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ENHANCING THE MECHANISMS OF HIGHER EDUCATION QUALITY ASSURANCE IN UZBEKISTAN THROUGH DIGITAL GOVERNANCE

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Annotatsiya: O‘zbekiston Respublikasida "Oliy ta’lim tizimini 2030 yilgacha rivojlantirish konsepsiyasi" doirasida so‘nggi o‘n yillikda oliy ta’lim tizimi jadal sur’atlarda kengayib, oliy ta’lim muassasalari soni hamda talabalar kontingenti sezilarli darajada oshdi. Ushbu o‘sish an’anaviy qo‘lda nazorat qilish va davriy baholashga asoslangan ta’lim sifatini ta’minlash tizimi oldiga yangi vazifalarni qo‘ydi. Mazkur muammolarni bartaraf etish maqsadida O‘zbekistonda Oliy ta’limni boshqarish axborot tizimi (HEMIS) respublika miqyosida joriy etildi va u oliy ta’limni raqamli boshqarish hamda sifatni ta’minlashning muhim vositasi sifatida shakllandi.
Kalit so‘zlar: raqamli boshqaruv, oliy ta’lim, ta’lim sifati, sifatni ta’minlash tizimi, HEMIS, O‘zbekiston.
Abstract: Under the strategic framework of the "Concept for the Development of the Higher Education System 2030," Uzbekistan's higher education system has undergone rapid expansion over the past decade, with a significant increase in the number of universities and student enrollment. This growth has posed significant challenges to the traditional quality assurance model based on manual inspections and periodic evaluations. To address the quality risks associated with this expansion, Uzbekistan has comprehensively implemented the Higher Education Management Information System (HEMIS) at the national level, positioning it as a key tool for advancing digital governance in higher education and enhancing quality assurance capabilities.
Keywords: Digital Governance; Higher Education; Quality Assurance System; HEMIS; Uzbekistan
Абстрактный: В рамках реализации «Концепции развития системы высшего образования Республики Узбекистан до 2030 года» за последнее десятилетие система высшего образования страны значительно расширилась, что сопровождалось существенным увеличением количества высших учебных заведений и численности студентов. Данный рост создал серьезные вызовы для традиционной модели обеспечения качества образования, основанной на ручном контроле и периодических проверках. В целях минимизации рисков, связанных с обеспечением качества, в Узбекистане на национальном уровне была внедрена Информационная система управления высшим образованием (HEMIS), ставшая важным инструментом цифрового управления и обеспечения качества высшего образования.
Ключевые слова: цифровое управление, высшее образование, обеспечение качества образования, система обеспечения качества, HEMIS, Узбекистан.

Introduction (Kirish/Введение).

Driven by the global advancements of Industry 4.0 and digitalization , digital governance has emerged as a pivotal tool for enhancing public s ervice efficiency. Through technologies such as big data, cloud computin g, and intelligent analytics, government management is transitioning fro m traditional, experience-based, campaign-style approaches to more prec ise, data-driven, and process-oriented models. This shift is particularly pr essing in higher education, where traditional methods like periodic onsite evaluations and paper-based oversight struggle to address the complexiti es of large-scale systems. Instead, continuous, data-driven monitoring is reshaping university boundaries, driving governance toward more transp arent, immediate, and evidence-based models.In this context, Uzbekistan has recognized higher education quality as a strategic national priority, v iewing it as essential to the country’s competitiveness and innovation. Th e 2019 Presidential Decree, "The Concept for the Development of the Hi gher Education System until 2030," emphasizes quality as a guiding prin ciple, mandating the enhancement of synergies between Internal Quality Assurance (IQA) and External Quality Assurance (EQA) mechanisms to ensure alignment with talent development and socioeconomic needs. Ho wever, as the higher education system in Uzbekistan has expanded signif icantly, with the number of institutions and student enrollment growing s ubstantially, the demand for reform has become more urgent.

By 2024/2025, the number of higher education institutions has reach ed 208-222, with student enrollment surging to approximately 1.43 milli on, marking a five-fold increase over the past decade. This growth, while expanding access, has also introduced significant governance challenges , such as strained resources, increasing student-teacher ratios, and more c omplex quality assurance processes.In response to these challenges, Uzb ekistan has turned to digital transformation in education, particularly thro ugh the implementation of the Higher Education Management Informati on System (HEMIS) as a core tool for digital governance. This system is intended to strengthen monitoring capabilities; however, a key issue rem ains: how to effectively convert this technical system into a robust qualit y governance mechanism rather than merely using it for administrative m anagement.As shown in Figure 1, the rapid expansion of the higher educ ation system in Uzbekistan has significantly increased the complexity of quality assurance, highlighting the necessity of introducing digital gover nance tools such as HEMIS.

Literature review (Mavzuga oid adabiyotlar tahlili/Обзор литер атуры). The concept of quality assurance in higher education has evolve d from traditional external inspection mechanisms toward comprehensiv e governance systems that emphasize continuous improvement, institutio nal accountability, and evidence-based decision-making. Harvey and Gre en [16] identified quality as a multidimensional concept encompassing e xcellence, fitness for purpose, value for money, transformation, and cons istency. Their theoretical framework remains one of the most influential approaches for understanding quality assurance in higher education and s erves as the conceptual foundation for many contemporary national quali ty assurance systems.

In Uzbekistan, higher education reforms have been guided by the co nstitutional guarantee of the right to education and the state's responsibili ty to ensure educational quality [1]. The adoption of the Law "On Educat ion" established the legal basis for improving educational standards, stre ngthening institutional autonomy, and introducing modern quality manag

ement approaches across higher education institutions [2]. These legislati ve reforms created favorable conditions for integrating digital technologi es into educational governance.

A major milestone in the modernization of Uzbekistan's higher educ ation system was the approval of the Concept for the Development of the Higher Education System until 2030, which emphasizes improving educ ational quality, expanding academic independence, strengthening institut ional governance, and accelerating digital transformation [3]. The Conce pt recognizes that effective quality assurance requires integrated digital i nformation systems capable of supporting strategic planning, monitoring institutional performance, and facilitating data-driven policy decisions.

The national digital transformation agenda has further accelerated educational modernization through the "Digital Uzbekistan – 2030" Strategy [4]. This strategy promotes the digitalization of public administration, including education management, encouraging government agencies and higher education institutions to adopt integrated information systems that improve administrative efficiency, transparency, and public accountability. Digital governance is therefore considered a key instrument for enhancing institutional effectiveness and service quality.

Recognizing the importance of systematic quality control, the Presidential Resolution on improving the education quality control system introduced additional institutional mechanisms for monitoring educational performance and evaluating institutional effectiveness [5]. The resolution strengthened both external quality assessment and internal quality assurance processes while encouraging the adoption of digital technologies to improve the accuracy and timeliness of institutional evaluations.

An important step toward digital governance was the introduction of the Higher Education Management Information System (HEMIS), approved by the Cabinet of Ministers in 2021 [6]. HEMIS integrates academic, administrative, financial, and student information into a unified digital platform, enabling real-time monitoring of institutional performance and reducing administrative fragmentation. The system represents one of the most significant digital governance initiatives implemented in Uzbekistan's higher education sector.

International organizations have consistently emphasized that digital governance is essential for improving educational quality. The Asian Development Bank [7] argues that modern higher education systems require integrated digital infrastructure capable of supporting institutional planning, monitoring graduate outcomes, and improving management efficiency. Similarly, the World Bank [11] highlights that digital quality assurance systems enhance transparency, facilitate evidence-based policymaking, and improve institutional accountability by providing reliable educational data.

The rapid development of artificial intelligence has introduced new opportunities and challenges for quality assurance. OECD [8] emphasizes that AI technologies enable predictive analytics, personalized learning assessment, automated administrative processes, and improved institutional decision-making. UNESCO [10] similarly recommends responsible implementation of generative artificial intelligence in education while emphasizing ethical governance, academic integrity, data privacy, and human-centered quality assurance frameworks.

Statistical evidence demonstrates the necessity of digital governance within Uzbekistan's expanding higher education sector. According to the Statistics Agency under the President of the Republic of Uzbekistan [9], the rapid increase in higher education institutions and student enrollment has substantially increased the complexity of educational management. Traditional manual monitoring mechanisms have become insufficient for maintaining consistent educational quality, thereby increasing the demand for integrated digital quality assurance systems.

Several Uzbek scholars have examined governance reforms supporting higher education modernization. Abdullaev [12] argues that administrative reforms implemented within the framework of New Uzbekistan have strengthened institutional governance through decentralization, improved public administration, and expanded digital public services. These reforms have provided favorable conditions for increasing institutional accountability and improving educational quality management.

Academic autonomy has become another important component of quality assurance. Aslonov [13] emphasizes that expanding institutional independence enables universities to respond more effectively to labor market demands while assuming greater responsibility for educational quality. Bekimbetova [14] further argues that successful implementation of academic independence requires the development of a strong institutional quality culture supported by transparent governance mechanisms, continuous self-evaluation, and evidence-based decision-making.

Efficiency analysis has also contributed significantly to understanding higher education performance. Using Data Envelopment Analysis, Eshchanov, Abdurakhmanov, and Yuldashev [15] demonstrated considerable variation in the operational efficiency of higher education institutions in Uzbekistan. Their findings suggest that institutional performance can be substantially improved through better resource management, digital administration, and systematic performance monitoring.

The implementation of HEMIS has attracted increasing scholarly attention. Karimov and Khakimov [17] examined the practical implementation of HEMIS and identified significant improvements in student information management, academic administration, reporting efficiency, and institutional transparency. However, they also noted challenges related to staff digital competencies, system integration, and organizational adaptation during the early stages of implementation.

From the perspective of internal quality assurance, Qo'ng'irov [18] emphasizes that quality management should be viewed as a continuous institutional process rather than periodic external evaluation. He argues that internal quality assurance systems should integrate performance indicators, stakeholder feedback, risk management, and continuous improvement mechanisms. Digital information systems significantly strengthen these processes by providing accurate and timely institutional data.

Rakhimov [19] specifically analyzed quality management within the context of digital transformation using HEMIS as a case study. His research concludes that digital governance significantly improves institutional planning, academic monitoring, document management, and quality assessment while reducing administrative costs and increasing transparency. Nevertheless, successful implementation requires continuous staff training, cybersecurity measures, and further integration with national educational databases.

Abdurakhmanov [20] further emphasizes that digital transformation and human capital development are mutually reinforcing processes. According to his research, investment in digital competencies, technological infrastructure, and innovative management practices significantly enhances institutional competitiveness and supports sustainable development of higher education systems within the digital economy.

Overall, the reviewed literature demonstrates broad agreement that effective higher education quality assurance increasingly depends on integrated digital governance mechanisms. International studies emphasize data-driven management, artificial intelligence, and institutional accountability, while national research highlights the strategic role of HEMIS, academic autonomy, internal quality assurance, and digital public administration reforms. However, despite significant progress in digitalizing higher education management in Uzbekistan, relatively limited empirical research has comprehensively examined how digital governance mechanisms directly influence institutional quality assurance outcomes. This research therefore seeks to address this gap by investigating the contribution of digital governance—particularly HEMIS—to strengthening higher education quality assurance mechanisms in Uzbekistan.

Methods (Tadqiqotni amalga oshirishda foydalanilgan usullar/ Методы).

This study employs a mixed-methods research design combining qualitative policy analysis with quantitative descriptive analysis to examine how digital governance mechanisms contribute to strengthening higher education quality assurance in Uzbekistan. The methodology is based on the principles of evidence-based educational governance and digital transformation research.

The research primarily utilizes document analysis to examine the legal, institutional, and strategic framework governing higher education quality assurance. National regulatory documents, including the Constitution of the Republic of Uzbekistan, the Law "On Education," the Higher Education Development Concept until 2030, the "Digital Uzbekistan – 2030" Strategy, and government resolutions related to HEMIS implementation and education quality management, serve as the principal sources for identifying policy priorities and institutional reforms.

A comparative analysis method is employed to compare Uzbekistan's digital governance initiatives with internationally recognized quality assurance approaches proposed by UNESCO, the OECD, the World Bank, and the Asian Development Bank. This comparison allows the identification of similarities, differences, and best practices that can be adapted to the national higher education system.

The study also applies a systematic literature review to synthesize previous empirical and theoretical research on higher education quality assurance, academic autonomy, digital governance, management information systems, and HEMIS implementation. Both international and

national scholarly publications are analyzed to establish the theoretical foundation of the research.

To evaluate the practical contribution of digital governance, the study uses descriptive statistical analysis based on official educational statistics published by the Statistics Agency under the President of the Republic of Uzbekistan. Key indicators, including the number of higher education institutions, student enrollment, digitalization coverage, and institutional management processes, are analyzed to illustrate recent developments in the higher education sector.

Furthermore, the research adopts a qualitative case study approach, considering the Higher Education Management Information System (HEMIS) as the central case of digital governance implementation in Uzbekistan. The analysis examines how HEMIS supports internal quality assurance through automated academic management, real-time monitoring, digital reporting, data integration, transparency, and evidence-based institutional decision-making.

Finally, the findings are interpreted using the methods of logical synthesis, induction, deduction, and analytical interpretation, enabling the identification of relationships between digital governance mechanisms and improvements in higher education quality assurance. These methodological approaches provide a comprehensive framework for evaluating the effectiveness of digital governance in supporting sustainable quality assurance and institutional development within Uzbekistan's higher education system.

Analysis and rezults (Tahlil va natijalarlar /Анализ и результаты). Theoretical Connotations and Institutional Forms of Higher Education Quality Assurance.

The concept of higher education quality has evolved from an early, static emphasis on compliance with predefined standards toward a more dynamic and adaptive understanding in the digital era. The multidimensional definition proposed by Harvey and Green (1993) remains a foundational reference in international higher education research. However, rapid changes in the global educational environment—particularly the widespread adoption of generative artificial intelligence (GenAI) and blended learning—have substantially reshaped the meaning of quality. Contemporary quality evaluation now extends beyond learning outcomes to include ethical and effectiveness-related considerations concerning the role of digital technologies in teaching processes. UNESCO (2023), in its Global Education Monitoring Report, emphasizes that modern higher education quality should incorporate principles of digital inclusion and algorithmic fairness, underscoring the need to address the implications of technology for educational equity and teaching effectiveness. Similar concerns are reflected in OECD (2023) analyses, which highlight that while digital technologies enhance teaching methods and expand access, they also generate new challenges related to data privacy and technological inequality.

In Uzbekistan, the advancement of the “New Uzbekistan” strategy has further accelerated the transformation of higher education quality concepts. The Uzbekistan–2030 Strategy redefines quality by shifting the focus from academic performance alone to the alignment between human capital development and labor market demand. This shift implies greater emphasis on students’ digital literacy as well as innovation and entrepreneurial competencies, while also requiring more fine-grained and data-intensive quality assessment tools. Toshkulov (2023) notes that, in the context of accelerating global digital transformation, Uzbekistan is systematically revising its higher education quality standards, particularly with regard to enhancing graduates’ digital skills and labor market competitiveness. This reorientation is consistent with international trends and provides institutional support for economic restructuring and human capital upgrading.

From an institutional perspective, traditional quality assurance theories have treated Internal Quality Assurance (IQA) and External Quality Assurance (EQA) as relatively independent operational mechanisms. Under conditions of digital transformation, however, the boundaries between these mechanisms are increasingly blurred. The application of big data and artificial intelligence has intensified interactions between IQA and EQA, as evidenced by the adoption of cloud-based data-sharing models in countries such as Scotland and Ireland, which has contributed to the emergence of “seamless quality assurance” practices. Based on an empirical analysis of Uzbekistan’s HEMIS system, Rakhimov (2024) demonstrates that real-time data flows have enabled a shift from periodic onsite inspections to continuous remote monitoring, significantly enhancing the responsiveness and efficiency of quality regulation. At the same time, this transformation has raised concerns regarding data reliability and algorithmic transparency. In 2024, the Ministry of Higher Education, Science and Innovation of Uzbekistan formally required universities to establish data-driven internal quality early warning mechanisms, signaling the transition of internal quality assurance toward a data-based model. At the national level, Abdullaev (2023) observes that quality supervision functions have moved from compliance-oriented approval to risk-based monitoring through the analysis of key performance indicators (KPI) using national databases. This state-led quality assurance model—characterized by institutional data generation and centralized oversight—maintains macro-level regulatory capacity while expanding institutional autonomy, and represents a notable institutional innovation for transition countries in the digital era.

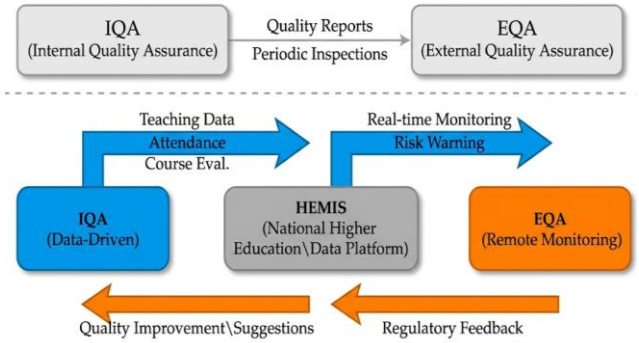

Figure 1. Coordinated mechanism of internal and external quality assurance under digital governance[1]

Digital Governance Theoryand.

Digital governance should not be understood as a passive application of technology, but rather as a distinct mode of governance that reshapes the coordination, decision-making, and regulatory logic of public affairs. Unlike traditional e-government or narrowly defined information management, digital governance moves beyond the instrumental goal of improving information-processing efficiency. It seeks to systematically reconfigure governance processes through data integration, algorithmic analysis, and platform-based operations, thereby enhancing the continuity, precision, and traceability of public governance. In the context of higher education, digital governance entails the incorporation of teaching, administration, and quality assurance into a unified digital ecosystem. Governance activities increasingly move away from reliance on ex post reporting and manual inspections, and instead are grounded in the continuous collection and analysis of teaching process data, enabling routine monitoring and early risk detection. Data-driven decision-making, process-oriented monitoring, and cross-actor coordination thus constitute the core features of digital governance.

In recent years, this line of thinking has further evolved into the paradigm of “algorithmic governance.” Williamson (2021) observes that in higher education governance, code and algorithms no longer function as neutral administrative instruments, but increasingly act as “invisible intermediaries” that define and enforce rules, thereby participating directly in the structural transformation of governance arrangements . From this perspective, education management information systems intervene in teaching and administrative practices through embedded algorithmic rules—such as the definition of attendance, the weighting of grade point calculations, or the thresholds that trigger academic risk alerts. These mechanisms subtly discipline and reconfigure the behavior of both teachers and students, illustrating how governance authority is partially relocated from formal administrative actors to technical systems.

Research on Higher Education Quality Assurance

From the standpoint of public management practice, Uzbekistan’s Higher Education Management Information System (HEMIS) offers a critical case for understanding how digital governance becomes deeply embedded in quality assurance systems. In contrast to earlier reforms that primarily pursued “paperless administration,” HEMIS integrates core functions such as academic operations, student records, research management, and administrative processes into a single digital infrastructure, covering the full lifecycle of higher education governance. According to Karimov and Khakimov (2023), the nationwide rollout of HEMIS—reaching a coverage rate of 98% by the end of 2023—has given rise to a distinctly “panoptic” mode of governance . Through API-based integration with key national databases, including taxation and civil registration systems, HEMIS not only curtails degree fraud at its source but also provides a verifiable third-party data chain for assessing graduate employment quality. This shift indicates that the role of digital infrastructure in higher education governance has moved beyond administrative efficiency toward the substantive enhancement of quality assurance reliability and regulatory transparency.

[1] author's development

A review of recent scholarship reveals a pronounced “technological turn” in international research on higher education quality assurance since 2022. On the one hand, increasing attention has been directed toward the potential of artificial intelligence (AI) in accreditation, evaluation, and risk prediction. An OECD (2023) report explores the use of machine learning techniques to analyze student feedback texts, predict dropout risks, and identify anomalies in learning processes, highlighting the importance of data analytics for strengthening the anticipatory capacity of quality assurance systems . On the other hand, the incorporation of governance perspectives has prompted scholars to examine how digital tools reshape power relations within quality assurance, suggesting a transition from outcome-oriented evaluation toward governance models centered on process monitoring and continuous improvement.

Despite these advances, existing research remains subject to notable limitations. Much of the dominant literature is grounded in the context of Western countries with mature data infrastructures, leaving the applicability of its conclusions to developing and transition economies insufficiently tested. In Uzbekistan, domestic studies have largely focused on macro-level policy interpretation, adjustments to governance structures, and the cultivation of quality culture. While Bekimbetova (2024) examines the impact of governance reforms from the perspective of academic autonomy, and research on HEMIS has gradually increased, most analyses remain confined to descriptive accounts of institutional arrangements and system functions. Systematic investigation into how digital governance tools operate at the micro level to reshape quality assurance mechanisms remains limited.

In light of these gaps, this study seeks to analyze the operational mechanisms of Uzbekistan’s higher education quality assurance system within the framework of digital governance. Particular attention is paid to the mediating and regulatory roles played by HEMIS between national-level oversight and internal quality assurance within universities. By doing so, the study aims to contribute empirically grounded and practice-oriented insights into higher education quality governance in transition contexts.

Institutional Framework of the Quality Assurance System in Uzbekistan

Top-Level Design of the National Policy and Legal Framework

The institutional construction of Uzbekistan’s higher education quality assurance system is closely embedded in the broader agenda of state governance modernization and the “New Uzbekistan” reform. Since independence, the state has consistently adopted a legislation-first approach, establishing its authority over higher education quality through legal regulation. This trajectory was strategically consolidated in 2019 with the Presidential Decree of 8 October 2019, On Approval of the Concept for the Development of the Higher Education System until 2030 (PF-5847), which formally articulated “quality priority” as a core development principle . The document explicitly called for the establishment of a quality assurance system aligned with international standards such as the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), and identified the development of internal and external quality evaluation mechanisms as a key strategic task.

Under this framework, a “pyramid-shaped” policy and regulatory system has gradually taken shape, supported by the revised Law on Education (2020), presidential decrees, and cabinet resolutions. At the legislative level, the Law on Education defines institutional qualifications and quality responsibilities of higher education institutions, while establishing the legal mandate of national supervision bodies. At the administrative level, cabinet resolutions on improving education quality control specify procedures for accreditation and licensing, shifting regulatory focus from input-based inspections—such as facilities and resources—toward output-oriented indicators, including graduate employment and research commercialization. At the level of targeted policy, a series of directives on the implementation of the HEMIS system mandate the integration of quality-related data into a unified national platform, providing both legal and technical foundations for standardized quality assurance.

Overall, Uzbekistan’s quality assurance framework exhibits a strong state-led orientation. Its central objective is to enforce quality thresholds amid rapid system expansion, while leaving institutional space for a gradual transition toward governance modernization.

Operational Mechanisms and Constraints of External Regulation.

At the implementation level, Uzbekistan has established an external quality assurance system centered on the State Inspectorate for Quality Control in Education (hereafter the State Inspectorate). As a specialized body subordinated to the Cabinet of Ministers, the State Inspectorate exercises key regulatory powers, including institutional approval, supervision of educational processes, quality certification, and evaluation reporting, thereby functioning as the principal gatekeeper of national higher education quality.

Traditionally, external regulation has relied on periodic onsite inspections and documentary compliance reviews. Expert panels conduct site visits at intervals of four to five years, focusing on teaching records, faculty contracts, and physical infrastructure. While effective during the elite phase of higher education, this campaign-style regulatory model has become increasingly strained under conditions of massification.

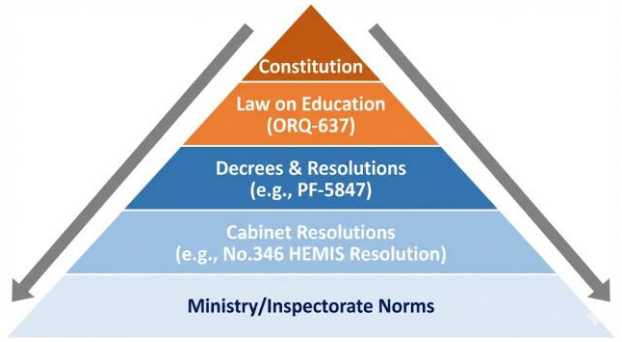

Figure 2. Hierarchy of Legal and Regulatory Framework for Higher Education Quality Assurance in Uzbekistan.

According to official statistics, by the 2024/2025 academic year the number of higher education institutions exceeded 200, with student enrollment surpassing 1.4 million—nearly five times the 2016 level . Under such conditions, traditional regulatory methods reveal clear limitations: regulatory coverage remains incomplete, compliance-driven reporting increases the risk of data distortion, and long assessment cycles impede timely identification of emerging quality risks. These constraints have generated strong institutional pressure to shift from ex post sanctioning toward process-oriented monitoring. At the national level, this has created an urgent demand for tools capable of acquiring operational data at low cost and high frequency, directly motivating the integration of HEMIS into the quality assurance system.

Operational Mechanisms of the Quality Assurance System under Digital Governance

The Repositioning and Functional Role of HEMIS in Quality Assurance

Under the policy frameworks of the Concept for the Development of the Higher Education System until 2030 (Presidential Decree PF-5847) and the Digital Uzbekistan–2030 strategy, the Higher Education Management Information System (HEMIS) has been redefined from a tool for administrative automation into a core digital infrastructure for national higher education governance. Unlike earlier fragmented digital initiatives, HEMIS establishes a centralized data platform that systematically records the full student lifecycle—from enrollment to graduation and employment—as well as key aspects of the teaching process, including curriculum design, instructional progress, and assessment outcomes.

Official statistics indicate that HEMIS has reached a level of coverage sufficient to support system-wide quality governance. According to the Education in Uzbekistan–2024 statistical report jointly issued by the Ministry of Higher Education, Science and Innovation and the State Statistics Committee, by the beginning of the 2024/2025 academic year the system covered 212 higher education institutions (including branch campuses), with more than 1.432 million registered students and a coverage rate exceeding 98% among public universities. This large-scale digital deployment has provided the state, for the first time, with the technical capacity to monitor the operation of a rapidly expanding higher education system on a continuous basis.

Within the logic of quality assurance, HEMIS performs a dual function as both a technical constraint and a standard-enforcement mechanism. Rather than replacing existing quality regulations, the system embeds national requirements into procedural rules, enforcing unified data standards and limiting discretionary manipulation in institutional reporting. By translating regulatory intent into system-level operations, HEMIS supports a transition from experience-based, static inspections toward data-informed, dynamic monitoring.

The Transformation of Data Flows: From Outcome Evaluation to Process Monitoring

Under digital governance, the most significant change in quality assurance mechanisms lies in the restructuring of data flows and monitoring logic. Through the HEMIS platform, large volumes of data generated in daily university operations—such as attendance records, interim assessment results, course selection patterns, and credit accumulation—are continuously transformed into standardized digital streams and transmitted to national databases. Data thus become a routine byproduct of teaching activities rather than materials produced solely for periodic evaluations.

In principle, this data infrastructure enables process-oriented quality diagnosis. By setting algorithmic thresholds, regulators can automatically detect anomalies and issue early warnings. For example, unusually high failure rates in specific courses or sudden increases in student attrition within certain programs can trigger timely regulatory attention, shifting quality assurance from ex post accountability to in-process intervention.

In practice, however, the diagnostic potential of these data remains underutilized. HEMIS-generated data are still primarily used for administrative compliance, statistical reporting, and performance documentation. Although data collection has been digitalized, most universities lack analytical frameworks capable of converting raw data into insights that support teaching improvement. As a result, the system remains “data-rich but information-poor,” with digital governance benefits largely confined to administrative efficiency rather than substantive enhancement of teaching quality.

Asymmetry in Coordinated Governance between External Regulation and Internal Quality Assurance

The comprehensive integration of HEMIS has reshaped interactions between external quality assurance (EQA) and internal quality assurance (IQA). While traditional hierarchical models relied on one-way administrative supervision, digital governance theoretically enables coordinated regulation through shared data infrastructures.At the national level, regulatory authorities have begun to use HEMIS data to implement differentiated supervision. By identifying institutions with higher operational risks, regulators can concentrate expert resources more efficiently and reduce onsite inspections for compliant universities. This risk-based approach demonstrates the potential of digital governance to enhance regulatory efficiency.

At the institutional level, however, coordination remains uneven. Empirical observations suggest that data primarily flow upward to national authorities, while mechanisms that support institutional improvement are underdeveloped. Universities generally have access only to their own raw data and lack permissions for benchmarking against peer institutions. Moreover, internal quality assurance units are often staffed by administrative personnel with limited data analysis expertise, constraining their ability to translate system outputs into evidence for teaching reform.

Consequently, internal quality assurance remains closely tied to external reporting requirements, with a tendency toward formalism rather than self-diagnosis. This misalignment between rapidly advancing digital systems and lagging governance capacity constitutes a central challenge in Uzbekistan’s higher education quality assurance reform and provides the empirical basis for the policy recommendations presented in the following chapter.

Table 1 Comparison of Data Utilization between National Regulation (EQA) and Institutional Quality Assurance (IQA)[2]

Dimension	National Regulation	Institutional Quality Assurance
Scope of data access	System-wide, cross-institutional datasets	Primarily institution-specific data
Analytical permissions	Horizontal benchmarking and trend analysis across institutions	Limited to descriptive statistics and raw reports
Primary use of data	Risk identification and differentiated supervision	Compliance reporting and internal record-keeping
Analytical| capacity	Dedicated personnel and institutionalized analytical routines	Predominantly administrative staff with limited analytical expertise
Feedback mechanisms	Data-informed regulatory decisions and targeted interventions	Weak linkage between data outputs and teaching improvement

Conclusion and Recommendations (Xulosa va takliflar/Выводы и предложения).

This study analyzes the operational mechanisms of Uzbekistan’s higher education quality assurance system from the perspective of digital governance. The findings show that, with the nationwide implementation of the Higher Education Management Information System (HEMIS) across 212 institutions and approximately 1.432 million students—covering more than 98% of public universities—the state has acquired the technical capacity to conduct continuous and system-wide monitoring of higher education. This infrastructural shift has substantially reduced the costs of traditional supervision and facilitated a transition from periodic onsite inspections toward data-based process monitoring.

At the same time, the study reveals a persistent misalignment between technological capacity and governance effectiveness. While national regulators primarily employ data for compliance-oriented oversight and accountability, internal quality assurance within universities remains constrained by limited data governance capacity. As a result, large volumes of process data are used mainly for reporting purposes and have not been effectively transformed into resources for teaching improvement. The core challenge, therefore, lies not in the absence of digital infrastructure, but in the lag of institutional design and governance capacity behind digital practice.

Inspiration and Prospect

Based on these findings, future reforms should move beyond a narrow focus on technological deployment toward the development of data governance frameworks. At the national level, quality assurance regulations need to be aligned with the data architecture of HEMIS, formally integrating process-level data into accreditation and evaluation systems while establishing feedback mechanisms that balance supervision with developmental support. At the institutional level, universities must strengthen internal data analysis capacity and reposition quality assurance as a mechanism for supporting curriculum reform, faculty development, and student learning.

It should be noted that this study is primarily based on macro-level institutional analysis and meso-level operational mechanisms, and does not yet examine classroom-level teaching practices or conduct extensive cross-national comparisons. Nevertheless, the transformation logic identified here—characterized by technology-first implementation followed by institutional and capacity adjustment—offers a useful analytical framework and practical reference for Uzbekistan and other Central Asian transition countries seeking to build modern higher education governance systems through the coordinated development of technology, institutions, and human agency.

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