

RESEARCH ARTICLE

An Analysis of The Operational Efficiency of Authorized Economic Operators in Uzbekistan

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Abstract

This article presents an empirical analysis of the development dynamics and operational efficiency of the Authorized Economic Operator (AEO) institution in Uzbekistan over the period 2021–2025. The study examines the growth rates of enterprises holding AEO status, their categorical distribution, and performance indicators disaggregated by customs lane (green, yellow, and red). The findings indicate that, while AEO status has significantly increased the share of green-lane processing in export operations, the yellow lane continues to predominate in import operations. The article systematically identifies the structural factors underlying this discrepancy, including carrier risk profiles, the mixed cargo effect, and the influence of risk management algorithms. The study concludes with policy recommendations aimed at enhancing the effectiveness of the AEO programme through the certification of logistics intermediaries and the improvement of risk-based control mechanisms.

KEY WORDS

Authorized economic operator (AEO), customs lane efficiency, green lane, risk management system, supply chain security, trade facilitation, mixed cargo risk, WCO SAFE, import, export.

INTRODUCTION

In the context of globalisation, ensuring the security of international supply chains while facilitating external economic activity represents one of the foremost priorities of customs administration. The Authorized Economic Operator (AEO) institution, established on the basis of the SAFE Framework of Standards recommended by the World Customs Organization [1], is widely regarded as one of the most effective mechanisms in this regard. Since its formal introduction in Uzbekistan in 2019, the programme has followed a trajectory of steady, if uneven, expansion.

The consistent growth in the number of enterprises holding AEO status is a positive development. Nevertheless, a discrepancy is observable between expected outcomes and

actual performance across certain indicators. While simplified procedures are applied at a high rate in export operations, customs control mechanisms remain comparatively active in import operations. This discrepancy warrants a more in-depth examination of the practical dimensions of AEO mechanisms.

The present study aims to analyse the development dynamics of the AEO programme in Uzbekistan over the period 2021–2025, to empirically examine the influence of categorical distribution (Categories I, II, and III) on the selection of customs lanes, and to identify the structural factors constraining the share of green-lane processing.

Specifically, this research analyses the distribution of customs

lanes for AEO-certified enterprises in Uzbekistan, distinguishing between import and export operations across the five-year study period. The analysis reveals that the customs risk management system takes into account not only an operator's compliance history, but also factors related to carriers, mixed cargo, commodity characteristics, and documentation — many of which are formed outside the operator's sphere of control. Accordingly, a comprehensive approach that extends beyond operator-level indicators to encompass the broader conditions of the supply chain in which certified entities operate is essential for evaluating AEO programme effectiveness.

LITERATURE REVIEW

The effectiveness of the Authorized Economic Operator (AEO) institution has been extensively studied in the international literature. Bachtiar and Inayati (2021) conducted a study analysing the practical effectiveness of AEO policy at the Tanjung Priok Customs and Excise Service Office in Indonesia, focusing primarily on the impact of the AEO programme within the framework of customs lanes (red, yellow, and green). Their findings demonstrated that clearance processes through the green lane were significantly accelerated for AEO-certified entities, resulting in a reduction in overall processing time. At the same time, instances of diversion to yellow and red lanes were associated with substantially higher time and cost burdens. The authors conclude that the AEO programme serves as an important instrument for simplifying customs procedures, while emphasising that its effectiveness is directly linked to the actual lane distribution and the institutional factors operating within the system [2].

In their article "The Changing Role of Customs: Customs Aligning with Supply Chain and Information Management," Heijmann, Tan, Rukanova, and Veenstra [3] analyse the contemporary transformation of the customs system, with particular attention to its integration with supply chain management and information technology. The authors examine the shift from traditional approaches to risk-based and differentiated control systems. The study substantiates the segmentation of customs controls into "green, yellow, and blue lanes," wherein the green lane represents minimal controls for trusted operators and the yellow lane embodies additional inspections aimed at ensuring supply chain security. The authors conclude that the effectiveness of the customs system is determined precisely by the maturity of risk-based

lane assignment and data-driven selection mechanisms.

Ostrikova (2022) [4] analyses the legal nature of the AEO institution and its formation across different legal systems. The author examines the AEO institution as a complex system formed at the intersection of customs law, administrative, financial, and private law. The study substantiates that the core concept of AEO is grounded in ensuring supply chain security through trusted operators and delegating a portion of state oversight to business entities. The author concludes that the effectiveness of the AEO programme manifests differently across countries, a variation explained by differences in national legal systems and institutions. In this regard, the study demonstrates that simplified procedures and control mechanisms under the AEO framework — including the risk-based lane system — may function differently in each jurisdiction.

While the international literature addresses the theoretical and institutional dimensions of the AEO institution, this institution in Uzbekistan is regulated through specific normative legal instruments. In particular, the Customs Code of the Republic of Uzbekistan [5] defines an authorized economic operator as a trusted participant in foreign economic activity who meets the criteria established by customs authorities and is entitled to use simplified customs procedures. The Code stipulates that customs control is carried out on the basis of a risk management system, within which the identification and application of risk profiles is regulated by customs authorities.

These norms have been further developed by the Resolution of the Cabinet of Ministers [6], which specifies the procedure for granting AEO status, the system of requirements, and the practical mechanisms for simplification. Pursuant to the Resolution, AEO entities are provided with simplified forms of customs control, the option to defer payment of customs duties, the ability to store goods in their own warehouses, and the possibility of expedited clearance processes.

Under the legislation of the Republic of Uzbekistan, customs control is carried out through four distinct lanes on the basis of a risk management system:

The green lane applies to goods and means of transport assessed as low-risk. Under this lane, goods are processed automatically and are not subject to specific forms of customs control (post-release control being an exception).

The yellow lane applies to goods and means of transport with

a medium risk level or identified through random selection. Controls under this lane take the form of verification of the customs declaration, documents, and associated data.

The red lane applies to goods and means of transport classified as high-risk or identified through random selection. Under this lane, one or more forms of customs control are applied, including physical inspection.

The blue lane applies to goods of medium risk or identified through random selection, under which control measures are carried out after the release of goods.

This system has been introduced with the aims of incentivising bona fide participants in foreign economic activity, reducing the time devoted to customs clearance and processing, and improving the effectiveness of enforcement prevention.

In general, the existing literature confirms that the AEO programme generates measurable benefits under favourable conditions. However, the realisation of these benefits depends on factors operating at multiple levels, including the degree of logistics partnership, commodity characteristics, and the architecture of the systemic risk management framework.

METHODOLOGY

This study employs a methodology that combines quantitative and qualitative approaches for the purpose of evaluating the effectiveness of the AEO system in the Republic of Uzbekistan. The research design comprises several interrelated stages encompassing empirical analysis and conceptual generalisation.

The study draws on official statistical data from the Customs Committee of the Republic of Uzbekistan covering the period 2021–2025. The objects of analysis are the dynamics of the number of enterprises awarded AEO status, their categorical

distribution (Categories I, II, and III), and the distribution of customs lanes (green, yellow, and red) disaggregated by import and export operations. Dynamic series analysis and cumulative growth indicators were computed to identify development trends in the AEO system. A comparative analysis method was applied to detect differences in customs lane distribution between import and export operations.

Within the analytical framework, factors were grouped into five principal categories: the risk profiles of carrier entities; the characteristics of mixed cargoes; the HS code and country of origin of goods; document quality and value-related discrepancies; and the practical algorithms of the risk management system.

On the basis of the empirical findings, a conceptual model was developed aimed at improving the AEO system. The model substantiates the necessity of applying a trust-based approach not only at the operator level but across the entire supply chain. In particular, it proposes extending the risk management mechanism through the accreditation of carriers.

Data analysis and interpretation employed modern visualisation tools, including donut charts, horizontal bar charts, and time series graphs. The calculations were aimed at identifying the relationship between the volume of customs declarations and risk-related signals. All computations were performed using the pandas library in Python; visualisations were prepared with matplotlib.

RESULTS AND DISCUSSION

Since its formal introduction in 2019, the AEO programme in Uzbekistan has followed a trajectory of steady, if uneven, expansion. Table 1 presents annual certification figures and cumulative totals for the period 2021–2025.

Table 1. Dynamics of AEO-Certified Enterprises in Uzbekistan, 2021–2025

Indicator	2021	2022	2023	2024	2025
Number of newly certified enterprises	11	17	8	10	50
Total (cumulative) AEO-certified enterprises	11	28	36	46	96
Growth rate (vs. previous year, %)	—	+154%	–29%	+25%	+109%

Source: Customs Committee of the Republic of Uzbekistan; compiled by the author.

As shown in Table 1, certifications declined to eight enterprises in 2023 - a brief pause following the growth

observed in 2021–2022. This temporary decrease is assessed as reflecting a tightening of evaluation standards rather than a waning of interest in the programme. The subsequent results for 2024 (+25%) and, particularly, 2025 (+109%, with 50 new certificates) indicate that the programme has entered a phase of rapid dissemination. The cumulative total of 96 certified operators by the end of 2025 represents a substantial

increase relative to the 11 operators recorded in 2021.

In Uzbekistan, AEO status is divided into four categories differentiated by the scope and stringency of compliance requirements. Table 2 presents the categorical distribution as of 2025.

Table 2. Categorical Distribution of AEO-Certified Enterprises, 2025

AEO Category	No. of Enterprises	Share (%)	Characteristics
Category I	57	59.8%	Enterprises meeting basic compliance requirements; most widespread category
Categories I & II	25	26.2%	Operators applying extended security requirements
Category II	9	9.3%	Entities meeting high reliability and security criteria
Category III	5	4.7%	Operators achieving the highest level of compliance
TOTAL	96	100%	

Source: Customs Committee of the Republic of Uzbekistan; compiled by the author.

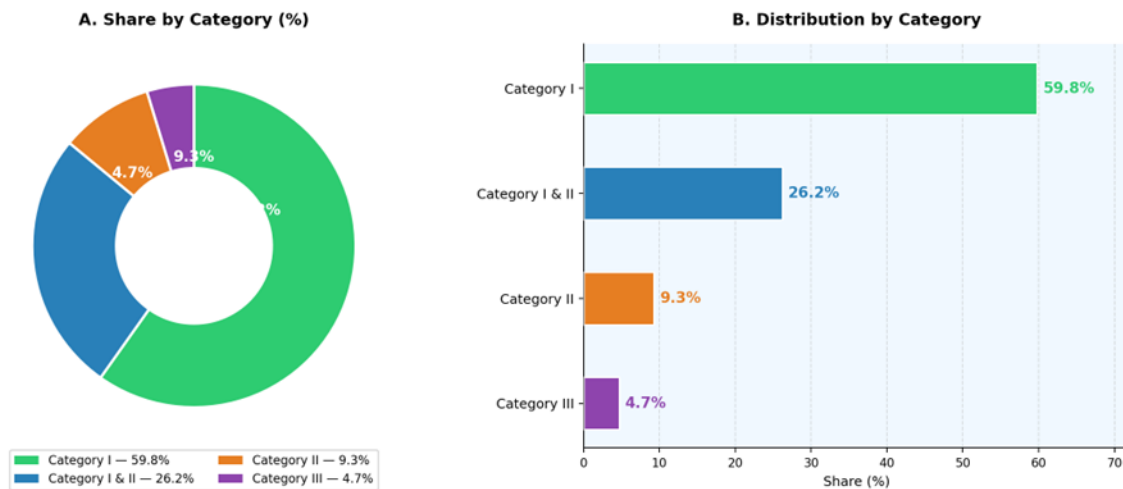


Figure 2. Distribution by Category: Share (%) and Absolute Number, 2025

Category I accounts for the largest share at 59.8%, reflecting both the accessibility of initial certification requirements and the broad practical applicability of the programme. The 26.2% share of enterprises operating under a combined Category I and II status represents operators who have voluntarily progressed to higher standards and are more deeply integrated in their relationship with customs authorities. The

higher categories (Categories II and III combined at 14%) constitute a small but strategically significant group of operators that have achieved the highest levels of compliance. The pyramidal structure is consistent with a well-functioning incentive architecture: operators enter at the lower category and face a positive economic incentive to advance to higher categories over time.

Figure 3 presents the annual distribution of green (G), yellow (Y), and red (R) lane shares for import and export operations

separately over the study period.

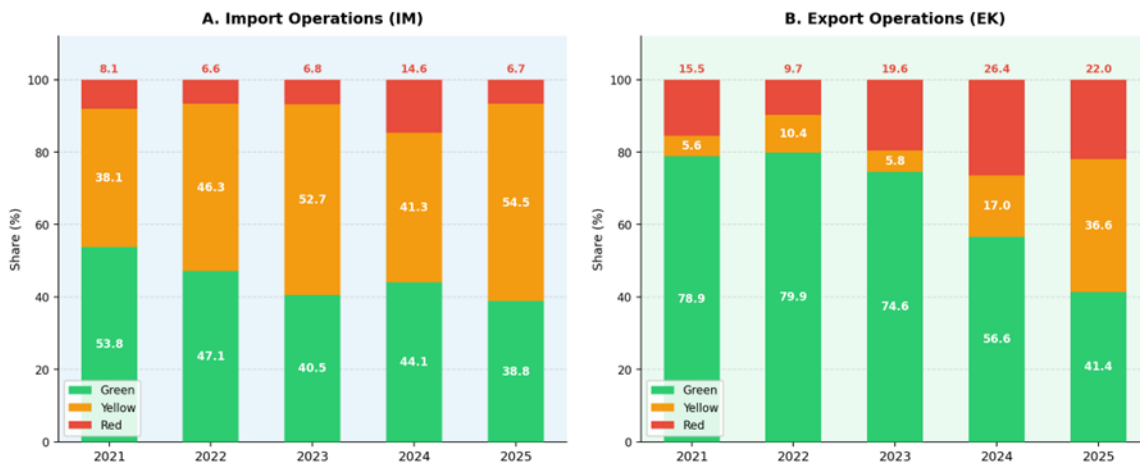


Figure 3. Distribution of Customs Lanes in Import (Panel A) and Export (Panel B) Operations, 2021–2025

Note: Calculated by the author on the basis of Customs Committee data.

Export operations exhibited a considerably more favourable lane profile than import operations throughout the observation period. During 2021–2023, the green lane share consistently exceeded 74 per cent, reaching a peak of 79.9 per cent in 2022. This constitutes significant empirical evidence confirming that AEO status produces practically and economically measurable benefits in export operations. From 2024 onwards, the green lane share declined sharply — to 56.6 per cent in 2024 and 41.4 per cent in 2025 — while the red lane share rose correspondingly to 26.4 and 22.0 per cent, respectively. This shift coincided with a significant increase in annual export declaration volumes, from 5,000–6,000 in 2021–2023 to over 12,000 in 2024. As export volumes expand, new carriers and markets are being engaged whose risk profiles are assessed as higher in the initial phase.

Import operations exhibit a structurally distinct lane pattern: the yellow lane has consistently predominated across all five

years, ranging from 38.1 to 54.5 per cent. The green lane share declined gradually from 53.8 per cent in 2021 to 38.8 per cent in 2025. The red lane share remained relatively low (6.7–14.6 per cent), with a transient increase in 2024 partially reversed in 2025. While the low red lane share may be regarded as a positive development, the persistently elevated yellow lane share indicates a prevailing preference for cautious application of customs control mechanisms in practice.

The lane distribution findings, particularly the below-expected green lane share in import operations, prompt a systematic investigation of the factors constraining the realisation of AEO facilitation benefits. In accordance with the Customs Code of the Republic of Uzbekistan, lane assignment is based not solely on the declarant's AEO status, but on a composite set of risk indicators and profiles. Table 3 presents a systematic classification of these factors across five categories.

Table 3. Classification of Systemic Factors Constraining the Green Lane Share for AEO-Certified Enterprises

Factor Category	Mechanism	Practical Manifestation
Carrier risk profile	The customs history and reliability of the carrier company are assessed independently of the declarant	If an AEO-certified enterprise's goods are transported by a low-reliability carrier, the entire consignment may be subjected to inspection
Mixed cargo effect	Risk profiles of all parties sharing a single transport unit are aggregated	High-risk cargo from another party may redirect an AEO-certified enterprise's goods to the yellow or red lane

Factor Category	Mechanism	Practical Manifestation
Goods HS code and country of origin	Dual-use goods, specially controlled categories, and high-risk countries generate independent risk signals	Even certified operators cannot fully neutralize commodity-level risk indicators through their AEO status alone
Document quality and valuation anomalies	Discrepancies in declared value, tariff classification, or mandatory certificates	Such discrepancies elevate the inspection level regardless of the declarant's AEO status
Risk management algorithm updates	Risk indicators are periodically recalibrated, affecting all operators	Systemic changes alter the lane distribution of all operators, including AEO-certified entities

Source: Compiled by the author.

The practical effect of these factors may be illustrated as follows: an AEO-certified importer selects a carrier with an average risk profile for cost optimisation purposes. Notwithstanding the operator's high level of compliance, the aggregated risk signals associated with the carrier's profile, the commodity category, and the country of origin may redirect the consignment to a higher-scrutiny lane. Consequently, AEO status does not fully neutralise risks that have been formed at the logistics chain level. This structural mismatch between the operator-level AEO model and the risk management system operating at the supply chain level constitutes the principal systemic explanation for the dominance of the yellow lane in import operations. This implies that enhancing the effectiveness of the AEO programme requires institutional reforms that extend the logic of trusted partnership to logistics intermediaries — most importantly, to carriers.

On the basis of the empirical analysis and the factor classification presented above, the following reform directions are identified:

- Establishing a registry of trusted carriers based on their compliance history, technical capabilities, and traceability levels would enable customs authorities to more accurately assess risk levels for operators and create conditions for the selection of reliable logistics partners.
- Developing a procedure for the separate assessment of consignments belonging to AEO-certified operators — distinct from those of other parties — would mitigate the adverse effects associated with mixed cargoes.
- Expanding pre-arrival risk assessment: developing an advance electronic data submission system would enable the

integration of AEO status into the risk calculation process prior to arrival, thereby reducing the number of inspections arising from documentation deficiencies.

- Strengthening category-based lane guarantees: introducing minimum guaranteed green lane shares corresponding to the respective category for higher-category (II and III) operators would enhance the incentive to advance within the certification hierarchy.
- Conducting regular analysis of lane distribution for each certified operator and implementing targeted support measures as necessary would contribute to improving overall system effectiveness.

CONCLUSION

The analysis of the development dynamics of the Authorized Economic Operator (AEO) institution in the Republic of Uzbekistan over the period 2021–2025 has yielded a number of significant conclusions. First, the AEO programme demonstrated substantial quantitative growth during this period. The consistent increase in the number of operators and, in particular, the acceleration of the certification process in the most recent phase attest to the growing practical significance of this institution. At the same time, the fact that the majority of operators remain in the lower category indicates the existence of opportunities to further incentivise progression to higher levels of compliance within the system.

The analysis of customs lane distribution confirmed that AEO status is being applied effectively in export operations, with a high share of simplified procedures. However, control mechanisms remain comparatively active in import operations. This discrepancy reflects the presence of a differential

approach in the application of customs procedures and indicates that the practical outcomes of AEO benefits vary depending on the type of operation.

The analysis further demonstrates that customs lane distribution is not determined solely by the operator's level of trustworthiness. On the contrary, factors such as the risk profiles of carrier entities, the composition of mixed cargoes, and the characteristics of the goods in question play a significant role. As a result, risk factors formed at the logistics chain level are not fully neutralised through AEO status. The scientific contribution of the present study lies in extending the analysis of AEO effectiveness beyond the operator level to encompass the supply chain level.

On this basis, enhancing the effectiveness of the AEO programme requires the extension of the trust-based approach. In particular, developing mechanisms for the assessment and regulation of carriers and other logistics intermediaries, as well as applying differentiated control to mixed cargoes, are identified as important directions for the improvement of customs administration. The AEO institution in Uzbekistan is transitioning from a formative stage to a stage of qualitative development. In this process, improving institutional mechanisms will serve to further accelerate customs clearance processes for AEO entities and reduce the costs associated with foreign trade.

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