The Process of Indexing and its Relevance in Academic Research

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Abstract The paper discusses the concept of indexing in the field of higher academia and research. Indexing is a significant feature that aids both the researchers and journal publishers in the field of research publication. Indexed journals helps the researcher to have a vast access to the materials in their area of interest as well as their published works gain a wide readability. Indexing is therefore a tool that indicates the journal quality. The indexing agencies try to maintain this feature of indexing through the strenuous process of selection of journals, the monitoring of the journals through the indexing parameters, and the constant reviewing of the knowledge produced in those journals. Thus, indexing of the journals serves as a resourceful aid for the researcher to have a knowledge of the already existing data on his/her area of interest and find new paths of knowledge in the field. The paper examines the concept of indexing, the history of indexing, different indexing agencies, and indexing parameters. It also briefly discusses the different types of peer review processes in journals which is relevant in research publication.

Keywords: Indexing, Journal Indexing, Indexing Agencies, Indexing Parameters, Peer review process

I. INTRODUCTION

Indexing is a crucial feature that aids both researchers and journal publishers in the field of research publication. Indexed journals are carefully chosen by researchers to have a wide accessibility of their works. Thus indexed journals helps the researcher to have a vast access to the materials in their area of interest as well as their published works gain a wide readability.

Indexing is the orderly and systematic arrangement of information for the ease of access of information from a reliable source. For example, in a database, one could search materials on a specific topic based on certain keywords, the name of the author, or title of work. This helps in filtering the whole database to find the necessary information. When the information is from an indexed journal, the credibility of the information or work increases and is then worthy of referring and citing. This in turn expands the reputation of the journal as that providing quality information.

II. INDEXING AGENCIES

On looking back at the history of indexing, Eugene Garfield and Fr. Robert Busa are considered pioneers in modern journal indexing. Garfield, in 1960, introduced the indexing of research papers published in academic journals. Garfield's Institute for Scientific Information (ISI) began with the citation index of Science journals later followed by Social Sciences' and also Arts and Humanities (1). In the contemporary scene, indexing is provided or sold by certain organizations that can be purchased by journals based on certain eligibility criteria. Some important indexing services/agencies are Web of Science, Elsevier's Scopus, ICI, CiteSeer, and Google Scholar (1).

a. Web of Science

Garfield's Institute for Scientific Information (ISI), the first agency to start citation indexing was reformed to Web of Science, which is a private global citation database, owned by its parent company Clarivate Analytics (5). It is considered as one of the major publishers in the field of academic publishing. It provides with several other sevices related to publishing such as Master Journal List, Professional Research Data Services, Vivo, Converis, and so on to facilitate efficient research (5). As Web of Science is a reliable source and is believed to produce great quality research, journals indexed by the same will be considered as high quality and trustworthy. It also provides access to several databases which expands the amount of information as well as increases the journals' visibility. WoS have stringent rules like other indexing agencies in order to get a journal indexed.

b. Scopus

Elsevier owned Scopus is another major name in the academic publishing field. Like WoS, Scopus is also believed to be an important source of high quality research and reliable information. It is the abstract and citation database of scientific journals, books and conference proceedings. Scopus brings research from the fields of science, technology, medicine, social sciences, and arts and humanities. Apart from the rigorous selection process,

to improve and maintain the quality of the journals, Scopus reviews them every year. If they do not meet the criteria, they'll lose their scopus indexing.

c. Google Scholar

Google Scholar is a freely accessible bibliographic database of scholarly literature. It is an array of literature from different fields and includes journal articles, books, and other types of literature. It also has an author profile like other citation agencies which keeps a record of the number of citations of an author.

III. INDEXING: PROCESS AND PROCEDURE

The indexing agencies have set rubrics as the eligibility criteria for the journals to be indexed. There are certain basic requirements for most of the indexing agencies. The basic requirements include having an ISSN (International Standard Serial Number), a DOIs (Digital Object Identifiers), a good copyright policy, consistent publishing of literature, and basic meta data on the article. These being the minimum requirements, different indexing agencies include other requirements to ensure the quality of the journals. Some may require detailed information on Editorial policies and Editorial board of the journals. Having reputed individuals from the specific field can increase the chance of a journal getting indexed. They may also closely look at the policy of reviewing articles. Certain indexing agencies only do index journals in specific field such as science, or medicine. Another requirement may be for the journals to show their data storage policy to ensure that the articles are efficiently stored in their repository (4).

Here, let me examine two of the popular indexing agencies - Index Copernicus International (ICI) and Crossref to understand their evaluation procedure and policies in the selection and indexing of journals. Index Copernicus International, a scientific journal database has an ICI Journals Master List wherein the journals are indexed and listed. The formal indexation criteria to submit a journal for evaluation in the ICI Journals Master List database requires the Editorial office to register the journal in the database and create a 'Passport' or registration of the journal. The evaluation procedure of ICI begins with an 'evaluation questionnaire' that is to be filled in and send by a given date. It also requires the journal to allow experts from Index Copernicus to have access to the issues of the journal published in the evaluated year (6). Apart from this, the database also has certain preliminary indexation requirements like other indexing agencies. For a journal to have ICI indexation, it should possess: a) scientific character – the articles published in the journal during the two years prior to the submission of evaluation questionnaire should consists of scientific research articles with "results of original empirical, theoretical, technical or

analytical research" (6) b) minimum number of published research papers depending on the publication frequency of the journal c) the current ISSN or eISSN d) scientific journal was published the whole evaluated year e) active and up-to-date website f) published review procedure of research papers. A journal that possesses these preliminary criteria is eligible to submit the journal for evaluation and indexation. The evaluating criteria of ICI also assess the editorial quality and standards, the stability of the journal, digitization, internationalization, and the journal's impact regarding citation. Once a journal pass the evaluation and is selected, it receives the ICV (Index Copernicus Value) index (6).

Crossref is an association of scholarly publishers to support scholars in their research work. It aims to create an effective medium to facilitate the availability of scholarly research and necessary information. It is a reference linking service where it gives links to the required articles or data. One requirement to become a member of Crossref is the publication of scholarly content online (10). Research institutions, government agencies, research funders, publishers or start-ups can become members at Crossref. Once indexed by crossref, it provides with a Crossref Digital Object Identifier (Crossref DOI), which is tagged to the article metadata of the publisher members in Crossref. This is an efficient system where the researcher is able to find an article in the reference list in a journal article by clicking the DOI link. To get Crossref indexed by Crossref, publishers are required to provide with the data citations (references of data) by including them in their content registration metadata as references and/or relation type. Once the publishers, who are the members of Crossref deposit these data citations, it is made freely available making it easier for the researcher to find the data. Crossref has the Metadata Manager Tool allows the members to effectively deposit the metadata. Members are to constantly keep a check on their deposits (9). You have to be a member at Crossref for Content registration. Each content has a different fee according to the type.

Fundamentally, the indexing agencies index articles or journals that publish scholarly articles. They ensure the regularity and also the quality of the articles published. It is after a thorough investigation, and evaluation they index a journal or article.

IV. INDEXING PARAMETERS

Once the journals have been indexed, it is not the time for them to be laid back in their publishing. In order to ensure the quality of the indexed journals, the indexing agencies have their own system of monitoring them in the form of different indexing parameters. This also helps the researcher to identify if the journal is keeping up with the recent developments in the fields, and so on. Some of these indexing parameters are Impact Factor, h-index, i10-index, Cite Score, and g-index.

i. Impact Factor

Impact Factor is an indexing parameter for the journals indexed by Web of Science and thus cannot use this for outside journals. The articles published in two years are taken into consideration to calculate the Impact Factor. This helps the researcher in understanding the quality of the journal as well as the indexing agency. Different journals in the same field can also be compared using the same Impact Factor.

ii. Cite Score

Cite Score is the indexing parameter generated by Scopus and thus is exclusively used to analyze the Scopus indexed journals. Here, the data of three years are considered to calculate the Cite Score.

iii. h-index

h -index is another popular indexing parameter developed by Jorge Hirsch. Unlike Impact Factor and Cite Score, h-index calculates the impact factor of individual authors based on the citations of their published works. For the h-index to be higher, it is important that there is consistency in the number of citations of each publication of an author.

iv. i10-index

i-10 index is an indexing parameter similar to h-index which calculates the author's academic publications with at least ten citations each.

These indexing parameters therefore assist the researchers in choosing the right journals and authors for both the collection of information and research publication.

V. REVIEW METHODS

The process of reviewing or evaluating articles and research papers by the journals is a significant aspect of the publication process. The type of reviews and the mode of evaluation also determine the quality of the journal. Once the paper or article is accepted by the editor of the journal, it is sent for peer reviewing. Peer review is the process of assessing and examining the content, style, and structure of the article or paper by certain reviewers who may be the subject matter experts in the area (11). They may also send feedback and suggest certain changes to the article.

The different types of peer review processes in the journals are discussed below.

Single blind Review

Single blind review is the type of review where the reviewer is aware of the author's name, but the author doesn't know who the reviewer is. This enables an efficient review system where the reviewer could give an honest feedback without the fear of receiving back a negative response from the author (11). But one disadvantage of this type of review system is that the reviewer might give a biased review based on the religion, caste, or class of the author. Also, there might be a biased review from the part of the reviewer if the author is a famous personality in the area. These might lead to a lack of efficient evaluation of the work.

Double blind Review

Double blind review is that type of review where the reviewer and the author do not know each other. Both the parties stay anonymous to each other. This type of review is better that the Single blind review as there is no place for a supposed bias. The review will entirely be based on the work. This is the type of review followed by most of the humanities and social sciences journals (12).

Open Review

Open review system, as the word suggests is the type of review method where the author's identity and the reviewers' identity are known to each other. Also, the readers are aware of the identity of the authors and reviewers as well. There are not many journals who follow this mode of reviewing.

Post publication Review

Post publication review is the review process where the revision or suggestions for review happens after the publication (12). The comments and critique post publication can be included in this review. There is a pre-publication review and this is an additional review mode for further revision of the research article or paper.

Open Access Journals are an important variant of journals to be discussed that are significant in Journal publishing. They provide free open access to articles, research papers, and dissertations for providing free knowledge to scholars around the world. They also provide facility for research scholars to publish quality research articles and papers in the approved and reliable journals.

VI. FRAUDULENT JOURNALS IN PUBLISHING

Journal indexing is a process that carefully select journals by ensuring the quality and credibility of a journal. Journals indexed by reputed agencies are therefore considered reliable and trustworthy. But, there are journals that pretend to be indexed when they are not. These are called predatory journals. They claim to be indexed by reputed agencies when they are not. The fact that it is indexed is an attractive factor when someone wants an article to be published.

The immense need for publications for employment and career opportunities has led to a rise in the scholarly publications. This has led to an increase in the number of

journals as well. There is an ocean of journals out there but not all of them are genuine. There are predatory journals that excellently hide among them with their outstanding claims of being indexed by reputed agencies, being listed in the UGC Care list, and so on. There are ways to fabricate the information and create fake indexing and impact factors.

Beall's list of Potential Predatory Journals and Publishers is one of them that aids in identifying these bogus journals. It is vital to have an eagle's eye in the selection of journals. On that account, Indexing is an essential factor to attest the quality of the journal and one should essentially clarify the claims of the journal before proceeding into publishing.

VII. CONCLUSION

Indexing is a tool that indicates the journal quality. The indexing agencies try to maintain this feature of indexing through the strenuous process of selection of journals, the monitoring of the journals through the indexing parameters, and the constant reviewing of the knowledge produced in those journals. Thus, indexing of the journals serves as a resourceful aid for the researcher to have a knowledge of the already existing data on his/her area of interest and find new paths of knowledge in the field.

The paper provides a brief understanding of the term indexing and the process of indexing journals. This would be helpful for the scholars, academicians, and authors in the selection of appropriate journals for publication. Also, for those in the area of journal publishing, the paper would be beneficial as it aids in the understanding of the rubrics and procedure of indexing in various indexing agencies.

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