 2015). For this purpose, the arrangement of green corridors has started in several key areas of the city. One such example is Barcăului Street, intended to be one of the biggest parks in Oradea. It will have a total area of 38,000 square meters and will include a multifunctional sports field, fitness field, public restrooms, alleys, benches, children's park, zip line and specific equipment for people with disabilities. The estimated value of this green corridor is 10,157,395.51 RON, the financing source being European funds for urban regeneration (Oradea Municipality, 2019).

Tourists are also invited to discover Oradea with the help of the Oradea City Card, a travel card that offers a 50% discount at tourist attractions, a number of 40 discounts at various shopping and entertainment locations, a free map for Oradea and Baile Felix hot springs, and also free transportation in Oradea, Felix Baths, and 1 Mai thermal baths. The card is valid for 48 hours and costs approx. five euros (Oradea City Card).

Improving local transport was another direction

in the smart city project undertaken by Oradea. In order to provide passengers with the opportunity to get real-time information regarding the location of means of transport and waiting time, a GPS system has been implemented, and the entire fleet of buses and trams is currently being monitored. What is more, the bus and tram stations have been equipped with electronic billboards. In order to support the reduction of energy consumption and increase passenger comfort, state-of-the-art trams were purchased in 2017 and 2018. The e-ticketing system and the payment of the travel cards by use of SMS of the travel cards have been implemented. What is more, the various means of transport have been upgraded with POS devices, to offer the possibility to purchase the transport tickets directly in the means of transport.

Oradea City Report is a mobile app developed to help the inhabitants of the city to send various notifications to Oradea City Hall and local public authorities and representatives. The aim is to improve the quality of life and the development of civic spirit (Oradea Municipality, 2020).

Another way through which the quality of life was increased with the aid of technology refers to the implementation of the QR code system on the documents issued by the mayor's office, including notifications/fines for illegal parking. Users can access a payment platform by scanning the code and making the payment online without having to travel to a physical counter (Oradea Municipality, 2017).

V. CHALLENGES AND FUTURE OPPORTUNITIES FOR SMART TOURISM

The major concern for smart tourism is related to the collection of personal data, as a number of applications automatically extract information known as 'digital footprints', information related to searches, location, or tourist IP (Newlands, 2019). Before the introduction of the General Data Protection Regulation (GDPR), the data collection rules were quite flexible. However, after the implementation of this protocol, it became required that the processing of personal data of tourists be done only with the explicit consent of the data subject. Such data obtained from tourists is stored for a limited period of time, and tourists can withdraw their consent at any time (Stoica, 2018). Another challenge is the immense and ever-growing amount of data that needs to be processed, reason why filtering methods are needed (Kontogianni, 2020). This will result in the use and exploitation only of data that is useful and to eliminate those that are extra and unnecessary (Nguyen TT, 2017 quoted in Kontogianni, 2020).

Is the future of tourism represented by smart tourism? Definitely, yes. If before the pandemic smart tourism sector was considered in its infancy (Kontogianni, 2020), the ever-increasing digitization will play an important role in defining the new 'normal' as social distancing will continue even after the relaxation of movement restrictions. Technology had an unexpected boom during the epidemic, and we notice that people who did not previously feel comfortable using the Internet and mobile apps have now developed the necessary digital skills, thus falling into the category of smart tourists. Tourism and augmented reality, for example, will harmoniously complement each other so as to provide the desired experience to those who want to visit various sights and places but who are still afraid to travel. The concept of smart mobility will be implemented in as many destinations as possible, in order to offer the choice between various individual means of transport.

VI. CONCLUSION

Aware of the size of demand and the opportunities that come from various needs, authorities in different cities and countries implement many of the services and innovations in the tourism sector, transforming their cities into smart cities. They are not just measures targeting visitors; they serve the locals too. Consequently, many of them cannot be created and distributed unless the city or resort itself has already built a digital infrastructure, has informed and educated the citizens and officials involved how to use these facilities and how to promote them. The positive effects of smart tourism in a smart city can go even further - stimulating tourism will stimulate associated services, local industries, benefiting local businesses, and creating jobs.

Smart tourism services complement, enhance, and sometimes replace existing services in more conventional tourist destinations - from installing Wi-Fi networks in different areas of the city, to redesigning old neighborhoods, creating routes accessible to people with reduced mobility, and promoting the use of public transport, designing tourist routes adapted to different visitor profiles, digitizing municipal information to allow easy access from mobile devices and the implementation of various training plans for SMEs and even for citizens.

Technological progress has made it possible to transform tourism into an essential component of the world economy. On the other hand, local communities transformed into tourist destinations are affected by the negative effects of the growing flow of tourists, namely pollution, heavy traffic, and increased resource consumption, all of which led to lower quality of life. Communities have begun to realize that problems can also be solved with the help of technology, rethinking tourism as an activity that does not harm the inhabitants and the patrimony. In this

way, the concept of Smart Tourism becomes a critical component of a smart city, which refers to the use of information and communication technology to provide tourists with authentic experiences while ensuring the well-being of the city and a better quality of life for the community. As it could be seen in the examples of good practices presented in the paper, at both the European and Romanian level, the technologies implemented in smart tourism destinations respond to important tourism challenges through accessibility, sustainability, digitization, and cultural-creative projects. Smart solutions can be seen to encourage walking, bike-sharing, or using public transport to reduce traffic congestion and pollution. Communities have become more aware that efficient resource exploitation and environmental protection are essential to care for the natural and cultural patrimony (Badulescu et al, 2014). Extraordinary progress has also been made in highlighting the authenticity of tourist destinations through the innovative use of cultural heritage. Smart cities understand that in order to be smart tourist destinations, technology must become a facilitator for a more competitive and sustainable tourism.

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