# Information Technologies used to Ensure Tourism Safety

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## I. INTRODUCTION

The idea of writing a paper based on tourism safety stems from the intertwining of information technologies with types of protection used in tourist facilities and tourist destinations. As we are surrounded with modern technology and changes, especially those emerging in the field of information sciences, it is important to be familiar with all aspects and models of protection that are available today. Tourism safety plays an important role in the movement of tourists, whether domestic or foreign ones and destinations that do not provide an adequate level of protection often have a very low number of arrivals.

Tourist destinations and tourist accommodation facilities such as hotels, apartment complexes and camps must have a well-developed plan for the protection of tourists and their tourist staff in order to prevent emergencies. Emergencies involve threats such as theft or serious weather conditions which can cause great material damage. Every natural and biological phenomenon, as well as every human activity during which harmful biological, chemical and physical agents are released, can be a source of endangering human life and human health.[1] Any unpleasant or sudden situation that happens during the tourists' stay leaves a negative impression and creates a negative memory, so, in most cases, the tourists do not return to the same location after the bad experience. It can be concluded that there are a couple of other very serious instability drivers in tourism that create harmful consequences in the tourism system, including different forms of terrorism, crime, war and various state internal and external unrest.[2] Accordingly, many destinations and accommodation facilities cultivate their image and gain publicity on the basis of their large investments in protection and safety.

Every tourist must be adequately protected during their stay in a foreign location, i.e. during their stay outside of their usual place of residence. Ensuring that is the responsibility of the institutions, as well as the accommodation facilities. A certain amount of responsibility lies on the tourists themselves, as they must be aware that they are in an unfamiliar environment and need to look after themselves, their loved ones and their belongings. It can be said that computer science and information technology have greatly helped reduce costs in tourism, strengthened the efficiency of tourism workers, and improved the tourists' experience. Although investing in safety equipment seems to be expensive and complicated, the benefits of this type of investment are noticeable very quickly. Safety must always come first.

**Keywords:-** *Information technology, tourism safety, type of protection*

## II. SAFETY AS THE MAIN CRITERION FOR TOURISM SUSTAINABILITY

### A. The term safety and its importance

It can be concluded that safety is the most important factor which influences our daily lives, our decisions and future activities. Safety and health are very important in preserving human life, and every global change, such as the Covid-19 pandemic, creates a potential threat and fuels fear for one's own safety. The term safety comes from the Latin word securitas, which in translation means security, safety (lat. reliable, secure).3

Accordingly, it can be concluded that safety is a state in which an individual is protected from any danger, risk or injury. In such a state, there is no external influence that can lead to physical, psychological or material damage inflicted either on the individual or the whole community. But is achieving such a state even possible? We are all at potential risk in everyday situations, even while we are resting. We need to be aware of our surroundings and always stay alert so we can protect ourselves.

### B. Safety as the most important factor of the tourist season

Safety is a major factor in the economy of any country. It contributes to the strengthening of GDP (Gross Domestic Product), strengthens the private and public sector, and contributes to the development of agriculture and the overall stability of all citizens. We have witnessed the impact of the lack of safety on the stability of countries during the Covid-19 pandemic, with many tourist destinations closing down to fight the disease, which caused revenue shortfalls due to the non-existent tourist season. Such a lack of safety affects everyone, from the state itself to entrepreneurs working in tourism, and many businesses have been shut down because of sudden fluctuations caused by the unexpected crisis.

Safety problems in tourism are determined by the conditions in which tourism takes place, and they arise when the overall safety performance falls below a minimum level which is considered reasonably acceptable.[4]

In order to be able to manage all aspects of safety in tourism, it is important to be familiar with all technologies

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[1] Poje, A.: *Ugrožavanje života i zdravlja ljudi, mjere zaštite i podsjetnik za njihovo provođenje*. Defimi, 2003, pp. 4.
[2] Mansfeld, Y., Pizam, A.: *Tourism, Security and Safety*, Elsevier, England, 2006, pp. 4.

[3] Matika, D., Gugić, A.: *Turizam i sigurnost*, Adriatica.net, Zagreb, 2007, pp. 19.
[4] Dobranović, Ž: *Opći pristup sigurnosti u turizmu*, Derimi, Zagreb, 2003, pp. 7.

and types of protection. These must cover the movement of tourists, starting with the departure from their regular place of residence until their arrival to the tourist destination, and including their whole way back home, i.e. they have to cover the entirety of their trip. It is important to ensure a state that is considered vital, i.e. a state of safety that allows them to carry out all tourist activities (travel, relaxation, recreation) undisturbed.

## III. RISK FACTORS IN TOURISM

### A. Threat factors in tourist destinations

As a consequence of globalization and changes in the concept of travel, there are also complex issues related to tourist safety in tourist destinations. The movement of tourists has been growing along with the growth in mobility, and some destinations, which were inaccessible until recently, have become accessible to the general public. But it is certainly important to understand the challenges and dangers such destinations can entail. The most common danger in exotic and distant destinations is "pickpocketing", i.e. stealing money and valuables from gullible tourists. The defence against such attacks largely depends on the behaviour of tourists who, by dressing a certain way, sightseeing and frequently shopping, can attract the attention of thieves even in the safest tourist destinations in the world.

But safety threats in tourist destinations can be quite different and unexpected. From terrorist attacks, sudden serious weather conditions like earthquakes, monsoons or hurricanes, to terrifying health threats like pandemics. Even political decisions can negatively affect the tourism of a country and contribute to the decreased level of safety of domestic and foreign tourists.

Tourists must be aware that the new environment in which they find themselves is completely different from their usual place of residence, and they have to know about all the cultural differences in the destination they visit to prevent possibly violating legal and religious regulations. Tourists often unknowingly violate norms and rules of conduct that disturb the local population. Tourists have to understand that the word *tourist* does not mean that they are allowed to do everything they want, they have to know that they need to behave in a civilized way and respect the environment they find themselves in. Such behavior alone will contribute to a significant increase in safety.

### B. Threat factors in tourist facilities

Tourist facilities entail special forms of threat, in addition to those mentioned earlier as types of destination threats (pandemics, weather conditions, crime). A common major problem found indoors is fire, which can be fatal in buildings such as hotels; however, some causes of health risks cannot be prevented by highly developed IT equipment. For example, food poisonings. Considering such a threat, the most important aspect is following laid down principles and rules of food quality (HACCP - Hazard analysis and critical control points) in order to avoid causing the guests health problems, or even death. Particular attention should be paid to the freshness of food during the summer months, and in addition to the freshness of food, it is important that chefs

maintain an adequate level of hygiene. They must wash their hands frequently to avoid causing various diseases which can emerge during food consumption (intestinal infections, salmonella). Tourists must be aware that they need to consume only safe water, and not drink from suspicious sources, eat only well-cooked food, and avoid consuming food that has stayed at room temperature for a long time, especially during summer. [5]

Poisoning can also occur due to carbon monoxide, especially in large accommodation complexes such as hotels. Gas leak detectors have been developed to prevent this type of poisoning. This type of poisoning can be fatal, and the greatest threat is created overnight. Electricity is also a major threat. Tourists who come on holiday are often not careful and can unknowingly, while in a hurry, cause an electric shock, especially if using faulty devices and cables. In older accommodation facilities, there is no proper type of protection against electric shocks, such as safety switches, which could prevent accidents.

In addition to all of the above, there are a number of other potential safety issues in tourist facilities, such as crime, environmental accidents, injuries and falls. It is very important to have an adequately educated staff who knows how to react quickly and correctly in order to, with the help of all technology and information systems, prevent any drastic damage or threat to human life.

### C. A new threat to safety in tourism – Covid-19

The emergence of the Covid-19 pandemic has greatly changed both domestic and foreign tourism. As much as it is an ideal economic branch for the transfer of income, i.e. increase in earnings and GDP growth of all tourist destinations, tourism is also a branch very suitable for the transmission of various diseases and infections even from one continent to another. The Covid-19 pandemic was transferred from one part of the world to another through business travel and tourism, and it escalated in a very short time. But what consequences has this disease had on tourism? We can generalize as following:

- Minimum number of arrivals of domestic and foreign tourists during the pandemic due to fear of infection
- Decreased revenues for tourist destinations, tourist facilities and local entrepreneurs
- Negative impact on the economy and agriculture (businesses closing down, agricultural activities stopping due to reduced product consumption)

The above-mentioned segments only briefly describe the impacts of this pandemic on tourism, and on the entire economy of one country. There are also a number of sub-items that have been affected by these changes. It can be concluded that tourism is a very sensitive branch which can be reduced in a very short time, which stops the flow of income and devastates certain tourist locations. A problem such as the Covid-19 pandemic has a particularly negative impact on island areas that depend on the tourist movements income. At the same time, it is important to point out that

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[5] Ropac, D.: *Epidemiologija zaraznih bolesti*, Medicinska naklada, Zagreb, 2005, pp.15.

some airlines ended up in bankruptcy due to the sharp decline in tourist movements, so this type of safety threat has endangered the entire transport industry. The positive side of this issue is that tourism will never completely disappear. People are eager to travel and explore new destinations, and therefore, after the pandemic, rapid growth and demand for accommodation units, flights and other modes of transport can be expected, which will also strengthen the private and public sectors of tourist destinations.

## IV. INFORMATION TECHNOLOGY FOR THE PROTECTION AND SAFETY IN TOURISM

### A. Central Monitoring System (CMS)

The first type of protection of human and material goods safety is video surveillance. It is the most common system used to prevent emergencies. Video surveillance is a live image display that transmits the current state from the recorded location to the surveillance room. There is a person in the surveillance room who has to react to potential threats visible through a live image. Video surveillance is often used at the front and rear entrances to hotels, at the entrance to wellness centers and ramps in parking lots. In addition to capturing a live image, the videos can be stored and viewed retroactively, if needed. The video is monitored by an authorized supervisor or facility staff.

It is important to understand the responsibilities of protection and safety supervisors:
- Managing daily activities related to protection and safety
- Participating in the coordination of all aspects of the protection program
- Introducing employees to specific responsibilities for protection and safety
- Encouraging employees to report violations or other suspicious behavior[6]

It is important to mention the Central Monitoring System (CMS) as currently the most modern way of providing protection and safety in tourism. This is a complex and innovative way of protecting property and people and it creates an integrated network consisting of several factors. From burglar alarm systems to fire alarm systems, all information is collected and sent to a technical center managed by the relevant security company in real time. This can greatly relieve the staff of tourist accommodation facilities, since security guards and supervisors of the company which manages the central alarm system are responsible for the safety. Operators on call must be available 24 hours a day to respond to a potential danger in a timely and proper manner, and security guards who come to the scene in the event of unwanted happenings such as burglary are armed and trained to fight crime. The police and ambulance are also contacted. The security guards on duty come to the scene before the police to secure the crime scene. In addition to video surveillance, there is an alarm that gives a warning if a crime is being committed. If the alarm gets activated, a security guard intervenes. This system combines all modern technologies, from a computer used to watch live

images, to mobile phones, which operators and security guards use to communicate, to the equipment in the field, which includes systems such as video cameras and devices, used to detect fires or gas leaks. For this paper, all relevant information on this most modern type of protection was collected, including information given by "Alfa razminiranje" Ltd., a professional company that provides the services of the Central monitoring system. The disadvantages of this type of protection are costs higher than those of the classic security control used in facilities, and being in a particular location, as there is ashortage of companies that provide CMS in smaller tourist destinations.

## V. HIGH-TEMPERATURE DETECTION SYSTEM (COVID-19)

As one of the first signs of infection with Covid is high fever, high-temperature detection system is ideal for use in areas of high human density. This system helps identify a person with a high temperature in time and prevent them from entering a room, as Covid-19 is transmitted by air. The system consists of a camera that detects a person's body temperature. It can be concluded that this threat is invisible and difficult to recognize, therefore only a high-temperature detection system can react promptly and stop the outbreak of the disease that can cause a particular tourist location or accommodation complex to close down. Speed and precision are important for high-temperature detection cameras. Degrees must be accurately shown in Celsius since high body temperature is a state above 37.2 degrees. This modern technological device is ideal for use in areas with a large movement of people, especially in airports, at cultural events and in government institutions. Additionally, thermal cameras can be integrated in the private sectors, as the outbreak of disease can negatively affect the entire business.

The disadvantage of thermal cameras is that they cannot recognize other infectious symptoms, and Covid-19 is often transmitted by people who have no fever. At the same time, high fever does not necessarily mean that a person has Covid-19 disease, especially during the cold and flu season.

### A. Integration of other types of protection in tourism using information technology solutions

Apart from video surveillance, there are other types of protection in tourism. Video surveillance can be considered the most developed and reliable system, as it provides insight into the live image. Computer science is a scientific branch that is "intertwined" in almost all segments of the protection of human lives and material things. There are several examples of protection in tourist facilities that use technological and information systems, i.e. the integration of several segments into one security network. Some types of protection include fire alarm systems, burglar alarm systems and access control devices, such as ramps.

Fire protection uses detectors that detect the formation of smoke, and a live image through video surveillance provides insight into whether intervention is needed or not. This type of protection against fire, which is one of the greatest risks to human safety, is very useful and very necessary in tourist locations and accommodation facilities,

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[6] Matika, D., Gugić, A.: *Turizam i sigurnost*, Adriatica.net, Zagreb, 2007, pp. 211.

and is often used in public areas, such as national parks, where they try to prevent fires that destroy habitats of a number of animals. Some directives for fire protection have been issued, and tourist accommodation facilities must comply with them. In addition to the Fire Protection Directive, hotels must comply with the Construction Products Directive, the Low Voltage Directive and the Directive on the Minimum Safety and Health Requirements at the Workplace.[7]

Anti-burglary systems are another IT solution that most often prevents material damage. The number of burglaries in tourist accommodation facilities has greatly decreased since hotels and apartment complexes began to use anti-burglary systems. The problem is that such systems are expensive and accommodation units with a smaller rating, i.e. a lower number of stars, usually do not have the financial means to implement them. As a result of that, the safety of material goods in tourist facilities with a lower rating largely depends on tourists who have to take care of their belongings and not leave the door to their room or balcony open or unlocked. The most common security check is performed at the entrance to the building, at the reception desk, where receptionists check everyone who enters the building, and confirm whether they have a reservation or not. This is certainly not enough protection to prevent crime like theft. However, access control devices are most commonly used everywhere.

Used in combination with video surveillance, they restrict access to people who should not be in the accommodation facility. They are often used in parking lots, in wellness centers in hotels, and in additional facilities such as sports fields or swimming pools. In addition to access control, they can be used for charging money, and in combination with video surveillance, they prevent threats to the lives and property of tourists and the accommodation facility. Video surveillance in facilities such as wellness centers is a problematic topic, given that, in those cases, the General Data Protection Regulation (GDPR) has to be complied with and the discretion has to be exercised.

In addition to information systems and technological solutions used to protect the lives of tourists and their property, it is important to have highly educated staff who can respond to other potential health threats, such as tourists choking while eating, where technology cannot be used to help. Problems concerning employee expertise include employees working in a facility only during the summer season, employing unqualified workers or people who have a completely unrelated profession, as well as the reluctance of the management of the accommodation facility to organize proper preparation and education for its employees before the start of the summer season.

In accordance with the European Parliament's study on safety in hotel facilities, the following guidelines have been recommended and should be followed:

- Providing safety routes for evacuation
- Solid construction and safe materials
- Functional alarm systems
- Functional firefighting equipment
- Safety instructions

- **Staff training**[8]

Staff training is one of the top priorities in ensuring an adequate level of safety in all tourist facilities, and combined with other items mentioned in the European Parliament's study, it provides a high level of safety, especially for EU Member States who are all supposed follow these guidelines.

## VI. CONCLUSION

This paper emphasized the relevance of the development of computer science and technological solutions for the safety of tourists, tourism workers, and their material possessions. Planning safety measures in tourism requires considering risks in four different areas: human and institutional environment inside and outside the tourism sector, related commercial activities, individual travel (personal risks) and physical and environmental risks.[9] In addition to standard safety measures such as ramps, video surveillance and the human factor, new types of protection have begun to emerge. The Central Monitoring System (CMS) is an ideal solution for large accommodation complexes that need an additional level of protection, especially facilities with a high-star rating. Such facilities usually use a highly integrated security measures and have no problem financing them. Their clients require a maximum level of protection, which is why sometimes the entire outdoor area of the complex is covered with additional surveillance and access to locations such as the beach, lounge bar and outdoor swimming pools is restricted for the non-guests. The paper also mentioned how IT equipment can help with health problems, such as the Covid-19 pandemic. Thermal cameras are a newer technology that can prevent further spreading of the disease in such an event. Although such technology is quite expensive, hindrances in business can cost even more. It is important to understand that investing in IT and technical equipment for safety purposes is not a "waste of money", but a prevention that will prove useful in the future. Tourism is a very sensitive industry and is most affected by the level of safety. As mentioned in the paper, with all the technology, integrated IT solutions and surveillance staff (such as security guards), a great responsibility lies on the tourists themselves, as well as tourism professionals. No equipment, camera or device can fully prevent the negative outcome of an unwanted event if people do not take care of their safety and the safety of their property. Numerous fires, electric shocks or thefts could be prevented with a small dose of caution, but it is certainly understandable that tourists come to tourist destinations to relax and therefore do not think too much about the consequences. This is why, in addition to IT solutions, it is very important to have adequately educated staff who will

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[7] European Parliament Study: Policy department, Economic and Scientific policy – HOTEL SAFETY, 2008. str. 9.

[8] *European Parlament Study: Policy department, Economic and Scientific policy – HOTEL SAFETY*, 2008, pp. 8.

[9] *UNWTO: Tourist safety and security – Practical measures for destinations*, 2011, pp. 15.

recognize the threat and prevent it in time. It can be concluded that the combination of IT equipment, trained staff, and responsible tourists creates a high level of safety, and reduces the percentage of negative events to a minimum.

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