

## **Perceiving Leading Information and Telecommunication Technologies in the Criminal Proceedings: A Problem Statement**

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**Abstract** This paper focuses on the attitude of the parties to a criminal proceeding to digitalization and active introduction of technologies in a criminal process. The purpose of the study is to actualize attention to the problems connected with the perception of information and telecommunication technologies in criminal proceedings and the need for carrying out interdisciplinary studies, including those related to the investigation of the psychophysiological aspect.

Allegedly, the widespread use of electronic documents, the introduction of remote forms of carrying out procedural actions, the use of digital evidence is aimed at the creation of modern and acceptable legal proceeding. At the same time, we need to form an understanding of the need for changes in the legal system and expectations of the positive effect of digitalization in general in the minds of citizens. The article justifies the need for developing adaptive measures which will allow people to maintain the sense of security and justice of the court. Otherwise, adverse consequences of introducing information technologies in criminal proceedings are inevitable.

**Keywords:** *leading information, telecommunication technologies, criminal proceedings, digitalization*

### **1 Introduction**

Currently, one of the in-demand mechanisms for optimizing public activities and the public production sector is digitalization of processes and mechanisms of obtaining and using professional work deliverables. This fully applies to criminal proceedings, which are undergoing a kind of a revolutionary transition to electronic format. From the standpoint of introducing information technologies, in addition to certain difficulties connected with the technical equipment of judicial authorities, one of the problems is the direct perception of new forms of information communications, which is accompanied by various, and not always positive, psychophysiological responses among parties to procedural relations. All this is also preconditioned by the requirements to preserve the traditional values in law, which successfully create a sense of public confidence during jurisdiction, respect for law and justice, and security guarantees.

Universal digitalization cannot but be reflected in socially important values of various categories of citizens. That is why, studies reflecting the current state of perceiving information technologies in legal proceedings are important from the sociological standpoint.

It seems that digitalization of the processes and results of professional activities in criminal proceedings should be based on an interdisciplinary system analysis which allows us to model possible legal constructs, reasonably forecast and manage the development of the situation. At the same time, notably, various aspects of human adaptation processes to information loads have been the subject of various scientific studies for a long time (Nesmelova 2005).

The purpose of this study is to analyse the current state of introducing digital technologies in criminal proceedings and to study the psychophysiological aspect of their perception by a person.

To this end, the priority tasks should be the formation of a due understanding of the need for changes in the legal system in the minds of citizens. Besides, it is necessary to justify the need to elaborate recommendations on the use of adaptive measures able to minimize the effects (psychological, technological, psychophysiological, technical, etc.) which adversely affect the citizens' perception of new information and communication technical means and technologies in criminal proceedings. All this will allow them to maintain a sense of security and justice

of the court. Otherwise, negative (adverse) consequences of introducing information technologies in criminal proceedings are inevitable.

## **2. Concise literature review**

General issues of digitalization of society, including in criminal proceedings, are reflected in the works of Antonova et al. 2017; Barg et al. 2016; Bridenback 2016; Dimpe and Kogeda 2017; Dixon 2011; de-Juan-Ripoll et al. 2018; Nikolaychenko 2019; Procopiuck 2018; Vlasova 2018. The problems of using electronic evidence in proving are considered in the works of Dimpe and Kogeda 2017; Digmayer and Jakobs 2016; Cizmic and Boban 2017; Jones and Alanazi 2017; Lazareva et al. 2019; Zhongzhou and Bin 2015; Minlay and Minh 2014; McQuilkin 2011.

Theoretical and practical aspects related to the perception of information and telecommunication technologies in criminal proceedings were considered by the following in the works of Alcaniz 2018; Gao et al. 2019; Jin et al. 2019; Hamidi and Jahanshaheefard 2019; Hollmana et al. 2019; Konya-Baumbach et al. 2019; Kopp et al. 2018; Lazareva et al. 2019; Procopiuck 2018; Rojas-Mendez et al. 2017; Spape et al. 2019, Hook 2017.

## **3. Methods of research**

When preparing the material, we used general scientific methods (observation, comparison), as well as theoretical research methods (such as the abstraction, analysis and synthesis, idealization, induction and deduction, mental modelling, rising from the abstract to the concrete).

## **4. Main results**

The introduction of information technologies has a complex effect on the forms and methods of human existence: communication, knowledge, culture, system of values, social structure (Hook 2017). This erases the distinction between reality and illusion. A person loses his/her sense of time and space, plunging into the “world of the game”. The feeling of compassion, sympathy, empathy is eased. A passive attitude to life and participation of other people in it develops. Psychological difficulties arise from the transition to the information society.

Summarizing the data on the users’ perception of new digital technologies in various spheres of life, we can also note a positive response to the effects of the interaction in the “man - digital technologies” system (Jin et al. 2019). For example, it has been found that when using educational online platforms, it is necessary to take into account the experience of working with information technologies, while such criteria as perceived usefulness and perceived ease of use can be applied (You 2019).

When studying the population’s readiness for new technologies (TRI index), demographic and behavioural variables are the leading ones. The person’s readiness to accept new technologies is determined by the level of his/her education (Procopiuck 2018).

It is easy to notice that all processes are directly dependent on “information”, which can be considered as the activity sphere of representing the current reality, which reproduces the function of collecting, processing, storing and transferring knowledge to the society, and contributes to the formation, development, and improvement of collective consciousness. In this case, the term “information” is a universal general scientific concept. Social processes of the formation of the interdisciplinary theory of information and information research methods take place on the informational basis. The information approach acts as a fundamental method of scientific cognition of the three most important information systems: nature, man and society. Information captures such constituent components as: the content of the information itself; cognition of the object of society, about which the information is transmitted; presence of the object transmitting the information; presence of the subject perceiving the information; interaction of subjects and objects in the course of the generation and interaction of the information. There are dialectically complex relations between the information transfer object and the information itself, which have not been unambiguously interpreted yet. But in any case, the concept of “information” can be applied only during interaction, when specific information is transmitted. Any activity is associated with human needs (Antonova et al. 2017).

The clarification of the “digital information” concept in a criminal proceeding and the determination of its evident significance is an interdisciplinary subject of research (Lazareva 2019). The authors draw attention to the fact that digitally relevant information may be present in criminal case files in the form of a printout of a text file, a screenshot of a video, a transcript of a video or a phonogram (paragraph 6, part 2, article 74 of the Code of Criminal Procedure of the Russian Federation). In cases where digital information is attached to criminal case files on electronic media (a flash drive, CD-ROM, memory card, etc.), we deal with material evidence (paragraph 4, part 2, article 74 of the Criminal Code of the Russian Federation) (Lazareva 2019).

The work of Nikolaychenko and Nikolaychenko (2019) postulates the effect of using information technologies in legal proceedings, namely the “barrier-freeness” of citizens when receiving jurisdiction services.

Special requirements are imposed on the assessment of the person's attitude and perception of digital technologies. So, failures of introducing digital innovations are shown on the example of strategies for designing business models of start-ups, which result from a failure to take into account the characteristics of the users' perception, their confidence in innovations (Konya-Baumbach et al. 2019). In addition, an important factor is the level of awareness or competence of commutants in a field of activity (Digmayer and Jakobs 2016).

In many developed countries, information and communication technologies have been successfully implemented in the criminal process. Scientific publications show that newly introduced technologies have both positive and negative sides (Dimpe and Kogeda 2017; Calo et al. 2016; Dixon 2011). Studying the experience of other countries will allow us to perform more competent digitalization of criminal proceedings. It should be understood that to date, the transition to the digital format is only a certain prospect for the Russian criminal justice system. Often, bold technical solutions encounter a stereotypical perception of procedural actions, which calls into doubt the results of assessing the evidence obtained using information technologies and the need to introduce innovative tools in evidence.

Information technologies have been actively developed and increasingly used, including in many institutes of criminal procedure law. The introduction of electronic document management into the criminal process, the widespread use of remote forms of interaction between the parties to criminal procedural relations, the creation of an "Electronic Criminal Case", etc., are of interest. All these issues can be conventionally divided into several modules, within the framework of which it is anticipated that problems of the citizens' psychophysiological perception will appear. The first module is the acceptance of crime incident reports in electronic form and transition to electronic document management. The second module is the use of digital technologies for audio and video recording of the investigative procedure. The third module: acceptance and use of electronic evidence. The fourth module is the high-tech equipment of courtrooms and use of video conferencing. The fifth module is the involvement of robots and computers in the investigation and judicial decisions. Finally, the sixth module is the use of augmented reality technologies in legal proceedings.

## **5. Elaboration on the six modules**

Speaking about the first module, one can recall that the procedure for accepting electronic crime incident reports is used in many countries, including Russia. In the People's Republic of China, for example, the idea of accepting and Internet registration of citizens' violation reports was embodied in 2004 by the Internet Society of China with the support of the Press Office of the State Council of the People's Republic of China. Then a group was established to accept violation and malicious information reports. In 2016, public security authorities of the PRC created an Internet platform for accepting violation reports, called "cyber police". Over the period from May to July 2019, 127,175 users were registered on this site. In the indicated period, 21,213 complaints were answered, 40,990 files were prepared for initiating a criminal case, out of which 22,042 files concerned the organization of illegal gambling activities (53.8%), 11,468 files - sexual harassment and distribution of materials with sexual content (28%).

The Republic of Kazakhstan uses the Tórelík judicial information-analytical system, which is a single framework integrating all the information processes of courts within the republic. The Tórelík system contains such services as: "Judicial account", audio and video recording (AVR), website of the Supreme Court of the Republic of Kazakhstan, information systems of other government bodies. Tórelík as a system is presented in two languages, has a centralized architecture and a cloud system. All applications and messages coming to courts are obligatorily scanned, and a printed coupon is issued to the applicant, indicating the document registration date and number. With the consent of the person, an SMS notice of the results of considering his/her appeal or actions in the case can be sent to the indicated mobile phone. In addition, the person is provided with a username and password, using which he/she can later go to the Supreme Court website and see his/her appeal, as well as the reply to it, print out and redirect it somewhere. At the request of the person, a reply can be sent to him/her in hard copy. In this case, the task is solved to ensure a prompt data access, while maintaining their safety. The used "Familiarization with Court Documents" service allows you to receive court documents in electronic form via the Internet, providing persons whose rights and legitimate interests are affected with a prompt and free access to court decisions.

This appeal procedure is convenient for those citizens who are regular users of Internet services. However, it is very problematic to exercise the right to file a crime incident report electronically for those who do not have the appropriate skill.

When it comes to the second module (the use of digital technologies for audio and video recording of the investigative procedure), one can see that various police manuals on standard operating procedures provide for full electronic recording of all interrogations. It is noted that electronic recording of interrogations at a police station should contain an explanation of constitutional rights before the interrogation. Further video recording in court will be used as evidence, and the police officer should indicate the interrogation electronic recording procedure and the recorded interrogation as evidence in his/her report.

Interrogation without video recording is allowed in exceptional cases, only if the recording equipment failed before the interrogation or the interrogated person refuses from video recording.

Similar electronic recording requirements were developed in the Manual of the US Department of Justice (The Office of the Attorney General), in which preliminary investigation authorities are required to record electronically the testimony of suspects in custody. Electronic recording of all testimony is established as a presumption, i.e., on a mandatory basis. Any reliable electronic recording device should be used for electronic recording.

An additional argument in support of the problem of information storage, processing and exchange in law courts is a threat of confidentiality compromise, which implies a potential erosion of confidence of the interested parties to the proceedings. It is supposed that information exchange may oppose the goal of earning confidence through transparency. Moreover, the fear of potential breaches of confidentiality forces information disseminators to share its minimum or not to provide it at all. The authors actualize the requirements to designing the organization of interactions - "design of actions" within the framework of the court as a social institution (Bargh et al. 2016).

Thus, it is convenient and efficient, but at the same time it requires more attention from the part of the interrogated persons. Many of them have no experience in carrying on a conversation for camera. And this is a significant stressful situation, taking many psychological efforts for most people.

When it comes to the third module (acceptance and use of electronic evidence), one would agree that modern technologies change the perception of paper document management and the use of conventional evidence. In a virtual environment, conventional evidence in a proceeding becomes electronic evidence, and legal proceedings, similar to the acceptance criterion, are transformed as compared to conventional evidence (Cizmic and Boban 2017).

To what extent is the average person ready to perceive such dramatic changes in this area, such as the use of a polygraph, instead of the usual proof? As an example, let us turn to the experience of the PRC in this matter.

Despite the fact that there is no statute organization of this procedure in this country, and the results obtained by law will not be evidence in a criminal case, interrogation using a polygraph has been actively used in the practical activities of Chinese law enforcement agencies. So, since 1990, research has been carried out on the use of the polygraph in criminal proceedings. Since 2008, the use of the polygraph has played a key role in the investigation of corruption, official, and contraband crimes. Besides, the polygraph is used as part of the public prosecutor's activities of filing accusations. In 2011, in 28 provinces (Liaoning, Shandong, Guangdong, Jiangsu and Zhejiang and others) and cities (Beijing, Shanghai), police, prosecutors and other law enforcement agencies authorized to investigate criminal cases were equipped with polygraphs. By 2011, 100 lie detectors were used in the investigation of over 1000 criminal cases and played an important role in identifying the suspect and determining the course of the criminal investigation.

In scientific and practical circles, discussions are being held on the role and place of using the polygraph when investigating crimes. A number of Chinese scientists (Minlay and Minh 2014) are of the opinion that the use of the polygraph in a criminal case can contribute to a quick and accurate collection of evidence, and see the need to consolidate the results of a psychophysiological examination as evidence. Other researchers (Zhongzhou and Bin 2015) believe that this type of evidence is not reliable enough for use in a criminal case and can only be used as orienting information.

It appears that currently, the results obtained using the polygraph cannot be recognized as evidence in a criminal case due to the lack of their status of organization. However, a radical change in the attitude to this issue is within the bounds of possibility not only in this country, but also in other countries.

The fourth module is represented by the high-tech equipment of courtrooms and use of video conferencing (Hook 2017). The modern system of producing evidence in court includes a computer, monitors and a camera, under which material evidence or a document is placed. When using a camera, trial participants can simultaneously examine the enlargement, which in the case of small objects is more convenient than demonstrating them from a distance, or sequential, often rapid, studying the evidence by the trial participants one after another. Large-dimensioned evidence can be replaced by graphic images or models, which allows us to avoid their delivery to court. Using a computer and additional monitors, the parties demonstrate photographs, videos, and slides to the court, while the videos can be supplemented with close caption and highlighting of significant fragments. The location and number of monitors in the courtroom can vary from several large screens to individual monitors for jurors and additional screens for the audience present. In the absence of monitors or upon the request of a party and with the consent of the court, individual tablets may be handed over to the jury (Dixon 2011).

Currently, for example, several regions of China are introducing a prototype of the Internet court with the possibility of filing online applications and criminal trials on the merits. The technical ability allows them to hold court even when the suspect is in a Detention centre of a district department of the public security body.

Video conferencing is actively used in criminal trials in the courts of the Republic of Kazakhstan. So, for example, the Aktogai district court of Karaganda region, the Republic of Kazakhstan, used mobile video conferencing during a criminal trial under paragraph 5, part 2, article 190 of the Criminal Code of the Republic of Kazakhstan. About 60 witnesses were connected to the case, many of whom were from Priozersk. The remoteness

of the district, the inability to appear in court and the need for interrogation were considered. The technical ability allowed the trial participants, regardless of their location and financial standing, to hear and see the court session, ask questions and receive answers to them, thereby exercising their rights and obligations. The trial based on the use of video conferencing allowed the trial participants to save time and money.

The use of information and communication technologies for trial management in various legal contexts is a serious problem associated with electronic data processing. Thus, no significant difference was found between the duration of a traditional legal proceeding and its “electronic” format. The author points out that physical processing of trial data is faster than the electronic one; therefore, the solution to this problem will depend on the actions of the legal system, judges and specific situations (Procopiuck 2018).

The fifth module relates to the involvement of robots and computers in the investigation and judicial decisions. Vlasova believes that in the future, the robot will successfully replace the investigator. Here is what the author writes on this subject: “Since “information crimes” leave information traces, an information technology specialist can follow (investigate) them. Instead of an investigator, detective, in the traditional sense, the subject of investigation can be a programmer, an information security specialist (professional “anti-hacker”), as well as a “robot” (computer)” (Vlasova 2018).

As an experiment, there are cases of using robots during interrogation. However, most scientists are convinced that the robot is only a tool in the hands of an experienced investigator, which can be used to solve individual problems. In particular, this applies to the interrogation of paralyzed people and patients suffering from schizophrenia.

Special attention should be drawn to the court assessment of evidence obtained by the investigating robot, and the development of their receipt and court use admissibility criteria. Legislative, including constitutional, remedies to protect human rights in the case when evidence is collected by a robot investigator should be developed before this technology is introduced into the criminal investigation process (Chen 2008).

Estonia may become the first country in the world where a judgment will be delivered by a computer fitted with an artificial intelligence function. The Ministry of Justice of the Republic scheduled to launch the introduction of the new technology at the end of 2019.

In this case, it is fair to raise the question of determining human responsibilities of a person when using the capabilities of the “judicial computer”. To date, it is difficult to imagine what will happen if this process is connected to a smart computer with a neural network.

The sixth module focuses on the use of augmented reality technologies in legal proceedings. The augmented reality technology results from the introduction of sensory data into the field of human perception in order to supplement the environmental information and improve the perception of information. This technology allows us to significantly expand the field of the data perceived by a person, due to the transfer of digital information into the real world. The augmented reality is formed using a camera or another device which can process a video signal. A special program will augment the picture with the necessary virtual objects, such as video and audio materials, 3D-models, as well as text content. The term “augmented reality” itself was supposedly proposed in 1990 by Caudell, a researcher at Boeing Corporation (Chen 2009). The proposed technology can both augment the surrounding world and eliminate objects from it - the capabilities of augmented reality are limited only by the capabilities of the corresponding devices and programs. The main principle of the technology is to expand understanding of the ongoing processes, but not to completely “absorb” the real world. This can drastically change the perception of reality, and therefore of the criminal procedure as such.

Thus, modern digital technologies have unlimited potential for controlling the mental state of the parties in any adversary proceedings. This characteristic feature of digitalization can be considered as an objective risk associated with the manipulation of one or another aspect of communication. So, for example, it has been proved that the virtual reality technology can be used as a possible surrogate measure to restore real scenes or to assess the physiological and psychological state of a person who is in a simulation situation (Dixon 2011). However, this approach is important if the capabilities of virtual reality are used to create immersive environments reconstructing realistic situations; to consider the conditions of augmented (virtual) reality as an evidence basis, in particular for assessing the behaviour of a person in the conditions of reproducing an offense. The use of such technologies will enable to understand how people behave in dangerous situations, how internal and external factors influence their decision-making process; will allow to carry out a secret assessment of informative behavioural patterns and online physiological measurement (Cizmic and Boban 2017).

Information technologies allow us to adjust the course of interaction, modulating perception processes. The quality of non-verbal means of communication largely determines how a person perceives, for example, the facial expression of a communicant, his/her tactile or olfactory profile. Such additional information determines the strength and intensity of social contact, in particular, determines the proximity (confidence) and adequacy of the attitude to what is happening (Spape et al. 2019).

## 6. Conclusions

Thus, digitalization of criminal proceedings is currently carried out spontaneously, according to forced legal regulation of newly emerging information and communication relations. At the same time, there is no strategy for its phased implementation, and the possible response of citizens to this matter has neither been studied. The latter causes serious concern, since any failure to accept significant innovations by the population may nullify the results of the “digital revolution”, jeopardizing the historically developed and customary traditions (rules, procedures, rituals), including cultural values (ideas) underlying the course of justice.

All of this, ultimately, can cause collective discontent and instability in legal policy. To avoid this or minimize possible risks, we need to carry out profound interdisciplinary studies allowing us to answer a number of questions in theory and in practice. This will allow us to forecast the introduction of information technologies in criminal proceedings, while retaining the citizens’ sense of security and justice of courts, and therefore a confidence in the justice of the decisions made.

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