

Citation analysis: a key or a trap?

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Citation analysis is done by using a citation index. Citation index is a bibliographic index which offers timely and comprehensive database of the published articles and was initially introduced in 1960 to help librarians select a journal.^{1,2} The journals which indexed in popular database are more recognizable in the scientific community. Initially, the citation indexes are used to help the readers in searching the related articles, but around decade ago, there were abundant journals including predatory journals and this indexes were used to filter "good" articles. To be indexed, a journal should pass an assessment and content requirement, including transparency and publication ethics. This assessment is used to avoid predatory journals included in the databases. These improvements need a financial support, which sometimes is difficult to achieve for a small journal. The editorial board and administration team should work together to overcome this situation. Many alternatives can be done i.e., an established open-access system to run a peer-review process and find a grant or support from many authorities for journals published by academic institutions.

As time goes by, the development of citation index reserves big data for further analysis. The topic or theme of popular science can be analyzed from these databases.² This can lead to which research focus should be prioritized at a specific time and help the journal publish more articles on similar topics to gain more attention and citation from the scientists. However, this can also be a "trap" for a developing journal that focuses on a specific topic. Some popular topics might not be an important burden for a regional journal, so it is difficult to get good data for these topics. In fact, the specific regional topic can impact global science, i.e., the tropical disease can impact travel medicine worldwide. Thus, editorial board should balance a popular topic worldwide and specific important regional topic that can impact worldwide or attract the reader.

The citation analysis from an indexing system tends to evaluate the "impact" of an article, an author, or a journal in the scientific community. Many citation analyses have been developed to evaluate these impacts, i.e., h-index, impact factor (IF), scientific journal ranking, and particularly, SINTA score that is used in Indonesia. Impact factor is one of citation analysis to measure relatively the importance of a journal on its topic.³ A higher journal impact factor (JIF) is related to a higher importance of the journal. It also becomes a "key" for a journal to be more recognizable worldwide. All journals put an effort to achieve a higher impact factor for this "prestige" position. However, they should realize the limitation of this impact factor, which can be a "trap" for a journal. This JIF is only calculated the citation count, not based on who cites the article. This limitation can be manipulated by an inappropriate self-citation by authors or the journal. Inappropriate and excessive self-citation is considered a manipulation related to an ethical problem in publication and should be avoided.³ We believe that the only ethical way to increase JIF is to improve the quality of the published articles. These high-quality articles can attract other scientists to read and cite, thus increasing the JIF. However, a small journal always faces a dilemma of the submission of the low-quality articles. A high rejection rate can lead to an insufficient number of published articles. Editorial board should work hard and smart to overcome this condition. Balancing a sufficient number of the published articles with the incremental improvement of the quality of the published articles is an optimal outcome that should be taken gradually. After the JIF increases, it will attract more articles; then, the journal can have more high-quality articles to be selected and published.

Nowadays, a cross using a citation index analysis still occurs, i.e., the usage of JIF to evaluate the impact of the articles, authors, or even universities. Furthermore, the JIF has been used to decide a promotion and research

funding. The main limitation of the JIF is built by the skewness of data shown based on the highly-cited articles instead of the overall citation of each article. This cross-citation analysis was not recommended by the San Francisco Declaration of Research Agreement in 2012.^{4,5} There might be some hypothetical reasonings for using JIF to evaluate articles or authors. First, there is a fallacy that “if a paper is published in a high impact factor journal, then it is of high quality. This paper is not published in a high impact factor journal. Therefore, this paper is not of high quality.” Second, it is time-consuming to evaluate individual works, which might also have a lot of uncertainty in the result. Thus, to overcome this uncertainty, many authorities rely on JIF to evaluate the quality of the work, person, or institution.⁵ Third, it is to acknowledge the effort of the author. A higher impact factor journal usually has a low acceptance rate to get a high-quality article. Thus, it triggers the authors to have a higher effort to run a high-quality study and an article accepted in a higher impact journal. Many improvements are still needed to overcome this condition. Because no ideal citation analysis can be used for a specific aim to an article, author, or journal, the possibility of combining citation index analysis might be a way out.

Citation index and citation analysis are inevitable tools for an author and a journal to be more recognizable worldwide. A developing journal should make an improvement in an ethical way to gain more of this recognition. A journal or authorities should realize many “traps” or limitations that can manipulate

the citation analysis to exhibit the impact of an article, author, and journal. Based on its limitation in each citation analysis, the cross-citation analysis should be evaluated cautiously. The combination of citation analysis might be a way to overcome the limitation of each citation analysis to evaluate the impact of each article, author, or journal. Because each analysis citation has its limitation and endanger, this combination should be carefully evaluated before being implemented.

*“Trust your brain for the content,
trust your heart for the ethics” (Rizal, 2022)*

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