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Global science discussed in local altmetrics: Weibo and its comparison with Twitter

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ABSTRACT

Local altmetrics is currently an integral part of the altmetrics landscape. This paper aims to investigate the characteristics of microblog altmetrics of the Chinese microblog platform, Weibo, to shed light on cultural differences and draw attention to local altmetrics in developing countries. The analysis is based on 4.4 million records provided by Altmetric.com. Data collected are from March 2014 to July 2015. It is found that Weibo users discuss global science, more actively compared with several international altmetrics sources. Statistical results show strong evidence of the immediacy advantage of metrics based on Weibo as well as Twitter and the general altmetrics over citations. Distribution of Weibo altmetrics on the article level, source level and discipline level are highly skewed. Overall, compared with Twitter, Weibo altmetrics present similar distributions, with some minor variations. To better understand how and why Weibo users discuss global scientific articles, the top weiboed articles, sources and disciplines are identified and further explored. Our content analysis shows that the common motivation of scientific weibos is to disseminate or discuss the articles because they are interesting, surprising, academically useful or practically useful. Conclusion of articles is the most frequently mentioned element in scientific weibos. In addition, different from Twitter, Weibo users have a preference for traditional prestigious journals.

1. Introduction

A series of behaviors are conducted in the research process, including but not limited to information seeking, saving, reading, annotating, brainstorming, experimentation, data analysis, paper drafting and citing. The citing behavior is recorded by citations, giving birth to citation analysis; in the modern digital era, many behaviors are recorded by online scholarly tools and platforms, laying the foundation of altmetrics. Altmetrics, by capturing digital traces of scientific products, aims to improve scholarly communication, scientific evaluation and literature discovery (Moed, 2015). Altmetrics research is developing from theoretical (Priem, 2013) and critical debate (Qiu & Yu, 2015) to more empirical (Wang, Guo & Zhang, 2015), experimental (Friedrich, Bowman, Stock, & Haustein, 2015) and application-oriented (Das, 2015) studies. So far, digital traces on many tools and platforms have been studied, including Twitter (Haustein, Peters, Sugimoto, Thelwall, & Larivière, 2014c), Mendeley (Thelwall & Wilson, 2015), ResearchBlogging (Shema, Bar-Ilan & Thelwall, 2014), F1000 (Mohammadi &

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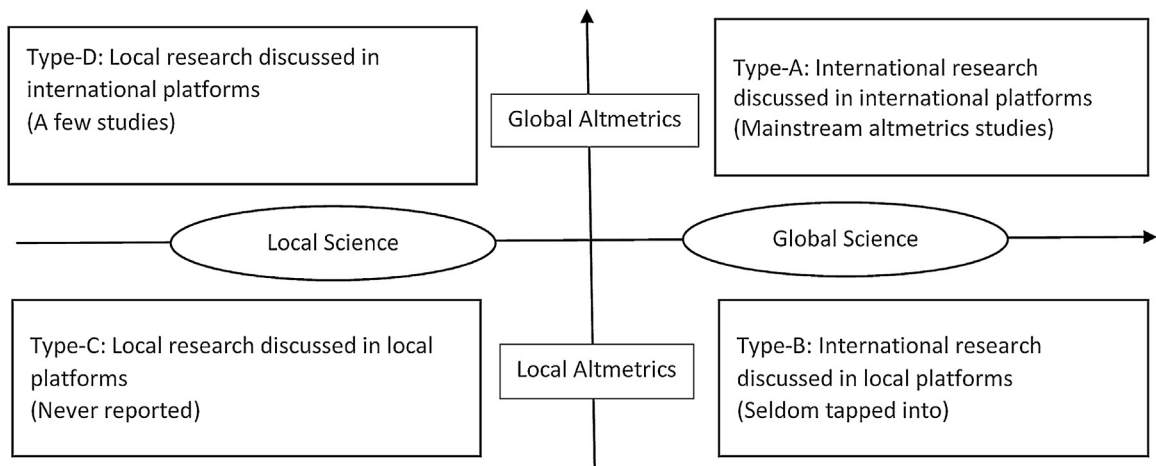   *E-mail address:* shenmeng@email.unc.edu (S. Xu).

Fig. 1. Four types of altmetrics studies.

Thelwall, 2013), ResearchGate (Thelwall & Kousha, 2015) and YouTube (Kousha, Thelwall & Abdoli, 2012), among others. While scientific article is still the most commonly studied type of scientific product, many other types are explored, for instance, blogs (Shema, Bar-Ilan & Thelwall, 2012), software (ImpactStory, 2016), slides (Kraker, Lex, Gorraiz, Gumpenberger, & Peters, 2015), datasets (Peters et al., 2015), and videos (Kousha et al., 2012). Altmetrics has been applied in scientific evaluation. Evaluated objects can be a journal (Loach & Evans 2015), an institution (Peters et al., 2014; Rehemtula, Rosa, Leitao, & Avilés, 2014), a discipline (Holmberg & Thelwall 2014) or a scientist (Kolahi, 2015). Some institutions (ScienceOpen, 2016) have enabled users to rank literature retrieval results by the Altmetric Attention Score.

Altmetrics has drawn attention from worldwide academia. As shown in Fig. 1, four types of altmetrics research are defined based on the geographical variation of altmetrics sources and scientific outputs. Type-B and type-D altmetrics studies investigate the communication between local science and global science, while type-C altmetrics studies mainly focus on domestic scientific communication. Alperin (2013) argues that by disseminating research in online social media, the altmetrics movement would reduce the bias caused by leading bibliographic databases where research from developing countries is underrepresented. However, altmetrics research hitherto has been focused on type-A studies where data are collected from international platforms, of research from international mainstream publishers, prevailingly in developed countries. A few researchers have considered local altmetrics and conducted Type-D studies. Alperin (2015) investigated the coverage of altmetrics data in the prominent Latin American journal portal SciELO and found the coverage level of most social media sources was zero or negligible. Poplasen (Poplašen & Zrnić 2014) tried to use altmetrics for measuring science in Croatia. Tammaro (2014) tested altmetrics as an evaluation method for Italian scholars in the humanities. Torres et al. (Torres, Cabezas, & Jimenez, 2013) conducted a case study on a sample of Spanish communication studies. However, these studies all used data from international social media platforms, neglecting local platforms, which play an important role in domestic scientific communication.

Type-B and type-C studies are seldom seen, because the infrastructure for analyzing local altmetrics, for example data aggregating services, is not well established. This paper argues that local altmetrics is an integral part of the holistic altmetrics landscape. Discussions on local altmetrics sources can function as channels for introducing international scientific research. This is true especially in countries where English is not the first language or where global platforms are blocked. Including local altmetrics of different context would reveal a more comprehensive view of a research product's true impact over the world.

China, while thriving as a strong scientific power, has restricted access to many international social media platforms such as Twitter, Facebook, and YouTube. Sina Weibo is currently the most widely used microblog service. As a type-B study, the aim of this study is twofold: (1) To investigate the characteristics of an important local altmetrics source, namely Weibo, in discussing global science. It is of particular interest to see how global scientific research is discussed on Weibo by Chinese users, considering that China is a large economic entity which also has a large academic community. (2) To study the difference between Weibo and Twitter as a comparison of local altmetrics and global altmetrics. Although both of these two platforms are popular microblog services, they have completely different users from diverse cultural backgrounds. It is also of significant meaning to compare altmetrics based on these two platforms to reveal the nature of altmetrics of microblog services as a whole.

2. Research questions

The research questions are: (1) How frequently do Sina Weibo users discuss global science? (2) How immediate is Weibo altmetrics? In other words, how soon do weibos appear after the publication of the articles? (3) What are the distributions