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Methodological principles of research in the field of ensuring evidence collection (on the example of cybercrimes): criminal-legal, criminal-procedural, and forensic aspects

Методологічні засади досліджень в сфері забезпечення збирання доказів (на прикладі кіберзлочинів): кримінально-правовий, кримінально-процесуальний та криміналістичний аспекти

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Abstract

The complexity, multifacetedness, and interdisciplinary status of ensuring the collection of evidence leads to the need to study it in the coordinate system set by different levels of scientific methodology. With this in mind, we consider it necessary to analyze the current issues of study methodology in ensuring evidence collection on the basis of cybercrimes. The purpose of the work is studying the criminal-legal, criminal-procedural, and forensic aspects of the methodological foundations of research in securing evidence on the example of cybercrimes. The research methodology includes such methods as the general system-structural method, the dialectical method, the historical method, the system method, the comparative-legal method, logical methods (deduction, induction, analogy, analysis, synthesis), the structural-logical method, and the modeling method. As a conclusion of the conducted research, the regulatory and legal factors that constitute the legal basis of the organizational and technical principles of the investigation of crimes in the field

Анотація

Складність, багатогранність і міждисциплінарний статус забезпечення збирання доказів приводить до необхідності її вивчення у системі координат, що задається різними рівнями методології науки. З огляду на це, вважаємо за необхідне проаналізувати актуальні питання методології досліджень у сфері забезпечення збирання доказів на базі кіберзлочинів. Метою роботи є дослідження кримінально-правового, кримінально-процесуального та криміналістичного аспектів методологічних засад досліджень в сфері забезпечення доказів на прикладі кіберзлочинів. Методологією дослідження є такі методи як загальний системно-структурний метод, діалектичний метод, історичний метод, системний метод, порівняльно-правовий метод, логічні методи (дедукція, індукція, аналогія, аналіз, синтез), структурно-логічний метод та метод моделювання. Як висновок проведеного

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of cybercrime were considered, and the problematic issues of the research methodology were identified. It was concluded that the methodological support of the research of evidence collection is a complex, multifaceted task of scientific research, it can be solved only on the basis of a systematic approach to this problem.

Keywords: methodological principles, provision of evidence collection, criminal-legal aspect of research, criminal-procedural aspect of research, forensic aspect of research.

Introduction

In conditions of the rapid growth of scientific and scientific-technical information, rapid changes, and updating of the system of scientific knowledge, there is a need for qualitatively new approaches to the theoretical understanding of science-intensive technologies and adaptation to the conditions of market relations.

Knowledge of methodology, theory, technique, methods, and organization of scientific research activity helps to get involved in professional activities, to translate scientific knowledge into a practical plane, and promotes the development of rational and creative thinking.

Currently, criminal law science faces a number of challenges due to both new types of crimes and the lack of a developed research methodology.

New challenges caused by the spread of the fields of application of special knowledge during the detection and investigation of crimes in the field of computer information and high technologies generate new risks associated with the possibility of cross-border circulation of information, which is increasingly used with criminal geopolitical, military-political, terrorist, with an extremist and other illegal purpose to the detriment of international security and strategic stability. An equally significant role was played by the expansion of the use of information and psychological influence technologies by the special services of individual states to destabilize the domestic political and social situation in certain regions, which threatens the sovereignty and territorial integrity of states. Strengthening the influence of terrorist and extremist organizations, which in their practices actively

дослідження розглянуто нормативно-правові чинники, які становлять правову основу організаційно-технічних принципів дослідження злочинів у сфері кіберзлочинності, ідентифіковано проблематичні питання методології досліджень. Зроблено висновок, що методологічне забезпечення дослідження збирання доказів - складне, багатоаспектне завдання наукового пошуку, його можна розв'язати лише на засадах системного підходу до цієї проблем.

Ключові слова: методологічні засади, забезпечення збирання доказів, кримінально-правовий аспект дослідження, кримінально-процесуальний аспект дослідження, криміналістичний аспект дослідження.

use mechanisms of informational influence on individual and public consciousness, actively recruit supporters and sympathizers through social networks to incite hatred on religious, racial, and ethnic grounds. The emergence of new and improvement of existing computer crimes, especially in the economic and financial sphere. An increase in the number of computer attacks on critical infrastructure and air transport. The lack of scientific research aimed at creating promising high technologies, the low level of introduction of domestic developments in the field of information security (Filipenko, Snigirev & Bublikov, 2020)

Therefore, we consider it necessary to analyze the criminal-legal, criminal-procedural, and forensic aspects of the methodological foundations of research in the field of ensuring the collection of evidence on the example of cybercrimes.

To achieve this goal, the following tasks have been set:

- determine the legal nature of cybercrimes;
- to investigate the methodological foundations of research in the field of ensuring the collection of evidence;
- to characterize the research methods in the field of ensuring the collection of evidence on the example of cybercrimes;
- to reveal and specify the experience of international legal provision of research on gathering evidence on the example of cybercrimes. and;
- to find out the specifics and trends in the development of the methodology of

criminal-legal, criminal-procedural, and forensic research in modern conditions.

The object of the study is the research methodology for ensuring the collection of evidence on the example of cybercrimes through the prism of criminal, criminal procedural, and forensic science. The subject of research is social relations that arise, change, and cease during the application of various research methods in the field of evidence collection.

Theoretical Framework or Literature Review

Forensic tactics and methods of investigation of certain types of crimes are considered in the book of Bilenchuk (2007). The work examines the latest trends in scientific research in the field of forensic strategy, tactics, and prevention, the art of investigative activity, diagnosis, research, and prediction of human behavior during pre-trial investigation, the use of social and communication technologies, methods and means of information security and methods of investigation of certain types of crimes. The authors proposed modern forensic methods, taking into account the peculiarities of the investigation of crimes in the field of high technologies and violations of the rules for handling radioactive materials, combating the laundering of financial resources, as well as transnational, economic crimes, crimes of terrorist orientation.

Moreover, Bogomaz (2019) considered methodological guidelines for the study of social communications in the conditions of the information society.

Further, Dobronravova, Rudenko, and Sydorenko (2018) considered the role of science and scientific research in the modern world and the issue of the technology of conducting scientific research by students and young scientists. The problems related to the methodology and organization of scientific research activity are described in detail: definition of the object and subject, research methodology and methods, ways of collecting information, and processing the results of scientific research.

Features of cyberspace as a new dimension of geopolitical rivalry were analyzed by Dubov (2014).

The object of Kovalchuk's (2017) research is the methodology of study about the material evidence in criminal proceedings. As a result of

the conducted research, the author concluded that the methodology of study about the material evidence as an independent criminal procedural branch is a complex dynamic system. As a complex system, the methodology of the study of material evidence not only includes various approaches, principles, methods, and techniques of scientific knowledge and the methodology of their use but also has inherent integrative laws that determine the relationship and interaction of its structural elements in the process of scientific research. As a dynamic system, the methodology of the study about material evidence, being in a constant search for new approaches, principles, methods, and techniques of scientific knowledge and the development of methods of their use, is being improved and diversified.

Also, Moroz and Kobzar (2016) analyzed the specifics of the use in criminal proceedings of information obtained by confidants and full-time undercover employees during criminal intelligence.

Besides, Panasyuk (2019) considered cyber security as a law-making factor. In turn, Oleksyuk (2020) prepared a detailed report on cyber security management using the example of Ukraine and foreign countries.

What is more, Rabinovych's (2014) study is devoted to the methodology of the domestic general theory of the rule of law. In particular, the article examines and critically analyzes the main trends in the transformation of methodological approaches and research methods of legal and state phenomena in domestic general theoretical jurisprudence and identifies the factors that deeply determine the relevant transformations of the mentioned methodology.

Ryzhiy (2021) analyzed the philosophical and methodological principles of the study of the assessment of testimony of participants in criminal proceedings in the court of first instance. The author concluded that the research methodology for evaluating the testimony of participants in criminal proceedings in the court of first instance is a complex combination of philosophical and general scientific methods (dialectical method of cognition, induction and deduction, analysis and synthesis, abstraction, observation) aimed at revealing the specifics of the specified activity. It is important to use historical-legal, systemic-structural, formal-dogmatic, comparative-legal, hermeneutic, synergistic, sociological, and prognostic methods. The specifics of the researched subject, as well as the set of cognitive tasks that are

diverse in their content and nature, make it necessary to use the entire complex of the above-mentioned methods, which enrich each other, and in their totality give a holistic perception of the assessment of the testimony of the participants in the criminal proceedings in the court of first instance, contribute to ensuring the validity of the conclusions obtained and recommendations.

Additionally, Rudyk, Senyk, Rudyk, and Senyk (2018) studied in detail the organizational, legal, forensic, and technical aspects of countering cybercrime in Ukraine. Moreover, Savchenko (2012) considered the question of the qualification of cybercrimes.

The detection and investigation of cybercrimes are analyzed in the work of Samoilenko (2020). In particular, the author's work includes the theoretical and methodological provisions of the investigation of cybercrimes and forensic tactics and methods of investigating cybercrimes of certain types, developed on the basis of general theoretical provisions of criminology.

Filipenko, Snigerev, and Bublikov (2020) investigated the application of special knowledge during the detection, prevention, and investigation of crimes in the field of computer information and high technologies. In order to increase the effectiveness of combating computer crime, in parallel with the development of methodological support for expert research and the improvement of the qualifications of forensic experts, in particular, their acquisition of the latest special knowledge, it is necessary to regularly hold international meetings of representatives of forensic expert institutions, law enforcement bodies, specialists, knowledgeable persons. Further, Foros (2016) also considered the legal regulation of combating cybercrime.

Chornous (2012) analyzed the theory and practice of forensic support for pre-trial investigation in cases of crimes of an international nature. The theoretical and methodological model of criminology and its new directions are studied in the work of Shepitko (2021). Shulgin (2019) drew attention in his work to the sufficiency of evidence as a basis for making procedural decisions by investigators and prosecutors. Tropina (2012) researched the issue of cyber security and the specifics of its provision.

Marín González, and García Sánchez (2015) researched the problems facing digital proof in

the United States of America. Cardona, and López, (2014) studied the documentary evidence in the accusatory criminal system, compilation and presentation at trial. In their research Más, & Rosado (2011) analyzed the technical and scientific process to collect and analyze digital evidence from computer or electronic devices in order to present them at Court. Buñay Guisñan, Mazón Fierro, Narváez Vilema, and Paguay Soxo (2021) researched different issues of use of the web system for the collection of evidence generated by university professors.

Methodology

The scientific research is based on the application of the general system-structural method, the main elements of which ensured a high effect of building models for solving the given problems. Thus, the methodological foundations of research in the field of ensuring evidence collection on the example of cybercrimes were investigated comprehensively, taking into account their features and functional purpose.

Also, the basis of the methodology system of scientific analysis of the genesis and development trends and the mechanism of legal regulation of evidence collection in the investigation of cybercrimes from the point of view of criminal law, criminal procedural and forensic aspects are such methods as: dialectical method - made it possible to explore the inner essence of things in the process of their development, as well as internal and external contradictions, in particular, with the help of this method, the genesis of the development and improvement of the methodological foundations of the research of evidence collection was analyzed; the historical method - contributed to the understanding of the genesis of the legal regulation of the fight against cybercrime and its proof; systematic method - made it possible to carry out a complete and objective study of the corresponding specifically outlined subject, in particular, it made it possible to investigate the peculiarities of the methodological foundations of research in the field of ensuring the collection of evidence on the example of cybercrimes, as well as to clarify the specifics of international and national experience in this topic; comparative legal method – used to analyze the peculiarities of methodological foundations in foreign countries.

During the research, logical methods and techniques were used - deduction, induction, analogy, analysis, and synthesis. Thus, their use is traced throughout the events of all scientific

analysis. The method of analysis made it possible to analyze the researched object in detail. With the help of synthesis, the acquired knowledge was combined into a whole. The use of the method of analogy, the essence of which is that certain properties and features are transferred from one subject of research to another, and in the same way the relations and connections between one and another set of subjects are transferred, helped to understand the methodological principles of research in the field of ensuring the collection of evidence from the point of view of criminal law, criminal procedural and forensic aspect. The use of induction and deduction are interrelated in this study: deduction helped to draw conclusions from theoretical ideas, laws, and principles, as it is related to the construction of an idealized object, and induction made it possible to generalize empirical regularities.

The use of the structural-logical method and modeling made it possible to highlight the perspectives and trends in the development of methodological foundations of research in the field of ensuring the collection of evidence in the investigation of cybercrimes.

Results and Discussion

The research objectives are to determine the role of the methodology in ensuring the collection of evidence; to find out what factors influence the development of the methodology, its state, and dynamics; to establish the features of the research methodology for ensuring the collection of evidence in the investigation of cybercrimes.

Table 1.

Characteristics of the criminal-legal, criminal-procedural, and forensic aspects of the phenomenon under study.

Criminal law	Criminal procedural	Forensic
It is designed to ensure the correct qualification of the act committed by the suspect and to create the necessary prerequisites for the individualization of criminal responsibility.	Presupposes the use of appropriate means of proof in the proper procedural order.	It involves the study of the identity of the criminal and the circumstances of his commission of the crime.

Data provided by National Institute of Strategic Studies (2022).

Therefore, conducting a study of the methodological foundations of the study of ensuring the collection of evidence on the example of cybercrimes through the prism of the specified aspects aims to conduct a comprehensive study (Raconteur, 2019).

In general, it is difficult to overestimate the importance of methodology, since no science can

A specific toolkit is necessary for the study of any object of scientific knowledge. Such a toolkit is the research methodology. The development of methodological issues is primarily aimed at practical goals: to arm the researcher with means that ensure the most efficient and rapid achievement of the scientific result. Therefore, the correctly chosen research methodology depends not only on determining the main directions of scientific research but also on obtaining reliable scientific knowledge about the object of knowledge.

In historical retrospect, many studies have been devoted to the concept of methodology. Thus, for a long time, the methodology was considered a structured system of approaches, principles, and methods of scientific knowledge. Later on, there was an expansion of the understanding of the methodology due to its coverage of not only the system of means of scientific knowledge but also the study about their use for the knowledge of this or that object of knowledge. In this regard, at the current stage of the development of science, the methodology should be understood as an integration phenomenon, which is both a system of interrelated elements of scientific knowledge (approaches, principles, methods, and techniques) and the study of their use (Rabinovych, 2014).

But before analyzing the methodological foundations of research on ensuring the collection of evidence on the example of cybercrimes, let's consider the essence of the criminal-legal, criminal-procedural, and forensic aspects of the investigation of the phenomenon under investigation (Table 1).

exist without it, including the science of criminal law, criminal procedural law, and criminology.

We believe that in order for science to move from commenting on the Criminal Procedure Code of Ukraine (Law No. 4651-17, 2012) and the Criminal Code of Ukraine (Law No. 2341-14, 2001) to the development of science itself, it is necessary to develop the following components:

- 1) philosophy of branch science;
- 2) theory;
- 3) methodology;
- 4) history;
- 5) comparative studies.

The general trend in the development of the methodology of modern general theoretical jurisprudence led to an active transition at the current stage of the development of the theory of criminal procedural evidence from monism to pluralism of its methodology.

The doctrine of proof as an independent criminal procedural doctrine has its own methodology, which allows for scientific knowledge of the set of elements covered by its subject. At the same time, the specifics of ensuring the collection of evidence on the example of cybercrimes are determined by its specifics.

The methodological principles of research in the field of evidence collection are a system of interconnected approaches, principles, methods, and techniques of empirical and theoretical knowledge of reality, which are aimed at systematizing of existing and obtaining new knowledge covered by the subject of this study, and a system of scientific provisions on their use to solve the tasks set before him (Ryzhiy, 2021).

Thus, when studying such an element of the evidence process as evidence collection, attention should be focused on the need to use methods and techniques of information collection, to process it in its totality and in all its multifacetedness, complexity, and contradictions, based on a set of positive and negative moments, identifying trends and patterns of such activity in criminal proceedings at the stage of trial (Samoilenko, 2020).

For example, the process of defining concepts cannot take place without the application of the technique of abstraction, therefore, this technique must be used in order to learn the specifics of evidence collection when de-icing cybercrimes, it is important to abstract from other elements of the evidence process, to concentrate your attention on collecting information about the crime. At the same time, the process of abstraction is inextricably linked with such research methods as analysis and synthesis, which form the basis of the formal-logical approach, the unity of opposites and, accordingly, are used to divide the subject of research into constituent parts and combine individual parts of the subject into a single whole. The formulation of conclusions and concepts, the

identification of criteria for evaluating the testimony of participants in criminal proceedings, the definition of the content of the judge's activity and the limits of his activity during the trial, the clarification of the peculiarities of the use of the testimony of the witness, the victim, the accused, written and material evidence – all this helps to clarify the specified methods.

It is worth pointing out the importance of using general scientific methods, which are general methods and ways of researching processes and phenomena and determining the trends of their changes, which are used in various fields of scientific knowledge. In particular, the application of deductive and inductive methods consists of the use of general scientific provisions of systems theory. Emphasis should be placed on the importance of applying systemic analysis, which makes it possible to determine the essence of testimony as a source of evidence in the criminal process, to analyze the relevant powers of the participants in the criminal proceedings, to investigate the relationships arising in connection with this.

An active approach makes it possible to conduct a versatile analysis of the structure of the phenomenon in dynamics. The use of this method when clarifying the specifics of evidence collection can be extremely effective because an important component of the subject of research in the science of the criminal process is the clarification of the powers of the court to collect evidence in criminal proceedings. The method of analogy, when, on the basis of the similarity of objects in some features, a conclusion is drawn about their similarity in other features, is useful when studying the peculiarities of the implementation of procedural powers to collect evidence in the Anglo-Saxon and Romano-Germanic legal systems.

The basis of the system-structural method is the study of a certain object as a complete system that has an internal structure and is divided into constituent elements. The task of the researcher is to determine their number, order of organization, connections, and interaction between them. Only after that can you get to know the relevant object comprehensively and perfectly. With the help of the system-structural method, it is possible to reveal the system of interconnection of the subjects of criminal proceedings during the evidence collection. In addition, the application of the specified method allows for the identification of gaps and contradictions in normative legal acts and to

formulate proposals for improving the current legislation.

With the help of the formal-dogmatic method, which reflects the content of the researched object in the form of a rational construction, it is possible to clarify the conceptual apparatus during the analysis of the current legislation on the procedure for collecting two pieces of evidence, as well as the practice of applying the provisions of the Criminal Procedure Code.

Implementation of effective legal reforms is impossible based only on national experience or simply familiarization with the legislation of certain countries, it requires systematized scientific knowledge of global and regional trends in legal development, which is accumulated primarily by comparative jurisprudence. The prognostic method makes it possible to determine, first of all, the identification of the main directions of the development of domestic legislation regarding the activity of the court on the assessment of testimony during the trial, guaranteeing the rights of participants in criminal proceedings, the peculiarities of their formation based on world experience, it makes it possible to predict the likely consequences of changes to the criminal procedural legislation in terms of collection, verification, and evaluation of evidence, in particular the testimony of the accused, the victim, witnesses.

Therefore, taking into account the multifacetedness of even the considered methods and approaches, we can state that modern criminal procedural, criminal law and forensic science are based on a systematically updated methodology, which, among other things, is aimed at theoretically solving the problems of everyday practice.

In general, in the structure of the research methodology in the field of ensuring the collection of evidence in the investigation of cybercrimes, it is advisable to highlight the following specific scientific methods:

- 1) the formal-legal method, which is often defined by scientists as a dogmatic or legal-technical method, allows to determine the formal content of the norms of the criminal procedural law, which define the concept of evidence and regulate the order of their formation and use, terms, order and conditions of storage of physical evidence and methods and the procedure for deciding their fate during criminal proceedings,

contributes to the disclosure of a crime in the field of cyber security and contributes to obtaining proper, admissible, sufficient and reliable evidence;

- 2) the comparative legal method involves the implementation of diachronic and synchronous structuring: a diachronic comparison allows you to compare evidence as a legal phenomenon that existed in the domestic criminal process, law, and criminology during different historical periods, and to identify patterns of development of this legal phenomenon, while a synchronous comparison involves comparing collection of evidence as a legal phenomenon that exists in various legal systems during a specific historical period, and to determine the expediency of taking into account the foreign experience of the normative definition of the concept of evidence and the order of their formation and use in criminal proceedings and the doctrinal approaches and practices formed in foreign countries on these issues;
- 3) the sociological-legal method involves the use of such tools as the analysis of statistical data and various legal documents, a socio-legal experiment, surveys, interviews on legal issues, and allows to establish the effectiveness of the normative definition of evidence collection in criminal proceedings, to identify the shortcomings of investigative and judicial practices regarding the formation and use of material evidence in criminal proceedings, including taking into account the legal standards of criminal procedural evidence formed in the practice of the ECtHR;
- 4) the method of theoretical and legal modeling allows you to substantiate the conceptual model of the doctrine of evidence collection and to determine its object, subject, purpose, tasks, functions, and system;
- 5) the method of theoretical and legal forecasting allows for determining the prospects for the development of domestic criminal procedural legislation in the part of defining the concept of evidence collection, terms, order, and conditions of storage of material evidence, and methods and procedure for deciding their fate during criminal proceedings (Kovalchuk, 2017).

Each of the above general scientific and specific scientific methods has its own cognitive capabilities in revealing the collection of evidence as an object of scientific knowledge, determined by the scope of their use, features of displaying the obtained scientific results, and

their evaluation. At the same time, all of the above methods are closely related and should be applied in combination (simultaneously or in stages) in order to comprehensively understand the collection of evidence as a legal phenomenon, especially in relation to the investigation of cybercrimes.

Conclusions

As a result of the research, the following conclusions were made:

- 1) When solving any scientific problem, the issue of methodological support is necessary and of primary importance for theoretical understanding in any subject area, and the methodology contributes to the search for optimal ways of learning the phenomena and processes that are the subject of study, their adequate reflection in the system of scientific knowledge.
- 2) From the above, a number of factors influence the development of the methodology, its state, and dynamics, including:
 - the needs of investigative and judicial practice regarding the collection of evidence to prove the commission of cybercrimes are put before the doctrine of the criminal process;
 - conditioned by the needs of law enforcement practice, changes in the object and subject of both the theory of criminal procedural evidence and the doctrine of material evidence in the criminal process;
 - development of the science of criminal, criminal procedural law, and criminology, the developments of which can be used to improve their methodological arsenal.

These factors determine the use of not only well-established but also the newest approaches, principles, methods, and techniques of knowledge used in modern science in the collection of evidence in the investigation of cybercrimes.

- 3) The research methodology for ensuring the collection of evidence in the investigation of cybercrimes is a complex combination of philosophical and general scientific methods (dialectical method of cognition, induction and deduction, analysis and synthesis, abstraction, and observation) aimed at revealing the specifics of the specified activity. The specificity of the researched subject, as well as the set of cognitive tasks

that are diverse in their content and nature, make it necessary to use the entire complex of the above-mentioned methods, which enrich each other and contribute to ensuring the validity of the conclusions and recommendations obtained.

Therefore, the goal and task of the conducted research has been fully achieved.

Regarding further scientific research, we consider it necessary to investigate the actual issues of the research methodology of evidence collection.

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