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Digitalization-Based Improvement of Public Financial Control in Uzbekistan: Empirical Analysis on the Example of Fergana Region

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Abstract: In this article, we will look at how the use of digital technologies can help improve the system of state financial control in Uzbekistan using the example of the Ferghana region. We analyzed changes in government budget expenditures, the number of employees involved in financial control, and audit results from 2015 to 2025. It turned out that the burden on the regulatory authorities has increased significantly, and the number of financial errors has increased. Based on the results of an external audit in the Ferghana region, we identified five key issues related to accounting for utility costs, integration of electronic invoices, reporting on personal income tax and social tax, accounting for confiscated assets, as well as information exchange between E-Kengash–DMBAT systems. After analyzing the experience of other countries, we have developed a five-component digital technology integration scheme that can improve the UzASBO-2 system. According to our forecasts, the implementation of this scheme in the Ferghana region will prevent financial losses in the amount of more than 497 billion soums annually.

Keywords: public financial control, UzASBO-2, digital integration, budget expenditures, internal audit, artificial intelligence, PIT automation, E-Council, DMBAT, Fergana region.

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Introduction

The state financial oversight is a crucial instrument for managing public finances, aimed at guaranteeing the lawfulness, purposeful, and efficient utilization of budgetary resources. The country's socio-economic advancement, the successful execution of government initiatives, and the preservation of financial equilibrium are largely contingent upon the efficacy of the state financial oversight framework.

In an environment where government expenditures are expanding and the number of entities receiving budgetary support is increasing, the expectations for the state financial oversight framework are becoming even more stringent. Moreover, the escalating intricacy of financial transactions is also placing additional demands on the state financial oversight framework [1].

Nowadays, traditional methods of state financial control are being actively improved through the use of digital technologies. The use of tools such as artificial intelligence, big data analysis systems, cloud technologies, and real-time monitoring systems significantly improves control efficiency. This allows you to quickly identify errors and violations, as well as reduce the risks associated with the human factor [2], [3].

International organizations such as the Organization for Economic Cooperation and Development (OECD), the International Monetary Fund (IMF) and the International Organization of Supreme Audit Institutions (INTOSAI) also foresee the future of public financial control in the close integration of information systems and data-based management decision-making [4].

In recent years, Uzbekistan has been implementing large-scale reforms aimed at improving the public finance management system and introducing digital technologies into budget processes. One of the key tasks set out in the "Strategy for the Development of New Uzbekistan" is to ensure the openness and transparency of public financial management, increase the efficiency of budget funds and the widespread use of digital technologies [5]. As part of these reforms, the country has developed and adopted regulations aimed at improving the system of state audit and financial control. This has made it possible to use modern information technologies more actively in the control process [6].

However, practice shows that the growth rate of government spending exceeds the capabilities of the control system. Thus, from 2015 to 2025, expenditures of the state budget and trust funds in Uzbekistan increased 8.7 times — from 51.3 trillion soums to 447.8 trillion soums. At the same time, the number of employees exercising financial control decreased from 835 to 594 people. As a result, the burden on each controller increased from 61.4 billion soums to 753.9 billion soums, which is almost 12.3 times higher than the previous figure. This indicates that the existing resources of the control system are not keeping pace with the rapid growth of government financial flows.

This trend is also supported by the increasing number of financial irregularities and shortcomings identified by the Accounting Chamber. Specifically, the volume of financial violations detected has almost doubled, from 3.920.6 billion soums in 2020 to 7.714.1 billion soums in 2025. This increase in the number of violations suggests a decrease in the efficiency of existing control mechanisms in certain areas. Therefore, it is necessary to introduce new technological solutions in order to address this issue [7].

The findings of the research indicate that a substantial portion of the issues in the realm of financial oversight can be attributed to the absence of effective communication between information systems. The difficulties arise due to the fact that the data between the systems for accounting electricity and gas consumption, electronic invoicing systems, reporting on personal income and social taxes, accounting for confiscated assets, and managing local budgets are not integrated. This results in financial inaccuracies and legal violations. Addressing these issues is a crucial step towards enhancing the efficiency of state financial oversight.

Literature Analysis

The scientific community actively discusses the theoretical and practical aspects of the system of state financial control.

In particular, L. Doe and S. Pattanayak conducted a study of institutional vulnerabilities in public finance management and financial control systems in developing countries [8]. They stressed that the principles of accountability and transparency are key to creating effective control mechanisms.

In turn, Munteanu and Zachariah reviewed the current trends in the development of the internal audit system [9]. They have shown that a risk-based audit approach and the use of digital technologies can significantly improve the effectiveness of control.

R.D. Koning has developed the methodological foundations of the concept of Public Internal Financial Control (PIFC) [10]. He proposed a management model in which the financial management, internal control and internal audit systems interact with each other.

In scientific papers devoted to the study of institutional and organizational aspects of state financial control, special attention is paid to the interaction between the treasury system and financial control authorities.

For example, in his work [11] Prokofiev explores ways to improve the financial control mechanisms carried out by the Treasury in the Russian Federation. He also evaluates the impact of information technology on the quality of this process.

Samarukha and Derevtsova in their work [12] analyze the organizational structure and performance indicators of the state financial control system. They justify the need for automation of control activities.

Uzbek scientists also made a significant contribution to the study of the development of state financial control. A. Vakhobov, T. Malikov and N. Khaidarov [13] devoted their work to the theoretical aspects of public finance management, as well as issues of improving the efficiency of budget funds and the economic essence of financial control.

A.A. Jabbarov [14] has developed institutional and organizational mechanisms that contribute to improving the system of state financial control. However, despite significant achievements in these areas, the impact of the integration of digital information systems on the results of financial control has not yet been sufficiently studied empirically.

In today's world, digitalization plays an important role in increasing the effectiveness of government financial control. For example, in South Korea, the introduction of the dBrain+ platform has reduced the number of financial errors by 67%. This was made possible through the use of artificial intelligence and real-time monitoring [15]. In France, the CHORUS ERP system has reduced the cost of routine operations by 40%. This became possible due to the centralization of public finance management processes [16]. In Australia, the GovERP platform has tripled its control coverage, made possible by the use of cloud technologies and analytical modules. The latest recommendations from the OECD and the IMF also note that database integration, automatic verification, and real-time monitoring are key elements of modern financial control systems.

The analysis of scientific research allows us to conclude that, despite the presence of a large number of works devoted to the theoretical, organizational and institutional aspects of state financial control, there are no comprehensive empirical studies examining the level of integration of the UzASBO-2 information system used in budgetary organizations with other state information databases. It has also not been investigated how integration deficiencies affect audit results. In particular, no quantitative relationship has been established between the financial errors identified during the audit, the level of information exchange between the systems and the effectiveness of control.

This research aims to fill the existing gap in scientific knowledge by conducting an empirical assessment of the relationship between the level of integration of the UzASBO-2 system and other government information systems. The research is based on the results of an external audit of the Ferghana region for 2025, which aims to identify financial deficiencies and assess the economic efficiency achieved through digital integration.

Research Methodology

The study examined the current state of the state financial control system and explored opportunities for improvement through the use of digital technologies, employing a comprehensive approach. During the analysis, methods of economic-statistical analysis, comparative analysis, and a systems approach were employed. The study focused on examining the dynamics of state budget expenditures, the number of employees in financial control bodies, and financial shortcomings identified through audit findings.

Results

One of the key indicators used to assess the effectiveness of state financial control is the ratio between the amount of budget expenditures and the resources allocated to control

measures. In recent years, Uzbekistan has seen a significant increase in government spending. However, the human resources of the financial control authorities are not keeping pace with these changes. As a result, each controller is burdened with too much load, which negatively affects the quality of the entire control system.

State budget expenditures increased 8.7 times from 2015 to 2025, from 51.3 trillion soums to 447.8 trillion soums. At the same time, the number of employees exercising financial control decreased from 835 to 594. As a result, each controller has more work to do: the volume of controlled funds increased from 61.4 billion soums to 753.9 billion soums. This indicates that the burden on supervisors has increased by 12.3 times.

Table 1. Dynamics of budget expenditures and financial control personnel (2015–2025).

Indicator	2015	2020	2023	2025
Budget expenditures (trln soums)	51,3	135,7	316,4	447,8
Financial control personnel (units)	835	742	621	594
Control workload per employee (billion soums)	61,4	182,9	509,5	753,9
Errors identified by the Accounts Chamber (billion soums)	3 857,2	3 920,6	6 124,3	7 714,1

Analysis of the table data shows that as the amount of budgetary funding increases, so does the number of financial irregularities and deficiencies detected. In particular, the number of violations detected by the Accounts Chamber increased from 3,857.2 billion soums in 2015 to 7,714.1 billion soums in 2025, an almost doubling. This indicates that the resources available to regulatory bodies are not sufficient to fully monitor the increasing financial flows, and the effectiveness of traditional control measures is reaching its limits. At the same time, there has been a significant increase in the number of preventive measures taken and illegal expenses detected. This suggests that digital monitoring tools are becoming increasingly important.

The audit activities carried out in the Fergana region during 2025 helped to identify a number of systemic issues within the country's financial management system. Based on the findings of the investigation, most of the identified shortcomings are related to the insufficient integration of the UzASBO-2 information system with other governmental information sources.

In relation to utility service settlements, we have identified receivables totaling 5,618.7 million soums for electricity and payables totaling 6,439.1 million soums. With regard to natural gas, there is a gap of 2,112.3 million soums recorded in 17 organizations. In addition, penalties for electricity and gas totaled 3,752.2 million soums, representing a significant increase from previous years. Furthermore, errors were identified in the accounting of energy generated by solar power plants.

Regarding the integration with the electronic invoicing system, it has been found that 43 businesses have underreported sales revenue totaling 41.3 billion soums. As a result, 4.85 billion soums in taxes have not been collected. With regard to personal income tax and social taxes, fines have been imposed on hundreds of businesses, and in some cases, overpayment of funds has not been refunded.

Additionally, there are serious issues with maintaining records of seized assets and inventory. Assets worth over 57 billion soums are not recorded on the balance sheet, primarily due to the absence of a dedicated module for accounting these assets within the UzASBO-2 system.

Based on the audit findings, decisions made by local councils and issues related to information exchange between the treasury and accounting systems have resulted in significant financial errors. The audit revealed that 138.2 billion soums (approximately \$14 million) in expenditures were incurred without the relevant council's approval, 240.5

billion soums (\$24 million) were not included in the financial statements, and 32.6 billion soums (\$3 million) were spent outside of the treasury's control.

Table 2. The results of the 2025 audit for the Fergana region are summarized.

Issue type	Amount (million soums)	Covered entities
Electricity accounts receivable/creditor discrepancies	12 057,8	All budgetary organizations
Natural gas differences	2 112,3	17 organizations
Penalty amounts for electricity and gas	3 752,2	281 organizations
Miscalculation of solar energy	7 000,0	617 organizations
Penalties for personal income tax and social tax	5 538,1	588 and 571 enterprises
Hidden tax base	41 300,0	43 enterprises
Uncontrolled expenses without a board decision	411 300,0	Regional budget
TOTAL	≥ 483 060,6	—

Analysis shows that the volume of financial deficiencies identified in the example of one region exceeds 483 billion soums, which confirms the systemic nature of these problems. Most of these shortcomings are related to the human factor, repeated data entry, and the lack of automated verification mechanisms between information systems.



Figure 1. The chain of risks arising from data breaches in state financial control.

This model demonstrates how disruption in the integration of information systems within the state's financial control can lead to inconsistencies in data, errors in reporting, increased control costs, and financial loss. This, in turn, can result in inefficient use of budgetary funds and decreased effectiveness of state financial management, negatively impacting budget discipline and quality of public financial management. Therefore, it is crucial to ensure real-time data exchange between different state information systems such as E-Qaror, UzASBO-2, treasury, and tax authorities in order to improve state financial monitoring and prevent potential risks.

An analysis of international best practices supports these findings. South Korea's dBrain+, France's CHORUS, and Australia's GovERP all employ distinct technological approaches, yet they share one common feature: a unified database, one-time data input,

and automated real-time tracking. Thanks to the implementation of AI and ERP systems as well as cloud-based technologies, financial inaccuracies have been significantly reduced and the extent of oversight has been expanded within these frameworks.

Table 3. Comparison of international digital financial control systems.

Indicator	South Korea (dBrain+)	French (CHORUS)	Australia (GovERP)
Year introduced	2022	2012	2021
Technology	AI + real-time monitoring	Integrated ERP	Cloud ERP + AI
Result	Errors decreased by 67%	Spending decreased by 40%	Control coverage increased threefold
Eligibility for Uzbekistan	UzASBO-2 + SI module	Integration of e-decision and DMBAT	Cloud Accounting & Analytics

The findings of the research indicate that the most efficient approach to enhancing financial management in Uzbekistan would involve integrating the existing UzASBO-2 framework with other pertinent information systems, including tax, treasury, utilities, and electronic billing systems, as well as local government systems based on API technology. Such an integration would enable real-time tracking, automatic error identification, and enhanced efficiency in the utilization of public resources.

Discussion

The results of the study revealed the main problem faced by the system of state financial control in the Republic of Uzbekistan. This problem lies in the discrepancy between the resources of the regulatory authorities and the volume of financial flows that they need to monitor. From 2015 to 2025, state budget expenditures increased by 8.7 times, while the number of financial control officers decreased. As a result, the workload of each supervisor increased by 12.3 times. This trend indicates that traditional methods of state financial control are becoming less effective in the context of increasing complexity of financial transactions. This may explain the increase in the number of errors and deficiencies identified during the audit.

A study of the problems found in the Ferghana region has shown that most of them are caused not by problems in financial control mechanisms, but by a lack of interaction between government information systems. Problems such as differences in calculations for electricity and natural gas, the presence of a hidden tax base on electronic invoices, errors in reporting on personal income tax and social tax, lack of accounting for confiscated property, as well as failures in the operation of E-Kengash-DMBAT systems, arise due to the lack of data exchange between these systems. This suggests that a significant part of the work in the process of state financial control is done manually, which leads to repeated data entry and thorough verification.

The results of the conducted research confirm the conclusions based on the study of international experience. The experience of countries such as South Korea with the dBrain+ system, France with CHORUS, and Australia with GovERP clearly demonstrates how important it is to create a unified database, conduct real-time monitoring, and use automated verification mechanisms to improve the effectiveness of financial controls. In these countries, the use of ERP platforms and artificial intelligence technologies has significantly reduced the number of financial errors, expanded control coverage, and reduced administrative costs. This suggests that the introduction of an integrated digital control model based on the UzASBO-2 platform in Uzbekistan is a reasonable step.

In the course of the research, a comprehensive integration model was created that makes it possible to optimize the operation of the existing system of state financial control without the need for significant changes. Integration with electricity and gas supply

systems helps to reduce utility bills and avoid fines. Communication with the electronic invoice system minimizes the concealment of sales transactions and helps to increase tax revenues. The automatic tax reporting module helps strengthen the reporting discipline, and the confiscated assets accounting module ensures full control over state property. The integration of E-Kengash, E-Qaror and ASCUD systems significantly reduces the risk of misuse of budget funds.

According to preliminary estimates, the implementation of the proposed integration modules in the Ferghana region will annually prevent financial losses in the amount of at least 497 billion soums. The data is based on the results of audits conducted by the Accounts Chamber, which revealed financial problems. The results confirm that accelerating digitalization in the field of state financial control is not only a way of technological modernization, but also an important tool for improving financial efficiency.

However, this study has its limitations. Since the analysis is based mainly on audit data for 2025 and the example of the Ferghana region, it cannot be unequivocally stated that the results are applicable to the entire republic. In future studies, it is worth considering data from other regions, developing control methods using artificial intelligence, and evaluating effectiveness after the introduction of digital technologies.

Conclusion

The results of the study show that the digitalization of the state financial control system and the improvement of the integration of information systems are key areas of modern financial management in the Republic of Uzbekistan.

The analysis revealed that, despite a significant increase in government spending over the past decade, the resources and control capabilities of financial control authorities have not been able to fully adapt to these changes. This led to an increase in the burden on supervisors and, as a result, to an increase in the number of financial errors, inaccuracies in calculations and factors negatively affecting the efficiency of using budget funds.

A study conducted in the Ferghana region has revealed a number of issues in the area of state financial management. The main cause of these issues is a lack of integration and communication between government information systems. Specifically, significant financial losses arise from a lack of data synchronization between different utility accounting systems, electronic invoices, tax reports, records of confiscated assets, and local budget decision-making.

An analysis of international experience shows that integrated digital financial control systems successfully implemented in South Korea, France, and Australia demonstrate high efficiency. They can significantly reduce the number of financial errors, expand the scope of control, and reduce management costs.

The UzASBO-2 platform is already operating in Uzbekistan, which can be improved using artificial intelligence technologies, automatic verification, and real-time monitoring. This will bring state financial control to a new level.

Based on the research results, the following scientific and practical proposals have been developed:

- ⊗ Linking the UzASBO-2 system with tax, treasury, utility, electronic invoicing, and local government information systems based on a unified integration platform;
- ⊗ implementation of the "one-time data entry - multiple use" principle in state financial control;
- ⊗ Creating an automated monitoring system for the early detection of financial risks based on artificial intelligence and Big Data technologies;
- ⊗ widespread implementation of mechanisms for the automatic generation and submission of tax and financial reports in budgetary organizations;

- ⊗ development of a separate digital module for accounting for confiscated assets and state property;
- ⊗ Establishing real-time data exchange between the E-Kengash, E-Qaror, DMBAT, UzASBO-2, and treasury systems;
- ⊗ development and implementation of a risk-based digital audit methodology in state financial control.

Based on the calculations, the practical implementation of the proposed digital integration model could significantly improve the efficiency of state financial management. This could increase financial discipline, reduce costs associated with control, and ensure transparency and effectiveness in budget spending.

At the same time, this would accelerate the digital transformation of financial oversight in the state and establish a strong institutional and technical basis for data-driven decision-making. Future research should focus on developing algorithms for auditing using artificial intelligence, implementing forecasting techniques in public finance, and assessing the effectiveness of digital integration in different regions.

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