



## Article

# Mechanism for Increasing Tax Collection Efficiency through the Introduction of Automatic Electronic Notifications on Tax Arrears Based on YAIDXP

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**Abstract:** This is an urgent task facing the economy of Uzbekistan aimed at ensuring the fiscal stability and sustainable growth of state budget revenues. In this regard, one of the priorities is to enhance effective tax collection by digitization of tax administration. This work explores the mechanism and efficiency of the automatic electronic notification system on the tax arrears implementation through the Unified Interactive Public Services Portal (YAIDXP). Using the official statistical data and analytical calculations as the starting point, the study considers the target population of YAIDXP among the economically active population and employees of enterprises, estimates the size of the ecosystem of potential tax liabilities that could be accessed via digital notifications, and analyzes the expected fiscal and administrative impact. Results indicate that around 80 percent of those who make up the economically active population are users of YAIDXP — including nearly 594,612 employees who have tax debts on land and property worth a total of 661.2 billion soums. Based on international practice and scenario-based calculations, the early implementation of automated notifications will achieve a decrease in tax arrears in the range of 8–10 % and additional annual budget revenues in the range of 53–66.12 billion soums. In addition to this, due to electronic notices, tax authorities are able to avoid considerable expenses on postal services and printing (which amounts to 5.05-5.95 billion soums annually). The results show that the automatic electronic notification system based on YAIDXP is an efficient and affordable digital tax solution for strengthening tax discipline and increasing tax collection, reducing administrative costs, and speeding up the digital transformation of tax administration in Uzbekistan.

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**Keywords:** tax administration, tax collection, electronic notification, YAIDXP, digital government, fiscal stability

## 1. Introduction

One of the main goals of economic policy in the Republic of Uzbekistan is the maintenance of fiscal stability and sustainable development of state budget revenues. In this sense, the capacity of the tax administration is a determining factor as tax revenues

provide the funding for public expenditures which in turn create the basis for socio economic progress. Contemporary public finance and digital governance theories indicate that taxpayer behavior and tax compliance are strongly affected by timeliness of information, transparency, and automation [1]. In this context, Digital notification systems are progressively considered a fundamental tool of tax discipline by easing, through the reduction of information asymmetry between tax authorities and taxpayers and low transaction and administrative costs.

In Uzbekistan, in recent years, the provision of public services in electronic form has been significantly expanded, however, the Unified Interactive Public Services Portal has not yet fully used the potential of automatic electronic notifications on the arrears of taxes in economic and administrative efficiency. Earlier international studies suggest that automatic digital reminders can help increase tax compliance through higher taxpayer awareness and less delayed payment, especially in the early stages of implementation [2]. However, nationally, there are still questions about the breadth of coverage, the quantity of tax arrears that can be addressed through such systems, and the anticipated fiscal impact. While we see a strong and growing interest in studying the intersection of digital technologies and the law, existing research has primarily addressed sweeping legal reforms or broader trends of digitalization, leaving little systematic research quantifying real time electronic notification mechanisms.

To fill this gap, this study examines the case of official electronic notification system on outstanding taxes implemented through YAIDXP. The research, based on official statistical data and analytical calculation methods, analyzes user coverage, the value of potential arrears subject to digital notification, and the expected arrears reduction per international experience [3]. It said the analysis expects e-portal providing widespread and reaching out to taxpayers with huge arrears to lead to the improved payment discipline and quicker recovery of the arrears. The results are believed to prove an increased tax collection and surplus revenues to the budget in addition to a making fundamental cut in administrative and postal costs [4]. The findings from this study have important implications for tax policy and digital governance by enhancing evidence-based policy-making, reinforcing the argument that the automated electronic notifications are a simple, cost-effective and scalable tool to modernize tax administration in Uzbekistan.

## 2. Materials and Methods

The design of this research rests on the quantitative, analytical methodology of research in assessing the effectiveness of introducing an automatic electronic notification on tax arrears through the Unified Interactive Public Services Portal. The analysis is based on statistics from the Tax Committee of the Republic of Uzbekistan, demographic data on the economically active population and administrative data on coverage of YAIDXP user [5]. All computations were conducted with verified, publicly available data, using common methods of the economic and statistical analysis, to provide high level of objectivity and reliability.

Descriptive analysis was outsourced at the first stage to reveal the volume and the nature of land and property tax debts of employees in business and nonprofit organizations [6]. After that, such basic indicators as the YAIDXP coverage coefficient, the proportion of portal users from the staff of enterprises, the average amount of tax arrears per employee were calculated. Such indicators were used to estimate the potential

amounts of tax dues that were likely to be subject to automatic electronic notifications. The second stage of this work was to use scenario-based forecasting methods to calculate potential tax arrears reductions under early implementation scenarios, using internationally observed reductions per year of between 8 and 10 percent attributable to the introduction of electronic notification systems.

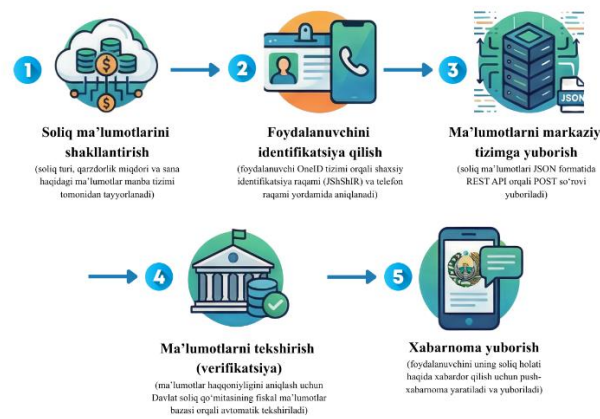
It also presented a cost-analysis approach to assess the administrative efficiency of the proposed mechanism [7]. This would be to forecast savings that could accrued from discontinuing mailing notification in paper format by offsetting the current costs of mailing and printing with the option of a notifying digitally. A methodological framework that comprises aspects of the theory of public finance, digital governance, and cost benefit analysis to provide a holistic view of both fiscal and administrative impacts. The empirical data analysis and comparative forecast reflect a strong foundation for assessing the possible economic effect and implementation relevance of the automatic electronic notification system from the perspective of the national tax administration.

### 3. Results

Ensuring fiscal stability and supporting the stable growth of state budget revenues are among the most important priority areas in the economic development of Uzbekistan. Increasing the efficiency of tax administration, in particular improving tax collection, plays a significant role in ensuring financial stability across sectors of the economy [8]. In the current system, the failure to notify taxpayers in a timely manner may lead to the accumulation of tax arrears and their remaining unnoticed for several months. This, in turn, results in a decline in tax discipline, an increase in administrative costs, and a slowdown in state budget revenues.

At present, when tax arrears arise, the process of sending notifications is mainly carried out through SMS messages, postal notices, or personal visits to tax authorities. The manual management of this process leads to delays in information delivery, an increase in errors, and shortcomings associated with the human factor [9]. Therefore, within the framework of the study, in order to fundamentally improve tax administration, it is proposed to introduce a system of real time automatic electronic notifications on tax arrears through the Unified Interactive Public Services Portal (YAIDXP).

The technological basis of the proposed mechanism lies in the fact that as soon as tax arrears are identified in the information system of the tax authorities, this information is transmitted to YAIDXP through the Interagency Integration Platform (IMIP). During transmission, IMIP approved REST APIs, JSON formatted data packages, JWT authentication, UUID identifiers, and 24/7 operating data exchange protocols are applied. YAIDXP identifies the user through OneID and delivers the electronic notification via push notifications, personal account alerts, or a mobile application [10]. The user can make the payment immediately, and the payment results are fully automated to be retransmitted to the Tax Committee through IMIP (Figure 1).



**Figure 1. Technological model for sending automatic electronic notifications to users regarding tax arrears**

This mechanism differs from the existing system by a number of advantages:

1. **Real time notification.** Information on tax arrears is delivered immediately, which significantly increases tax discipline and prevents arrears from remaining outstanding for long periods.
2. **Improved user experience.** Sending notifications through YAIDXP expands the ability to manage tax related services and other public services on a single digital platform.
3. **Reduction of administrative costs.** The automated process reduces expenses related to phone calls, SMS notifications, and postal notices, and minimizes errors associated with the human factor.
4. **Strengthening of the digital ecosystem.** The integration established between the Tax Committee, IMIP, and YAIDXP ensures the seamless operation of state systems within a unified ecosystem.

The proposed solution also demonstrates high economic efficiency. As a result of timely notification of taxpayers, the speed of arrears recovery increases, budget revenues become more stable, and tax discipline is strengthened. International experience (Estonia, Korea, Brazil) shows that the introduction of digital notification systems increases tax revenues by up to 8 to 10 percent. These results indicate that the automatic notification service via YAIDXP will also be economically efficient in Uzbekistan.

This initiative was supported by the Ministry of Digital Technologies and was officially stipulated in paragraph 8 of Annex 5 of Resolution No. PQ 286 of the President of the Republic of Uzbekistan dated 16 September 2025 "On measures to further accelerate the introduction of digital technologies in the regions, sectors, and industries of the Republic." In November 2025, this service was tested and put into operation in practice (Figure 2).



soums, of which land tax accounted for 501.2 billion soums, representing 60.3 percent, and property tax accounted for 330.3 billion soums, representing 39.7 percent (Figure 3). These indicators show that the level of taxpayer awareness and discipline is not sufficient.

**Table 1**

**Structure of property and land tax arrears of employees working in enterprises and organizations** (Prepared by the author based on data from the Tax Committee of the Republic of Uzbekistan)

No.	Tax type	Arrears (billion soums)	Share (%)
1	Land tax	501.2	60.3
2	Property tax	330.3	39.7
<b>Total arrears</b>		<b>831.5</b>	<b>100</b>

The introduction of automatic notifications through YAIDXP will enable real time monitoring of these arrears, simplify the payment process, and enhance payment discipline (Table 1).

According to statistical data, the economically active population of Uzbekistan amounts to 15.1 million people, while the number of active users of YAIDXP has exceeded 12 million [12]. These data serve as a basis for assessing the coverage of tax notifications through YAIDXP.

#### 1. Baseline indicators.

In assessing the level of use of digital public services, the number of YAIDXP users and the size of the economically active population are taken as the main criteria (Table 2).

**Table 2**

#### Key demographic and system indicators

No.	Indicator name	Symbol	Value
1	Number of YAIDXP users	U	12,000,000
2	Economically active population	P	15,097,900
3	Number of employees in enterprises and organizations	N	747,940
4	Total arrears on land and property taxes	D	831,500,000,000

#### 2. Calculation of the YAIDXP coverage coefficient.

The share of the economically active population using YAIDXP is determined as follows:

$$k = \frac{U}{P} * 100$$

$$k = \frac{12,0}{15,1} * 100 \approx 79.5 \%$$

Thus, the actual coverage level of YAIDXP is 79–80 percent, which means that nearly 80 percent of the economically active population uses digital services through the portal.

### 3. Share of YAIDXP users among employees of enterprises.

The share of YAIDXP users relative to the number of enterprise employees is calculated using the following formula:

$$E_u = N * k$$

$$E_u = 747\,940 * 0,795 \approx 594\,612$$

Thus, out of approximately 748,000 employees, about 594,612 actively use YAIDXP.

### 4. Calculation of the average tax arrears per employee.

$$d_{avg} = \frac{D}{N}$$

$$d_{avg} = \frac{831\,500\,000}{747\,940} \approx 1\,112\,000 \text{ so'm}$$

On average, **1.112 million soums** of land and property tax arrears fall per employee.

### 5. Calculation of potential arrears among YAIDXP users.

$$D_u = E_u * d_{avg}$$

$$D_u = 594\,612 * 1\,112\,000 \approx 661,2 \text{ mlrd. so'm}$$

The amount of arrears identified for the audience that can be provided with automatic notifications through YAIDXP amounts to **661.2 billion soums**.

### 6. Forecast of tax arrears reduction based on international experience.

In international practice, as a result of the introduction of electronic notifications, tax arrears decreased by **25 to 30 percent** in developed countries, while at the initial stage of implementation the reduction amounted to **8 to 10 percent**.

For the conditions of Uzbekistan, the indicator corresponding to the initial stage is applied:

#### 6.1. Calculation of an 8 percent reduction in tax arrears.

$$R_8 = D_u * 0,08$$

$$R_8 = 661,2 \text{ mlrd. so'm} * 0,08 = 53 \text{ mlrd. so'm}$$

#### 6.2. Calculation of a 10 percent reduction in tax arrears.

$$R_{10} = D_u * 0,10$$

$$R_{10} = 661,2 \text{ billion soums} * 0,10 = 66,12 \text{ billion soums}$$

### 7. Calculation of the reduction in postal costs.

As a result of the introduction of the electronic notification system through YAIDXP, all costs incurred by tax authorities related to sending paper notifications will be fully eliminated [13]. Currently, the cost of sending registered mail with a tracking code is 8,400 soums, and this information was obtained from the official website of Uzbekistan Post Joint Stock Company. When the costs of paper and printing are added, the average cost of sending one postal notification ranges from 8,500 to 10,000 soums.

Number of employees with outstanding arrears among YAIDXP users:

$$n = 594\,612 \text{ notifications}$$

b) Savings based on the minimum postal cost  $C_{min}$

$$C_{min} = n * c_{min}$$

$$C_{min} = 594\,612 * 8\,500 \approx 5,05 \text{ billion soums}$$

d) Savings based on the maximum postal cost  $C_{max}$

$$C_{max} = n * c_{max}$$

$$C_{max} = 594\,612 * 10\,000 \approx 5,95 \text{ billion soums}$$

The conducted research shows that the introduction of an automatic electronic notification system on tax arrears through YAIDXP is an effective digital mechanism for increasing tax collection in Uzbekistan. Out of 748,000 employees working in enterprises and organizations, approximately 594,612 are active users of YAIDXP, which ensures that the digital notification system covers a broad audience [14]. The identification of total arrears amounting to 661.2 billion soums in land and property taxes among these users indicates the formation of a real fiscal base with high tax collection potential.

According to international experience, automated notification systems directly affect tax collection by increasing taxpayer awareness, strengthening payment discipline, and reducing arrears. The research results show that under the conditions of Uzbekistan, the implementation of this mechanism may lead to a reduction in tax arrears by 8 to 10 percent at the initial stage, that is, the formation of additional revenues ranging from 53 billion to 66.12 billion soums per year [15]. This contributes to strengthening budget stability through an increase in the level of tax collection.

In addition, the electronic notification system eliminates significant administrative costs incurred by tax authorities in sending traditional paper based notices. According to calculations, sending 594,612 notices in paper form would require annual expenditures of 5.05 to 5.95 billion soums. The digitalization of this process through YAIDXP ensures the full saving of these funds and leads to a further increase in the efficiency of tax administration.

In general, the introduction of an automatic notification system based on YAIDXP:

- increases tax collection by reducing tax arrears;
- enhances taxpayer awareness and payment discipline;
- ensures additional revenues to the state budget;
- reduces administrative costs;
- significantly accelerates the digitalization of tax administration;

The results indicate that the automatic electronic notification system is an economically efficient, modern, and practically applicable innovative solution that is appropriate for implementation to increase tax collection in the tax system of Uzbekistan.

#### 4. Conclusion

The findings of this research confirm the quality of the introduction of an automatic electronic notification system on tax arrears through YAIDXP as an effective tool, proving this digital instrument can be effective in enhancing the improvement of collections in Uzbekistan and economically justified. The results show that high portal coverage among the economically active population provides a broad coverage of taxpayers with overdue land and property tax payments, as well as real-time monitoring of arrears and rapid recovery of uncollected sums. International assessment demonstrates that implementation of automated notifications can decrease tax backlogs at the beginning stage by 8–10 %, which will have a direct impact on ballancing the budget and will grow millions of additional revenues as well as reduce substantial administrative and postal expenditures related to paper notifications. The results show that the implementation of the proposed mechanism increases tax discipline, improves taxpayer awareness and provide fiscal

stability through better efficiency of tax administration. The results are a clear call for expanding the existing digital tool save tax system and integrating it with a broader public services ecosystem. Further work could assess the longer term impact of electronic notifications on the behavior of particular groups of taxpayers; study the performance of the system at a later stage after full scale implementation; and examine the relevance of applying similar digital mechanisms to other taxes and areas of public revenue administration.

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