The Role of Science in the Context of National Strategies

Key Messages

- The growth rate of academic output since 1990's was at a lower rate compared to other developing countries
- There is significant need to identify new policy tools to stimulate increase in high quality academic output (publications) and attract youth in science
- Increasing the quality of research is instrumental to enter global University rankings by 2030

In line with the Decree of the President of the Republic of Uzbekistan (№5544, 21.09.2019), the Uzbekistan's Innovative Development Strategy for 2019-2021 and the Road Map for its implementation was approved. The main goal of the strategy is "the development of human capital as the main factor enhancing Uzbekistan's competitiveness and innovation". According to the paragraph №4 of the Roadmap, one of the tasks outlined in the Strategy is increasing the number of academic publications in international peer-reviewed scientific journals. Moreover, Appendix №3 of the Strategy, among others, outlines the following key indicators:

- Increase the number of published academic papers by 2030 (indicator №58)
- Increase the ranking of national Universities in global rankings by 2030 (indicator №20)
- Facilitation of the integration of education, science and industries (indicator №45)

Increase the Number of Published Papers

Presently, comparing academic output of Uzbekistan against other countries we can observe that Uzbekistan with its growing population has significant unrealized scholarly potential. For example, in 2018 only 621 academic papers were published in SCOPUS system, compared to 8814 in Vietnam or 3977 in Kazakhstan. The average growth rate of academic output in Uzbekistan during 1996-2018 is only 2.8% compared

to 11.7% in Bangladesh, 12.8 in Kyrgyzstan, 17.3% in Vietnam and 16.1% in Kazakhstan.
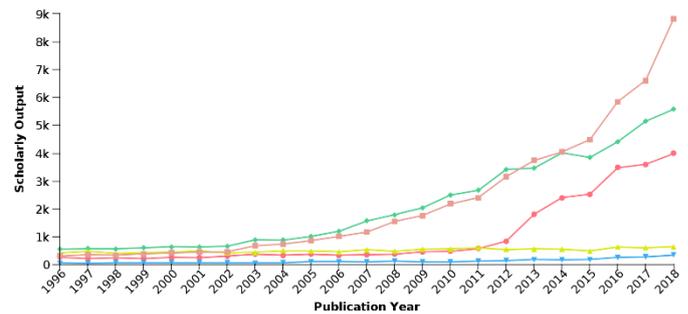

Chart Legend
Bangladesh [Country] — Kazakhstan [Country] — Kyrgyzstan [Country] — Uzbekistan [Country] — Viet Nam [Country]

This implies the government should increase monetary and non-monetary motives for the younger population to engage in research and science. Indeed, existing data suggests the number of researchers per million population is significantly and positively correlated with its Global Innovation Index scores. In order to achieve the TOP50 rank in GII, Uzbekistan should on average increase number of people engaged in science and research to at least 1500, from its current 496 (according to World Bank).

● global innovation index 2019 — Fitted values

Number of researchers per million people
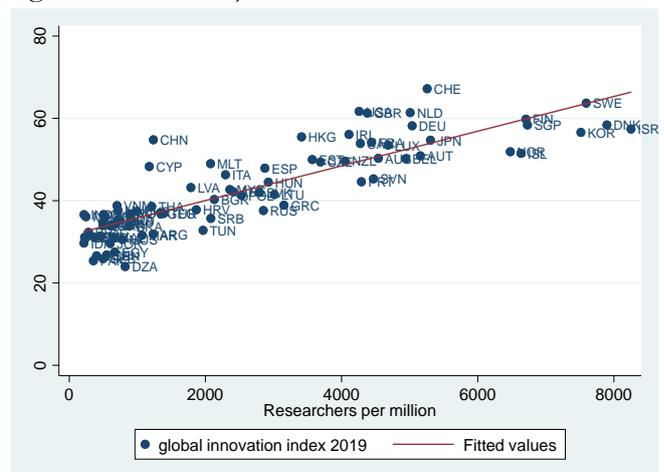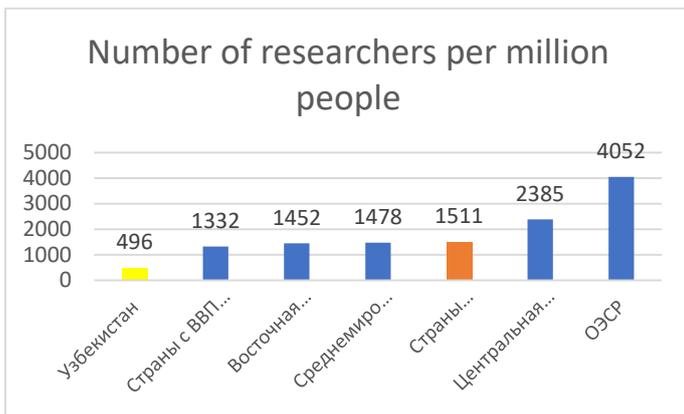
In this vein, to achieve the target indicators outlined in the Strategy, we suggest the following measures and activities:
- Conducting a series of trainings and seminars in universities with the involvement of local scholars who have significant scientific achievements to improve the quality of research studies submitted to international peer-reviewed journals with impact factor;
- Establishing in select national universities, research groups (10-15 people) to conduct high quality research in those areas of science where there is a significant scholarly gap;
- Creating a scientific community of young scientists and university professors to exchange experience, discuss research and prepare co-authored scientific articles meeting the requirements of international peer-reviewed journals;
- Strengthening the integration of the scholarly community and private sector through joint academic research;
- Popularizing science among young people (especially, young women) through high-quality trainings and seminars involving the most successful scientists who have publications in prestigious impact factor journals

Increase the Ranking of National Universities in Global Ranking by 2030

Apart from that there is another goal outlined in the national strategies is fostering the reputation of local universities in international rankings such as QS. QS World University rankings methodology is based on the following metrics:
- Academic Reputation
- Employer Reputation
- Faculty/Student Ratio
- Citations per faculty
- International Faculty Ratio
- International Student Ratio

Academic reputation is based on survey which is focused on teaching and research quality. Presently, national universities mostly aim at increasing academic

outputs, the growth rates if publication activities are far below the required levels. One of the potential solutions to increase the academic output of local universities is to make academic ranks (and salaries) linked to the number of papers published at internationally reputable peer reviewed journals.

Employer reputation aims to identify those institutions from which they source the most competent, innovative, effective graduates. Presently, according to industry reports there is significant skills gap in the local labor market. According to the skills gap survey of 2018, the main difficulties in the process of hiring employees are lack of professional and technical skills of candidates (89%) and lack of relevant work experience (86%). The following difficulties in hiring employees in Uzbek companies are inappropriate personal skills, motivation or attitude of a candidate (76%) and lack of educational background (63%). According to the respondents, 48% of candidates do not agree with proposed salaries and 19% in terms of work conditions. Also, Uzbek companies face a lack of candidates interested in proposed positions. Competition between employers which is only 18% and lack of prospects or unsatisfactory career of the candidate 22% are also seen as difficulties in hiring process. Top-3 important skills for employees joining the company are Collaboration 16%, Communication (12%), critical thinking and problem solving as well as professionalism (11% for each). Therefore, local universities seem to be lagging behind in enabling graduates to be equipped with soft skills entering labor market.

Apart from academic and employer reputation, the index takes into account the teacher/student ratio. Currently, around 13% of applicant are accepted to universities which implies that the education coverage remains very low comparing to other developing countries. Therefore, one of the potential solutions is the establishment of private universities or branch campuses to increase the rising demand for higher education. Moreover, this measure will increase the International faculty ratio/International student ratio which is also one of the dimensions of QS ranking methodology.

Finally, citation per faculty is another criterion that captures the quality of research output produced by universities. Presently, the citation of local scholars remains below potential levels as there is significant need to increase the number of papers published in reputable peer reviewed journals. A significant fraction of academic papers published by local faculty member are indexed outside of the internationally acknowledged SCOPUS database. These papers published outside of SCOPUS indexed journals are

rarely cited by foreign scholars thus leading to lower levels of per faculty citations. Therefore, achievement of aims and targets outlined in the Strategy can take place only under active development of the academic and scientific work in Universities. They must implement the most up to date state-of-the-art approaches and methodologies and create comparable indicators of success for faculty members.

-Rauf Salahodjaev

Author

Rauf Salahodjaev is Senior Research Fellow at the Center for Policy Research & Outreach at Westminster International University in Tashkent, Uzbekistan.

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