



Article

Prospects for Improving the Quality of Higher Education Services in Uzbekistan

Salimov Akmal Alimzhanovich¹

1. PhD in Economics, Professor, Independent Researcher at Tashkent University of Information Technologies

Abstract: The article examines the significance and necessity of improving the quality of higher education services. A methodology for evaluation through the generalized integral index of higher education service quality assessment is presented, and the corresponding periods have been calculated for each structural component of the generalized integral index that determines higher education service quality. Medium-term forecast parameters have been developed for higher education coverage, academic quality, research capacity of faculty members, graduate employment, and the level of digitalization.

Keywords: Higher Education, Higher Education Services, Qualified Personnel, University, Higher Education Institutions, Educational Services, University Rankings, Academic Quality

1. Introduction

Improving the quality of higher education services provides the opportunity to accelerate positive trends not only in social but also in long-term economic development of the country, and to ensure the effectiveness of enhancing the competitiveness of the national economy [1]. For this reason, in any economic system, the determination of strategic state program priorities oriented toward the long term – through the development of forecast parameters based on scientifically grounded alternative scenarios for the effective utilization of development potential – is of both scientific and practical relevance. This, in turn, necessitates the development of forecast indicators based on alternative scenarios in order to substantiate the possibility of achieving the targeted parameters developed for improving the quality of higher education services in the country in accordance with the “Uzbekistan–2030” strategy [2], [3].

Literature Analysis

The scientific and methodological foundations of improving the quality of higher education services and evaluating the quality of provided higher education services find their expression in the scientific research of such foreign scholars as T. Brown, M.B. Flek, O.B. Adedoyin, R. Clemons, O.I. Ban, and C. Cheng [4].

By such Uzbek scholars as P.M. Lutfullaev, N.Zh. Sotvoldiev, F. Khoshimov, N.G. Zufarova, Sh.Sh. Zakhidova, and Kh.Kh. Rezhapov, the development characteristics of the higher education services market in the country, the strengthening of mutual integration relations between higher education and production, and the priorities of integrating higher education institutions into the international university rankings system have been studied [5].

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2. Methodology

The article employs the methods of systemic-theoretical analysis, comparative and selective research, grouping, monographic analysis, economic-mathematical analysis, and forecasting.

3. Results and Discussion

In developing alternative scenarios for improving the quality of higher education services in the country for the period up to 2030, we consider it expedient to rely on an integral index composed of indicators such as the coverage level of this type of services in terms of structural composition of higher education quality, the academic quality indicator achieved on the basis of the effectiveness of international cooperation programs being implemented to improve the quality of higher education services and international accreditation, the average research capacity of higher education institutions, the employment of graduates of higher education institutions, and the level of digital transformation of this sector – as recommended by experts from various global organizations, including the Asian Development Bank, the United Nations Development Programme (UNDP), and the World Bank [6], [7], [8]. The generalized integral index of higher education service quality assessment (1) is determined through the following equation:

$$SI_{otx} = \alpha \cdot Q + \beta \cdot G + \gamma \cdot IS + \delta \cdot BS + \varepsilon \cdot RT \quad (1)$$

Where:

SI_{otx} – the value of the generalized integral index of higher education service quality;

Q – the state of coverage of the country's population with higher education services;

G – the state of development of international accreditation and global cooperation relations in the higher education system, used to characterize academic quality;

IS – the indicator of research capacity of faculty members at local higher education institutions;

BS – the indicator of effective employment of graduates of higher education institutions, taking into account the state of provision of graduates with decent job positions;

RT – the level of digital transformation in the practice of providing higher education services;

$\alpha, \beta, \gamma, \delta, \varepsilon$ – weight values for the structural elements of the generalized integral index of higher education service quality assessment; in our case, we found it appropriate to divide the weights of each structural component's influence on the overall integral index value into equal intervals, and we arrived at the conclusion that the weight values of the indicators shall be in the following order:

Table 1. Grouping of the results of the Generalized integral index of higher education service quality (SI_{otx})

No.	Quality Index (SI_{otx}) Value Range	Grouping of Obtained Results
1	$0,0 < SI_{otx} < 54,9$	Higher education services are of unsatisfactory quality
2	$55,0 < SI_{otx} < 71,9$	Higher education service quality is at a low level
3	$72,0 < SI_{otx} < 85,9$	Higher education service quality is at a medium level
4	$86,0 < SI_{otx} < 100,0$	High-level quality higher education services

$$\alpha = 0,20; \beta = 0,20; \gamma = 0,20; \delta = 0,20; \varepsilon = 0,20$$

At the same time, taking into account that the results of the proposed generalized integral value of higher education service quality assessment are on a 100,0-point system, based on the approaches of the above-mentioned global organizations, we found it appropriate to carry out the grouping of the generalized integral quality index by unsatisfactory, low, medium, and high quality levels in the order presented in Table 1.

Thus, at the next stage, it is necessary to carry out the calculations directed at evaluating the generalized integral index of higher education service quality (SI_{OTX}), wherein the statistical data table for the developed index structural elements was formed using the databases of local and international organizations on the development of Uzbekistan's higher education system, and the obtained results were placed in Table 2 [9].

Table 2. Statistical values of the structural elements of the Generalized Integral Index of Higher Education Service Quality (SI_{OTX}) in Uzbekistan

Years	Coverage rate, in %	Academic quality, in units	Research capacity, in %	Graduate employment, in %	Digitalization level, in %
2017	9	5	35	60	10
2018	15	7	36	61	15
2019	20	10	38	62	20
2020	25	20	40	63	30
2021	29	40	42	65	40
2022	38	60	45	67	48
2023	42	85	47	69	52
2024	42	110	50	70	55
2025	44	125	52	72	58

Source: Compiled based on data from the Ministry of Higher Education, Science and Innovation

In carrying out the calculations, it is first necessary to form benchmark indicators for each structural element of the generalized integral index of higher education service quality (SI_{OTX}). In achieving this goal, it is considered expedient to rely on the international norms developed by experts from global organizations such as the Asian Development Bank and the United Nations Development Programme (UNDP)¹ regarding the high level of higher education service quality, which also allows for a comprehensive assessment of the state of integration of the results achieved in ensuring higher education service quality in the country into the global standards system [10]. Here, the normative standards established by global organizations for higher education service quality serve as benchmarks for the results achieved in our country and are used in calculating the normalization coefficients for each indicator. Based on our analysis, the values of such benchmark indicators were determined to be in the order presented in Table 3 [11].

Table 3. Values of statistical indicators established as benchmarks for the structural elements of the generalized integral index of higher education service quality (SI_{OTX}) in Uzbekistan

No.	Quality Index (SI_{OTX}) Structural Indicators	Maximum level	Minimum level
1	Coverage rate, in %	60	0
2	Academic quality, in units	300	0
3	Research capacity, in %	70	0
4	Graduate employment, in %	90	0
5	Digitalization level, in %	100	0

Source: A Matter of Choice: People and Possibilities in the Age of AI. Human Development Report 2025: Overview. UNDP, 2025. 20 p

Based on the above-mentioned structural elements of the generalized integral index of higher education service quality (SI_{OTX}) and the statistical indicators obtained for each of them in terms of benchmark values, the calculations need to be carried out in the following sequence:

At the first stage, the normalization coefficient for each structural element is determined based on the following equation (2):

$$N_K = \frac{Z_{it} - Z_i^{min}}{Z_i^{max} - Z_i^{min}} \quad (2)$$

Where:

N_K – the value of the normalization coefficient, which needs to be calculated for each structural component of the generalized integral index that determines higher education service quality for the corresponding periods;

Z_{it} – the actually achieved result indicator for the period and indicator for which the normalization coefficient is being assessed;

Z_i^{min} – the minimum indicator value within the benchmark values for the indicator for which the normalization coefficient is being assessed;

Z_i^{max} – the maximum indicator value within the benchmark values for the indicator for which the normalization coefficient is being assessed [12].

Table 4. Results of calculating normalization coefficients for the structural elements of the generalized Integral Index of Higher Education Service Quality (SI_{OTX}) in Uzbekistan

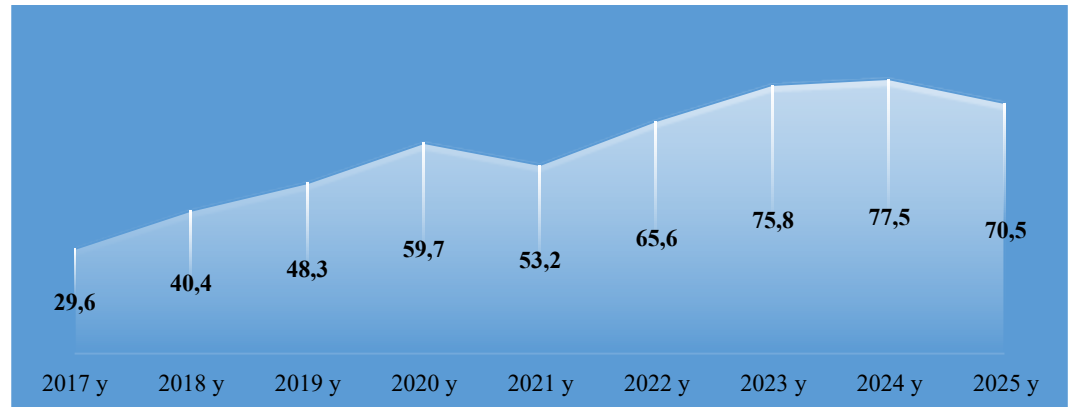
Years	Coverage rate	Academic quality	Research capacity	Graduate employment	Digitalization level
2017	0,150	0,017	0,500	0,667	0,100
2018	0,250	0,023	0,514	0,678	0,150
2019	0,333	0,033	0,543	0,689	0,200
2020	0,417	0,067	0,571	0,700	0,300
2021	0,484	0,133	0,600	0,722	0,400
2022	0,634	0,200	0,643	0,744	0,480
2023	0,700	0,283	0,671	0,767	0,520
2024	0,700	0,367	0,714	0,778	0,550
2025	0,734	0,417	0,743	0,800	0,580

Source: Calculated by the author

The values of the normalization coefficients calculated for the 2017–2025 period for the structural elements of the generalized integral index of higher education service quality (SI_{OTX}) in Uzbekistan were presented in Table 4. Based on the normalization coefficients

obtained from the conducted calculations, the generalized integral index of higher education service quality (SI_{OTX}) in Uzbekistan was calculated [13].

According to the calculations, the average annual growth rate of the generalized integral index of higher education service quality (SI_{OTX}) in the country during 2017–2025 constituted 111,2 percent, and the index value increased from a coefficient of 29,6 to a coefficient of 70,5 during the analyzed period, with the overall achievement of ensuring higher education service quality at a low level [14]. It should be noted here that in 2024–2025, the value of the generalized integral index of higher education service quality in the country decreased by 9,0 percent (or by 7,0 coefficient points), and it was determined that the overall quality level relatively deteriorated (see Figure 1).



Source: Compiled by the author

Figure 1. Development trends of the Generalized Integral Index of Higher Education Service Quality (SI_{OTX}) in Uzbekistan

Based on the results of evaluating the development trends of the generalized integral index of higher education service quality (SI_{OTX}) in Uzbekistan, the following generalized conclusions were formulated:

first, in improving the quality of higher education services in the country, the development trends in such structural components as coverage level, academic quality, and digitalization level, which are part of the integral quality index composition, were of priority importance;

second, it was determined that the development trends achieved in such indicators as research capacity and employment of higher education institution graduates, which are part of the composition of the generalized integral index of higher education service quality, had a comparatively weaker impact on ensuring the quality level in the overall situation compared to other structural components. The reason for this is expressed in the low level of integration of the research work conducted at the bases of higher education institutions into the global scientific activity sphere, together with the low potential for commercialization of research results, as well as the weak level of integration of education with practice in the employment of graduates of higher education institutions [15].

At this point, directing the economic models constructed within the framework of the research toward determining the forecast indicators planned for 2026–2030, we found it appropriate to determine forecast indicators through the inertial, target-modernization, and intensive transformation scenarios using the stepwise incremental growth method. In achieving this goal, the following equation (3) is used in determining the stepwise incremental growth method:

$$X_{t+1} = X_t + \Delta X_s \quad (3)$$

Where:

X_{t+1} – the value of the indicator of the forecasted period based on the stepwise incremental growth method;

X_t – the current year indicator in carrying out the analysis;

ΔX_s – the annual growth indicator established on the basis of the corresponding scenario.

At the next stage, the normalization coefficients of each indicator are determined based on the following equation (4):

$$N_{it} = \frac{Z_{it}}{Z_i^{max}} \quad (4)$$

Where:

N_{it} – the value of the normalization coefficient, which needs to be calculated for each structural component of the generalized integral index that determines higher education service quality for the corresponding periods;

Z_{it} – the actually achieved result indicator for the period and indicator for which the normalization coefficient is being assessed;

Z_i^{max} – the maximum indicator value within the benchmark values for the indicator for which the normalization coefficient is being assessed.

In calculating the generalized integral index of higher education service quality (SI_{OTX}) in Uzbekistan, the weight values of the structural elements used and their benchmark values are required to remain unchanged in our case. Through this, the structure of the model for improving higher education service quality in the country based on alternative scenarios was determined to be in the form of the following equation (5):

$$\begin{aligned} SI_{OTX_t} &= 0,2 \times Q + 0,2 \times G + 0,2 \times IS + 0,2 \times BS \\ &\quad + 0,2 \times RT \\ SI_{OTX_t}^{100} &= 100 \times SI_{OTX_t} \end{aligned} \quad (5)$$

At the same time, relying on the indicators used in calculating forecasts for alternative scenarios in terms of the structural elements of the integral quality index, the results in Table 5 were achieved based on the calculation of forecast parameters of the structural elements for each scenario.

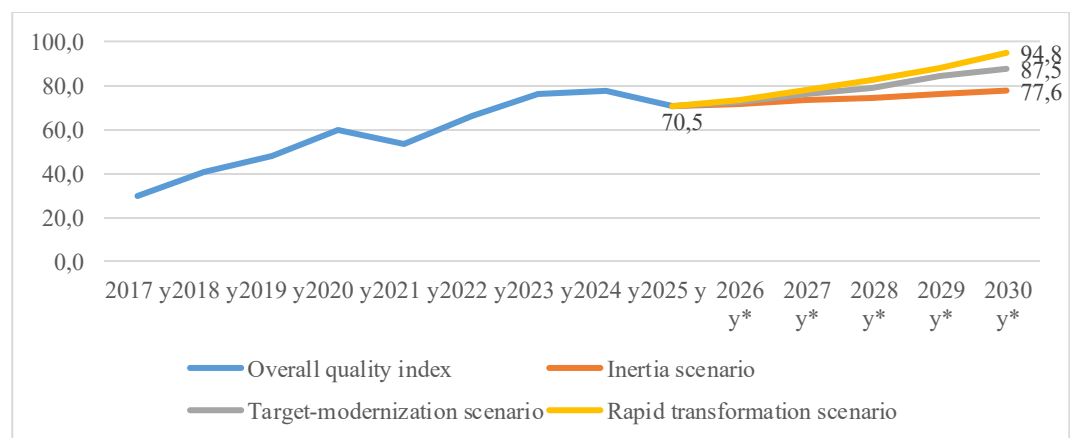
Table 5. Values of forecast parameters based on alternative scenarios for the structural elements of the generalized integral index of higher education service quality (SI_{OTX}) in Uzbekistan

Years	Coverage rate, in %	Academic quality, in units	Research capacity, in %	Graduate employment, in %	Digitalization level, in %
Inertial scenario					
2026	45,5	134	52,8	72,8	60,4
2027	47,0	143	53,6	73,6	62,8
2028	48,5	152	54,4	74,4	65,2
2029	50,0	161	55,2	75,2	67,6
2030	51,5	170	56,0	76,0	70,0
Target-modernization scenario					
2026	46,4	144	53,6	74,0	63,4
2027	48,8	163	55,2	76,0	68,8
2028	51,2	182	56,8	78,0	74,2
2029	53,6	201	58,4	80,0	79,6

2030	56,0	220	60,0	82,0	85,0
Intensive transformation scenario					
2026	47,4	156	54,6	75,2	66,4
2027	50,8	187	57,2	78,4	74,8
2028	54,2	218	59,8	81,6	83,2
2029	57,6	249	62,4	84,8	91,6
2030	61,0	280	65,0	88,0	100,0

Source: Compiled by the author

Based on the results of the conducted calculations, through the values of forecast parameters based on alternative scenarios for the structural elements of the generalized integral index of higher education service quality (SI_{OTX}) in Uzbekistan, it becomes possible to determine the forecast parameters for the overall quality index planned for 2026–2030.



Source: Compiled by the author

Figure 2. Forecast parameters based on alternative scenarios for the development of the generalized integral index of higher education service quality (SI_{OTX}) in Uzbekistan

The developed forecast parameters based on alternative scenarios for the development of the generalized integral index of higher education service quality (SI_{OTX}) in Uzbekistan (Figure 2) enabled the formulation of the following scientific conclusions:

first, in developing the inertial scenarios, the development trends of recent years are based on the average development indicators achieved during 2017–2025, and they are distinguished by their stability characteristic. According to the conducted calculations, it was substantiated that the opportunity exists to increase the state of the generalized integral index of higher education service quality in the country by 10,1 percent relative to 2025 in the period up to 2030, and it showed that the growth rate of the quality index may proceed comparatively slowly relative to the developed target-modernization and intensive transformation scenarios;

second, the forecast indicators based on the target-modernization scenario are assessed as forecast parameters of the most optimal variant of development due to the priority given to increasing the efficiency of utilizing the real potential for improving the quality of higher education services in the country in the coming years, and the calculations showed that the generalized integral index of higher education service quality in the country may increase by 24,1 percent during 2026–2030;

third, the forecast parameters based on the developed intensive transformation scenarios are directed toward maximally increasing the existing opportunities for

improving the quality of higher education services in the country, are based on deep integration into the international standards system in this direction, and the implementation of this scenario in practice would give rise to large-scale institutional reforms and a large volume of investment demand. According to the forecast parameters based on the intensive transformation scenario, it was determined that the opportunity exists to increase the quality of higher education services in Uzbekistan by 34,5 percent relative to 2025 in the period up to 2030.

4. Conclusion

Overall, the forecast indicators planned for 2026–2030 were developed on the basis of a scenario approach, wherein the 2025 baseline values were taken as the foundation and three alternative development variants were formulated – inertial, target-modernization, and intensive transformation scenarios. For each scenario, annual growth parameters were established for higher education coverage, academic quality, research capacity of faculty members, graduate employment, and the level of digitalization.

At the next stage, forecast values were calculated for each year, they were normalized based on benchmark thresholds, and the generalized quality index was determined through the equal-weighted integral method. As a result, it was substantiated that by 2030, the quality index may reach 77,6 points under the inertial scenario, 87,5 points under the target-modernization scenario, and 94,8 points under the intensive transformation scenario.

These results create the opportunity to compare what quality outcomes different intensity variants of state policy in the sphere of higher education may yield.

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