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IMPROVING THE EFFICIENCY OF USING INTELLECTUAL RESOURCES IN THE SERVICE SECTOR: A COMPARATIVE ASSESSMENT BASED ON THE GLOBAL INNOVATION INDEX

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Abstract
The thesis evaluates the alignment between the formation and the use of intellectual resources in Uzbekistan on the basis of the Global Innovation Index 2025-2026. An analysis of the dynamics of the index pillars, sub-pillars and individual indicators shows that the country is successfully building its intellectual resource potential, while the level of its absorption by enterprises, particularly service enterprises, remains low. The "break points" in the chain from the formation of intellectual resources to their commercial results are identified, and directions for improving the efficiency of using intellectual resources in the service sector are substantiated.

Keywords: Intellectual resources, service sector, Global Innovation Index, knowledge workers, absorptive capacity, intangible assets, innovation efficiency.

Introduction

The efficiency of using intellectual resources is determined not by their volume but by the degree to which knowledge and skills are transformed into economic results. W.M. Cohen and D.A. Levinthal described a firm's ability to recognise

the value of external knowledge, assimilate it and apply it to commercial ends as "absorptive capacity" and showed that it is a decisive factor of innovation performance. I. Nonaka and H. Takeuchi demonstrated that organisational knowledge is created through the continuous conversion of individual tacit knowledge into explicit, shared knowledge. For service enterprises this capacity is of particular importance, since their main factor of production is the knowledge of employees and the competence they demonstrate in direct interaction with the customer.

One of the main sources that allow an international comparison of the formation and use of intellectual resources at the national level is the Global Innovation Index (GII) published by the World Intellectual Property Organization. The index separately evaluates the resources for innovation (input indicators) and their results (output indicators), which makes it possible to judge the efficiency of resource use. Uzbekistan's position in the ranking has improved steadily: from 93rd place in 2020 to 86th in 2021, 82nd in 2022-2023, 83rd in 2024, 79th in 2025 and 77th in 2026. The results for the last two years by index pillars are presented in Table 1.

According to the table, scores increased in six of the seven pillars, with the largest improvement in the "Human capital and research" pillar: the score rose by 5.0 points and the country moved up 11 places. In the innovation output sub-index, the rank improved from 92nd to 78th, so the gap between the input and output rankings narrowed from 23 to 10 places. This indicates that the efficiency of converting intellectual resources into results is increasing in the country.

Table 1 Uzbekistan's performance in the pillars of the Global Innovation Index

Index pillars	Score 2025	Score 2026	Change in score	Rank 2025	Rank 2026	Change in rank
Institutions	51.9	54.2	+2.3	62	57	+5
Human capital and research	27.4	32.4	+5.0	81	70	+11
Infrastructure	41.8	43.9	+2.1	69	71	-2
Market sophistication	35.0	36.1	+1.1	74	69	+5
Business sophistication	27.1	24.6	-2.5	77	81	-4
Knowledge and technology outputs	20.9	23.3	+2.4	68	62	+6
Creative outputs	11.8	15.1	+3.3	104	96	+8
Innovation input sub-index	score not published			69	68	+1
Innovation output sub-index	score not published			92	78	+14

At the same time, the only pillar with a declining score is "Business sophistication": its score fell from 27.1 to 24.6 and its rank dropped from 77th to 81st. It is precisely this pillar that reflects the employment of knowledge workers in enterprises, cooperation between enterprises and higher education institutions, and the absorption of external knowledge. Consequently, although intellectual resources are being formed in the education system, business entities, including service enterprises, are not making full use of them. To see this mismatch more clearly, the 2026 sub-pillars were grouped according to the stages of formation of intellectual resources, their use by firms, and the results of intellectual activity (Figure 1).

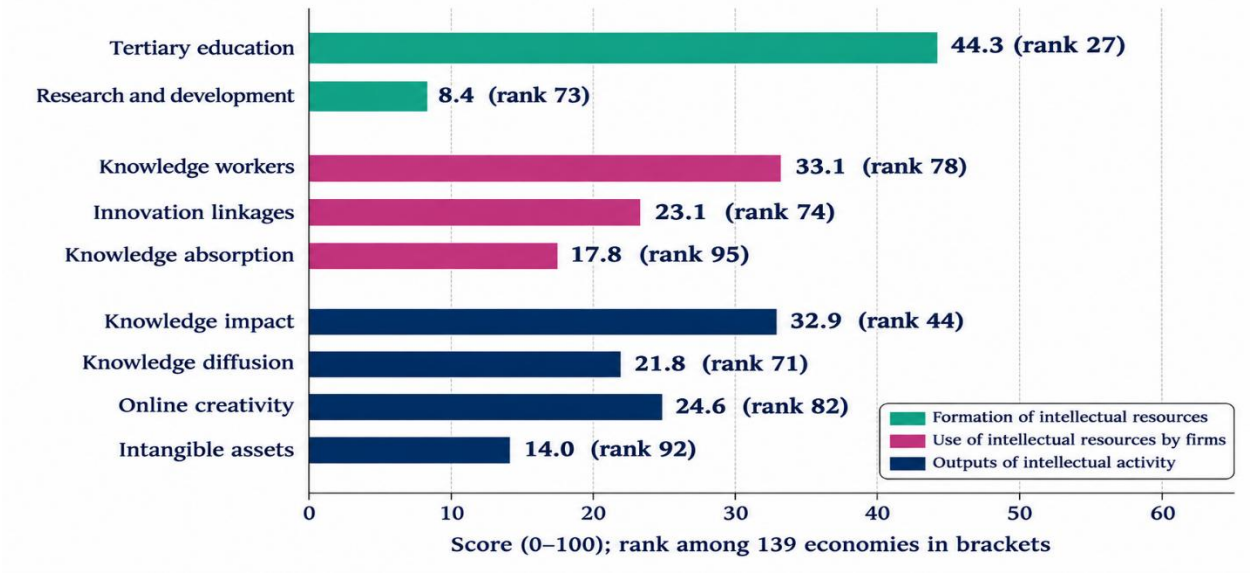


Figure 1. GII sub-pillars for Uzbekistan in 2026 grouped by the formation of intellectual resources, their use and results

The figure clearly shows the main "break point" in the intellectual resource chain. In tertiary education Uzbekistan ranks 27th among 139 economies, and in the share of graduates in science and engineering it ranks 2nd [7]. However, at the stage of use in enterprises the indicators fall sharply: 78th place for knowledge workers and 95th place for knowledge absorption. Business expenditure on research and development amounts to only 0.03% of GDP, the country ranks 117th in software spending, 78th in research talent in businesses and 91st in university-industry and international engagement [7].

The weakness of the research base itself also limits the use of intellectual resources. Gross expenditure on research and development is 0.1% of GDP (99th place), and the number of researchers is 639.5 full-time equivalents per million population (69th place) [7]. For service enterprises this means that the external knowledge they could absorb is generated in insufficient volume within the

country, and that cooperation with foreign partners and the import of knowledge-intensive services become an important channel for acquiring new competencies. At the results stage, the weakest link is intangible assets (14.0 points, 92nd place). For service enterprises, intangible assets such as trademarks, brands, software products and customer bases are the main source of competitiveness. Nevertheless, while the country ranks 40th in trademark registration activity, it ranks only 80th in global brand value. This means that registered intellectual property objects are not yet sufficiently transformed into market value. A positive trend is observed in exports of ICT services: their share in total trade increased from 1.3% to 1.8%, and the rank improved from 81st to 70th [6; 7].

It is important to note that the country also has strengths that create favourable conditions for raising efficiency. According to the GII 2026, Uzbekistan ranks 3rd in entrepreneurship policies and culture, 4th in finance for startups and scaleups, and 7th in labour productivity growth [7]. These institutional advantages mean that the main constraint lies not in the business environment but in the internal capacity of enterprises to employ and develop knowledge workers.

Based on the results of the analysis, it is advisable to raise the efficiency of using intellectual resources in the service sector in the following directions. First, strengthening the absorptive capacity of enterprises by stimulating in-house training of employees and investment in software and digital technologies, for example through tax deductions for training and software expenditure of service enterprises. Second, expanding contract research and internship programmes between higher education institutions and service enterprises, so that the high output of science and engineering graduates is matched by demand for their knowledge in business. Third, introducing the practice of recognising, valuing and commercialising intangible assets in service enterprises, including brand development and licensing of software products.

Fourth, extending the positive experience of IT services exports to engineering, consulting and educational services, which have similar requirements for qualified personnel.

Conclusion

First, in 2025-2026 Uzbekistan's position in the Global Innovation Index improved from 79th to 77th, and in the innovation output sub-index from 92nd to 78th. The narrowing of the gap between input and output rankings from 23 to 10 places confirms that the efficiency of using intellectual resources is increasing.

Second, there is a significant mismatch between the formation of intellectual resources (27th place in tertiary education) and their use by enterprises (95th place in knowledge absorption). The only declining pillar, "Business sophistication" (-2.5 points), shows that the main reserve for raising efficiency lies at the enterprise level.

Third, the priority directions for improving the efficiency of using intellectual resources in the service sector are strengthening the absorptive capacity of enterprises, developing cooperation between education and business, and commercialising intangible assets. The effectiveness of these directions can be monitored through the GII sub-pillars "knowledge workers", "knowledge absorption" and "intangible assets".

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