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## Investigation of criminal offenses in the field of tourism through technical means

### Розслідування кримінальних правопорушень у сфері туризму за допомогою технічних засобів

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#### Abstract

Tourists are frequent victims of criminal offences, but the investigation of such crimes is usually complicated by several factors, which allow offenders to often stay unpunished. The aim of the research is to study the possibilities of using technical equipment during detection, investigation, and prevention of crimes against tourists. The research employed a doctrinal approach, a statistical method and other methods. The study identified the factors of victimization of tourists and the main scenarios under which crimes are committed. The main areas of application of technical equipment for the detection and investigation of crimes in tourism are established: the use of photo and video recording devices, traceology, weapons examination, handwriting examination, document, examination, identification of a

#### Анотація

Туристи є частими жертвами кримінальних правопорушень, проте розслідування подібних злочинів зазвичай ускладнене рядом факторів, через які злочинці нерідко залишаються безкарними. Це актуалізує тему дослідження можливостей використання технічних засобів для виявлення та розслідування кримінальних злочинів в сфері туризму. Метою роботи є дослідження можливостей використання технічних засобів у ході виявлення, розслідування, а також попередження злочинів проти туристів. У ході дослідження було використано формально-юридичний метод, статистичний метод та ін. В результаті роботи було виявлено фактори віктимізації туристів та основні сценарії, за якими відбуваються злочини. Так, туристи часто є легкою мішенню через необережність, небажання повідомляти

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person by appearance, phonoscopy, odourology, research of physical evidence, forensics, forensic profiling, etc. The problems of using technical equipment to detect and investigate crimes in the tourism sector are identified using the example of Ukraine, particularly the impossibility of using interrogation video footage as evidence during a judicial investigation. The obtained conclusions can be useful for optimizing the work of law enforcement agencies by providing a wide range of modern innovations to increase the effectiveness of detection and investigation of crimes in tourism.

**Keywords:** technical equipment, criminal offences, tourism sphere, innovations, digitalization, victimization of tourists.

## Introduction

Crimes against tourists are very common and threaten both the safety of people and property, as well as the development of the tourism sector due to damage to the image of certain tourist destinations (Glensor & Peak, 2004). This necessitates the study of modern technical equipment that can be useful for detecting and solving crimes against tourists.

Detection and investigation of crimes in tourism is often complicated by several factors. These are the distance and differences in the legislative framework between the countries where tourists live and where a crime has been committed against them, the tourists' reluctance to report crimes to law enforcement agencies, as well as other difficulties characteristic of all areas and related to the challenge of identifying traces of crimes and adapting the criminal areas to traditional methods of investigation.

In view of the foregoing, the means of detecting and investigating crimes need to be modernized (Humin et al., 2018) through the exchange of best practices. Technical equipment helps to increase the level of crime detection several times (Nikkel, 2020; Završnik, 2020; 2021). Technological innovations enable more effective

pro злочини у правоохоронні органи, а також тимчасове перебування на території країни, що ускладнює розслідування. Розкрито основні сфери застосування технічних засобів для виявлення та розслідування кримінальних злочинів в сфері туризму: використання фото- та відеозаписуючих засобів, трасологія, дослідження зброї, дослідження почерку, дослідження документів, ідентифікація особи за зовнішністю, фоноскопія, одорологія, дослідження матеріальних свідчень, криміналістична форензика, криміналістичний профайлінг та ін. На прикладі України розкрито проблеми використання технічних засобів для виявлення та розслідування злочинів в туристичній сфері, зокрема неможливість використання відеоматеріалів допиту як доказу під час судового розслідування. Отримані висновки можуть бути корисними для оптимізації роботи правоохоронних органів через надання широкого спектру сучасних інновацій для підвищення ефективності виявлення та розслідування злочинів в туризмі.

**Ключові слова:** технічні засоби, кримінальні злочини, туристична сфера, інновації, цифровізація, віктимізація туристів.

detection and investigation of crimes in tourism by detecting and analysing traces that are difficult or impossible to detect with conventional methods (Win et al., 2020). Moreover, they can prevent crime and provide greater safety for tourists (Brayne & Christin, 2021; Mambetova et al., 2021). Digital technologies are already widely used in the field of tourism (Arefiev et al., 2024; Pikkemaat et al., 2019; Stankov & Gretzel, 2020), ensuring a higher level of security for tourists. In the event of a crime, such tools as video surveillance cameras, identification by fingerprint or license plate number can provide useful information during the investigation. Specialized technical equipment is being developed, which are used by law enforcement agencies to identify the criminal, the victim, reveal details of the crime, etc., based on the smallest traces of materials, DNA, invisible prints, etc.

The aim of the work is to study the possibilities of using technical equipment in the course of detection, investigation, and prevention of crimes against tourists. The aim involves the fulfilment of the following research objectives:

- identify the most widespread types of crimes in tourism and the factors of victimization of tourists;
- describe the technical equipment of detecting crimes in tourism;
- conduct an overview of the analytical SMART functions of CCTV cameras and their use for the investigation/detection of crimes in tourism.

In accordance with the tasks, the first section of the study reveals the factors of victimization of tourists, as well as the main scenarios under which crimes are committed. At this stage of the research, the relationship between the number of international tourists and the level of crime in the most popular tourist destinations in Europe was revealed by conducting a correlation analysis. The second section of the study is devoted to the characteristics of effective technical means that come in handy in the process of investigating crimes in the field of tourism. The third section outlines an approach to improving the investigation of tourism crimes using video surveillance. At this stage, the intelligent functions of modern video surveillance cameras are described and ways of their application in the investigation process are proposed.

### Literature review

Many researchers study the possibilities of using technical equipment in forensics. The issue of crimes in tourism, the use of innovations in the tourism sector is also covered. Along with this, the problem of detection and investigation of crimes in tourism with the use of technical equipment is not sufficiently studied, and most works focus only on certain aspects of this field of research.

Buhalis (2020) studies the possibilities of using technological innovations in tourism. The researcher notes both the positive aspects of innovations in this field and their dangers. At the same time, the paper states that new technologies allow tourists to create shared values at all stages of the trip. Pencarelli (2020) explores the concept of Tourism 4.0 or “smart tourism” and also divides the experience of using technological means in tourism into positive and negative. In particular, the researcher notes the importance of using social platforms and the possibility of accessing them through mobile devices as an important means of protecting oneself from emergency situations (terrorist attacks, riots, etc.). Hua et al. (2020) deal with criminal offences in tourism. The researchers note that the implementation of the latest security

technologies in hotels can create new values for tourists, increasing their safety, and sharing impressions through digital means of communication increases awareness. At the same time, the development and introduction of new technologies threatens with new opportunities for committing crimes. Such possibilities include the risk of information leakage. Besides, security technologies may violate customer privacy. An important advantage of the mentioned studies is the identification of the dangers of using technical means to investigate crimes in the field of tourism, in particular, violations of confidentiality and cybersecurity. This emphasizes the need to strike a balance between technical advantages and ethical aspects.

Vakhitova et al. (2023) explore the relationship between tourism and crime. The researchers have revealed that tourists are more likely than locals to experience crime while on holiday, particularly theft from tourist accommodation. Researchers note that this affects the tourism industry as a whole, because crime reduces the popularity of tourist destinations, and crimes against tourists deter them from returning to the places where they occurred. Mataković and Cunjak Mataković (2019) give reasons why tourists are frequent victims of offenders. The researchers also classify crimes in the tourism sector by perpetrator, noting which objects, types and goals of crimes are the most frequent in each case. Buil-Gil and Mawby (2023) compare the willingness to report crimes by locals and tourists. The study found that international tourists are less likely to report crimes to the police than local residents. However, crimes involving vehicles are more often reported by tourists. These studies are mainly focused on the causes of the problem of crime against tourists, at the same time, they could be supplemented with a detailed description of approaches to solving this problem.

The noted research gap is filled by the work of Teplytskyi (2020), who studies the problems of investigating crimes involving computers, systems and computer networks, telecommunications networks. One of the main problems identified by the researcher is insufficient use or absence of modern technical forensic tools during investigation. The study considers the requirements for the use of such tools, as well as their various types and capabilities.

Several studies identified the procedural and legal features of the use of evidence obtained with the help of technical equipment as an

evidence base. Xiao et al. (2019) study the analysis of crime evidence based on video examination. The researchers proposed their own system of forensic analysis, which will contribute to improving the quality of video material with low quality. Chaplynskyi (2022) notes that the use of technical equipment in interrogations during the investigation of criminal offences in tourism is an effective method, especially when there is a long interrogation with many details. However, the study doesn't mention legal aspects of the use of technical equipment. Venherova (2020) noted that pre-trial investigation materials (in particular, video recordings of interrogations) cannot be evidence in court under Ukrainian law. These works make an important contribution to the field under study, because without enshrining the provisions regarding technical means during investigations in the legislation, their use may be illegal and violate human rights.

The conducted literature review gives grounds to conclude that most of the works cover only separate parts of the issue under research. The specifics of the use of technical equipment to detect and investigate crimes specifically in the tourism sphere were not studied, which is a limitation of previous studies, however, provides space for new scientific research. The author of this article reveals the possibilities of technical equipment for detecting and solving crimes in the tourism sector, conducts an overview of the most effective means and ways of their use.

## Methodology

### Research design

The research design involves several consecutive stages. The first stage provides for the analysis of the factors of victimization of tourists, as well as the main scenarios of crimes in tourism. The second stage provides a description of the most frequently used technical equipment for the detection and investigation of crimes, as well as a description of the latest developments in this field. The third stage involves identifying the advantages of using video surveillance to detect and solve crimes in tourism. In particular, the new possibilities of modern smart functions of video surveillance cameras were revealed. The need to take into account legislative provisions regarding the possibility of using video materials as an evidence base, as well as the need to ensure confidentiality and the need to respect people's rights and freedoms, was noted at this stage.

## Sample

The sample for the study includes Ukraine, which was chosen due to the high risk for tourists within the country today, which requires increased attention to the problem of investigating crimes against tourists. Also, the sample includes European countries, which were chosen based on the criterion of popularity for tourist visits, which, in turn, hypothetically contributes to the increase in the level of crime against tourists. Secondary data collected from open access resources were used for the study (Numbeo, 2023; Statista, 2023).

The work describes the best global practices of using technical equipment to detect and investigate crimes in tourism. The possibility of using video materials as an evidence base is separately covered, as well as in view of the need to ensure confidentiality and the need to observe the rights and freedoms of people using the example of Ukraine. It should be noted that today Ukraine is not one of the popular tourist destinations because of the war. According to Global Guardian (2023), Ukraine in 2023 belongs to the most dangerous countries for tourists with an extreme level of risk, along with such countries as Sudan, Yemen, Burkina Faso, and the Central African Republic. A high level of risk is characteristic of Haiti, Mexico, Venezuela, Belarus, Iraq, Ethiopia, Myanmar, Pakistan, Papua New Guinea. However, the danger according to this rating is not always related to criminal offences. In Europe, according to the Crime Index (Numbeo, 2023), Ukraine ranks only seventh in 2023 with a value of 46.8 – it is overtaken by such countries as the United Kingdom (46.9), Italy (47.3), Sweden (48.1), Belgium (48.9), Belarus (51.4), France (54.6).

The main limitation of the study is the lack of accurate information on crimes against tourists, which may be related, among other things, to the reluctance of tourists to report crimes, insufficient attention from government authorities to the problem.

## Methods

The research employed the methods of analysis and synthesis, deduction and induction, statistical method to identify the most common factors of victimization of tourists and the main scenarios of crimes. These methods were also applied to describe the main areas of using technical equipment and high-tech innovations. Besides, the methods of analysis and synthesis were used to analyse the functions of the latest smart video

surveillance cameras and reveal their suitability for use in the detection and investigation of crimes in tourism. The doctrinal approach was applied to outline the possibilities of using video materials as an evidence base, as well as in view of the need to ensure confidentiality and the need to observe the rights and freedoms of people using the example of Ukraine.

## Results

### *Common types of crimes in tourism and factors of victimization of tourists*

Crime in tourism is a common phenomenon that has different manifestations, purposes, areas of occurrence, consequences for victims, as well as legal consequences for offenders. The most common type of crime against tourists is theft, but there can also be such serious crimes as violence, rape, murder, terrorist acts, etc. In addition, crimes in the tourism sector can be committed by tourists themselves, as well as by tourist establishments in relation to visitors and criminals against tourist establishments. The study focuses primarily on crimes against tourists themselves, the high level of crime in relation to which can be explained by several factors:

- tourists often carry large amounts of money, which they can accidentally or carelessly display, or other valuables (jewellery, mobile phones, cameras, etc.), which makes them “profitable” targets;
- carelessness and inattention of tourists due to being on vacation, as well as certain excesses during sports, recreation, driving, alcohol consumption, etc.;
- tourists’ reluctance to report a crime to law enforcement agencies because of the ignorance of local laws, fears about possible problems, in particular, related to returning from vacation. Besides, even if tourists report a crime to the police, they are unlikely

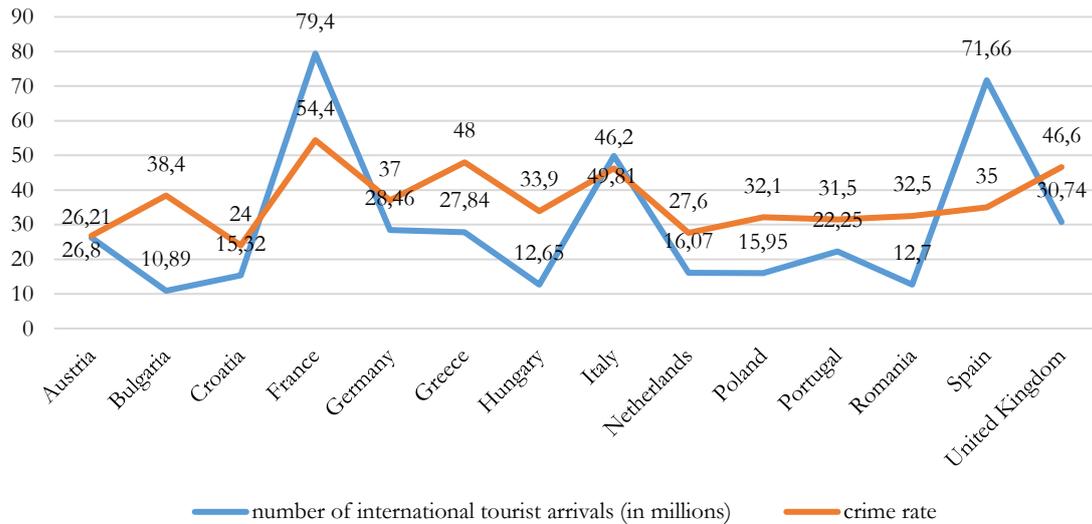
to have the opportunity to put pressure on the police, as their stay in the country is temporarily. For the same reasons, they are most likely not to act as witnesses, so crimes may go unpunished, which encourages commitment of new crimes;

- hostile attitude of local residents towards tourists.

Offenders can easily identify tourists in a crowd because of their clothing different from locals, confusion, following a map, having a backpack/camera, etc. Most often, crimes against tourists involve the implementation of one of the following scenarios:

- a tourist is an accidental (and easy) victim who found himself in a place advantageous for criminals (for example, a crowd at the airport, public transport, etc.);
- a favourable environment for crime (places with active nightlife, various entertainment establishments, etc.);
- the tourists may find themselves in dangerous places (on their own in particular, in areas with a high level of crime, such as urban slums, or in remote areas that attract tourists with scenic nature) because of the lack of safety measures in general, risk-taking, or desire for new experiences (Glensor & Peak, 2004).

In addition, the tourists’ safety also significantly depends on the safety of the hotel or other establishments where tourists stay. Poor lighting of the hotel territory, the lack of a security system, video surveillance and other security means increase the possibility of committing a crime. The crime rate in the destination country as a whole can affect the tourists’ safety. For example, Figure 1 shows the relationship between the number of international tourists and the crime rate in the most popular tourist destinations in Europe.



**Figure 1.** Correlation between the number of international tourists and the crime rate in the most popular tourist destinations in Europe in 2022 (built by the author based on Numbeo, 2023, Statista, 2023)

The correlation analysis between the indicators in Figure 1 detects a noticeable statistically significant correlation, which is approximately 0.5938. On this basis, it can be assumed that a large number of tourists can be one of the reasons for the high crime rate. At the same time, an in-depth analysis of a large sample over a long period of time is required in order to obtain more indicative results, but conducting such an analysis is beyond the scope of this research. In addition, accurate data on crime against tourists is lacking due to reluctance of tourists to report crimes, insufficient attention to the problem by the authorities, imperfect crime recording systems, etc.

### **Technical equipment for detection and investigation of crimes in tourism**

The study of the main factors of victimization of tourists and the most frequent scenarios of crimes against them provides information for determining the most effective technical equipment for detecting and investigating crimes in tourism. The use of technical equipment (including digital ones) for the detection and investigation of crimes is aimed at obtaining information in the course of investigative activities. In forensics, there are many ways of using technical equipment, the main ones are presented in Table 1.

**Table 1.**  
*Main areas of using technical equipment in forensics*

Area	Purpose
use of photo and video recording equipment	recording crimes with the use of these means makes it possible to identify the details of the crime and the criminal's identity
study of traces left at the scene of the crime (traceology)	enables identifying and collecting various types of traces left at the scene and to investigate them with the help of technical equipment
weapons examination	helps to understand the construction and methods of use of various types of weapons, including explosives, to use this information to prevent and investigate crimes
handwriting examination	makes it possible to determine the author of the text, signature, etc., based on the features of writing
document examination	used to investigate whether a document is forged
identification of a person by appearance	provides for the use of technical equipment to search for individuals based on individual external characteristics
study of sound evidence (phonoscopy), smell (odourology), materials, etc	Involves the use of technical equipment to investigate traces in the relevant directions

Without technical equipment, it would be much more difficult or impossible to obtain information in the indicated areas, which would

significantly reduce crime detection rates. In addition to the mentioned areas, such innovative areas as forensics, which involves the use of



computer tools to detect and investigate crimes in the digital sphere, as well as forensic profiling, which allows creating a criminal profile based on the investigation of the crime scene (through analysis and prediction of behavioural characteristics).

Some innovative means for investigating crimes are worth noting. Biometric identification systems have gained significant development, allowing to analyse not only fingerprints, external features and handwriting, but also the iris of the eye, DNA (including old and mixed samples), gait characteristics, etc. In this context, one can note the innovative German technology Eviscan (2023) for detecting hidden fingerprints and other hidden evidence. A feature of the technology is the absence of physical contact and the use of chemicals. After fingerprints are extracted, they are sent to specialized databases, in particular, the Integrated Automated Fingerprint Identification System (IAFIS) in the United States of America (Federal Bureau of Investigation, 2023) or Eurodac in the European Union (EU-LISA, 2023), for identification of a person that left them. Some modern technologies even make it possible to identify fingerprints in persons whose fingerprints are damaged in some way. Modern scanners can recognize a pattern that is under the skin and repeats the pattern of a fingerprint.

The latest tools can also be used in forensics, such as:

- mass spectrometers for the study of microparticles of materials found on the clothes of the criminal and their comparison with those found at the scene;
- 3D facial reconstruction – can recreate the face from the found remains for identification of the person;
- programmes for accessing hidden files on the computer;
- hyperspectral imaging technologies are used to detect minimal blood residues, etc.

Summing up the analysis, it can be noted that today there is a wide range of technical means that can be useful during the investigation of crimes in the field of tourism. However, it is worth remembering that the use of technical means in the investigation process must meet the requirements of current legislation. Otherwise, their use threatens to violate privacy.

### ***An overview of the analytical smart functions of video surveillance cameras and their use for the detection and investigation of crimes in tourism***

Considering the variety of crimes that can take place in the field of tourism, all the technologies mentioned in the previous section can be used in the course of their detection and disclosure. However, in the author's opinion, the latest video surveillance technologies deserve special attention. Video cameras can be installed in places where tourists gather, where the most frequent crime against tourists is theft, and cover a fairly large area. They can also monitor places with an increased risk of crime (criminal areas, remote areas, etc.), ensure the safety of tourist places of rest (parks, restaurants, clubs, etc.) and places to stay overnight (hotels, hostels, camping sites, etc.). New features of modern video surveillance cameras allow not only to detect and investigate crimes, but also to predict them using a system of restrictions, in case of violation of which the alarm is activated.

Innovative functions of modern video surveillance cameras can be demonstrated using the example of Hikvision equipment (Hikvision, 2023). In particular, the latest models can perform a number of functions to solve the following tasks:

- signal an alarm in the event of an invasion of the area or when crossing a line specially defined by the user (new models recognize and ignore animals);
- signal if the lens is closed or the focus is broken (in particular, if it was covered with a hand, an object, painted over, stuck in whole or in part, etc.);
- give an alarm signal when the sound exceeds the set level — loud sounds, shouts, etc. may indicate a security breach, an attack, etc. (the function is available in cameras with a microphone);
- identify objects left unattended — with the specified sensitivity they can detect abandoned objects, which can be useful, for example, to prevent terrorist acts;
- record car license plates;
- identify a person;
- count the number of people in the frame (Hikvision, 2023).

Analysis of the mentioned tasks shows that such video surveillance cameras (smart cameras) are primarily aimed at preventing crimes, because an alarm signal is triggered if the specified conditions are met. However, if the signal did not work (for example, because of incorrectly

defined sensitivity or other parameters), the material recorded by the camera can be used to identify criminals and further investigate the crime. For example, if the hotel is equipped with such technology, it is possible to allow only guests' cars to enter the hotel, and to the rooms — only the people staying in them. It is also necessary to ensure proper lighting of the territory that is the object of surveillance for the camera (Myroshnychenko et al., 2020). It is quite easy in the case of a hotel area, but in the case when the camera is installed, for example, in a criminal area, the installation of proper street lighting can cause certain difficulties. In addition to financial costs, the possibility that the lanterns may be broken by intruders poses certain difficulties.

In addition to hotel territory and areas with a high level of crime, an important example of the effective use of video surveillance cameras is their installation in places with a large flow of tourists. For example, in airports or other places of large crowds. Such measures can be effective not only for the prevention or investigation of minor crimes (for example, theft), but also for the prevention of such serious crimes as terrorist acts.

On the one hand, wide opportunities of video surveillance increase security in tourist places, but they can affect privacy. Besides, each country has legislative provisions regarding the possibility of using video and photo materials (as well as other evidence obtained, in particular, with the use of technical equipment) as evidence. In Ukraine, the use of operational equipment by the National Police is provided for in Articles 30-32 of the Constitution of Ukraine (The Constitution of Ukraine, 2020). These articles provide for the possibility of restricting certain rights and freedoms of a person, in particular, the inviolability of housing, the secrecy of correspondence, telephone conversations, non-interference in personal and family life, etc., in the presence of a court decision or in the case when obtaining the necessary information related to a criminal violation by other means is impossible. According to the Criminal Procedure Code (CPC) of Ukraine (Código de Procedimiento Penal No. 4651-VI, 2012), video materials can serve as evidence in a criminal case.

At the same time, some controversial points regarding the use of evidence obtained with the use of video records are worth noting. For example, given the long time it takes to investigate crimes in tourism, which is typical of

such crimes given the distance (for example, if the victim lives in another country), it could be useful to use video footage of the interrogation as evidence in court. The duration of the investigation may cause forgetting of certain facts that were observed during the interrogation. However, according to Article 23 of the Criminal Procedure Code of Ukraine "Direct examination of testimonies, objects and documents" (Código de Procedimiento Penal No. 4651-VI, 2012), testimony given in the pre-trial investigation cannot be used as evidence in court, which is provided because of the possibility of putting pressure on the suspect during interrogation.

The following most important conclusions can be drawn from the conducted research. First, in the conditions of increasing threats of various origins, in particular, for international tourists, increasing the effectiveness of the investigation process is an objective necessity. Secondly, the use of technical measures can significantly improve this process by providing additional evidence, as well as prevent a number of crimes. Thirdly, investigative actions must comply with legal requirements. The legislative framework, in turn, must be constantly optimized in accordance with the development of technologies in order to enable the legal application of the necessary technical means. In this regard, future studies should take into account not only methodological features of the use of technological means, but also proposals for improving the legislative framework.

## Discussion

So, the use of technical equipment to detect and investigate crimes in tourism is an effective measure to increase the number of solved crimes. Besides, technical equipment is an effective measure to prevent crimes. However, during their use, a detailed study of the legislation of the country in which the crime is being investigated is necessary in order to determine whether the use of technical equipment does not violate certain legal provisions, as well as to determine the possibility of using the obtained materials as evidence.

The author of this study examines, first of all, crimes committed against tourists. Some studies also describe deviant behaviour of tourists themselves, as well as violations by tourism industry establishments. Mataković and Cunjak Mataković (2019) distinguish crimes in tourism into those committed by locals, tourists, and representatives of the tourism industry. All types

of crimes are united by the fact that most often their goal is to obtain economic benefit.

A number of studies noted not only the possibilities of using technical equipment to detect and investigate crimes in tourism, but also the negative aspects of using innovative technologies, for example, video surveillance or computer technologies. Buhalis (2020) notes such a negative side of the application of innovative technologies in tourism, such as privacy violations, system malfunctions, inefficiency, etc. Therefore, there must be an appropriate balance between the implementation of technology and common sense. Pencarelli (2020) notes that the use of technical equipment in the tourism sector can raise the issue of cyber security. When the tourism system is dependent on network connections, the actions of cybercriminals can cause the paralysis of the entire system, which can pose, among other things, a danger to people's lives and health. These findings are mostly related to ensuring the tourists' safety and crime prevention, touching on the means used by the tourism industry itself. During detection and investigation of crimes, the use of technical equipment is often justified and effective, although it also requires taking into account legislative norms regarding the protection of human rights and freedoms.

Some researchers noted the advantages of using technical equipment to investigate crimes. Teplytskyi (2020) notes that the investigation of crimes involving computer can be significantly optimized using such mobile forensics tools as hardware, software, hardware recording blockers, computer forensics software, etc. Hua et al. (2020) note that technology can help control criminal activity, but they also create new crime problems. First of all, this is related to the possibility of information leakage. The researchers noted that academic studies in the relevant field widely reveal the problem of information leakage, but little attention is paid to the connection between crime and technologies such as fingerprint access, natural language recognition, robotics and online payments. Vakhitova et al. (2023) note the insufficient effectiveness of such means as a concierge in the hotel, and a room safe in the hotel room. Therefore, the researchers emphasize the need for further research into ways to increase security in places where tourists live. At the same time, the authors note that excessive and/or intrusive security measures can also scare away tourists or affect their privacy. It is worth confirming that the use of technical equipment provides significant advantages, but is always associated

with certain risks, which must be considered during the implementation of technical equipment.

Some studies examine problems only indirectly related to the use of technological means to detect and investigate crimes in tourism but expand the research issue by identifying industry-specific problems. In their study, Buil-Gil and Mawby (2023) note the problem of tourists' reluctance to report crimes committed against them to the police. The researchers emphasize the need for measures to encourage visitors to report crimes to the police. For example, by informing tourists to turn to police units or special tourist services in the event of a crime in the hotel.

Some studies, like the author's article, deal with the legal aspects of using video materials as an evidence base. Xiao et al. (2019) note that video materials are often used as a source of primary evidence in judicial investigations. The work of Chaplynskyi (2022) revealed the peculiarities of the organization and tactics of interrogation while conducting tourism-related criminal investigations. The work states that, according to the National Police, only 33% of respondents noted technical equipment as a frequently used tactical technique. Venherova (2020) reveals the problems associated with the impossibility of using video footage of such an interrogation as evidence in court (according to the legislation of Ukraine). So, it can be concluded that the use of video materials during the investigation has its own peculiarities, which depend on the legislation of the country, as well as the subjective views of police officers regarding the use of such means.

## Conclusions

Criminal offenses in tourism are quite common. The study proved a close relationship between the number of tourists in the country and the level of crime by conducting a correlation analysis. The results of the analysis showed the presence of a correlation of 0.5938. From this we can conclude that a large number of tourists can be the reason for a high level of crime.

Victimization of tourists is caused by a number of factors that explain why tourists often become victims of criminals. This is most often justified by the following main reasons: first, tourists are quite easy targets; second, they do not always refer to the police; third, even if tourists do contact the police, they are unlikely to be able to put pressure on them because they return home

to another country after vacation. So, impunity creates new crimes, which makes it necessary to find new ways of detecting and investigating crimes. One of the most effective methods is the use of technical equipment by law enforcement agencies.

The study revealed the main capabilities of technical equipment for detecting and investigating crimes in tourism. Such fields of forensic technology as the use of photo and video recording devices, traceology, weapon examination, handwriting examination, document examination, identification of a person by appearance, phonoscopy, odourology, physical evidence examination, forensics, forensic profiling, etc., were described. The use of smart video surveillance cameras was noted as an effective tool for detecting and investigating crimes in tourism. It was established that the smart functions of such cameras can be useful not only for the detection and investigation of crimes, but also for their prevention. Examples of the use of video surveillance cameras on the hotel territory, in criminal areas and in places with a large concentration of tourists are considered. It is emphasized that the use of technical equipment during the detection and investigation of crimes must be justified by the legislation of the country in which the investigation is taking place. Comparing the results of the research with other works of the authors, one can note the contribution of the author's research, which consists in revealing the specifics of the use of technical means for the detection and investigation of crimes in the tourism sphere.

Further areas of research may involve studying the specifics of crime detection and investigation capabilities in smart cities, as well as the advantages and disadvantages of the smart city concept in terms of its impact on crime.

### Bibliographic references

- Arefiev, S., Zhyhlei, I., Pereguda, Y., Kryvokulska, N., & Lushchuk, M. (2024). The use of digital technologies to ensure environmental safety in the context of the green economy development. *Journal of the University of Zulia*, 15(42), 353-369. <https://doi.org/10.46925/rdluz.42.20>
- Brayne, S., & Christin, A. (2021). Technologies of crime prediction: The reception of algorithms in policing and criminal courts. *Social Problems*, 68(3), 608-624. <https://doi.org/10.1093/socpro/spaa004>
- Buhalis, D. (2020). Technology in tourism-from information communication technologies to eTourism and smart tourism towards ambient intelligence tourism: a perspective article. *Tourism Review*, 75(1), 267-272. <https://doi.org/10.1108/TR-06-2019-0258>
- Buil-Gil, D., & Mawby, R. I. (2023). Do tourists report crime to the police? An exploratory analysis in Barcelona. *Current Issues in Tourism*, 26(18), 2931-2947. <https://doi.org/10.1080/13683500.2022.2105198>
- Chaplynskyi, K. O. (2022). Organization and tactics of interrogation during the investigation of criminal offenses in the field of tourism. *Bulletin of the Luhansk Educational and Scientific Institute named after E. O. Didorenko*, 2, 251-261. <https://luhbulletin.dnuvs.ukr.education/index.php/main/article/view/92>
- Código de Procedimiento Penal No. 4651-VI. *Liga* 360, 13.04.2012. <https://ips.ligazakon.net/document/T124651?an=1>
- EU-LISA. (2023). *Eurodac*. <https://www.eulisa.europa.eu/Activities/Large-Scale-It-Systems/Eurodac>
- Eviscan. (2023). *Contactless latent fingerprint detection*. <https://www.eviscan.com/en/>
- Federal Bureau of Investigation. (2023). *Privacy Impact Assessment Integrated Automated Fingerprint Identification System (IAFIS)/Next Generation Identification (NGI) Biometric Interoperability*. <https://www.fbi.gov/>
- Glensor, R. W., & Peak, K. J. (2004). Crimes against tourists. *ASU Center for Problem-Oriented Policing*, 26. <https://popcenter.asu.edu/content/crimes-against-tourists-0>
- Global Guardian. (2023). *The most dangerous countries in the world by region: Emergency Response, Global Digest, Traveler Security, Global Intelligence*. <https://www.globalguardian.com/global-digest/most-dangerous-countries>
- Hikvision. (2023). *Hikvision announces new audio product line, unveils range of network speakers*. <https://www.hikvision.com/en/>
- Hua, N., Li, B., & Zhang, T. (2020). Crime research in hospitality and tourism. *International Journal of Contemporary Hospitality Management*, 32(3), 1299-1323. <https://doi.org/10.1108/IJCHM-09-2019-0750>
- Humin, O., Zarubei, V., & Rymarchuk, O. (2018). Concerning the need for improvement of the methodology of investigating frauds and development of methods of investigation of this individual types. *Baltic Journal of Economic Studies*,

- 4(5), 63-66. <https://doi.org/10.30525/2256-0742/2018-4-5-63-66>
- Mambetova, S., Ayaganova, M., Kalykov, A., Akhmetova, A., & Yeskerova, Z. (2021). Digital economy in tourism and hospitality industry. *Journal of Environmental Management and Tourism*, 11(8), 2006-2019. <https://journals.aserspublishing.eu/jemt/article/view/5804>
- Mataković, H., & Cunjak Mataković, I. (2019). The impact of crime on security in tourism. *Security and Defence Quarterly*, 27(5), 1-20. <https://doi.org/10.35467/sdq/115539>
- Myroshnychenko, V. O., Kochetkova, I. B., & Makhnytskyi, V. O. (2020). *The use of video analytics in the work of the National Police. Guidelines*. Dnipropetrovsk State University of Internal Affairs. <https://acortar.link/4MMeal>
- Nikkel, B. (2020). Fintech forensics: Criminal investigation and digital evidence in financial technologies. *Forensic Science International: Digital Investigation*, 33, 200908. <https://doi.org/10.1016/j.fsidi.2020.200908>
- Numbeo. (2023). *Europe: Crime index by country 2023 mid-year*. <https://acortar.link/B1sl5i>
- Pencarelli, T. (2020). The digital revolution in the travel and tourism industry. *Information Technology & Tourism*, 22(3), 455-476. <https://doi.org/10.1007/s40558-019-00160-3>
- Pikkemaat, B., Peters, M., & Bichler, B. F. (2019). Innovation research in tourism: Research streams and actions for the future. *Journal of Hospitality and Tourism Management*, 41, 184-196. <https://doi.org/10.1016/j.jhtm.2019.10.007>
- Stankov, U., & Gretzel, U. (2020). Tourism 4.0 technologies and tourist experiences: A human-centered design perspective. *Information Technology & Tourism*, 22(3), 477-488. <https://doi.org/10.1007/s40558-020-00186-y>
- Statista. (2023). *Countries with the highest number of international tourist arrivals in Europe from 2019 to 2022*. <https://acortar.link/LuLTNV>
- The Constitution of Ukraine. *Verkhovna Rada of Ukraine*, 01.01.2020. <https://zakon.rada.gov.ua/laws/show/254к/96-вп#Text>
- Tepliytskyi, B. B. (2020). Technical features of forensic products during certain investigative (detective) actions during the investigation of crimes in the use of computers systems and computer networks and telecommunication networks. *Juridical Science*, 6(108), 248-255. <https://doi.org/10.32844/222-5374-2020-108-6-1.30>
- Vakhitova, Z. I., Mawby, R. I., Helps, N., & Alston-Knox, C. L. (2023). Tourism and crime: An exploratory study of burglary from tourist accommodation from the criminal opportunity perspective. *Crime & Delinquency*, 69(11), 2164-2193. <https://doi.org/10.1177/00111287221106962>
- Venherova, Yu. V. (2020). The use of video recording equipment during the interrogation of persons who have committed crimes in the field of tourism: tactical and procedural aspects. In *Modern Movement of Science: abstracts of the 11th International Scientific and Practical Internet Conference* (pp. 114–116), October 8-9, 2020, Dnipro. <http://dSPACE.puet.edu.ua/bitstream/123456789/9843/1/24112020.pdf#page=114>
- Win, K. N., Li, K., Chen, J., Viger, P. F., & Li, K. (2020). Fingerprint classification and identification algorithms for criminal investigation: A survey. *Future Generation Computer Systems*, 110, 758-771. <https://doi.org/10.1016/j.future.2019.10.019>
- Xiao, J., Li, S., & Xu, Q. (2019). Video-based evidence analysis and extraction in digital forensic investigation. *IEEE Access*, 7, 55432-55442. <https://doi.org/10.1109/ACCESS.2019.2913648>
- Završnik, A. (2020). Criminal justice, artificial intelligence systems, and human rights. *ERA Forum*, 20(4), 567-583. <https://doi.org/10.1007/s12027-020-00602-0>
- Završnik, A. (2021). Algorithmic justice: Algorithms and big data in criminal justice settings. *European Journal of Criminology*, 18(5), 623-642. <https://doi.org/10.1177/1477370819876762>