Presentation

Cross-Metric Compatibility of Altmetrics: Consistency of the Metrics from PlumX and Altmetric.com

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Introduction

Today, researchers are strongly under pressure to prove their contribution to society and quantitive indicators – also in form of altmetrics – are one way to do so. Introduced by Priem (2010), the term altmetrics describes "events on social and mainstream media platforms related to scholarly content or scholars, which can be easily harvested (i.e., through APIs), and are not the same as the more 'traditional' concept of citations" (Haustein, Bowman, & Costas, 2015, p. 373). For relying on indicators like tweet counts, Mendeley readers and blog posts, it is essential that these measures fulfill criteria like transparency and robustness (Martin, 2015). In this context, altmetric aggregators play an important role. These providers aim at presenting its users a variety of metrics for publications ranging from classical citation data to usage counts and social media mentions. Regarding transparency and robustness, the consistency of the metrics included by the aggregators plays an important role. Do different aggregators evaluate the same article with the same indicator differently? This question will be the subject of this presentation. It will be investigated which indicators are consistent among the aggregators PlumX and Altmetric.com and which are less consistent. In the case of inconsistency, possible reasons will be analyzed.

Methods

In order to obtain a testing set of articles that can be used to compare the metrics of the altmetric data aggregators, the professional database Web of Science has been consulted. This provider has been chosen as it represents a multidisciplinary platform that can be used for bibliometric analyses Moed (2009). All articles with publication year 2015 and publication language English have been retrieved on September 27th, 2016. A random, multidisciplinary set of 5000 articles with DOI has been chosen for the analysis. For all articles the corresponding altmetrics have been retrieved from the aggregators Altmetric.com (via the API) and PlumX (via a personal site created by the Plum Analytics staff). In a second stage, correlations between the metrics of the two altmetric providers have been calculated by using Spearman's rank correlation (Spearman, 1904). The correlations have been calculated by using the *R* function `cor`.

Results

From the 5000 DOIs that have been collected from the Web of Science, 4936 (99%) are traced by PlumX. The number of DOIs having hits on Altmetric.com on the other hand sums up to 1955 (39%). There are some data sources and metrics that are covered by only one aggregator and on the other hand sources that are considered by both of them. Mendeley readers, tweets on Twitter, Facebook shares, comments on Reddit, links on Wikipedia, Google+ mentions as well as news and blog mentions are events that Altmetric.com and PlumX take into account. Altmetric (2017) provides detailed information on the starting and ending date of the coverage of all its data sources. Most of the sources are being tracked since October 2011 when Altmetric.com started its service. Among them

are Twitter, Facebook, news, blogs, Reddit, Mendeley and CiteULike whereas for the latter coverage ended in December 2014.
Considering the correlations of the joint metrics of the aggregators, the most striking value is achieved for Mendeley readers. Here, the aggregators correlate on a high level of $r = 0.97$. Similarly, Wikipedia achieves a good value of $r = 0.82$. Tweets on the other hand show a medium correlation of $r = 0.49$. For Facebook, the value only amounts to $r = 0.29$, which can be explained by the circumstance that likes and comments are not considered by Altmetric.com but by PlumX. For blogs, a moderate value of $r = 0.46$ has been calculated. The lowest value on the other hand is achieved with regard to news mentions ($r = 0.11$). As the aggregators cover a different set of blogs and news, this is not surprising. Google+ only produces a low value of $r = 0.28$ and Reddit a moderate correlation of $r = 0.41$.

Discussion

The aggregators gather data from a different set of altmetric sources. The selection decision illustrates that the popularity of altmetrics differs depending on the source but also on the time, which makes altmetrics a fast-moving research subject. It should be further explored if the common chosen objects in fact are an appropriate tool for assessing research. Like in other investigations, Mendeley sticks out in the evaluation. Accordingly, this could be a promising metric regarding the evaluation of science. Therefore, more analyses should be conducted on the user's motivations of working with the reference manager. Beside Mendeley, there is currently a large number of altmetric sources which have to be considered in differentiated ways. The aggregators facilitate the overview of the different metrics and can help in assessing altmetrics. The inconsistency of some data sources should be taken into account. Further analysis is needed to assess these sources also in a qualitative way.

References

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