Description

In academic publishing, citations make a body of work more widely known amongst other researchers and demonstrate that the work has relevance in the field. In addition to the obvious value of citations for an author, citations of scientific articles are also valuable for the publishing journal as the impact factor for a journal is calculated based on the number of times articles published in the journal are cited.

Citation Mafia

Citation cartels consist of authors or journal editors that have teamed up to increase the citation of their articles by disproportionately citing articles of cartel members more than other relevant articles. In some instances, journal editors coerce authors into either self-citing articles published by the journal or into citing other journals within a cartel. While self-citation is the simplest way for scientists and academic journals to increase the citations of their publications, some metrics omit self-citations from their calculations. Thus, citation cartels increase the number of citations by methods that are more difficult to detect than self-citation. The economist Georg Franck wrote about the existence of these citation cartels almost two decades ago in his 1999 essay in Science Magazine titled, “Scientific Communication—a Vanity Fair?”

Thomas Reuters, the organization that determines and reports impact factors for academic journals in its annual publication, *Journal Citation Report*, has banned certain journals from its list for using “anomalous citation patterns.” In 2013, Thomas Reuters added 37 journals to its banned list, bringing the total to a record high of 66 journals (which remain banned for a period of two years). Of these newly banned journals, 23 were banned for suspiciously high levels of self-citation and 15 were banned for similarly high levels of “citation stacking.”

Fewer journals have been added to the list released in 2016, with a total increase of 18. However, it is quite difficult to differentiate between the existence of a citation cartel and the quite common occurrence of authors or academic journals within a given field frequently citing each other because of highly related research. Importantly, the term “citation cartel” is reserved for groups that team up with the specific intent of affecting the number of citations their publications receive.

Study on Citation Cartels

In their recent paper, Fister, Fister, and Perc (2016) present an algorithm based on graph theory to help detect the existence of citation cartels. However, human assessment of the situation is still required once the algorithm determines the potential presence of a cartel. Because citation cartels are so difficult to detect, Fister et al. have opted not to show specific results in this early phase of their study. Falsely accusing a group of academic researchers or journals of forming a citation cartel has a highly negative impact on their reputations in academia, and Fister et al. felt the need to be absolutely certain before issuing accusation of involvement in a cartel. Indeed, Thomas Reuters specifically uses the term “citation stacking” as opposed to “citation cartel,” to avoid issuing false accusations without certainty of intent.

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There have been several examples of citation cartels in recent years:

- In 2012, an article published in Scholarly Kitchen described atypical citation patterns between four journals: *Cell Transplantation*, *Medical Science Monitor*, *The Scientific World Journal*, and *Technology and Innovation*. As an example, *Medical Science Monitor* published a review that cited 445 articles published in *Cell Transplantation* between 2008 and 2009 (out of a total of 490 citations). Of the four authors of this review, three were members of the editorial board of *Cell Transplantation*, which had seen phenomenal growth of its impact factor between 2006 and 2010.
- A 2013 Serbian study implicated *HealthMed* and *Technics Technologies Education Management (TTEM)*, two Bosnian journals, in a citation cartel. This study found that publications from these journals came largely from unfounded self-citations and mutual citations and that these suspicious citations contributed to the impact factor for these journals. Further, several Bosnian authors were suspected to have contributed to the functioning of this cartel.
- In 2014, six journals were banned from the Thomas Reuters report: *Enterprise Information Systems*, *Management Decision*, *International Journal of Production*, *Systems Research, and Behavioral Science*, and *The Service Industries Journal*.
- This year, two European journals in the field of soil science have been implicated in a citation cartel: Soil and Solid Earth. Artemi Cerdà has stepped down as the editor of both journals following allegations of involvement in this suspected cartel. He has also recently stepped down as an editor at another soil science journal, *Land Degradation and Development*, a journal that has seen its impact factor grow considerably in the last few years.

Final Words

Given that Thomas Reuters examines 10,500 academic journals for inclusion in its impact factor ranking, the total number of journals involved in “anomalous citation patterns” has remained comparatively low. However, despite the fact that only a small percentage of journals and authors appear to take part in citation cartels, the improper use of citation damages an important means of indicating authority in different fields of academic research. Further, citation cartels damage the validity of the impact factor and the reputation of scientific literature.

To help combat the development of citation cartels, algorithms such as the one developed by Fister et al. will provide a useful means of detection. Some scientific fields have a tendency to place more emphasis on the impact factor, and these fields are more at risk for the formation of citation cartels. In general, to maintain academic integrity, members of the scientific publishing community should avoid focusing on these metrics, which lend themselves to manipulation.

Readers of academic research can choose to stop reading an article with suspicious citation practices, however, their impact on the formation of citation cartels will be minimal. On the other hand, academic journals must exercise great care in selecting their editors and must be sure to express a firm policy regarding appropriate citation practices. Finally, Thomas Reuters’ policy of banning journals delivers a clear message that improper citation methods will not be tolerated.

Do you think researchers and even journals should stop relying so much on the Impact Factor? Will this help reduce citation manipulation? Let us know your thoughts in the comments below!

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Category

1. Publishing Research
2. Understanding Ethics

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