Presentations

Politics of platforms: the ideological perspectives of social reference manager users on scholarly communication

Abstract

Social reference managers are deemed as a potentially rich source for altmetrics to reflect the broader values and impact of scholarship. While there are several document-focused studies of social reference managers, as well as general demographic surveys, little is known about the users' ideological perspectives towards scholarly communication and the mutual shaping between the use of the tools and these perspectives. This study examines these differences by means of parallel surveys for Mendeley and Zotero users, the two most popular social reference managers offering similar functionalities but different in the type of the software license. The preliminary results show that while Mendeley and Zotero users share similar ideologies toward bibliometrics and online scholarly identity, Zotero users are not only more critical of current journal-based publishing and peer-review systems but also more cautious about the use of altmetrics. These data are necessary to inform the use of altmetrics in broader research evaluation exercises.

Conference Topic

Altmetrics; Participation in science

Introduction/Literature Review

The scholarly communication system has been transformed over the past two decades by Web 2.0 applications and open scholarship initiatives. In recent years, social media platforms have significantly increased the visibility of online scholarly activities leaving behind digital traces of scholarly communication. Such traces, often referred to as altmetrics (Priem, 2014), have the potential to "expand our view of what impact looks like" (altmetrics manifesto, para 5) by identifying online communities and tracking their engagement with scholarly content (Priem, Taraborelli, Groth, & Neylon, 2010).

Among various social media platforms, social reference managers are one of the most commonly used online tools to access, save, and curate documents (Sugimoto, Work, Larivière, & Haustein, 2016). Two of the most popular social reference managers are Zotero and Mendeley, released in 2006 and 2008, respectively. Both platforms allow users to leave comments, rate papers, cite entries, share work, create subject tags, and join embedded social networking communities (Sugimoto et al., 2016). Referred to as academic social networking services (Jeng, He, & Jiang, 2015), these social reference management systems provide a means for scholars to interact with other researchers and distribute their work widely. Due to the considerable sizes of their user base, reported at 2.5 million for Mendeley (Bonasio, 2013) and 620,000 for Zotero (Takats, 2011), they have been suggested as potential data sources for altmetrics, revealing readership behavior and thus indicators of broader impact (Haustein, 2014).

As Mendeley provides anonymized usage data via an open application program interface (API), several studies examined features of saved documents, focusing largely on coverage and correlations with citations (Bar-Ilan et al., 2012; Haustein et al., 2014; Mohammadi, Thelwall, Haustein, & Larivière, 2015), as well as demographics and user behavior (Mohammadi et al., 2015; Mohammadi, Thelwall, & Kousha, 2016). Due to the lack of an API and the anonymity of the user base for Zotero (Takats, 2011), neither document nor user behavior on Zotero has yet been systematically analyzed on Zotero.

Although both platforms have similar functions, they differ regarding their license type. Zotero is an open source software maintained by the Center for History and New Media at George Mason University. Due to its open source nature, users often contribute new ideas and improvements to Zotero on an ongoing basis. The forums on the Zotero website are frequently

updated regarding the most recent changes or improvements to the software with the latest 4.0 version being released back in April 2013 ("Documentation," n.d.). Despite initially also an open source software, Mendeley was acquired by Elsevier for $76 million in April 2013 (Van Noorden, 2014).

As Mendeley readership counts are increasingly integrated into altmetrics tools and measurements and Zotero has announced to provide their data in a similar manner (Fahringer, 2015), it is necessary to understand whether data about Mendeley can be generalized across social reference managers. More precisely, since metrics rely on generalizability, it is important to know whether user demographics and user behavior are similar across platforms in order to interpret the indicator derived from such data (Haustein, Bowman, & Costas, 2016). Therefore, we conducted parallel surveys of Mendeley and Zotero users to ascertain potential differences in the user base. For the present study, we examine the differences in ideological perspectives to scholarly communication, particularly issues related to open access, peer review, and scholarly impact. We hypothesize that users will reflect the ideological principles of the platforms: that is, that Zotero users will be more inclined towards greater openness and will challenge traditional notions of scholarly communication; whereas users of Mendeley, owned by a large and traditional academic publishing house, will be more traditional in their perspectives.

Method

Two parallel surveys were designed for Mendeley and Zotero users (respectively) and distributed through Qualtrics, a cloud-based survey tool, from mid-April to early June in 2016. Each survey is divided into four sections: 1) study and consent information; 2) demographic information; 3) user behavior; and 4) meaning and motivation. In the meaning and motivation section, one set of 15 statements directly addresses issues related to ideological concerns in scholarly communication and asks the respondents to rate their level of agreement in a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Due to different modes of cooperation and levels of concern over privacy, the two surveys were distributed in different ways. Invitation with a unique survey link embedded was sent through email to a sample of more than 26,000 Mendeley users provided by Mendeley, while the Zotero survey with the anonymous link was disseminated by Zotero through various online and offline channels. Of the 1214 Mendeley responses and 796 Zotero responses, 752 for Mendeley and 522 for Zotero were complete and used for analysis on this question.

Chi-square tests and logistic regression were employed to test whether there are statistically significant differences between Mendeley and Zotero users. To conduct logistic regressions, the 5-point Likert scale was converted into binary variables by assigning 1 to the original value 4's (agree) and 5's (strongly agree) and 0 to the value 1's (strongly disagree) and 2's (disagree) while dropping the value 3's (neither agree nor disagree). Granted that "neither agree nor disagree" also signals respondent's ideological orientation, the decision was made to render the results more comparable by highlighting stances closer to both ends of the spectrum.

Findings

Openness

Most of Mendeley and Zotero users exhibit a high degree of openness, reflecting in their support for open access, open source software, as well as being early adopters of new technology. About 85% of Mendeley users and 90% of Zotero users consider themselves advocates of open access and opensource software. Although fewer consider themselves early adopters of new technology, they still account for nearly 70% of Mendeley and 80% of Zotero users. Despite the seemingly high consistency between Mendeley and Zotero users, Zotero users are

statistically more likely to be strong advocates for open access (OR = 9.29, p <.01) and early adopters of new technology (OR = 1.63, p < .05).

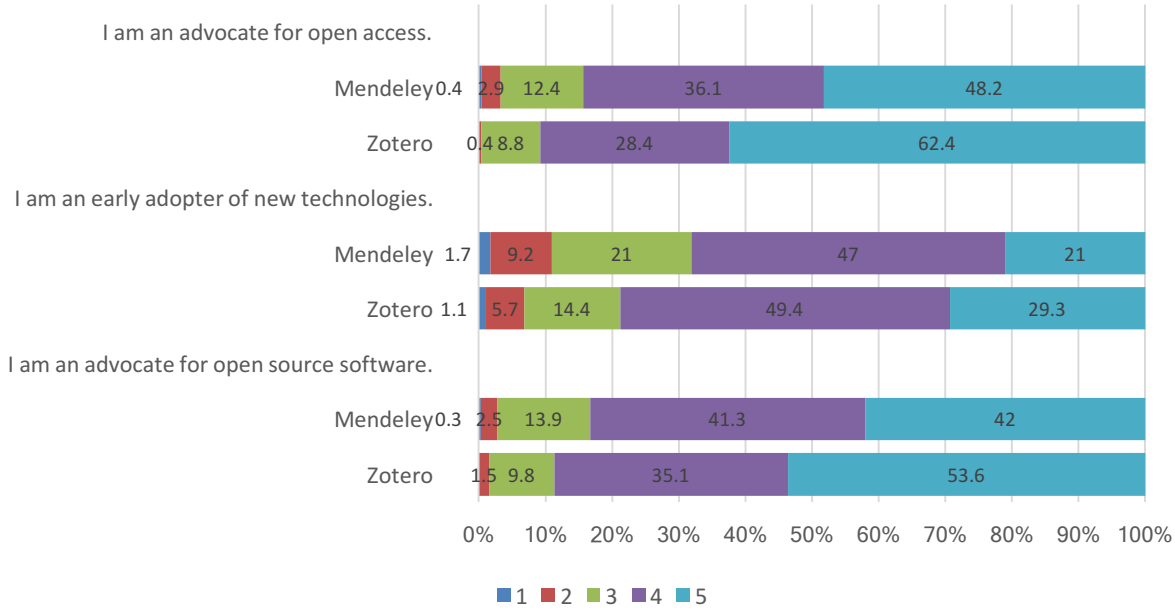

Figure 1 Openness

Journals, Publishers, Peer-Review System

The ideological cleavage between Mendeley and Zotero users is most clearly seen in their attitudes toward the current journal-based publishing and peer-review system. While 50% of Mendeley and 40% of Zotero users have no strong opinions on whether the current peer-review system is broken, more than 50% of Zotero believe the system is broken whereas only 34% of Mendeley users hold the same opinion. At the same time, 80% of Mendeley and 73% of Zotero users still acknowledge that journals add credibility to their research. This is largely in line with their agreement that journals are necessary for scholarly communication, accounting for 82% of Mendeley and 63% of Zotero users. It is worth noting that not only is the percentage of Zotero users in support of these two statements consistently lower compared to Mendeley users, Zotero users are significantly less likely to consider journals as necessary for scholarly communication.

The split is even more manifest in their views toward the publisher's profit margin. 46% of Mendeley users remain in the middle ground, whereas 44% of Zotero users strongly agree that the publisher's profit margin is too high. More broadly speaking, those who are critical of this phenomenon account for 72% of Zotero users but only 49% of Mendeley users. Consistent with the result, 60% of Mendeley users agree that publishers are necessary for scholarly communication, but only 37% of Zotero users agree. Statistically speaking, Zotero users are more likely than Mendeley users to agree that the current peer-review system is broken (OR = 3.31, p < .001) and that the profit margin for publishers is too high (OR = 2.36, p < .01). On the other hand, they are less likely to agree that journals (OR = 0.33, p < .001) and publishers higher (OR = 0.26, p < .001) are necessary for scholarly communication.

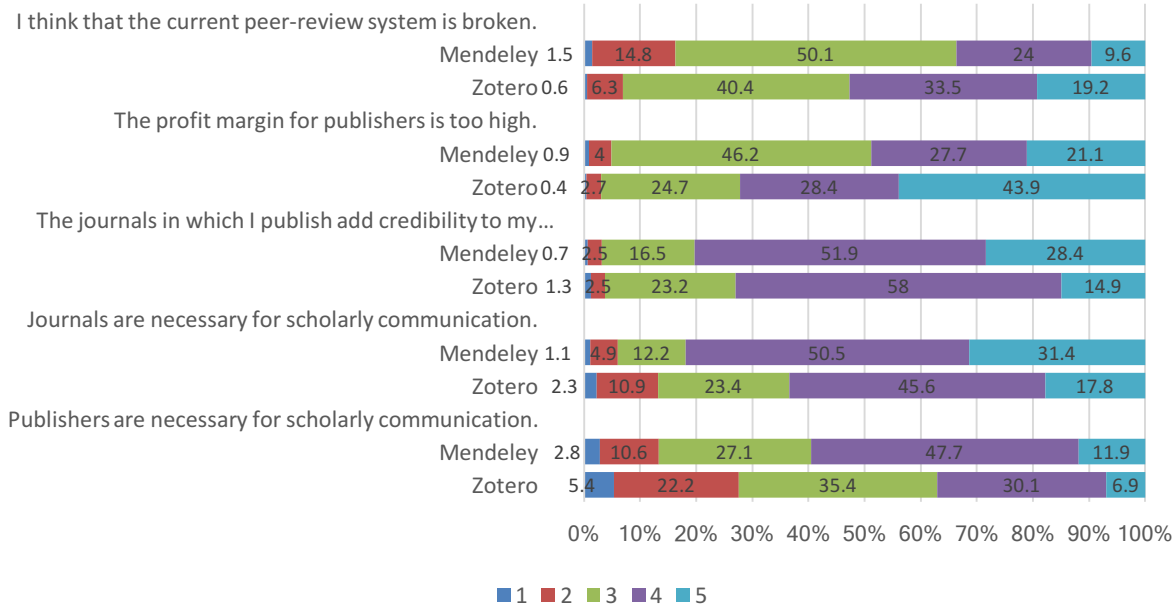

Figure 2 Journals, Publishers, and Peer-Review System

Indicators of Scholarly Impact

Among various indicators, citations are still widely recognized as an appropriate indicator of scholarly impact, as agreed by 79% of Mendeley and 69% of Zotero users. In contrast, respondents' attitude toward social media activity and altmetrics are more cautious. The majority of Mendeley users and 40% of Zotero users doubt the utility of social media activity as an indicator of scholarly impact. When asked whether Mendeley readership counts or Zotero library counts should be used as an indicator of scholarly impact, nearly 40% of all respondents had no strong opinion, 37% of Mendeley and 28% of Zotero users were supportive. However, the users were more likely to report that counts on social reference managers were an indicator of the value of the items. Overall, Zotero users were less likely to agree that Zotero library counts should be used either as an indicator of scholarly impact (OR = 0.56, $p < .001$) or that they are good indicators of the value of that item (OR = 0.57, $p < .01$).

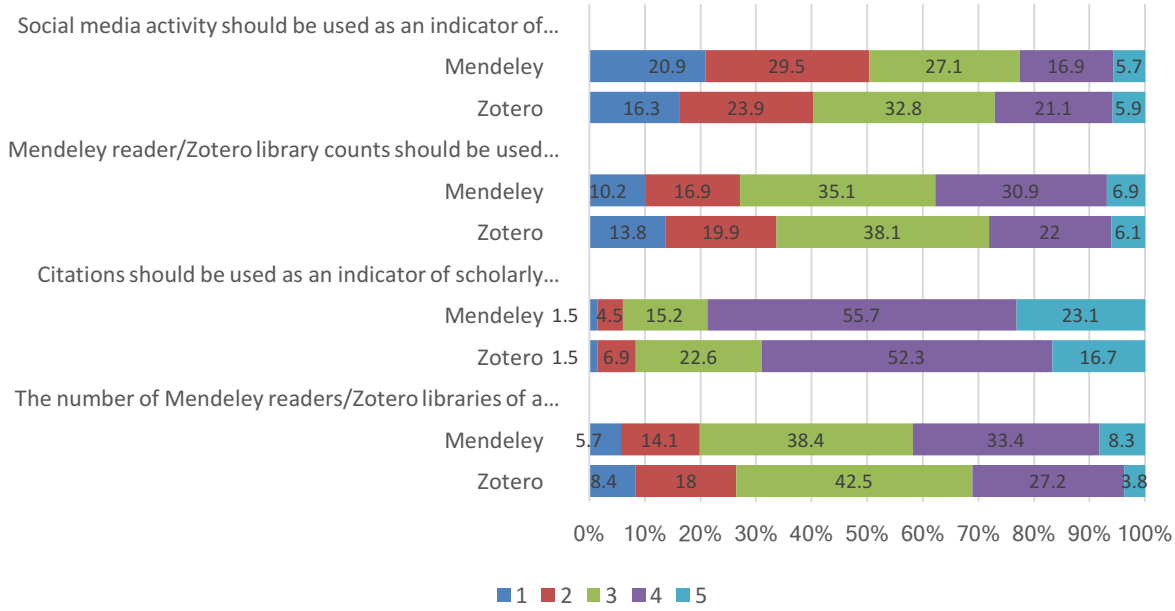

Figure 3 Indicators for Scholarly Impact

Online Visibility and Scholarly Identity

One of the features of social reference managers is the ability to create a profile online, which is assumed to increase the user's visibility in the academic community. However, more than 40% of Mendeley and Zotero users respectively neither agree nor disagree with the statement. Moreover, a reverse direction of opinions is perceived between Mendeley and Zotero users, where 44% of the Zotero users disagree and 28% of Mendeley users agree that having a profile on Mendeley/Zotero makes them more visible in their field. The difference between Mendeley and Zotero is statistically significant ($OR = 0.22$, $p < .001$). While it is tempting to conclude that Zotero users may be less concerned about online visibility, it turns out that more than half of Zotero users consider being visible online critical for their scholar identity, which is even higher than Mendeley users. A more plausible interpretation is thus that while respondents care much about their online visibility as part of their scholar identity, social reference manager profiles may not be the prime site for them to construct such an identity and maintain their online visibility.

At the same time, over 80% of respondents of the respective survey agree that maintaining their privacy online is very important to them, and there is no statistically significant difference between them. It seems that while online visibility and privacy are both desired by respondents across surveys, privacy is still the most dominant concern for users in the online environment.

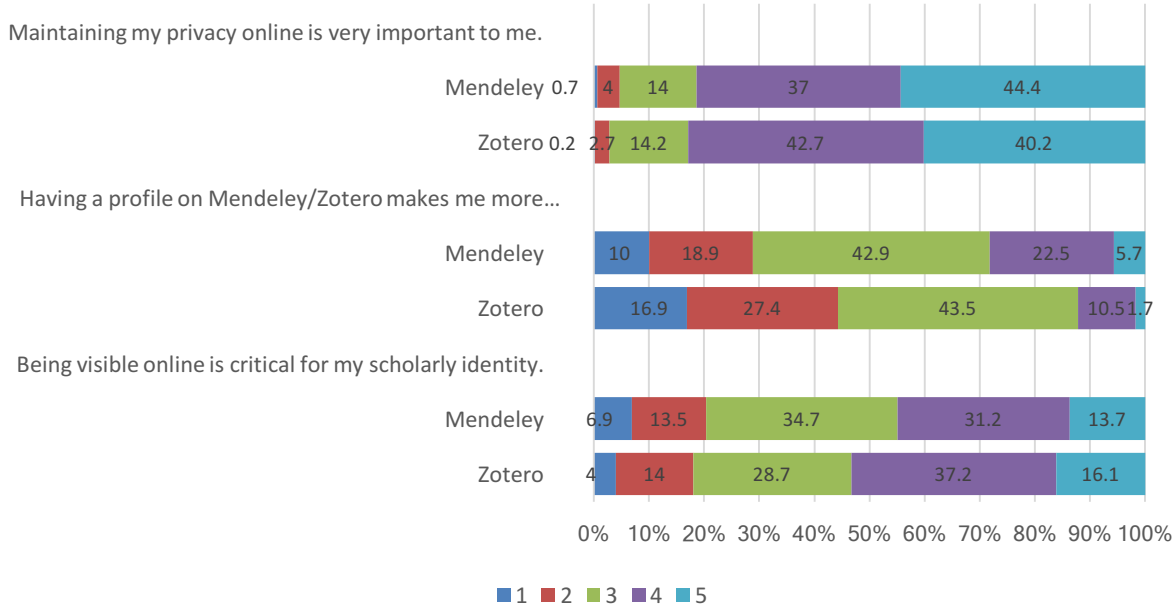

Figure 4 Online Visibility and Scholarly Identity

Discussion and Conclusion

The results from the two surveys suggest that there is a correlation between users' ideological perspective on scholarly communication and the social reference managers they use. On the one hand, compared with Mendeley users, Zotero users are more likely to identify themselves as advocates of open access and early adopters of new technology. They also tend to be more critical of the traditional journal-based publishing and peer-review system and skeptical of the role of journals and publishers in scholarly communication. At the same time, however, they seem to be more cautious of adopting altmetrics, such as treating Zotero library counts as an indicator of scholarly impact or value of a document. Lastly, they are less likely to consider that having a Zotero profile would increase their visibility within their academic fields. On the other hand, Mendeley and Zotero users do not significantly differ in advocating open-source software, recognizing the symbolic capital of journals, appreciating citations but doubting social media activity as an indicator of scholarly impact. The consensus also extends to strong concerns for online privacy while recognizing that online visibility is critical for their scholarly identity.

As altmetrics are increasingly incorporated into assessment exercises and evaluation tools, it is imperative that researchers and policymakers gain a greater understanding of the users behind these data. The present study provided a comparison of users from one source of altmetric data—that is, social reference managers—in order to ascertain the generalizeability of one platform to another. Furthermore, this study focused on the ideological differences that may separate the users of the platforms. This study provides a lens on interpreting the meaning of altmetrics, given the context of the users generating the data.

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References

Bar-Ilan, J., Haustein, S., Peters, I., Priem, J., Shema, H., & Terliesner, J. (2012). Beyond citations: Scholars' visibility on the social Web. *arXiv:1205.5611 [Physics]*. Retrieved from http://arxiv.org/abs/1205.5611

Bonasio, A. (2013, September 3). Mendeley Has 2.5 Million Users! Retrieved April 28, 2017, from https://blog.mendeley.com/2013/09/03/mendeley-has-2-5-million-users/

Documentation. (n.d.). Retrieved April 28, 2017, from https://www.zotero.org/support/

Fahringer, A. (2015, September 3). Studying the altmetrics of Zotero data. Retrieved May 1, 2017, from https://www.zotero.org/blog/studying-the-altmetrics-of-zotero-data/

Haustein, S. (2014). Readership metrics. In B. Cronin & C. R. Sugimoto (Eds.), *Beyond bibliometrics: Harnessing multidimensional indicators of scholarly impact* (pp. 327–344). Cambridge, MA: The MIT Press.

Haustein, S., Bowman, T. D., & Costas, R. (2016). Interpreting "altmetrics": Viewing acts on social media through the lens of citation and social theories. In C. R. Sugimoto (Ed.), *Theories of Informetrics and Scholarly Communication* (pp. 372–406). Berlin, Boston: De Gruyter. https://doi.org/10.1515/9783110308464-022

Haustein, S., Peters, I., Bar-Ilan, J., Priem, J., Shema, H., & Terliesner, J. (2014). Coverage and adoption of altmetrics sources in the bibliometric community. *Scientometrics*, *101*(2), 1145–1163. https://doi.org/10.1007/s11192-013-1221-3

Jeng, W., He, D., & Jiang, J. (2015). User participation in an academic social networking service: A survey of open group users on Mendeley. *Journal of the Association for Information Science and Technology*, *66*(5), 890–904. https://doi.org/10.1002/asi.23225

Mohammadi, E., Thelwall, M., Haustein, S., & Larivière, V. (2015). Who reads research articles? An altmetrics analysis of Mendeley user categories. *Journal of the Association for Information Science and Technology*, *66*(9), 1832–1846. https://doi.org/10.1002/asi.23286

Mohammadi, E., Thelwall, M., & Kousha, K. (2016). Can Mendeley bookmarks reflect readership? A survey of user motivations. *Journal of the Association for Information Science and Technology*, *67*(5), 1198–1209. https://doi.org/10.1002/asi.23477

Priem, J. (2014). Altmetrics. In B. Cronin & C. R. Sugimoto (Eds.), *Beyond bibliometrics: Harnessing multidimensional indicators of scholarly impact* (pp. 263–288). Cambridge, MA: The MIT Press. Retrieved from http://arxiv.org/abs/1507.01328

Priem, J., Taraborelli, D., Groth, P., & Neylon, C. (2010). Altmetrics: A manifesto. Retrieved April 28, 2017, from http://altmetrics.org/manifesto/

Sugimoto, C. R., Work, S., Larivière, V., & Haustein, S. (2016). Scholarly use of social media and altmetrics: A review of the literature. *arXiv:1608.08112 [Cs]*. Retrieved from http://arxiv.org/abs/1608.08112

Takats, S. (2011, May 21). On Usage Figures. Retrieved April 28, 2017, from http://quintessenceofham.org/2011/05/21/on-usage-figures/

Van Noorden, R. (2014). Online collaboration: Scientists and the social network. *Nature News*, *512*(7513), 126. https://doi.org/10.1038/512126a