

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 year 2003 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, impact of such productivity (assessed from the standing of the journals preferred by the Indian authors) and research collaboration. Using standardized measures normalizes the impact of the productivity.

Publication of papers from India in the last ten years is reported to be on increase although the increase is skewed. The extensive analyses on the productivity in relation to other countries are not carried out currently. However, the macro level (source - *Science and Engineering Indicators of the National Science Foundation 2004*) indication is that publication of research papers in the scientifically advanced countries such as US, UK and Canada is flattened while it is increased drastically in China and South Korea. Unless specific studies on the 'reality' of the results conducted, it would be misleading to accept the above data. Depth studies, for example the coverage of database, need to be initiated before arriving at decisions.

Universities contribute largely to the publication share in India and research institutions stand a distant second while industries and private enterprises have little impact. Physical sciences such as Chemistry and Physics have more output than other fields in contrast to the world high output in biomedical sciences. Chemistry and Physics publication output in India is not only more but the most of the high impact papers are also published in the fields, Chemistry and Physics. In Biology and Biomedical Sciences, the top high impact papers are produced with international collaboration. Research collaboration is found to be less in Indian institutions and it is much lesser than the world average*. Barring a few institutions such as *Tata Institute of Fundamental Research, Indian Institute of Science* and *University of Delhi*, the cross border collaboration among Indian institutions is found to be low.

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.

* This is observed from the *Science and Engineering Indicators of the National Science Foundation, 2004*

The basic exercise carried out in this work leads us to suggest the few following measures.

1. Science journals of the country should opt for peer reviewing particularly international peer review;
2. Institutions and Government should consider and accept only the publications in the peer reviewed journals;
3. Research collaboration needs to be strengthened, particularly the cross border research collaboration; and
4. High productive institutions need to be recognized, supported with more resources.

The final report for the last five years would enable us to understand more comprehensively about the level of scientific research in the country.

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