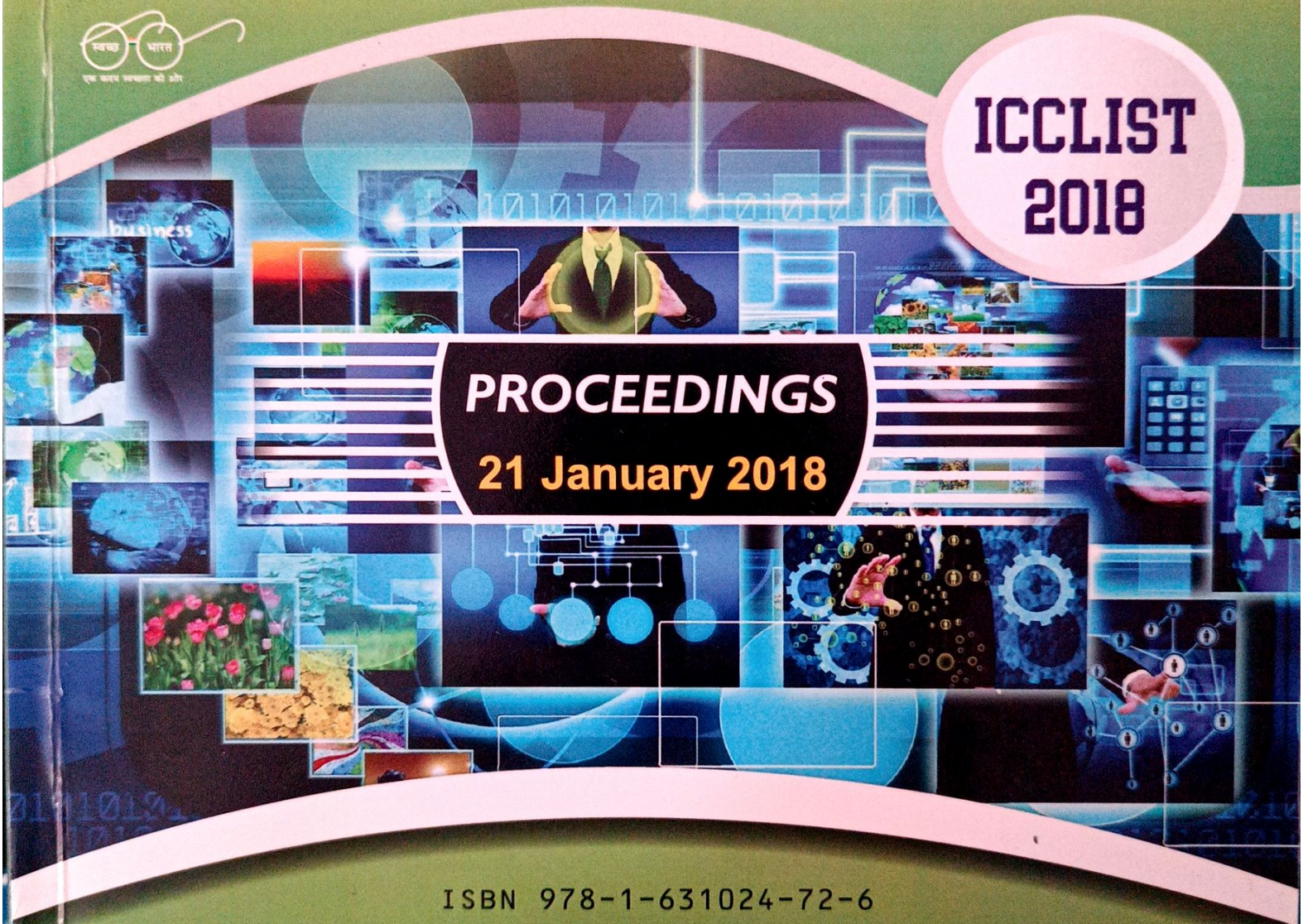
4th International Conference

CONTEMPORARY INNOVATIONS IN MANAGEMENT LIBRARY, SOCIAL SCIENCE AND TECHNOLOGY FOR VIRTUAL WORLD



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Contemporary Innovations in Management, Library, Social Science and Technology for Virtual World

(ICCLIST - 2018)

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Content

ALTMETRICS: DIGITAL METRICS FOR SOCIAL MEDIA

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Abstract

Social media platforms such as blogs, Twitter, Facebook, and article reference managers such as Mendeley are now being used to communicate and discuss research. Traditional bibliometric analysis and peer review have formed the standard methods to assess the 'scientific status of disciplines, research institutes and scientists. But some research has investigated how scholars use social web services, giving insights into the kinds of activities that altmetrics might reflect. Altmetric is a system that tracks the attention that research outputs such as scholarly articles and datasets receive online Altmetrics, or alternative citation metrics, provides researchers and scholars with new ways to track this influence. This article briefly layout about the concept and need of the Altmetrics. Altmetric Attention Score for a research output and Altmetric donut also discussed in depth.

Keywords: Metrics, Altmetrics, Social Media, SNS

Introduction

Metrics and their use and misuse are very live issues for our communities. Bibliometric data such as citations will be used by the Research Excellence Framework (REF) panels as part of their deliberation. While publications are still a key part of that analysis, panels are explicitly forbidden to consider the impact factor of the journal where those publications appear, when assessing the article's impact or importance: 'No subpanel will make any use of journal impact factors, rankings, lists or the perceived standing of publishers in assessing the quality of research outputs'. Alongside that, the rise of 'altmetrics' is a new ways of looking at the usefulness and impact of research outputs that take into account references outside of the journal article, including social media and news stories. The web makes these new metrics possible, and technology brings assessing impact and reach closer to real time.

Librarians, those working in research offices and publishers are no strangers to the use of metrics: for making journal collection decisions; showing return on investment of journal collections or funding of research; and assessing research outputs and impact institution. Often, however, we lack the time and resources to understand all the metrics available, let alone to gather the data and analyse it effectively to aid reporting and decision-making.

The term "altmetrics" is short for "**alternative metrics**. These are a range of nontraditional metrics that can be used to assess the impact that scholars have on research in their areas of study. They can include the number of article downloads, citation of research in online news/social media sources, Mendeley bookmarks (a web-based system for sharing and extracting information from PDFs and other electronic documents), and nontraditional forms of scholarship.

Definition

According to Jason Priem, Paul Groth, and Dario Taraborelli, *"Altmetrics is the study and use of scholarly impact measures based on activity in online tools and environments. The term has also been used to describe the metrics themselves; one could propose in plural a "set of new altmetrics." Altmetrics is in most cases a subset of both scientometrics and webometrics; it is a subset of the latter in that it focuses more narrowly on scholarly influence as measured in online tools and environments, rather than on the Web more generally."*

Altmetric is a system that tracks the attention that research outputs such as scholarly articles and datasets receive online. It pulls data from:

- Social media like Twitter, Facebook, and Google+.
- Traditional media - both mainstream (The Guardian, New York Times) and field specific (New Scientist, Bird Watching). Many non-English language titles are covered.
- Blogs - both major organisations (Cancer Research UK) and individual researchers.
- Online reference managers like Mendeley and CiteULike

Need for Altmetrics

Articles are increasingly joined by:

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- The sharing of "raw science" like datasets, code, and experimental designs
- Semantic publishing or "nano-publication," where cite able unit is an argument or passage rather than entire article.
- Widespread self-publishing via blogging, micro blogging, and comments or annotations on existing work.

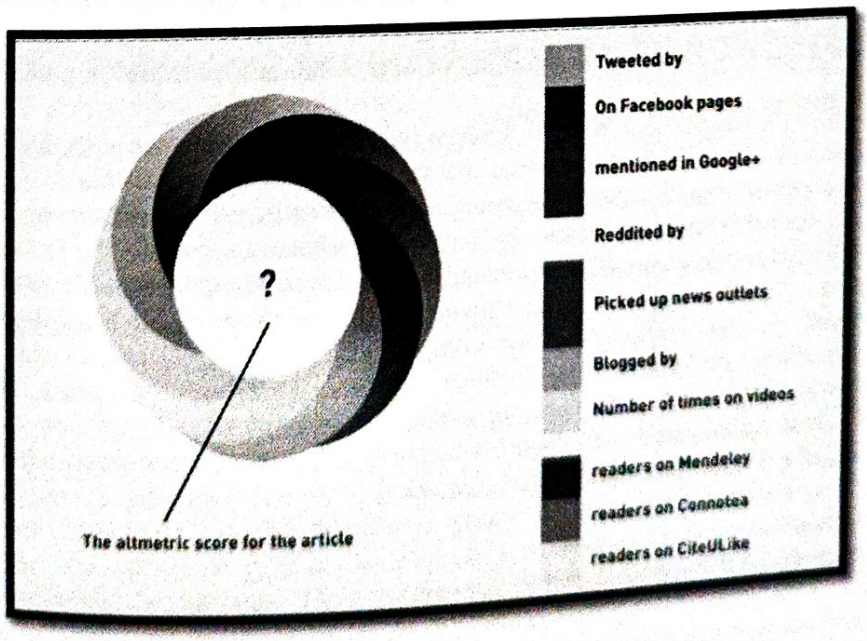
Because altmetrics are themselves diverse, it is great for measuring impact in this diverse scholarly ecosystem. In fact, altmetrics will be essential to sift these new forms, since it was outside the scope of traditional filters. This diversity can also help in measuring the aggregate impact of the research enterprise itself. Altmetrics are fast, using public APIs to gather data in days or weeks. Altmetrics is open, not just the data, but the scripts and algorithms that collect and interpret it. Altmetrics look beyond counting and emphasize semantic content like usernames, timestamps, and tags. Altmetrics aren't citations, nor are they webometrics; although these latter approaches are related to altmetrics, they are relatively slow, unstructured, and closed. As the volume of academic literature explodes, scholars rely on filters to select the most relevant and significant sources from the rest. Unfortunately, scholarship's three main filters for importance are failing:

- Peer-review has served scholarship well, but is beginning to show its age. It is slow, encourages conventionality, and fails to hold reviewers accountable. Moreover, given that most papers are eventually published somewhere, peer-review fails to limit the volume of research.
- Citation counting measures are useful, but not sufficient. Metrics like the h-index are even slower than peer-review: a work's first citation can take years. Citation measures are narrow; influential work may remain uncited. These metrics are narrow; they neglect impact outside the academy, and also ignore the context and reasons for citation.
- The JIF, which measures journals' average citations per article, is often incorrectly used to assess the impact of individual articles. It's troubling that the exact details of the JIF are a trade secret, and that significant gaming is relatively easy.

Altmetric Attention Score

The Altmetric Attention Score for a research output provides an indicator of the amount of attention that it has received. After Altmetric aggregates all of the information it can find about a research output it looks at both the quantity and the quality of attention being paid to an output and visualizes it. The number inside the colored circle is the **Altmetric Attention Score** for the output being viewed. This is a quantitative measure of the quality and quantity of attention that the output has received. The colours themselves reflect where the posts mentioning the output came from.

Altmetric donut



The score is a weighted count

The score is derived from an automated algorithm, and represents a weighted count of the amount of attention we've picked up for a research output. To reflect the relative reach of each type of source. It's easy to imagine

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that the average newspaper story is more likely to bring attention to the research output than the average tweet. This is reflected in the default weightings:

News	8
Blogs	5
Twitter	1
Facebook	0.25
Sina Weibo	1
Wikipedia	3
Policy Documents (per source)	3

Q&A	0.25
F1000/ Publons/ Pubpeer	1
YouTube	0.25
Reddit/Pinterest	0.25
LinkedIn	0.5
Open Syllabus	1
Google+	1

The Altmetric Attention Score always has to be a whole number. This means that mentions that contribute less than 1 to the score sometimes get rounded up to one. So, if picked up one Facebook post for a paper, the score would increase by 1, but if picked up 3 more Facebook posts for that same article, the score would still only increase by 1.

Sources of Altmetric

Altmetric monitor the following sources for mentions of research outputs to bring the most relevant and up to date picture of the online activity and discussion:

- **Public policy documents:** Altmetric track and text mine a range of public policy sources globally, looking for references to published research.
- **Mainstream media:** Mainstream media tracking offers a unique insight into where a piece of research has attracted high-profile coverage from over 2,000 outlets around the world.
- **Online reference managers:** Displayed on the details pages but not included in the Altmetric score are the number of Mendeley users who have saved the research to their library. One can view a breakdown of the demographics (location, discipline, etc) of these users on the summary tab details page.
- **Post-publication peer-review platforms:** Also included in coverage are evaluations of individual outputs from contributors to open post-publication peer-review forums Pubpeer and Publons.
- **Wikipedia:** Altmetric currently track the English language version of Wikipedia for citations to published research, with new mentions or edits being identified automatically.
- **Open Syllabus Project:** Data from the Open Syllabus Project is displayed on the details pages of individual books to showcase where those titles appear in the course syllabi of over 4,000 institutions around the world.
- **Blogs:** System scans a manually curated list of over 9,000 academic and non-academic blogs every day.
- **Citations:** Provide Scopus and Web of Science (where licensed) citation information in the Explorer for Publishers and Explorer for Institutions platforms for items that have also received attention from the other sources we track. Users of these platforms are able to see the total citation count and 3 citing articles in the Altmetric details page for the item, and click through to view the full record.
- ***Research highlights:*** Recommendations of individual research outputs from F1000.
- ***Social Media:*** Track a range of social networks for mentions of research outputs – all of these are then displayed on the details page for complete transparency. Networks we track include of Facebook (mentions on public pages only), Twitter, Google+, LinkedIn, Sina Weibo and Pinterest (historical data only – they no longer supply an open feed)
- ***Multimedia and other online platform:*** Monitor a selection of other sites and community forums such as YouTube, Reddit and Q&A (stack overflow)

Calculation of outputs score

The Altmetric Attention Score is influenced by two factors:

1. The quantity of posts mentioning an output
2. The quality of the post's source

The first is relatively straightforward: the more posts mentioning an output the higher their attentions score. It measure quality in a few different way such as

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- Higher profile posts are worth more than lower profile ones. A blog post contributes more than a tweet.
- Who authored each post is important. For posts on social media sites we typically fetch an author's list of followers, a list of their past posts and information about how often those posts were liked, retweeted or reshared. A tweet from a doctor followed by other doctors will contribute more than an automated tweet from a journal's press office.

Criticism of Altmetrics

- Attempts to use data derived from social media sources as measures of research influence are intriguing efforts to refine and improve accepted methods, which are widely seen as unsatisfactory for various reasons. It is important to note that these attempts may bring real improvement, or may simply generate more numbers and graphs.
- Altmetrics, like established scholarly metrics, measure the activity surrounding a particular scholarly work which is in turn being taken as an indication of the report's scholarly significance. In that respect, it should not be assumed that altmetrics show an altogether different or "better" picture than that which is revealed through other scholarly metrics. Altmetrics are merely seeking to provide a more complete version of that picture.
- Concerns have also been raised about the manipulation of these metrics. A paper published in December of 2012, linked below, examined Google Scholar's services in particular and concluded that it was quite easy to atifically inflate a paper's scores as determined by Google Scholar's metrics.
- Altmetric measures attention, not quality. People pay attention to papers for all sorts of reasons, not all of them positive.
- Altmetric only tracks public attention. Papers are discussed in private forums, offline in journal clubs and by email but we cannot track this.
- Altmetric tracks direct attention, that is to say attention focused on a specific research paper or dataset. More specifically for a newspaper article or blog post etc. to be counted by Altmetric it must either contain a link to the publication (journal article, DOI, PMID, or institutional repository) or reach our text mining criteria
- Altmetric provides with a single metric per output so that you can quickly compare relative levels of attention but it only makes sense. The norms for attention are very different for different scientific disciplines, just as the norms for citations are.

Pros and Cons of Altmetrics

Pros	Cons
Immediacy: Unlike citations, which take time to accumulate, impact can be assessed in real-time	**Potential for manipulation:** The openness of social media provides the opportunity for artificial inflation of figures
Track impact outside the formal publishing network: Can measure the impact of a wider variety of scholarly communication channels such as datasets, presentation slides, pre-prints, videos and websites	**Popularity of social media services:** Comparisons of figures from a specific tool (e.g. Twitter) for material published at different times can be affected by fluctuations in the number of users
Assess reach beyond scholarly citing community: Capture evidence of engagement in broader society e.g. practitioners, undergraduates, general public including the impact of influential but uncited work	**Acceptance:** These measures and their role in measuring impact are evolving and have differeng levels of acceptance in the scholarly community

Conclusion

Altmetrics are new and changing indicators, and measurement is not standardized, making the choice of indicator challenging. However, it may be possible to select the sort of alternative metric to use depending on the type of impact being investigated. Altmetric counts cannot be used at present as a measurement of societal impact because more information is needed about user groups; for example, whether impact has been measured by citations in policy documents or guidelines, or used in healthcare commissioning decisions, rather than simply appearing on social media sites. There is no conclusive evidence to link activity on social media platforms with citations or on the impact of the article. Social media may well have a role to play in academia in the future, and should not be ignored. Assessing the value and impact of scholarly work can be modernised, and altmetrics and social media potentially provide the tools to do this.

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