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INTEGRATING DIGITAL FINANCE INTO PUBLIC SECTOR BUDGETING: CHALLENGES AND OPPORTUNITIES IN UZBEKISTAN

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Abstract: This study explores the integration of digital finance into public sector budgeting in Uzbekistan, analysing both the challenges and emerging opportunities. As Uzbekistan continues its transition toward a more transparent and efficient fiscal system, digital tools—including electronic payments, blockchain-based ledgers, and automated reporting—have begun reshaping budget planning and execution. Using a qualitative approach supported by secondary data from government reports, international organisations, and policy reviews, the study identifies key institutional, technical, and regulatory barriers while highlighting the benefits of enhanced transparency, traceability, and fiscal control. The findings suggest that successful digital integration requires a comprehensive policy framework, capacity-building, and inter-agency coordination to unlock the full potential of digital finance in Uzbekistan's public budgeting.

Keywords: digital finance, public sector budgeting, fiscal transparency, e-government, financial technologies, budget reforms, digital economy.

Introduction

In the context of Uzbekistan's ongoing socio-economic reforms, the integration of digital finance into public sector budgeting has emerged as a strategic priority. As part of the "New Uzbekistan" development strategy for 2022–2026, the government has committed to improving fiscal transparency, efficiency, and accountability by leveraging modern digital technologies in public financial management (PFM). Specifically, the strategy outlines a roadmap to digitise budget planning, execution, monitoring, and reporting across all levels of government institutions[1].

The global digital transformation in public financial systems offers promising solutions for improving budget governance. Uzbekistan has taken concrete steps in this direction through key presidential and governmental decrees. The Presidential Decree No. PF-60, dated January 28, 2022, explicitly emphasises the need to expand the use of digital finance in public sector reforms and optimise budget expenditures through e-government systems[2]. Moreover, the Cabinet of Ministers' Resolution No. 710 (October 4, 2022) introduced the "Digital Budget Management" program, aiming to automate budget processes, reduce human errors, and enhance traceability of public funds[3].

However, the transition to digital finance in public budgeting is not without challenges. Institutional fragmentation, lack of digital infrastructure in rural areas, and limited digital literacy among budget executors remain critical barriers to full-scale implementation[4]. At the same time, international

[1] "Development Strategy of New Uzbekistan – Priority Areas for 2022–2026," President.uz, January 2022.
[2] Presidential Decree No. PF-60, "On the Development Strategy of New Uzbekistan for 2022–2026," January 28, 2022.
[3] Cabinet of Ministers Resolution No. 710, "On the Implementation of the Digital Budget Management Program," October 4, 2022.
[4] World Bank, "Uzbekistan Public Finance Management Assessment," Report No. 167834-UZ, 2023.

experience shows that successful integration can result in greater fiscal control, real-time tracking of public expenditures, and improved citizen trust in budgetary decisions[5].

Furthermore, the Ministry of Economy and Finance of Uzbekistan has outlined a Digital Public Finance Reform Roadmap (2023–2026), which includes the development of centralised budget management platforms, integration with the national tax and treasury systems, and implementation of open budget portals accessible to citizens[6]. These initiatives reflect the government's recognition that modern financial technologies (FinTech) are not merely optional but essential tools in the transformation of fiscal governance.

Given this background, the present study aims to explore the extent to which digital finance is being integrated into Uzbekistan's public budgeting system, identify the main implementation challenges, and assess the opportunities it provides for improving fiscal performance and governance. This analysis contributes to a growing body of literature on digital public finance in transitional economies, providing policy-relevant insights for Uzbekistan and similar contexts.

Literature Review

The integration of digital finance into public sector budgeting has been the subject of increasing academic interest in both developed and developing economies. Scholars have explored how digital financial systems, including electronic payments, automated budget tracking, and blockchain applications, can enhance fiscal transparency, reduce corruption, and increase public trust in financial governance.

Internationally, Allen and Alves (2016) emphasise that digital finance improves the efficiency of budget allocation by enabling real-time monitoring and performance-based budgeting practices[7]. According to Cangiano et al. (2013) from the International Monetary Fund, digital tools can reduce leakages and support a more rules-based approach to public financial management (PFM), particularly in countries undergoing transition to open market economies[8]. Similarly, the OECD (2021) asserts that the digitisation of fiscal systems is not just a technical reform but a profound transformation of institutional accountability and transparency mechanisms[9].

In the context of emerging economies, Bhargava and Dutta (2020) note that implementing digital finance in the public sector requires more than technological upgrades; it demands changes in institutional culture and workforce capacity-building[10].They argue that without adequate training and legal reform, digital tools may remain underutilised or even resisted by public sector employees.

In post-Soviet contexts, such as Kazakhstan and Georgia, researchers have documented positive impacts of digital budgeting platforms on expenditure monitoring and citizen engagement[11]. These cases offer valuable lessons for Uzbekistan, where similar institutional challenges exist but reforms are actively underway. From a regional perspective, Uzbek scholars have also contributed to this field. T. G'ulomov (2022) analyses Uzbekistan's efforts to modernise fiscal infrastructure through e-budget platforms, noting that initial outcomes have shown improved control over budget execution but that data integration across ministries remains weak[12]. In his recent work, Sh. Yusupov (2023) highlights the need to harmonise digital finance policies with broader

[5] OECD, "Digital Government in Developing Countries: Opportunities and Challenges," OECD Publishing, 2021.
[6] Ministry of Economy and Finance of the Republic of Uzbekistan, "Digital Public Finance Reform Roadmap (2023–2026)," official document, Tashkent, 2023.
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[11] Khetsuriani, T. (2021). *PFM Reform and Budget Digitization in Post-Soviet Economies: Case Studies from Georgia and Kazakhstan*. Eurasian Economic Review, 11(3), 377–395.
[12] **G'ulomov, T. (2022).** *Digital Budgeting System and the Experience of Uzbekistan.* Journal of Financial Research, 4(1), 44–56.

administrative reforms to avoid fragmentation in digital transformation projects[13]. Furthermore, a 2023 policy paper by the Centre for Economic Research and Reforms (CERR) found that while Uzbekistan has made notable progress in digitising tax collection and treasury operations, budget transparency remains limited at the local level due to weak feedback mechanisms and low digital literacy in certain regions[14]. In summary, the literature agrees that while digital finance holds transformative potential for public budgeting, its success depends on several interlinked factors: legal foundations, institutional coordination, technical infrastructure, and human capital. For Uzbekistan, this means not only adopting digital tools but also ensuring an enabling environment for their effective implementation.

Research methodology

This research adopts a qualitative and descriptive methodological approach aimed at analysing the integration of digital finance into the public sector budgeting system in Uzbekistan. The study primarily relies on secondary data sources, including official government strategies, presidential decrees, Cabinet of Ministers' resolutions, analytical reports, and academic literature. This approach allows for a comprehensive understanding of institutional reforms, technological advancements, and policy implementation related to digital finance in the country.

To ensure conceptual depth and consistency, the research employs an analytical framework derived from Public Financial Management (PFM) reform theory, digital governance theory, and institutional capacity models such as PEFA (Public Expenditure and Financial Accountability). This framework focuses on five critical areas: the legal and regulatory environment for digital finance; infrastructure readiness and interoperability; institutional capacity, especially in rural or under-resourced regions; the digital skills of public finance personnel; and the presence of mechanisms to ensure fiscal transparency and citizen engagement. Furthermore, the study includes a comparative component by examining the experiences of countries with similar post-Soviet economic and governance legacies, including Kazakhstan, Georgia, and Estonia. These cases provide relevant insights into the successful sequencing of reforms, technology adoption, and institutional coordination. For example, Georgia's success in implementing an open budget portal and Kazakhstan's treasury digitisation reform serve as comparative benchmarks for assessing Uzbekistan's path forward.

Although the study is qualitative, it also incorporates statistical observations where available, such as budget execution rates, digital platform adoption levels, and public satisfaction indicators reported in national surveys. However, several limitations remain. First, there is a lack of detailed, disaggregated performance data at the local government level. Second, many reform outcomes remain unpublished or are not sufficiently transparent, making independent verification challenging. Lastly, no primary fieldwork was conducted in regional or municipal budget institutions, which may limit the applicability of findings to grassroots-level implementation. Despite these limitations, the triangulation of multiple data sources and the use of a structured analytical framework provide a reliable foundation for concluding the state of digital finance in public budgeting in Uzbekistan. This methodology ensures that the research findings are both policy-relevant and academically rigorous.

Analysis and discussion of results

To assess the extent of digital finance integration in Uzbekistan's public budgeting system, data from various institutional reports, government statistics, and international benchmarks were

[13] **Yusupov, Sh. (2023).** *Challenges and Prospects of Digital Reforms in Uzbekistan's Public Finance.* Scientific Journal of Public Administration, 2(2), 18–29.
[14] Centre for Economic Research and Reforms (CERR) (2023). *Analytical Review: Digital Public Finance in Uzbekistan*. Tashkent.

analysed. The findings reveal both significant progress and persistent challenges across multiple dimensions of digital budgeting reform.

Progress in Digital Budgeting Infrastructure: Since 2021, Uzbekistan has made notable strides in digitising core budget functions such as revenue forecasting, expenditure control, treasury payments, and inter-agency coordination. The Ministry of Economy and Finance reports that over 82% of central government budget transactions were processed through digital platforms in 2023, compared to 56% in 2020[15].

Table 1. Growth in Digital Budget Processing Coverage (2020–2023)

Year	% of Budget Transactions Digitised	Remarks
2020	56%	Pilot systems in 6 ministries
2021	67%	Introduction of the unified treasury module
2022	75%	Interlinked with e-Tax and procurement
2023	82%	Nationwide rollout (excluding some rural areas)

E-Government Integration and Transparency: The State Tax Committee, Customs Committee, and Treasury Department have increasingly integrated systems for real-time tracking and data sharing. However, the Open Budget Portal, launched in 2022, has limited functionality for citizen interaction. According to a 2023 UNDP report, only 27% of surveyed citizens were aware of the portal, and less than 10% had accessed or used it[16].

Table 2. Public Engagement with Digital Budget Transparency Tools

Indicator	Value (2023)
Citizens are aware of the Open Budget Portal	27%
Citizens who accessed it at least once	9.6%
Citizens who provided feedback/comments	2.3%
Local government units publishing data	38%

Institutional and Human Capacity Challenges: While high-level ministries have adopted digital finance systems, many regional budget departments lack sufficient qualified IT personnel and training programs. According to the Centre for Economic Research and Reforms (CERR), more than 48% of regional finance staff in 2023 reported not receiving formal training on digital tools[17]. Moreover, existing systems often lack interoperability, leading to redundant manual data entry between treasury, tax, and procurement systems in some oblasts. This not only slows down operations but also increases the risk of human error.

International Comparison and Lessons Learned: Compared to peer countries in the post-Soviet space, Uzbekistan shows a moderate pace of progress. For example:

[15] Ministry of Economy and Finance of Uzbekistan (2024). *Annual Budget Implementation Report*.
[16] UNDP Uzbekistan (2023). *Digital Governance and Budget Transparency Survey Report*. https://www.uz.undp.org/
[17] Center for Economic Research and Reforms (CERR) (2023). *Survey on Digital Finance Capacity in Regional Budget Offices.https://cerr.uz/en/research/digital-finance-2023*

Table 3. Comparative Overview of Digital Budget Integration (2023)

Country	Digital Budget Coverage (%)	Citizen Portal Usage (%)	Inter-Agency Integration
Uzbekistan	82%	9.6%	Partial
Kazakhstan	92%	24.3%	Advanced
Georgia	89%	37.8%	Full
Estonia	99%	45.6%	Full

Uzbekistan still lags in inter-agency integration and public participation, which are considered key elements in achieving full fiscal transparency. Georgia's citizen-budget portal, for instance, includes feedback loops and expenditure dashboards updated in real-time. The findings of this study confirm that Uzbekistan has made notable progress in centralising and digitising public budgeting. The introduction of unified treasury systems and digital expenditure tracking marks a significant shift in fiscal governance, aligned with the Development Strategy of New Uzbekistan. These reforms have improved budget execution speed, accuracy, and transparency while reducing paperwork and corruption risks. Despite these achievements, digital transformation remains incomplete. Technological progress must be supported by broader structural reforms. First, clear legal mandates are needed to ensure open budget data publication across all government levels. Second, local administrators require targeted digital finance training. Third, citizen engagement should be strengthened through accessible platforms and feedback tools. Finally, full interoperability among tax, treasury, and procurement systems is essential to eliminate inefficiencies. To address these gaps, the study recommends a hybrid model—combining top-down enforcement with bottom-up capacity building. This dual approach will promote both effective implementation and inclusiveness. If sustained, Uzbekistan can become a regional leader in digital public financial management soon.

Conclusions and suggestions

This study has examined the current state, challenges, and opportunities associated with the integration of digital finance into Uzbekistan's public sector budgeting. It is evident that over the past few years, Uzbekistan has embarked on a strategic path toward modernising its fiscal governance system. Through the implementation of unified treasury systems, digital payment mechanisms, and centralised budgeting platforms, the country has made significant progress in improving efficiency, transparency, and accountability in public financial management.

The adoption of digital tools has accelerated budget execution processes, minimised redundant paperwork, and enhanced the traceability of public expenditures. These developments mark a transition away from manual, paper-based operations toward a more streamlined and accountable budgeting environment. However, while central government institutions have embraced digital systems relatively quickly, subnational entities continue to face limitations due to digital infrastructure gaps, low digital literacy, and limited institutional capacity. Furthermore, citizen engagement in the budgetary process remains low despite the availability of digital platforms. This suggests that technological advancement alone is insufficient. The success of digital finance integration in the public sector depends not only on the availability of digital infrastructure but also on the strength of institutional frameworks, human capital development, and legal enforcement mechanisms. In conclusion, Uzbekistan stands at a critical juncture in its public financial reform trajectory. The foundations of digital budgeting have been laid, but the next phase of reform must focus on sustainability, inclusiveness, and full integration. With targeted policy interventions and inclusive governance mechanisms, Uzbekistan can consolidate its gains and set a benchmark for other countries in the region.

Based on the findings and analysis of this study, the following recommendations are proposed to enhance the effective integration of digital finance in Uzbekistan's public budgeting system:

Introduce binding legal requirements mandating all government levels to publish budget data in open and machine-readable formats. Legal clarity and consistency will foster accountability and ensure compliance across ministries and local authorities. Invest in the development of digital competencies among budget officers, particularly at the regional and district levels. Training programs, e-learning modules, and institutional partnerships with universities should be prioritised to build sustainable digital literacy. Establish fully integrated digital platforms that connect tax administration, treasury operations, and public procurement systems. This would eliminate data silos, reduce duplication, and enable real-time monitoring of public finance activities. Expand and upgrade the Open Budget Portal to make it more interactive and user-friendly. Introduce features that allow citizens to track budget allocations, submit feedback, and participate in public consultations on spending priorities. Encourage experimental budgeting technologies at the local government level through pilot programs, supported by central funding and technical guidance. Successful models can later be scaled up to the national level. Establish clear indicators and mechanisms to evaluate the performance of digital finance reforms. Regular audits and feedback loops will help refine strategies and ensure continuous improvement.

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