

Publishing, identifiers & metrics: Playing the numbers game

Edwin van Teijlingen^{1*}, Shovita Dhakal Adhikari², Pramod R. Regmi³, Alexander van Teijlingen⁴, Nirmal Aryal², Sarita Panday⁵

¹ Faculty of Health and Social Sciences, Bournemouth University, UK; Visiting Professor, Manmohan Memorial Institute of Health Sciences, and Nobel College, Nepal.

² Faculty of Health and Social Sciences, Bournemouth University, UK.

³ Faculty of Health and Social Sciences, Bournemouth University, UK; Visiting Fellow, Chitwan Medical College, Nepal and Datta Meghe Institute of Medical Sciences, India.

⁴ Department of Pure and Applied Chemistry, University of Strathclyde, UK.

⁵ Department of Politics and International Relations, The University of Sheffield, UK.

Received:

31 May 2021

Revised:

30 August 2021

Accepted:

10 September 2021

*Corresponding author

evteijlingen@bournemouth.ac.uk

Abstract

The number of scientific articles published each year is rapidly growing and so is the number of academic journals. This makes it impossible for an individual practitioner or researcher to keep track of all research published in their own field or sub-discipline. With the growing amount of publications, it is also becoming more difficult to distinguish between similar papers published on the same topic, in the same journal, or by the same researchers (or research team). This perspective paper could support students and novice researchers, outlines the difference between the unique identifier for: (1) you as the researcher, (2) a specific paper; and (3) a specific journal. This paper further outlines the various numerical identifiers associated with academic publishing to help demystify academic publishing.

Keywords: *Journal identifiers, impact factors, academic publishing*

DOI: [10.3126/hprospect.v20i1.37391](https://doi.org/10.3126/hprospect.v20i1.37391)

Tweetable abstract: This paper discusses different numerical identifiers associated with academic publishing.

Introduction

With the growing number of academic authors, the ever-expanding number of academic journals and the increase in the number of journal articles published each year, it can be difficult, but crucial to find a specific paper in the right journal. At the same time, we live in a more and more automated and digitalised world, in which it makes sense to number and code every item in a group, be that a paper, a journal or an author. Unfortunately, not many students and junior researchers learn about these key academic identifiers from their tutors and supervisors. Therefore, this article outlines the different coding systems/metrics applied in academic publishing and highlights their characteristics and the differences. Table 1 provides an overview of this paper. We start by introducing the journal identification numbers, and metrics around the success of journal, known as impact factors (IF). The next section addresses identification numbers of individual articles and their success. The following section focuses on identification numbers associated with authors' individual academics and quantitative measurements of their success.

Table 1: How to identify and assess popularity of papers, journals & authors

	Identifier	Measurement of popularity
Paper	DOI	Reads / citations
Journal	ISSN/eISSN/ISSN-L	Impact Factor
Author	ORCID	h-factor

Identifying the journal

Every good academic journal has a unique identifying number (similar to other academic or non-academic publications), called the ISSN [International Standard Serial Number]. The ISSN is a unique eight-number identifier, with a separate identifier for the printed version of the journal and its electronic version. Each of the genuine journals across the globe will have registered for a unique ISSN number. For example, the journal you are currently reading, Health Prospect, is listed as ISSN 2091-2021 for its print version and eISSN 2091-203X for its electronic version online.

If researchers want to submit a manuscript to a particular journal, they need to be sure they have selected the correct one, which can be tricky if there are journals with the same or very similar names. ISSN numbers can become helpful when you come across journals

having very similar titles, or occasionally even the same title. Table 2 demonstrates five different journals with similar, or even the same, titles: (1) Health Science Journal; (2) Journal of Health Sciences; (3) Journal of Health Science; (4) Journal of Health Sciences; and (5) Journal of Health Sciences.

Table 2: ISSN numbers for journals with similar/same title

Title of journal	ISSN	e-ISSN	Publisher's details
Health Science Journal	1108-7366	1791-809X	https://www.hsj.gr/
Journal of Health Sciences	2232-7576	1986-8049	https://www.jhsci.ba/ojs/index.php/jhsci
Journal of Health Science	1347-5207	1344-9702	https://www.jstage.jst.go.jp/
Journal of Health Sciences	1429-9623	2391-8306	Now renamed: Journal of Education, Health and Sport
Journal of Health Sciences	2447-8938		https://seer.pgskroton.com/

Some of the recent journals have added a new ISSN-L. The 'L' in the ISSN-L stands for linking, and the ISSN-L, is the specific ISSN that groups the different media of the same serial publication [1]. This ISSN-L combines the original ISSN and the e-ISSN, but rather than replacing them, it adds an overarching new one.

Journal Impact factor

The ISSN only identifies the specific journal that does not tell you anything about its quality, impact, popularity, or success. The Impact Factor (IF) refers to the citations by academics of articles published in the journal; a higher IF somewhat equates with academic status. After explaining the way an IF is calculated, and where these are recorded, we reflect on why academics use it in the first place.

The IF is a metric tool introduced by Eugene Garfield fifty years ago [2], to measure research output. It is calculated over a two-year period and published annually (but note that some journals also report five-year impact factors) in Journal Citation Reports (JCRs) which is available from Web of Science, but it needs a subscription to access this source. The IF indicates the status/importance of a journal by establishing citation frequency i.e. the number of times all articles in the journal are cited within the past two years. The main IF calculation is from the previous two years by dividing the number of citations in the current year by the total number of articles published in the past two years. Thus IF 3 means that articles published one or two years ago have on average been quoted thrice. Despite IFs being controversial and deemed are not completely reliable [3,4], they are still widely used fairly by journals, universities, researchers, and funding bodies.

For researchers, the significance of using the IFs is that it indicates how prestigious a journal is in its discipline. However, it is important to note that: (1) IFs differ between disciplines, for example, a high IF for Nursing or Sociology journal is regarded as below average in Cancer journal; and (2) different disciplines give more or less importance to IFs. Both these factors require researchers to be cautious when making comparisons. Moreover, not all journals have an IF- only those listed in the Science Citation Index Expanded® (SCIE) and Social Sciences Citation Index® (SSCI) receive an IF [5].

If you are keen to publish your work in a journal that scores highly in citation-based metrics- here are some ways of finding the IF of the journal. First, you can explore the Scientific Journal Rankings - SJR + Web of Science service. To identify the IF of a specific journal in your particular discipline, you can search by subject categories and regions/countries. For instance, you can search - Social Sciences- Sociology and Political Science. Then a list of journals will appear. The homepage of the journal often displays the IF. To illustrate, if you looked on the list of IFs in 2021, you would have found Gender & Society (IF 2.742), Journal of Criminal Justice (IF 2.935), Critical Perspectives on Accounting (IF 2.684) and so on. Obviously, the IF changes every year depending how many times articles in a journal are cited and how many articles were published in the past two-year period.

The advantage of considering publication in a high IF journal is that articles are likely to be cited more frequently by others. Although it is important to note that journals covering wider areas, and those publishing more articles have the advantage of having more 'total citations' as compared with other journals focusing on a particular area/region [2]. For example, the journal High Altitude Medicine and Biology has a current IF of 1.4. However, it is a premium journal of high-altitude medicine. In contrast, the Journal of Travel Medicine (current IF 7.0) covers a broad range of topics, including the area of high-altitude medicine. Nevertheless, for researchers publishing in a high impact journal increases the visibility and impact of their published work.

Identifying the paper

Traditionally, the citation reference is the identifier of an individual journal, typically listed as: author (or authors), year of publication, title of article, title of journal, volume, issue, beginning page number and end page number. It is, of course, much easier to assign every individual article a unique identifying number, called DOI (Digital Object Identifier). It is the mixture of numbers and letters, for example DOI: 10.3126/ijssm.v7i1.27405 is the unique identifier of an article [6] written by three of the co-authors of this current paper.

The organisation DOI® [<https://www.doi.org/>] runs the DOI registration and has a web search engine which checks DOI numbers and takes you to the relevant website.

In the health field, there are also the identifiers known as PMID and PMCID, where the former stands for PubMed IDentifier, the latter for PubMed Central IDentifier. PMID is a unique number given to a record (typically an abstract of an academic paper) listed on PubMed. PubMed is a free search engine developed originally for searching electronic medical and health databases. PMCID is a unique

identifier to the free text of health or biomedical journals.

The DOI (or PMID or PMCID) does not tell you anything about the quality, impact, popularity, or success of the individual article, like the ISSN of a journal does. Individual articles can be tracked to see how often each gets cited or accessed. The database SCOPUS lists the number of publications (and their details) that have cited a particular paper, whilst the database ResearchGate lists the number of times it has been accessed [6].

There is the Altmetric Attention Score (<https://www.altmetric.com/>) which indicates the amount of attention an article has achieved, not in terms of academic citations as in SCOPUS or reads as in ResearchGate, but more general in media, social media, and policy sources. For example, a landmark report published in *The Lancet* in December 2018 on migration health "The UCL–Lancet Commission on Migration and Health: the health of a world on the move" has received an Altmetric Attention Score of 1,633. This score was calculated based on the mention in 79 news outlets, six blogs, four policy sources, 1391 tweeters, nine Facebook pages, and two Wikipedia pages. The Altmetric Attention Score, derived from an algorithm, incorporating three elements: (1) volume of mention of an article counting on mention per source, thus whether an article mentioned once or nine times on the same website counts one mention only; (2) the weighting of the source, an online news item scores higher than a tweet; and (3) the weighting of the author of the mentioning article or tweet, to prevent bias from online bots promoting an article.

Identifying the author

Each academic author can have a unique identifier, known as the Open Researcher and Contributor ID (ORCID). ORCID (<https://orcid.org>) is a 16-digit number, enough to represent every human alive > 100,000 times over. The benefits of using unique persistent identifiers in an age of increasing population and interconnectivity are numerous, particularly when compared to the traditional naming systems [7,8]. This helps when (1) the author's first or family name and which are middle names, is not clear, since there are cultural differences in name order, (2) author change their name, especially after marriage; (3) separating authors with the same names (Jane Smith, Zhang Wang, Mohammad Ali, Nirmal Aryal); and (4) authors with different names where text formatting results in names that appear the same, for example, María and Maria; or the author's name being spelt differently on different publications (see Table 3), each of these examples are sources of name collision which can negatively impact software as well human recognition. All your research outputs are appropriately attributed to you and not another author with the same or similar name if you have an ORCID number. ORCID adds to transparency in research as it aims for unambiguous attribution of all scholarly contributions. While other author identifiers are available, such as Researcher ID or arXiv Author ID, these tend to be platform-specific and therefore less widely used.

Table 3: ORCID numbers example of authors of this paper

Author's name	ORCID	Confusing names/ different ORCID
Nirmal Aryal	0000-0002-4835-0785	Nirmal Aryal appears thrice in ORCID
Shovita Dhakal Adhikari	0000-0001-8834-0971	
Sarita Panday	0000-0003-2369-1476	Sarita Pandey appears twice in ORCID
Pramod R. Regmi	0000-0003-0226-3894	There is also: Pramod Raj Regmi
Alexander van Teijlingen	0000-0002-3739-8943	
Edwin R. van Teijlingen	0000-0001-5523-8583	

Adding your ORCID number when submitting an article is now a prerequisite for thousands of academic journals or grant application systems. It is required as the ORCID's guidelines state that the publisher can include only ORCID numbers, which authors have validated for each manuscript prior to official acceptance for publication. We recently received the proofs of a paper where we could not add the missing ORCID number for a co-author after it had been accepted by the editor but before its publication. Moreover, using ORCID can save time and effort during the online submission to a journal. When entering ORCID numbers the journal's submission system can automatically retrieve researcher's details and associated information, instead of having to type in at the time of each submission, as well as automatic updating of your record within ORCID.

Also, ORCID helps to link published papers to the correct author. It does not, in any way, assess the quality of that author. Not all researchers or scholars are equally good. If you are an active researcher, you may perhaps like to ask 'how good researcher are you or where do you stand in terms of your research field? Even funders or collaborators may also want to explore about your research impact. Over the past decades, the impact measurement of a researcher has become big business. There are now several metrics available to rank or rate an author. Here we highlight the most commonly used one, which is called the h-index or Hirsch index. The h-index aims to measure research impact of researchers and is scientifically productive. This index is used in many countries to help evaluate a candidate's suitability for an academic post, for promotion, or when assessing grant applications forms [9].

The h-index is a number to measure the productivity of an individual researcher and is available from Google Scholar, Web of Science or SCOPUS. It is calculated based on the papers a researcher has published set against which other authors cite. For example, if your H-index is 12, this means, among all your publications, say one hundred, 12 of these publications have at least 12 citations each. Thus, the h-index combines research outputs (e.g., number of publications) and impacts (e.g., number of citations) in a numerical value. However,

different platform (e.g., Google Scholar vs Scopus) produces different h-indices as they use a different database to count total publications and citations. You may also get a different h-values for the same academic on Web of Science when searched through different institutions because of their subscription features.

We want to alert the reader that it is difficult to compare h-indices across different academic field as they can often be higher in one field than another. Factors that impact upon the h-index included the nature of the underlying research method as review papers often lead to a higher h-index, as generally cited more than primary studies. Self-citation may also influence h-index [10]. Self-citation means authors citing their previous papers in the new article. this will increase their citations and can increase their h-index. Another downside of h-index is that it does not inform whether you are a first author or a co-author of a large team. Since the h-index links number of publications with citations, earlier career researchers with few publications will not have a high h-index. Early career researchers often lack a volume of publications, although their research may be novel or highly cited. There are many other alternatives to h-index such as g-index, c-index, s-index, e-index, i10-index, k-index, o-index to incorporate different features.

Conclusion

We hope to have enlightened junior researchers and postgraduate students about unique identifying numbers for academic journals, articles and authors and why these numbers matter. This perspective outlined the significance of these identifiers which are often used as proxy indicators for academic quality.

Although IF factors are of some importance, we like to remind the reader that one should not select a target journal for an article on IF alone. Publishing research work in high impact journals has become a buzzword over the years, as it can increase the reach and impact of your research, but journals with high IF also have high rejection rates. As an academic author you are involved in a creative writing process and you want to make sure that your target journal is likely to review your paper. Sometimes a journal with a medium IF is more appropriate for your paper, as a higher impact journal is most likely going to reject it. Moreover, remember that good quality papers appear in journals with a wide range of IFs, although it is important to note that IF differs between disciplines and different disciplines give more or less importance to IFs.

Competing interests

The authors declare that they have no competing interests.

References

1. ISSN International Centre. The ISSN-L for publications on multiple media, Online: <https://www.issn.org/understanding-the-issn/assignment-rules/the-issn-l-for-publications-on-multiple-media/> (accessed August 2021).
2. Nisonger T.E. Use of the Journal Citation Reports for Serials Management in Research Libraries: An Investigation of the Effect of Self-Citation on Journal Rankings in Library and Information Science and Genetics. *Coll Res Libraries*. 2000; 61(3): 263-275.
3. Greenwood D. C. Reliability of journal impact factor rankings. *BMC Med Res Methodol*. 2007; 7(48): 48.
4. Seglen P.O. Why the impact factor of journals should not be used for evaluating research. *BMJ*.1997; 314(7079), 498-502.
5. Author Services. Research impact A guide to creating, capturing, and evaluating the impact of your research (e-book), no date, online freely available from Taylor & Francis Publishers https://authorservices.taylorandfrancis.com/wp-content/uploads/2021/03/Research_impact_ebook.pdf (accessed August 2021).
6. Dhakal Adhikari S, van Teijlingen E, Regmi P, Mahato P, Simkhada B, Simkhada P. The presentation of academic self in the digital age: the role of electronic databases, *Int J Soc Sci Manag*. 2020;7(1):38-41.
7. Torvik V.I., Weeber M, Swanson D.R, Smalheiser N.R. A probabilistic similarity metric for Medline records: A model for author name disambiguation. *JASIST*. 2005; 56(2): 140–158. 10.1002/asi.20105
8. Sanyal D.K, Bhowmick P.K, Das P.P. (2019) A review of author name disambiguation techniques for the PubMed bibliographic database. *J Inf Sci*. 2019; 47(2): 227-254.
9. Hirsch J.E. An index to quantify an individual's scientific research output, *Proceedings of the National Academy of Sciences (PNAS)*. 2005; 102(46): 16569-16572.
10. Bornmann L, Marx W. The h index as a research performance indicator. *Eur Sci Ed*. 2011;37(3):77-80.