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MECHANISMS FOR ENHANCING EDUCATION SERVICE QUALITY IN DEVELOPING YOUTH ENTREPRENEURSHIP IN THE ARAL SEA REGION

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Abstract. The article develops organizational-economic mechanisms for advancing youth entrepreneurship through education service quality in the Aral Sea region. The author's «TE Model» (Entrepreneurship - Experience - Education service quality) is transformed into a practical institutional mechanism, substantiating dual education, business incubation, ecological adaptation, and digital monitoring directions. Foreign digital models (South Korea, Estonia, India) are analyzed, and the growth prospect of the integration coefficient is assessed through scenario analysis. Risks limiting mechanism effectiveness are identified, along with mitigation measures, a coordination architecture, and a KPI system.

Keywords: youth entrepreneurship, education service quality, «TE model», digital technologies, integration coefficient, KPI.

INTRODUCTION

The existence of theoretical foundations and empirical evidence regarding youth entrepreneurship development does not by itself lead to practical results—transforming this relationship into a real institutional mechanism constitutes a distinct scientific-practical task. As D. Isenberg noted, any entrepreneurial ecosystem must be built to fit local conditions; no universal template exists [1]. This principle carries particular significance for the Aral Sea region under conditions of ecological crisis, since despite the rapid expansion of education coverage in the region, the degree of integration between youth entrepreneurship and the education system remains low [2].

The Resolution of the President of the Republic of Uzbekistan No. PQ-62 of February 14, 2025, set out clear tasks for improving the system of supporting youth entrepreneurship [3], yet the effectiveness of such state programs largely depends on the extent to which they are adapted to local institutional conditions. International experience shows that digital technologies constitute a powerful tool for overcoming geographic remoteness. In particular, Estonia's e-Residency program is noted to have delivered a high economic return on investment ($ROI \approx 10$) for the state [4], while South Korea's KISED institute has integrated education, finance, and infrastructure into a single accelerator system, demonstrating that a strong innovation environment can be built in a short period [5].

At the same time, any institutional mechanism—however carefully designed—faces a range of risks in practice, in particular institutional fragmentation and financing instability, which requires a dedicated governance architecture and monitoring system to enhance mechanism effectiveness [6]. While existing research has addressed the theoretical and statistical foundations of the education-entrepreneurship relationship, the question of transforming this relationship into a practical, stage-by-stage organizational-economic mechanism suited to the conditions of the Aral Sea region has not been comprehensively studied as a distinct research object.

The purpose of this article is therefore to scientifically substantiate and develop the organizational-economic mechanisms for advancing youth entrepreneurship through education service quality in the Aral Sea region, together with their digital component and the conditions for enhancing their effectiveness.

LITERATURE REVIEW

D. Isenberg and E. Stam divided the entrepreneurial ecosystem into six interrelated domains and substantiated the necessity of building it according to local conditions [1]. D. Kuratko, A. Fayolle, and H. Neck demonstrated the need to transform entrepreneurship education into a practice-based method [7]. In international practice,

Germany's dual education system [8], South Korea's KISED accelerator [5], Estonia's e-Residency program (ROI≈10) [4], and India's network of digital service centers [9] each demonstrate distinct institutional forms of education-entrepreneurship integration. T. Saaty's AHP methodology is applied in factor evaluation [10], while the PDCA closed-loop cycle is used for the continuous improvement of mechanisms [6]. However, none of these experiences can be transferred unchanged to a region under ecological crisis conditions—the task of synthesizing them remains open, and addressing this gap is the objective of the present article.

RESEARCH METHODOLOGY

The research methodology is aimed at developing a practical organizational-economic mechanism for advancing youth entrepreneurship through education service quality in the Aral Sea region and is structured in four stages. In the first stage, building on prior analytical findings, the author's «TE model» is transformed into a practical mechanism through institutional design by identifying its participants, instruments, and integration directions.

In the second stage, foreign digital models (South Korea, Estonia, and India) are examined through comparative analysis, substantiating their region-adapted application. The economic efficiency of the mechanisms is assessed on the basis of human capital theory through cost-benefit analysis. The future dynamics of the integration coefficient are projected through scenario analysis (inertial, non-digital, and digital scenarios).

In the third stage, risks limiting mechanism effectiveness are identified through risk analysis, and corresponding mitigation measures are developed. A multi-level governance architecture is designed on the basis of a systems approach to ensure institutional coordination. In the final stage, a Plan-Do-Check-Act (PDCA) closed management cycle and a KPI indicator system for measuring effectiveness are developed, and a phased implementation roadmap (pilot → expansion → institutionalization) is established.

ANALYSIS AND RESULTS

The author's «TE model» was transformed into a practical institutional mechanism, with key participants, instruments, and key performance indicators (KPIs) defined for each of the three stages. At the entrepreneurship stage, the Youth Affairs Agency, financial institutions, and IT Park participate, with preferential financing as the main instrument. At the experience stage, local enterprises and university-based business incubators build practical skills through dual education agreements. At the education service quality stage, higher education institutions and vocational education institutions introduce entrepreneurship as a cross-disciplinary module (Table 1.).

Table 1.
Institutional structure of the «TE model»

Stage	Key participants	Main instrument	KPI
Entrepreneurship	Youth Affairs Agency, banks, IT-Park	Preferential financing, grants	Growth in number of young entrepreneurs
Experience	Local enterprises, business incubators	Dual education agreements, mentoring	Growth in share of practical education (I_2)
Education service quality	Higher education and vocational institutions	Entrepreneurship module, teacher training	Share of graduates covered by the module

Source: author's own elaboration.

Four integration directions of the model were developed: dual education, business incubation, ecological adaptation, and digital monitoring. Based on the analysis of foreign digital models (South Korea, Estonia, and India), the influence of digital technologies on the components of the integration coefficient (I_1) was identified: EdTech and remote internships increase the share of practical education (I_2), while e-commerce and digital registration accelerate the entrepreneurship conversion rate (I_1).

The expected integral effectiveness of the mechanisms was assessed under three scenarios. Under the inertial scenario (without the mechanism), the integration coefficient rises within five years from the current 0.18–0.28 to only 0.32–0.36. If the mechanism is introduced without a digital component, it reaches 0.46. When fully implemented together with the digital direction, it reaches 0.53—an increase of 90–195 percent over the current level (Figure 1).

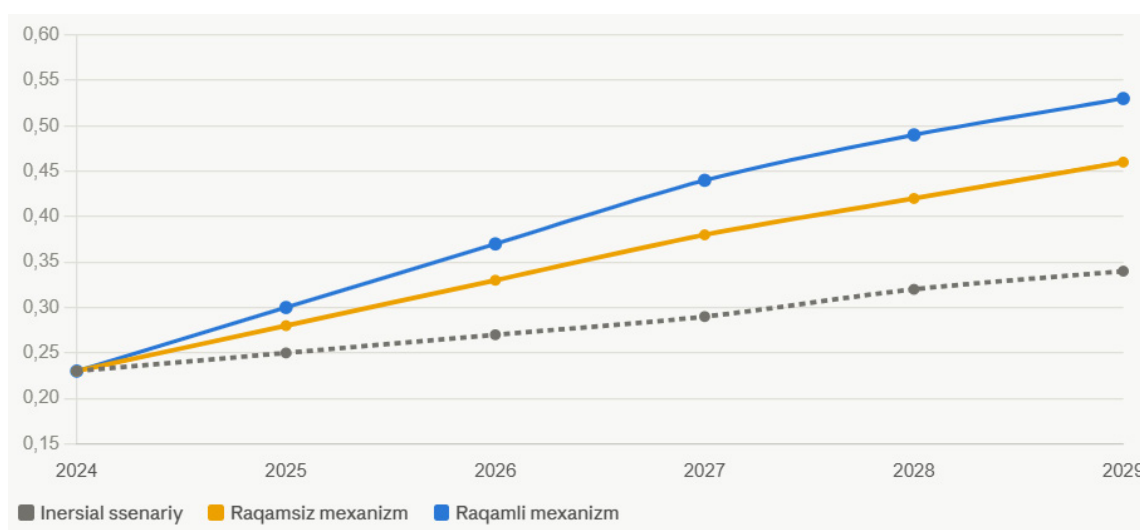


Figure 1. Projection of the integration coefficient (I_t) under three scenarios (2024–2029)

The chart shows that the full scenario incorporating the digital component (blue line) substantially outperforms the other two scenarios, confirming the multiplier effect of digital technologies.

Six key risks limiting mechanism effectiveness were identified (institutional fragmentation, financing instability, digital inequality, low absorption capacity, formalism in implementation, and ecological-climatic uncertainty), and corresponding mitigation measures were developed. To overcome institutional fragmentation, a three-tier (strategic, operational, and executive) coordination architecture was proposed, and for financial sustainability, a blended and results-based financing model was proposed. The continuous improvement of the mechanisms was designed on the basis of the “Plan-Do-Check-Act” (PDCA) closed management cycle, and a phased implementation roadmap (pilot → expansion → institutionalization) was developed.

CONCLUSIONS AND RECOMMENDATIONS

The analysis demonstrates that the author’s «TE model» was successfully transformed from a theoretical concept into a practical institutional mechanism: clear participants, instruments, and KPI indicators were defined for each of the model’s three stages, and four integration directions—dual education, business incubation, ecological adaptation, and digital monitoring—were developed. The analysis of foreign digital experiences (South Korea, Estonia, and India) confirmed that digital technologies possess significant potential to accelerate the integration process. According to the scenario forecast, the integration coefficient could rise by 90–195 percent over the current level within five years under the digital mechanism.

At the same time, the theoretical soundness of a mechanism does not automatically guarantee its practical effectiveness. Accordingly, the following recommendations were formulated: first, to address risks such as institutional fragmentation and financing instability through advance mitigation measures; second, to clearly distribute responsibilities and authority through a three-tier coordination architecture; third, to introduce a blended and results-based financing model in which fund allocation is tied to specific KPI indicators; fourth, to organize the mechanisms as a self-correcting closed management cycle (PDCA), allowing them to be consistently refined over time in line with the region’s actual outcomes; fifth, to implement the mechanisms not simultaneously but in a phased sequence—pilot, expansion, institutionalization—which reduces risk and allows lessons from each stage to inform the next.

The proposed mechanism, its digital component, and the approach to enhancing effectiveness together constitute a unified, practice-oriented organizational-economic solution for advancing youth entrepreneurship through education service quality in the Aral Sea region. The forecast estimates obtained are cautious and conditional in nature, and their actual achievement depends on the consistent fulfillment of conditions relating to institutional coordination, financial sustainability, and digital literacy.

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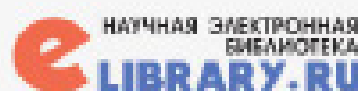
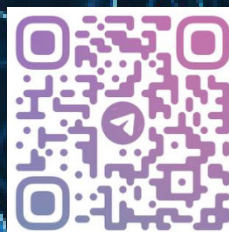
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