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LEGAL REGULATION OF ARTIFICIAL INTELLIGENCE APPLICATION IN ANTI-MONEY LAUNDERING: ANALYSIS OF INTERNATIONAL EXPERIENCE

The article presents a comprehensive examination of the legal aspects of artificial intelligence (AI) applications in anti-money laundering (AML) and counter-terrorism financing (CTF), drawing on an analysis of international experiences in legal regulation. Special attention is paid to the transformation of public perception of the problem following high-profile information leaks - the Panama Papers (2016) and Paradise Papers (2017), which became catalysts for the transition from relative tolerance of asset concealment schemes to active international counteraction to financial crimes. It has been proven that traditional financial monitoring methods are unable to effectively process millions of daily transactions, which necessitates the implementation of cutting-edge AI technologies, including machine learning algorithms (MLA), deep neural networks, and predictive analytics tools. The legal nature of AI in the financial context and its specific applications in AML monitoring systems are revealed. The evolution from an instrumental understanding of computer programs to the recognition of the special status of autonomous decision-making systems is traced. It is established that AI's ability to self-learn and form unpredictable conclusions creates new legal challenges, particularly regarding the attribution of responsibility, which are resolved through the distribution of obligations between technology developers and users.

International approaches to AI regulation in the AML/CFT sphere are analyzed. FATF recommendations that establish risk-based approach principles are examined. The European model based on the EU AI Act, which came into force on August 1, 2024, and classified AML systems as high-risk, is studied. The American model, characterized by flexibility through Financial Crimes Enforcement Network (FinCEN) initiatives, as well as regional practices, including initiatives by the Monetary Authority of Singapore and the Financial Conduct Authority of the United Kingdom, is characterized. Two dominant approaches are identified: the European (comprehensive and normatively detailed) and the American (more adaptive and practically oriented). It is concluded that the key problem remains the lack of international harmonization of legal standards, which creates fragmentation of the regulatory environment and complicates operations conducted by transnational financial institutions. The rationale for establishing unified principles at the global level through the activities of international organizations is argued, which will allow ensuring a balance between innovation and legal certainty in the field of AI application. Proposals for improving the legislative regulation of this sphere in Ukraine are substantiated, taking into account European standards and contemporary technological challenges.

Keywords*: artificial intelligence, anti-money laundering, AML systems, corruption, financial monitoring, legal regulation, EU AI Act, machine learning, regulatory supervision, algorithmic accountability.*

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Правове регулювання застосування штучного інтелекту у сфері протидії відмиванню коштів: аналіз міжнародного досвіду

У статті здійснено комплексне дослідження правових аспектів використання штучного інтелекту (ШІ) у сфері протидії відмиванню коштів та фінансуванню тероризму на основі аналізу міжнародної практики правового регулювання. Розглянуто трансформацію суспільного сприйняття проблеми після гучних інформаційних витоків – Панамських документів (2016) та «Райських паперів» (2017), які стали каталізаторами переходу від відносної толерантності до схем приховування активів до активної міжнародної протидії фінансовим

злочинам. Доведено, що класичні системи фінансового контролю не можуть належним чином опрацьовувати мільйони щоденних транзакцій, що зумовило впровадження новітніх технологій ШІ, зокрема алгоритмів машинного навчання, глибинних нейронних мереж та інструментів предиктивної аналітики. Розкрито правову природу ШІ у фінансовому контексті та специфіку його використання в системах AML-моніторингу. Простежено еволюцію від інструментального розуміння комп'ютерних програм до визнання особливого статусу автономних систем прийняття рішень. Встановлено, що здатність ШІ до самонавчання та формування непередбачуваних висновків породжує нові правові виклики, зокрема щодо атрибуції відповідальності, які вирішуються шляхом розподілу обов'язків між розробниками та користувачами технологій.

Проаналізовано міжнародні підходи до регулювання ШІ у сфері AML/CFT. Розглянуто рекомендації FATF, що закріплюють принципи ризик-орієнтованого підходу. Досліджено європейську модель на основі EU AI Act, який набув чинності 1 серпня 2024 року та визначив AML-системи як високоризикові. Охарактеризовано американську модель, що відзначається гнучкістю завдяки ініціативам FinCEN, а також регіональні практики, зокрема ініціативи Монетарного органу Сінгапуру та Управління фінансового нагляду Великої Британії. Виявлено два домінуючі підходи: європейський (комплексний і нормативно деталізований), та американський (більш адаптивний і практично орієнтований). Зроблено висновок, що ключовою проблемою залишається відсутність міжнародної гармонізації правових стандартів, що створює фрагментацію регуляторного середовища та ускладнює діяльність транснаціональних фінансових установ. Аргументовано доцільність формування уніфікованих принципів на глобальному рівні через діяльність міжнародних організацій, що дозволить забезпечити баланс між інноваціями та правовою визначеністю у сфері застосування ШІ. Обґрунтовано пропозиції щодо вдосконалення законодавчого врегулювання цієї сфери в Україні з урахуванням європейських стандартів та сучасних технологічних викликів.

***Ключові слова**: штучний інтелект, протидія відмиванню коштів, AML-системи, корупція, фінансовий моніторинг, правове регулювання, EU AI Act, машинне навчання, регуляторний нагляд, алгоритмічна відповідальність.*

Statement of the problem. The last decade has fundamentally changed public perception of corruption and money laundering, transforming these phenomena from latent offenses into central issues of public policy and lawmaking. Society no longer tolerates schemes for concealing assets and financial flows, which was particularly vividly demonstrated by public reaction to the publication of the Panama Papers in 2016 [1] and the Paradise Papers in 2017 [2]. The Panama Papers investigation allowed governments worldwide to recover over $1.2 billion, but the true value of these revelations lies not so much in financial revenues as in the fundamental change in public expectations regarding transparency of financial operations and government accountability [1].

Money laundering creates a necessary channel for legitimizing illegal proceeds from corruption, and therefore becomes the subject of separate legal regulation in the AML sphere. Corruption and money laundering exist in a complex symbiosis: the former creates illegal proceeds, the latter provides a mechanism for their legitimization [3]. This interconnectedness determines the need for a comprehensive legal approach, where effective detection of money laundering schemes becomes a tool for fighting corruption, not merely financial crime. The public demand for justice has transformed into legal standards that require the state not simply to declare a fight against corruption, but to create technologically advanced systems for its detection and prevention.

At the same time, traditional methods of detecting financial crimes have proven incapable of responding to modern challenges. Financial institutions process millions of transactions daily, among which detecting suspicious operations becomes an increasingly complex task. In this context, AI emerges as a revolutionary technology capable of transforming approaches to AML through the application of MLA, neural networks, and predictive analytics [4-6]. AI can analyze vast data arrays, identify hidden correlations, and predict potential risks with accuracy unattainable by traditional methods [7-9].

This social transformation prompted legislators to adopt revolutionary decisions in the field of AI regulation. The EU AI Act [10], which came into force on August 1, 2024, became the world's first comprehensive legal regulation of AI, directly affecting financial institutions and their AML systems. This landmark legislation classifies AI systems by risk levels and establishes strict requirements for ensuring transparency, security, and fairness. In parallel, the British regulator FCA published updates on AI in April 2024, outlining approaches to applying the existing regulatory framework to AI [11]. The issue of legal regulation of AI in the AML sphere has transformed from a futuristic concept into an urgent legislative necessity that requires immediate scientific comprehension and practical resolution.

The state of research on the problem. The issue of legal regulation of AI applications in AML is at the intersection of several scientific disciplines, which determines the interdisciplinary nature of research in this field.

In foreign scientific literature, the problems of AI application in AML systems are studied primarily within three main directions: technical aspects of implementing MLA for detecting suspicious transactions [12-14], legal challenges of automated decision-making in the financial sector, and ethical issues of AI use in compliance processes [15; 16]. Researchers pay particular attention to problems of ensuring transparency and explainability of algorithmic decisions, as well as issues of responsibility for errors in automated systems [17; 18].

In domestic scientific literature, AML regulation issues were considered mainly in the context of implementing European directives. Significant contributions to the study of legal foundations of financial monitoring in Ukraine were made by scholars V. R. Bila, V. V. Bondarchuk, M. S. Utkina, V. S. Ponomarenko, S. M. Kyrkach, I. V. Pleskun, O. I. Lozinska, and others, who analyzed the peculiarities of transposing EU AML directives into national legislation and studied the risk-based approach in the AML system [19-21]. Theoretical aspects of information technology application in legal regulation of financial activities also found reflection in domestic research [22; 23], although these works did not address the specifics of AI. Individual aspects of cybersecurity in the financial sector and protection of personal data in the financial sphere were also subjects of scientific analysis [24; 25].

At the same time, it should be noted that specialized studies of legal regulation of AI application in AML systems are practically absent in Ukrainian legal science, which emphasizes the novelty and relevance of the chosen subject matter.

The research aims to provide a comprehensive analysis of the legal aspects of AI application in AML systems based on international experience and to develop scientifically grounded proposals for improving the legislative regulation of this sphere in Ukraine, taking into account European standards and contemporary technological challenges.

Presentation of the main research material. The interpretation of the concept of AI in the financial context requires consideration of specific aspects of its application in the AML prevention and counteraction system. The European AI Act, which came into force on August 1, 2024, proposed a technologically neutral definition, according to which an AI system is interpreted as a machine system capable of functioning autonomously and adapting after deployment, generating results in the form of predictions or decisions [10]. In the field of financial monitoring, this definition acquires particular specificity, as AI systems not only process data but also perform analytical functions that traditionally belonged to humans: risk assessment, transaction classification, and decision-making regarding further actions concerning suspicious operations.

The specificity of AI applications in financial monitoring lies in its ability to detect complex behavioral patterns that may indicate money laundering. Unlike conventional software tools, AI systems use MLA that allows them to independently improve their performance based on the analysis of new data [26]. This includes the application of neural networks for recognizing anomalous transactions, using clustering algorithms for grouping similar operations, and applying predictive analytics to forecast potential risks [5; 20; 21]. Such functionality goes beyond the traditional understanding of a computer program as a set of predetermined instructions and approaches the concept of autonomous decision-making.

The issue of the legal status of AI algorithms in AML systems is one of the most debatable in contemporary legal science [27]. The traditional legal paradigm views computer programs exclusively as tools devoid of independent legal personality. However, the complexity of modern AI systems calls into question the adequacy of such an approach. MLAs are capable of making decisions that their creators cannot fully predict or explain, which creates a problem of responsibility attribution. In the AML context, this is particularly important, as erroneous AI system decisions can lead to blocking legitimate transactions or missing genuinely suspicious operations.

Contemporary legal doctrine leans toward an instrumental understanding of the legal status of AI algorithms, according to which responsibility for their functioning is assigned to system providers and deployers. The EU AI Act clearly delineates these roles and establishes different obligations for each category of subjects [10]. Providers are responsible for ensuring AI system compliance with established safety and efficiency standards, while users (in our case, financial institutions) bear responsibility for proper system application according to its intended purpose. Such an approach allows preserving the principle of legal certainty while recognizing the special nature of AI technologies.

However, the instrumental concept of AI legal status does not resolve all problems. Particularly complex is the issue of autonomous decisions made by AI systems without direct human intervention. In AML systems, such decisions may concern automatic account blocking or submission of suspicious operation reports to financial regulators. Although financial institutions formally bear responsibility, they may practically have limited

possibilities to control the AI system's decision-making process, especially in cases of using complex deep learning algorithms.

Comparison with traditional AML methods allows for a better understanding of the revolutionary nature of AI technology implementation in financial monitoring. Classical systems were based on rigidly programmed rules that established clear criteria for classifying transactions as suspicious. For example, an operation could be considered suspicious if its amount exceeded an established threshold or if it was conducted in a certain jurisdiction. Such systems provided a high level of predictability and control but had limited effectiveness in detecting complex money laundering schemes that did not fall under predetermined criteria. AI systems fundamentally change this paradigm, transitioning from rigid rules to flexible behavioral pattern analysis. Instead of searching for operations that meet specified criteria, AI analyzes the entire spectrum of a client's financial operations, identifying behavioral anomalies that may indicate money laundering attempts. This allows for the detection of complex, multi-stage schemes that could have remained unnoticed by traditional systems. At the same time, such flexibility creates new challenges for legal regulation, as decision-making criteria become less transparent and predictable [17].

The fundamental difference also lies in AI systems' ability for self-learning and adaptation [26]. Traditional AML systems remained static until their software updates by developers. AI systems, conversely, continuously improve their performance based on the analysis of new data, making them more effective in countering the evolution of money laundering methods. However, this also means that system behavior may change over time in ways that were not anticipated at the development stage, creating additional legal challenges regarding ensuring the stability and predictability of regulatory requirements. Such transformation requires a revision of traditional approaches to legal regulation of financial monitoring and the formation of a new paradigm that will consider the specific features of AI technologies while preserving the fundamental principles of legal certainty and protection of financial relations subjects' rights.

International Experience in AI Regulation in AML/CFT. International experience in legal regulation of AI use in AML and CTF demonstrates various approaches to balancing innovative technology development and ensuring effective supervision of financial operations. The Financial Action Task Force (FATF), in its guiding principles, has defined the basic foundations for using digital technologies within a risk-based approach. In the document «Digital Transformation and AML/CFT» [28] from 2021, FATF emphasizes the need to adapt traditional methods of detecting suspicious operations to conditions involving AI and ML. The organization establishes that financial institutions must ensure proper management of risks associated with AI use, including issues of algorithm transparency, accountability for decisions made, and the ability to provide explanations to regulatory authorities regarding the logic of automated system functioning.

The European approach to regulation is characterized by comprehensiveness and detailed legal norms. The EU AI Act [10], adopted in 2024, establishes a comprehensive legal framework for regulating AI systems in all economic sectors, including the financial sector. For systems used in financial institutions to detect fraud and money laundering, the regulation provides for their classification in the high-risk category, requiring mandatory conformity assessment, ensuring high levels of accuracy and reliability, maintaining detailed documentation, and implementing measures for risk management and minimizing algorithmic bias.

Parallel to the AI Act, the updated EU AML measures package of 2021 functions, which includes the sixth AML Directive [29] and Regulation (EU) 2024/1620 of May 31, 2024, on establishing the Anti-Money Laundering and Counter-Terrorism Financing Authority (AMLA) [30]. In 2021, the European Commission presented a proposal for a directive on mechanisms that member states should implement to prevent the use of the financial system for money laundering or terrorism financing purposes. The directive provides for the repeal of Directive (EU) 2015/849 and establishes new requirements for the use of automated technologies, including AI, to enhance the effectiveness of financial monitoring systems [31]. These regulatory acts encourage the use of innovative technologies to improve AML/CFT controls, require financial institutions to apply a risk-based approach using automated tools, and establish standards for information exchange between regulators. The Payment Services Directive 2 (PSD2) created additional legal opportunities for AI technology integration through open banking mechanisms, allowing data aggregation from various sources for more accurate risk profiling [32].

The American regulatory model is characterized by greater flexibility and focus on practical results. The FinCEN developed the «Innovation Hours» program, which provides consultations to financial institutions regarding the implementation of new technologies in AML processes [33]. The AML/CFT pilot program allows selected banks to experiment with alternative approaches to AML monitoring, including replacing traditional rule-based systems with AI algorithms [34]. FinCEN has also issued special recommendations regarding artificial

intelligence use, which emphasize the importance of proper AI model governance, ensuring auditability and explainability of decisions, as well as regular testing for bias and discrimination [35].

The Office of Foreign Assets Control (OFAC) established specific requirements for AI use in sanctions screening through the Compliance Commitment Framework, which defines standards for automated systems, requirements for accuracy in identifying sanctioned persons, and the necessity of maintaining a complete audit trail. Some American states have implemented «safe harbor» provisions for financial institutions using regulator-approved AI technologies, as well as created regulatory sandboxes for testing innovative AML solutions in a controlled environment with relaxed regulatory requirements [36].

The practical implementation of these legal norms demonstrates different models of regulatory supervision. Large international banks, such as HSBC, JPMorgan Chase, and Standard Chartered, have developed comprehensive ML systems for detecting suspicious operations under the supervision of respective regulators [37]. European institutions, including ING and Danske Bank, have implemented AI solutions in compliance with European data protection directives and AML requirements [38]. Fintech companies, such as Elliptic, ComplyAdvantage, and Quantexa, operate in various jurisdictions, adapting their technologies to local legal requirements [39].

Regional approaches also demonstrate diversity in legal regulation. The Monetary Authority of Singapore (MAS) launched the «Project Guardian» initiative to create legal frameworks for testing AI solutions in the digital assets sphere [40], while the Financial Conduct Authority of the United Kingdom (FCA) developed «TechSprint» programs for legal support of joint AI solution development by banks and fintech companies [41]. The main challenges for international harmonization of AI legal regulation in the AML/CFT sphere are the absence of unified international standards, which creates legal fragmentation and complicates the activities of international financial institutions. Discrepancies in personal data protection legislation between different jurisdictions, particularly between the General Data Protection Regulation (GDPR) in the EU [42] and other legal systems, create additional obstacles for information exchange and joint development of AI models. At the same time, there are prospects for further legal harmonization through the FATF, Financial Stability Board (FSB), and other international organizations' initiatives to create unified legal principles for AI use in the financial sector.

Conclusion. The study of legal regulation of artificial intelligence applications in AML systems demonstrates a fundamental transformation of approaches to financial monitoring under the influence of technological progress and growing public demands for transparency of financial operations. The public resonance from the disclosure of the Panama Papers and Paradise Papers catalyzed the transition from tolerant attitudes toward asset concealment schemes to active counteraction to corruption and money laundering, which was reflected in the adoption of revolutionary legal acts, particularly the EU AI Act. Analysis of the legal nature of AI in the financial context demonstrates evolution from the traditional instrumental understanding of computer programs to recognition of the special status of autonomous decision-making systems. The ability of AI algorithms for self-learning, adaptation, and making unpredictable decisions creates new legal challenges regarding attribution of responsibility, which contemporary doctrine resolves through the distribution of obligations between system developers and users.

Comparative analysis of international experience reveals two main regulatory approaches: the European approach, characterized by comprehensiveness and detailed legal norms through the AI Act and updated AML measures package, and the American approach, distinguished by flexibility and practical orientation through FinCEN programs and regulatory sandboxes. Both approaches emphasize the need to balance innovative development with effective supervision, but the European model prioritizes ex-ante regulation, while the American model focuses on outcomes. The key problem remains the absence of international harmonization of legal standards, which creates fragmentation of the regulatory field and complicates the activities of transnational financial institutions. Discrepancies between GDPR and other personal data protection systems additionally complicate the development and implementation of international AI solutions for AML monitoring.

For Ukraine, it is relevant to form its own legal model that will consider European standards in the context of European integration processes, while ensuring flexibility for adaptation to rapid technological development. This requires creating a special legal regime for AI systems in the financial sector, establishing clear responsibility criteria, and ensuring effective regulatory supervision of automated decision-making systems.

References

1. *The Panama Papers: The World Reacts*. (2016). OCCRP. Retrieved from https://www.occrp.org/en/ [in English].
2. *Paradise Papers*. (2016). OCCRP. Retrieved from https://www.occrp.org/en/ [in English].
3. Banakh, S. & Holota, N. (2025). Corruption as a Source of Funds for Money Laundering. *Legal Mechanisms of Counteraction. Actual Problems of Law, 2,* 215–221 [in English].

4. Teremetskyi, V., Kovalchuk, O., Kolesnikov, A., Udovenko, Z., Shramko, O. & Predmestnikov, O. (2023). Proactive Models for Information Support of the Judicial System. *Revista Brasileira de Direito*, *19(3),* Article e4975 [in English].
5. Yassine, S., Esghir, M. & Ibrihich, O. (2023). Using artificial intelligence tools in the judicial domain and the evaluation of their impact on the prediction of judgments. *Procedia Computer Science*, *220,* 1021-1026 [in English].
6. Orosz, T., Vagi, R., Csanyi, G. M., Nagy, D., Uveges, I., Vadasz, J. P. & Megyeri A. (2022). Evaluating Human versus Machine Learning Performance in a LegalTech Problem. *Applied Sciences*, *12 (1),* Article 297 [in English].
7. Automating injustice: The use of artificial intelligence & automated decision-making systems in criminal justice in Europe. Retrieved from ttps://policehumanrightsresources.org/automating-injustice-the-use-of-artificial-intelligence-automated-decision-making-systems-in-criminal-justice-in-europe [in English].
8. Tokarieva, K. S., Kovalchuk, O. Ya., Kolesnikov, A. P., Dzyurbel, A. D., Bodnar-Petrovska, O. B. & Predmestnikov, O. G. (2024). The Use of AI-Language Models in Judicial Proceedings: Information and Legal Aspects. *Revista Juridica Unicuritiba,* 2(78), 520-538 [in English].
9. Teremetskyi, V. I. & Kovalchuk, O. Ya. (2024). Artificial Intelligence as a Factor in the Digital Transformation of the Justice System. *Forum Prava*, *78(1),* 106-115 [in English].
10. EU AI Act: first regulation on artificial intelligence (2023). *European Parliament.* Retrieved from https://www.europarl.europa.eu/topics/en/article/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence [in English].
11. Regulators' strategic approaches to AI. (2024). Go UK. Retrieved from https://www.gov.uk/government/publications/regulators-strategic-approaches-to-ai [in English].
12. Poon, C.-H., Kwok, J., Chow, C. & Choi, J.-H. (2025). LineMVGNN: Anti-Money Laundering with Line-Graph-Assisted Multi-View Graph Neural Networks. *AI*, *6(4),* Article 69 [in English].
13. Masunda, M. & Barot, H. (2025). Disruption in Southern Africa's Money Laundering Activity by Artificial Intelligence Technologies. *Journal of Risk and Financial Management*, *18(8),* Article 441 [in English].
14. Ding, K., Gerhard, D. & Fan, L. (2025). AML-Based Multi-Dimensional Co-Evolution Approach Supported by Blockchain: Architecture Design and Case Study on Intelligent Production Lines for Industry 4.0. *Information*, *16(3)*, Article 243 [in English].
15. Kovalchuk, O., Kolesnikov, A., Proskurniak, I., Halunko, V. & Kovach, Y. (2024). Implementation of innovative information technologies in judicial proceedings: organizational and legal aspect. *Amazonia Investiga*, *13 (76),* 53-62 [in English].
16. Ramos, G. (2021). *Ethics of Artificial Intelligence. UNESCO.* Retrieved from https://www.unesco.org/en/artificial-intelligence/recommendation-ethics [in English].
17. Shirvanporzour, A. (2025, March). *Artificial intelligence in banking risk management and anti-money laundering: A comprehensive review*. Retrieved from https://doi.org/10.13140/RG.2.2.27192.25602 [in English].
18. Fox, S. & Victores, J. G. (2024). Safety of Human–Artificial Intelligence Systems: Applying Safety Science to Analyze Loopholes in Interactions between Human Organizations, Artificial Intelligence, and Individual People. *Informatics*, *11(2),* Article 36 [in English].
19. Bila, V. R. & Bondarchuk, V. V. (2025). Instytutsiina reforma systemy zapobihannia ta protydiyi legalizatsii (vidmyvanniu) dokhodiv, oderzhanikh zlochynnym shliakhom, finansuvanniu terozyzmu v Yevropeyskomu Soiuzi: vyklyky ta znachennia dlia Ukrainy [Institutional reform of the system for prevention and counteraction of money laundering and terrorist financing in the EU: challenges and significance for Ukraine]. *Yurydychnyi naukovyi elektronychnyi zhurnal - Legal Scientific Electronic Journal, 4,* 241-243 [in Ukrainian].
20. Utkina, M. S. (2023). Vprovadzhennia ryzyk-orientovanoho pidkhodu v systemi finansovoho monitoryngu Ukrainy [Implementation of a risk-based approach in the financial monitoring system of Ukraine]. *Aktualni problemy vitchyznianoi yurysprudentsii - Current issues in domestic jurisprudence, 2,* 127-133 [in Ukrainian].
21. Ponomarenko, V. S., Kyrkach, S. M., Pleskun, I. V. & Lozinska, O. I. (2020). Ryzyk-orientovanyi pidkhid u pervynnomu finansovomu monitoryngu bankiv [Risk-based approach in primary financial monitoring of banks]. *Financial and Credit Activity: Problems of Theory and Practice - Current Issues of Domestic Jurisprudence, 3(34)* 42-52 [in Ukrainian].
22. Sidor, M. I. (2023). Vplyv didzhytalizatsii na zdijsnennia finansovoho kontroliu [The impact of digitalization on the implementation of financial control]. *Yurydychnyi naukovyi elektronychnyi zhurnal - Legal Scientific Electronic Journal, 2,* 379-393 [in Ukrainian].

23. Shyshkina, O. V. (2023). Tsyfrovi tekhnolohii finansovykh ustanov: ryzyky i perspektyvy vykorystannia [Digital technologies of financial institutions: risks and prospects of use]. *The Actual Problems of Regional Economy Development, 2(19),* 130-143 [in Ukrainian].
24. Honcharenko, I. (2023). Kiberzahrozy finansovoho sektora v umovakh viiny [Cyber threats to the financial sector in wartime]. *Ekonomika ta suspilstvo - Economy and Society, 50* [in Ukrainian].
25. *Kiberbezpeka ta innovatsiynist finansovykh instrumentiv na birzhovomu rynku: materialy krugloho stolu (m. Kyiv, 30 lystopada 2023 r.): elektronn. nauk. vyd. [Cybersecurity and innovativeness of financial instruments in the stock market: round table materials (Kyiv, November 30, 2023): electronic scientific publication]* / Za nauk. red. O. V. Bezpalenko. Kyiv: VNZ «Kyivskyi universytet rynkovykh vidnosyn», 2023 [in Ukrainian].
26. Kovalchuk, O., Karpinski, M., Banakh, S., Kasianchuk, M., Shevchuk, R. & Zagorodna, N. (2023). Prediction Machine Learning Models on Propensity Convicts to Criminal Recidivism. *Information*, 14(3), Article 161 [in English].
27. Lendvai, G. F. & Gosztonyi, G. (2025). Algorithmic Bias as a Core Legal Dilemma in the Age of Artificial Intelligence: Conceptual Basis and the Current State of Regulation. *Laws*, *14(3),* Article 41 [in English].
28. Digital Transformation of AML/CFT. (2021). *FATF*. Retrieved from https://www.fatf-gafi.org/en [in English].
29. Directive (EU) 2024/1640 of the European Parliament and of the Council of 31 May 2024 on the mechanisms to be put in place by Member States for the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Directive (EU) 2019/1937, and amending and repealing Directive (EU) 2015/849. *EUR-Lex*. Retrieved from https://eur-lex.europa.eu/eli/dir/2024/1640/oj/eng [in English].
30. Regulation (EU) 2024/1620 of the European Parliament and of the Council of 31 May 2024 establishing the Authority for Anti-Money Laundering and Countering the Financing of Terrorism and amending Regulations (EU) No 1093/2010, (EU) No 1094/2010 and (EU) No 1095/2010. EUR-Lex. Retrieved from https://eur-lex.europa.eu/eli/reg [in English].
31. Proposal for a directive on the mechanisms to be put in place by the Member States for the prevention of the use of the financial system for the purposes of money laundering or terrorist financing and repealing Directive (EU) 2015/849 (2021). European Parliament. Retrieved from https://www.europarl.europa.eu [in English].
32. Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC. *EUR-Lex*. Retrieved from https://eur-lex.europa.eu/eli/dir/2015/2366/oj/eng [in English].
33. AML in 2025: How are AI, real-time monitoring, and global regulation are transforming compliance? (2025). *Moody's*. Retrieved from https://www.moodys.com [in English].
34. *Twelve-Month Pilot Program of Anti-Money Laundering and Combating the Financing of Terrorism (AML/CFT) Assessments-Joint Report on the Review of the Pilot Program* (2025). IMF. Retrieved from https://www.elibrary.imf.org [in English].
35. *FinCEN Alert on Fraud Schemes Involving Deepfake Media Targeting Financial Institutions* (2024). FinCEN. Retrieved from https://www.fincen.gov [in English].
36. *A Framework for OFAC Compliance Commitments* (2019). OFAC. Retrieved from https://ofac.treasury.gov [in English].
37. Calvery, J. *Harnessing the power of AI to fight financial crime* (2024). HSBC. Retrieved from https://www.hsbc.com [in English].
38. Johnson, B. M. (May, 2025). *Integrating Artificial Intelligence and Blockchain for Enhanced AML Compliance: A Cross-Jurisdictional Perspective*. Retrieved from https://www.researchgate.net/publication/391678501_Integrating_Artificial_Intelligence_and_Blockchain_for_Enhanced_AML_Compliance_A_Cross-Jurisdictional_Perspective [in English].
39. Top 10 Anti Money Laundering Software Companies Strengthening Fraud Detection Capabilities of Organizations Worldwide (2023). *Emergen*. Retrieved from https://www.emergenresearch.com [in English].
40. Guardian (2025). *Monetary Authority of Singapore.* Retrieved from https://www.mas.gov.sg [in English].
41. *Financial Inclusion TechSprint* (2024). FCA. Retrieved from https://www.fca.org.uk [in English].
42. Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation). *EUR-Lex*. Retrieved from https://eur-lex.europa.eu [in English]

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