Type of Contribution: PAPER

Usage and interpretation of alternative bibliometric indicators

Keywords: altmetrics, indicators, usage, interpretation, Slovakia

**Introduction**

It is widely accepted that social networks offer efficient communication channels not only for personal communication but also for the exchange of ideas in the area of science and research. By their very nature and omnipresence, the social networks support the concept of imminent communication and co-operation which is an integral attribute defining the modern science – on every level of information sharing, be it within a discipline, in an interdisciplinary context or even towards the external environment. Social networks thus help in promoting the transparency of scientific and research processes as well as in the ever more important area of science popularization, spreading of new scientific knowledge in the wider society. In a way, social networks represent an important precondition and, at the same time, a tool for the development of the concept and the practice of open science.

**Theoretical framework**

Altmetrics is a relatively new area of theory and practice, based on studying and applying alternative methods of scholarly activities/outputs assessment. It started to take its shape some 10 years ago and probably the most important defining moment of the field was the Altmetric Manifesto published in 2010 (Priem et al., 2010).

Traditionally, bibliometric methods have been accepted and used for the purpose of evaluating the scientific and research performance on individual, and very often on an institutional level, since the second half of the 20th century (Nicolaisen, 2007). Of course, these methods have their own limitations, two of the most notable being the lack of impact measurement from public, non-academic environment, and the long delay between the time when a traditional, printed output is published and the time when it gets first citations.

Altmetrics came up with the idea of using alternative ways of measuring the impact of scholarly outputs, based primarily on the activities that are going on on social media sites. These approaches started to take into account such criteria as reading/viewing, bookmarking, downloading, linking, liking, tweeting, recommending, analyzing and reviewing etc (Galloway and Rauh, 2013). All of these are the activities that are inherent to the technological environment of social media and are relatively easy to track and measure. Which, of course, is a source of serious criticism towards altmetrics from the partisans of traditional bibliometrics. (Fenner, 2014)

During previous decade a lot of research was carried out in the area of altmetrics, focusing on various aspects of its practical application in research assessment (e.g. Zahedi, Costas, and Wouters, 2014). There were also quite a few studies dealing with comparison between the outcomes of analyses based on traditional bibliometric measures of scientific impact and the alternative indicators (Lutz and Hoffmann, 2017). Not many articles were devoted to the way the authors/researchers perceive the altmetrics as a method of assessing their work and how they value the importance of individual altmetrics indicators.

**Research questions**

In our research, we concentrated on mapping the awareness of altmetrics among scientists in Slovakia. More specifically, we focused on investigating the possibile ways of interpreting the altmetrics indicators (FB, tweet, Mendeley Reader and others related to social networks) and the differences in interpretation of these indicators in the context of various research fields, gender and age groups.

We also tried to discover the factors affecting the interpretations (types of followers, formal and content characteristics of publication), including an effort to identify the intersections between the reasons behind “formal” citation behaviour (Garfield, 1965) and expressions of interest in social networks (Holmberg and Vainio, 2018), as well as conditions and circumstances of applicability of alternative indicators.

**Methodology and results**

The research was carried out in 2 phases. First part was based on interviews with 13 subjects, researchers from various fields of science, resulting in nearly 14 hours of records that were subsequently transcribed, RQDA analysed and coded.

Based on the results of interviews the questionnaire was prepared in Microsoft Forms, containing 40 questions of various formats and complexity. The request for answer was sent out to more than 2000 email addresses, to the researchers working at Slovak universities and the Academy of Sciences. By the end of October 2019, more than 250 responses were registered. We asked about the attitudes of scientists towards public and academic social networks, about the frequency and reasons for their usage, about the differences in the content the users communicate via public and academic networks, about the reasons for citing in the traditional publishing landscape and the reasons/background of reacting on the social media. We also wanted to know the users’ attitude towards using altmetrics in the area of research performance assessment.

Preliminary results show that there are some differences in the attitudes towards altmetrics among different groups – they are, however, not on the level of research fields but rather on the individual level, based on specific, individual attitude of a researcher towards social media in general. Social networking sites are clearly seen as an intermediate step or communication tool between preprint and official publication. Overall, alternative indicators are very often not viewed as tools adequate for the purposes of evaluating the science, but as a kind of supporting indicator, for example for starting a crowdfunding initiative.

There also seem to be differences in attaching significance to the attention that the papers get in the social media – it often depends on the kind of a public that predominantly reacts to the paper („sources of attention“). The authors value their own publications higher if the attention comes from their peers, and less if it comes from students or public, for example.

**Conclusions**

The outcomes of our survey suggest that the researchers in general perceive the altmetrics as a useful tool supplementing the traditional bibliometric measurement. They are viewed more positively in the area of social sciences and humanities where they can reflect wider and more varied forms of social impact, not only citations by academic peers. One of the most important factors of their acceptance is the way the author reflects on the role of social media as such.

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# ACKNOWLEDGMENTS

Authors wish to thank the Slovak research and development agency (APVV) for the support of this research which was carried out in the framework of the project APVV-15-0508 HIBER – Human Information Behavior in the Digital Space.