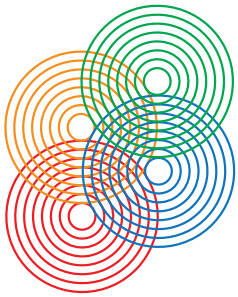

SCHOLARLY COMMUNICATION IN AFRICA PROGRAMME

BRIEF 2
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Impact Beyond Citation: An Introduction to Altmetrics

An overview of new Altmetrics tools by
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A fundamental concern for higher education institutions worldwide is improving their effectiveness and efficiency. This is often expressed as a need to maximise the "impact" of funded research.

"Impact" is intended to mean the effects of research beyond the research community, and may include influence on policy, improvements in health and living standards, cultural enrichment or an improved environment. Different forms of impact – and the framework by which impact is assessed and rewarded – should depend on the mission and goals of the institution.

In a political environment that places high value on transparency, accountability and demonstrable return-from-investment, and with intensifying competition in global higher education, universities are under pressure to provide evidence of the value of services they provide. While the value of teaching services has been straightforward to measure, this has not been the case for research.

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The commercial publishing sector provides citation-based analysis – the ISI Impact Factor – that is the dominant metric for research evaluation. But the ISI Impact Factor's methodology, equitability and ability to measure the range of scholarship have been criticised.

The Altmetrics movement, a body of scholars that seeks to create tools allowing scholarship to be measured and tracked in novel ways, is challenging the ISI Impact Factor. The Scholarly Communication in Africa Programme investigated "alternative methodologies for a more Afrocentric approach to research evaluation".

Impact in Africa

In developing countries there is a pressing need for research focused on development. An historical deficit in higher education has left Sub-Saharan Africa with a shortage of high-skill professionals who can easily translate basic research into applied socio-economic solutions.

Thus, the importance of "grey literature" – policy briefs, working papers, media articles and other scholarship aimed at lay audiences – is massive, satisfying the need for social engagement as well as scholars' professional expectations.

While Africa is recovering from its higher education recession and there has been rapid creation of institutional policies that serve the research agenda, there are still gaps, old-fashioned concepts and flaws in the institutional policy environment.

Systems to reward and incentivise research are still based largely on the ISI Impact Factor, which retains value but is less suited to measuring wider forms of impact. New developments may provide African institutions with opportunities to stop playing catch-up and leapfrog to the forefront of innovative scholarship – if they are willing to embrace new concepts of research impact.

Tracking impact

Research and its use and application are increasingly taking place online in ways that leave traces that can be tracked and measured. New tools could greatly aid African institutions to measure – and fully realise – the impact of research and to report to government, funders and civil society.

Altmetrics contains the potential for a reconceptualisation of what qualifies as impact, what should be rewarded in incentive structures and how to track and promote engagement with civil society. Here is a description of tools available, what they measure, who the users are, and their limitations.

Citations

Most quantitative analyses of research have focused on citations. Some familiar measures – such as Impact Factors, Scimago Journal Rank or Eigenfactor – are measures of journal rather than article performance. However, information on citations at the article level is increasingly available.

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What kind of usage?

- Citing a scholarly work is a signal from a researcher that a specific work has relevance to, or has influenced, the work they are describing.
- It implies significant engagement and is a measure that carries some weight.

What users?

- Researchers, which means usage by a specific group for a fairly small range of purposes.
- With high-quality data, there is some geographical, career and disciplinary demographic detail.

Limitations

- Slow to accumulate, as citations must pass through a peer-review process.
- It is seldom clear from raw data why a paper is being cited.
- A limited view of usage, focused on re-use in research, not application in the community.

Bookmarks

Tools for collecting and curating personal collections of literature, or web content, are now available online. They make it easy to make copies and build up indexes of articles. Bookmarking services can choose to provide information on the number of people that have bookmarked a paper.

Two important services targeted at researchers are Mendeley and Citeulike. Mendeley has the larger user base and provides richer statistics. Data includes the number of users that have bookmarked a paper, groups that have collected a paper, and in some cases demographics of users, which can include discipline, career stage and geography.

Bookmarks accumulate rapidly after publication and provide evidence of scholarly interest. They correlate quite well with the eventual number of citations. There are also public bookmarking services that provide a view onto wider interest in research articles.

What kind of usage?

- Bookmarking is a purposeful act. It may reveal more interest than a page view, but less than a citation.

- Uses different to those captured by citations. These may include papers for background reading or introductory material, position or policy papers, or statements of community positions.

Which users?

- Academic-focused services provide information on use by researchers.
- Each service has a different user profile in, for instance, sciences or social sciences.
- All services have a geographical bias towards North America and Europe.
- There is some demographic information, for instance on countries bookmarking most.

Limitations

- Bias in coverage of services, for instance, Mendeley has good coverage of biomedical literature.
- Can only report on activities of signed-up users, with this information often not provided.
- Not usually possible to determine why a bookmark has been created.

Page views and downloads

A major new source of data online is the number of times articles are viewed. Page views and downloads can be defined in different ways and can be via a range of paths. Page views are an immediate measure of usage. Viewing a paper may involve less engagement than citation or bookmarking but it can capture interactions with a much wider range of users.

The possibility of drawing demographic information from downloads has significant potential for the future in providing detailed information on who is reading an article, which may be valuable for determining, for example, whether research is reaching a target audience.

What kind of usage?

- The number of people who have arrived at an article page or downloaded an article.

Which users?

Page views and downloads report on use by those who have access to articles. For publicly accessible articles this could be anyone; for subscription articles it is likely to be researchers.

Limitations

- Page views may be calculated in different ways, not directly comparable across publishers.
- Data cannot easily distinguish between 'flying' visitors and those who engage more deeply.
- There are complications if a paper appears in multiple places.

“In future it will be possible to identify target audiences and to ask whether they are being reached and how modified distribution might maximise that reach. This could be a powerful tool, particularly for research with social relevance.

Social media (Twitter, Facebook)

Social media are one of the most valuable new services producing information about research usage. A growing number of researchers, policy-makers and technologists are on these services discussing research.

There are three major features of social media as a tool. First, is it possible to discover among a large set of conversations, a discussion about a specific paper. Second, Twitter makes it possible to identify groups discussing research and learn whether they were potential targets of the research. Third, it is possible to reconstruct discussions to understand what paths research takes to users.

In future it will be possible to identify target audiences and to ask whether they are being reached and how modified distribution might maximise that reach. This could be a powerful tool, particularly for research with social relevance.

Twitter provides the most useful data because discussions and the identity of those involved are public. Connections between users and the things they say are often available, making it possible to identify communities discussing work – but the 140-character limit of tweets does not support extended critiques. Facebook has much less publicly available information – but being more private, it can be a site for frank discussion of research.

What kind of usage?

- Those discussing research are showing interest potentially greater than page views.
- Often users are simply passing on a link or recommending an article.
- It is possible to navigate to tweets and determine the level and nature of interest.
- Conversations range from highly technical to trivial, so numbers should be treated with caution.
- Highly tweeted or Facebooked papers also tend to have significant bookmarking and citation.
- Professional discussions can be swamped when a piece of research captures public interest.

Which users?

- The user bases and data sources for Twitter and Facebook are global and public.
- There are strong geographical biases.
- A rising proportion of researchers use Twitter and Facebook for professional activities.
- Many journalists, policy-makers, public servants, civil society groups and others use social media.

Limitations

- Frequent lack of explicit links to papers is a serious limitation.
- Use of links is biased towards researchers and against groups not directly engaged in research.
- Demographic issues and reinforcement effects – retweeting leads to more retweeting in preference to other research – so analysis of numbers of tweets or likes is not always useful.

Altmetrics tools and services

There are new tools with which to collate and present different forms of impact. These show a range of different impact measures based on individual research objects, enabling cross-comparison of different forms of impact for a single resource. Institutional managers can see in which metrics researchers are performing well, and in which they could use intervention.

Altmetric.com

Altmetric.com is a subscription service that aggregates information for articles from a range of social media and news sources, with a focus on identifying articles with activity. It provides search tools and fine-grained control over which articles are selected.

One strength of Altmetric.com is in probing social media activity and demographics. Another is the ability to create regular reports that can be emailed to a user – useful for institutions and funders. Altmetric.com attempts to collect all mentions on Twitter of all articles; the results are comprehensive for recent papers but limited in historical reach – though this is common to many data sources.

ImpactStory

ImpactStory is a free data aggregation service that helps researchers collect data on the usage of articles, datasets, presentations and web content. It is also useful for institutional data-gathering on a small scale. It enables collections of research objects. The service will provide information on citations, bookmarking, social media activity and page view or download data where available.

ImpactStory is most effective for tracking usage of articles that have unique identifiers. It relies on the user creating a collection and does not enable searching for objects by name or institution. Reports can be stored and accessed later for updating or tracking usage over time. Historical data is not accessible and there is no reporting function, so regular downloads are required.

Other tools and data providers

PLOS Article Level Metrics API

For those willing to undertake a little technical work, a tool of value is the PLOS Article Level Metrics API (ALM API). It provides a mechanism for collecting data locally on a set of articles for which digital object identifiers are available. Out of the box, the application provides data on citations, Wikipedia usage, Mendeley bookmarks, Facebook activity, media mentions, and usage information for a small number of publishers. The limitation of ALM API is that it is focused on articles and not other forms of research output, and is limited to a set of data sources.

Publisher-provided usage information

Some publishers and journals provide usage information directly. Several provide some information, including page views and usage data. Others provide data from ImpactStory or Altmetric.com.

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