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DIGITAL TRANSFORMATION OF BUDGET-ESTIMATE AND ACCOUNTING PROCESSES IN STATE UNIVERSITIES OF UZBEKISTAN: SYSTEM INTEGRATION AND A ROAD MAP TO 2030

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Abstract

State universities in Uzbekistan plan, execute and report their budget estimates across several unconnected information systems. The thesis assesses the digital maturity of six estimate and accounting processes on a five-level scale, maps seventeen accounting and reporting proposals to the system integrations they require, and outlines a three-stage road map for 2026–2030. Payments and estimate execution have reached level 4, while revenue recognition stands at level 2 and cost accounting at level 1. Six of the seventeen proposals depend on a link between the HEMIS education management system and the UzASBO accounting software. The study argues that a bridge between education data and financial data, supported by common identifiers and data-quality rules, has to precede artificial-intelligence tools, and that most measures can be carried out within existing systems.

Keywords: Budget estimate, public sector accounting, digital maturity, HEMIS, UzASBO, treasury, data quality, higher education, road map.



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Introduction

A financially autonomous state university in Uzbekistan executes separate estimates for budget appropriations, tuition fees, its development fund and other extra-budgetary sources. Each estimate has its own treasury account and its own set of reports. Accounting teams therefore spend much of their time transferring figures between systems and reconciling the results by hand. The proposals developed in our earlier monograph on estimate execution accounting (Norquchqorov, 2025) and developed further in the present research (monthly recognition of tuition revenue, activity-based costing of educational services, control ratios between report forms and remote monitoring of execution risks) all rely on large volumes of data processed every month. Without system integration they remain on paper.

Government policy has set a clear direction. The Strategy for improving public financial management for 2025–2030 requires a concept for integrating public finance information systems, a single passport of budget organisations, automated submission of budget requests and the automatic generation of key budget reports, and it sets the goal of a full transition to programme budgeting by 2030 (Cabinet of Ministers of the Republic of Uzbekistan, 2025). Decree No. PF-252 makes the digitalisation of state audit and the use of artificial intelligence in financial control a priority (President of the Republic of Uzbekistan, 2025). The aim of this thesis is to translate these national goals into concrete tasks for the estimate and accounting processes of state universities.

Methods

Seven information systems used in estimate planning, execution, accounting, reporting and control were reviewed on the basis of official descriptions and normative documents: UzASBO, the treasury information system, HEMIS,

kontrakt.edu.uz, the public procurement system, the Remote Audit system of the Accounts Chamber and the Open Budget portal. The Remote Audit system and risk-based planning of control were introduced by Decree No. PF-100 (President of the Republic of Uzbekistan, 2024). The descriptions of the systems were taken from official sources (Ministry of Economy and Finance of the Republic of Uzbekistan, 2024; Ministry of Higher Education, Science and Innovation, 2024). Three analytical steps followed. First, each of the seventeen proposals of the monograph was linked to the data it needs and to the source system of those data. Second, six processes were scored on a five-level digital maturity scale: 1, paper documents; 2, electronic documents with manual entry; 3, automation within one system; 4, integration between systems with single data entry; 5, analytical and intelligent tools on integrated data. Third, the gaps between the current and the target levels were arranged into a staged road map aligned with the timeline of the 2025–2030 Strategy. Evidence on data problems came from the 2021–2025 annual reports of TUIT and the Avloniy Institute.

Results

UzASBO already automates budget accounting, fixed assets, inventories, cash, payroll, staffing tables and budget and financial reports on a single chart of accounts, and it exchanges data with the treasury and the public finance management system (UzASBO, n.d.). In 2024 paper staffing tables were fully replaced by electronic ones and two separate programs were merged into one (Ministry of Economy and Finance of the Republic of Uzbekistan, 2024). Education data live elsewhere. HEMIS holds student records, curricula and teaching loads, and the education-loan procedure already requires student data to be present in both HEMIS and kontrakt.edu.uz (Ta'lim xabarlari, 2024). We

found no public evidence of an automatic link between these education systems and the accounting software.

Figure 1 groups the seventeen proposals by the integration each of them requires. The HEMIS – UzASBO link is needed by six proposals: contingent-based estimate planning, monthly recognition of tuition revenue, activity-based costing, segment accounting, expenditure analysis per student and public disclosure of cost per student. Treasury, tuition-contract and Remote Audit links are needed by three proposals each, and the programme-budget module by two.

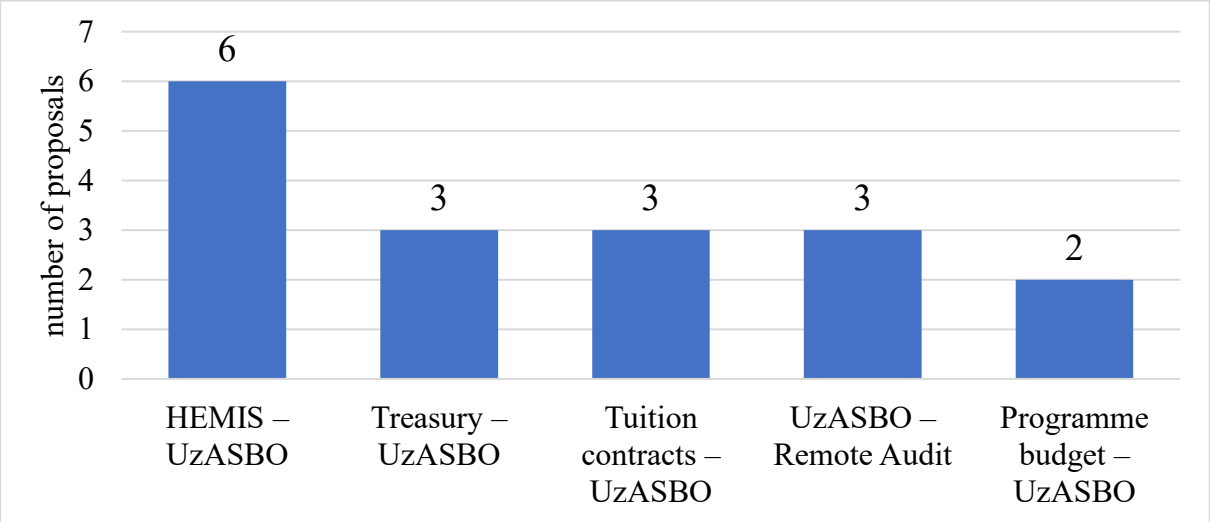


Figure 1. Accounting and reporting proposals by the system integration they require

Source: compiled by the author.

The maturity scores in Table 1 show an uneven picture. Processes tied to treasury cash control are the most advanced, whereas accrual-based revenue recognition and cost accounting lag behind by two to three levels.

Table 1 Digital maturity of estimate and accounting processes in state universities

Process	Current practice	Current level	Target practice by 2030	Target level
Estimate planning	Electronic estimate and staffing table in UzASBO; student numbers calculated by hand	3	Automatic forecast from contingent and contract data	4
Execution and payments	Commitments and payments registered through the treasury and linked to UzASBO	4	Real-time analysis of commitment execution	5
Revenue recognition	Receipts recorded electronically; timing of recognition not regulated	2	Monthly automatic recognition from HEMIS and contract data	4
Cost accounting	Not maintained	1	Automatic allocation under an activity-based model	4
Reporting	Electronic reports in UzASBO; control ratios not checked	3	Automatically generated integrated report package	5
Control and audit	Remote Audit system and risk analyses	3	Early-warning indicators and AI-assisted monitoring	5

Source: author's assessment.

The integration has a technical precondition: shared identifiers for the student, the contract, the study programme, the cost centre and the institution. The annual reports of the two universities revealed the problems that such rules would prevent: mixed balances in settlements with students, an unfilled financing column in the estimate execution report (Form 2), discrepancies of UZS 1.2–2.2 billion between report forms at TUIT, all receipts of the development fund

booked under "other receipts", an opening balance shown as a receipt after a treasury account change, and a switch of the unit of measurement in Form 2 from thousand to single soums. Six data-quality rules (uniqueness, completeness, consistency, correct classification, continuity and a single unit of measurement) answer these problems one by one.

Table 2 sets out the proposed road map. The budget-to-actual comparison in stage 1 follows IPSAS 24 (International Public Sector Accounting Standards Board, 2024). Each stage builds on the outputs of the previous one, and responsibility is shared between the Ministry of Economy and Finance, the sector ministry, universities and the Accounts Chamber.

Table 2 Road map for the digital transformation of estimate and accounting processes in state universities, 2026–2030

Stage	Key measures	Expected result
1. Methodological groundwork (2026–2027)	Add budget-to-actual comparison, cash flow statement, notes and control ratios to BAS No. 3; regulate tuition revenue recognition in BAS No. 2; complete the move to a single chart of accounts; set data standards and identifiers	Comparable data; discrepancies between report forms removed
2. Integration and pilots (2027–2028)	Data exchange between HEMIS, kontrakt.edu.uz and UzASBO; pilot monthly revenue recognition and activity-based costing in 5–10 universities; early-warning indicators and an integral execution index in Remote Audit	Contingent and contract data reach the ledger automatically; risk-based control
3. Full roll-out (2029–2030)	Cost-based differentiation of funding norms; integrated report package and an open financial dashboard in every university; AI tools for revenue forecasting and risk assessment	Results-oriented funding; transparency and accountability

Source: developed by the author.

Discussion and conclusion

The uneven maturity profile has a historical explanation. Digitalisation of public finance in Uzbekistan began with the treasury's need to control cash execution of budget appropriations, so processes linked to payments advanced first. Accrual accounting, costing and management analysis received far less attention, although accrual information is valuable precisely as an analytic tool even where budgets remain cash-based (Schick, 2007), and the target state requires the focus to move from cash control towards accrual-based accounting and analysis. This sequence is consistent with Diamond's (2003) argument that classification and accounting systems must measure programme costs reliably before funds can be linked to results.

The proposed architecture follows the principle that data are entered once and reused many times. When a student is expelled, the event would be recorded only in HEMIS; the contract would then be suspended in kontrakt.edu.uz, deferred revenue reversed in UzASBO, monthly recognised revenue reduced and the contingent forecast updated. Today the same event is keyed into each system separately, or not entered at all, which explains many of the mismatches found in settlements with students.

Artificial intelligence belongs to the last stage of the road map. Each of its six use cases, from forecasting tuition receipts and detecting unusual payments to clustering institutions by risk, presupposes integrated and standardised data, and algorithms trained on inconsistent reports would produce false signals and undermine trust in control. Two further risks need attention. Centralised systems can fail: in 2021 accountants of budget organisations reported that salary payments were delayed because UzASBO was not working during the payroll period (Kun.uz, 2021). Integration also moves personal data of students and staff across several systems. A gradual roll-out through pilot projects, with

professional review of automatically generated entries, reduces both risks. Most measures of the road map can be implemented within existing systems and institutions without large additional investment, and their completion would give universities the data base needed for the full transition to programme budgeting by 2030.

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