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SCImago

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SCImago

Getachew Dinku Godana

The degree to which a scholar's work is cited by others has been regarded as an indicator of its scientific impact relative to other researchers in the web of scholarly communications.¹ Likewise, various metrics based on citation counts have been developed to evaluate the impact of scholarly journals.² Recently there has emerged a new research trend aimed at developing impact metrics that consider not only "the raw number of citations received by a scientific agent, but also the importance or influence of the actors who issue those citations."³ These new metrics represent scientific impact as a function not of just the quality of citations received but of a combination of the quality and the quantity. For example, the SCImago Journal Rank (SJR) indicator, which has been developed by the SCImago Research Group headed by Professor Felix de Moya,⁴ and launched in December 2007, is a size-independent, web-based metric aimed at measuring the current "average prestige per paper" of journals.⁵ This indicator shows the

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- 1 Borja González-Pereira, Vicente P. Guerrero-Bote and Félix Moya-Anegón, "The SJR Indicator: A New Indicator of Journals' Scientific Prestige," *Computer Science Digital Library*, (December 2009), <http://arxiv.org/abs/0912.4141v1>.
 - 2 González-Pereira, et al., "SJR Indicator."
 - 3 González-Pereira, et al., "SJR Indicator."
 - 4 SCImago Research Group, "SCImago Institutions Rankings," PowerPoint presentation, <http://www.webometrics.info/Webometrics%20library/morning%20session/Vicente%20Guerrero.pdf>
 - 5 González-Pereira, et al., "SJR Indicator."

visibility of the journals contained in the Scopus database.⁶

SCImago Journal Rank

The SJR indicator of a specific journal for a three calendar year period is calculated through an iterative process that computes the “prestige” gained by the journal through the transfer of prestige from all the other journals included in the network of journals, by their citations during the past 3 years, to all articles of the specific journal published in the past 3 years, divided by the total number of articles of the specific journal during the 3 year period under consideration.

The SJR index is derived from analysis of the citation links between journals in a series of iterative cycles, similar to the Google PageRank algorithm, assigning more weight to citations coming from journals with higher SJRs. The assumption is that a journal has a particular prestige in a particular field and it transfers prestige if cited by another journal. The amount of prestige of each journal transferred to another journal in the network is computed by considering the percentage of citations of the former journal that are directed to articles of the latter journal.⁷ If one is cited by a journal with a high prestige or a high SCImago index value, the citation is valued highly. On the contrary, if one is cited by a journal with a low prestige, then the citation is worth less.⁸ A journal is believed to have a fixed amount of prestige and this prestige has to be shared among all of its citations.

In fields such as those in the life sciences, there are very abundant citations. This means that life science journals generally tend to have very high impact. Fields such as those in the arts and humanities tend to have fewer citations. In making the SJR calculation for these fields, one citation will have a higher value. This caveat is important to note because it is reported to have the effect of normalizing the differences on the citation behavior between subject fields.⁹

6 SCImago Group, “SJR — SCImago Journal & Country Rank, (2007),” <http://www.scimagojr.com>.

7 Matthew E. Falagas, Vasilios D. Kouranos, Ricardo Arencibia-Jorge and Drosos E. Karageorgopoulos, “Comparison of SCImago Journal Rank Indicator with Journal Impact Factor,” *The FASEB Journal Life Sciences Forum*, 22 (2008): 2623-2628.

8 SCImago Research Group, “SCImago Institutions Rankings,” PowerPoint presentation, <http://www.webometrics.info/Webometrics%20library/morning%20session/Vicente%20Guerrero.pdf>

9 SCImago Research Group, “SJR.”

The SJR indicator is computed in two phases. The SJR algorithm begins by assigning an identical amount of prestige to each journal. Next, this prestige is redistributed in an iterative process whereby journals transfer their attained prestige to each other through the previously described connections. The process ends when the differences between journal prestige values in consecutive iterations do not surpass a pre-established threshold.¹⁰

Strengths and weaknesses of SCImago

The main strength of SCImago is that it uses Scopus as the data source for the development of the SJR indicator. Scopus is said to be the world's largest scientific database with current coverage of data from more than 17,000 research publications embracing the full range of scholarly research.¹¹ The SCImago research group believes Scopus covers all the journals included in the Thomson Reuters Web of Science and more.

Multidimensionality is the other merit of SJR. The index's multi-faceted view of research activity enables it to measure the world's 2000 leading research-focused institutions. Production, visibility, impact and collaboration are among the major dimensions SJR considers in cross analyzing citations of scholarly writings by different individuals and institutions including higher education, government research agencies, health research institutions and private research companies. SJR also has a provision of analyses within a subject area.¹²

SCImago metrics also help to prevent excessive journal self-citation by limiting the number of references that a journal may direct to itself to a maximum 33% of its total references so that excessive self-citation will not involve artificially inflating a journal's value, but without eliminating the normal academic practice of self-citation.

Another advantage of SJR is that it introduces international collaboration in a bid to show the institution's output ratio that has been produced in collaboration

10 González-Pereira, et al., "SJR Indicator."

11 SCImago Research Group, "SCImago Institutions Rankings (SIR) 2009 World Report number 003," 2009, http://www.scimagoir.com/pdf/sir_2009_world_report.pdf

12 SCImago Research Group, "SCImago Institutions Rankings."

TABLE 1

Main characteristics of the evaluation of scientific journals by journal citation reports and SCImago journal and country rank

Characteristic	ISI	SCImago
Organization	Thomson Scientific	SCImago research group
Number of journals (as of 2009)	9,000	17,000
Languages of publication of journals	30	50
Countries of publication of journals	71	97
Countries of research origin	Not available	229
Update	Weekly	Daily
Main indicator of quality of journals	Journal Impact Factor	SCImago Journal Rank
Reference period	1 calendar year	3 calendar years
Citation window	2 preceding years	3 past years
Journals providing citations	Source journals	All other journals
Weight of citations	Equal	Shifts with “prestige” of citing journal
Journal self citations	Included	Not included
Articles considered to receive citations	“Citable” (research and review articles)	All types
Access	Restricted (paid subscription required)	Open

Source: Table adapted from Falagas, et al., “Comparison of SCImago.”

with foreign institutions. The values are computed by analyzing the institution's output whose affiliation includes more than one country address over the whole period.¹³

SJR provides not only a resource, but also a user-centered tool designed to help individuals construct the information they need in the way they need it.

¹³ SCImago Research Group, “SCImago Institutions Rankings (SIR) 2009 World Report,” 2

Both the data and the tool are open access materials.

Weaknesses

SCImago metrics consider only peer reviewed journals, proceedings, reviews and book series with peer reviewed content. That SJR does not consider trade journals and other non-peer reviewed articles to generate metric can be seen as a major limitation. The second limitation is that articles are considered if they are received by articles reviews and conference papers.

A further limitation is that a citation is counted only if it is made to an item which is published in the three previous years. However, the SCImago Group argues that a three-year citation window is “long enough to cover the citation peak of a significant number of journals, and short enough to be able to reflect the dynamics of the scholarly communication process.”¹⁴

Judgment

Recent years have witnessed a growing criticism on the traditional Thomson Scientific Impact Factor, the metrics extensively used for more than 40 years to measure prestige. Some of the major criticisms of Thomson include the lack of assessment of the quality of citations, the inclusion of self-citations, the poor comparability between different scientific fields, and the analysis of mainly English-language publications.¹⁵

As we have seen from its strengths listed above, I would argue, SJR best reflects the citation relationships among scientific sources. SJR has responded to the dissatisfactions of the scientific community with former metrics like Thompson Scientific’s Impact Factor. The fact that it has a late comer advantage makes it not only learn from the limitations of former metrics but also exploit the benefit of the current developments in the communications technology.

The SCImago Research Group reports that SJR has already been studied as a tool for evaluating the journals in the Scopus database compared with the Thomson Scientific Impact Factor and shown to constitute a good alternative for

14 González-Pereira, et al., “SJR Indicator,” 18.

15 Falagas, et al., “Comparison of SCImago.”

journal evaluation.¹⁶ The comparison made between SJR and the journal impact factor (IF) suggests that: 1) the SJR indicator is an open-access resource, while the journal IF requires paid subscription; 2) The SJR indicator lists considerably more journal titles published in a wider variety of countries and languages, than the journal IF; and 3) contrary to the journal IF, the SJR indicator attributes different weight to citations depending on the “prestige” of the citing journal without big influence of journal self-citations.

Appropriateness of SCImago for the Field of Communication

I would argue some features of the SCImago citation index analysis fit the interests of Communication Studies. In the first place, the idea of measuring collaboration in the SJR sits well with the move in Communication Studies to develop non-othering ways of engaging differences. The payoff from a core collaborative approach, according to Deetz, is not only in better corporate goal achievement, as “learning to participate in collaborative decision making is also a value in itself, and increasingly important in our pluralistic social context.”¹⁷ This idea of collaboration might be a way of increasing citizen participation in knowledge formation and the democratic process in general.

If dialogic communication is effectively introduced to practices of measuring intellectual impact, it can serve as a site of struggle and collective meaning production. Dialogue has a transformative potential as it helps to overcome the adversarial thinking that damages creativity.¹⁸

SJR not only ranks, analyzes and compares but also has a feature that generates visuals. So I also got the impression that the diagrammatic comparison of results might add a dimension of visual rhetoric to presenting quality of an academic impact as images present information and evidence that is relevant to an argument more accurately and concisely. Cognizant of the fact that contemporary society is filled with a variety of visual images designed to influence opinions, “rhetoricians working from a variety of disciplinary perspectives are beginning to pay a substantial amount of attention to issues of visual rhetoric.”¹⁹

16 González-Pereira, et al., “SJR Indicator.”

17 Stanley Deetz & J. Simpson, “Critical Organizational Dialogue: Open Formation and the Demand of ‘Otherness,’” in R. Anderson, L.A. Baxter, & K. Cissna (Eds.), *Dialogue: Theorizing Difference in Communication Studies* (pp. 141-158) (Thousand Oaks: Sage, 2006), 49.

18 Deetz & Simpson, “Critical Organizational Dialogue.”

19 C.A. Hill & M. Helmers, *Defining Visual Rhetorics* (Mahwah: Lawrence Erlbaum Associates, Pub-

Communication Studies scholars have increasingly recognized the rhetorical advantage of images. In *No Caption Needed*, Hariman and Lucaites assert images have a huge potential of communicating social knowledge, shaping collective memory, modeling citizenship, and providing visual resources for public action.²⁰

Compared to science journals, Communication Studies journals might generally have low citations and hence impact. However, the in-built mechanism of normalizing with SJR makes it possible that scholars can still salvage respectable SJR scores for publications that receive fewer citations in relatively less dense citation fields such as in the humanities. If mere citation numbers were to be considered to decide the impact of a journal, communication journals would be rated lower.

lishers, 2004), 2.

²⁰ Robert Hariman & John Lucaites, *No Caption Needed* (Chicago: The University of Chicago Press), 2007.