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More the Tweets More the Citations: Do Altmetric Variables Contribute to Citations?

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Abstract

The present study was carried out to examine the alternative metrics variables twitter and its relationships with citation pattern for scholarly articles. This study was carried on with top 100 twitted articles for the year 2014-15 and the second set of data was specific to the "Genomic" subject domain, around 131 hot paper was identified and their twittes and citation data was studied. From the study it was found that the top tweeted articles did not have any kind of correlation with citation its β value was 0.071. While the second set of data from the "Genomic" subject showed a strong positive linear correlation between the Twitter count and Citation counts its β value was 0.72.

Keywords: Alternative Metrics, Altmetric, Citation, New Media, Twitter

1. Introduction

Web 2.0 is characterised by greater user interactivity and collaboration. The components of Web 2.0 are Social Networking Site (SNS) like Wikipedia, Facebook, Twitter, and LinkedIn. These have changed the communication and information transmission pattern. SNS have penetrated all walks of life and are not confined to conventional communication. In the past scholarly communication were made only via scholarly journals but now blogs and other SNS have penetrated that space. Till now the quality of a scholarly communication is gauged by the number of citation, h-index and i-10 index. A new entrant which tries to explain the reach of scholarly communication is Altmetric Scores which is calculated using variables like News, Blogs Tweets etc.[9] One important variable which contributes to Altmetric Score is "Twitter"; Tweets can predict the citation count for a publication.

2. Literature Review

If we can we predict the citations an article may receive based on number of tweets, altmetric can be used as a prediction tool[12]. Publications in social sciences, humanities and medical and life sciences show high altmetric scores[3]. But presence of paper on these platforms is very low[8]. In the present competitive academic environment, the quality of a scholarly article is quantified on the basis of citations. There are 33 different ways for increasing the citation count[4]. Some write blog posts highlighting their findings to have a wider reach. Some are cited in blog also, blog citations can be used as an alternative metric source[10,15]. Facebook is another medium to get feedback on an article which may be likes and dislikes. The Facebook likes can also be used to predict the citations. This social media indicator can be a potential early indicator of the impact of a scientific work in a particular domain of knowledge[14]. From the literature it is evident that varies studies have been carried out on altmetrics. However, there is no study on the relation between altmetrics and citations.

3. Methodology

For the present study two types of data was collected. The first type was top 100 tweeted articles for the year 2014-2015, as the above set of top tweeted articles was from different subjects like biological sciences, physical sciences, medical and health sciences and more. The second kind of data was collected for a specific area, viz., Genomics.

Top 100 tweeted articles for the year 2014-2015 were identified from Altmetric.com and from this site the tweet count data on the top 100 articles for the two

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years was collected. For each of the papers citation data was collected using "Google scholar". For the second set of data specific to Genomic domain, the prolific authors were identified from[16] published by Thomson and Reuters; 12 authors have penned 131 articles in 2014. The citation and tweet data for all 131 articles was collected using the above tools.

4. Limitations

This study has some limitations:

- It is limited to the top 100 tweeted articles, and
- The top 100 tweeted articles are not on the same subject.

5. Objectives of Study

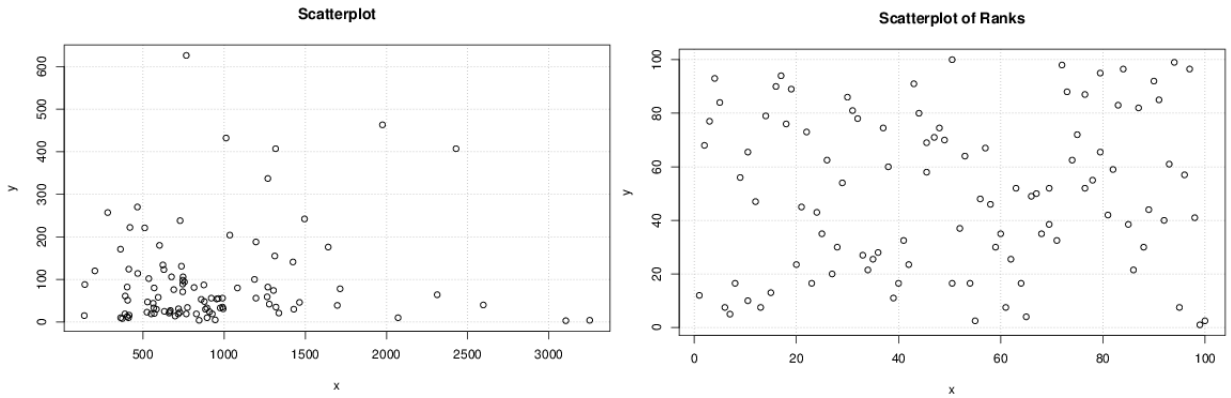
- To study the correlation between the top 100 tweeted articles and citations to these; and
- To study the correlation between citations and tweets received by papers in Genomics.

6. Reflection of Academic Writing on Social Media

In the present social media environment communication is both fast and focused. In the traditional print method, it took years to get recognition for a piece of writing. In the current platform authors are using social media to publicise their own work and to network with their peers and also maintain a professional identify in the virtual world[2]. Social media comprises of various communication channels like, Twitter, Facebook, Blog, Wiki's, News post, Google+ etc. The above communication tools play a vital role in disseminating information. These web tools had been recognised as an important medium in scholarly communication and tools like Twitter have prompted Modern Language Association publishers of one of the major standards for technical writing, to come out with formal guidelines on how to cite Twittes[7]. At present twitter has average of 313 million monthly active users, which generates around 8TB of data daily[11]. This podium disseminates information on various fronts; one important area is scientific literature. Growth of scientific literature on twitters had been treated as s subject research[6]. Web 2.0 variables are brought together to form a new metric called Altmetric, which will inform an author how his/her writings is perceived by the various audience using the above tools. Now the Altmetric score is considered parallels to citation score[13].

7. Data Analysis

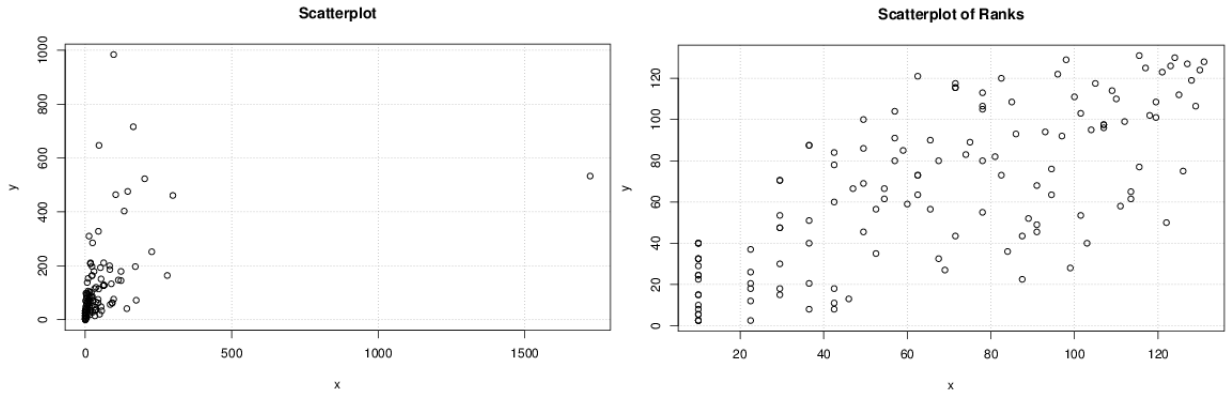
From the data for the year 2014-15 it is clear from the scatter plot that there is no pattern indicating correlation between Tweets and Citations. The ϐ value is .071, which clearly suggests that there is no correlation between an article getting citations and the number of tweets the paper receives. The broad picture for the top 100 tweeted



(a) (b)

Figure 1. (a-b) Scatter plot between Twittes vs citation of top100 Twitted articles of 2014-15.

Spearman Rank Correlation	
rho	0.071
2-sided p-value	0.477
S	154673.376656547



(c) (d)

Figure 2. (c-d) Scatter plot between Twittes vs citation of the articles from Genomic subject.

Spearman Rank Correlation	
rho	0.72
2-sided p-value	1.19
S	102964.079922889

articles (total of 200 articles for the two years) suggests that they had received a total of 18,8,644 tweets and these had been cited by 28,844 papers. The above 200 articles were classified under thirteen subjects including biological science, physical science, medical and health science, etc. The major share among the top hundred articles was from the subject medical and health science and biological science. These two subjects contributed 118 and the other 82 was contributed by other eleven subjects; the data for the subjects even when considered individually suggested any kind of correlation between citations and tweets (Figure 1-2).

For the set of data comprising of 131 papers in Genomics research published in the year 2014, the tweet pattern was different; in the above sample, the articles had received more tweets than citation. But in Genomics the pattern is reverse, 131 papers had received 14,679 citations and 6,599 tweets; the maximum number of citations received by a paper was 984 and maximum tweets by a paper were 1723. From the Figure 3-4, it is evident that strong positive linear correlation exits between the two variables; $\theta = .72$ for the 131 articles in Genomics. It may be concluded from the data that there is a positive linear correlation between citations and tweets a paper receives confirming the findings in the previous study[5].

8. Conclusion

The current study suggests a positive correlation in the Genomics between number of tweets for a paper and the number of citations it receives[17]. Alternative metrics and the dynamics of social media are still evolving. Tweeter has still not received attention in many areas; for example papers in material sciences received good citations but were hardly discussed in the new media environment. Hence more research is necessary in order to determine and validate these potential types of impact[3]. As most of the former empirical studies on altmetrics have pointed out, we need further studies (including a broad range of altmetrics) dealing with the question of the specific impacts of altmetrics[1] the present study also falls in the same line.

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