Review:

Publication recognition or Measuring author’s research impact: H-index - An overview

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Abstract

Writing a scientific article for publishing in the top journals is an art and science. Recently, the number of publications for any author has been increasing across the world. Various databases metrics or platforms have been used to measure the academic footprint of an author or researcher to shed light on the academic or scientific age. One among these databases is the H-index or Hirsch index and all authors including researchers in health sciences must be aware of this database which is used for professional identification and progression. This index is one of the most popular metrics among all other databases for research work evaluation because it is easy to calculate the score and understandable for even non-expert authors. Therefore, the purpose of this article is to discuss in detail about definitions, history, advantages, disadvantages, and various tools used to measure the H-index score of an author or researcher

Keywords: Articles, Google Scholar, H-index, Publications, Scopus, Research work

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Introduction

Writing an article and publishing it in a renowned highly indexed journal is a great task for any author. After the publication of research work the task is not over. Attaining a career ship as an author of published works is also more about wishing or expecting for outstanding results. Therefore, for a good successful author, it is very important to know about the impact of our own publications on our own people or across the world.[1] This is the key to defining our individual performance as an author and researchers. This factor also helps the scientific community to compare professionals in the same research field and to the full length of the author’s career. There are many tools in software technology that can be used to show whether the publications of an author are impacting a greater number of people in the research field. The h-index is one of those tools most commonly used by researchers.[1-6]

The H-index also called as Hirsch index, therefore analyses the impact of a particular author rather than a journal through his/her publications. The H-index is a quantitative tool based on analysis of publication data using publications and citations cited by other authors to provide “an evaluation of the importance, significance, and overall impact of an author’s or researcher’s total research work to the academic and scientific literature.” It is a tool used to show the impact and total productivity of an author based on how often his/her publications have been cited by other readers.[2-6]

Discussion

There is a tremendous rise in writing articles and an increase in the number of scientific publications across the world. The H-index gives a scoring criteria for both author’s and researcher’s overall scientific achievements including publications and citations for their lifetime. Therefore this tool adds the total number of publications of an author in terms of productivity and the total number of citations cited by other authors in terms of the quantity of those publications. It means to say, the H-index measures both the quality and quantity of publications and citations at a time in a cumulative manner. But it does not give information pertaining to the recent results of the scientific performance of an author.[2-6] Therefore the present article discusses in depth about H-index including definitions, history, advantages, disadvantages and various databases used to calculate H-index scores.

Definitions

Wikipedia defines the H-index as “an author-level metric that measures both the productivity and citation impact of the publications, initially used for an individual scientist or scholar.”[1] Scientist J.E. Hirsh defined it as “A scientist has index h if h of his or her Np papers have at least h citations each and the other (Np − h) papers have < h citations each”.[2] Whereas other specific platforms define H-index as “the highest number of publications of a scientist that received h or more citations each while the other publications have not more than h citations each.”[1,3-6] For example, an author with an H-index of 8 had published 8 papers, each of which has been cited by others at least 8 times.[3-6]

History

J.E. Hirsh in 2005 in his research work “Proceedings of the National Academy of Sciences of the United States of America” proposed the term H-Index. He explained that an author’s lifetime career published articles should be considered or taken into consideration for calculating his/her H-index.[2,3] Therefore this H-index proposal given in 2005, which is a measure of the academic score has conquered worldwide interest for authors, scientists, and researchers and also shown to pave for the birth of other new indices(metrics/analysis/tools based on analyses of publication data like the ‘m quotient’, ‘r-index’, ‘g-index’ and ‘h (2)-index’).[7]

Usefulness of H-index:[9]

1. Helps in getting a totally focused picture of an author’s research work.
2. Helps in comparing authors with other authors having similar career ages.
3. Helps in comparing authors or researchers within the same field pertaining to similar interest area, and department, and shows about who publish in the same journal under different categories.

H-index is not useful for:[9]

1. It is not good in assessing fields, subjects, and departments where research work is typically books or conference proceedings as they are not well represented by databases providing H-indices.
2. Not useful in comparing authors of different areas, interests, disciplines, or subjects.
Different tools are used to find H-index [2-9]

There are various methods or databases/resources used to find the H-index value for authors. They are Elsevier’s Scopus, Google Scholar, Clarivate Analytics’ Web of Science, and Publish or Perish database. Among these, Google Scholar is a growing database compared to other platforms that calculate the H- H-index scores for authors who have already created a profile. In Scopus, a “Citation Tracker Feature” is used for the generation of a citation overview to generate an H-index for publications and citations from 1970 to the present status of articles published. This also allows for the removal of self-citations from the overall citation counts. Presently, Scopus is the largest abstract and citation database of peer-reviewed literature. Whereas, Web of Science allows for the generation of the H-index for publications and citations from 1970 to the current year using a special feature called “Create Citation Report”. The final database, “Publish or Perish” uses a software program that retrieves and analyzes academic citations from Google Scholar and provides the H-index among other metrics. This is a very handy or easy method for calculating the H-index for authors who do not have a Google Scholar profile.

Although the different four databases mentioned above provide or calculate an individual author’s citation for his/her publications, an individual’s H-index may be very different in different databases. This is because the databases indicate different journals and consider different years of publications. For example, the ‘Scopus platform considers only those publications that are published from the year 1996 or later, whereas the ‘Web of Science’ calculates an H-index using all years that an institution has subscribed to the particular journal. Therefore H-index obtained from the ‘Web of Science’ platform entirely looks different when searched through different institutions. As a result, it is confirmed that no single metric is perfect, and the use of two or more metrics is helpful in calculating the author’s academic footprint.[2-9]

Finally, the choice of a particular database depends on the purpose and matter of the evaluation.

Good H-index score

A good H-index score depends not only on an author’s total output but also on a large number of citations cited by other authors worldwide. Therefore, it is very important that the published work should reach a large group of readers across the globe. For this to happen, the articles should be published in high-quality journals. Moreover, authors and researchers should always keep an eye mainly on journals having high impact factors and PUBMED-indexed journals. In addition to this, the institutions should subscribe to many journals so that it indirectly adds to the impact factor for the publications. In addition to these considerations, the research work should be written in an outstanding way including various factors like interesting topics, relevance, clear, no plagiarisms, and high-quality text with zero grammatical mistakes.[4-10]

Advantages/Merits of H-index [9]

H-index gives recognition to an author or researcher from an individual perspective and from within the community with other readers. Although scoring or measuring the intellectual activities of an author or researcher is often a matter of concern, H-index is associated with its own benefits.

They are:

1. The H-index corrects for the inappropriate quality of highly cited publications or publications that have not yet been cited.
2. Numerous scoring platforms automatically calculate the H-index as a part of citation reports for authors.
3. The H-index is an analysis or evaluation of the cumulative impact of an author’s scholarly total output and performance.
4. It measures both quantities with quality by comparing total publications to total citations for an individual author.

Disadvantages of H-index [9]

Although H-index provides citations for an individual author’s publications, at the same time it is associated with various shortcomings. They are as follows:

1. Issues of author names spelled differently in different publications and the multiple times’ same work published under the same author accounts for challenges in establishing accurate citation data for a specific author.
2. It is not good for those publications that are rarely cited such as meeting abstracts and for publications that are frequently cited such as review articles.
3. Self-citations or gratuitous citations done by known other authors or other colleagues can decrease the value of the H-index.

4. It is a platform to assess the full length of scholarly output by an author but not mentioned for a specific timeframe.

5. It is poor in showing author ranking and other co-authors’ information on publications.

6. It is not considered a universal database as it is difficult to compare authors of different seniority or disciplines. It is not useful for young investigators, and academic disciplines for each investigator vary in the average number of publications, references, and citations.

7. The value obtained from H-index will vary among resources depending on the publication data that is included in the calculation of the index.

8. This index does not provide the context of the citations.

In addition to the above shortcomings, there are some possibilities of “paradoxical situations” for those authors who have the same number of publications but with varying citation counts and both have the same H-index. For example, suppose Author 1 has eight publications and which have been cited a total of 418 times and Author 2 also has eight publications which have been cited a total of 38 times. Author 1 and Author 2 have the same H-index of 6 but Author 1 has a higher citation rate than Author 2.\(^{[7-12]}\)

**Conclusion**

Finally, to conclude, the author of this paper would like to say, that for an author to have the best of the best H-index for his/her lifetime, it is always wise to maximize the impact of excellent research work by publishing high-quality articles with quality writing, richly edited text and without grammar mistakes. This not only catches the eye of other researchers and authors in the same academic field but also worldwide.

**References**

3. Calculate your academic footprint: Your H-index. URL: https://subjectguides.uwaterloo.ca/calculate-academic-footprint
8. Research Impact Metrics: Citation Analysis. Retrieved from URL: http://guides.lib.umich.edu/citation