

Social media analytics dashboard for academics and the decision-making process: A systematic literature review

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Abstract

Our worlds have changed since the social media exploded, and it affects not only our social, everyday lives but also our academic endeavours. Now, academics can disseminate knowledge through social media platforms, created specifically for academics and for the public. Uses of social media are now analyzed for providing an overview of the impact of academic dissemination, might be termed as *social media analytics for academics* — a non-traditional statistical dashboard that include both citation impact metrics and webometrics of scientific publications. The analytics have potential to change the way researchers disseminate, choose study focus, research fields, and much more. Readers also could rely on the analytics in the selection process. However, along with the social media analytics, comes a need for new terminology and use of metrics to evaluate the impact of research articles. Online interaction metrics have evolved to become alternative bibliometric matrices, that view downloads, likes, shares, comments, and other similar online engagements as the indicators of impact. The impact evaluation no longer solely depends on citations, but on the various forms of engagement and activity surrounding an article. This systematic literature review attempts to uncover whether literature about dashboards on social media for academics exists. Also, whether any study has been conducted on the decision-making process that comes with the recent social media dashboards for academics. The literature review uncovered 11 texts of relevance to the topic, along with five pre-determined texts. In order to create a legible overview of the literature, a qualitative content analysis was conducted, coded with 21 themes, and merged into three categories: (1) *Bibliometrics, social media analytics and alternative metrics for the reputation of academics*, (2) *Academics' strategy for- and impact of dissemination* and (3) *Dashboard for Academics' knowledge dissemination analytics*. The study shows that no study exists about dashboards for social media for academics, nor is there a focus on the decision-making process. Thereby, a need to study dashboards on social media exist, because, not only will altmetrics on the dashboards provide authors with critical numerical information, but also create an opportunity for the readers to make decisions regarding academic work and academics. Authors will, at the same time, be able to make decisions on what to further investigate/study and how to make greater impact in the broader society than just readers of the bibliographic databases.

Keywords: social media for academics, social media analytics dashboard for academics, alternative metrics, altmetrics, scientometric analysis, bibliographic analysis

Introduction

The twenty-first century use of social media is making advancement in social and professional lives. Keeping track of family, friends, and acquaintances, finding lovers, and encountering latest news, whether it being the rise of a celebrity or death toll due to earthquake is now more accessible than ever. Scholars use social media for research dissemination and collaboration, knowledge encounter and discussion, and even data collection and analysis. Whether it being Wikipedia, ResearchGate, MySpace, Twitter, LinkedIn or Academia.edu, social media has immense disseminative and communicative possibilities. During the past decade, the reputation-evaluation of scholars has undergone massive changes, moving further away from an evaluation method commonly known as *bibliometrics*, towards *alternative metrics* (altmetrics). The academic world can no longer view citations as the primary evaluation of impact. With the latest possibilities of social media dissemination, the altmetrics provide a much more extensive overview of impact than before; counts such as downloads, views, likes, comments, shares are now considered relevant when determining the impact of an article. The aim of this paper is to investigate the extent of knowledge that exists about social media for academics, with the intention of

uncovering whether studies about dashboards on social media for academics exists. A future study will focus on how dashboards can aid academics, librarians, administrators, and the public in their decision-making processes.

Methodology

In this paper, the preferred reporting items for systematic reviews and meta-analyses (PRISMA) (Moher et al., 2009) is applied as the methodological approach to investigate the literature about social media for academics. PRISMA consists of four phases, namely, “identification”, “screening”, “eligibility” and “included” (Moher et al., 2009), which is shown in figure 1. This model is applied in the process of searching the databases of peer-reviewed articles and including relevant documents for the literature review.

The search protocol is conducted using the *Publish or Perish* software (Harzing, 2012) for extracting search results from Google scholar, and three databases, namely, IEEE Xplore, Science Direct and Primo. Different combinations of the following keywords are used in the queries: social media analytics, dashboard, research impact, social media for academics, altmetrics, and dissemination. The queries are constrained to English language, years 2007 to 2017, and peer-reviewed full-text articles. The restriction in years is based on the preliminary search outcomes indicating that the most relevant titles and abstracts on “social media for academics” were published during 2007 and onward. Along with an existing five articles the opportunity to conduct a chain search presented itself, in which pre-determined relevant literature stands ground for locating additional literature. Two of the results are, not peer-reviewed, PDF-files about social media dissemination and are relevant, because they present legible insights into social media use.

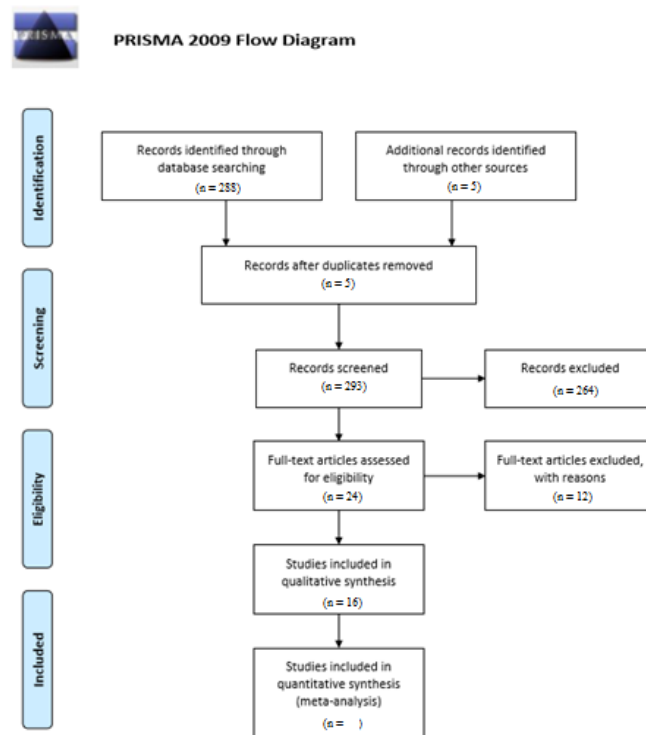


Figure 1: Flow Diagram

(Moher et al., 2009)

IEEE Xplore returned eight papers, Science Direct 176, PRIMO 83 and Publish or Perish returned with 31. The first phase of the PRISMA flow diagram, “identification”, thereby returned 288 literature results. In the second phase, “screening”, five duplicates were removed, along with a total of 264 results being excluded. The exclusions were made due to the abstracts and conclusions having different foci, such as social media use of the public, municipalities and/or governments but not on the dissemination and impact of academic work. The third phase of the flow diagram consisted of 23 results, 12 articles were excluded because of their focus on non-academic news dissemination, regarding weather forecasts, public knowledge, politics in municipalities, and sales. Thus, in the fourth phase, 11 articles were “included”.

The qualitative content analysis (Hsieh and Shannon, 2005) method is applied for the qualitative analysis of the 11 articles, in which themes and categories are identified. The method allows for the data to be coded into 21 themes and categories, and thereby making big amounts of data legible. Firstly, all the material was read, and summed up into short texts or phrases, with the intention of making the content comprehensible for further analysis (Hsieh and Shannon, 2005). Preliminary themes were then formulated. In this article, the content analysis will function as a summative analysis, that; [...] “involves counting and comparisons, usually of keywords or content, followed by the interpretation of the underlying context” (Hsieh and Shannon, 2005, p. 1277). In the process of writing this paper, the content analysis consisted of four phases: (1) the literature results were read and summarized into short texts. (2) The literature was re-read, and the short texts were compressed into sentences. (3) Preliminary themes and categories were formulated, and each article color-marked in accordance to its theme. (4) Finally, the themes were re-evaluated, and some were excluded or re-formulated, due to similarities amongst themes. The literature results have been divided into themes, by locating similarities within the literature, either in the form of statements and/or results in the conclusions. The themes are thereby developed with an outset on the similarities within the literature.

Qualitative Synthesis

This section will attempt to answer the questions: (1) What is the extent of knowledge about social media for academics? (2) Is there a study that focuses on dashboards, and the correlating decision-making process, on social media for academics? In the quest of answering the questions, the literature results will be presented, along with the themes and categories. Re-reading and re-thematization of the literature resulted in a total of 21 themes, later merge into 14, as per the Content Analysis. This deduction was important, because several of the original 21 themes had similar descriptions, thus to ensure that there are no redundant themes, the deduction was made. Lastly, the themes were categorized in the three categories; *Bibliometrics, social media analytics and alternative metrics for the reputation of academics, Academics’ strategy for- and Impact of Dissemination and Dashboard for Academics’ knowledge dissemination analytics*. The categories are formulated by viewing the themes and how each theme correlates to another theme. The categories thereby function as a summary, in the form of a sentence, to best connect the themes. Table 1 illustrates the 14 themes located amongst the literature results.

Table 1: Themes and literature

Authors	Almrousa (2011)	Lutz (2015)	Watkinson, Nicholas, Thornley, Herman, Jamali, Volantine, Allard, Levine & Tenopir (2015)	Gruzd, Staves & Wilk (2012)	Buckama, Thiels, Gas, Cabrera, Bingener-Casey & Farley (2016)	Weller (2014)	Chavda & Patel (2016)	Huang, Mihne, Martin, Bond, Mohindra, Yeh, Chin, Sanderson, Murray, Chan & Thoma (2017)	Christiano & Smarandache (2010)	Cress (2014)	Baykoucheva (2015)	Thelwall & Kousha (2014)	Ovadia (2015)	Gross & Suttor (2011)	Markgren (2011)	Smithers (2012)
Positive perspective on social media use					X		X									
Social media dissemination has no effect on impact					X											
Lack of use of social media																X
Knowledge sharing with non-academics																X
Science and the current tendencies				X					X					X		
Social media as a dissemination tool		X		X	X	X	X	X	X	X		X	X			
Changes due to digitalization		X	X								X				X	X
Distrust in digital media			X													
Social media as altmetrics		X				X										
Knowledge about altmetrics		X					X			X						
Use of altmetrics	X			X	X	X	X			X	X	X				
Personal opinion															X	X
Guide/description of social media for academics												X	X			
Altmetrics		X					X	X		X						

Category 1: Bibliometrics, social media analytics and alternative metrics for the reputation of academics

Since the mid 1950's academic accomplishments have been measured by the Impact Factor (IF) in peer-reviewed journals, first mentioned by Dr. Eugene Garfield (Baykoucheva, 2015; Cress, 2014). The impact factor is calculated by dividing the number of times an article has been cited with the number of citable items in a journal. The h-index and immediacy index are also bibliometrics that illustrate the impact of a published item. The h-index consists of the quantified scientific output from an academic, and the immediacy index cover the average number of citations during the year a paper is published. However, the means of assessing academic accomplishments no longer solely rests on citation count, but rather on a large variety of factors, incorporating both social media analytics and webometrics. Such an approach to assessing the impact of academic work is termed as alternative metrics, which cover: likes, shares, comments, downloads, mentions, tweets and retweets, scholar activity and views, depending on which social media is used (Baykoucheva, 2015). Scientometrics/Bibliometrics and alternative metrics differ on many accounts, but especially two can be emphasized: (1) Scientometrics/bibliometrics depend on *one* form of data, whereas altmetrics depend on many. (2) Scientometrics/bibliometrics take a long time to become visible, whereas altmetrics are immediate. While the bibliometric process is slow, and depend solely on citation count, other shortcomings are relevant to illuminate: the actual process of publication varies depending on discipline and publications are not "exact", because researchers may only cite articles with a high number of citations (Weller, 2015). Consequently, altmetrics seem to be relevant for creating a more open evaluation of researchers and articles. Altmetrics are defined as: "*Web-based metrics for the impact of scholarly material, with an emphasis on social media outlets as sources of data*" (Shema et al., 2013, p. 2).

With altmetrics comes the potential for reputation management, because academics can emphasize desired topics, while managing the context of who reads it, where they are from (regarding potential cooperation or workspaces), and which fields the readers are working within. Citations do not offer such means of management, because undesired or irrelevant contexts may be drawn, depending on the source of citation. Using social media for dissemination may also allow the academics to evaluate and reflect upon topics or matters at hand, by viewing the altmetrics that are received. This may trigger the question, *what* alternative metrics can be used? Though none of the literature seem to investigate such a question, one perspective is contemplated upon: alternative metrics can be utilized as a means of "predicting" future citations (Chavda and Patel, 2016), though there is no proof of a link between the number of altmetrics leading to citation (Baykoucheva, 2015). This contemplation does, however, suggest that altmetrics are not independent metrics that should be acknowledged separately from citations. Though metrics may very well function as supplements to citations, they still offer an independent value. Altmetrics offer an immediate overview of research impact, as well as the potential for evaluation of the topic interests.

Category 2: Academics' strategy for and impact of dissemination

The literature suggests that there is a continuous need for training and facilitating academics in their use of social media for dissemination. Several articles reveal strategies about how to use social media, which platforms to use, and positive and negative perspectives of using social media. Reasons for using social media are provided, these including: *reputation and career management, research profiling and promotion of accomplishments* (Gross and Suttor, 2013; Markgren, 2011; Ovadia, 2014). The negative and positive perspectives of social media are also discussed, with the negatives ranging from privacy, credibility of content and plagiarism, to personal targeting, leakage of personal metadata and negative/undesired image being formed — thus caution is advised (Gross and Suttor, 2013; Lupton, 2014). The positive aspects are listed as: possibilities of publishing, evaluation of one's work, possible research-platform, teaching, dissemination, knowledge-sharing, etc. (Lutz, 2015).

The articles also include overviews and evaluations of social media dissemination, some being very positive, but others negative in their connotations as the outcome might not have been a success. This could reside in the fact, that each study focuses on a particular research or discipline, such as those of surgical-, CJEM- and UTAUT matters, or Anthropology, Chemistry and Computer Sciences (Almoussa, 2011; Buckarma et al., 2017; Gruzd et al., 2012; Huang et al., 2017; Thelwall and Kousha, 2015). Because of these limited focuses, no over-all perspective of social media dissemination is provided in the results of the literature. Other literature focuses on personal experience and opinions, suggesting that the use of social media should be implemented amongst academics and not excluded due to mistrust. It is argued that massive possibilities are being missed because of prejudices surrounding social media (Smithers, 2012). One prejudice is that universities are institutions whose reputations needs to be managed and maintained, whereas social media has the potential to disrupt the reputation. However, researchers may benefit from listening to comments or ideas from newcomers and peers online, an approach already used in the academic society, known as peer-reviews (Christianto and Smarandache,

2010). This distrust calls for a strategy or frame that only the institutions could provide. Such means could prevent unwanted topics being raised, negative focuses, or the like.

Another element of discussion in the literatures is the concept of “Open Access”. The means of judging fellow researchers have evolved from citation and impact factor-based to downloads, readings, clicks, likes, shares, etc. Along with this change follows open access, which allows readers to access literature free of charge. However, studies show that open access is considered doubtful in quality amongst researchers, thus creating a prejudice surrounding alternative dissemination methods (Watkinson et al., 2016). Nonetheless, the potential for more citations leave researchers with a general positive view of social media (Buckarma et al., 2017).

Though the literature suggests a need for training and facilitating academics in their endeavors on social media, one aspect seems to be forgotten: how are academics supposed to gain knowledge about metrics and alternative metrics? Since altmetrics range widely, and some are more descriptive than others, this would seem to be a topic of relevance. As illustrated in Table 2, many of the alternative metrics can be incomprehensible and differ greatly depending on the social media. Reasons for this being an uncovered topic, which is possible to contemplate on — since the use of social media for dissemination is a relatively new topic, it may yet not have sparked an interest amongst academics as a research topic.

Category 3: Dashboard for Academics’ knowledge dissemination analytics

Since no literature accumulated in this review cover or investigate the dashboards on social media analytics for academics, a google search was conducted to learn more. This search mainly resulted in support-sites from social media, of which ResearchGate, Facebook, Google Scholar, Academia, Twitter and LinkedIn were chosen. Table 2 illustrates the alternative metrics and dashboard contents that were located as a result.

Table 2: Altmetrics on social media

Social media \ Altmetrics	LinkedIn	Google scholar	Twitter	ResearchGate	Facebook	Academia
Searches						X
Traffic sources						X
Pages read						X
Percentage of viewers						X
Jobs						X
Research fields						X
Universities	X					X
Cities	X					X
Countries	X					X
Views						X
Downloads						X
Unique visitors						X
Mentions					X	
Shares	X				X	
Comments	X				X	
New visitors					X	
Likes	X		X		X	
Visitors	X				X	
Reads				X		
Citations				X		
Recommendations				X		
Project updates				X		
Questions				X		
RG score				X		
Exposure			X			
Engagement			X			
Frequency of engagement			X			
App install attempts			X			
App opens			X			
Detail expands			X			
Embedded media clicks			X			

Engagements			X			
Engagement rates			X			
Follows	X		X			
Hashtag-clicks			X			
Impressions			X			
Link-clicks			X			
Permalink clicks			X			
Replies			X			
Retweets			X			
Shared via email			X			
User profile clicks			X			
Updates	X					
H-median		X				
H-index		X				
H-core		X				

Many of the alternative metrics are comprehensible and easy to understand, because the terms are used in our everyday lives on social media. However, those of us that are not Twitter or ResearchGate savvy, may require additional knowledge about some terms. Moreover, it seems that several of the terms are similar, though the terminology differs. “Countries”, “cities” and “universities” consists of the location of views, which are also described as “traffic sources” on Academia.edu. “New visitors” and “unique visitors” may also be argued to be similar, because both entail new coming visitors to a personal profile. “Mentions” and “recommendations” also appear to have the same quality, because a source would be referring to, or recommending, a post to others or the author of a text. Table 2 illustrates, that there are inconsistencies when it comes to the terminology of altmetrics, which can cause unclear outcomes. If there are no guidelines or restrictions for what an altmetric consists of, the validity may be affected.

The content of the dashboards available on these sites varies immensely, which leaves the question: what constitutes as an *alternative metric*? Previously it was mentioned, that alternative metrics include both *scientometrics* or *bibliometrics* and *web-based metrics* (with an *emphasis on social media analytics*), yet no distinct definitions are available. The variation, and lack of definition of altmetrics, can have both negative and positive effects; positive because, all activity surrounding an article or paper is considered relevant, but negative because all activity may not be relevant or contributing to a valid overview of impact. Meanwhile, though the altmetrics may need specification, the social media sites have different purposes and consequently different altmetrics to cover impact. LinkedIn was launched as a job-oriented networking site, whereas Facebook is defined as a social networking site, which causes a need for separate altmetrics. ResearchGate and Academia are developed as knowledge dissemination platforms for academics and contains a different metrics, which have not been studied as alternative metrics. Creating restrictions for what constitutes as an altmetric may therefore not be desirable, because the purpose of social media differs, and dashboards of the analytics vary according to those purposes.

Conclusion

The literature results are considered relevant in relation to the question of, whether research about dashboards on social media for academics and the correlating decision-making process exists. However, the literature results show that studies about the topic is scarce. Literature about dissemination and alternative metrics is plentiful but does not cover both scientometrics and web-based (or social media metrics). Social media as a dissemination method offers immediate overviews of impact, whereas assessment based on citations take two years or more before becoming visible (Chavda and Patel, 2016). Even though metrics that evaluate a researcher’s impact on the world have changed since the Web 2.0, citations are still considered the main impact-evaluation (Gruzd et al., 2012). The reviewed literature do not, however, describe how academics use social media analytics in their endeavors, nor do any current studies view the decision-making process in relation to the use of analytics. Thus, a study regarding this matter is relevant to conduct because the analytics provided on the social media dashboards offer insights into the impact of academics’ knowledge dissemination activities. A study is therefore expected to emerge from this paper with the intention of uncovering the dashboards on social media for academics and the associated decision-making process.

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