

ALTMETRICS: NEW RESEARCH TOOL IN THE GROWTH OF SOCIAL MEDIA**P. Sankar *****Dr. E. S. Kavitha****

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QR Code**ABSTRACT: -**

Altmetrics as a term was coined in September 2010 by Jason Priem. Altmetrics (alternate or alternative metrics) is a field of web-based metrics that accounts for total author influence which also looks beyond journal and monographic citation counts to the social web. Quantifying emerging social-scholarly activity is new and differs from traditional citation metrics which is how academics have for decades tracked their influence in their disciplines. Altmetrics, or alternative citation metrics, provides researchers and scholars with new ways to track this influence. Academic librarians should aim to follow these trends in measuring web-based scholarly influence by monitoring altmetric tools and social media, and engage with researchers in discussion of these emerging metrics. This article explained about the concept and historical development Altmetrics in the field of Library and Information Science. The article layout the online tools used for organizing and sharing information, and each generates some type of metric that can be considered a type of altmetric. The main difference between these tools and those in the previous category is that these tools have been created for an academic audience, making academics the core user base for them.

INTRODUCTION

In today's modern era of analytics, electronics, and scholarly competition, metrics are an important part of the everyday lives and workflows of people across the higher education community. From researchers applying for federal grants to faculty members preparing their tenure

and promotion files, metrics have become an increasingly visible part of how academics and administrators are expected, if not required, to talk about impact and value. However, just as what it means to do research has changed drastically over the last fifteen years with advances in information technology, so have the qualifications for what

constitutes a useful impact metric begun to evolve and expand with changes in scholarly communication. Of these expansions, the most significant is arguably the development of altmetrics, which constitutes a strictly twenty-first-century approach to impact measurement that relies heavily on the connection between scholarly activity and the opportunities afforded by the Social Web.

DEFINING ALTMETRICS

Altmetrics as a term was coined in September 2010 by Jason Priem, a doctoral student at UNC-Chapel Hill's School of Information and Library Science. A firm believer in the power of online scholarly tools to help researchers filter information and identify relevant sources, Priem was interested in identifying a set of metrics that could describe relationships between the social aspects of the web and the spread of scholarship online with few terms available to encompass this diverse yet specific group of analytics, Priem decided to popularize one of his own making. The result, altmetrics, is a shortened version of the phrase alternative metrics, presumably because it offered scholars an alternative to metrics derived from a purely print-based understanding of scholarly research and communication.

Altmetrics (alternate or alternative metrics) is a field of web-based metrics that accounts for total author influence which also looks beyond journal and monographic citation

counts to the social web. Quantifying emerging social-scholarly activity is new and differs from traditional citation metrics which is how academics have for decades tracked their influence in their disciplines. Altmetrics, or alternative citation metrics, provides researchers and scholars with new ways to track this influence. Academic librarians should aim to follow these trends in measuring web-based scholarly influence by monitoring altmetric tools and social media, and engage with researchers in discussion of these emerging metrics. Since the 1960s and Eugene Garfield's pioneering work in statistical bibliography, and citation-based measurement, assessment of published research has been conducted mostly through citation reference counting and creation of the ISI Journal Impact Factor. Altmetrics provides new ways of measuring impact especially the behaviours of scientists online, their interactions with their own (and others) content, and the pervasive use of social media in self-promotion.

DEVELOPMENT OF ALTMETRICS

As the definition of altmetrics makes clear, one of the first prerequisites for its development was the growth of the Social Web, or the part of the Internet focused on social relationships and activities.

- ❖ Between the late 1990s and early 2000s, the texture of the Internet underwent a dramatic

shift as innovative toolmakers began offering users more and more ways to create and share original, personal content on the web. Free online journaling platforms, such as LiveJournal, led to an explosion in the number of blogs and bloggers, while early social networking sites such as MySpace and Friendster broadened the scope of online social sharing to include shorter updates, media, and more.

- ❖ By 2004, the year of the first Web 2.0 Conference, the Social Web had officially blossomed from a possible fad into a real and significant part of the Internet. The technological changes of the late 1990s and early-to-mid 2000s were also important from the perspective of academia, although not entirely in the same ways. For instance, for the first time, researchers at colleges and universities were beginning to see the widespread availability of scholarship online. “Big Deals” made by librarians with certain scholarly publishers resulted in new electronic access to thousands of articles, often from journals previously outside of libraries’ print collections. This sudden spike in the range and availability of electronic scholarly material quickly altered the ways that users searched for and found academic information.
- ❖ In December 2002, at the height of the serials crisis, the attendees of a small conference in Budapest convened by the Open Society Institute released a short public statement, in

which they proposed using the Internet to make research literature free for anyone to use.

- ❖ Later known as the Budapest Open Access Initiative, this powerful statement became a founding document of the open-access (OA) movement, for which many libraries and librarians have since become champions. While the history of the open-access movement is too rich a topic to go into here, it is notable that its invention helped set the stage for the later development of altmetrics. By emphasizing the power of the Internet as a tool for research, the benefits of rapid research discovery for purposes of innovation, and the positive consequences of openly sharing scholarly content with the public, OA helped encourage deeper connection between libraries, scholars, and makers of alternative platforms for scholarly publishing and networking.
- ❖ Evidence of this can be seen in the type of online scholarly venues that began to grow and thrive in the early 2000s following the articulation of open access, including the Public Library of Science and arXiv, both of which endorse OA values while tracking interactions between objects and users online that is, alternative impact metrics.
- ❖ Perhaps it is for the combination of these various reasons that the mid-2000s saw the first true flourishing of both Web 2.0 and “open values” across the spheres of both academia and the general public. The year 2004, for instance, saw the release of

Facebook, a social networking tool aimed originally at college students, which today sees 864 million daily active users.

- ❖ In the same year, academic users of the Internet gained access to the citation-sharing tool CiteULike, which PhD candidate Richard Cameron developed based on the social bookmarking model popularized by Web 2.0 tool Delicious. Gradually, this cross-pollination of social principles and “serious” user interests resulted in the release of a flurry of game-changing tools for both scholars and professionals alike, including Twitter (founded 2006), GitHub (founded 2007), and Academia.edu, Mendeley, and Research- Gate (each founded in 2008).

FROM BIBLIOMETRICS TO ALTMETRICS

In contrast to altmetrics, which has emerged as a fully articulated idea only within the last five years, bibliometrics has been around as a formal concept since the early 1960s and was originally defined as the set of quantitative methods used to analyze scholarly literature.

Best known for its inclusion of metrics such as Journal Impact Factor, which was proposed as early as 1955, bibliometrics is traditionally concerned with analyzing scholarship through the counting and tracking of journal article citations which themselves tend to lean toward citations of other journal articles. Because of this, the major providers of bibliometrics tend to be closely

connected to, or synonymous with, established indexers of scholarly articles, such as Thomson Reuters (Web of Science, Journal Citation Reports, Book Citation Index, Data Citation Index), Scopus (SCImago Labs, Eigenfactor.org), and the increasingly popular Google Scholar (Google Scholar Profiles, Google Scholar Rankings). While the analysis of print-based journal citations has always been the bread and butter of the bibliometrics world, this is not to say that the landscape of bibliometrics hasn't shifted noticeably with innovations in the technologies that drive scholarly communication. Even before the rise of altmetrics as a buzzword, bibliometricians and bibliometrics-producing organizations were clearly very interested in how to incorporate both the web and broader forms of scholarly output into their quantitative analyses; hence the occasional appearance of webometrics, cybermetrics, and other portmanteaus ending in metrics in the pre 2010 era literature.

Thus, although the field of altmetrics may have positioned itself originally as an “alternative” to the filtering systems offered up by print- and citation based bibliometrics, its core interest remains largely congruent with that of bibliometrics in that both are essentially interested in what can be learned from the quantitative analysis of information related to scholarly output and publication. Such similarities have not, however, prevented occasional perceivable periods of tension between the two fields' respective followers.

PRESENT-DAY ALTMETRICS

The decision on behalf of major publishers like Elsevier and EBSCO to acquire altmetrics focused start ups (Mendeley and Plum Analytics, respectively) is another tick mark in favor of altmetrics' eventual stability and wider acceptance as a supplement to bibliometrics. On the other hand, even if the altmetrics movement is no longer in its infancy, one might be hardpressed to place it beyond the phase of toddlerhood.

Experimental partnerships between altmetrics providers and publishers have also led to the unexpected cropping up of altmetrics in new online spaces overnight, such as the adding of metrics from Altmetric.com to some. Scopus articles in 2012, and again to all online Wiley journals in 2014.¹⁰ Similarly, while the acquisition of altmetrics providers by for-profit publishing companies like Elsevier and EBSCO has buoyed the reputation of altmetrics for some parties, it has been a cause for concern for others, who see it as a sign that altmetrics may lose its connection to values of openness and online community.

MAJOR ALTMETRICS TOOLS

The altmetrics landscape is largely influenced not only by the thought leaders and outspoken critics and promoters, but also by the very tools that are used to produce, aggregate, and contextualize the raw data that comprises altmetrics data. In bibliometrics, the vast majority of available data

is produced by a very small number of providers, mainly through costly library subscriptions. However, with altmetrics, usable data can be generated or harvested from a wide variety of sources, with different cost structures, accessibility levels, and intended audiences and purposes.

NONACADEMIC TOOLS

Facebook

Perhaps the best known of all social media tools, Facebook is used by individuals, groups, businesses, and other organizations to connect and share information of all kinds, including photos and videos. Sometimes, Facebook is even used to share academic information like journal articles, video presentations, and blog posts. The number of times a URL has been shared or Liked can be counted and reported by outside tools such as altmetrics harvesters, which we will discuss later in the chapter. These metrics can be used as an early indicator of interest or attention regarding any scholarly contribution that can be traced to a URL.

Twitter

Twitter serves a purpose very similar to Facebook's in that it connects individuals, businesses, and other entities for the purpose of sharing information, including photos and videos. However, Twitter's most distinguishing feature is that information bites, or Tweets, are restricted to

140 characters. Twitter also seems to be used more often for academic purposes, with people and organizations from publishers to individual journals to editors, researchers, and other academic individuals and entities widely represented. As on Facebook, when a URL is Tweeted or Retweeted, the number of Tweets can be counted, as well as the total reach of those Tweets that is, the total number of Twitter users that follow everyone who has Tweeted the URL, meaning that they may have read the Tweet or clicked on the URL.

YouTube

YouTube is a popular video-sharing website where individuals and entities can create a YouTube account, allowing them to upload videos, subscribe to other individuals' video feeds, and comment on or Favorite a video. However, many videos are discovered by users through YouTube search, Google search, or the sharing of YouTube videos on social media sites and elsewhere. Metrics include the total number of views for a video, along with the number of comments and Favorites that a video has received. Videos can serve a variety of academic purposes, from the videotape of a lecture to a video methodology demonstration, or as a supplement to published research. The number of views or subscribers can demonstrate the relative interest in the videos or account. YouTube metrics are particularly useful for things like conference

presentations, an area of scholarship that is often lacking in useful metrics.

Amazon

Amazon may not seem like an intuitive addition to the list. Amazon's main function is to buy and sell all kinds of goods, but it first started in 1995 as an online bookstore of sorts before expanding into other types of goods. Amazon provides a Best Sellers Rank for all books on its website, that is, how often a book is purchased as compared to other books in the same category. This can demonstrate overall interest in the book, since there's no way to know who, exactly, might be buying the book. Since Amazon users can also leave a rating and a review for any good, Amazon can also serve as a place to retrieve overall ratings and book reviews, keeping in mind that Amazon ratings and reviews can be added by any Amazon user for any reason and may reflect aspects of the buying process or impressions of the book rather than a reasoned critique of its contents.

Goodreads

Like Amazon, Goodreads can give us metrics only for a specific type of scholarship, that is, books. However, unlike Amazon, which gives us sales metrics, Goodreads can tell us self-reported readership metrics. Goodreads is a website and mobile app designed as a sort of "online bookshelf" for readers where they can keep track of books read, rate them, and look for book recommendations from other Goodreads readers.

Another similarity to Amazon is the ability to retrieve the overall rating and book reviews from Goodreads members, keeping in mind again that the reviews may be coming from a diverse pool of readers.

SlideShare

SlideShare is the first listed tool that can count academics as one of the primary, but not exclusive, users of the tool. On SlideShare, users can upload a “slidedeck,” or series of slides, like those from PowerPoint or other similar programs. Other users can follow a user, receiving notifications when that person uploads new presentations. Slidedecks are searchable by keyword or by user-input tags. Metrics include total number of views, Favorites, comments, and downloads, and users can access detailed metrics for each slidedeck, including number of views over time. As with other sources, metrics can hint at overall interest in a presentation but cannot differentiate between academic interest and interest from the general public.

GitHub

GitHub is a useful website for anyone who creates programming code because it allows individuals to upload code, collaborate on code with others, and freely share code with others. In turn, GitHub tracks watchers, collaborators, and “forks.” A fork is when someone copies code to develop and use for their own purposes, similar to creating a derivative work from a Creative Commons–

licensed work. For programmers, this represents one of the only ways to track the impact of written code since citations are not easily trackable within coding. However, since program coding spans academic, business, and other realms, these metrics can show the impact of a code only on other coders, and not necessarily within academia.

ACADEMIC TOOLS AND PEER NETWORKS

The following are online tools used for organizing and sharing information, and each generates some type of metric that can be considered a type of altmetric. The main difference between these tools and those in the previous category is that these tools have been created for an academic audience, making academics the core user base for them. Because of this, the metrics generated from these tools can tell us more about the scholarly impact of contributions like journal articles.

Institutional Repositories

Institutional repositories (IRs) are familiar to many academic librarians since libraries are often responsible for the creation and maintenance of their institution’s IR. But while many librarians are familiar with the role IRs play in contributing to open access, fewer are familiar with the role they play in the production of altmetrics. Many IRs contain metrics about the repository’s artefacts such as views and downloads. These metrics can also serve as a powerful incentive for

researchers to place their artefacts in the repository.

CiteULike

CiteULike is a social bookmarking website specifically designed for researchers to save and organize journal citations into their personal libraries. These libraries can be set to be viewed publicly or for private viewing. Metrics can then be generated based on the number of public CiteULike libraries that contain a particular article.

Mendeley

Like CiteULike, Mendeley is a free citation manager, helping researchers save and organize citations and PDFs. Users must register for an account online before downloading the Mendeley desktop program or using its online tools for citation management. However, Mendeley also hosts a social media component through its website by integrating the ability to follow individuals, join groups, and browse articles by discipline. The number of Mendeley users who have saved an article to their citation library is tracked, along with some demographic information. These metrics are publicly available, meaning that they can be retrieved and analyzed by other tools. Having detailed demographics related to the metrics helps move the generated metrics from “someone is interested in this work” to “faculty and researchers in specific areas are interested in this work.” Recent studies have

shown a modest correlation between Mendeley users and later citation counts, meaning that this particular metric serves as a decent early indicator of scholarly impact.

Academia.edu

Academia.edu is the first example of a “closed” peer network system. As on Mendeley, researchers can create a free profile and upload citations and full-text works, follow other authors, and track their usage metrics over time. However, unlike Mendeley, this information is available only to the individuals who have registered for an account so that it’s closed to other tools, which are unable to retrieve these metrics. Nonetheless, these metrics can show interest in works over time, and Academia.edu remains a very popular research network for many researchers across many disciplines.

Research Gate

ResearchGate is a closed peer network system designed for researchers in the sciences, with metrics accessible only to its users. After registering for a free account, ResearchGate users can upload their citations and fulltext articles and get metrics for views, bookmarks, and downloads. Additionally, ResearchGate produces an author-level metric, the RG score, which aims at approximating the level of influence the user has within ResearchGate. The RG score is one of the only altmetrics scores whose primary focus is to measure author level impact that is, a metric that

is derived from the sum of scholarly contributions, rather than metrics for individual contributions (like journals), which are then summated for an individual author.

Social Science Research Network (SSRN)

The Social Science Research Network is one of the oldest peer networks, having been around in some form since 1994. However, SSRN is known primarily for allowing users to share pre-publication versions of articles, as well as white papers. Like the other peer networks detailed above, registration is free, and authors can add their own papers and retrieve metrics for those papers. However, since it focuses on articles that have yet to be published, SSRN can be useful in gathering early metric indicators, such as views and downloads, prior to the publication of an article.

Altmetrics Harvesting Tools

This helps to provide a more in-depth understanding of what altmetrics can actually say about a scholarly work, particularly as it compares to similar works. Each tool has different features, strengths, and weaknesses, and they all serve similar but distinct purposes with different intended audiences.

Altmetric

The London-based company Altmetric provides a series of tools, all under the Altmetric banner, that

increase in complexity from a tool designed to generate altmetrics for a single journal article to a tool that summates and compares altmetrics at the institutional level. However, each tool is built on altmetrics that are harvested and contextualized from the same sources, many of which are detailed above. However, all metrics are derived from journal articles only more specifically, journal articles with a retrievable DOI, PubMed ID, or arXiv ID with “friendly metadata.” This essentially limits the content for which the Altmetric tools can pull data to only those journal articles that it can correctly identify. With these limitations in mind, Altmetric is still able to pull together some powerful altmetrics data, starting at the individual article level with its bookmarklet.

ALTMETRIC BOOKMARKLET

The Altmetric Bookmarklet is a bookmarklet that integrates with Chrome, Firefox, or Safari to provide altmetrics from a journal article’s website. The bookmarklet web page walks through the steps to install and use the bookmarklet. Once it is launched, the signature “Altmetric donut” is displayed, along with the “Altmetric score,” some basic altmetrics, and links to more information at the bottom. The colors in the donut indicate the altmetrics source (Twitter, Facebook, Mendeley, etc.), and the Altmetric score in the middle shows the level of attention the article has received in one unified score as measured by the article’s altmetrics interactions. The higher the score, the greater the level of attention according to

Altmetric's calculations. These numbers can, in theory, be directly compared between different journal articles.

Impactstory

Impactstory (formerly known as Total-Impact) was created to help researchers demonstrate research impact using altmetrics. Once a researcher has created an account, that person can add scholarly works manually or can import works from SlideShare, ORCID, Scopus, and more. Works are sorted into types of work, and the user's home page will display an overview of all altmetrics, along with selected works highlighted in the center of the page. Impactstory will then display all available altmetrics for these works using badges like Discussed, Saved, and Viewed. Like other altmetrics harvesters, Impactstory excels in providing contextualized metrics based on raw altmetrics data it collects from other sites. If any metric is higher than 75 percent of comparable works, the badge will be designated as "Highly," such as "Highly Viewed." Badges can be clicked. So if an article is read primarily by people affiliated with information science, all metrics will be compared to other information science articles published that same year.

PlumX

PlumX was created by two entrepreneurs to help researchers and institutions meaningfully measure and engage with generated altmetrics data, and it

serves as a direct competitor to Altmetric Institutional. Within PlumX, altmetrics are gathered from a variety of sources, including EBSCO abstract views and downloads. The function of adding works for scholars is similar to that for Impactstory, as researchers and artifacts can be added by DOI, URL, or PubMed ID or uploaded from other systems such as Web of Science or Scopus. One of the more unique forms of engagement that PlumX provides is through the Plum Print. This feature is designed to allow users to view types of engagement with altmetrics through a visual display for example, degree of social media interaction versus citations.

Kudos

Kudos is a relatively new online platform for researchers designed to help them better market their research and track their impact over time. Through Kudos users can associate their published articles with supplemental information and other files like videos, data files, or other articles in one Kudos article web page. Users can then track how the sharing of these Kudos web pages affects metrics like views and downloads. Kudos is free for users and is supported by publishers and institutions, which pay a fee for access to their own metrics. Kudos imports and displays metrics from a variety of sources, including data from Altmetric and Thomson Reuters (for Web of Science's times cited), along with tracking the number of views of the researcher's Kudos web pages.

Evaluating Tools

Since the field of altmetrics is still emerging, change and experimentation are currently the only norm upon which we can rely, making an up to date introduction to the tools that make up the altmetrics field virtually impossible. Here are some factors to consider when assessing potential altmetrics tools.

- ❖ **Audience:** Some tools are targeted toward the individual researcher, while others are designed for institutional use. Identifying the target audience will also help the intended uses, including the most likely scenarios in which this tool could be useful to the concern library or its users.
- ❖ **Cost:** While the cost structure is usually relatively simple to determine, it is worthwhile to dig deeper and learn a bit more about the financial environment under which this tool operates. This will help identify tools that may implement a subscription or may be more likely to be bought by a larger company in the future.
- ❖ **Metrics and Accessibility:** Understanding a bit about the metrics within the tool is important since metrics can tell different stories regarding research impact. Accessing the metrics largely relies on whether the tool is an open tool or a closed tool that is, whether registration and login are required to access personal metrics or whether metrics can be retrieved by

anyone, including altmetrics harvesting tools. Accessibility can ultimately limit the success of the tool, particularly due to “sign-up fatigue” or the reticence to register and manage upkeep for tool after tool.

- ❖ **Unique Features:** Finally, learning more about what this tool can provide for the intended user can determine its relative usefulness for that user.

CONCLUSION:

The altmetrics landscape is comprised of a diverse set of tools and resources that can be used to measure a variety of ways in which researchers and other people are viewing, saving, and interacting with scholarly content. But, like many 21st-century innovations, the tools themselves emerge, evolve, and disappear rapidly, making it difficult to stay on top of the most recent developments. Using evaluative criteria can help those working with altmetrics better understand the benefits and downsides of using data generated from any given source.

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