

The Secret Life of Articles: From Download Metrics to Downstream Impact

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The Secret Life of Articles: From Download Metrics to Downstream Impact

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Abstract

Traditional citation and download metrics have long been the standard by which we measure the use and value of scholarly articles. However, these methods neglect the usage and real-world impact of newer technologies to access, store, and share downloaded scholarly articles. This session's speakers will share the results of interviews, focus groups, and an international survey with 1,000 scholars to investigate the ways in which they now access, store, share, and use downloaded scholarly articles. By identifying and measuring what traditional metrics fail to examine, the Beyond Downloads project attempts to capture a more complete picture of the use and value of scholarly articles, which is critical for librarians, publishers, and vendors to understand in developing scholarly tools and services. Complete usage can no longer be measured by traditional means alone. The speakers will discuss the findings of their research and the implications for metrics that take into account scholars' changing access, reading, and sharing behaviors.

Introduction

Project COUNTER has long been the standard by which libraries and publishers monitor download counts and usage for articles and journals (Shepherd, 2004). This measurement is then used for a proxy in determining full usage and value. However valuable this estimation is to libraries, it

misses an equally important secondary usage—that is, repeat and shared usage information.

Sharing is widespread among the scholarly community, becoming an integral and daily part of the scholarly work life, especially when working in research groups (Zhu & Proctor, 2012; Haustein, Peters, Sugimoto, Thelwall, & Larivière, 2014). Social media and e-mail have become the go-to

methods for sharing (Cheng, Ho, & Lau, 2009; Harley, Acord, Ear-Novell, Lawrence, & King, 2010, Tenopir et al., 2014). The Beyond Downloads project examines the life of a scholarly article beyond the point of download. It examines how and why scholars share scholarly articles, and the format and platform of sharing. This secondary usage is important to consider if we are to estimate or even hope to arrive at a more accurate estimate of the complete value of scholarly articles—for the authors, libraries and, publishers.

Our project research questions included:

1. What are download counts missing?
2. How much do scholars share and what do they share?
3. Are there ways to calculate or measure sharing?
4. What is a more complete use and value of articles?

For regular Charleston attendees, you may remember that we introduced this project last year and reported some of the preliminary results (Tenopir et al., 2014). This year we report the final results. The overall project aimed to define ways to measure non-download usage of digital content and to initiate discussion regarding these issues. This presentation focuses on some of the key takeaways from the research project.

Methodology

We used a multiple-method approach to answering these research questions. The first step was to identify the most frequently and commonly used platforms of sharing scholarly materials. Given the innumerable methods of sharing material in general, we focused on methods scholars are likely to use for sharing research and teaching materials. The second step was to conduct focus groups in the United States and interviews in the United Kingdom. Participants included 29 academics at all levels in the sciences and social sciences—from senior faculty and researchers to doctoral students. Ten participants were in their thirties, while others ranged from their twenties to early sixties. Twenty

participants held a PhD, seven held a master's, and two held a bachelor's degree. Twelve participants were professors, four were researchers, five were lecturers, five were PhD students, and three held "other" positions.

This second step helped to inform an international survey of researchers. In late October 2014, an e-mail invitation was sent to a mailing list of 32,956 authors who had previously published in an Elsevier journal. The survey was open until January 16, 2015. We received 1,000 responses for a response rate of 3.03%. Respondents came from 69 countries, with just over a quarter (27.1%) from the United States. Other top respondent nations were: Italy (7.1%), China (7%), Canada (4.0%), United Kingdom (3.8%), and India (3.8%). We also had a range of subject disciplines, mostly coming from the STEM fields. Thirty-four percent were from the sciences, 20.8% from the medical sciences, 21.4% from engineering, 22.4% from the social sciences, and only 1.7% from the humanities. Respondents' ages ranged from 18 to 83, with an average age of 48 years and about a quarter under 39 years old. Eighty-one percent of respondents were in the academic ranks, 3.4% were students, and 11.2% were private or non-academic researchers. Eighty-two percent of respondents held a PhD.

Results

Survey respondents, interviewees, and focus group participants expressed a wide range of behaviors and attitudes. However, this presentation focuses on five main takeaways from the project.

1. Sharing articles is a means to an end. Scholars find sharing useful to further scientific and academic discovery, to facilitate collaboration, and to advance their work.
2. Function drives form. Whether scholars share via a link or PDF depends on the primary channel used for sharing.
3. E-mail is #1. Scholars share primarily via e-mail; however, other forms of scholarly sharing include academic social networks, and social media.

4. The version matters. Scholars want to share the final published version of their articles.
5. The library is key (but not the only source). Scholars' primary source to download scholarly articles is their library subscriptions or databases.

Sharing Articles Is a Means to an End

Researchers and teachers *like* to share. In the survey, we asked, "How did you feel about your work being shared with others?" We received 690 responses to this question. In general, the vast majority of comments were positive. Many respondents say that knowing that their work was being read and shared by others made them feel that their work and their time spent researching was important, that they have a positive impact. They feel validated by this knowledge. Moreover, they expect their work to be shared, as it "is the entire point," according to more than one respondent. Only a few express reservations. Most of these reservations concern using the proper citation.

Why do they share? Sharing is a natural part of scholarship. Scholars say they find sharing useful to further scientific and academic discovery, to facilitate collaboration, and to advance their own work. Sharing is often initiated by others who are interested in an author's work, and the sharing is by the author. But not always. If a scholar has access to an article by someone else that they think is particularly good or useful, or that another person wants, they will likely share it either as a full-text file or a link.

Another common reason for sharing is the lack of access. Articles protected behind a paywall create problems of access for researchers at smaller or private institutions or those from developing countries. Whether someone asks for an article by the respondent or a copy of another researcher's article, respondents report sharing full-text copies to help fulfill these colleagues' information needs—*whether or not the act of sharing is strictly legal*. As one survey respondent states, "It's not like I'm giving away something that they could not get anyhow. But it never dawned on me that, in effect, you know in theory, I am violating

copyright." While another reasons, "If I have got it, I will just share it. It is easier than having them go track it down, even if I have got the citation." Convenience and helping others are more important than the letter of the law. Scholars also do not like embargoes. They disagree with statement "Embargo periods that restrict sharing of scholarly articles for (6 months/1 year/2 years) are reasonable" ($M = 2.74, 2.07, 1.64$, where 1 = strongly disagree; 5 = strongly agree). The longer the embargo period, the more likely they are to disagree or strongly disagree with the idea that embargoes are reasonable.

Scholars who work in a research group are more likely to share their articles and others' articles than those who work alone. Survey respondents mostly agree with the statement that "most of my work is done in a research group" ($M = 3.88$, where 1 = strongly disagree; 5 = strongly agree). Only 16.3% of participants (128 of 783) disagreed or strongly disagreed with this statement; 12% were neutral (94), and 71.6% agreed or strongly agreed (561). The vast majority of respondents work in research groups most of the time. Furthermore, when working in a group, 66.8% say they share articles more often than otherwise (515 of 771); 30% report their sharing unaffected (231), and only 3.2% report sharing less in groups (25). Moreover, many scholars report that their sharing has increased or will increase. As the number of coauthors on papers and in research teams are increasing, we can expect sharing to increase as well.

Function Drives Form

At first, we assumed that sharing meant the sharing of the full-text article. However, this is not always the case. Early in the project, it became clear that there are two types of saving and sharing downloads—that is, sharing and forwarding a link and sharing the full-text article. Access is key in examining these different sharing behaviors. Sharing a link is most common when the scholar knows the person with whom they are sharing has the same level of access. When access may be an issue, sharing full-text articles comes into play more often. Shared full-texts articles are most often in PDF form.

E-mail is the most popular method for sharing links or full-texts (PDF). In the survey, we asked of respondents, "Thinking back to the last scholarly article that you published, please estimate how many times and/or with how many people you shared references/links/full-text" and provided a list a methods for which to provide their estimates. In all cases, e-mail emerged as the method most used (approximately 10.5 times for both a link or reference and full-text). Learning management software such as Blackboard is the second most used method for sharing a link or reference (13.9 times). Research social networks such as ResearchGate are the second most used method for sharing full-text (10.8 times).

E-mail Is King

As we have stated, e-mail is the most common method of sharing articles. Within the survey, we also asked respondents to rate their preferred method for sharing articles for research and teaching purposes. Again, e-mail came out on top. For research purposes, 73.8% of respondents rank e-mail as their highest preferred method of sharing, followed by cloud services (11.6%) and password-protected internal networks (10.7%).

The picture is similar for teaching, with only learning management systems replacing cloud services. Eighty-three percent of respondents rank e-mail as their most preferred method for sharing articles for teaching, followed by learning management systems (9.6%) and password-protected internal networks (8%). Perhaps the biggest takeaway here is the mundane nature of this behavior. Convenience and ease continue to dominate sharing behaviors.

However, respondents acknowledge that more people are reached by other means than e-mail, cloud services, and learning management systems. Research and general social networks allow them to potentially reach hundreds or even thousands of people. Again, in thinking about the last article they shared of their own work, respondents estimated reaching between 559–4066 through research social networks, 96–614 through general social networks, and 40–189 through internal networks.

Version Matters

Most scholars want to share the final published version—not the author's submitted version or a preprint. Eighty-four percent of respondents report preferring to share the published version of someone else's work, and 77% prefer sharing the published version of their work. This finding differs somewhat by discipline. Medical scientists were the most likely to share the published manuscript of either their own work (84.3%) or another's work (89.7%). Engineers were the least likely (68.5% for their own and 76% for others' work).

Many survey respondents and focus group participants explained their preference for the published version. A focus group participant from the social sciences states, "The main point should be that I share a version that is evidentially the peer-reviewed version (with the publisher and the journal stamp on it)." Another reiterates their intellectual attachment to the final copy, "My feeling is that I've written this, this is my work, they're publishing it. I'm not getting paid for this, they're benefiting from this. I'm a little fish . . . Let them come for me." One survey respondent claims, "Content providers in general have to realize that the relationship between seller and buyer has fundamentally changed in the last 20 years . . . In order to get someone to pay you for something they can get without your permission, you need to (1) make the process of obtaining your product legally at LEAST as effortless as the process of obtaining it illegally. (2) Make it so cheap that it's not worth pirating."

Academics are now utilizing social media in innovative ways to navigate around pay walls in order to disseminate these preferred published versions of scholarly articles. For example, some academics are using the hashtag #icanhazpdf to freely share copyrighted papers (Mohdin, 2015). In the case of sharing other people's work, altruism is a key factor. Many researchers are aware of their position of privilege and are willing to help other less fortunate researchers gain the access they lack.

The Library Is Key

When we asked survey respondents to estimate how many scholarly articles they downloaded for their last research project, the average was 65 articles; for their last teaching term, the average was 36. Still, the most common source for downloads was the library—for research and teaching purposes. This finding follows that of the Tenopir and King scholarly reading studies, which found that the library remained an important and primary resource for scholars (King, Tenopir, Choemprayong, & Wu, 2009; Tenopir, King, Edwards, & Wu, 2009; Tenopir, King, Christian, & Volentine, 2015). Of course, COUNTER allows the library to count these downloads. Over half (54%) of downloads for research and 35% of downloads for teaching come from the library. If we exclude non-responses (or those who selected “0” for each source), we find that 61% of articles for research and 65% of those for teaching come from the library.

But, these numbers may be gross underestimates of use, because when rereading or sharing or returning to that article again, only 9–12% of the

time are articles reported as being redownloaded. The rest of the time, readers are returning to a saved copy. If you add the potential 10+ times that an article is shared, you may see why downloads tell only part of the usage story.

Conclusion

Sharing is a natural behavior, which supports research and the dissemination of results. Convenience is a key concern in how researchers choose to share their own work as well as the work of others. Therefore, sharing channels are chosen for their fitness-to-work style. Because sharing is, and has always been, an integral part of the research cycle, new policies and measures must fit preferences and likely behavior patterns. After all, current download counts likely underestimate usage, though the sharing of references and links may balance out discrepancies to a certain extent. Furthermore, these new policies and measurements should not be punitive; rather, they should enable scholars, publishers, and librarians to form a more complete picture of the value of articles—that is, their secret life.

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