

Executive Summary

This report provides the empirical data and results derived from the extraction and analyses of India's performance in Science as viewed from the publication profiles reflected in the international database Expanded Science Citation Index (SCI).

The report presents India's scientific research productivity in the publication period 2000-2004 based on the indexed articles and other significant source items published in the most influential journals of science and technology. Journals covered by the SCI are the selections among hundreds of thousands of journals published across countries.

The papers extracted from SCI database are analysed for the subject orientation, institutional productivity, citation impact of such productivity (assessed from the standing of the journals preferred by the Indian authors) and the relative changes in the observed period. The impact of productivity is normalized by using standardized measures. A small effort is made to compare the S & T performance of India with China and South Korea.

Publication of papers from India in the last ten years is reported to be on increase although the increase is skewed for a couple of years. The publication output of China and South Korea has increased significantly in the last decade. After doing some in-depth analyses, it is observed that the (Institute for Scientific Information) ISI dataset has increased its coverage for Chinese and Korean journals while the number of journals from India remains constant. The database coverage has considerable influence on the publication count.

The impact of scientific publications (assessed through the citations) from Korea is high followed by India and China. In other words, the citation impact of India is more than China. However, the citation impact of these three countries is lesser than US and many European countries.

The scientific output is increasing in Chemical sciences, Medical Sciences and Biological sciences. In physical sciences and Engineering and Technology, the increase is less. In Mathematics and Earth Sciences the scientific output has not increased in the last five years. In Agricultural sciences, the output (covered in international database) is decreased in the observed period.

Universities contribute largely to the publication share in India and research institutions stand a distant second while industries and private enterprises have little impact. The increase of scientific output of All India Institute of Medical Sciences, Indian Institute of Technology (Kharagpur and Roorkee), Center for Cellular & Molecular Biology, Indian Council Medical Research, Panjab University, Bharathidasan University, University of Delhi and Christian Medical College & Hospital is significant in the last five years.

A large number of papers are published in national journals. Out of the top ten Indian scientists preferred journals, only two are non-Indian. Five among top 20 and 8 among the top 25 are non-Indian journals.

Chemistry and Medicine publication output in India is not only increased but the most of the high impact papers are also published in these fields.

The total citation impact of fields such as Medicine, Chemistry and Biology has increased in the last five years while in Agriculture it is decreased. However, the increase or decrease is not consistent across sub-fields.

More than one fourth of total Indian S & T papers were published in high impact journals. The percentage is on increase barring a small drop in 2004.

The policy of journals has considerable influence in improving the quality of papers. To understand in depth, the quality of Indian journals, an extensive analysis on Indian science journals is carried out. Just 4 % of the Indian journals have peer reviewing practices and only one percent of the Indian journals are covered by SCI. Indian journals instead of orienting the researchers and scientists in the research path, lead them in the wrong way by accepting many 'so-called' scientific papers without peer review.

The data and results presented in the report serve as an instrument in identifying the scientific research carried out in India. It is acknowledged that a refined assessment depends on comparing the scientific input and output where the publications serve as a part of the output. Research infrastructure, particularly the research space and its quality, cyber space occupied by scientists and degree of collaboration are some of the potential requirements to increase the quality of publications. In the knowledge-driven world, cross border knowledge transfer enable a nation's increased scientific research quality.