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**STRATEGIC IMPERATIVES FOR STRENGTHENING CUSTOMS
CONTROL: ENHANCING EFFICIENCY AND EFFECTIVENESS IN
THE CONTEXT OF UKRAINE'S EUROPEAN INTEGRATION
СТРАТЕГІЧНІ ІМПЕРАТИВИ ПОСИЛЕННЯ МИТНОГО
КОНТРОЛЮ: ПІДВИЩЕННЯ ЕФЕКТИВНОСТІ ТА
РЕЗУЛЬТАТИВНОСТІ В УМОВАХ ЄВРОІНТЕГРАЦІЇ УКРАЇНИ**

***Summary.** Introduction. The current stage of development of Ukraine's customs system is defined by profound transformational processes driven by integration into the European legal and economic space. Amid the implementation of the European integration course, the issue of strengthening customs control gains particular relevance as a tool for ensuring the country's*

economic security, transparency of foreign economic activity, and compliance with international standards. Strategic imperatives for improving customs control focus on enhancing its efficiency, effectiveness, and alignment with sustainable development principles, requiring systemic reforms in management approaches, digitalization of procedures, and development of the human resources potential of customs authorities.

Purpose. The aim of the study is to scientifically substantiate the strategic imperatives and develop a set of practical recommendations for enhancing the institutional efficiency and operational effectiveness of customs control in Ukraine within the context of its European integration aspirations.

Materials and methods.. The research utilizes a comprehensive approach to analyzing the strategic foundations of customs control strengthening in Ukraine within the framework of the European integration vector. The main empirical base includes official statistical data of the State Customs Service of Ukraine, analytical reviews, reports of international organizations, as well as normative and legal acts of Ukraine and the EU. Methods applied to achieve the research objective include systemic analysis to generalize factors and directions for improving customs control; comparative legal method to identify differences and adaptation aspects in legislation; statistical methods for processing dynamic indicators of customs activity efficiency; and content analysis of documents to highlight strategic imperatives in customs administration and control.

Results. The article provides an in-depth analysis of the processes of strengthening customs control, particularly in the context of European integration changes in Ukraine. The primary conclusion is that reforming the customs system, its digitalization, and harmonization with European standards have contributed to increased transparency, efficiency, and effectiveness of customs procedures. It has been found that the introduction of modern technologies and management approaches has reduced corruption risks, accelerated cargo processing, and increased fiscal revenues. Moreover, these

changes have facilitated the approximations of Ukrainian customs policy with European practices, positively influencing the country's integration into the EU and enhancing its competitiveness in foreign markets.

Further research in this area. The prospects for developing Ukraine's customs system in the context of strengthening the efficiency and effectiveness of customs control under European integration are determined by preparation for the full accession of Ukraine to the EU single customs space by 2030. This entails further harmonization of customs legislation with the EU regulatory framework, including the adoption of a new Customs Code of Ukraine, which will be integrated with implementation subordinate acts according to European standards. A key focus is the development and implementation of modern IT systems ensuring unification and automation of customs procedures, as well as compatibility of Ukrainian systems with European platforms.

Key words: *customs control, efficiency, effectiveness, institutional capacity, risk management, European integration, customs security, modernization.*

Анотація. *Вступ. Сучасний етап розвитку митної системи України визначається глибокими трансформаційними процесами, зумовленими інтеграцією до європейського правового та економічного простору. В умовах реалізації євроінтеграційного курсу особливої актуальності набуває питання посилення митного контролю як інструменту забезпечення економічної безпеки держави, прозорості зовнішньоекономічної діяльності та дотримання міжнародних стандартів. Стратегічні імперативи вдосконалення митного контролю спрямовані на підвищення його ефективності, результативності та відповідності принципам сталого розвитку, що потребує системного реформування підходів до управління, цифровізації процедур і розвитку кадрового потенціалу митних органів.*

Мета. Метою дослідження наукове обґрунтування стратегічних імперативів та розробка комплексу практично орієнтованих рекомендацій щодо підвищення інституційної ефективності та операційної результативності митного контролю в Україні в контексті її євроінтеграційних прагнень.

Матеріали і методи. У дослідженні використано комплексний підхід до аналізу стратегічних засад посилення митного контролю в Україні в контексті реалізації євроінтеграційного вектору. Основною емпіричною базою слугували офіційні статистичні дані Державної митної служби України, аналітичні огляди, звіти міжнародних організацій, а також нормативно-правові акти України та ЄС. Для досягнення мети дослідження застосовувалися такі методи: системний аналіз для узагальнення чинників і напрямів удосконалення митного контролю; порівняльно-правовий метод для визначення відмінностей та адаптаційних аспектів у законодавстві; статистичні методи для обробки динамічних показників ефективності митної діяльності; контент-аналіз документів для виокремлення стратегічних імперативів у сферах митного адміністрування та контролю.

Результати. У статті здійснено глибокий аналіз процесів посилення митного контролю, зокрема у контексті євроінтеграційних змін в Україні. Основний висновок полягає у тому, що реформування митної системи, її цифровізація та гармонізація з європейськими стандартами сприяли підвищенню прозорості, ефективності та результативності митних процедур. Виявлено, що впровадження сучасних технологій і управлінських підходів дозволило зменшити корупційні ризики, пришвидшити обробку вантажів і збільшити фіскальні надходження. Крім того, зміни сприяли зближенню української митної політики з європейською, що позитивно впливає на інтеграцію країни до ЄС та підвищує її конкурентоспроможність на зовнішніх ринках.

Перспективи. Перспективи розвитку митної системи України у контексті посилення ефективності й результативності митного контролю в умовах євроінтеграції визначаються підготовкою до повного входження України до єдиного митного простору ЄС до 2030 року. Для цього передбачається подальша гармонізація митного законодавства з нормативною базою ЄС, зокрема ухвалення нового Митного кодексу України, який буде інтегрований з імплементаційними підзаконними актами за європейськими стандартами. Важливим напрямом є розвиток та впровадження сучасних ІТ-систем, що забезпечують уніфікацію та автоматизацію митних процедур, а також сумісність українських систем з європейськими платформами.

Ключові слова: митний контроль, ефективність, результативність, інституційна спроможність, управління ризиками, євроінтеграція, митна безпека, модернізація.

Statement of the problem. In the context of deepening European integration processes and ensuring the economic stability of the state, an effective and efficient customs control system acquires strategic importance for Ukraine. The functional role of customs control extends beyond its purely fiscal function (ensuring the inflow of customs revenues to the State Budget) and encompasses a wide range of tasks related to protecting national economic interests, ensuring external economic security, and facilitating legitimate international trade. High-quality customs control serves as a necessary prerequisite for creating a favorable investment climate and optimizing the movement of goods and vehicles across the customs border.

The functioning of the national customs system takes place under complex geopolitical challenges and the intensification of international trade relations, which require the continuous modernization of public administration mechanisms. Despite certain reforms, the effectiveness of customs control

remains constrained by a number of systemic dysfunctions, manifested in insufficient procedural transparency, significant time losses during customs clearance, and a considerable scale of customs legislation violations, including smuggling and tax evasion.

Particular relevance is gained by the improvement of organizational, legal, and technological aspects of customs control, especially the implementation of effective risk management systems and the harmonization of national customs legislation with the norms of the *acquis communautaire*. Although academic research pays considerable attention to certain elements of customs administration, the strategic imperatives and integrated instruments for enhancing the institutional efficiency of customs control remain insufficiently explored. These instruments should ensure a balanced approach between simplifying procedures for bona fide foreign economic operators and strengthening countermeasures against customs violations in the context of Ukraine's European integration.

Thus, there exists an objective necessity for scientific substantiation and the development of new vectors aimed at improving the efficiency and effectiveness of customs control, which constitutes the core research problem of this study.

Analysis of recent research and publications. The analysis of scientific sources demonstrates significant research interest in the issues of customs affairs; however, existing works show a fragmented nature and do not always correspond to the modern Eurointegration challenges faced by Ukraine. A substantial contribution to the theoretical and methodological foundations of customs policy and the fiscal function of customs control has been made by domestic scholars, including P. Afonin, I. Berezhniuk, O. Vakulchyk, L. Voronina, and others. Their works focus on the role of customs duties in state budget revenues, the legal basis for regulation of foreign economic activity, and the classification of types and forms of customs control.

Problematic aspects of the modernization and enhancement of the effectiveness of customs procedures, the application of Risk Management Systems (RMS), as well as the implementation of digital technologies were studied by such researchers as A. Voitsekhyuk, T. Yedinak, A. Berzan, and S. Voitov. Their works outline the advantages of applying customs post-audit as the least costly and most effective form of control (as you correctly noted); the use of non-invasive control methods (scanning); and the benefits of automation and integration of customs authorities' databases.

Studies dedicated to the harmonization of national customs legislation with the EU Customs Code (Union Customs Code) and best European practices are presented in the works of A. Vdovychenko, O. Dubinina, and Ye. Brydun. They focus on the introduction of the Authorized Economic Operator (AEO) institution; transition to a paperless customs model; and the formation of transparent mechanisms for appealing customs authorities' decisions.

Materials and methods. This study applies a multidisciplinary methodological framework combining general scientific, legal, and empirical research methods to comprehensively analyze the strategic imperatives of enhancing customs control in Ukraine during the European integration process.

The core materials of the research comprise official legislative and regulatory documents of Ukraine and the European Union, statistical data from the State Customs Service of Ukraine, analytical reports, and relevant scientific literature. This diverse source base ensures a robust foundation for the study.

Presentation of the main material of the research. The quality and effectiveness of implementing the state's customs policy in the sphere of foreign economic relations act as key determinants of macroeconomic stability, fiscal balance, and the gradual integration of Ukraine into the global economic space. Amid the intensification of globalization processes and the liberalization of international trade, the role of customs control as a systemic instrument for ensuring the legal regulation of foreign economic activity, minimizing risks of

violating customs legislation, protecting national economic interests, and creating favorable conditions for the functioning of the legal business sector is steadily increasing.

According to Part One of Article 7 of the Customs Code of Ukraine (hereinafter – CCU), customs affairs are understood as “the established procedures and conditions for the movement of goods across the customs border of Ukraine, their customs control and clearance, the application of tariff and non-tariff regulation mechanisms of foreign economic activity, collection of customs payments, maintenance of customs statistics, exchange of customs information, the management of the Ukrainian Classification of Goods of Foreign Economic Activity, exercise of state control over non-food products upon their import into the customs territory of Ukraine in accordance with the law, prevention and counteraction to smuggling, combating violations of customs rules, organization and provision of customs authorities’ activities, and other measures aimed at implementing state customs policy.” Within this framework, customs control occupies a pivotal role in the functioning of the national customs system.

Customs control serves as the fundamental element in the mechanism for implementing state customs policy, ensuring compliance with international and national customs law norms, establishing an effective regime for the movement of goods across the customs border, and contributing to the harmonization of the national customs system with international standards.

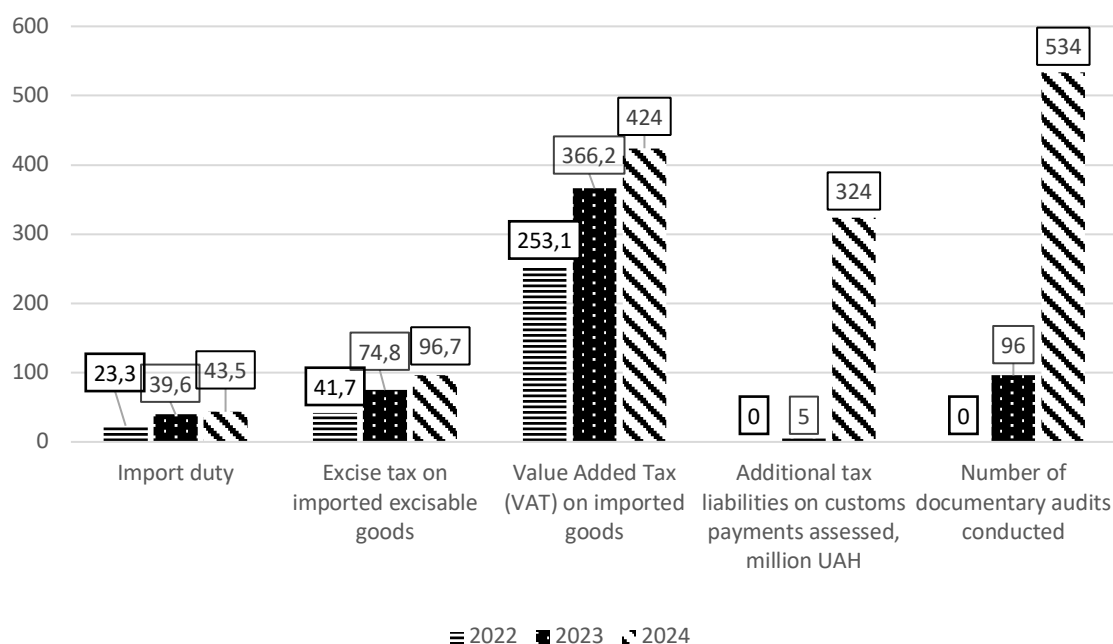


Fig. 1. Comparative dynamics of customs revenue inflows and results of customs audit in Ukraine for 2022–2024

Source: [15]

In 2022, there was a significant decline in customs revenue, reflecting a critical strain on the state’s fiscal system. The average level of planned revenue fulfillment amounted to less than 65%, which was a direct consequence of a sharp decrease in imports, reduced business activity among foreign economic operators, and the introduction of preferential import regimes for goods of critical necessity. These factors led to a temporary weakening of the control potential of customs authorities and a decrease in the overall effectiveness of state customs policy implementation.

In 2023: Stabilization and Recovery. The situation gradually stabilized due to the restoration of transport and logistics chains, the revival of business activity, and the strengthening of import control. Revenues increased to UAH 366.2 billion from VAT, UAH 74.8 billion from excise tax, and UAH 39.6 billion from import duties. The performance indicators approached full implementation (VAT — 92.7%, import duties — 112.5%). At the same time, the effectiveness of customs post-audit (i.e., inspections

conducted after the completion of customs clearance procedures) demonstrated positive dynamics. In 2023, 96 documentary audits were carried out, resulting in over UAH 5 million in additional tax assessments, which indicates the activation of the analytical function of the State Customs Service of Ukraine.

2024: Strengthening Analytical Capacity and Risk-Oriented Control. A particularly important indicator for assessing the qualitative effectiveness of customs control is the dynamics of customs post-audit (inspections conducted after the completion of customs clearance). The effectiveness of customs post-audit in 2024 demonstrates exponential growth. The additional assessments amounting to UAH 534 million (January–November 2024) exceeded the 2023 figure by more than 100 times. These results directly reflect the growing analytical and control capacity of the State Customs Service of Ukraine. This indicates the strengthening of the risk-oriented approach, the integration of data systems, and the digitalization of analytical monitoring processes, which together represent a strategic imperative in the context of harmonizing Ukraine’s customs system with EU standards [8].

Thus, the summarized empirical data and fiscal dynamics indicate a qualitative transformation in the functioning of the State Customs Service of Ukraine and its conceptual transition to the model of *Intelligent Customs Administration*.

This model is characterized by the following strategic features:
Priority of the risk-oriented approach:

The control procedures are based on the use of complex analytical risk assessment systems (RMS), which makes it possible to move away from total control and focus resources on high-risk operations [6].

Digital optimization: The use of automated selection of objects for documentary inspections and post-audit, which significantly increases objectivity and reduces the human factor.

Complexity of management: Ensuring a comprehensive approach to the administration of customs payments, which covers both customs clearance and subsequent control (post-audit).

This trend directly corresponds to the strategic guidelines of the EU Customs Code (UCC) in the field of fiscal security and contributes to enhancing the transparency, predictability, and institutional efficiency of the state customs policy.

Empirical results confirm that the synergy between the fiscal and control functions of customs authorities generates a stable multiplicative effect:

Growth of fiscal resilience: The positive dynamics of revenues from VAT, excise tax, and import duties indicate the restoration of Ukraine's fiscal stability under the conditions of a wartime economy, confirming the system's ability to adapt to critical challenges.

Increase in operational effectiveness: The exponential growth in the number of audit inspections and, critically, in the amounts additionally assessed (an increase of more than one hundredfold) demonstrates a significant reduction in violations of customs legislation and the minimization of budget losses, as well as the activation of the analytical potential of customs authorities.

Key conclusion: The modernization of the customs control system through the implementation of intelligent tools is not merely a tactical measure for increasing budget revenues, but a strategic imperative for achieving operational interoperability with European customs administrations [9].

Further enhancement of customs control efficiency and its harmonization with EU standards require not only the acknowledgment of quantitative growth in additional assessments (as demonstrated above), but also an in-depth structural analysis of the most risk-prone areas and the typology of systemic violations of customs legislation.

Such analysis is critically important for the proper calibration of the Risk Management System (RMS) and the targeted reorientation of control

mechanisms.

The results of documentary audits conducted by the State Customs Service of Ukraine make it possible to identify key dysfunctions and sources of fiscal losses.

The analysis of data obtained during documentary audits in 2025 revealed that systemic violations of customs legislation are concentrated around several main areas (Figure 2).

Key Identified Dysfunctions:

Non-compliance with customs regimes (54.1%) – This category represents the largest share of violations, directly indicating significant problems in the enforcement sphere and in the compliance of foreign economic activity (FEA) entities with the Customs Code requirements regarding the proper completion of customs procedures. It includes violations of time limits and conditions for the use of goods under transit, temporary import/export regimes, and others.

Improper use of tax exemptions (24.3%) – The second-largest group reflects the insufficient effectiveness of preventive control and, critically, the weak integration of customs information systems with tax authority databases, which enables unscrupulous entities to gain unjustified fiscal advantages.

Administrative and valuation violations (totaling up to 8.2%) – A smaller yet significant share includes incorrect determination of customs value (4.5%), errors in product classification according to the Ukrainian Classification of Goods for Foreign Economic Activity (UCGFEA) (2.8%), and incorrect calculation or non-payment of special duties (0.9%) [1].

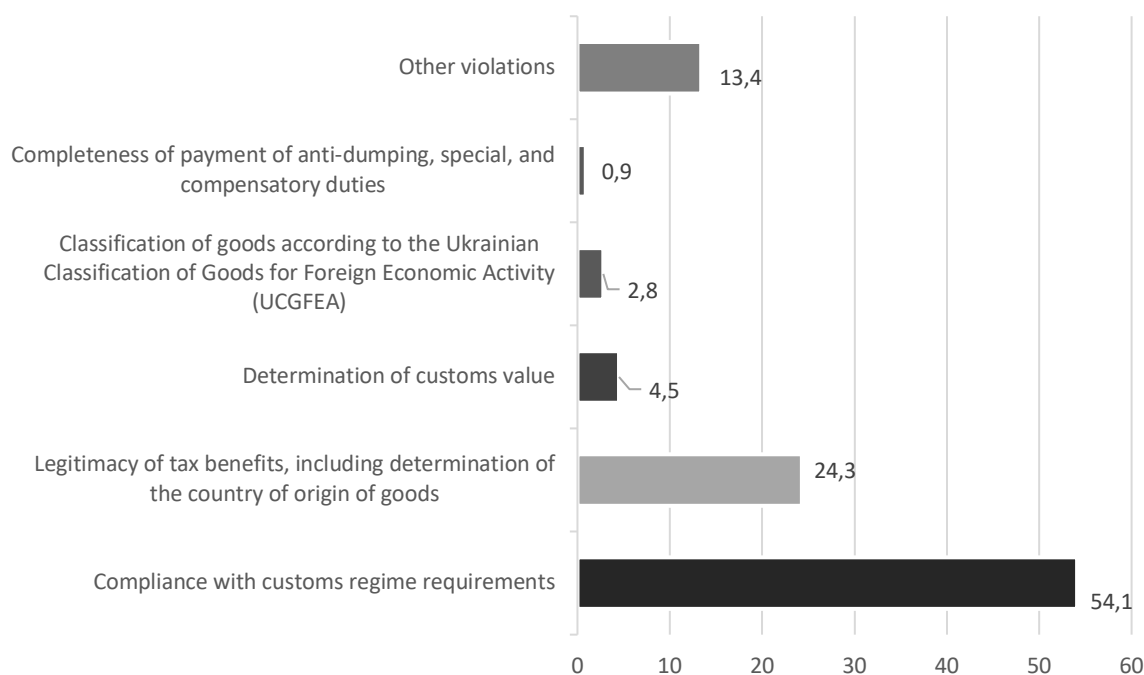


Fig. 2. Dynamics of systemic violations of customs legislation by main areas of activity

Source: [8]

Taken together, these indicators demonstrate the persistence of systemic problems in the administration of customs payments, which are caused by a low level of procedural automation, the need to strengthen analytical support, and the revision of regulatory and legal mechanisms.

The above distribution of violations clearly indicates that the main risks in the field of customs control are concentrated around:

- the correctness of the application of customs regimes (violations are long-term in nature and cannot be detected at the moment of clearance);
- the determination of taxation conditions and the legality of tax exemptions (which requires data verification with tax authorities) [3].

This, in turn, forms a strategic imperative for reorienting fiscal and control policy toward a significant strengthening of post-customs control (audit). Such an approach should be based exclusively on in-depth risk-oriented analysis, which constitutes a key principle of the EU Customs Code (UCC).

A structural concentration of violations has been identified in the areas of customs regimes and tax benefits, which forms a strategic imperative for deepening the intellectualization of customs administration.

In order to minimize the identified risks, it is advisable to implement the following directions for improvement:

Improvement of pre-audit analysis methods. It is necessary to integrate analytical monitoring systems and automated *red flag* detection modules in the behavior of foreign economic activity (FEA) participants. This will enable the effective differentiation between compliant and potentially non-compliant operators even before the initiation of physical or documentary inspections.

Enhancement of legal awareness among FEA participants. In parallel with strengthening control measures, it is essential to intensify explanatory and educational work with declarants. This aims to increase the level of voluntary compliance with tax and customs obligations, which is an important component of building partnership relations between the state and business (the *compliance* principle).

Under conditions of limited resources of customs authorities—particularly relevant during the period of martial law—enhancing control efficiency is possible only through the rationalization of human and technical resource utilization and the implementation of intelligent risk assessment systems.

The application of such mechanisms not only enhances the effectiveness of customs audits but also significantly optimizes administrative costs while simultaneously increasing the fiscal return from each inspection conducted [8]. This reflects the implementation of the principle of selectivity, which underlies the risk-oriented approach to customs control. Its fundamental essence lies in applying only those forms of control that are sufficient to ensure compliance with customs legislation, while minimizing interference in legitimate foreign economic activity (*trade facilitation*).

A key operational instrument for implementing this strategic approach is the Automated Risk Analysis and Management System (ARAMS). ARAMS is a comprehensive information and analytical system designed to:

Objective risk assessment is carried out at all stages of customs clearance and post-clearance audit [8].

It involves:

- the formation of risk profiles for specific goods, foreign economic operators, or transportation routes;
- the selection of optimal forms of customs control and determination of the need for detailed inspections based on automated risk level assessment.

The illustrated scheme reflects a logically consistent process of evaluating and applying customs risk indicators within the framework of risk analysis and management. It demonstrates the sequenced decision-making stages undertaken by customs authorities regarding the necessity and type of control to be applied, in accordance with the identified risk parameters.

The next step involves the selection of risk indicators that signal potential violations — i.e., identifying specific parameters with high diagnostic value for detecting high-risk operations. Following this, a comprehensive risk evaluation is conducted, taking into account practical application, which allows verification of indicator efficiency based on previous customs control outcomes.

A generalized scheme of this process is presented in Figure 3.

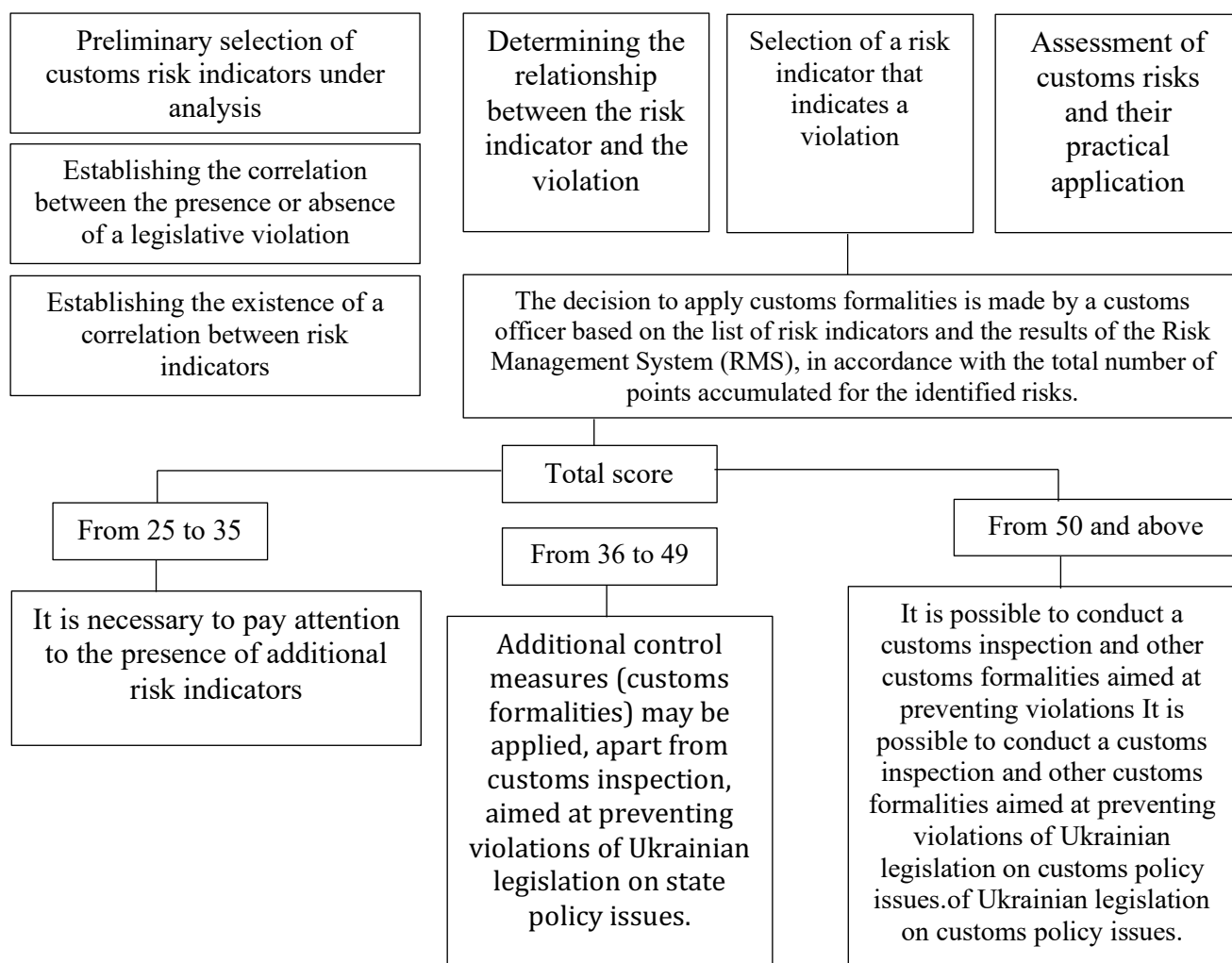


Fig. 3. Logical and sequential process of assessing and applying customs risk indicators during the analysis [14]

Source: [6; 14]

After establishing the existence of a correlation between risk indicators, a decision is made regarding the application of customs formalities. This decision is based on the number of points accumulated during the risk assessment process.

Thus, the presented scheme illustrates an integrated risk management system in the field of customs, built upon an analytical approach to the evaluation of risk indicators. Its implementation contributes to enhancing the effectiveness of customs control, ensuring the state's economic security, and optimizing the procedures for the movement of goods and vehicles across the customs border.

The implementation of the Automated Risk Analysis and Management System (ARAMS) has become a catalyst for the qualitative transformation of Ukraine's customs control model, initiating a transition from comprehensive to intelligent ("smart") control based on analytics, risk management, and a high level of automation.

This technological modernization has enabled the achievement of a dual strategic objective:

Trade Facilitation: Reducing customs clearance time and minimizing administrative pressure on compliant foreign economic operators.

Enhanced Control Function: Increasing the effectiveness of violation detection and improving fiscal returns.

Thus, the Risk Management System (RMS) serves as a key element of the modern Ukrainian customs administration model, optimally combining the fiscal and facilitation (service) functions of customs authorities.

Taking into account global experience, the introduction of automated risk management systems is a crucial factor in ensuring transparency, efficiency, and security of customs procedures. This approach not only enhances operational effectiveness but also creates the necessary conditions for simplifying legitimate foreign economic activity and harmonizing national customs policy with international standards.

A comparative analysis of foreign risk management systems indicates that the leading countries of the world are actively implementing comprehensive information and analytical solutions aimed at enhancing the efficiency of customs control. In particular, the RMS systems in the European Union and the ACE system in the United States demonstrate successful integration of technological data analysis tools, allowing for both high-speed information processing and greater accuracy in identifying risky operations. The application of such approaches ensures a balance between facilitating foreign economic activity and

strengthening the control function of customs authorities, serving as a benchmark for the further improvement of Ukraine's customs administration model [1].

Table 1

Comparative Characteristics of Risk Management Systems in the Field of Customs Control in Leading Countries

Country / Institution	System	Description and Strategic Objective
European Union (EU)	Risk Management System (RMS)	Enables customs authorities to automatically analyze data and assess risks based on multiple parameters (type of goods, country of origin, foreign trade history). The RMS provides differentiated control: shipments from Authorized Economic Operators (AEOs) with a high level of trust are processed under simplified procedures, while high-risk shipments undergo more thorough inspections. This approach optimizes resource allocation and reduces clearance time [2, p. 8].
United States of America (USA)	Automated Commercial Environment (ACE)	An integrated information and analytical system that consolidates data from declarations, manifests, and importer databases. ACE uses automated risk assessment algorithms to determine the necessity of inspection, significantly reducing administrative workload.

Source: [9]

Thus, the Risk Management System (RMS) is a key element of the modern Ukrainian model of customs administration, which optimally combines the fiscal and service (facilitation) functions of customs authorities. Taking into account international experience, the implementation of automated risk management systems is a crucial factor in ensuring transparency, efficiency, and security of customs procedures.

This approach contributes not only to enhancing operational performance but also to creating conditions for the simplification of legitimate foreign economic activities and the harmonization of national customs policy with international standards.

Considering global experience (RMS in the EU, ACE in the USA), Ukraine possesses significant potential for further qualitative improvement of its own Automated Risk Management System (ARMS).

Priority directions for the development of ARMS include:

Integration and Forecasting: Expansion of functionality through the integration of additional risk factors (for instance, data from tax authorities and banking institutions), as well as the improvement of forecasting algorithms aimed at strengthening the preventive component of customs control.

Innovative Technologies: Implementation of machine learning (ML) technologies and artificial intelligence (AI) elements. This will enable the creation of an adaptive system capable of responding promptly and autonomously to:

Changes in the global trade environment;

Challenges associated with the development of e-commerce;

Shifts in international sanctions regimes;

Emerging schemes of customs payment evasion.

However, as the analysis indicates, the effectiveness of the Automated Risk Management System (ARMS) depends not only on the level of technical sophistication or the complexity of its algorithms, but primarily on the human factor. It is the professional competence and training of customs officers that determine:

The quality of risk-based control implementation;

The accuracy of interpreting analytical results generated by the system;

The validity of final managerial decisions.

Therefore, the development of human capital constitutes one of the most important strategic imperatives for enhancing the institutional effectiveness of customs control in Ukraine [11].

At present, personnel issues remain among the most acute in the customs sphere, manifested in low remuneration levels, limited opportunities for professional growth, and an insufficient methodological training base. This creates an urgent need to attract qualified specialists capable of working with modern analytical tools and digital platforms.

The state should implement a comprehensive set of measures aimed at improving the qualifications of customs officers, in particular:

Systematic Training: Organization of regular training programs, workshops, and professional development courses on key topics such as risk management, customs auditing, and the practical application of the Automated Risk Management System (ARMS).

Interinstitutional Cooperation: Establishment of partnerships between customs authorities and higher education institutions for the training of professionals in public administration, international trade, and customs law.

Methodological Support: Provision of high-quality methodological, educational, and practical materials to customs officers for continuous professional development.

International experience confirms the relevance of this approach:

EU (Customs 2020 Programme): Development of a unified training portal for customs officials of EU Member States, covering courses on international customs law, risk assessment, and the use of automated systems [6].

Canada (CBSA): Implementation of the *Customs Officer Induction Program*, focused on risk management, protection of intellectual property rights, and the operation of more than thirty automated control systems, with particular attention to ethical standards and cooperation with businesses [9].

An important direction for improving Ukraine's customs policy is the integration with international customs systems, which will ensure prompt information exchange, strengthen control over the movement of goods, minimize risks of customs duty evasion, and enhance the state's economic security. Foreign practice confirms that such integrated systems significantly reduce corruption risks, enable the tracing of trade flows, and contribute to the development of a *digital customs environment* [4].

A striking example is the previously mentioned Automated Commercial Environment (ACE) program in the United States, which not only integrates

customs databases of various countries but also provides a single platform for risk analysis, declaration verification, and monitoring of international trade operations [12, p.170].

The use of such technological solutions can serve as a benchmark for Ukraine in the process of further modernization of the Automated Risk Management System (ARMS) and the formation of a next-generation intelligent customs system, oriented toward risk-based, analytical, and preventive control.

Within the World Customs Organization (WCO), the *Customs Enforcement Network (CEN)* program serves as a global platform for exchanging information on customs violations, smuggling schemes, and high-risk cargo.

An essential direction for enhancing the effectiveness of customs control in Ukraine is the active implementation of innovative approaches and technologies aimed at increasing transparency, speed, and security of customs procedures. The use of modern IT solutions, process automation, digitalization of document workflows, and analytical instruments reduces corruption risks, optimizes resource allocation, and creates favorable conditions for law-abiding participants in foreign economic activity.

The main directions of innovation in the field of customs control are summarized in Figure 4.

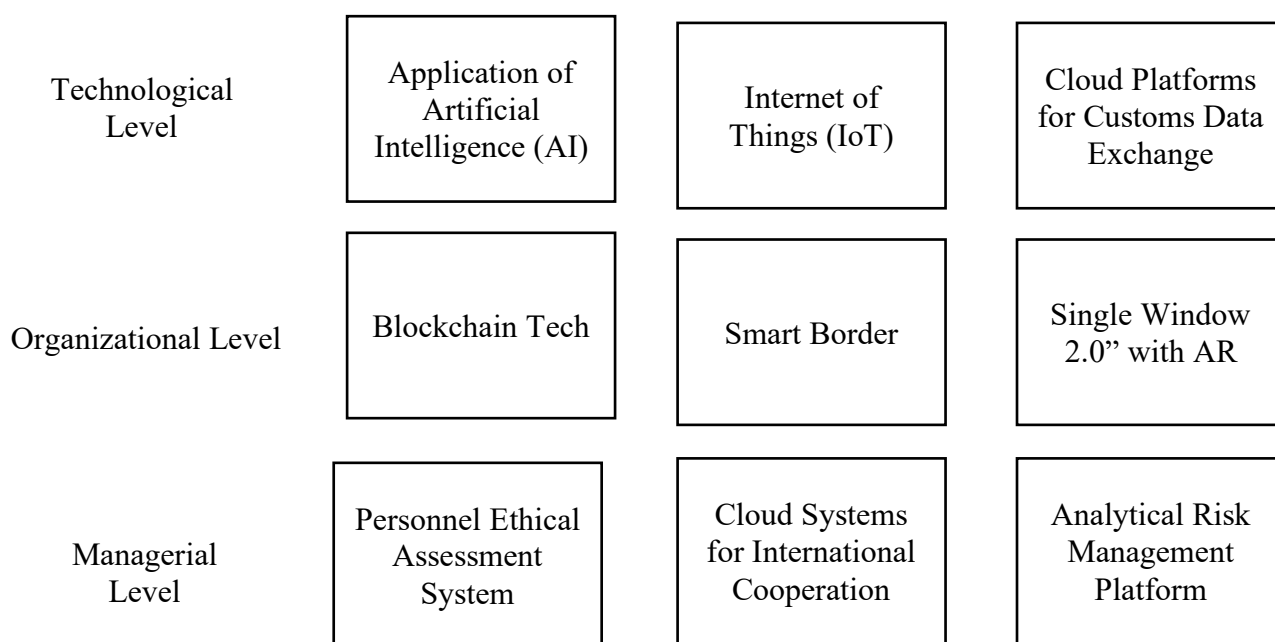


Fig. 4. Structure of innovative directions for the development of the customs control system by management levels

Source: [3]

Thus, the conducted research has scientifically substantiated the strategic imperatives for enhancing the institutional efficiency and operational performance of customs control in Ukraine, which serves as a key prerequisite for successful European integration.

1. Priority of intelligent administration: It has been proven that the effectiveness of customs policy directly correlates with the implementation of intelligent customs administration based on the Risk Management System (RMS). Empirical analysis has demonstrated an exponential increase in the effectiveness of post-customs audit (a more than 100-fold rise in additional assessments), confirming the strategic feasibility of shifting control from total to risk-oriented and post-factum approaches.

2. Risk imbalance: It has been identified that systemic violations are mainly concentrated in the areas of non-compliance with customs regimes (over 54%)

and improper use of tax benefits (over 24%). This necessitates deeper integration of the RMS with tax databases and the improvement of analytical algorithms.

3. The defining role of human capital: It has been established that the ultimate efficiency of high-tech systems (RMS) critically depends on the professional competence of personnel. Therefore, the development of human potential through systematic training and the harmonization of educational programs with international standards (as in the EU and Canada) is a key institutional imperative.

To achieve operational compatibility with EU customs administrations and minimize identified risks, within the framework of forming a modern risk management system, it is advisable to introduce a three-level innovative ecosystem of customs control: A–B–C.

A. Technological level (Instrumental base).

This level focuses on tools that ensure the digitalization of data collection, analysis, and exchange processes.

A. Technological Level (Instrumental Base)

This level concentrates on tools that ensure the digitalization of data collection, analysis, and exchange processes.

Tools: Artificial Intelligence (AI), Machine Learning (ML) for forecasting, the Internet of Things (IoT) for cargo monitoring, and cloud technologies (Cloud Computing) for data integration and real-time analytics, as well as data exchange platforms and blockchain technologies to ensure reliable transaction tracking. Result: Automated big data analysis (Big Data), improved accuracy of risk assessment, reduction in the number of physical inspections, and the provision of cryptographic transparency in customs procedures.

B. Organizational Level (Operational Interaction)

This level encompasses innovations aimed at improving interaction processes among foreign economic activity (FEA) participants and optimizing control procedures.

Concepts: "Smart Borders," an enhanced "Single Window 2.0" concept with potential elements of Augmented Reality (AR), and the use of blockchain in internal administration.

Result: Acceleration of cargo and passenger clearance processes, minimization of human factor influence through automation of routine procedures, and increased border throughput capacity, which is essential for facilitating international trade.

C. Managerial Level (Strategic Governance)

This level includes tools that provide analytical, strategic, and ethical management of customs activities.

Tools: Cloud-based international cooperation systems (for real-time data exchange with EU customs administrations), a risk management analytics platform (for data-driven decision making), and a system for ethical monitoring of personnel.

Result: Integration of information from various departments, provision of strategic management based on reliable data, and reduction of corruption risks through ethical monitoring, thereby increasing public trust in the customs service.

Thus, the implementation of the proposed innovative customs control system will enable Ukraine not only to enhance fiscal efficiency and control effectiveness but also to achieve full institutional and technological harmonization with the EU Customs Code (UCC), thereby solidifying Ukraine's position as a reliable and transparent participant in international trade [6].

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