



## Impact Factor and the Dangers of Gamifying Scholarship

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### Abstract

*The debate on the use and abuse of Journal Impact Factor (JIF) has been on for decades. Some JIF crusaders think it should be used for the assessment of journal quality, article quality and author competence while opponents of this broad application insist that impact factor should be restricted to the assessment of journal credibility and never for article or author assessment. However, some institutions continue with the contentious practice of using JIF and associated metrics to determine employee promotion, hiring and funding, thereby provoking controversies and bitter contentions in academic institutions. This paper focuses on the merits of alternative metrics that accommodate the interest of various disciplines and respect their peculiar circumstances with a view to developing more realistic and less contentious metrics that measure only what they are designed to measure. It highlights the importance of Altmetrics as a useful addition and Impact Factor Distribution as a useful alternative to impact factor.*

**Keywords:** Impact Factor, Altmetrics, Employee Assessment, Research Impact, Citation

### Introduction

“Publish or perish” is a phrase used by H. J. Coolidge in the year 1932 to explain the pressure on scholars in academic communities to rapidly churn out research papers in scholarly journals in order to sustain career progress. At the time of his writing, only those who



## **Introduction**

failed to publish perished. And when Eugene Garfield invented citation-based Journal Impact Factor, his objective was to identify frequently used journals to enable librarians to be more effective in selecting and managing scholarly publications (Ifeduba, 2022). But the use and abuse of this invention by institutions all over the world currently gives rise to the perishing of even well published researchers whose publications make impact without impact factor. The result is that the measurement of the impact of scholarly contributions is a subject of fierce debates and controversies championed by scholars who question the curious focus on impact factor rather than impact, a focus on mere statistics rather than the real substance of research contributions (Carotenuto and Nicolais, 2023). They ask why attention has shifted from a publication's impactful contribution to its impact factor, percentile, quartile, ranking and source normalization of its citations—all statistics and little substance—a situation which seems to reduce a serious business not only to a game but a game of numbers.

As the argument rages, attempts have been made to shift the focus of scholarship from the "publish or perish" sport driven by journal-level metrics to more inclusive and realistic methods of measuring research impact. Nicholas Negroponte of The MIT Media Laboratory, thus, suggested that it should rather be a case of "demo or die", placing demonstrations above publication, whereas yet another scholar, emphasizing technology adoption, suggested that the phrase should rather change to "deploy or die" (Smith, 2014). All of this suggests that it is time to develop impact indicators that cater to the interest of all disciplines while recognizing their peculiarities. This paper, therefore, strives to make some clarifications with a view to deepening the understanding of not only the issues debated but also shading light on their implications for the good of the global research enterprise. The clarification begins with the metrics at a glance:

## **The Metrics at a Glance**

1. **Google Scholar Article Citation:** This refers to the total number of citations accumulated by each article on the World Wide Web irrespective of the publisher and indexer.
2. **Google Scholar Article H-index:** The h-index is an article-level metric for evaluating the cumulative impact of an author's scholarly output. It has the advantage of comparing publications to citations, with the objective of striking a balance between the disproportionate weight of highly cited publications and the publications that are yet to be cited. These Google scholar metrics have one thing going for



them—they take books into account. And scholars argue that there is need to understand the impact of books beyond citation-based metrics (Barboza, Bondra, Chabot and Gilmour, 2011).

3. **Scopus Citescore:** Scopus citation score is the main indicator of impact in Scopus metrics, and others such as percentile and quartile are derived from it.
4. **ScopusCiteScore Percentile measures** the credibility of a publication. Derived from the citation score, indicates the extent to which that publication is present in the most cited journals in the data source—Scopus. Where a journal percentile is 99%, it means that the journal is in the top 1% in its subject area.
5. **Source-Normalized Impact per Paper (SNIP):** The most-cited journals are defined by this metric, and it measures a journal's contextual citation impact by weighting citations based on the total number of citations in its field.
6. **SCImago JournalRanking (SJR)** is also derived from citations and is weighted by the prestige of the journal as determined by Scopus.
7. **Scopus Journal Quartile** shows the credibility of a journal in a particular area of research, and it is derived from citations also. Scholars have consistently argued that all this seems to tend towards a mere play on data and number, leading to more and more controversies (Rossner; Van-Epps; Hill, 2007).
8. **Web of Science Journal Impact Factor:** This measures a journals contextual citation impact by weighting citations based on the total number of citations in a subject field. It is designed to "evaluate the relative importance of a journal within its field and to measure the frequency with which the "average article" in a journal has been cited in a particular time period" (Sharma et al., 2014). The inventor and many journal publishers have warned that using it for evaluating individuals would lead to abuse because there is "a wide variation from article to article within a single journal" therefore, "in an ideal world, evaluators would read each article and make personal judgments" (Garfield, 2006).
9. **Altmetrics:** Altmetrics, meaning "alternative metrics," seek to provide some aspects of impact not covered by traditional indicators of impact such as citation counts, journal prestige or impact factor and author H-index (Aimee Sgourakis Jenkins, 2023). The narrowness of impact factor or other citation-based metrics has been at the centre of all controversies on research impact. But Altmetrics seem to



clearly expand the view of what impact should be and clearly identifies what is making the impact.

Research impact naturally ramifies into all areas of life, and could be read, downloaded, shared and discussed outside the academic community, but citation-based metrics miss all of these even when online interaction, learning and research are daily increasing in importance.

10. **Citation Distribution:** This is an evolving metric proposed as an alternative to impact factor. It uses graphs to display how many papers published in a particular journal were cited and how many times they were cited. The essence is to increase equitable distribution of credit based on actual breadth and depth of citation rather than ascribing citation credit to all the papers in a journal even where only a few are cited(Callaway, 2016).

To justify the need for Altmetrics, Aimee Sgourakis Jenkins presented a detailed explanation thus: "There is increasing understanding that scholarly research has moved beyond the printed page and that traditional measures of impact are inadequate. Citations are only a small part of the scholarly ecosystem and only represent one type of impact... These numbers provide a more complete picture of the reach and impact of research and scholarship; one that goes beyond citations in peer-reviewed publications" (Jenkins, 2023). Thus, questions on number of downloads, number of reads (on Mendeley, bookmarking sites, for instance) number of times shared, number of news reports on research outcomes and researchers' comments on it are answered by Altmetrics.

In addition to reads, shares and downloads on the traditional platforms, citations in policy documents are counted, and this is an improvement on the traditional but contentious metrics. Scholarly bookmarks on Mendeley and CiteULike; bookmarks by the public on Delicious and Pinboard; Twitter favorites and others are accommodated in Altmetrics. Discussions such as peer reviews on F1000, Publons, and other post-publication peer review websites; Twitter mentions and Facebook wall-posts; newspaper articles, videos and podcasts as well as mentions on scholarly blog networks like Research Blogging are accommodated. Research shared by Twitter mentions and Facebook shares, page views, download statistics from the journal website or a repository such as researchgate are all recognized as evidence of impact in Altmetrics. A summary of the appropriateness of the itemized metrics showing their purposes, measurement levels and appropriateness for research output evaluation is presented in Table 1:

**Table 1: Metrics Purposes, Measurement Levels and Appropriateness**

SN	Metric	Purpose	Measurement Level	Fitness
1	Google Scholar Article Citation	Article Impact Evaluation	Article level	Appropriate
2	Google Scholar Article H-index:	Cumulative article Impact Evaluation for each author's publications	Article level	Appropriate
3	Scopus Citescore:	Article Impact Evaluation	Article level	Appropriate
4	ScopusCiteScore Percentile	Measures the credibility of a Journal	Journal Level	Mismatched
5	Source-Normalized Impact per Paper (SNIP):	Measures a journal's citation impact, comparative to others in its field	Journal Level	Mismatched
6	SCImago Journal Ranking (SJR)	Measures the prestige of journals as determined by Scopus citations	Journal Level	Mismatched
7	Scopus Journal Quartile	Measures the credibility of a journal in a particular field using	Journal Level	Mismatched



		citation		
8	Web of Science Journal Impact Factor	Measures a journal's contextual citation impact in a subject field	Journal Level	Mismatched
9	Altmetrics	Presents evidence reads, downloads, shares and discussions gained by a paper, especially outside the academic community	Article level	Appropriate
10	Citation Distribution	Uses graph to show how many papers are cited in a journal and how many times each was cited	Journal Level	Appropriate for Journals only

**Source:** Author

**Correcting the Anomalies**

In research, when an instrument fails to measure exactly what it set out to measure, it fails the validity test. Now, the set of metrics that set out to measure the impact of researchers' outputs but ended up measuring the prestige of journals, and not individual research impact, cannot be valid for research impact assessment but for journal ranking. Expert opinion which is inevitable in assessing the quality of research publications is fast becoming irrelevant in many institutions. (Hicks et al., 2015; Owan and Owan, 2021; Vanclay, 2012).



As a matter of fact, there is this amazing case of some institutions that award additional score to any article with citation, another point to the same article for the impact factor and yet a higher point to the that same article for the percentile of the journal it was published in. This amounts to triple entry for one publication. The result is that some papers score as much as ten points above the maximum 5 points set for a paper. In other words, one paper is awarded the score of three papers. Scholars argue that this amounts to abuse rather than use of this great invention (Esposito, 2011). When one vote is counted twice by politicians, it is described as rigging, but curiously such triple entries pass for nothing short of inventive genius in some universities. And all of this leaves book-based disciplines wreathing in pains because they see themselves publishing more and perishing more in the same place where others are publishing less and prospering more (Ifeduba, 2022). A case of “the more you publish the more you perish”, or how best could this be described? (Owan and Asuquo, 2022).

In Nigeria and the rest of the global south where over 80% percent of scholarly journals, including university-based journals, are not indexed in Scopus and Web of Science, publishing becomes a typical case of “Publish in the global West or perish in the global South” (Aina, 2016). A preliminary survey of Nigerian universities indicates that nearly 30% of the 206 licensed institutions have either introduced impact factor points for staff promotion or are planning to do so. For book-based disciplines (Humanities, Social Science and Law) promotion becomes more difficult even when they publish more (De Filippo, Morillo and González-Albo, 2023). And this calls for a development of a set of measures that address the peculiarities of these disciplines. Except this is done, the controversies, contentions and conflicts will continue and unanswered questions will remain unanswered. Some of the questions begging for answers are listed below as food for thought:

**Unanswered Questions and Attempted Answers:** In light of the identified shortcomings of journal-level metrics and the contentions arising from them, the continued use of JIF and other associated journal-level metrics to determine funding and promotion throws up the following questions:

When a textbook or a novel is adopted by several universities and used for classroom activities by hundreds of thousands of undergraduates without citation, how would the author get promoted or funded? If that book is cited in a million undergraduate research projects not published on the web, how would the author get promoted or funded?



If that same book is cited in a million student research projects published on the web but not indexed in WOS and Scopus, how would the author get promoted or funded?

If an article is accepted for publication in a high-impact-factor journal and the author uses the metrics to gain promotion even when his article has not been cited, is he not promoted because of the company he kept rather than the impact of his paper?

How do we justify the case of a journal article which has never been cited since it was published 20 years ago, in a high-impact-factor journal, and the author has leveraged on the "impact" his paper never made to gain promotions and fundings?

Is this not a mere gamification of intellectualism, gamification promoted and pursued for narrow self-interests? Is this game of numbers not creating room for unethical practices? Where are we headed? (Rawat and Meena, 2014).

**Attempted Answers and New Directions:** In a 2016 article published in *Nature* and entitled: "Beat it, impact factor! Publishing elite turns against controversial metric," it was reported that senior staff at leading journals across the world were making moves to end inappropriate use of JIF. Reasoning along with the rest of the global academic community, the American Society for Microbiology announced "plans to remove the impact factor from its journals and website, as well as from marketing and advertising". Earlier, it was announced that the American Society for Cell Biology "had banned the mention of impact factors from its annual meetings." Similarly, Thomson Reuters had stated through its spokesperson Heidi Siegel that JIF "should not be used as a proxy for the quality of any single paper or its authors" (Callaway, 2016).

Every empirical evidence speaks in support of these leading industry voices. A study conducted by scientists drawn from leading science publishers, including *Nature*, indicates that most of the papers selected from high-impact factor journals accumulated fewer citations than the impact factors for their various journals. The study showed that nearly 75% articles in *Nature* with 38.1 impact factor at the time, were cited below the journal's impact factor, meaning that about 75% of *Nature* authors might have gotten funds, jobs and promotions on the basis of company they kept rather than the impact of their research. It could also mean that JIF is misused 75% of the time. Journals implicated in this contentious game of numbers include *Science*, *PLoS Genetics* Their authors benefit from the works of a few



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highly cited authors, and this should actually be perceived as unethical (Callaway, 2016). All these point to a change that must happen, and forward-looking institutions should follow suit and expunge impact factor from promotion and recruitment criteria. Unfortunately, many Nigerian institutions have just begun to introduce JIF for these purposes with little or no recourse to the direction in which the rest of the community is headed.

### **Conclusion and Recommendations**

The pressure is on faculties to publish or perish. The race is on and book-based disciplines, especially in developing nations, are worse off. The crux of their argument is that there is a clear mismatch in using the achievement of a journal to promote an author who published in it. This calls for an urgent conference on the use of impact factor and other citation-based metrics for the assessment of promotion and funding applications. Each university should kickstart it by commencing university-wide conferences on this matter. Already, quality and thoroughness are being sacrificed, short cuts to publication and promotion are increasing, even some of those actively publishing are perishing and this can only lead to a more devastating effect—death of true scholarship. Universities should begin now to de-emphasize the game of numbers and take steps to position their employees for real impact by developing separate measures for the citation-driven disciplines and the book-based disciplines. Certainly, the impact factor cap does not fit all.

### **Reference**

- Aimee Sgourakis Jenkins, 2023) What are Altmetrics?<https://pitt.libguides.com/prf.php?id=5a767d80-7c9b-11ed-9922-0ad758b798c3>
- Aina, L.O. (2016) The Visibility of Researchers: Measuring the Impact of Journals in a Scholarly Community, Paper Delivered at the Redeemer's University Research Seminar, held at the University Auditorium, Redeemer's University, Ede, Osun State, Nigeria, 6 April, 2016.
- Callaway, E. (2016). Beat it, impact factor! Publishing elite turns against controversial metric. *Nature* 535, 210–211. <https://doi.org/10.1038/nature.2016.20224>
- Carotenuto G, Nicolais F. (2023) One Secret for a High Citation Rate. *Publications*, 11 (2):23. <https://doi.org/10.3390/publications11020023>
- Coolidge, Harold Jefferson; Lord, Robert Howard (1932). Archibald Cary Coolidge: Life and Letters. Books for Libraries Press. ISBN 9780836966411 – via Google Books.



- De Filippo, D.; Morillo, F.; González-Albo, B. (2023) Measuring the Impact and Influence of Scientific Activity in the Humanities and Social Sciences. *Publications*, 11, 31.  
<https://doi.org/10.3390/publications1102003>
- Eshchanov, B.; Abduraimov, K.; Ibragimova, M.; Eshchanov, R. (2021) Efficiency of "Publish or Perish" Policy—Some Considerations Based on the Uzbekistan Experience. *Publications*, 9, 33.  
<https://doi.org/10.3390/publications9030033>
- Eposito, M. (2011) The impact factor: Its use, misuse, and significance. *Int J Prosthet Dent*. 24:85. Google Scholar
- Garfield E. (1996) How can impact factors be improved? *BMJ*. 313:411–3. [PMC free article, PubMed, Google Scholar]
- Garfield, E. (2006) The history and meaning of the journal impact factor. *JAMA*. 2006; 295:90– 3. PubMed, Google Scholar
- Ifeduba, E. (2022) Developing Comprehensive Indicators for Measuring Research Impact, *Redeemer's University Journal of Management and Social Sciences*, Vol. 5 (2)[www.google.com](http://www.google.com)
- Malathi, M. Thappa D.M. (2012) The intricacies of impact factor and mid-term review of editorship. *Indian J Dermatol Venereol Leprol*. 2012;78:1–4. PubMed, Google Scholar
- Owan, V. J., & Asuquo, M. E. (2022). "Publish or perish," "publish and perish": The Nigerian experience. In J. A. Undie, J. B. Babalola, B. A. Bello & I. N. Nwankwo (Eds), *Management of higher education systems* (pp. 986-994). University of Calabar Press
- Ravenscroft J, Liakata M, Clare A, Duma D (2017) Measuring scientific impact beyond academia: An assessment of existing impact metrics and proposed improvements. *PLoS ONE* 12(3): e0173152.  
<https://doi.org/10.1371/journal.pone.0173152>
- Rawat S, Meena S. (2014) Publish or perish: Where are we heading? *J Res Med Sci*. 19 (2):87-9. PMID: 24778659; PMCID: PMC3999612.
- Rosner, M. Van Epps H, Hill E. (2007) Show me the data. *J Cell Biol*. 2007;179:1091–2. PMC free article, PubMed, Google Scholar
- Sharma, M; Sarin, A; Priyanka Gupta, P; Sachdeva, S. & Ankur V. Desai, A.V. (2014) Journal Impact Factor: Its Use, Significance and Limitations, *World J Nucl Med*. 13(2): 146. doi: 10.4103/1450-1147.139151
- Smith, N.D. (2014) "Deploy or Die—Media Lab Director's New Motto", *Slice of MIT*, [https://en.wikipedia.org/wiki/Publish\\_or\\_perish](https://en.wikipedia.org/wiki/Publish_or_perish)