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Aragudige Nagaraja

*SriKrishna Institute of Technology*, nag.kcb@gmail.com

M. Vasanthakumar

*Adichunchanagiri Institute of Medical Sciences*, mvasanthkumar07@gmail.com

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# Comparison of Web of Science and Scopus Impact Factors of Indian Journals

### Aragudige Nagaraja

Librarian

SriKrishna Institute of Technology

Hesaraghatta Road

Chikkabanavara Post

Bangalore, India

### Dr. M Vasanthakumar

Senior Librarian

Adichunchanagiri Institute of Medical Sciences

Nagamangala Taluk

Mandya District, Karnataka, India

## Introduction

Many periodicals and magazines have been published in India. The Directory of Indian Scientific Periodicals published from Council for Scientific and Industrial Research (CSIR) New Delhi provides information about 2000 journals published from India. Every year library budgets are decreasing. Hence librarians are facing difficulties when selecting journals for collection development. Since few national or international systematic approaches exist for journal selection, this article asserts that the best methods for librarians often include the following:

1. Check the catalogue or collections of journals subscribed by similar type libraries.
2. Measure the opinion of subject experts working in the same organization or others by survey or other scientific methods.
3. Examine the impact factor (IF) of journals under consideration.

The evaluation of the quality of research is important for various professional societies, individual scientists, scholarly institutions, and funding organizations (Smith, R 2006). Even though the above mentioned three methods are scientific, most of the libraries will take the impact factors of journals as an important tool while evaluating and selecting journals. Academic librarians frequently use impact factors to help them decide which journals are important enough to subscribe to and which subscriptions may be canceled ( Barschall 1988; Coleman 2007). The best tools available to select the quality journals are JCR (Journal Citation Report) and Scimago journals rank (SJR) indicator.

JCR was the only publication source for the impact factor (IF) of journals before the introduction of the SJR indicator from Scopus data. The journal IF, first conceived in 1955 by Eugene Garfield, the founder of the Institute for Scientific Information (ISI), has been extensively used in past decades as an index of quality of scientific journals (Garfield, E. 2006) and is based on citation analysis (Garfield, E. 1972). ISI publishes JCR in every year which contains impact factor of journals indexed in Web of Science. Elsevier's Scopus, which became available in 2004, has been considered a competitor to Web of Science because of its citation tracking capabilities (Bakkalbasi et al. 2006). Spanish Universities developed the SJR indicator and lists the ranked journals indexed in Scopus according to their impact. The SJR is based on the transfer of prestige from a journal to another; such prestige is transferred through the references that a journal do to the rest of the journals and to itself.

## Objective

The main objective of this study was to identify database coverage of Indian journals in Scopus and Web of Science and to compare the impact factors Indian journals in JCR and SJR.

## Methodology

A list of Indian journals was compiled from online access to Web of Science and Scopus. The lists of Indian origin journals indexed in Web of Science and SCOPUS were prepared separately. Database coverage of Indian Journals in Web of Science was identified and matched with JCR 2008 to assess their impact factors. SJR indicator rank list 2008 of Indian journals was collected from SCImago Research Group through online means and their impact factors were similarly tabulated.

## Results

Table 1 shows the database coverage of Indian journals in Web of Science and Scopus. Web of Science covered 269 journals and Scopus covered 298 journals originating from India. Ninety-eight journals were repeated in both Web of Science and Scopus. Web of science had 171 unique titles and Scopus had 200 unique titles Only 45 (16.72 %) journals had impact factor in JCR 2008 and out of 45 journals, 43 journals were indexed in Scopus with impact factor. Three journals had impact only in JCR were: Photonivachak Journal, Operative Dentistry and Indian Journals of Marine Sciences. A total of 228 journals had IFs in SJR 2008. Only eight journals ranked in JCR top 20 journal's list had positions in top 20 SJR rank list; Indian Journal of Medical Research had high impact factor in JCR with 1.883 but it was second position for SJR with 1.47 IF. Journal of Biosciences had positioned in second in JCR with 1.703 IF but it was ranked first position in SJR with 2.06 IF.

Table 1

Database coverage of Indian journals in Web of Science and Scopus.

No. journals indexed in Web of science	No. journals indexed in Scopus	No. journals repeated in Web of science and Scopus	No. of unique journals indexed in Web of science	No. unique journals indexed in Scopus.
269	298	98	171	200

All Indian journals in the JCR rank had occupied different positions in SJR expect two journals; Journal of Postgraduate Medicine, it was ranked third

position and Journal of Chemical Sciences it was positioned at 9th in both rank lists. Journal of Environmental Biology ranked in fourth position in JCR, whereas it was in thirty-seventh position for SJR. Indian Pediatrics positioned in fifth rank in JCR and it had got twentieth rank in SJR. Bulletin of Material Sciences ranked in sixth position of JCR and it was ranked in sixteenth position in SJR. Journal of Earth System Science earned seventh position in JCR but it was 34th rank in SJR according to their impact. Current Science occupied eighth position at JCR, it was ranked in 26th position for SJR. Many journals had higher IFs in SJR were not covered in Web of Science. 10 (3.7%) journals in the JCR were related medical sciences whereas SJR had 78 (26 %) journals. Table 2 presents the JCR top 20 ranked Indian journals and Table 3 presents the SJR top 20 ranked Indian journals.

Table 2: JCR top 20 Indian journals

Sl.No	Name of Journal	ISSN	IF
1	INDIAN J MED RES	0971-5916	1.883
2	J BIOSCIENCES	0250-5991	1.703
3	J POSTGRAD MED	0022-3859	1.538
4	J ENVIRON BIOL	0254-8704	1.359
5	INDIAN PEDIATR	0019-6061	0.956
6	B MATER SCI	0250-4707	0.858
7	J EARTH SYST SCI	0253-4126	0.786
8	CURR SCI INDIA	0011-3891	0.774
9	J CHEM SCI	0253-4134	0.745
10	J ASTROPHYS ASTRON	0250-6335	0.667
11	INDIAN J PEDIATR	0019-5456	0.646
12	J GENET	0022-1333	0.64
13	INDIAN J EXP BIOL	0019-5189	0.599
14	INDIAN J BIOCHEM BIO	0301-1208	0.579
15	INDIAN J CHEM A	0376-4710	0.575
16	ALLELOPATHY J	0971-4693	0.525
17	INDIAN J CHEM B	0376-4699	0.466
18	J INDIAN CHEM SOC	0019-4522	0.384
19	INDIAN J PURE AP MAT	0019-5588	0.365
20	J GEOL SOC INDIA	0016-7622	0.355

Table 3: SJR top 20 Indian Journals

Sl.No	Name of Journal	ISSN	IF
1	Journal of Biosciences	2505991	2.06
2	Indian Journal of Medical Research	9715916	1.47
3	Journal of Postgraduate Medicine	9722823	1
4	Indian Journal of Medical Microbiology	2550857	0.82
5	Indian journal of medical sciences	195359	0.8
6	Journal of Communicable Diseases	195138	0.76
7	Indian Journal of Ophthalmology	3014738	0.73
8	Neurology India	283886	0.7
9	Proceedings of the Indian Academy of Sciences: Chemical Sciences	2534134	0.69
10	National Medical Journal of India	0970258X	0.68

11	Indian journal of gastroenterology : official journal of the Indian Society of Gastroenterology	2548860	0.67
12	Indian Pediatrics	196061	0.67
13	Journal of Vector Borne Diseases	9729062	0.65
14	Indian Journal of Experimental Biology	195189	0.64
15	Indian Journal of Pediatrics	195456	0.63
16	Bulletin of Materials Science	2504707	0.63
17	Indian Journal of Cancer	0019509X	0.63
18	Indian Journal of Dermatology, Venereology and Leprology	3786323	0.62
19	Indian Pacing and Electrophysiology Journal	9726292	0.6
20	Indian Heart Journal	194832	0.6

## Discussion

Web of Science covers 16,350 journals and Scopus covers 26,447 journals, of which 16,500 were peer-reviewed journals. Web of Science covers substantially fewer journals compared Scopus. Greater numbers of Indian journals related to medical sciences had impact factors in SJR list compared to JCR. Probably this might be due to the fact that Scopus covers more Indian journals related to the current research. In Web of Science, journals related to fundamental and pure subject areas had higher average IF than average IF specialized or applied ones (Amin.2007). SJR indicator uses different methods to evaluate a journal. It gives weight to citations depending on the prestige of the citing journal. SJR indicator would not consider the influence of self citations; prestige of a journal is estimated with the application of the Page Rank algorithm in the network of journals. SJR indicator takes the total number of documents of a journal in the denominator of the relevant calculations. Journals IF considers only "citable" articles (i.e. mainly original articles and reviews). If the database covers a higher number of open access journals, there would be more opportunity to have more IF journals. A recent ISI study has reported that traditional journals and Open Access (OA) journals have similar citation impact factors (Pringle 2004). Numerous studies have shown that freely accessible publications are more frequently cited than those with restricted access (Mertens, S.2009). This was confirmed by Harnad and Brody's (2004) analysis of publications from the field of physics, in which they compared publications which only appeared in conventional journals with publications which were also made available via the open access portal ArXiv. The latter group enjoyed a citation advantage of up to 500%.

Regarding the methodology of the calculation of the two compared indices, the most significant difference lies in the fact that the SJR indicator takes into account not only the absolute number but also the "quality" of citations received by a journal, whereas the journal IF considers incoming citations only in a quantitative manner (Falagas et al.2008). Some of the controversies while calculating IF include:

- 1) lack of assessment of the quality of citations (Dellavalle et al.2007),
- 2) the inclusion of self citations (Miguel.2002;Fassoulaki.2002;Falagas. 2006),
- 3) the poor comparability between different scientific fields (Postma, E. 2007) and
- 4) the analysis of mainly English language publications (Aleixandre-Benavent.2007; Aleixandre-Benavent.2006)

## Conclusion

Impact factor and SJR indicator of journals are not only useful for

libraries, but also helpful to authors while targeting reputed journals for publication. Both give the list of quality journals. SJR indicator is a free open source product; anyone can access it online. More opportunities exist to improve the impact of Indian journals. Only a small percentage (20-30%) of Indian journals was indexed in Web of Science and Scopus. Editorial teams of Indian journals should develop and implement plans to improve the impact factors of Indian journals.

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