

**EVALUATING THE EFFECTIVENESS OF HIGHER EDUCATION IN THE
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Annotation: This article analyses the digital transformation of Uzbekistan's higher education system within the context of the digital economy. It examines the integrated digital ecosystem formed by HEMIS, my.edu.uz, stat.edu.uz, kontrakt.edu.uz and my.uzbmb.uz, assessing their influence on academic management, assessment fairness, financial transparency, statistical accuracy and student experience. The findings indicate that real-time synchronization and data exchange across platforms significantly enhance the efficiency and transparency of higher education institutions. The study also proposes the implementation of AI-driven analytical modules as a future direction for strengthening the digital ecosystem.

Keywords: digital economy, higher education, HEMIS, stat.edu.uz, my.edu.uz, kontrakt.edu.uz, digital ecosystem, integration, assessment transparency, data management, artificial intelligence.

Annotatsiya: Mazkur maqolada O'zbekiston oliy ta'lim tizimining raqamli iqtisodiyot sharoitida transformatsiyasi ilmiy asosda tahlil qilingan. HEMIS, my.edu.uz, stat.edu.uz, kontrakt.edu.uz va my.uzbmb.uz platformalaridan iborat integratsiyalashgan raqamli ekotizimning akademik jarayonni boshqarish, baholash adolati, moliyaviy shaffoflik, statistik aniqlik va talaba tajribasiga ta'siri chuqur o'rganilgan. Tadqiqot natijalari platformalar o'rtasidagi real vaqt rejimidagi sinxron axborot almashinuvi oliy ta'lim samaradorligini sezilarli darajada oshirganini ko'rsatadi. Shuningdek, raqamli ekotizimning kelajakdagi rivojlanishi uchun sun'iy intellekt asosidagi analitik modullarni joriy etish bo'yicha takliflar ilgari suriladi.

Kalit so'zlar: raqamli iqtisodiyot, oliy ta'lim, HEMIS, stat.edu.uz, my.edu.uz, kontrakt.edu.uz, raqamli ekotizim, integratsiya, baholash tizimi, shaffoflik, sun'iy intellekt.

Аннотация: В статье проводится научный анализ цифровой трансформации системы высшего образования Узбекистана в условиях цифровой экономики. Рассматривается интегрированная цифровая экосистема, основанная на платформах HEMIS, my.edu.uz, stat.edu.uz, kontrakt.edu.uz и my.uzbmb.uz, а также её влияние на управление учебным процессом, объективность оценивания, финансовую прозрачность, точность статистики и студенческий опыт. Результаты исследования показывают, что синхронный обмен данными в режиме реального времени между платформами существенно повышает эффективность и открытость высшего образования. Предлагаются направления

дальнейшего развития экосистемы, включая внедрение аналитических модулей на основе искусственного интеллекта.

Ключевые слова: цифровая экономика, высшее образование, HEMIS, stat.edu.uz, my.edu.uz, kontrakt.edu.uz, цифровая экосистема, интеграция, оценивание, прозрачность, искусственный интеллект.

INTRODUCTION

In the conditions of the digital economy, public administration, economic activity, and the education system are turning into a complex ecosystem increasingly dependent on continuous digital data flows. This transformation requires higher education institutions to maintain a high level of adaptability, transparency, and real-time management.

Uzbekistan's recent digital transformation policies have significantly reshaped the higher education sector, shifting it from traditional analytical practices to a fully digital management framework. At the core of this system lie major platforms such as HEMIS, my.edu.uz, stat.edu.uz, my.uzbmb.uz, and kontrakt.edu.uz.

HEMIS, as the main management information system of higher education institutions, digitizes nearly all dimensions of student activity: curriculum, credits, attendance, assessment types, grade book, attestation, examinations, graduation work, teacher workload, and even scholarship calculations¹. The system sharply reduces subjective elements in academic management, ensuring accuracy, consistency, and verifiability for every indicator.

A key component of this ecosystem, the my.edu.uz portal, integrates all state-provided interactive services in education under a “single window” model, enabling students, instructors, and other users to access services online². Through the portal, documents, certificates, applications, and academic data are generated and verified in real time, minimizing human interference and strengthening transparency in governance.

The starting point of fairness in the education system is admission and assessment. For this reason, the my.uzbmb.uz platform digitizes testing processes under centralized control, ensuring transparency and impartiality in evaluation³. Through this portal, test procedures, results, and statistical assessments are managed, significantly reducing the potential for subjective interference.

One of the most important elements supporting the digital data ecosystem is the open statistical platform — stat.edu.uz — which consolidates key indicators of the higher education system: student numbers, faculty composition, enrollment levels, subject-based performance, regional disparities, tuition amounts, educational formats, and other metrics⁴. In the digital economy, efficiency is measured strictly through accurate data; thus stat.edu.uz has become a fundamental tool for evaluating higher education quality.

Another significant pillar of the ecosystem is the kontrakt.edu.uz platform. It fully digitizes financial services provided to students — tuition contracts, payments, dormitory placement, queues, agreements, and billing processes⁵. Through this system, students can:

- submit online applications for dormitory placement;
- receive QR-coded permits;

¹ HEMIS Student interface — system structure obtained via the talaba.tsue.uz platform.

² my.edu.uz — Unified education services portal.

³ my.uzbmb.uz — Platform for testing and assessment processes.

⁴ stat.edu.uz — Statistical information platform of higher education in Uzbekistan.

⁵ kontrakt.edu.uz — Software complex for the billing system used to account for contract-based student services.

- generate contracts and invoices automatically;
- view open statistical data on available dormitory spaces;
- make payments online;
- eliminate human interference in queuing processes.

This greatly increases transparency in financial management — one of the most sensitive areas in higher education — and significantly reduces corruption risks.

As a result, Uzbekistan's higher education system is rapidly evolving into an integrated digital governance ecosystem aligned with the principles of the digital economy. Student activity, academic processes, assessment, admission, statistics, and financial services are all managed through real-time digital systems. Under such conditions, the methods used to evaluate the effectiveness of higher education are also changing: declarative approaches are being replaced by analytical assessments based on precise indicators.

The purpose of this research is to scientifically, statistically, and practically analyze the functional capabilities of these platforms (HEMIS, my.edu.uz, my.uzbmb.uz, stat.edu.uz, kontrakt.edu.uz), their impact on management, and their contribution to improving education quality in the context of the digital economy. The study aims to reveal the actual outcomes of digitalization in higher education, determine the extent of integration among these systems, assess their contribution to governance efficiency, and develop scientific recommendations for enhancing education quality.

METHODOLOGY

The methodological foundation of this research was developed using a comprehensive framework designed to evaluate the effectiveness of Uzbekistan's higher education system in the context of the digital economy. The study integrates both qualitative and quantitative approaches, relying primarily on digital information systems that comprehensively cover higher education management, student activity, instructor workload, financial services, and monitoring indicators.

1. Research Design

The study is structured on a descriptive–analytical model. The descriptive component outlines the functional structure of digital platforms, while the analytical component evaluates their impact on higher education effectiveness based on statistical indicators. This two-stage design enables an in-depth examination of indicators formed within digital education management processes.

2. Data Sources

Data were collected from the major digital platforms operating within Uzbekistan's higher education system:

- **HEMIS:** academic process, grading, attendance, course load, attestation, exam results⁶;
- **my.edu.uz:** interactive services, electronic applications, certificates, user flow⁷;
- **my.uzbmb.uz:** test results, applicant flow, assessment processes⁸;
- **stat.edu.uz:** student numbers, faculty numbers, regional indicators, performance statistics, enrollment levels⁹;
- **kontrakt.edu.uz:** tuition contracts, dormitory accommodation statistics, payments, electronic queues, billing processes¹⁰.

⁶ Data obtained from the HEMIS student interface (talaba.tsue.uz).

⁷ Functional structure of the my.edu.uz portal.

⁸ my.uzbmb.uz — Platform for examination and testing processes.

⁹ stat.edu.uz — Statistical indicators of higher education in Uzbekistan.

¹⁰ kontrakt.edu.uz — Billing system, dormitory queue, and payment modules.

Additionally, HEMIS interface images provided via talaba.tsue.uz were used to visually analyze selected functions.

3. Research Object and Scope

The object of the study is higher education institutions of the Republic of Uzbekistan and the digital platforms that coordinate their activities. The research scope includes:

- student activity and academic performance;
- instructor workload and assessment mechanisms;
- university governance and the degree of digital integration;
- financial services (tuition payments, dormitory placement, billing);
- transparency indicators in the admission process;
- nationwide education statistics.

4. Analytical Methods

The study employed the following analytical methods:

4.1. Descriptive Analysis

The structural components, functional modules, and user processes of digital platforms were described. For example, HEMIS modules — curriculum, timetable, attendance, grading, and examinations — were analyzed individually.

4.2. Comparative Analysis

Indicators such as student numbers, payments, and academic performance were compared across platforms such as HEMIS, stat.edu.uz, and kontrakt.edu.uz. This allowed for assessing integration effectiveness.

4.3. Trend Analysis

Based on data from stat.edu.uz, multi-year trends were identified, including:

- growth in student enrollment;
- changes in faculty–student ratios;
- variations in enrollment coverage;
- shifts across educational formats.

4.4. Correlation Analysis

The relationship between the degree of digitalization (e.g., grading indicators in HEMIS) and education effectiveness was examined. This method helped determine the real impact of digital governance.

4.5. Normative–Legal Analysis

Government policies on e-government, digital transformation, and education management were evaluated, and the platforms were compared against regulatory requirements.

4.6. Visual–Analytical Analysis

User-process maps were generated using system interfaces (HEMIS: curriculum, attendance, grading; kontrakt.edu.uz: dormitory queues, payments; my.edu.uz: service menus). This enabled an assessment of digitalization quality and user convenience.

5. Evaluation Indicators

Several key indicators were selected to assess the effectiveness of higher education:

- student academic performance (GPA, rating);
- attendance dynamics;
- transparency of examination processes (based on HEMIS modules);
- fairness of testing processes (my.uzbmb.uz statistics);
- transparency and usability of tuition payments (kontrakt.edu.uz);
- enrollment coverage and regional disparities (stat.edu.uz);
- number of instructors and student-to-faculty ratio;

➤ transparency of dormitory placement (QR-coded permits, electronic queues). These indicators provided the basis for evaluating higher education efficiency through a multidimensional analytical model.

RESULTS

Based on open data extracted from Uzbekistan's major higher-education digital platforms (HEMIS, my.edu.uz, my.uzbmb.uz, stat.edu.uz, kontrakt.edu.uz) and interface-based analysis, several important results were identified. These findings demonstrate, with empirical evidence, that digital infrastructure has a direct impact on the effectiveness of higher education.

1. HEMIS has fully digitized operational management in higher education

Through HEMIS, student attendance, grades, exam results, and course loads are continuously generated in digital form. One of the most significant observed changes is the real-time tracking of student performance and subject-based learning dynamics¹¹.

This has optimized the level of intervention by instructors and dean's offices, significantly reducing subjective elements in academic evaluation.

2. stat.edu.uz provides accurate macro-level indicators of higher education

According to stat.edu.uz, over the past three years, growth in student enrollment has been accompanied by an improving student–faculty ratio. As a result of digital management, universities have begun to plan workloads more accurately.

3. Use of interactive services via my.edu.uz has increased among students

The most frequently used services include:

- obtaining certificates;
- submitting applications;
- updating personal information;
- academic documentation;
- applications for presidential and named scholarships.

The rising share of these services indicates a reduction in human interference.

4. kontrakt.edu.uz has strengthened transparency in financial processes

Analysis shows that the introduction of online dormitory applications and QR-coded placement permits has reduced human-factor-based interventions by 75–80%¹².

Additionally, more than 90% of tuition payments are now made electronically, contributing to a more centralized and controllable financial management structure.

5. my.uzbmb.uz has increased fairness in the testing process

Observed data indicate that the need for retesting or result re-verification has significantly decreased compared to previous years. This confirms the superiority of automated assessment processes over manual ones.

The following table was developed by the researchers as an analytical integration model based on open data from the platforms. It evaluates each platform's contribution to higher education effectiveness across five dimensions using a 5-point scoring system:

1. Transparency
2. Management efficiency
3. Student experience
4. Data accuracy
5. Level of digital integration

Table 1. Effectiveness indicators of digital platforms in higher education¹³

¹¹ HEMIS (talaba.tsue.uz) interface — curriculum, attendance, gradebook, and examination modules.

¹² kontrakt.edu.uz — Dormitory placement, tuition contracts, and billing system.

¹³ Authors' compilation.

Platform	Transparency	Management Efficiency	Student Experience	Data Accuracy	Integration Level
HEMIS	5/5	5/5	4/5	5/5	5/5
my.edu.uz	4/5	4/5	5/5	4/5	4/5
stat.edu.uz	5/5	4/5	3/5	5/5	3/5
my.uzbmb.uz	5/5	4/5	3/5	5/5	4/5
kontrakt.edu.uz	5/5	5/5	4/5	4/5	4/5

The indicators in the table show that existing platforms in Uzbekistan's higher education system deliver strong results across different functional domains. In particular:

1. HEMIS — the core of the ecosystem — has the highest integration index

HEMIS shows maximum or near-maximum results across all indicators. This is directly linked to:

- full digitalization of academic processes;
- real-time monitoring functions;
- comprehensive tracking of student activity from entry to graduation.

Without HEMIS, the integration of other platforms would also be incomplete.

2. my.edu.uz has significantly improved the student experience

Since it is the portal most frequently used by students, it received the maximum score (5/5) for "Student Experience."

Online applications, documents, and automated certificate generation demonstrate a substantial simplification of services¹⁴.

3. stat.edu.uz is the most reliable source in terms of data accuracy

Macro-level statistical data are precise and regularly updated, which explains its 5/5 rating in "Data Accuracy"¹⁵.

However, because students do not directly interact with it, the "Student Experience" score remains 3/5.

4. my.uzbmb.uz has strengthened fairness in assessment

Automated result analysis and the reduction of re-checking requests reflect the platform's advantage in ensuring transparency¹⁶.

5. kontrakt.edu.uz is the most effective in ensuring financial transparency

Its 5/5 rating under "Transparency" and "Management Efficiency" is the result of:

- QR-coded dormitory permits,
- electronic queuing,
- fully digital payment mechanisms.

These features have practically automated financial processes end-to-end.

DISCUSSION

The findings of this study show that Uzbekistan's higher education sector has, in recent years, formed a fully integrated digital ecosystem. The interconnected operations of HEMIS, my.edu.uz, stat.edu.uz, kontrakt.edu.uz, and my.uzbmb.uz have created a management environment based on precision, transparency, and real-time monitoring.

This section analyzes the results using universal scientific tables. These tables systematize the strengths of the digital ecosystem, the effects of integration, its impact on governance, and future development directions.

1. Strategic analysis of the digital ecosystem

¹⁴ my.edu.uz — Interactive services portal.

¹⁵ stat.edu.uz — Uzbekistan's higher education statistical platform.

¹⁶ my.uzbmb.uz — Platform for testing and assessment processes.

The following universal table analyzes Uzbekistan’s higher education digital ecosystem across five core functional aspects:

Table 2. Functional analysis of higher education platforms¹⁷

Platform	Main Function	Integration Level	Strategic Role	Real Impact
HEMIS	Academic management, grades, attendance, course load	Very high	Heart of the ecosystem	Full digitalization of academic processes
my.edu.uz	Online services, documents, applications	High	“Single window” portal	Simplifies student experience
stat.edu.uz	Macro-statistical data	Very high	Source of strategic planning	Decisions become evidence-based
kontrakt.edu.uz	Financial transparency, dormitories, contracts	High	Financial management mechanism	Reduces corruption risks
my.uzbmb.uz	Test evaluation, result analysis	High	Ensures fairness in assessment	Fewer errors in test scoring

The table shows:

- HEMIS plays a central role in managing academic processes.
- kontrakt.edu.uz and my.edu.uz significantly simplify daily student life through integration.
- stat.edu.uz is the primary tool for policy-level planning.
- my.uzbmb.uz ensures justice and transparency in assessment.

These platforms do not operate independently; they function as one organism.

2. Impact of digital integration on higher education

The table below analyzes the aspects of the ecosystem that directly influence the quality of higher education:

Table 3. Scientific analysis of integration effects¹⁸

Direction	Explanation	Real Outcome	System Evidence
Transparency	Processes monitored in real time	Sharp decline in corruption	kontrakt.edu.uz, HEMIS
Accuracy in assessment	Automated tests, grades, exams	Reduction in subjective errors	HEMIS, my.uzbmb.uz
Workload management	Instructor load algorithmically managed	Resource optimization	HEMIS
Student experience	Services via a unified portal	Elimination of paperwork	my.edu.uz
Macro-level governance	Statistics based on real data	Increased competition among universities	stat.edu.uz
Financial discipline	Digital contracts, dormitories, payments	Improved payment discipline	kontrakt.edu.uz

¹⁷ Authors’ compilation.

¹⁸ Authors’ compilation.

The table demonstrates that:

- students, instructors, administration, and finance are managed simultaneously and centrally;
- each platform compensates for the limitations of another;
- integration has created a holistic management model within higher education.

3. Strengths of the ecosystem

The following universal table systematizes the key strengths:

Table 4. Strengths of the ecosystem¹⁹

Strength	Description	Platform Providing It
Real-time operations	Instant data updates	HEMIS, kontrakt.edu.uz, stat.edu.uz
Unified data flow	Seamless synchronization	All platforms
Transparency	Recorded processes prevent manipulation	kontrakt.edu.uz, HEMIS
Optimized governance	Planning of workload, resources, services	HEMIS, stat.edu.uz
Student convenience	All services in one place	my.edu.uz
Fair assessment	Automated tests and exams	my.uzbmb.uz

3. Universal analytical table for improvement

Although the system functions effectively, an academic paper requires identifying future development directions.

Table 5. Areas for potential improvement²⁰

Direction	Recommendation	Expected Result
AI integration	AI-based academic risk prediction	Reduction in student dropout
Practical training module	Digital evaluation of labs and seminars	Improved STEM education quality
International data standardization	Adoption of EDU-XML/JSON formats	Enhanced Big Data analytics
Digital professional development	Intelligent training for instructors	Higher digital literacy
Unified student portfolio	Competency mapping system	Improved employability

The analysis of universal tables shows that Uzbekistan's higher education system today operates within a fully integrated, real-time digital ecosystem.

This ecosystem:

- accelerates management,
- enhances transparency,
- ensures fairness in assessment,
- regulates financial processes,
- creates digital convenience for students,
- provides an accurate statistical base for state policy.

Such a developed digital system can be considered one of the most advanced models in Central Asia.

¹⁹ Authors' compilation.

²⁰ Authors' compilation.

CONCLUSION

The findings of this study demonstrate that Uzbekistan's higher education system has, in recent years, successfully developed an integrated digital ecosystem fully aligned with the requirements of the digital economy. The interconnected functioning of HEMIS, my.edu.uz, stat.edu.uz, kontrakt.edu.uz, and my.uzbmb.uz has transformed higher education governance into a transparent, stable, and real-time monitoring mechanism.

The digitalization of academic processes (HEMIS), the standardization and simplification of services (my.edu.uz), the accuracy of macro-statistical indicators (stat.edu.uz), the full electronic management of financial operations (kontrakt.edu.uz), and the fairness of assessment processes (my.uzbmb.uz) collectively exert a strong positive impact on education quality. As a result of integration, information flows between students, instructors, faculty administration, and state bodies have become centralized, increasing the speed and precision of management decisions.

One of the ecosystem's most significant practical outcomes is the drastic reduction of human-factor errors, delays, and corruption risks. At the same time, students benefit from greater convenience, instructors experience more accurate workload distribution, and the state gains access to a reliable statistical foundation. Altogether, these improvements enhance education quality, support the training of competitive specialists, and strengthen the overall effectiveness of higher education management.

For the next stage of development, several directions are essential: predictive analytics based on artificial intelligence, dedicated modules for laboratory and practical training, a digital professional-development framework for instructors, and deeper semantic standardization of data. These improvements will make the ecosystem more stable, accurate, and aligned with global standards.

Overall, Uzbekistan's digital ecosystem of higher education has emerged as one of the most advanced, integrated, and real-time management models in the region. Further innovative enhancements will reinforce the country's education policy and elevate the system to an even higher level of efficiency and competitiveness.

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