

HABILITATION THESES

Tourism Security, Crisis Communication and Smart
Tourism: Challenges and Solutions

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Table of contents

1. Introduction	1
2. Presentation of the habilitation theses.....	3
2.1. <i>Scientific research interest</i>	3
2.2. <i>The structure of the habilitation document.....</i>	4
2.3. <i>Theses</i>	4
3. Tourism safety	7
3.1. <i>Problem statement, research questions</i>	7
3.2. <i>Methodology.....</i>	8
3.3. <i>Results.....</i>	10
4. Crisis communication in tourism.....	15
4.1. <i>Problem statement, research questions</i>	15
4.2. <i>Methodology.....</i>	16
4.3. <i>Results.....</i>	17
5. Smart tourism.....	21
5.1. <i>Problem statement, research questions</i>	21
5.2. <i>Methodology.....</i>	22
5.3. <i>Results.....</i>	25
6. Contribution to the science and future research directions	29
6.1. <i>Key contributions.....</i>	29
6.2. <i>Future Directions</i>	30
7. References	31

List of Tables

Table 1. Digital tools to revitalise tourism in Székesfehérvár	23
Table 2. Description of measurement items	24
Table 3. Eigenvalues and percentages of the rotated factors' variance	
Table 4. Rotated component matrix	25
Table 5. Coefficients of the model of the impact of on-site technologies (total sample)	26
Table 6. Coefficients of the model of the impact of on-site technologies (sub-samples: below 55 and above 56)	27

List of Figures

Figure 1. Global tourism trends related to smart tourism	2
Figure 2. Other areas of scientific interest	3
Figure 3. Relationship between the themes of habilitation	4
Figure 4. Terms considered in the quantitative analysis	9

1. Introduction

In the pre-COVID-19 period, the tourism sector (including its direct, indirect and induced effects) contributed 334 million jobs (10.5% of total employment) and USD 10.3 trillion to the world economy, accounting for 10.4% of global GDP, according to the World Travel & Tourism Council (WTTC, 2024).

Tourism faced severe challenges during the coronavirus epidemic (Keller et al., 2024). Between 2020 and 2022, 2.7 billion fewer international trips were made, which reduced tourism revenues by USD 2.5 trillion over the three years (World Tourism Organization, abbreviated WTO, n.d.). In 2023, the sector contributed 9.1% of global GDP, and employment was 27 million fewer than in 2019 (WTTC, 2024).

In 2024 the sector already consolidated, with the number of international tourists (1.4 billion) reaching 99% of 2019 (UN Tourism, 2024). A duality characterises the current phase: on the one hand, the search for experiences plays a dominant role (González-Reverté et al., 2022), driven by the rapid spread of technological innovations (Gursoy et al., 2023); on the other hand, tourism services that promote inward-looking and slowing down are coming to the fore, in the spirit of slow tourism (Balaban & Keller, 2024). The sector also faces challenges during the recovery, including increasing geopolitical tensions, rising costs of living and climate-related problems (Organisation for Economic Co-operation and Development, 2024).

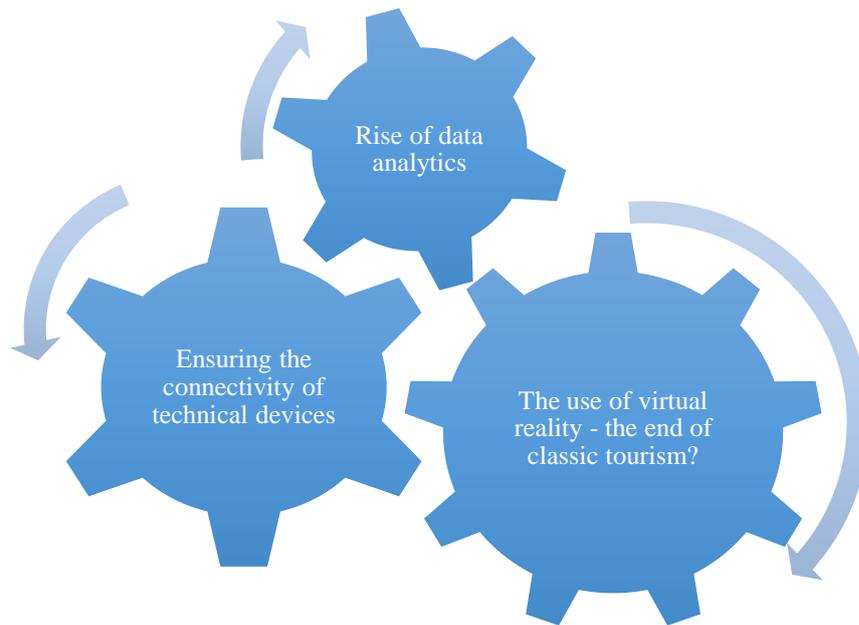
The habilitation theses present the studies on my three main research topics: tourism security, crisis communication, and smart tourism. They are all parts of modern tourism trends, and their importance is expected to grow.

Tourism and security incidents are inevitably intertwined, with security issues shaping global trends. Williams and Baláž (2014) describe tourism as a mixture of uncertainties and risks known only in fragments. Risks refer to known uncertainties, while uncertainties refer to the unknown. Without proper management, risks can become crises that negatively affect travellers, tourism businesses, organisations and destinations (Paraskevas & Quek, 2019). Research by the WTTC (2019) shows that the average duration of a tourism recovery in a destination is 22.2 months following political turmoil, 19.4 months following a disease crisis, 16.2 months following an environmental disaster and 11.5 months following terrorism.

A tourism crisis can be defined as an unforeseen event that reduces tourists' confidence in the destination and disrupts their ability to carry out activities as usual (Patrichi, 2013). Managing crises at a strategic level has become an essential requirement for tourism organisations. Prevention and preparedness are increasingly crucial in the planning process. Yet, those affected face lasting negative impacts often due to the lack of proper management and marketing approach. Through crisis management and crisis communication, we can provide answers on how to reduce the risks perceived by travellers and what strategic actions are essential for managers (Marton et al., 2018b).

After traditional and digital tourism, smart tourism can be seen as the next evolutionary development stage, the “smart revolution” era, which has emerged on the ground of innovation based on interactive digital technology and communication infrastructure (Yoo, 2012).

Figure 1. Global tourism trends related to smart tourism



Source: own editing based on Csapó & Törőcsik, 2020

The term “*smart*” is widely used in the literature, often in a technological sense, indicating the relationship between technologies and the ability to connect and transmit data (Gretzel et al., 2015). Smart tourism is based on the increasing use of information and communication technologies (ICT) in tourist destinations. Smart tourism systems can be used before, during and after the trip. Inspired by the smart city concept (Boes et al., 2015), environmentally and economically sustainable developments enhance the tourist experience (Gretzel et al., 2015), offer personalised services with real-time monitoring (Buhalis & Amaranggana, 2015) and increase competitiveness (Gretzel et al., 2016).

For destinations, the future of smart tourism lies in automating processes, increasing efficiency, developing new tourism products, forecasting demand, crisis management and value creation (Xiang & Fesenmaier, 2017). Individual technological advantages do not drive smart tourism, but by the interconnection, synchronisation and coordinated use of different technologies (Höjer & Wangel, 2015). Today, most travellers have the digital tools to participate in tourism, so the challenge for operators is not to create a digital presence but to develop applications optimised for their devices (Happ et al., 2020).

To better understand tourists' expectations of smart destinations, it is essential to understand the needs of today's tourists to develop “smarter” tourism attractions (Xia et al., 2016). The development of ICT and especially the internet has created “new” tourists who are more experienced, sophisticated and demanding. For consumers in the new information age, digital culture is natural, and their decision-making behaviour is based to a large extent on the information available on the internet (Tari, 2017).

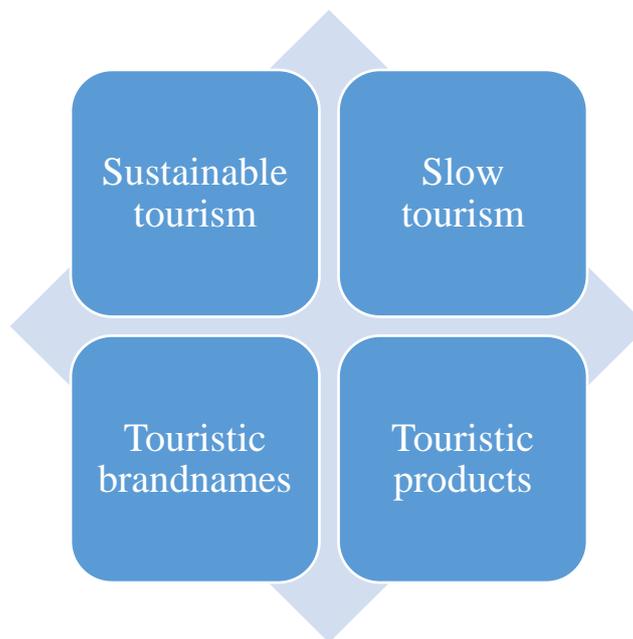
2. Presentation of the habilitation theses

2.1. Scientific research interest

Currently, my primary research area is tourism security, especially crisis communication. Since 2020, I have been a member of the Tourism Security Workshop led by Prof. Gábor Michalkó, in which I have published five papers in volumes written by the professional community. My secondary research area is smart tourism, in which I have conducted research with colleagues in the field of smart destination and smart event management, and I have written a book with colleagues entitled *Innovation in Tourism* (Akadémiai Kiadó).

Other areas of my scientific interest are the following (Figure 2):

Figure 2. Other areas of scientific interest



Source: own editing, 2025

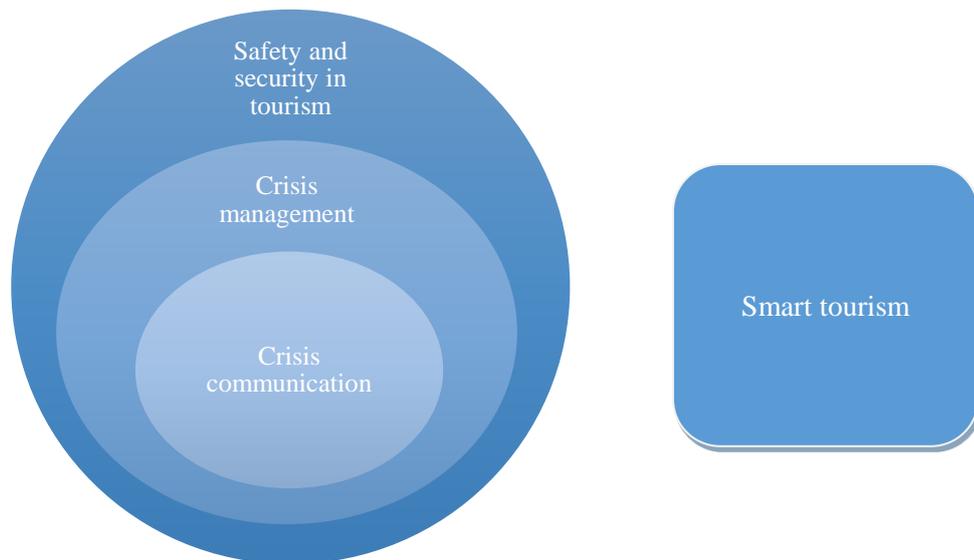
- Since 2023, I have been working at the Institute for Sustainable Development; I have also worked with several co-authors on the sustainability of destinations, events and tourism initiatives and the climate impact of tourism transport. I have focused on last-chance tourism as a niche tourism product within environmental sustainability. A study on circular tourism practices is one of my most cited articles. The social and economic pillars of sustainability were also strengthened by the research on twin towns, which was carried out in Kőszeg thanks to a grant from the Institute of Advanced Studies.
- I became more interested in tourism brands after joining the Brand and Marketing Communications Research Group led by Dr. Habil. László Kovács (Eötvös Loránd University). I have been involved in projects related to green marketing and brand associations, including urban and regional brand association studies and research on the brand awareness of Hungarian tourist destinations.
- The issue of slow tourism has been explored in joint research with Turkish PhD candidate Eylül Balaban over the past two years. Following a systematic literature review, we are currently critiquing our study on residents in slow tourism destinations, but we have also started writing our third joint article on the topic.

- During my career, I have published on several tourism products such as wine tourism, fashion tourism, ecotourism and cycling tourism.

2.2. The structure of the habilitation document

My postdoctoral theses focus on tourism security, crisis communication and smart tourism (Figure 3).

Figure 3. Relationship between the themes of habilitation



Source: own editing, 2025

The first thesis relates to the role and content of tourism security in the planning and development strategies of the European Union (EU) countries and to what extent and with what content the dimensions of tourism security have appeared in the case of each Member State.

In case of the second thesis, the focus is on the victimisation of foreign nationals in the case of Budapest, with nationality, location of victimisation and the structure of crimes against foreign nationals as focal points.

The third thesis concerns the crisis communication of national tourism destination management organisations (DMOs) in the EU before and during the coronavirus outbreak, looking at their websites and social media channels.

The fourth thesis presents the evolution of crisis communication in domestic business hotels during the coronavirus epidemic regarding the communication channels used and the messages formulated, emphasising the differences between the first and second phases of the pandemic.

The fifth thesis shows how digital technologies affect the attractiveness of small-scale heritage tourism destinations for potential tourists in fierce competition between destinations.

2.3. Theses

T1-T2: Tourism security and safety

- 1a: All the dimensions of tourism security and safety examined, including public safety, technical safety, health safety, orientation safety and consumer safety, are included in the tourism strategies of the Member States surveyed. The EU countries understand tourism security and safety primarily regarding public safety and have set targets for

crime and terrorism. In the area of technical security, the main objectives mentioned were the development of digital communications and investment in infrastructure. Health security was the most prominent in the context of food safety through the introduction of quality labels and trademarks and the promotion of local products. Several strategies highlighted the objective of improving signposting in the context of safer navigation. Regarding consumer safety, the strategies identified the reduction of the grey and black economy as a key factor, alongside good service quality and consumer protection.

- 1b: Most planning strategy documents do not pay much attention to tourism safety, with Bulgaria, Cyprus and the Czech Republic being exceptions. Tourism safety terms appear in the strategies in a subdued way, with safety, security, safe being the most frequently used terms, mainly in the chapters on situation analysis and tourism consumer trends. Risk, threat and terrorism were mostly mentioned as factors influencing consumers' travel decisions. The term "peace" was used mainly in the sections dealing with marketing communication as a potential call word.
- 2a: Tourist arrivals are not always directly proportional to the level of victimisation. In the Hungarian capital, British and Dutch citizens are victimised at a rate well above their tourist arrivals, which can be explained by tourist behaviour and party tourism in the case of the former group and by the willingness to report in the case of Dutch travellers.
- 2b: In Budapest, foreign national victims are most often victimised in accommodation, public transport, bars, and car parks within residential areas and on pavements and footpaths.

T3-T4: Crisis communication

- 3a: Websites did not play a significant role in the communication of EU national DMOs before and during COVID-19. Before the outbreak, the websites were mainly static content and blog posts, primarily focusing on the region, attractions and events. Few websites dealt with tourism security and safety aspects, and these only shared basic information. No structural change was observed on the DMOs' websites with the pandemic's emergence. The websites mainly provided information on the restrictions or bans imposed but were unsuitable for two-way communication and image protection.
- 3b: Facebook, Instagram and Twitter are the social media platforms many EU national DMOs use. Tourism safety content was limited before the coronavirus outbreak, with social media posts mainly focusing on attractions and programmes. The national DMOs used social media platforms to varying degrees during the coronavirus outbreak, with Facebook being the most used platform for sharing this news. The topics of the posts were mostly summaries of the epidemic, information on restrictions, border closure news, and warnings on safe travel.
- 3c: The number of entries related to the coronavirus epidemic was high in the first months of the crisis. During that time, National Destination Management Organisations in the European Union used communication channels to maintain contact with tourists and their image. From May to October 2020, the number of entries related to COVID-19 decreased significantly, with DMOs returning to pre-pandemic themes. Although the second wave again discouraged travel, and posts about the epidemic and vaccines reappeared on social media, activity on tourism safety remained moderate.
- 4a: Domestic 4-star business hotels motivated business travellers to book during the first and second waves of the coronavirus epidemic by maintaining continuous contact with partner companies, offering extra services, flexible booking and free cancellation conditions, frequent guest programmes, price reductions and communication emphasising safety and cleanliness.

- 4b: During the first two waves of the coronavirus epidemic, Hungarian 4-star business hotels tried to maintain their image through continuous communication, making short films with their staff and participating in various activities and charity programmes.
- 4c: There were significant changes in how domestic 4-star business hotels communicated about safety during the coronavirus outbreak. In the pre-crisis period, the safety of the country and the capital was highlighted in their communications, while after the pandemic emerged, the focus was on hotel safety. Their most common message was that the guest was safe in the hotel, where regulations and precautions were respected, there was a high level of cleanliness, the hotel was open, and the guest could count on them.

T5: Smart tourism

- 5a: Digital technologies can be divided into three groups based on attitudes towards them in small-scale heritage tourism destinations: Smart tourism programs (city and event mobile apps, digital thematic tourist routes, digital tourist discount card system, digital sightseeing with QR codes, digital city game app); smart attractions (light art design game, light painting of buildings, jigsaw puzzles with 3D light cubes) and smart technology initiatives (smart pedestrian crossing, smart parking, smart benches, charging points).
- 5b: Tourists use smart technologies mainly for orientation, searching for information on programmes and digital sightseeing in small-scale heritage tourism destinations. Smart devices used primarily for information gathering and planning tourism programmes are the main drivers, but developing smart attractions and smart infrastructure is also essential.
- 5c: Age affects the use of smart tourism technologies for all age groups. Smart attractions and smart technology initiatives have a slightly more substantial impact on younger segments than in general, while smart tourism programmes are more important for older generations.

3. Tourism safety

The need for safe travel is a key factor (Zou & Meng, 2020). Still, tourism is exposed to risks due to the intangibility, heterogeneity, inseparability and perishability of tourism services, as well as the time lag between booking and travel (Jancsik et al., 2019). In Maslow's pyramid, human needs are ranked into five levels, with safety being the second level. Travellers make travel decisions that minimise the risks associated with travel (Michalkó, 2020). In addition to actual information, tourists' decisions are influenced by their impressions and perceptions, with their interpretations often being more important than reality when choosing a destination (Li et al., 2018).

Tourism safety does not have a universally accepted definition; it is a discipline created by professionals, researchers and policymakers to protect the safety of destinations and tourists (Korstanje, 2020). Tourism security is the absence, reduction or elimination of threats that hinder the effective operation and development of the sector, whose factors include public safety, health safety, environmental safety, consumer safety, technical safety, orientation safety, cyber safety and lifestyle safety (Michalkó, 2023; Michalkó et al., 2020).

3.1. Problem statement, research questions

In the field of tourism safety, I would like to present two studies that have examined this area at the European (Keller & Tóth-Kaszás, 2021) and municipal (Mátyás et al., 2023) level.

The main aim of the first research was to identify the place of tourism security in the planning, development and strategy-making practices of the Member States of the European Union and to explore the importance of safety in the tourism sector at the level of nation-states. Since tourism planning is a national competence, i.e., EU countries have complete competence and autonomy to decide on their development (Juul, 2015), we examined the different planning and strategy documents per Member State.

Based on the analysis of the EU strategies, it can be said that public safety is at the centre of the strategy makers' thinking, so as a continuation of the research, we focused on a specific case, Budapest, as a destination. The second study presents research carried out in an area at the intersection between two scientific fields: tourism (tourism safety and security) and criminology (victimology). Both fields are among the “well-researched” areas, but the area at the intersection of the two is considered a white spot not only in Hungary but also in other countries. Researchers rarely deal with the victimisation of tourists, although the number of victimised tourists is estimated at several million per year worldwide (Mátyás, 2017; Ritecz, 2019).

The second study explores where foreign tourists are victimised in Budapest and what types of crimes are committed against them. The question of where is not just that of which district it took place in, as that provides little help to municipal law enforcement experts when developing area-specific crime prevention. It can also reveal the typical scenarios in which foreign nationals are most likely to become the victims of crime.

The research questions were the following:

1. In what dimensions do EU Member States interpret and translate tourism safety into practical recommendations and goals?
2. What are the similarities and differences between EU Member States regarding their tourism safety priorities?
3. To what extent does the nationality of victimisation represent the composition of tourists arriving in Hungary by country of origin?

4. Where are the highest numbers of foreign victims victimised in Budapest?

3.2. Methodology

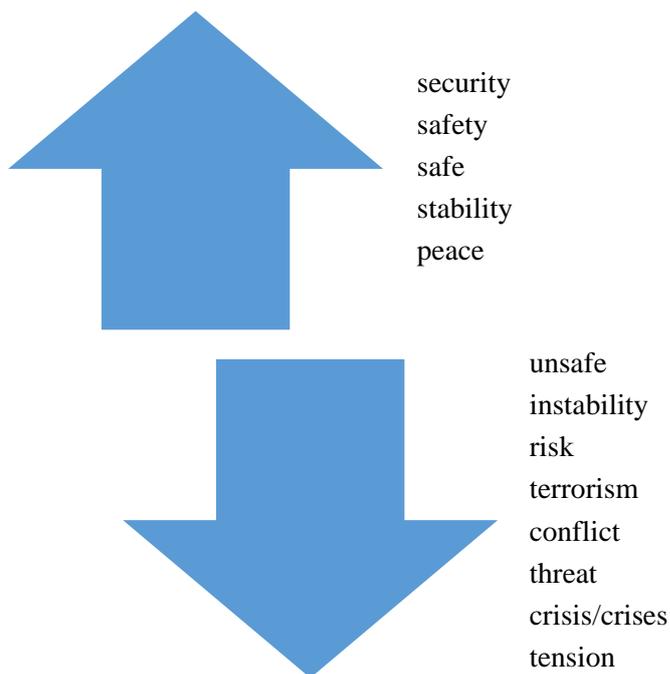
The Emergence of Safety and Security in the Tourism Strategies of EU Member States

During our empirical research, we examined the importance of tourism security and safety in the tourism planning, development, and strategy documents of the European Union Member States through content analysis. Currently, the EU has no unified tourism development concept, leaving the development of tourism in individual countries as destinations to the competence of the Member States.

The strategies available in English for 13 Member States (Austria, Croatia, Cyprus, Hungary, Ireland, Italy, Latvia, Malta, the Netherlands, Poland, Romania, Slovenia and the United Kingdom) were downloaded from the websites of the national destination management organisations. (The UK left the EU on 31 January 2020 when its strategy was still in effect, that is the reason why it was taken into account in the research.) There is no tourism development strategy in English for nine countries (Bulgaria, the Czech Republic, Denmark, Estonia, Finland, Lithuania, Germany, Portugal, and Slovakia). Still, after an e-mail request, we received them from the national tourist offices in the original language. We translated these original language documents into English using Google's software and used these for the analyses. For six other countries, we did not receive information on planning documents (France, Greece, Luxembourg, Sweden), and there is no national strategy for Belgium and Spain.

In the quantitative analysis, we examined the frequency of occurrence of 13 terms in the documents (Figure 4). Some of the selected terms were based on a basic benchmark method, including a study by Marton et al. (2018a) and previous literature on travel risks (Floyd & Pennington-Gray, 2004; Lepp & Gibson, 2003; Newsome et al., 2004). The terms thus obtained were supplemented with additional words that appeared in a significant number in national and international news channels in 2019. To do this, we used Google Trend Analytics (<https://trends.google.com>). We filtered out occurrences that were not relevant, i.e., they were not mentioned in the strategies on the topic of tourism safety and security but rather in the general economic sense.

Figure 4. Terms considered in the quantitative analysis



Source: own research, 2020

Spatial characteristics of the victimisation of foreign tourists in Budapest

This research was based on crime statistics data gained from the Criminal Analysis and Evaluation Department of the Hungarian National Police Headquarters, the website of the Hungarian Central Statistical Office (HCSO) (www.ksh.hu), and the Crime Statistics System (<https://bsr.bm.hu/>).

The Hungarian National Police Headquarters provided the following crime data in the period of 2017-2021 in Budapest:

- The registered number and type of crimes committed against victims of foreign citizenship,
- Locations where victims of foreign citizenship were victimised,
- Registered nationality distribution of victims of foreign citizenship.

One methodological problem was that it was impossible to connect the individual crime statistics data, that is, where a victim of a particular nationality was victimised and the specific crime that was committed against them. Despite this, the places where victims were victimised and the main types of crimes committed against foreign nationals were clearly defined. The results for each year were distorted by the pandemic period and the presumably high latency.

The authors also sought to analyse when foreign citizens were victimised, but this would not have had a predictive value. In this regard, a problem arose that, in many cases, the precise times at which a crime was committed/someone became a victim could not have been identified. Therefore, it would have led to the research astray (see: the problem of the accuracy of data used by predictive software). Furthermore, the data cleaning would have only been possible with a detailed study of the individual case files and repeated questioning of the victims. The authors did not have the opportunity to do that.

The authors would like to note that the term “victim of foreign nationality” used in the study is not the same as the concept of “foreign tourist” (Ritecz & Tokodi, 2020) since there are almost two hundred thousand foreign citizens living in Hungary who study or work here (in 2020 199,957 foreign citizens were staying in Hungary /HCSO, 2021a/).

Statistics only recognise the former category; therefore, among the foreigners who have been offended, there may be people who are not tourists but rather foreigners living in Hungary. This methodological problem characterises not only Hungarian statistics but all European countries.

3.3. Results

The Emergence of Safety and Security in the Tourism Strategies of EU Member States

A significant part of tourism development strategies was prepared in the early 2010s, and it typically includes goals and recommendations until 2020 and, in some cases, an action plan. As a result, we found that tourism safety and security terms were restrained in the strategies. Still, there were many references to the economic crisis of 2008-2009 and its effects. It was also noteworthy that the elaboration of each strategy showed considerable diversity. There were strategies with highly detailed analysis and an action plan, but planning documents setting out general objectives were also found.

Safety and security issues appeared in varying proportions in the tourism development strategies of the 22 EU Member States examined. The terms safety, security and safe were predominant in the examined documents. These terms were primarily mentioned in the situation analysis chapters of the documents (SWOT or PESTEL analyses) and in the overview sections that discussed tourism consumer trends. Risk, threat and terrorism were also mentioned more frequently in several documents, mainly influencing consumers' travel decisions. Marketing communications sections often used “peace” as a potential buzzword.

In the qualitative content analysis, in addition to the terms mentioned above, we also looked at the documents for manifestations that connect with one of the five dimensions of tourism safety, according to Michalkó (2020). Accordingly, we found references to public, technical, health, orientation, or consumer safety in 153 cases in the 22 strategies examined.

The planning documents mainly focused on public safety (mentioned 69 times in 18 countries). In this regard, national tourism development strategies primarily drew attention to the fact that safety and security play an important role in tourists' travel decisions, one of the reasons for which is the rapid flow of information, as wherever a negative event occurs, tourists can be informed immediately. Regarding public safety, several countries (Portugal, Latvia, Slovenia, Cyprus, Estonia) emphasised that they consider themselves safe, which is also why tourists visit them.

In addition, several countries mentioned the safety of various tourism products, e.g., the safety of adventure, cycling, and water tourism. The reduction of crime, assassinations and immigrants, as well as the need to introduce safety and quality standards, were mentioned as a task to be addressed. To prevent illegal immigration and crime, new electronic control systems are needed in the European Union.

Some strategies also identified the goal of increasing the safety of people and luggage at accommodation establishments and beaches and managing conflicts between residents and tourists. In some cases, the (in)adequacy of transport morale or the negative influencing power of geopolitical conflicts in sending and bordering countries were also mentioned as an external factor.

Technical safety appeared in the strategies for 12 countries 23 times. Typically, the emphasis was on the safety of different modes of transport and routes, highlighting roads, parking, and related traffic signs. The strategies address critical security issues for ports, airports and the visa system, in relation to which countries have set several development goals. Cyber security has become a key security issue today, and the analysis of data protection and data traffic has been mentioned in the strategies. The documents also referred to the need to ensure the accessibility of digital content and services and the development of local applications to make visitors' stays easier and safer.

The health safety issue was the least discussed topic in the documents examined. A total of 14 topics were mentioned in the strategies in 11 countries. These were almost exclusively about food and the supply of restaurants. In several cases, the importance of healthy, quality food and drink was emphasised by tourism service providers, and in this connection, knowledge of the origin of food and the preference for local products, as well. Potable tap water has also become an important issue nowadays. Therefore, it is no wonder that some countries emphasise that tap water is drinkable. It has been mentioned in several strategies that quality labels and trademarks have recently acquired an important role in tourism, especially in hospitality, and several countries have set the goal of developing them and establishing their system. In some cases (e.g., Malta), curbing illegal catering activities has also been mentioned as a task to be addressed.

The issue of orientation safety was mentioned by 14 countries (28 times in total), most of which point out that the country did not pay enough attention to the placement of multilingual signposts in the past. This is typical of city centres, around airports and close to attractions. The countries mentioned the backwardness of rural areas in this field as an apparent shortcoming; the development of the signposting of roads and attractions was defined as a task for several countries in the development plans. In connection with the above problem, it is also necessary to improve the signposting of close-to-nature tourism (e.g., walking and cycling tourism) to ensure safe transport. The need to set up tourism information systems in several countries was also mentioned.

Only 10 countries dealt with a relatively broad area of consumer safety (23 mentions). Several Member States have highlighted the quality problems caused by the grey and black economies, which make it impossible for regular service providers to operate profitably. Reducing these illegal activities and eliminating unlicensed units is a goal for several countries shortly.

Quality standards and categorisations have emerged in many tourism areas, and strategies have also drawn attention to their accurate measurement and adherence. The responsible thinking of the tourism sector is reflected in the continuous improvement of quality and the safety and accessibility of tourism services. In connection with the above, several countries have mentioned the provision of adequate quality of service and, in this context, consumer protection in their strategies. In some cases, we have read that the lack of education in the tourism workforce can also be a problem with the quality of services, therefore Malta plans to expect a minimum level of qualifications for those working in the industry.

Spatial characteristics of the victimisation of foreign tourists in Budapest

Between 2017 and 2021, 11,151 foreign nationals were victims of crime in Budapest, i.e., an average of 2,230 people a year during the five years. Due to the pandemic, the number of foreign citizens fell compared to recent years (total number of trips: 2018: 57,667,000; 2021: 36,688,000 /HCSO, 2021b/). Both the number of crimes and the number of foreign victims were decreasing. In the case of the years between 2017 and 2021, it can also be seen that the number of foreign victims registered in the capital fell more proportionally than the number of crimes as a whole. In the Hungarian capital, the number of victims fell by almost half in five

years (2017: 41,523 →2021: 19,972). The national data also shows a downward trend, but such a reduction was not observed as in Budapest (at national level, the number of victims decreased only by 29.5% between 2017 and 2021).

In the case of Budapest, tourist arrival figures are not always directly proportional to the degree of victimisation. Among the citizens of the most affected countries were those nations in whose case the number of tourist arrivals does not justify those figures. In connection with the Hungarian capital, the proportion of British and Dutch citizens who are victims of crime is well above their tourist arrival numbers. In the case of the British, the numbers can be explained by tourist behaviour and party tourism, while in the case of Dutch tourists (2017: 184 people, 2021: 29 people), it can be explained by their willingness to report. The Dutch can be considered highly law-abiding; therefore, they often bring minor violations to the attention of the authorities. This significantly increases the number of reported offences against Dutch citizens (Mátyás et al., 2020). The willingness to report is higher among citizens of countries with a long history of democracy (Buil-Gil & Mawby, 2022).

In the case of Chinese citizens, the high number of victims of crimes is probably not caused by the large numbers of tourist arrivals but by the high number of Chinese citizens living in the capital.

For decades, German citizens have been visiting Hungary in the largest numbers, including the capital. Based on this, it is not surprising that in their case, we can also encounter significant victimisation values (2017: 224 people, 2021: 25 people). The number of German citizens who came to Hungary specifically for entertainment (party tourists) or those who live or study in Budapest is also high (in 2020, 18,344 German citizens lived in Hungary /HCSO, 2021a/).

Romanian citizens are also victimised in large numbers (in both 2020 and 2021, they were victimised in the second largest number; 2017: 175 people; 2021: 82 people). In their case, the number of Romanians staying in Hungary for non-tourist purposes is high since many stay in the capital for occasional or long-term employment. Among them, the proportion of Transylvanian Hungarians, whose mother tongue is Hungarian, is high.

Police statistics distinguish 171 types of locations where crimes are committed. In this research, the ten most frequent venues for victimisation were analysed.

The apartment category has the highest number of victims; however, this cannot necessarily be linked to tourism. These statistics contain data on victims of foreign nationality, i.e., tourist data and the tens of thousands of foreign nationals living in Hungary.

The hotel, motel, and inn category was the second to sixth most frequent location for crime in the years under review. Most of these crimes are against property, mainly thefts; to a lesser extent, fraud and over-billing also occur.

Although the number of frauds committed in bars and nightclubs significantly decreased (2017: 251, 2021: 39) - which is certainly positive from the point of view of the country's image - it must be mentioned that we can assume significant latency in this category. In many cases, tourists visit nightclubs without the knowledge of family and friends, where they often become victims as a result of their frivolity or the satisfaction of extreme needs. However, they do not want to reveal this activity to their family members and acquaintances in a lengthy police procedure and thus refrain from filing reports despite significant financial damage (Győri, 2015).

Although the number of cases is not large, the “parking lot within a residential area”, the “square, park within a residential area”, and the “road within a residential area” categories occur in each of the years examined (e.g., 2017: road within a residential area - 135, 2021: parking

lot in a residential area - 49). These can also be classified as hard-to-locate places because, for the crimes committed in these categories, one should mostly think of thefts committed by trickery or deception when the passengers of a car with a foreign license plate have parked in a parking lot, at a gas station, or at the side of the road and become the victims of crimes. In many cases, the perpetrators themselves are foreigners (e.g., Serbians, Albanians) who pretend to be seeking help or offer their assistance to the prospective victim (e.g., the perpetrator changes a flat tyre). Still, in many cases, they harm foreign citizens resting in their cars (Márkus, 2008).

Various public transport vehicles (railway vehicles, trams, buses) are also frequently listed as places where crimes are committed. In this connection, it is worth mentioning, especially in the case of the railway vehicle, that the precise identification of “moving locations” and the recording of traces are quite difficult from a criminalistic point of view. In many cases, it also disrupts criminalistic thinking (Nyitrai, 2020). It can be assumed that the victims have noticed the crime committed on the train after their arrival in the capital and reported it there, which is why this increases the number of offence venues in the capital. Crimes committed on trams and buses almost exclusively cover pickpocketing. Congested tram and bus lines near attractions that foreign citizens frequently visit are those that most often induce a high number of crime scenes.

The “tent” can be classified as a unique venue for offences. The crimes included in this category are all thefts from tents during the Sziget festival. We can certainly count on significant latency here, as well, since many people do not file a report, especially in the case of thefts of minor material value. In some years, this location is characterised by particularly high numbers of cases (2017: 139, 2018: 81), which decreased to zero in 2021, and only one was registered in 2020 (Due to the pandemic, in 2020 and 2021, the Sziget festival was also cancelled.)

Among the crimes committed against foreigners, only the five crimes with the most significant number were analysed since the number of other crimes is much smaller and would thus only provide an unfounded possibility for analysis.

In the capital, the most significant number of thefts are committed against foreigners, constituting the highest number of delicts in each of the years examined. This also corresponds with the trend observed throughout the country (Finszter, 2020). For foreign citizens, this mainly means pickpocketing, beach theft, and theft from accommodation and vehicles. The number of crimes is decreasing (2017: 2909 → 2021: 626). The economic situation of a country dramatically influences the number of thefts and robberies. If the economic situation is unfavourable, the number of thefts and robberies is higher. The crimes of theft, plundering, and robbery have a similar legal nature, with the incidence of the three crimes increasing or decreasing simultaneously. This could also be observed during the present research.

In the case of the other crimes, a constant ranking can no longer be observed between the individual years. Disorderly conduct and battery crimes usually show a higher value in each year's rankings. Among the causal factors, alcohol and drugs can also play a role, but speaking a different language or having different skin colours may also provoke conflict between the parties involved. This can even escalate to violence, which in turn can result in injuries (→ battery) (2021: 46). Together, the two crimes exceed one hundred, with the highest number reached in 2018 when 82 cases of battery and 68 cases of disorderly conduct were committed against foreigners. Compared to other crimes, if we compare the first and the last years of the examined period, the incidence of these crimes decreased less. Significant territorial differences can be observed in the case of disorderly conduct and physical assault, not only in Hungary but also in other countries, where it can be observed that there are more “aggressive” areas of a country.

Plundering was among the most common crimes in two years (2017: 80, 2018: 63), mainly around downtown entertainment venues. The statistical system has no data on who the party tourists are since foreigners are not categorised in this way. Among the young people who come to the Hungarian capital for a few days specifically for entertainment, there is a higher percentage of young people who (in the state of being unable to defend themselves) become victims of robbery. In their case, a cause-and-effect relationship can be discovered between excessive alcohol consumption and robbery. Robbery is a crime that can be placed between theft and plundering. Plundering is more serious than theft but less serious than robbery. In crime statistics, looting is sometimes registered as theft, as it is less “damaging” to the statistics. This is a limitation of the research as it is challenging to reveal.

In each year examined, fraud is among the most common crimes. A decreasing incidence can be observed (2017: 77 incidents, 2021: 36 incidents); however, despite the favourable trend, we can assume high latency. The main locations for fraud are train stations, parking lots and airports. In these places, many people exchange money, take a taxi, or even go to a restaurant where they are “overcharged”.

We can state that robbery is not among the most common crimes. This offence is most acutely deleterious for the subjective sense of safety and is among the worst “advertisements” for a country. In 2019, 34 robberies were registered, but in 2021 only 11. In many cases, it can be established that the victims were under the influence of alcohol or other intoxicants, therefore easily became victims of robbery.

4. Crisis communication in tourism

If tourism security is not achieved, crisis management becomes of utmost importance, and crisis communication is part of it, which has been another significant research area for me over the last 5 years.

When a tourist destination is in crisis, the crisis news reaches visitors immediately (Sönmez et al., 1999), who may change their travel plans, cancel their reservations and choose another destination (Cartier & Taylor 2020). Therefore, communication is essential to manage crises effectively and efficiently. Using a pre-prepared crisis communication strategy can limit the negative impact both during the crisis and in the recovery/recovery phase. The role of crisis communication is to inform those affected, thereby helping to prevent the negative effects of the crisis from escalating and to support the destination in recovering from the crisis by protecting its image (Ritchie et al., 2004).

“Crisis communication is the process of transmitting news, messages, information, or ‘communiqués’ to overcome a malfunction” (Barlai & Kővágó, 1996). It provides up-to-date and realistic information about the crisis and its resolution (Fenyvesi, 2005).

The primary objective of crisis communication is to influence the company's image in the minds of stakeholders by maintaining the current positive image or by restoring the image that has deteriorated over time (Ray, 1999). Companies, therefore, seek to shift their image in a positive direction during times of crisis by continuously informing, persuading, or even motivating stakeholders. Another objective of communication during a crisis is harm reduction, which is understood as minimising the negative impact of the business on its stakeholders and the environment (Dezenhall, 2011).

4.1. Problem statement, research questions

Tourism safety is an increasingly important issue, and by communicating a safe and secure atmosphere, a destination can gain a significant competitive advantage today. However, we must not forget that this security is highly fragile and volatile and that tourism operators have little control over it.

The extent of the crisis also depends on the organisation that carries out the crisis management tasks (Christensen et al., 2016). The government supports tourism businesses and organisations on the economic and labour market side, but it is also essential to keep the interests of tourists in mind (Breitsohl & Garrod, 2016). Hence another vital actor in crisis management is the countries' tourism destination management organisations (Backer & Ritchie, 2017), which help the tourism sector to respond to and recover from crises (Cartier & Taylor, 2020).

During a pandemic, travel decision-making is most influenced by local governments and destination management organisations, which have the highest confidence level in their safety communications. In other words, DMOs must provide information on risk mitigation measures in the target area to restore people's trust in travel (Villacé-Molinero et al., 2021).

Among the businesses, the choice of Hungarian business hotels is justified by the fact that the highest number of nights spent in Hungarian commercial accommodation is in 4-star hotels (Hungarian Tourism Agency, 2018). There were 148 4-star hotels in Hungary at the time of the study (Hungarian Tourism Quality Certification Board, n.d.) and all the hotels we studied fall into this category.

The research questions are the following about national tourism destination management bodies:

1. How did the national DMOs of the EU Member States communicate before and during the crisis on their tourism websites?
2. How did the national DMOs of the EU Member States communicate before and during the crisis on the social media platforms they operate?
3. What differences could be identified in the online crisis communication of national DMOs in EU countries for the first and second waves of the epidemic?

Research questions are the following about domestic business hotels:

4. How did 4-star business hotels motivate business tourists to visit them during the coronavirus epidemic?
5. What did 4-star business hotels do to preserve their image during the coronavirus epidemic?
6. What was the main message regarding safety in the communication of 4-star business hotels before, during and after the crisis?

4.2. Methodology

The two studies (Kaszás & Keller 2024; Sirkó et al. 2024) presented in the crisis communication section of the habilitation theses have different focuses.

In the first empirical research, we examined the European Union Member States' crisis communication on online platforms before the coronavirus epidemic and during the epidemic crisis. We aimed to identify the possible differences between the epidemic's first and second waves, examine the potential for recovery, and propose post-epidemic communication strategies.

The research examined the English-language websites of the official national DMOs in the Member States and, where available, their posts on the following social media platforms: Facebook, Instagram, YouTube, TikTok and Twitter. The research was carried out in March 2021 with the involvement of tourism and hospitality students of the Corvinus University of Budapest.

Our analysis focused on the following main themes:

- National DMO website before the crisis: strategic issues; tourism safety content; frequency, type, topic of news sharing;
- National DMO website during the crisis: display of COVID-19 news; frequency of sharing COVID-19 news; summer season; organisations involved in communication;
- National DMO social media before the crisis: tourism safety content; frequency, type, and topic of sharing posts;
- National DMO during the social media crisis: display of COVID-19 news; frequency, type, topic of COVID-19 news sharing; reactions to COVID-19 news.

The second research aimed to evaluate the three areas (preparation, elaboration, and implementation) of crisis communication during the coronavirus epidemic in the examined Hungarian 4-star business hotels during the first (March 11, 2020 - June 18, 2020) and the second (November 4, 2020 - March 31, 2021) waves of the pandemic.

The fifteen hotels participating in the research were selected based on several criteria. There are 148 4-star hotels in Hungary (hotelstars.hu) and this category sees the highest number of guest nights spent in Hungarian commercial accommodations (Hungarian Tourism Agency, 2018). All the hotels we examined belong to this category. During the coronavirus epidemic, on several occasions, commercial accommodation was only allowed to receive guests arriving for

business, economic and educational purposes (Hungarian Gazette, 2020), which justified the investigation of business hotels. Within the business hotels, the hotels with a large conference capacity were included in the sample.

The interviewees actively participated in crisis management and communication as sales, marketing, and PR directors or hotel managers at the investigated hotels. The interviews took place via telephone and video calls between February 11 and March 12, 2021.

4.3. Results

Crisis Communication of National Destination Management Organizations before and during the Coronavirus Pandemic

National DMOs' online communication before the crisis

Seven national DMO websites (Bulgaria, Denmark, Ireland, Luxembourg, Hungary, Malta, and Germany) did not contain any tourism security entries that dealt with public security, health safety, consumption safety, technical security, or navigational security issues. In countries that have published tourism security content on their website, primarily navigation-related issues have been promoted, most often in France, Cyprus, and Latvia.

Since a significant part of DMO's websites is blog-based or static, permanent content, frequency, type, and theme of the pre-emergence of the coronavirus epidemic could not be clearly determined. Another problem was caused by the fact that a few websites did not include the date of preparation of the content.

Most news shared on websites was displayed in a text and/or pictorial form. Videos rarely appeared on websites. Games, votes, or question-type entries on websites were not typical. This is probably because national DMOs, on the one hand, did not consider websites to be an appropriate two-way communication channel. Therefore, they could not/were not planning to develop consumer interaction through the website, as social media interfaces provide a more straightforward and popular terrain for this kind of communication. On the other hand, since our study covered web pages in English, we could assume that updating content and tracking website visitors is of lower priority. Regarding the shared news content, attractions were the most common, closely followed by the promotion of events.

Social media offers the best interface today for creating bi-directional communication (Huang et al., 2024). The presence and activity of the European Union Member States are quite heterogeneous in social media. It can be concluded that most national DMOs were present on four different platforms: Facebook, Instagram, YouTube, and Twitter (X since 2022). TikTok is getting more popular nowadays. However, it is less applied by DMOs, so much so that no one used it daily.

Content on tourism security and safety before the coronavirus epidemic was limited in the social media platforms of DMOs. Typically, the number of entries per country was from 0 to 10, mainly dealing with public security, health safety, consumption security, technical safety, or navigation security issues. In addition to these posts, it can be concluded that they were not explicitly called for tourists but for residents. However, these themed entries could also provide helpful information for foreigners.

Regarding the topics of posts published on social media surfaces of DMOs, we could conclude that most of the shares were about the attractions of the destination, followed by events. In most cases, positive guest opinions appeared on social media but developments were less often reported.

National DMOs' online communication during the crisis

The coronavirus pandemic reached Europe in March 2020, and the news on the DMO's websites was restructured. The main task of the national DMOs was to develop and protect the country's image. This communication during the epidemic played an outstanding role in ensuring the destination could retain its safe image. Honest communication is the basis of all crises, but admitting that the region is currently unsafe and unsuitable for visitors can awaken serious doubts in potential travellers about when it will be safe again or whether it will ever be safe at all. Despite these doubts, the Dutch, Luxembourgish, Italian and Slovakian national DMOs published content on their websites explaining that it was unsafe to travel to the destination. This type of communication was primarily available before the 2020 summer period when there were no prospects for treatment or prevention of the disease. Fifteen countries also created a separate menu item on the official tourist website for summarising and sharing news related to coronavirus.

During the period from March 2020 to February 2021, Bulgaria, Cyprus, Estonia, Finland, and Germany did not share any news about coronavirus at all on their official tourist websites or were unable to identify when the news was created, because of the absence of post-dates.

The frequency of sharing pandemic news on the official tourism website varied, clearly outlining the epidemic's various waves. Most entries were made on the websites of the DMOs in March-April, and the volume remained almost unchanged until the start of the summer period. We heard less about the virus in the high season, and the news was mostly about opening and raising opportunities. In October 2020, however, the second wave of the pandemic was strengthened, so sharing related news was also more common until November. However, since the virus was no longer novel and unknown and restrictions were introduced by the Member States, the frequency of sharing the virus-related news was missed from spring. Following the re-enlargement at the end of 2020 and at the beginning of 2021, the third wave was greeted in February 2021. Thus, there was a rising trend in the appearance of coronavirus, restrictions, travel conditions and vaccine content.

The emergence of the coronavirus epidemic also had a significant impact on the social media communication of the national DMOs. The number of posts related explicitly to COVID-19 was outstanding; the 28 Member States published 483 entries in five examined social media platforms in March 2020 and 473 in April. The novelty of the epidemic was reduced, and many restrictions were released. Therefore, the number of posts was reduced to 70-95 in the summer period. With the appearance of the second wave of the epidemic, the number of posts rose again (between October and January, a total of 115-165 posts), but the volume this time was much lower than in the spring of 2020. DMOs mostly used Facebook to share this news (11 DMOs), but some organisations preferred Twitter (7) and Instagram (5) surfaces.

National DMOs used social media platforms to different degrees during the reviewed period of the coronavirus epidemic (March 2020 - February 2021): an average of 82 coronavirus-related posts were available on the national DMO's Facebook, Instagram, YouTube, TikTok and Twitter surfaces. Belgium stands out, with DMO publishing COVID-19 content on the five most prominent social media surfaces 799 times. In a higher proportion than average, Slovenian (330), Austrian (221), Cyprian (134) and Spanish (92) DMOs distributed content. The topics of posts were described mainly by virus-related summaries, restrictions, deadlock news, secure travel, virtual visits, and tours, next to the #stayhome and #staysafe entries.

National DMOs were also trying to communicate with their followers despite the appearance of the coronavirus epidemic. Therefore, they made various reminder and retrieval campaigns. To do so, basically - photo-sharing - Instagram created an excellent basis (11 DMOs preferred reminder types of campaigns), as well as Facebook and Twitter, which were used by 5-5 DMOs.

Most retrieval entries appeared as pictures on social media, but many videos were also shared. On Facebook, a few DMOs challenged their followers in a game (for example, in Croatia, “where was the picture taken” types of posts), and two DMOs used vote entries on Twitter.

In the summer period, tourism was relieved; therefore, the content of “restart” also appeared on social media. After the active summer months, there was a decline. Still, at the beginning of 2021, with the appearance of vaccines, a new way of optimism emerged, thus increasing the number of recovery entries. Regarding the type of posts, DMOs primarily shared photo images, but the video and mood-industrious content was shared on YouTube, Facebook, Instagram, and Twitter.

Tourism crisis communication in business hotels during the COVID-19 pandemic

The examined hotels were caught completely unawared by COVID-19; however, relying on their previous protocols, force majeure contracts and their newly acquired knowledge, they managed to develop a crisis plan and a crisis communication plan that they were able to apply effectively during the coronavirus epidemic. During their internal and external communication, they used all their communication channels and transparently communicated their measures, and their guests and colleagues felt safe.

The examined hotels tried to provide as much information as possible to those involved. The most typical communication channels were their own websites and social media sites. Current COVID-19 information was placed in booking confirmation letters, newsletters, telephone and e-mail notifications and on-site in the hotels. According to the hotels participating in the research, internal communication was the most important since the employees provided information to the guests. Most hotels preferred verbal information, the most common means of which were online or face-to-face meetings. However, they also considered written communication important, which in most cases was conducted via an internal email system, intranet, application or closed social media group.

Even in this challenging situation, the hotels participating in the research tried encouraging business travellers to make bookings. Among the most common tools were continuous contact with partner companies, the provision of extra services (free room service, accommodation in a higher category room, extra preparations), flexible booking and free cancellation conditions, the frequenter program, price reductions, and communicating security and cleanliness, or simply the fact that the hotel was open and continued to welcome business guests.

The employees of the surveyed hotels all believed that the coronavirus epidemic did not affect the hotel's image negatively. In most cases, they tried to preserve the image through continuous communication, made short films with their colleagues, and participated in various movements and charity programs.

In almost all cases, the crisis communication of the hotels in the study changed during and between the first and second waves. The most common reason for the change was the regulation in place and the fact that the first wave was completely unexpected; they had no crisis plan and had to react quickly and communicate about many things, but they were much better prepared for the second wave. Also, they felt that by the second wave, travellers were already aware of all the details of the coronavirus outbreak and would have liked to be informed about other, more positive issues, as well, so they continued to communicate the essential information but also tried to speak about other hotel-related points of interest. During the first wave, hotels were the most active in using their Facebook pages to communicate about the coronavirus outbreak.

In the case of the examined hotels, significant safety changes were made. In the period before the crisis, the safety of the country and the capital was emphasised in their communication, rather than specifically the safety of the hotel, fire safety and property protection. After the

appearance of the coronavirus epidemic, safety became the main topic, and everything was built around it. Most often, the main message was that the guest was safe in the hotel, regulations and precautions were followed, cleanliness and hygiene were paid attention to at a high level, the hotel was open, and the guests could count on them.

5. Smart tourism

Digitalisation is a significant trend in tourism today, and the importance of smart tourism is constantly growing, which is the subject of the last study (Pinke-Sziva et al. 2023) to be presented.

Smart tourism is one of today's key trends that significantly impacts all stakeholders. The concept is often defined and applied inconsistently and too generally. Zhang's (2012) interpretation of a smart tourism ecosystem concept was used in the study. It refers to a tourism system that uses digital technology to create, manage and administer smart tourism services/experiences and is characterised by intensive information sharing and value creation. The system's core function is collecting, processing, and exchanging tourism-related data.

Three layers emerge in the smart tourism ecosystem: smart destination, smart business ecosystem and smart experience (Gretzel et al. 2015). In our empirical research, we explored all three layers: our study location, Székesfehérvár, aims to become a smart destination where the digitisation of tourism experiences has been at the forefront in recent years. To this end, the foundations of a smart tourism ecosystem have started to be laid within the framework of the Smart City project.

Destinations are under enormous pressure to develop offers that meet the needs of tourists for physical, emotional and internal self-enrichment (Wolf et al., 2017). It is essential to become part of the mind map of the travellers (Ries & Trout, 2006) by knowing how a destination differentiates itself from competitors and how it can satisfy travellers (Botha et al., 2019). Positioning can enable a brand to compete effectively within a particular group of competitors in a given market (Keller, 2003). Effective positioning gives decision-makers the tools to solve problems differently from rivals (Chacko, 1996).

5.1. Problem statement, research questions

The development of cultural heritage is at the centre of European cohesion policies, focusing on a “place-based approach” and smart specialisation. “The smart specialisations approach is getting to be a key instrument for identifying regions' opportunities for growth, development and circular economy. It is a place-based approach and plays a critical function in benchmarking regional competitiveness and attractiveness” (Stanojev & Gustafsson, 2021, p. 3). There is a gap in the academic literature concerning smart specialisation in regional, peripheral small towns, as usually, urban cities are the focus; however, improving the attractiveness of cultural heritage is an essential way of creating regional development (Harfst et al., 2021). These small towns face fierce competition in attracting tourists. They usually offer only a few (sometimes very similar) attractions connected to a specific heritage (e.g. history or buildings) and can be monocentric with one historical city centre (Bucurescu, 2015). One of the main challenges of these destinations is to differentiate themselves to become unique so that potential visitors can recognise them.

Differentiation is becoming more important due to the increasingly blurred differences between destinations (Evren & Kozak, 2018). Regarding differentiation, an adequate positioning strategy is the key, which can be a source of competitive advantage for destinations (Hooley et al., 2004).

While many destinations are available, travellers typically consider only two to six options when making their decisions. One of the destination marketers' most significant challenges is competing with locations with similar characteristics (Pike, 2012), making differentiation even more important regarding the substitutability of destinations. (Pike, 2005). This can be partly

attributed to the impact of modernisation and technological development in tourism, which has resulted in an unintended standardising and “dedifferentiating” of products and services (Pike, 2008). Tourists with specific motivations for travelling tend to be more satisfied with memorable and unique experiences in destinations (Sangpikul, 2018).

In recent years, historic town tourism has been growing intensively (Teng, 2017), with places of historical significance contributing in a unique way to tourist satisfaction and motivating them to visit (Rejikumar et al., 2021). Studies pertaining to heritage towns mainly focus on cultural heritage management (Bucurescu, 2015; Paul & Roy, 2017), planning and management (Tian et al., 2013; Yang & Wall, 2021) and competitiveness (Bucurescu, 2015; Teng, 2017).

Implementing smart tourism technology can improve innovation through digital tools and differentiation in heritage destinations (Bohlin & Brandt, 2014). However, there is a gap regarding the analysis of visitors' perceptions, and the question arises of whether this innovation can affect the choice of destination among competitors. The research in this article addresses the research gap, particularly in the field of applied technologies.

The research aimed to analyse the use of digital technology as a positioning strategy for heritage towns. Through a case study, we sought to answer whether a small heritage destination can use technology to differentiate itself from the perspective of potential tourists.

Based on previous research, the following research questions were formulated:

RQ: How do on-site technologies influence the choice of heritage destinations by potential tourists in a Hungarian historical town?

The following sub-questions were proposed:

SQ1: How can on-site technologies be categorised based on the attitudes towards them?

SQ2: What impact do attitudes towards different types of on-site technology have on the attractiveness of certain heritage destinations compared to their competitors?

SQ3: What are the differences between younger and older generations' attitudes towards on-site technologies and their impacts on destination attractiveness?

5.2. Methodology

Székesfehérvár is a small-scale Hungarian heritage town (according to the definition of OECD (2022), classifying small urban areas as those with a population of 50,000 to 200,000) close to the capital of Hungary (60 km away) with around 96,000 residents (HCSO, 2024). The reason for choosing the destination as a case study was that the town implements smart technology in tourism. The town is well-known for its history and is often referred to as the “City of Kings” since it was the place where the Hungarian kings were crowned. Some former Hungarian kings are also buried in the town. This means the uniqueness of the destination and the interpretation of the attractions are based on these historical facts.

The improvement of smart technologies in relation to infrastructure, education, and tourism has been among the town's strategic objectives in recent years. In 2018, smart parking was adopted with a mobile application showing empty parking spaces. Smart benches with USB charging points and free Wi-Fi are available in two public parks of the town, while at some of the busiest road junctions, smart pedestrian crossings were implemented to signal to car drivers the walkers' intention of crossing the roads. Digital tools have also been developed to improve the town's attractiveness and/or to create new attractions in the following areas (Table 1).

Table 1. Digital tools to revitalise tourism in Székesfehérvár

Name	Short description
Digital city game (application)	Mobile application for an adventure game about the history of the city (e.g. Park of Secrets, which can be played with touch-screen mobile devices; the use of the park and the game is free)
Application for events	Mobile application for the Royal Days of Székesfehérvár with information and navigation
Interactive light art painting of buildings	Different heritage themes and artistic performances are projected on buildings in the inner town (e.g. History of the Coronation Basilica was projected onto the facade of the Mausoleum: the promise of an experiential past)
Light art design game	Interactive street game with Kinect sensor in different themes
Puzzle with 3D light cubes	Kinect game for playing puzzle with painted cubes projected on buildings
Smart sightseeing with QR codes	Information about tourist attractions by scanning QR codes
Digital tourist discount card system	Digital pass containing offers and discounts for attractions and services
Digital-themed sightseeing trails	Offering themed routes in different topics with navigation
Urban mobile application	Application with information about the town, attractions, and events
Smart pedestrian crossing	The system obtaining the energy required from solar cells detects when pedestrians cross the road, which is indicated by a flashing yellow light to motorists, and it also illuminates the persons' footwear with a laser in the darkness of the evening
Smart parking	Motorists and car drivers can monitor the occupancy status of a parking space using a mobile application
Smart benches, charging points	Functioning as a wired and wireless charging point. Solar collectors are under the seating surface, so the structure constantly charges itself. The seating area also provides free Wi-Fi, and its built-in sensors monitor the weather, therefore you can sit on the benches even if it is snowing, as it has a heating element and is comfortable even in the winter months

Source: own editing based on the interviews of the DMO, 2021

The two main objectives of the sampling were 1) to reach potential domestic tourists outside of the destination and 2) to collect responses from different age groups. Due to COVID-19, the survey was distributed only on an online platform. The questionnaires were filled out face-to-face through online channels (Skype and Messenger), and the answers were recorded in the online survey system Qualtrics. Between March and April 2021, trained interviewers collected 537 valid answers from potential tourists.

Purposive sampling was used: only those domestic respondents who live outside the destination were chosen to be part of the sample since they could be identified as potential domestic tourists. The female respondents were dominant in the sample (59.8%). Regarding the age distribution, 22.3% of the respondents were between 18 and 25 years old, 18.9% 26-35, 7.9% 36-45, 12.8% 46-55, 18.7% 56-65, and 19.4% above 65 years old. 62.5% of the respondents travelled without

kids, while 13.6% had one kid, 17.1% had two kids, and 6.9% had three or more kids. In consideration of technology usage, the respondents showed a positive attitude towards technology usage during their trip (with an average of 5.29). The results varied in different age groups: younger segments below the age of 55 years had a very positive attitude towards using mobile phones during travel (in age-group 18-25 with an average of 6.5; 26-35 yrs 6.5; 36-45 yrs 6.02; 46-55 yrs 5.65) rather positive in the case of 56-65 yrs old respondents (av.: 4.59), while 65+ respondents had weak interest (av. 2.87).

Measurement

The questionnaire was designed in cooperation with the local DMO. Statements concerning the type of on-site technologies were created based on the digital solutions of the destination and previous research in the area. They were measured on a 1-7 scale (1=strongly disagree; 7=strongly agree). A further item (Variable: Differentiative impact) contained a general statement regarding how far digital technology can differentiate destinations (Table 2).

Table 2. Description of measurement items

Variable	Statement	References
Differentiative impact	Digital attractions make a heritage town more attractive to me than a town without attractions.	Local DMO; Huertas et al., 2021; Trinchini et al., 2019
Type of on-site technologies	How much would you prefer Székesfehérvár as a destination compared to similar heritage small towns due to the following technical innovations? Digital city game (application): mobile application for an adventure game in the theme of history. Applications for festivals: mobile application for festivals /events of the destination, with information and navigation. Interactive light art painting of buildings: different heritage themes and artistic performances are projected onto the buildings. Projected wall painting, light art design game: an interactive street game with Kinect sensor in different themes. Puzzle with 3D light cubes: Kinect game for playing puzzles with painted cubes projected on buildings. Smart sightseeing with QR codes: information about tourist attractions by scanning QR codes. Digital tourist discount card system: a digital pass containing offers and discounts for attractions and services. Digital-themed sightseeing trails: Offering themed routes with different themes and navigation.	Local DMO Bohlin & Brandt, 2014; Fusté-Forné, 2020; Giordano & Ong, 2017; Gretzel et al., 2018; Mandić & Praničević, 2019; Shafiee et al., 2021; Solima & Izzo, 2018; Vuksanović et al., 2021; Yew et al., 2020

	Urban mobile application: an application with information about the city, attractions and events.	
Age	18-25 26-35 36-45 46-55 56-65 above 65	Buhalis & Foerste, 2015; Floros et al., 2021; Jeong & Shin, 2020; Levy, 2020

Source: own editing, 2021

A pilot questionnaire was created and pre-tested with 30 potential domestic tourists in February 2021 to assess respondents' familiarity with the meaning of the different on-site tools. It could be seen that the younger people were familiar with the various technologies, while the definition of some tools needed to be explained to older people. This was the reason for implementing a face-to-face survey instead of online questionnaires and training the interviewers to define digital tools. The data were analysed using Principal Component Analysis (PCA) and linear regression using SPSS software. PCA was chosen as it is among the most widely used methods to reduce the variables while keeping as much information as possible. At the same time, linear regression was an effective tool to analyse the linear relationship between dependent and independent variables.

5.3. Results

The categorisation of on-site technologies

To identify the attitude to different types of technologies by demand, one of the most widely used tools for data analysis, PCA, was applied to the statements described in Table 2 so as to generate uncorrelated variables. The number of the principal components was identified based on Kaiser criteria and Varimax rotation (converged in 6 iterations) to understand and interpret the components. The value of KMO was high, 0.903, and Bartlett's test was significant. Both results showed appropriate fit for the factor analysis. The results showed three factors explaining 74.351% of the variance (Table 3).

Table 3. Eigenvalues and percentages of the rotated factors' variance

Factor	Initial Eigenvalues	% of variance	Cumulative %
1	6.487	32.077	32.077
2	1.435	21.995	54.072
3	1.000	20.279	74.351

Source: own editing, 2021

Table 4 contains the weights of each factor and the interpreted variables as follows.

Table 4. Rotated component matrix

Manifest variables for differentiating on-site technologies	Factor			Latent variables
	1	2	3	

Urban mobile application	0.832			Smart Tourism Programs
Digital-themed sightseeing trails	0.805			
Digital tourist discount card system	0.772			
Smart sightseeing with QR codes	0.750			
Digital city game (application)	0.660			
Applications for festivals	0.585			
Light art design game		0.893		Smart Attractions
Interactive light art painting of buildings		0.874		
Puzzle with 3D light cubes		0.759		
Smart pedestrian crossing			0.892	Smart Technology-Related Initiatives
Smart parking			0.810	
Smart benches, charging points			0.694	

Source: own editing, 2021

The factors have been named based on the research of Gretzel et al. (2018) introduced earlier. The first factor, called Smart Tourism Programs, contains all those elements that can help to plan programs and experiences at the destination. These tools support information gathering, planning and paying for programs as well as navigation, particularly in the form of applications, while others help visitor management in the town. These sub-types (application and visitor management tools) can be seen in this factor. The second factor, called Smart Attractions, is those high-tech, interactive, and spectacular smart tools that can interpret the city's history in a modern way with the involvement of visitors. The third, Smart Technology-Related Initiatives, is about innovations that support traffic management and outdoor mobile phone charging.

Relationship between on-site technology and attractiveness of the destination

Linear regression was used to identify the effects of the different on-site technology variables created in the PCA above to see their impacts on the attractiveness of a destination presenting smart technology. According to the result of the F-test ($F=119.86$; $\text{sig}=0.00$), our model below is significant; there is a correlation between the dependent and independent variables. The adjusted coefficient of the determination is 0.4, which means that the model above explains 40% of the choice of the destination with smart technology through the variables identified above. Based on the coefficients introduced in Table 4, the following model can be described:

The attractiveness of the destination with smart technology = $3.842 + 0.478$ Smart Tourism Programs + 0.294 Smart Attractions + 0.297 Smart Technology-Related Initiatives

Table 5. Coefficients of the model of the impact of on-site technologies (total sample)

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.842	0.065		59.156	0.000
Smart Tourism Programs	0.928	0.065	0.478	14.272	0.000
Smart Attractions	0.570	0.065	0.294	8.774	0.000

Smart Technology-Related Initiatives	0.578	0.065	0.297	8.885	0.000
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Source: own editing, 2021

All the independent variables impact the dependent variable significantly: Smart Tourism Programs have the highest impact on the choice of destination. This can be explained by the fact that tourists seek programs and experiences, particularly in urban tourism, where visitors search for intensive, local, authentic, and active experiences (Bock, 2015), and these types of tools support such motivations. Smart attractions, particularly the interactive light art design, and smart technology-related initiatives seem to have a moderate effect and they are relatively uncommon in Hungary.

The effect of age

Earlier studies showed that there are differences between younger (below 50 years) and older generations (above 50 years) considering attitudes towards tourism-related smart technologies (Jeong & Shin, 2020; Levy, 2020). Although our research did not aim to analyse the needs of the segments deeply, from a practical perspective, the identification of the impact of age differences was important. For this reason, the sample was divided into two parts.

As we could see above, younger segments (below 55 years) were intensely interested in using mobiles during travel, while the older respondents had moderate or weak interest. Due to this, the database was split at the age of 55 years (the segment 55 and below years represented 62% of the sample. A linear regression model was used for both segments, showing significant results (F below 55= 46.879, sig= 0.000; F above 56 = 48.086, sig= 0.000) and explaining 41% of the variables in the case of the above 56 segment, and 29% at 55 and below segment. The coefficients show differences between the two segments according to the results displayed in Table 6.

Table 6. Coefficients of the model of the impact of on-site technologies (sub-samples: below 55 and above 56)

Age	Models	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
55 and below	(Constant)	3.961	0.095		41.619	0
	Smart Tourism Programs	0.860	0.105	0.383	8.173	0
	Smart Attractions	0.580	0.086	0.313	6.767	0
	Smart Technology-Related Initiatives	0.634	0.088	0.338	7.219	0
above 56	(Constant)	3.618	0.105		34.322	0
	Smart Tourism Programs	0.892	0.092	0.527	9.735	0
	Smart Attractions	0.505	0.098	0.277	5.135	0
	Smart Technology-Related Initiatives	0.413	0.097	0.231	4.268	0

Source: own editing, 2021

All the variables significantly impact the dependent variable in both cases. As shown, in the case of respondents aged 55 years and below, smart attractions and smart technology-related initiatives have a slightly stronger impact than in the overall model (Table 5), while smart

tourism programs are far more important for the 55+ segment, showing low interest in other smart technologies.

6. Contribution to the science and future research directions

My habilitation booklet critically examines tourism security, crisis communication and smart tourism.

6.1. Key contributions

- *Tourism safety*
 - The main objective of the first research was to determine the importance of tourism security and safety in the planning and development strategies of the European Union countries and to explore the perception of the importance of safety in the tourism sector at the national level. It was found that all dimensions of tourism safety, such as public safety, technical safety, health safety, orientation safety and consumer safety, were present in the Member States. However, a novel academic finding is that, although the grouping of tourism risks outlined by Roehl-Fesenmaier (1992) was the focus of our study in terms of destination, we found, based on the strategy documents examined, that they tend to project the general socio-economic security issues of the country onto the tourism sector. Our qualitative analysis confirmed this, as well.
 - The second study examined the borderline between two disciplines, the victimisation of foreign nationals in Budapest between 2017 and 2021. So far, neither criminology (victimology) nor tourism studies have examined this area sufficiently. The research has revealed correlations that can be used in developing tourism security and safety concepts and area-specific crime prevention strategies.
- *Crisis communication*
 - Based on the first study, not all EU Member States communicated tourism safety-related messages on their destination websites before the pandemic. In the countries where such content was available on the website, navigation safety-related issues were the main topic, not public safety. Like in the case of websites, the publication of tourism safety-related content on social media platforms operated by national DMOs of the EU Member States was not typical before the coronavirus, either. However, there were still quite heterogeneous activities on social media during the epidemic. An average of 82 coronavirus-related content appeared on the Facebook, Instagram, YouTube, TikTok, and Twitter pages of the national DMOs between March 2020 and February 2021. During this period, DMOs tried to maintain the consumer relationship and image. Therefore, they published reminding posts, questions and games. However, regarding their number, DMOs did not perform well; they did not feel compelled to develop customer relationships.
 - In the second study, the coronavirus epidemic did not affect the image of hotels negatively, and its preservation was achieved through communication and participation in movements. During the pandemic, safety became the main topic; the most important message was that the guest was safe in the hotel, the regulations were followed, the hygiene was taken care of, and the guest could count on them.
- *Smart tourism*

- The current study was the first attempt to understand how on-site technologies influence the attractiveness for potential tourists of small-scale heritage destinations in the face of fierce competition. This study found empirical evidence that on-site technologies can be distinctive tools for small-scale heritage towns. We identified three factors: Smart Tourism Programs, Smart Attractions and Smart Technology-Related Initiatives. Smart Tourism Programs are easily implemented and add to the city's attractiveness while preserving its main attractions and position as a heritage city. It may attract tourists to revisit the city. Smart Attractions can add a new perspective to the city, creating a new positioning for the city and attracting new tourist segments. Smart Technology-Related Initiatives are less tourist-specific; they make the lives of tourists and inhabitants easier. By themselves, they will attract no new visitors, but they can largely increase the satisfaction of tourists and add to the well-being of inhabitants. Compared to larger destinations, these new technologies may function as a breakout point for small heritage cities because with relatively little investment more tourists can be persuaded to visit the city.

6.2. Future Directions

- My co-authors and I intend to continue the study of tourist victimisation, as it will provide research results that can be adapted to practice, both in the field of tourism and law enforcement. The study of foreign tourists as victims and perpetrators of crime is also important in this context, therefore a questionnaire survey is planned among them and the representatives of law enforcement agencies.
- Further research should investigate the relationship between real and perceived safety for tourism products. Association research could be a suitable tool for this purpose.
- The communication activities of individual EU Member States also deserve a special focus. Examining destination-specific publications and other digital content explicitly aimed at visitors will also help us understand the marketing communication practices of tourism safety.
- Incentive travel was the subject of a tourism safety survey in 2023, which we intend to extend to other countries in the future to compare geographical areas to identify differences in perceptions and incentive travel patterns.
- We have also conducted studies on shopping tourism, as digitalisation is also a dominant trend in this area, therefore it would be essential to investigate in the future how e-WOM influences the risk perception of shopping tourists, how much emphasis is placed on its use as a risk reduction tool and how much it influences the choice of destination and service provider (in this case, mainly shopping locations and shops).

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