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A closer look on indexing and indexing parameters

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ABSTRACT

This paper gives an in-depth knowledge about indexing and indexing parameters. A study of indexing and detailed calculations of indexing parameters like Impact Factor, Site score, h-index, m-index, g-index are really helpful to the new-comers in the area of research. The paper suggests some steps to get a journal to be indexed. The paper would try to have a closer look on indexing and indexing parameters.

Keywords— Indexing, Indexing Agencies, Indexing Parameters

1. INTRODUCTION

“When we share; everyone wins” is the motto of Creative Commons (CC) and it shares the joy of sharing knowledge. It has been observed that for the last few years, the authors have started searching for ‘Indexed Journals’ to share their knowledge. Then there is a big question has raised. What is an indexed Journal? The word ‘Indexing’ is widely used as a measure of something or as an indicator. In other words, we can say it helps us to pointing or sorting ideas. Citation Index (Indexing) is an ordered list of cited articles, each accompanied by a list of citing articles (Garfield E,1970)¹. The citing article is identified as the source and the cited article as reference. Indexing can be referred to as a concept of quality. Nowadays search is done online, so it is necessary that a journal is represented in the relevant online search system. Indexing helps us to locate the position of the specific document in files at the earliest.

2. METHODOLOGY

The detailed study of history of indexing, indexing agencies and indexing parameters and method is done. The qualitative study of the whole process of writing a research article and publishing procedure is identified.

3. HISTORY OF INDEXING

The concept of indexing is one of the essential factors for the success of a journal. A form of citation index was first found in the 12th century in Hebrew religious literature. The modern printing era started from the year 1440. The printed book of indexes started to gain recognition in 1460. In the year 1544, the first Bible Concordance was published. The complete concordance to the Holy Scriptures was done in the year 1737 by Alexander Cruden. Later in the year 1755, the first index to the English language, which is the Dictionary of English Language, was published by Samuel Johnson. In 1848, while still a student, William Frederick Pole published his own 154 pages index to periodical literature. He is known to be precursor to modern indexing. Legal citations were found in the 18th century and are known as Shepards’ Citations (1873) (Citation Index)². In 1960, Eugene Garfields’ Institute for Scientific Information (ISI) introduced the first citation index for papers published in academic journals, first the Science Citation Index (SCI) and later the Social Sciences Citation Index (SSCI) and the Arts and Humanities Citation Index (AHCI). The first automated citation indexing was done by Cite Seer in 1997. Other sources for such data include Google Scholar and Elseviers’ Scopus (Citation Index)². Without mentioning some names like William Frederick Poole (1821-1894), Frank Shepard (1848-1902), Fr. Roberto Busa S.J (1913-2011), Paul Otlet (1868-1944), Chauncey Leake (1896-1978), Eugene Garfields (1925-2017), the history of indexing is incomplete.

3.1. William Frederick Poole (1821-1894)

William Frederick Poole was an American bibliographer and librarian. In 1848, while still a student published his own 154 page index to periodical literature. A 524-page edition was published in 1853 and a third 1469-page edition in 1882. He introduced the idea of opening the library on Sundays.

3.2. Paul Otlet (1868-1944)

Paul Marie Ghislain Otlet was a Belgian author who have been considered as the 'Father Of Modern Informative Science' a field he called 'Documentation'. Paul Otlet is famously known for his bibliographic work and he wanted to create a network and international

cooperation between libraries and librarians. In 1895 Otlet and Henri La Fontaine founded a Universal Bibliographic Repertory (U B R) which brought together all the works published around the world on any subject. Otlets' first published work on the subject was the essay named 'Something about bibliography' written in 1892. In his work he mentioned that books are not an effective way to store information. In 1904, Otlet created the Universal Decimal Classification, which is one of the most prominent examples of faceted classification and is still used by some libraries. He was responsible for the standard American 3x5 inch index card now displaced by online public access catalogues (O P A C). Otlets' writings have sometimes been called prescient of the current World Wide Web (www). And his vision and insights were remarkable. His commitment and conviction to realize, peace through knowledge is impressive. His noble vision of the use of knowledge for the peace of humanity is admirable.

3.3. Frank Shepard (1848-1902)

Shepards' citation is a legal citation used in United States Legal Research which provides a list of all authorities citing a particular case, statue or other legal authority.

3.4. Fr. Roberto Busa (1913-2011)

Fr. Roberto Busa was an Italian Jesuit priest. He is famous for using computers for linguistics and literature analysis. He was the author of the Index Thomisticus, a complete lemmalization of the works of Saint Thomas Aquinas.

3.5. Chauncey Leake (1896-1978)

Chauncey Depew Leake was an American Pharmacologist. He is famous for Medical Indexing.

3.6. Eugene Garfield (1925-2017)

Eugene Garfield was an American linguist and one of the founders of bibliometrics. He helped to create current contents, Science citation Index (SCI), Journal Citation Reports. He founded the magazine 'The Scientist'. Garfield founded the Institute for Scientific Information (ISI)³. ISI formed a major part of the science division of Thomson Reuters. Garfield is responsible for many innovative bibliographic products including Current Contents, Scientific Citation Index (SCI) and other citation databases.

4. INDEX SOCIETY

There are several groups to promote indexing, the quality of indexes and the profession of indexing which together called the Index Society. In 1877, the first Index Society⁴ in London aims to create a general index of universal literature. The List and Index society (L and IS) is a learned society that publishes editions and calendars of historical records and occasional monographs. The Society of Indexers (SI) is a professional society based in UK, which is constituted on 30 March 1957 by G. Norman Knight. Later, members in various areas of the world together grouped and formed societies like

- American Society for Indexing (A S I)
- Indexing Society of Canada (ISC/SCI) which established in 1977 as Canadians' national association of indexers
- Australian and NEW-Zealand Society of Indexers (A N Z S I)

5. JOURNAL INDEXING AND INDEXING AGENCIES

Journal Indexing helps us to improve journals' reputation as a reliable source of high-quality information. Through indexing a journal can achieve its main purpose of being accessible to a wider community. Indexing a journal will help to increase journals' readership. Once a journal is indexed by a database, it is immediately made available to all users in that database. Some databases indexed only titles, some others indexed only the abstract and some others indexed full articles. Today there are several abstracting and indexing services available. Some of them are ISI Web of science, Scopus, OCLC, Ulrichs, Directory google scholar, Crossref, ABDC, MIAR, INDEX Copernicus, BASE. Some of them are affiliated with institutions. For example, PubMed which is maintained by the United States National Library of Medicine. Some of them are provided by publishers like Scopus by Elsevier. There are several steps to get a Journal to be indexed.⁵ Some of them are:

5.1 Choose the right database

Usually indexing companies do not consider journals that lie outside their scope. So, the first step is to choose a database that indexes journals from our field. Some databases are only indexed abstract, some of them will indexed entire article and some of them will do the keywords. Some others will be indexed citations in their indexing system. So, it is also important to understand the features that the database provides.

5.2 Understand the selection process followed by the database we have chosen

Each indexing agency have their own criteria to evaluate a journals' suitability for indexing. They will search for the quality of content published, the time taken for publishing and the work flow and processes of a journal. The process of getting indexed is similar to a manuscript submission and peer review. To get indexed, a journal has to submit a formal application to the database and provide relevant documents and evidences supporting their application. If the journal meets all criteria, it gets indexed. Otherwise we have to introduce some changes to acquire the eligibility.

5.3 Ensure the journal processes smooth and efficient

Make sure that our journal meets the basic publication standards required by the industry. That means the author friendly system, smooth and timely peer reviews and easy accessibility.

5.4 Approach a company with multiple databases

Some of the companies like Elsevier and Thomson Reuters offer several indexes. This helps to have more platforms for the journal is visible on. Once a journal is indexed in one database we should not stopped. We can go for multiple databases. This helps to visible our journal in a wider range.

6. A CLOSER LOOK TO MIAR AND BASE

6.1 MIAR

Information Matrix for the Analysis of Journals is a collaborative indexing tool. It is maintained by University of Barcelona.⁶ MIAR collects data for the identification and the analysis of scientific journals. It has currently 46,254 journals and 117 databases. If we enter an ISSN in search box, first the system will check the databases where the journal is indexed. It is not compulsory that the journal is included in MIAR or not. The system also calculates an index called ICDS (Secondary Composite Index Broadcasting). If the journal is not included in MIAR, the value of survival index will not be given. MIAR also provides information about journals such as Scimago Journal Rank other than visibility of journals. So, it is an Integrated Approach. The information is always processed using data available from public sources. It can be directly compared with the original source material. Every 15 days the data in MIAR keep updated with the latest changes. The algorithm for ICDS is public and is displayed for each journal. So MIAR is a Transparent and Up-To Date resource.

6.2 BASE

Bielefeld Academic Search Engine is a multi-disciplinary search engine. It has launched on 24 June 2004.⁷ BASE is maintained by Bielefeld University Library in Germany. It is non-commercial, open access initiative and available in more languages. BASE provides more than 150 million documents from more than 7000 sources. BASE is a registered OAI (Open Archives Initiative) service provider. In BASE sources are indexed only after checked by Bielefeld University Library. The display of search results includes precise bibliographic data. In BASE several options for sorting is available.

7. THE MAJOR INDEXING AGENCIES

7.1 ISI Web of Science

It is a website which provides subscription-based access to multiple databases that provide comprehensive citation data for many different academic disciplines. It was originally produced by the Institute for Scientific Information (ISI) and is currently maintained by Clarivate Analytics. It is purely an indexing agency and not have publishing company. An article in *Scientometrics* (2018)⁸ mentioned that WoS is an increasingly significant scientific instrument across countries and knowledge domains, being used by global scientists in different ways to answer scientific questions. This is a tremendous intellectual debt the scientific community owes to Eugene Garfield.

7.2 Scopus

Scopus is the largest abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings from more than 5000 publishers⁹. It is available online only. It is Elsevier's abstract and citation database launched in 2004. The Scopus selection criteria is:

- Peer review
- Regular publication and have an ISSN
- English abstracts
- References in Roman Scripts
- Publication ethics statements

7.3 Google Scholar

Google Scholar is a freely accessible web search engine that indexes the full text or metadata of scholarly literature across an array of publishing formats and disciplines.¹⁰ While Google does not publish the size of Google Scholar's database, scientometric researchers estimated it to contain roughly 389 million documents including articles, citations and patents making it the world's largest academic search engine in January 2018.¹¹

8. INDEXING PARAMETERS

Indexing is an important parameter for any Research Journal to increase its visibility so that maximum researchers can reach to explore new innovative ideas and opportunities around the world. Indexing parameters can contain indexing, conversion, and resource collection parameters, options, and values. Over the years, there has been so many issues related to journal publishing. Researchers always enquiring that where they have to publish their works. There are some factors related to the journal publishing sites. They are known as the indexing parameters. Few of them are listed below:

8.1 Impact factor

The impact factor (IF) or Journal Impact Factor (JIF) of an academic journal reflects the yearly average no. of citations that articles published in the last two years in a given journal received¹². It is associated with the ISI Web of Science. A journal with high impact factor has more importance than those with lower ones. It is calculated based on a two-year period. Impact Factor is calculated yearly starting from 1975 for journals listed in the Journal Citation Reports (JCR). Now the publishing of JCR is handled by Clarivate. It helps the researchers to choose the best-reviewed journal. It can present the change in the nature of a journal from one year to another.

8.1.1 Calculations: In any given year, the impact factor of a journal is the number of citations, received in that year, of articles published in that journal during the two preceding years, divided by the total number of "citable items" published in that journal during the two preceding years: Suppose we are calculating the impact factor of Year3(Y₃)

$$IF_{Y3} = \frac{\text{Citations in Y1} + \text{Citations in Y2}}{\text{Publications in Y1} + \text{Publications in Y2}}$$

8.1.2 Advantages

- Purely a journal metric(measure)
- Calculation is very easy
- It provides a tool to manage the library journal collection

8.1.3 Disadvantages

- Expensive to access the database
- Plenty of errors in citations
- Language barriers

8.2 Cite Score

Cite Score of an academic journal is a measure reflecting the yearly average number of citations to recent articles published in that journal. This journal evaluation metric was launched in December 2016 by Elsevier as an alternative to the generally used JCR impact factors¹³

8.2.1 Calculations: In any given year, the Cite Score of a journal is the number of citations, received in that year, of articles published in that journal during the three preceding years, divided by the total number of "citable items" published in that journal during the three preceding years. Suppose we are calculating the impact factor of Year4(Y₄)

$$\text{Cite Score of Y}_4 = \frac{\text{citations of Y}_1 + \text{citations of Y}_2 + \text{citations of Y}_3}{\text{publications of Y}_1 + \text{publications of Y}_2 + \text{publications of Y}_3}$$

8.2.2 Advantages

- Expansive range of journals
- Transparency
- Current
- No cost

8.2.3 Disadvantages

- The vast quantity of journals may dilute the quality of outcomes.
- Cite score metrics seem to favour journals that fall under Elsevier

8.3 h index

The h-index is an author-level metric used to measure both the citation impact and productivity of a scholar or researcher. The index is based on the set of the scientists' most cited papers and the number of citations that they received in other publications. The index was developed in 2005 by Jorge E. Hirsch, a physicist at UC San Diego as a tool for determining Hirsch index¹⁴. It can also be calculated for a journal. The h-index is defined as the maximum value of h such that the given author/journal has published h papers that have each been cited at least h times

8.3.1 Calculation: If f is the function that corresponds to the number of citations for each publication, we compute the h-index as follows. First arrange the f values in decreasing order. Then, we look for the last position in which f is greater than or equal to the position (we call h this position).

8.3.2 Advantages and disadvantages of h-index: In their article Rodrigo Costas, Mar'ia Bordons¹⁵ mentioned that both quantity and impact of publications are taken into account when calculating the h-index, but the number of publications plays a very important role, since it is the maximum h-index an author can obtain. The h-index tends to underestimate the achievement of scientists with a "selective publication strategy", that is, those who do not publish a high number of documents but who achieve a very important international impact.

8.4 m-index

The m-Index is the h-index divided by the number of years that a scientist has been active.¹⁶

8.5 g index

The g-index is an index for quantifying productivity in science, based on publication record. It was suggested in 2006 by Leo Egghe¹⁷ All these indexing parameters help the researchers and scholars to a great extent for choosing journals for their publication.

9. CONCLUSION

Indexing will help the journal to achieve its main purpose of being accessible to a wide audience. Indexing of journal provides better visibility of the journal with a wider user. Being visible and accessible to larger people will cause better quality papers and results. Indexation of a journal is considered as a reflection of its quality. It helps the research community to choose quality journals for their publication.

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