Indian Citation Index: A new web platform for measuring performance of Indian research periodicals

Article *in* Library Hi Tech News · May 2011

DOI: 10.1108/07419051111145154

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Indian Citation Index: a new web platform for measuring performance of Indian research periodicals

Rabishankar Giri and Anup Kumar Das

Introduction

Citation symbolizes association of ideas. Therefore, citation indexing is considered as one of the most important tool for tracing ideas across a multitude of disciplines and for evaluating R&D output of an individual, institution, country, or region. India is one of the fastest growing economies in the world with a sizable R&D infrastructure. India's current higher education spending is estimated at 460 billion rupees (approx. $10.5 billion) projected to grow over 1,500 billion in the next ten years, with an average growth rate of 12.8 per cent per annum (Nanda, 2010). At present, more than 2,000 scholarly journals are published from India. But, visibility of Indian R&D knowledge in the global scholarly system is quite dismal. There are several reasons for this. The major ones are poor accessibility and less coverage of Indian periodicals by global indexing and abstracting services. Every international database has its own selection criteria as well as limitation in terms of coverage. To overcome this limitation, countries such as China and South Korea have already come up with their own citation indexes.

Genesis of Indian Citation Index

Although there have been some initiatives of country-specific citation indexes, in India there is no such comprehensive citation tool until 2009 and it has been a matter of hot discussion among the information scientists and R&D scholars in the country. Some attempts were made during early 1990s to develop a country-specific citation database for India at the Indian National Scientific Documentation Centre (INSDOC), the premier research institute in India in the area of scientometrics and bibliometrics. Bharat Bhusan and Banwari Lal, the then scientists in INSDOC, tried to make the database using CDS/ISIS (Bhushan and Lal, 1991). Later, a pilot project was started to develop a citation database of Indian scientific journals, under the leadership of Bimal Kanti Sen, the then head of National Centre on Bibliometrics at INSDOC. But, the pilot project was not completed (Sen *et al.*, 2002).

In 2009, the "Knowledge Foundation", a civil society organization under the leadership of Praksh Chand, a former Senior Scientist and Head of the National Science Library at NISCAIR, in collaboration with new-age entrepreneur Divan Enterprises, the publisher of IndianJournals.com, came forward to address this long awaited need. On 20 January 2010, they presented a beta version of Indian Citation Index (ICI) before a group of information scientists, research scientists, senior librarians and scholars at the India Habitat Centre, New Delhi with the anticipation of getting input and about important features and requirements for ICI. On October 2010, they formally launched ICI at the India Habitat Centre in New Delhi.

Need for ICI

Quantitative studies of science and technology is a rapidly developing field and its development is closely linked to a number of general tendencies in the global scholarly environment. Citation analysis is a subfield of quantitative science and technology studies aimed to construct indicators of research performance from a quantitative analysis of scholarly documents. In a vast country like India with a large R&D infrastructure and increasing higher education spending, the public research funding agencies, apex research organizations and sponsored R&D centres critically need a systematic evaluation tool for optimizing their research support, reorienting public-private support, rationalizing research funding, restructuring research in particular fields, or augmenting research productivity. Since, there was no comprehensive citation tool that covers the majority of Indian journals, researchers had to depend mostly on Web of Science and more recently, Scopus. But the representation of Indian journals has been consistently poor in these citation databases. As of 2010, Science Citation Index Expanded (SCI-E) covers 105 Indian journals out of a total of 8,254 journals covering or approximately 1.27 per cent (http://science.thomsonreuters.com/mjl/). In the year 2010, they have added 21 new journals from India. During 2008, it covered only 52 Indian journals out of a total 6,822 S&T journals or just 0.76 per cent. Scopus covers total 18,928 active journals, out of which 244 are active S&T journals selected from India covering just 1.29 per cent (http://info.scopus.com/scopus-in-detail/facts/) as of October 2010. At present, Scopus and SCI-E jointly cover only 328 Indian journals. In a joint study by Sen and Lakshmi, it was shown that 500 Indian journals could be included in Science Citation Index (SCI) during the 1990-1991 time period. But at that time, only 12 Indian journals were included in SCI (Sen and Lakshmi, 1992). Since SCI-E and Scopus cover only a small fraction of Indian journals, measures and evaluation of research output using these sources raised several questions rather than answers (Balaram, 2003).

As a result, attempts were made to measure the R&D output of Indian S&T

knowledge by using Indian Science Abstracts (ISA) (Kumar *et al.*, 2009). At present, during year 2010 ISA covers approximately 1,220 journals as listed in the ISA web version. Moreover, R&D output on subjects such as agriculture and health sciences which are many times more relevant at local contexts than at an international level may hardly find a place in international citation databases such as Scopus or SCI-E. For example, national agricultural research system (NARS) in India publishes 124 journals from India (Abraham *et al.*, 2009). But only 13 NARS journals are included by Scopus and ten NARS journals by SCI-E. Out of them, seven journals are common in Scopus and SCI-E databases.

Research funding agencies and R&D administrators seem to be more attracted by the possibility of using scientometric analysis as a tool to assess scientific performance; but are quite unaware that difference in journal coverage can lead to differences in citation counts. With the absence of a compressive citation index covering the majority of peer-reviewed Indian journals, it is almost practically impossible to compare individuals and institutions based on scientometric analysis.

ICI (www.indiancitationindex.com)

ICI is a fully web-based abstract and citation database covering R&D literatures across all disciplines published in journals/serials or in other documents emanating from India. It intends to cover about 1,026 Indian scholarly journals (already identified) based on their defined parameters before the end of 2011. Currently, it covers the source journals from 2004 onwards. In due course of time, the back files from 2000 and prior to 2000 will be available in phases. The contents of ICI are organized in 12 subject groups with 51 main subject classes. The distribution of selected source journals is shown in Figure 1 and Table I. They indicate that the top three subject groups are biological sciences, health sciences and agricultural sciences, respectively, in terms of their rank. There is also overlapping of subject groups, as many journals have inter-disciplinary or cross-disciplinary subject coverage.

Figure 1. *ICI coverage by subject groups*

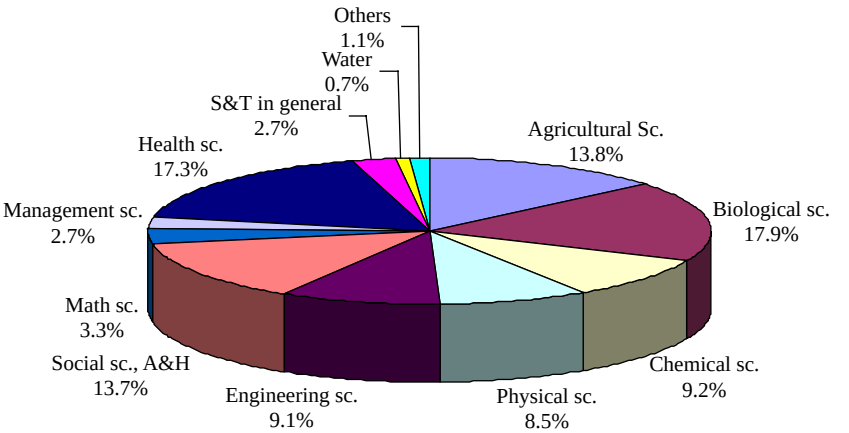

Table I.
ICI Journal groups and their ranking

Rank	Subject group	No of journals
1	Biological sciences	246
2	Health sciences	238
3	Agricultural sciences	190
4	Social sciences, arts and humanities	188
5	Chemical sciences	126
6	Engineering sciences	125
7	Physical sciences	117
8	Mathematical sciences	46
9	Management sciences	37
10	General science	37
11	Other	15
12	Water	10

This citation database covers research papers, review papers, short communications, editorials, letters to the editor, research notes, case studies, case reports, opinion papers, observations and special papers that have appeared in the journals along with patents, standards, R&D project reports, and papers from conference proceedings. The database uses index terms from reputable controlled vocabularies for the various subject areas represented such as MeSH for medical and health science and INSPEC for engineering and physics to increase search recall.

ICI provides extensive search features such as basic search, cited reference search, advance search, subject category search and refine search capabilities. Search can be done by title, topic, author, institution, region, publication name, document type as well as combining them with Boolean operators within a specific time span. In the cited reference search, a search can be done using cited author, cited work or cited year. Search limits can be made using document type such as case study, editorial, journal articles, etc. ICI provides a very useful search history tool to locate and review the searches that have been performed in a single session and being able to mark records. In the subject category search, it provides three different levels to provide more granularity and refinement into the search process. In analyze search features, it provides percentage rankings based on different fields such as document type or name of author as examples. Search refinement features are provided to give finer semantics in the search results by subject category, document type, name of author, publication type and year.

The database is presently open to all registered users. Free registration can be made online. Users' feedback and suggestions on data quality, presentation of data, search features and accessibility can be sent to the administrator for continuous improvement of this service. ICI also envisages development of seven different information products as subsets. These products will be namely (Figure 2):

(1) Indian Science Citation Index.
(2) Indian Health Science Citation Index.
(3) Indian Agriculture Citation Index.
(4) Indian Social Science & Humanities Citation Index.
(5) Indian Journals Citation Report.

Figure 2. *Homepage of ICI portal*

(6) Indian Science & Technology Abstracts.
(7) Directory of Indian R&D Journals.

Conclusion

ICI is an important and bold step in the world of Indian research and development. It will greatly enhance the visibility of Indian R&D literature and knowledge products to global research communities and collaborative networks which may automatically attract more citations, more prestige to Indian research outputs and more global research collaborations. So far, ICI is a very user friendly database with a reasonable response time. But as of this date, it covers only a small fraction of identified sources. After the inclusion of all the identified source materials is available, it can be seen how far it maintains the quality of the data as well as improves accessibility issues such as speed of downloads, ease of use, downloading data in different bibliographic formats, and usability by bibliographic analysis software. Financial sustainability of such a big project in the long-term remains a concern. Revenue earning and sharing model of this comprehensive project is untested. ICI has the potential to be a knowledge base with the greatest coverage of Indian research and to be the most authentic tool to map and evaluate the health of Indian R&D. This analysis will certainly help policymakers and planners in India to reorient and restructure their policies and priorities. ICI will also help in improving the quality of Indian research journals by measuring performance and acceptance rates of each journal.

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