

SCIENTIFIC ARTICLE

MODERN METHODS OF FORENSIC ACCOUNTING FOR THE DETECTION AND SUPPRESSION OF ECONOMIC CRIMES IN THE CORPORATE SECTOR

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ABSTRACT

Introduction. With the growth of economic crimes, there is an increase in financial crimes in organizations, including corruption. Despite the efforts of law enforcement agencies and compensation for damages, hidden crime within companies remains a serious threat. To solve this problem, modern investigative methods such as forensics are needed, combining financial, legal, psychological and auditing knowledge. The purpose of the study is to develop proposals for improving the methods of law enforcement using modern technologies to increase efficiency in solving economic crimes. To achieve this goal, current methods of forecasting will be investigated and their disadvantages and risks for the company will be identified, the potential of new technologies in relation to the field under consideration will be studied and a list of practical recommendations for their use will be developed.

Materials and methods. The research methodology includes data analysis and synthesis, comparison of different approaches to forensic accounting. Special attention is paid to the specifics of fraud in various areas of the organization's activities: in production, in sales and in personnel management. The specific methods used in forensic accounting to identify economic crimes are considered. The methods are divided into three main groups: auditing (standard accounting procedures), expert-analytical methods (study of financial indicators, identification of hidden patterns) and specialized (wealth assessment, asset movement tracking and gross profit analysis to detect income and expense manipulation).

Results and conclusions. The limited nature of current methods of forecasting is indicated, such as labor intensity, subjectivity of interpretation, difficulty in detecting complicated schemes, retrospectivity, detection of collusion and insufficient adaptation to the digital environment. An analysis of the risks that arise for companies that use the services of forensic specialists, or maintain a department for the detection of economic crimes in the company, taking into account outdated methods of forensic accounting. From the almost certain and critically important to the rare and insignificant, risks are identified in the form of excessive financing of activities that do not bring appropriate benefits, continued withdrawal of shareholders from the company, loss of potential investors and customers, the obligation to pay fines for violations of the law, leakage of data and confidential information, lack of quality personnel and many others.

Discussion. In connection with the identified risks, solutions are proposed to improve forensic accounting, including the use of artificial intelligence for data analysis and threat forecasting, the introduction of social network monitoring systems to identify links between participants in schemes, the use of AR/VR for data visualization and analysis tools for creating reports and detecting anomalies, and other innovations that will optimize the process and focus on identifying violations that cannot be automated. While forensic accounting offers a wider range of opportunities to detect fraudulent schemes compared to auditing, the growing complexity of economic crimes in the digital environment requires a change in the existing paradigm of forensic accounting right now. The issue for further detailed study should be the side of the economic feasibility of introducing improved methods into the practice of forensic specialists. Although traditional methods still remain a fundamental element, their inherent limitations reduce the effectiveness of their use in performing modern problems. Thus, the strategic solution is to introduce modern technologies into the forensic accounting, which represent a more convincing way to increase

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the effectiveness of economic crime investigation methods that contribute to the financial stability of the company. At the same time, this improvement eliminates the information asymmetry between insiders and external stakeholders, increasing operational efficiency by optimizing costs, increasing transparency of management and reducing the possibility of exposure to reputational risks.

KEYWORD

Forensic accounting, economic crimes, financial investigation, expertise, corporate fraud, digital transformation.

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AUTHORS' CONTRIBUTION

All the authors participated in the research concept development, data collection, processing and analysis, manuscript text writing and conclusions formulation.

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The authors declare interest conflict lack.

USE OF AI TOOLS DECLARATION

The authors declare that they have not used Artificial Intelligence (AI) tools for writing this article.

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НАУЧНАЯ СТАТЬЯ

СОВРЕМЕННЫЕ ФОРЕНЗИК-МЕТОДЫ ДЛЯ ВЫЯВЛЕНИЯ И ПРЕСЕЧЕНИЯ ЭКОНОМИЧЕСКИХ ПРЕСТУПЛЕНИЙ В КОРПОРАТИВНОМ СЕКТОРЕ

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АННОТАЦИЯ

Введение. В условиях роста экономических преступлений наблюдается увеличение количества финансовых преступлений в организациях, включая коррупцию. Несмотря на усилия правоохранительных органов и возмещение ущерба, скрытая преступность внутри компаний остается серьезной угрозой. Для решения этой проблемы необходимы современные методы расследования, такие как форензик, объединяющие финансовые, юридические, психологические и аудиторские знания. Определена цель исследования – разработать предложения по совершенствованию форензик-методов с использованием современных технологий для повышения эффективности при раскрытии экономических преступлений. Для достижения этой цели будут исследованы текущие методы форензика и выявлены их недостатки, риски для компании, также будет изучен потенциал новых технологий применительно к рассматриваемой сфере и разработан перечень практических рекомендаций по их использованию.

Материалы и методы. Методология исследования включает анализ и синтез данных, сравнение различных подходов к форензику. Особое внимание уделяется специфике мошенничества в различных сферах деятельности организации: в производстве, продажах и управлении персоналом. Рассматриваются конкретные методы, используемые в форензик-расследованиях для выявления экономических преступлений. Методы делятся на три основные группы: аудиторские (стандартные процедуры бухгалтерского учета), экспертно-аналитические (изучение финансовых показателей, выявление скрытых закономерностей) и специализированные (оценка благосостояния, отслеживание движения активов и анализ валовой прибыли для выявления манипуляций с доходами и расходами).

Результаты и выводы. Указывается ограниченная сущность текущих методов форензика, таких как трудоемкость, субъективность интерпретации, затруднительность обнаружения усложненных схем, ретроспективность, выявление сговоров и недостаточная адаптация к цифровой среде. Проводится анализ рисков, возникающих для компаний, которые используют услуги форензик-специалистов, либо содержат отдел по выявлению экономических преступлений, с учетом устаревших методов форензика. От самых вероятных и критически важных до маловероятных и малозначимых – выявляются риски в виде: излишнего финансирования не приносящей соответствующей пользы деятельности; продолжения вывода активов из компании; потери потенциальных инвесторов и клиентов; возникновения обязанности выплаты штрафов за нарушение законодательства; утечки данных и конфиденциальной информации; нехватки качественных кадров и многие другие.

Обсуждение. В связи с выявленными рисками предлагаются решения по совершенствованию форензик-методов, включающие использование искусственного интеллекта для анализа данных и прогнозирования угроз, применение систем мониторинга социальных сетей для выявления связей между участниками схем, применение AR/VR для визуализации данных и инструментов анализа для создания отчетов и выявления аномалий и иные нововведения, что позволит оптимизировать процесс и сфокусироваться на выявлении нарушений, не поддающихся автоматизации. В то время как форензик представляет больший спектр возможностей по выявлению мошеннических схем по сравнению с аудитом, растущая сложность экономических преступлений в цифровой среде требует смены существующей парадигмы форензика уже сейчас. Вопросом для дальнейшего детального изучения должна стать сторона экономической обоснованности внедрения усовершенствованных методов в практику форензик-специалистов. Хотя традиционные методы до сих пор остаются основополагающим элементом, однако присущие им ограничения снижают эффективность их применения в выполнении современных задач. Таким образом, стратегическим решением является внедрение в форензик современных технологий, представляющих собой более убедительный путь повышения эффективности методов расследования экономических преступлений, способствующих финансовой стабильности компании. Одновременно это усовершенствование устраняет информационную асимметрию между инсайдерами и внешними заинтересованными сторонами, увеличивая операционную эффективность за счет оптимизации затрат, повышая прозрачность управления и уменьшая возможность подверженности репутационным рискам.

КЛЮЧЕВЫЕ СЛОВА

Форензик, экономические преступления, финансовое расследование, экспертиза, корпоративное мошенничество, цифровая трансформация.

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ВКЛАД АВТОРОВ

Все авторы участвовали в разработке концепции исследования, сборе, обработке и анализе данных, написании текста рукописи, формулировке выводов.

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Авторы заявляют об отсутствии конфликта интересов.

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Авторы заявляют о том, что при написании данной статьи не применялись средства генеративного искусственного интеллекта.

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Introduction

During the globalization and increasing complexity of transactional activities of business entities, there is a tendency to escalate the scale and sophistication of illegal activities in the financial and economic sphere. Statistical data from the Ministry of Internal Affairs of the Russian Federation for 2024 indicate the recording of more than 65,000 economic crimes, a significant proportion (over 70%) of which belong to the category of grave and especially grave crimes. In addition, over 18,000 corruption offenses have been identified, which highlights the escalating nature of the problem. As a result of operational search measures and procedural actions, compensation for damages, the seizure of assets and the withdrawal of funds totaling more than 242 billion rubles were provided. It should be noted that these indicators reflect only verified cases, while latent crime in the economic sphere, especially in terms of intra-corporate fraud, poses a significant threat to economic security. Among the most common types of corporate fraud are such as misappropriation of assets, exploitation and use of company equipment for personal gain, collusion, falsification of documentation, dissemination and sale of insider information, etc. [1, p. 145].

The established paradigm of achieving corporate economic security, adopted as a basis, involves the implementation of several key aspects:

1. Risk management, which allows you to identify existing threats, assess the likelihood of their occurrence and the criticality of potential damage.
2. Ensuring effective implementation of internal control of department employees in the implementation of business processes.
3. Achieving a sustainable competitive advantage by strengthening market share and implementing technological innovations.

In order to achieve financial stability, implement these processes and combat the increased number of complicated fraudulent schemes, the method of applying specialized methods of forensic accounting, which is an interdisciplinary approach integrating knowledge in the field of financial accounting, auditing, jurisprudence, sociology and psychology of human behavior for the investigation and prevention of economic offenses, is becoming popular and significant [2, p. 3915]. The existing demand among the private sector for the use of this service is explained not only by preventing the risk of loss of income from opportunistic behavior and the detection of illegal

schemes among the company's management and staff, but also by the opportunity to demonstrate the attractiveness and financial stability of the company to potential investors.

However, the traditional methods used by forensics specialists do not show high results in the fight against modern fraudulent schemes implemented by people in the digital space. In this regard, there is a need to improve the existing approaches of forensic accounting in identifying illegal schemes for the withdrawal of assets from the company, manipulation of financial statements, and enrichment bypassing the legislation of the Russian Federation to effectively prevent economic crimes.

The purpose of this study is to analyze the methods of coercion used in modern practice, to identify their weaknesses, which will help develop a list of recommendations for updated methods of preventing economic crime using technological solutions to improve the effectiveness of coercion as a service provided to the private sector.

Solving the tasks set will be the basis for achieving the goal:

1. Specification of the subject and the object of the research of forensic accounting as a service provided to private business
2. Conducting a critical analysis of existing (traditional) methods of forecasting.
3. Identification of problems and limitations associated with the use of traditional methods of forensic accounting in modern conditions.
4. Drawing up a matrix of risks that arise for the corporate sector when using forensic accounting with existing restrictions.
5. Development of a set of scientific and practical recommendations for improving the methodology of forensic accounting based on the results obtained.

Given the vastness of the subject area of economic crimes, there are discrepancies in the definition of the concept of forensic accounting among domestic and foreign authors [3, p. 106]. This study will focus on the analysis of offenses that arise within the framework of business operations within an organization, and therefore the following definition is proposed:

A forensic accounting is an independent expert investigation of the facts of financial, economic, organizational or other activities of a company, carried out by engaged specialists in order to assess risks, identify facts of corporate fraud, personnel misconduct and corruption.

Currently, the provision of forensic services is mainly carried out by consulting and auditing organizations. There is a logical justification for this fact, since audit services by themselves are able to detect only a narrow range of economic crimes, which is associated with random verification in the audit, for this reason, larger-scale methods of uncovering economic crimes in the form of forensic accounting are becoming popular [4, p. 265].

Proactive implies a range of services provided by specialists in the form of:

- Financial investigation (disclosure of fraud facts, identification of vulnerabilities in the company's activities);
- Asset search (verification of the trustworthiness of legal entities and individuals; identification of facts of concealment or misappropriation of assets);
- Corporate intelligence (identification of the affiliation of the person being checked with other persons; reputation check);
- Identification of intentional bankruptcy (calculation of withdrawal schemes from the company);
- Internal investigation of incidents (diagnostics of procurement activity, employee fraud);
- Regulatory compliance analysis (internal corruption and ethics violations, insider trading and market manipulation);
- IT-proactive (collection and processing of information from electronic media to detect unauthorized use of confidential information);
- Countering money laundering (money laundering and terrorist financing), etc. [2, p. 3918; 5, p. 76].

In the Russian market, the relevant services are provided, in particular, by companies that were previously part of the «Big Four» (Kept, Trust Technologies, B1, DRT). At the same time, recently there has been a tendency to create specialized forensic accounting units in the structure of large corporations, which indicates an increasing demand for these services from the corporate sector.

Materials and methods

In the framework of this study, a set of interrelated scientific methods was used in the form of data analysis and synthesis, which were used to study and systematize theoretical material related to the problems of using forensic accounting, as well as comparison to identify the advantages and disadvantages of various methods of preventive measures.

Significant economic risk dictates the need for forensic accounting [6, p. 220]. For this examination, there is the following algorithm of actions:

1. Systematization of risks and fraud schemes. Identification and classification of typical organizational environment problems, typical scenarios and common fraud schemes relevant to the industry and type of activity under study.
2. Improvement of methods for detecting deliberate data distortion. Building upon existing protocols

for detecting deliberate data distortion, this study proposes refinements to the methodologies employed for identifying indications of intentional information manipulation. Furthermore, it advocates for a risk-informed approach to prioritize and narrow down salient threats, enabling more focused and effective subsequent investigation.

3. Simulation of fraud scenarios. Extrapolation of investigative technologies to business processes, that is, the development of models of likely fraud scenarios and methods for their detection and suppression.

When modeling fraud scenarios within an organization, it is advisable to take into account the specifics in different areas with an increased risk of committing illegal acts: production, sales, personnel management. Next, we will consider the specifics of the manifestation of risks in each of these areas.

1. Fraud in the field of production. It implies the implementation of illegal actions within the framework of the production process. One of the common schemes is the unjustified cancellation of a marriage or manipulation of classifiers and reference books to hide theft and abuse. Another example is the organization of a «parallel business», when a person who has influence on decision-making in a company redirects orders to a third-party organization under his control, obtaining personal benefits to the detriment of the interests of the company. Cases of the sale of unaccounted-for finished products and surplus raw materials through manipulation of production standards, distortion of accounting data, breakdown of control and measuring equipment are also common. Forensic accounting specialists identify areas of formation of unaccounted-for finished products and surplus materials by analyzing production and warehouse accounting data, comparing them with inventory results and video surveillance data.

2. Fraud in the field of sales. The main scheme is to sell products at low prices and receive hidden rewards from the buyer. This scheme can be implemented in various forms, including contract fraud: misrepresentation of expenses, violation of conflicts of interest, receiving rewards, etc. [7, p. 3]. Forensic accounting specialists analyze the terms of transactions, identify the facts of providing individual buyers and contractors with advantages that discriminate against the interests of the owner, compare prices with market prices and identify signs of price underestimation.

3. Fraud in the field of personnel management. Malfeasance within personnel management manifests in various guises. Common schemes encompass the unwarranted disbursement of bonuses, the fraudulent inflation of payrolls through the inclusion of fictitious employees (colloquially termed 'dead souls'), the artificial augmentation of expenses related to construction, installation, or repair projects, investment activities detrimental to shareholder value, and the execution of contracts under unfavorable conditions.

Forensic accountants detect such improprieties through meticulous scrutiny of staffing schedules, timekeeping records, payroll documentation, employment contracts, and other records substantiating financial interactions with personnel.

The effectiveness of an organization's internal control system is reduced if the authority to process transactions related to income or expenses is excessively concentrated in the hands of one individual or unit. In order to analyze the effectiveness of control procedures and identify potential vulnerabilities, forensic accounting experts use operational flowcharts that display the sequence of operations and the movement of documents between departments. With this method, it is possible to achieve a complete visualization of information flows, which makes it possible to identify inefficient or overlapping control points.

Currently, specialists engaged in forensics use a wide range of methods, which can be conditionally divided into three groups: audit, expert-analytical methods and specialized [8, p. 115].

1. Audit methods. This group of methods involves the use of standard audit procedures to identify anomalies and signs of fraud. Despite the controversial nature of traditional accounting methods, many authors identify them as a separate category of forensic accounting [9, p. 80]. These include:

- Accounting analysis: the study of the balance sheet, the statement of financial results (profit and loss) and the statement of cash flows in order to identify unusual trends, inconsistencies and deviations from established norms.

- Document verification: confirmation of authenticity, completeness and compliance of financial documents with accounting data. Examination of signatures, seals and other details of documents.

- Inventory: Comparing the availability and condition of an asset on the company's balance sheet with its physical ownership by the company.

2. Expert-analytical methods. A detailed and in-depth study of the company's financial performance, based on which a conclusion is drawn about the presence or absence of hidden patterns, deficiencies, evidence of fraudulent activities. Include:

- Analysis of financial coefficients: calculation and comparison of coefficients of current, fast, absolute liquidity, turnover, profitability, equity, financial independence, financial stability with regulatory or industry average values. The revealed deviations demonstrate the presence of weaknesses of the company, within which the risk of fraudulent transactions is possible.

- Time series analysis: the dynamics of changes in financial indicators over time allows you to see the transformations taking place and conclude about the presence or absence of unusual fluctuations, trends and anomalies, which may be signs of illegitimate ways of making a profit.

3. Specialized methods. This group of methods is specific to forensics and involves the use of unique techniques and techniques aimed at detecting and investigating fraud. Among them:

- Net Worth and Expense Methods: an assessment of a person's well-being based on an analysis of his assets, expenses and income over a certain period. A significant excess of expenses over income may indicate the presence of unaccounted-for sources of income obtained illegally.

- Asset Trackin: a method aimed at establishing the trajectory of assets (cash, property, etc.) from the initial source to the final beneficiary. This method allows you to identify complex money laundering and asset concealment schemes.

- Gross Profit Analysis: a method that allows you to identify manipulations with income and expenses by analyzing the dynamics of gross profit. This method is effective in investigating cases of skimming, when funds are withdrawn from a business before they are reflected in accounting.

- OSINT (Open Source Intelligence): a method of collecting and analyzing data about individuals involved in a company, that is, information intelligence using open data sources. It is applicable in the situation of establishing a digital footprint at the risk of fraudulent schemes.

- HUMINT (Human Intelligence): a method of intelligence, which is a psychological contact with a source of information, using methods of social engineering. Since the human factor is one of the most dangerous and unpredictable in the conduct of financial activities, the identification of prohibited actions and relationships is possible thanks to information received directly from a person, and not indirectly from documents compiled by him.

Despite the revealed relevance of the use of forensic accounting by companies, as well as the use of a huge number of interdisciplinary methods in this type of expertise, many researchers such as Shukhman [10, p. 229], Zlobova [11, p. 68], Kapriyan and Tolmacheva [12, p. 72] in their works raise the question of whether that there are currently certain difficulties in implementing this type of activity. The disadvantages under consideration limit the possibility of using this service, making it less flexible in an environment where fraudsters come up with increasingly sophisticated schemes to commit economic crimes. In their work, Kapriyan and Tolmacheva conclude that solutions to the problems raised are required in the context of the changed conditions of digital transformation. As Paradeeva, Volkova and Lyaskina emphasize in their work, the timely implementation of specialized programs in the field of security control and data protection makes it possible to minimize the risks of economic fraud [12, p. 228].

Results

An analysis of existing approaches to conducting surveillance allows us to identify a number of limitations that reduce the effectiveness of detecting and investigating economic crimes in modern conditions. The most significant are:

1. High labor intensity and significant time costs. Modern organizations generate huge amounts of data (Big Data), manual analysis of which using traditional methods becomes almost impossible and requires significant time resources.

2. Subjectivity of interpretation of results. The interpretation of the results of the analysis of financial ratios and the identification of abnormal trends in reporting largely depend on the experience and qualifications of a specialist. There is a risk of subjective assessment and missing important signals about fraud.

3. Limited effectiveness in detecting complex and well-disguised schemes. Traditional auditing methods may not be effective in identifying complex financial schemes involving offshore companies and complicated transactions.

4. Retrospective evaluation of the data. Auditing and mathematical analytical methods rely on working with data related to the past period. While the risks of detecting vulnerabilities in the company's business process exist and are changing in the present period. Focusing on the analysis of historical data can reduce the effectiveness of disclosing financial fraud in a company.

5. Low level of trust in the facts collected according to the system «from person to person». Specialized methods of surveillance involve building a dialogue with an informant who has information about existing fraudulent schemes against the company, using social engineering. However, for this, it is necessary to first draw up a reliable portrait of the informant in order to identify the levers of influence for obtaining the necessary information. There is a high risk of making mistakes in drawing up a portrait of the information source from a forensic specialist due to existing emotional beliefs or empathy.

6. Difficulty in detecting collusion. Most standard approaches are not effective enough against well-organized group frauds; as such schemes often involve coordinated actions by participants, masking the traces of a crime, and a well-thought-out system for allocating responsibility. Traditional methods of analysis are often focused on identifying individual violations, whereas collective criminal acts require a comprehensive approach that can identify connections between group members. In addition, participants in the conspiracy may intentionally create false trails, complicating the investigation process and making it difficult to establish the true motives and connections between the perpetrators. Finally, judicial practice shows that evidence of the guilt of individual members of a group is often insufficient to charge the entire group, especially if the scheme

is organized in such a way as to minimize the risks of exposing each participant separately.

7. Poor adaptation to financial fraud in the digital environment. Traditional approaches are insufficiently adapted to the use of digital means of data manipulation, they do not take into account the features of modern technologies, such as the ability to easily hide information in the digital space, imperceptibly change data and apply complex IT solutions to organize illegal actions. Criminals actively use encryption capabilities, anonymizers, and distributed networks to protect their activities, which significantly complicates the work of forensic specialists. For example, using cloud services allows you to store information outside the jurisdiction of a particular company, creating additional obstacles to its discovery and seizure.

8. The lack of a unified methodological framework for the implementation of financial and economic investigations in the form of law enforcement, regulated by the norms of national legislation.

9. Shortage of personnel. To conduct research, the group of persons providing forensic services may include lawyers, auditors, specialists in the field of corporate intelligence, as well as employees with specialized competencies that allow them to be experts in the type of activity that the client company of the service is engaged in. Thus, each of the group's specialists, in addition to the skills of their respective field, must have the competencies of a forensic specialist. This feature makes it much more difficult to find a staff.

These restrictions are prerequisites for the emergence of a number of risks for the corporate sector.

The listed risks indicate that it is unprofitable for the corporate sector for forensic as a service to remain with the old base of methods, without changing to the digital conditions of our time. Since in most cases this will lead to additional costs, reputational risks, and low efficiency in suppressing economic crimes.

Discussion

Risk analysis, while maintaining the situation in the same state, shows that traditional methods used in forensic accounting have certain weaknesses that increase the likelihood of economically unfavorable consequences for the company. Despite the existing limitations, the forensic accounting remains a competitive tool for detecting illegal and fraudulent actions within the framework of an organization's activities, allowing it to solve extremely important tasks using a variety of approaches based on the specifics of the industry of the company in question. [14, p. 49]. As a result, it is impractical for the corporate sector to abandon the use of preventive measures. In this regard, the issue of modernization of old methods becomes urgent. To achieve this goal, recommendations have been developed to improve the methods of forensic accounting based on the integration of modern technologies, ranked according to the degree of importance to the company:

Table 1 – Risk matrix for the company while maintaining restrictions on forensic accounting

The probability of risk occurrence	Degree of exposure to risk					
		Insignificant (1)	Minor (2)	Significant (3)	Major (4)	Critical (5)
	Almost certain (5)	Technological lag behind competitors (5)	Additional costs of lengthy court proceedings (10)	Regular withdrawal of assets from the company (15)	Inability to prove the attacker's guilt due to insufficient reliability of the collected evidence (20)	The financing of the forensic accounting department/ payment for the services of forensic specialists will exceed the benefits of the resulting economic effect from their activities (25)
	Likely (4)	Working with an unreliable counterparty (4)	Failure to detect real-time data manipulation (8)	Fines and sanctions from regulatory authorities due to violations of the law (12)	Risk of data distortion during internal audits (16)	Making serious mistakes in strategic planning, leading to missed opportunities and incorrect calculations (20)
	Moderate (3)	Difficulties in detecting and identifying cash withdrawal schemes (3)	Insufficient detail when analyzing a large amount of data, leading to the omission of important fraud signals (6)	Inability to respond to fraud signals in a timely manner (9)	Loss of potential investors (12)	Reputational risks of the company due to the negative information noise around fraudulent crimes that have occurred (15)
	Unlikely (2)	Duplication of functions of employees in different departments (2)	The inability to establish a relationship between the accomplices of a collective economic crime (4)	Data leakage and disclosure of confidential information (6)	Significant deterioration of relations with major clients of the company (8)	The difficulty in ensuring the safety and integrity of digital evidence of fraud (10)
Rare (1)	The need for additional costs for reanalysis due to the incompleteness of the initial analysis information (1)	Skipping highly specialized fraud schemes uncharacteristic of the company's industry (2)	Lack of qualified personnel to prevent economic crimes (3)	Reducing the level of corporate culture due to increasing internal unrest among employees due to increased distrust of them (4)	Complicity of low-level forensic specialists to fraudsters (5)	

Source: compiled by the author

– Development and implementation of systems based on artificial intelligence (AI) and machine learning (MO) for automated analysis of large amounts of data (cash flow, network traffic, file systems) in order to identify anomalies, suspicious activity and potential signs of incidents.

– The use of modern multifunctional media and social media monitoring systems to build interpersonal

relationships between the profiles of various users to identify and intersect contacts between company employees and external contractors. The use of such monitoring systems will help speed up the search for necessary digital evidence in the case of collusion, as well as the possibility of providing them when bringing a case to trial.

– Integration of augmented (AR) and virtual reality (VR) technologies to create interactive spaces for data visualization and simulation of incident scenarios, which will allow forensic specialists to improve their understanding of the production process, cash flow in the company and the relationships between departments. Forensic specialists will be able to see the full picture with all the features of the object under study, which will give a huge advantage when analyzing «bottlenecks».

– Using Data Analytics tools such as Power BI, Tableau, and others to create visual reports and charts, analyze key indicators, and identify anomalies. The transfer of reporting analysis to an automated system will allow specialists to focus on identifying violations in established patterns that may indicate the presence of fraudulent schemes.

– Using the blockchain system to record transactions in an immutable and transparent registry to track the movement of assets, as well as identify suspicious transactions. This innovation will be effectively used within the company's department dealing with the prevention of economic crimes, as it will prevent the transfer of data to third-party organizations and at the same time ensure the effective implementation of the control function.

– The use of AI to identify potential threats based on the analysis of historical data, user behavior patterns, information about vulnerabilities and external factors, as well as the preparation of predictive scenarios for the occurrence of economic crimes with a detailed action plan to prevent them.

– The problem of the lack of qualified personnel with knowledge of the profile and at the same time able to apply the methods used by forensic specialists can be solved by conducting specialized training sessions in augmented or virtual reality format. Practical cases developed by AI, that is, which did not actually take place, can become a good basis for training

personnel to solve non-standard tasks and search for intricate relationships.

The list of recommendations is not exhaustive and will continue to be updated as time passes. There is an urgent question that concerns the practical side of using modern technologies in conducting surveillance, namely, the problem of introducing new tools into the activities of individual companies providing services to forensic specialists, as well as within the work processes of departments for detecting economic crimes created within the company. This aspect should be considered in detail in order to avoid unjustified unnecessary costs for the corporate sector.

Thus, despite the emergence of an alternative to auditing of forensic accounting services, which provide a more in-depth analysis of the financial and economic activities of the company, preventing possible fraud risks [15, p. 3], the analysis revealed a growing need to improve the methods of forensic accounting due to the increasing complexity of economic crimes in the digital economy era. Traditional methods continue to be an important part of the arsenal of specialists, but they face limitations in terms of labor, accuracy, and the ability to identify complex patterns, which causes additional risks for business representatives. The areas of improvement proposed in the work, based on the integration of modern technologies, represent a promising way to increase the effectiveness of forensic accounting and ensure the economic security of organizations. Reducing fraud in the corporate sector minimizes information asymmetry between insiders and external investors, which increases confidence in corporate reporting; allows companies to optimize operating costs and reallocate resources in favor of innovation and productive investments; promotes management transparency, reducing conflicts between management and shareholders; reduces the likelihood of reputational risks for the company.

REFERENCES

- [1] Izvarina, N. Y., Klimina, K. V., Ryabova, Ya. A. (2020) Corporate fraud as a threat to the economic security of economic entities. *Journal of Economy and Business: theory and practice*. (4-1), pp. 145-147. <https://doi.org/10.24411/2411-0450-2020-10785>. <https://elibrary.ru/mfonex>.
- [2] Rastegaeva, F. S., Kamotskiy, A. V., Devyatova, M. S. (2022) Forensic as a method of combating corporate fraud. *Creative Economy*, 16 (10), pp. 3913-3922. <https://doi.org/10.18334/ce.16.10.116389>. <https://elibrary.ru/rzvyr>.
- [3] Shalina, O. I., Khazimuratova, A. A. (2023) Forensic: Features of the emergence and development of a new service. *Tomsk State University Journal of Economics*, (64), pp. 105-114. <https://doi.org/10.17223/19988648/64/8>. <https://elibrary.ru/dbsfid>.
- [4] Kalinina, I. N., Mezina, S. A., Vorotnikova, A. M. (2020) Forensic as a type of expert and analytical activity. *Natural sciences and humanities research*, 27 (1), pp. 264-269. <https://doi.org/10.24411/2309-4788-2020-00046>. <https://elibrary.ru/hjyknm>.
- [5] Gorodilov, M. A., Shklyayeva, N. A. (2018) Forensic in the framework of expert-analytical and auditing activities: a theoretical study of the concept. *Accounting. Analysis. Audit*, 5 (2), pp. 72-79. <https://doi.org/10.26794/2408-9303-2018-5-2-72-79>. <https://elibrary.ru/yvraop>.
- [6] Sokolov, I. S. (2020). The essence of the enforcer and its functional content in the internal control system of an economic entity. *Journal of Economy and Business*, Vol. 7, (65), pp. 219-222. <https://doi.org/10.24411/2411-0450-2020-10625>. <https://elibrary.ru/jczvzx>.
- [7] Yang, Ch. H., Lee, K. Ch. (2020) Developing a strategy map for forensic accounting with fraud risk management: An integrated balanced scorecard-based decision model. *Evaluation and program planning*, (80). <https://>

- doi.org/10.1016/j.evalprogplan.2020.101780. <https://elibrary.ru/wqavdv>.
- [8] Suyts, V. P., Anushevskiy, I. I. (2019). Forensic Accounting Examination – The Essence and Basic Methods of Financial Investigations Performance in Companies. *Moscow University Economic Bulletin*, (3), pp. 111–127. <https://elibrary.ru/lerwnv>.
- [9] Davydenko, I. G., Gazieva, P. V. (2023) Assessment of Forensic Demand in the Corporate Sector of the Regional Economy. *Theory and Practice of Social Development*, (4), pp. 78–83. <https://doi.org/10.24158/tipor.2023.4.10>. <https://elibrary.ru/qbcktr>.
- [10] Shukhman, M. E., Fokina, A. A. (2021) The essential characteristics of the forensic audit. *Collection of scientific papers of the series «Finance, accounting, audit»*, 2 (22), pp. 222–230. <https://doi.org/10.5281/zenodo.5502623>. <https://elibrary.ru/qkjivt>.
- [11] Zlobova, E. G., Shvyreva, O. I. (2016) Technology of forecasting: analytical procedures for checking income and expenses. *Problems and prospects of development of economic control and audit in Russia: collection of articles based on the materials of the VII All-Russian Scientific and Practical Conference of young Scientists*, pp. 61–69. <https://elibrary.ru/wiyomt>.
- [12] Kapriyan, Yu. V., Tolmacheva, I. V. (2021) Forensic as a means of ensuring financial stability of the state. *Siberian Financial School*, (3), pp. 69–72. <https://doi.org/10.34020/1993-4386-2021-3-69-72>. <https://elibrary.ru/nmayvo>.
- [13] Paradeeva, I. N., Volkova, A. N., Lyaskina, A. A. (2020) Forensic as a solution to the problem of fraud in Russia. *Bulletin of the Moscow Humanitarian and Economic Institute*, (2), pp. 219–229. <https://doi.org/10.37691/2311-5351-2020-0-2-219-229>. <https://elibrary.ru/tjmuoo>.
- [14] Kevorkova, Z. A. (2020) Methodological aspects of forensic control as a tool for detecting and preventing fraudulent actions in the activities of economic entities. *Proceedings of Voronezh State University. Series: Economics and Management*, (4), pp. 43–53. <https://doi.org/10.17308/econ.2020.4/3192>. <https://elibrary.ru/cgbmqg>.
- [15] Nursansiwi, D. A. (2024). The Role of Forensic Accounting in Detecting Financial Frauds. *Accounting Studies and Tax Journal (COUNT)*, (1), pp. 111–116. <https://doi.org/10.62207/brkz8497>. <https://elibrary.ru/qdysua>.