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Article

Improving the Management of Border Customs Posts In Uzbekistan

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Abstract: *The deepening of globalization processes in the world economy, the growth of foreign trade volumes, and the expansion of international transport and logistics chains have made improving the efficiency of border customs posts an urgent task. Under modern conditions, border customs posts are evolving not only as administrative structures responsible for state control, but also as strategic economic and logistics institutions ensuring the continuity of foreign trade. This article examines the theoretical, organizational, and economic aspects of improving the management of border customs posts in the development of foreign trade.*

During the course of the research, methods such as economic-statistical analysis, correlation analysis, econometric regression analysis, DEA efficiency analysis, SWOT analysis, and comparative analysis were employed. In addition, the study examined the impact of digital customs technologies, integrated border management, the "Single Window" mechanism, AI-based risk management systems, and trade facilitation instruments on the efficiency of border customs posts. The results of the analysis revealed that the level of digitalization, technical control equipment, and intelligent management technologies exert a strong positive influence on the throughput capacity of border customs posts. Based on the findings of the research, a conceptual model of the organizational and economic mechanism for managing border customs posts was developed, and practical recommendations aimed at reducing time and costs for participants engaged in foreign economic activity were formulated.

Keywords: *foreign trade, border customs post, customs administration, digital customs, trade facilitation, risk management, integrated border management, logistics, foreign economic activity*

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Introduction

According to the World Trade Organization, the global volume of merchandise exports reached USD 24.43 trillion in 2024, representing a 2.9 percent increase compared to 2023. The expansion of foreign trade volumes has led to a rise in international transport flows, thereby increasing the burden on border customs post infrastructure and creating the need to modernize border management systems. Excessive bureaucratic procedures at border crossings, prolonged vehicle delays, slow customs clearance processes, and high logistics costs negatively affect the competitiveness of foreign trade [1].

Under contemporary conditions, border customs posts are no longer viewed solely as administrative structures responsible for ensuring state security; they are increasingly evolving into strategic logistics institutions that ensure the

continuity of international trade chains. For this reason, the efficiency of customs posts has a direct impact on a country's external economic competitiveness [2].

According to OECD estimates, the full implementation of the WTO Trade Facilitation Agreement could reduce foreign trade costs in developing countries by an average of 14–17 percent [3].

According to the study conducted by Djankov and co-authors, each additional day of delay in customs clearance reduces export volumes by more than 1 percent on average.

Hummels and Schaur, in their research, noted that each additional day of delay at the border may result in economic losses equivalent to 0.6–2.1 percent of the value of the goods.

According to UNCTAD reports, digital trade facilitation measures can reduce foreign trade costs by an average of 13–15 percent [4].

As Uzbekistan is considered an important transit country in Central Asia, the growth of foreign trade and international transport flows increases the workload placed on the country's border customs posts. Consequently, improving the management of border customs posts represents an important factor in enhancing the competitiveness of the country's foreign trade.

In recent years, issues related to increasing the efficiency of border customs posts, facilitating foreign trade, and reducing logistics costs have been widely studied by international scholars and economic organizations. In particular, trade facilitation, digital customs, integrated border management, and intelligent risk-management systems are regarded as key factors contributing to the improvement of foreign trade competitiveness [5].

Literature review

Issues related to the efficiency of border management have been extensively studied by both foreign and domestic scholars.

Andrew Grainger viewed trade facilitation as a process of simplifying, standardizing, and modernizing international trade procedures. According to his approach, trade facilitation serves to reduce foreign trade costs and optimize interactions between government authorities and the business sector.

M. Polner emphasized that Coordinated Border Management enhances the efficiency of foreign trade processes through information integration and cooperation among government agencies [6].

J. McLinden and A.Z. Durrani substantiated that the digitalization of customs administration, risk management practices, and automated control systems contribute to reducing corruption risks and improving the efficiency of foreign trade operations. Studies conducted by Gabrielli and Rekki also indicated that border permeability is directly associated with a country's foreign trade competitiveness.

An analysis of the above-mentioned studies demonstrates that the effectiveness of border management in the development of foreign trade depends not only on infrastructure, but also directly on the level of digitalization, inter-agency integration, and intelligent management mechanisms.

Victor Ijirshar emphasized that trade facilitation indicators have a positive impact on economic growth and international trade flows [7].

In the studies conducted by Sungwon Park, it was noted that AI technologies can increase the efficiency of detecting illegal operations in customs control by 2 to 11 times.

Domestic scholars, including Q.H. Abdurakhmonov, R.A. Alimov, A. Suyunov, A. Saidov, and others, have conducted research on issues related to management efficiency and the regulation of foreign economic activity.

However, existing studies have not sufficiently examined the comprehensive

assessment of automobile border customs post management from the perspective of foreign trade development. The present study is specifically aimed at filling this scientific gap [8].

Materials and methods

The study employed methods such as economic-statistical analysis, a systematic approach, correlation analysis, econometric regression analysis, DEA efficiency analysis, SWOT analysis, comparative analysis, and forecasting techniques.

Automobile border customs posts operating under the system of the Customs Committee of the Republic of Uzbekistan were selected as the object of the research.

In 2025, Uzbekistan’s foreign trade turnover increased threefold compared to 2017 (Figure 1).

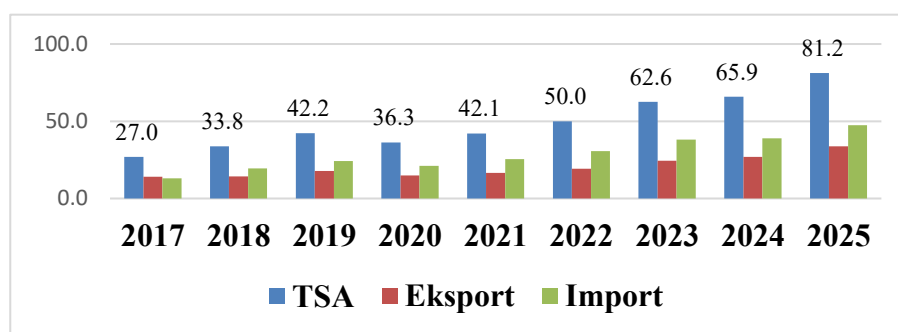


Figure 1. Uzbekistan’s Foreign Trade Turnover, in billion U.S. dollars

As the volume of the country’s exports and imports continues to increase the number of goods and vehicles passing through border customs posts naturally increases as well. This, in turn, leads to a significant increase in the workload of border crossing points. Figure 2 illustrates the year-by-year growth in the operational workload of Uzbekistan’s automobile border customs posts.

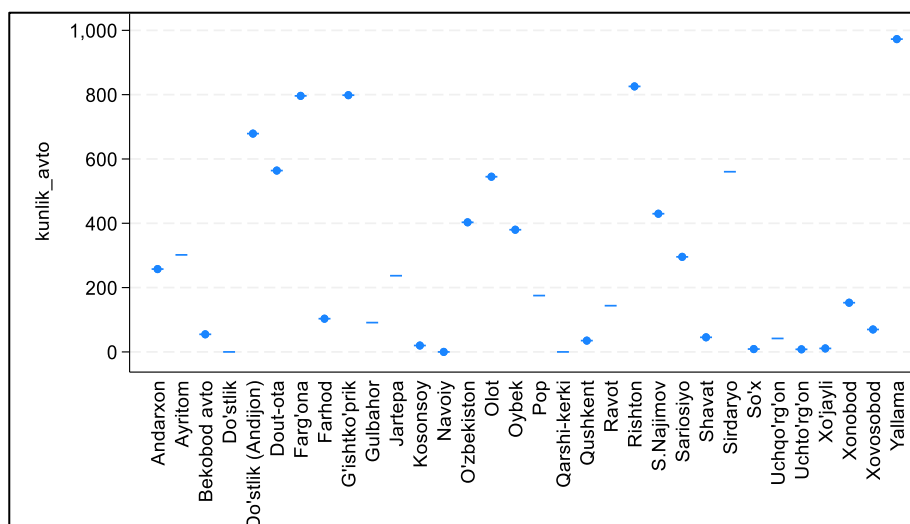


Figure 2. Average daily number of vehicles passing through automobile border customs posts in 2024

The study analyzed the following indicators related to automobile border customs posts: the flow of vehicles passing through automobile border customs posts (X1), passenger traffic (X2), the number of employees working at customs posts (X3), the quantity of technical customs control equipment (X4), the level of digitalization (X5), and throughput efficiency (Y).

In order to assess the factors affecting the efficiency of border customs posts,

a multiple regression model was developed:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

In the DEA analysis, personnel, infrastructure, technical equipment, and financial resources were considered as input parameters. The results of the DEA analysis demonstrated that the efficiency of resource utilization varies across border customs posts. In particular, border customs posts characterized by a higher level of digitalization and better technical equipment showed higher throughput efficiency. This confirms that investment in customs infrastructure and the introduction of intelligent management technologies have a positive impact on the efficiency of foreign trade operations.

As output parameters, the number of processed vehicles, customs revenues, customs clearance time, and detected violations were evaluated.

During the research process, a SWOT analysis was conducted to assess the strengths and weaknesses of the border customs post management system, as well as external opportunities and threats.

Furthermore, within the framework of the study, a conceptual model of the organizational and economic mechanism for managing border customs posts in the context of foreign trade development was developed (Figure 3).



Figure 3. Organizational and economic mechanism for the management of border customs posts

The study developed an integrated conceptual model aimed at improving the organizational and economic mechanisms of border customs post management. The proposed model serves to ensure the effective management of foreign trade processes through the interrelationship between organizational, economic, institutional, and innovative mechanisms.

The organizational mechanism reflects the management structure, distribution of authority, internal communication, and e-governance processes, whereas the economic mechanism encompasses customs payments, logistics costs, tariff policy improvement, and instruments for stimulating foreign economic activity.

The institutional mechanism includes the legal framework, state regulatory instruments, international standards, and the risk management system. The innovative mechanism, in turn, is focused on increasing the efficiency of customs administration through the introduction of digital technologies, electronic declaration systems, AI-based risk-management systems, and automated information platforms.

The developed mechanism contributes to increasing the throughput capacity of border customs posts, reducing foreign trade costs, and creating a

favorable business environment for participants engaged in foreign economic activity.

The proposed conceptual mechanism enables the comprehensive management of border customs post activities. Through this model, it becomes possible to digitalize foreign trade processes, ensure prompt managerial decision-making, optimize the distribution of transport flows, and reduce the administrative burden on participants in foreign economic activity.

Results

The research findings revealed that the level of digitalization and technical equipment exerts the strongest influence on the efficiency of border customs posts.

The results of the correlation analysis indicated the following:

Factor	Correlation Coefficient
Transport flow	0.81
Passenger flow	0.67
Technical equipment	0.84
Digitalization	0.89
Number of employees	0.59

The results of the analysis demonstrated that digital customs technologies and the level of technical equipment are strongly correlated with the throughput capacity of border customs posts [9].

Based on the methodological approaches outlined above, the key factors affecting the efficiency of border customs posts were evaluated, and the institutional as well as organizational-economic problems influencing foreign trade processes were identified [10].

Within the framework of the dissertation, an automatic export declaration generation mechanism based on the “single data entry” principle was developed. This mechanism created the opportunity to generate export declarations quickly and efficiently using the information contained in contracts.

In addition, the possibility was introduced to conduct customs inspections of export-oriented goods not only at inland customs posts, but also directly at border customs posts. Compared to inland customs posts, border customs posts are equipped with significantly more advanced technical customs control facilities, making it possible to inspect goods using scanning equipment without unloading them from vehicles [11].

As a result, the time required for customs inspection was reduced from 3-4 hours to 3-4 minutes, which significantly simplified foreign trade procedures. Consequently, the number of export clearance stages was reduced from nine to three, while the annual expenses incurred by participants in foreign economic activity for completing export declarations decreased by an average of 75 billion soums [12].

DEA таҳлили рақамлаштириш даражаси юқори бўлган постлар ресурслардан самаралироқ фойдаланишини кўрсатди.

SWOT таҳлил натижалари қуйидагиларни кўрсатди:

Strengths	Weaknesses
Government support	Limited infrastructure
Digital customs systems	Excessive paperwork in certain procedures
Transit potential	Low level of information integration
Opportunities	Threats
AI technologies	Cybersecurity threats

Smart customs	Risk of smuggling
International integration	Geopolitical risks

The results of the SWOT analysis indicated that the introduction of digital technologies, integrated management systems, and smart customs mechanisms should be considered a priority direction in improving the management of border customs posts. From this perspective, studying the experience of foreign countries is of significant scientific and practical importance.

Discussion

International studies indicate that the digitalization of border management is an important factor in increasing the competitiveness of foreign trade. In particular, following the introduction of the TradeNet system in Singapore, customs clearance time was reduced from 2–4 days to 10 minutes, while 95 percent of document circulation was digitalized [13].

Through South Korea's UNI-PASS system, export clearance time was reduced to 1.5 minutes, while import clearance time decreased to 1.5 hours, and the annual economic benefit was estimated at USD 3.4 billion.

According to UNECE studies, Single Window mechanisms can reduce customs clearance time by 50–70 percent.

Research published in the World Customs Journal also noted that unpredictable border delays may have a more negative impact on the economy than traditional tariff barriers [14].

The simplification of customs procedures reduces the transaction costs associated with foreign trade operations, increases the speed of export-import processes, and strengthens a country's integration into global supply chains.

According to the study conducted by Hendy (2021), trade facilitation measures have a positive impact on firms' export activity.

The impact of borders on foreign trade volume has also been widely examined in international economic research based on the gravity model.

In 1995, John McCallum analyzed trade between Canada and the United States and introduced the well-known "border puzzle" phenomenon. According to his findings, trade among Canadian provinces was 22 times higher than trade between Canada and the United States. This result was unexpected for economists, since formal tariff barriers between the United States and Canada were very low.

McCallum's study demonstrated that:

- even minor administrative and institutional barriers can exert a significant impact on trade;
- borders substantially increase trade costs.

In 2003, James E. Anderson and Eric van Wincoop further developed the gravity model by introducing the concept of "multilateral resistance." Their main argument was that trade between countries depends not only on the geographical distance between two states, but also on their relative trade costs with the rest of the world market. In other words, if a country faces substantial trade barriers with other countries, trade with a particular partner country may become relatively more intensive [15].

By reassessing McCallum's 22-fold effect, they demonstrated that the actual border effect was approximately 44 percent.

Conclusion

The research findings demonstrated that improving the management of border customs posts plays an important economic and institutional role in the development of foreign trade.

Based on the results of the study, the following conclusions were formulated:

- digital customs technologies make it possible to reduce foreign trade costs by 13–17 percent;
- each additional day of delay at the border reduces export volumes by more than 1 percent on average;
- integrated border management accelerates foreign trade processes;
- AI and Big Data technologies enhance the efficiency of customs control;
- the “Export in Three Steps” module, developed on the basis of the “single data entry” principle, enables the automatic generation of customs cargo declarations for export goods based on contractual information, thereby reducing the annual expenses of participants in foreign economic activity by up to 75 million soums;
- conducting customs inspections of export-oriented goods directly at border customs posts contributes to accelerating customs inspections and simplifying export procedures;
- the introduction of a KPI-based monitoring system enables the effective evaluation of border customs post performance.

Furthermore, the findings of the study may serve as a scientific and practical basis for the development of a digital model for managing border customs posts in Uzbekistan, the broader implementation of AI-based risk-management systems, and the improvement of state policy mechanisms aimed at increasing the country’s competitiveness within international logistics corridors.

At the same time, the organizational-economic mechanism and conceptual model developed in the article contribute to the modernization of customs administration in Uzbekistan, the enhancement of foreign trade competitiveness, and the improvement of logistics efficiency.

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