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Impact of Scholarly Articles on Social media: An Altmetric Mapping of University of Calicut, Kerala-India.

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ABSTRACT

Article level metrics (Altmetrics) is a source of a wide range of metrics regarding the scholarly impact of articles by generating the statistics of usage, citations, bookmarks, social shares, attentions, and online comments on various social media and other platforms. The paper is an attempt to showcase the state of the art of the most viewed fifteen scholarly articles of the University of Calicut through various social media platforms and which were selected and ranked based on altmetric attention score in the Dimension database during January 2021. The study intends to explore the most viewable social media platforms to disseminate the scholarly data by the University of Calicut, and also to check the Pearson correlation between the altmetric attention score with citations from different scholarly databases like Dimension, Google Scholar, and Web of Science. These selected fifteen articles were published during the period between 2009 and 2016. The findings reveal that Mendeley and Twitter are the most viewed social media platforms used to disseminate scholarly data and the majority of Twitter users are from the United States of America, the United Kingdom, and India. The scholarly articles of the University of Calicut have received more attention in Mendeley from members of the public followed by scientists, science communicators, and practitioners including doctors and other healthcare professionals. Mendeley possesses major readability contribution from the discipline of Agricultural and Biological science and followed by Medicine and Dentistry. As the 'p' value comes in the range of 0.5 to 0.7, altmetric attention score is not significantly correlated with citation scores from the dimension, Google scholar, and Web of science.

Keywords: Altmetrics, Social media, Mendeley, Scholarly article, Citation, Twitter.

1. INTRODUCTION

The scholarly landscape has undergone a drastic change in the metric studies from bibliometrics to altmetrics to measure the scholarly impact. The entry of social media into the scene also totally changed the equation of traditional metric calculation into the social web usage-based metric. At present, a paradigm shift in social media can be seen in the use and acceptability of the scholarly communication process which doubled its relevance and online interactions in this COVID-19 pandemic age. The new alternative metric called altmetrics which is introduced by Jason Priem's tweet in 2010 helps to measure the immediate research attention from the broad spectrum of academic as well as non-academic audiences when compared to other classical metrics (Drongstrup et al., 2020). Social media can go beyond the organizational boundaries of academic communication and act as an open equal platform for providing information (Chinchilla-Rodríguez et al., 2016).

The faculties of various disciplines around the world struggle to find out the new way to publicize the changing scholarly value with lots of tools and also to track its online attention. Simultaneously, librarians were engaging in promotional activities to disseminate the researcher's knowledge about the current trends with new metrics of impact (Roemer & Borchardt, 2012). The usage statistics measurement also changed according to the evolution of new metrics. The visibility of scholarly content is not only based on the citation counts but also reflected on counts of downloads, bookmarks, reads, saves, mentions as in the form of tweets in the various social media platforms like Twitter, Facebook, Mendeley, etc. (Huang et al., 2018). On the other hand, there is a need to recheck the alternative indicators before taking them to use for evaluating the societal impact because it is not authentically originated from the trusted sources which are not peer-reviewed or not in the scholarly publication process. For example, In the case of twitter lots of unknown tweets by whom and why, it was not clear if Twitter bots dwarfed human tweeting, whether academic tweeters outnumber the public when citing academic research (Thelwall, 2020). A scientific screening should be needed while dealing with alternative indicators in social media platforms.

The paper is an attempt to showcase the state of the art of the most viewed fifteen scholarly articles of the University of Calicut through various social media platforms which were selected and ranked based on altmetric attention score in the Dimension database. The most social

participatory platform of discussion and the correlation between the attention score and citation score are also discussed.

ALTMETRIC DONUT AND ITS COLORS

The Colors of the Donut

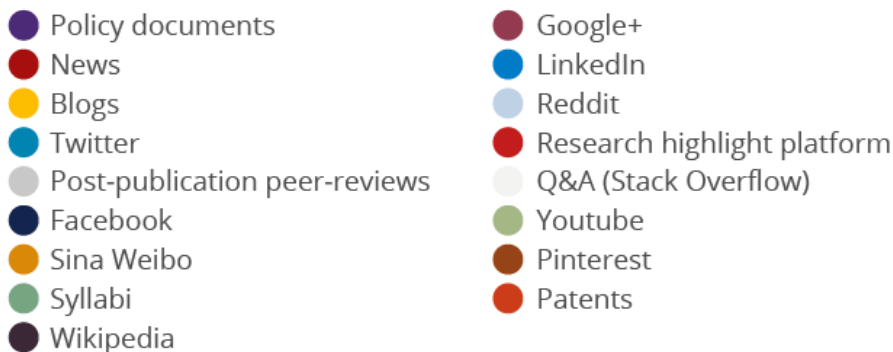


Figure No.1 Altmetric donut and its colors (Altmetric, 2017)

The altmetric donut has different colors to denote the various sources of attention received. The shade changes of colors are determined according to the mentions in the main and other sources. So, the colors remain changed daily as per the attention obtained. Figure retrieved from <https://www.altmetric.com/about-our-data/the-donut-and-score/> and accessed on 19th January 2021.

THE UNIVERSITY OF CALICUT: A PROFILE

The University of Calicut established in 1968, largest university in Kerala, India. The main is to provide excellence in quality education and research. It also emphasizes on fostering human resource and promoting productive research for the humanity. The motto is 'Nirmaya Karmanasree'. Presently, it holds 30 post-graduate and 426 affiliated colleges. The reputation of institution and accreditation is based on the research productivity of the academic community of the concerned institution.

REVIEW OF RELATED STUDIES

Over the past decade, extensive studies on altmetric have been done to explore the different areas of alternative metrics or article-level metrics. Tattersall & Carroll (2018) analyzed the policy impact of 1463 research articles produced by the authors of the University of Sheffield using

altmetric.com. The research topics with greater impact were Medicine, Dentistry health and followed by Social and Pure science. Costas et al.,(2015) made a correlation study on altmetric indicator with citation and it showed a positive relationship between them which does not reflect the same kind of impact as the citation. Another study proved a moderate correlation between the AAS and citation in cardiovascular articles (Barakat et al., 2018). AAS was poorly correlated with citation counts of high-impact general medicine journals (Barakat et al., 2019). Mendeley and Twitter were the major social media by health literacy scholars for sharing scientific output (Mansoureh Serati Shirazi & Marzieh Goltaji, 2018)(Shiah et al., 2020) and the dissemination media of scholarly communication of the University of Madras (Batcha M, 2018). It is evident from the previous studies that there were no studies carried out in this specific topic.

2. OBJECTIVES OF THE STUDY

2.1 To analyze the current state of the art of altmetric data of the University of Calicut.

2.2 To frame out the scholarly impact of articles of the University of Calicut on various social media platforms.

2.3 To explore the most used social media platforms to disseminate the scholarly data by the University of Calicut.

2.4 To correlate the altmetric attention score with citations from different scholarly databases like Dimension, Google Scholar, and Web of Science.

3. METHODOLOGY

The study is used as a method of metric analysis through the free version of a comprehensive database namely 'Dimension' in which partnership with Google cloud and integrated with BigQuery. The Dimension database has access to multiple content types including patent, clinical trials, datasets, grants, and policy documents. The study was restricted to the fifteen articles of the University of Calicut selected based on top altmetric attention score from 1st January to 30th January 2021 and the citations retrieved from Google scholar. The publishing years of these fifteen articles range from 2009 to 2020. The investigators used the 20th edition SPSS software package to analyze the collected data and find out correlations of citation scores and altmetric scores. Microsoft Excel was used to make the graphical representation of the altmetric data.

4. DATA ANALYSIS & INTERPRETATIONS

5.1 Ranked list of scholarly articles of the University of Calicut.

The top fifteen scholarly articles of the University of Calicut are selected and ranked according to the altmetric attention score in the Dimension database which is tabulated below in table no.1

Table No.1. Ranked list of scholarly articles of University of Calicut

Article- No.	Title of Article/Journal	Authors	Year	Altmetric Attention Score	Dimension Citation Score	Google Scholar Citation	Web of Science
1.	Major range extensions for two genera of the parasitoid subtribeFacitorina, with a new generic synonymy (Braconidae, Rogadinae, Yeliconini)/ ZooKeys	Butcher et al.	2016	114	3	3	4
2.	Two new phragmotic ant species from Africa: morphology and next-generation sequencing solve a caste association problem in the genus Carebara Westwood/ ZooKeys	Fischer et al.	2015	74	12	22	16
3.	Origin of lithium enrichment in k giants/The Astrophysical Journal Letters	Bharat Kumar et al.	2011	71	79	114	36
4.	Pros and cons of CLA consumption: an insight from clinical evidence/Nutrition & Metabolism	Benjamin et al.	2015	69	42	67	44
5.	Virgin coconut oil maintains redox status and improves glycemic conditions in high fructose-fed rats/ Journal of Food Science and Technology	Narayanankutty et al.	2015	58	35	56	27
6.	Eye Movement Desensitization and Reprocessing: A Conceptual Framework/Indian Journal of Psychological Medicine	Menon et al.	2010	44	2	8	0
7.	Conjugated linoleic acids as functional food: an insight into their health benefits/ Nutrition & Metabolism	Benjamin et al.	2009	40	159	306	163
8.	Natural history of JavetapallidaBaly, 1858 on Phoenix palms in India (Chrysomelidae, Cassidinae,Coelaenomenoderini)/ ZooKeys	Shameem et al.	2016	29	1	2	1

9.	Gut Microbial Dysbiosis in Indian Children with Autism Spectrum Disorders/ Microbial Ecology	Pulikkan, et al.	2018	27	49	54	32
10.	Sizing and Desizing of Cotton and Polyester Yarns Using Liquid and Supercritical Carbon Dioxide with Non fluorous CO ₂ -Philes as Size Compounds/ACS Sustainable Chemistry & Engineering	Antony et al.	2018	23	0	0	1
11.	Fungal Planet description sheets: 400–468/ Persoonia	Crous et al.	2016	22	104	151	123
12.	Final-impression techniques and materials for making complete and removable partial dentures/Cochrane Database of Systematic Reviews	Jayaraman et al.	2018	21	5	12	2
13.	A qualitative study on perspective of parents of children with autism on the nature of parent–professional relationship in Kerala, India/Autism	Ramachandran et al.	2020	18	0	0	0
14.	Paying for Hemodialysis in Kerala, India: A Description of Household Financial Hardship in the Context of Medical Subsidy Kidney International Reports	Bradshaw et al.	2018	18	10	13	7
15.	Phthalates impact human health: Epidemiological evidences and plausible mechanism of action/Journal of Hazardous Materials	Benjamin et al.	2017	16	140	176	120

Table no.1 displayed fifteen articles that have received high AAS which provides an indicator of the amount of attention that has been received through various social media platforms like Twitter, Mendeley, Facebook, blogs, Wikipedia, etc. The citation from the different databases like Dimension, Google Scholar, and Web of science also tabulated. These selected fifteen articles were published during the period between 2009 and 2016. The altmetric attention score obtained 114 for the 1st article and it decreased to 16 at the 15th article. The highest citations from various databases were secured by the 7th article written by Benjamin et.al, published in the journal Nutrition and metabolism by scoring 159 from Dimension, 306 from Google scholar, 163 from Web of science, and AAS of 40 followed by the 15th article and 11th article authored by Benjamin et.al, and Crous et.al respectively. The other articles also have received citations at a moderate level.

5.2 Altmetric attention score and various citations of University of Calicut

Altmetric attention score (AAS) represents the amount of social media attention received for scholarly articles of the University of Calicut. The citation from the various sources used to measure the scientific impact in the specific field of discipline. Figure no.2 indicated the AAS and citations of scholarly articles of the University of Calicut.

Figure No.2. AAS and various citations of University of Calicut

AAS	114	74	71	69	58	44	40	29	27	23	22	21	18	18	16	644
Dimension Citation score	3	12	79	42	35	2	159	1	49	0	104	5	0	10	140	641
Mendeley	6	34	14	148	72	22	197	8	159	12	86	187	25	44	296	1310
Twitter	9	5	--	9	11	21	2	4	23	1	6	14	17	27	5	140
Facebook	6	2	--	7	2	2	--	--	--	--	2	--	1	--	--	22
Blogs	1	2	--	2	--	1	2	1	1	--	--	2	--	--	--	12
News Outlets	13	7	9	6	--	2	--	2	1	2	2	--	--	--	1	45
Wikipedia Page	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	3
Google+ User	1	2	--	2	50	--	2	--	--	--	--	--	--	--	--	57
Video Uploads	--	--	--	3	1	--	--	--	--	--	--	--	--	--	1	5
Patent/ CiteUlike	--	--	--	--	--	--	5	--	--	--	--	--	--	--	--	5

The global social media visibility of selected articles produced by the University of Calicut has shown in table no.2. All of the selected articles have a good number of online visibilities through various social media platforms like Twitter, Mendeley, Facebook, Blogs, Wikipedia, Google, etc. The online attention reflects the social impact of research outputs and which gives the statistics of academic talks in the connected world. Mendeley has wider visibility than Twitter and Facebook. The 15th article and 7th article have received total Mendeley views of 296,197 respectively which were authored by Benjamin et. al. The 12th, 9th, and 4th article has scored 187, 159, and 148 Mendeley readers which were contributed by Jayaraman et al., Pulikkan, et al., and Benjamin et al correspondingly. The 14th, 9th and 6th article has more than twenty views on Twitter and only 5th article has received 50 Google plus users. The 1st and 4th articles were mentioned more than five times through Facebook.

Germany	--	--	--	1	--	--	--	1	--	--	--	--	--	--	--	2
Poland	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	1
France	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	1
Spain	--	--	--	--	2	--	--	--	--	--	--	1	1	--	--	4
Canada	--	--	--	--	1	1	1	--	1	--	--	--	--	--	--	4
Philippines	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	1
Netherland	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	1
India	--	--	--	--	--	--	--	--	1	--	--	--	4	12		17
South Africa	--	--	--	--	--	--	--	--	1	--	--	1	1	1	1	5
Saudi Arabia	--	--	--	--	--	--	--	--	1	--	--	--	--	1	--	2
Netherland	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	2
Ecuador	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	1
Chile	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	2
Unknown	6	1		3	3	6	1	2	12		3	6	5	5	6	59

. The overall analysis showed that most of the Twitter users 30, 23, and 12 from the United States of America, United Kingdom, and India respectively. A total of 59 users from the unknown category which means those users did not complete their profile by adding the subject domains.

5.5 Category of Twitter readers of scholarly articles of University of Calicut

Based on the user's given information on the Twitter profile, the Dimension database has been divided into four groups such as members of the public, scientists, science communicators, and practitioners.

Table no.4 Demographic distribution of Twitter users of scholarly articles

Category of Twitter Users	Article no.															Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Members of the Public	5	4	--	7	10	19	--	1	18	--	6	9	13	16	5	113
Scientists	1	--	--	1	1	--	--	2	3	--	--	--	3	5	--	16
Science Communicators (Journalist, Bloggers, Editors)	1	1	--	--	--	--	1	1	2	--	--	1	3	3	--	13
Practitioners(Doctors, Other healthcare professionals)	--	--	--	1	--	2	1	--	--	--	--	4	--	3	--	12

The scholarly articles of the University of Calicut have received more attention from members of the public (113) followed by scientists (16), science communicators (13), and practitioners (12) including doctors and other healthcare professionals.

5.6 Category wise distribution Mendeley readers' professional status

Mendeley is one of the popular social platforms and reference management tool for information seekers can connect, collaborate, search, discover, and share the thoughts and ideas with the support of a wide spectrum of its resources.

Table no. 4 Distribution of Mendeley Readers by professional status

Mendeley Readers	Article Number															Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Bachelor Student	--	--	--	25	14	--	29	1	27	2	7	26	1	--	51	183
Master Student	1	3	3	31	10	4	23	1	22	--	9	38	--	8	38	191
Postgraduate Student	--	--	--	--	--	3	--	--	13	--	--	14	3	3	--	36
Researcher	1	8	2	19	7	3	31	--	23	3	18	13	7	5	35	175
Ph.D./Doctoral Student	1	7	5	15	9	4	57	3	--	2	11	15	5	3	42	179
Assistant Professor/Lecturer/Professor	1	--	3	--	4	--	--	2	21	2	7	--	2	--	--	42
Unknown/	1	13	--	58	28	8	57	1	53	3	34	81	7	25	130	499

others																
Mendeley Total	6	34	2	148	72	22	197	8	159	12	86	187	25	44	296	1298

Table no. 4 describes the category of Mendeley readers according to professional status. Master students comprise as it major part by scoring 191 readers and followed by bachelor students with a score of 183. The researchers and Ph.D. /Doctoral students have received 175 and 179 numbers of readers and a large majority did not complete their profile by adding their professional status. So, it kept unknown by having 499 readers.

5.7 Discipline-wise distribution of Mendeley readers

Mendeley readership to determine the scholarly impact of articles among the academia. The readership from various subject domains was analyzed.

Table no.5 Discipline-wise distribution of Mendeley readers

Discipline	Article Number															Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Agricultural & Biological Science	5	20	--	31	12	--	80	5	14	1	39	--	2	--	30	239
Biochemistry, Genetics & Molecular Biology	1	--	--	14	7	--	13	1	20	--	6	3	--	2	28	95
Environmental Science	--	5	--	--	--	--	--	--	--	--	3	--	--	--	32	40
Physics & Astronomy	--	14	--	--	--	--	--	--	--	--	--	--	--	--	--	14
Medicine & Dentistry	--	--	--	25	8	--	21	--	27	--	4	90	--	3	29	207
Nursing and Health Professionals	--	--	--	10	9	4	--	--	--	--	--	9	--	3	--	35
Pharmacology, Toxicology & Pharmaceutical Science	--	--	--	7	--	2	--	--	--	--	--	5	--	--	--	14
Immunology & Microbiology	--	--	--	--	--	--	--	--	--	--	4	--	--	--	--	4
Chemistry	--	--	--	--	4	--	16	--	--	4	--	--	--	--	17	41

Psychology	--	--	--	--	--	8	--	--	12	--	--	--	6	--	--	26
Social Science	--	--	--	--	--	2	--	--	--	--	--	--	3	4	--	9
Neuroscience	--	--	--	--	--	--	--	--	15	--	--	--	--	--	--	15
Business, Management & Accounting	--	--	--	--	--	--	--	--	--	--	--	--	3	3	--	6
VeternaryScience	--	--	--	--	--	--	7	--	--	--	--	--	--	--	--	7
Engineering, Computer Science	--	--	--	--	--	--	--	--	--	2	--	2	--	--	--	4
Arts & Humanities	--	--	--	--	--	2	--	--	--	3	--	--	--	--	--	5
Others	--	--	--	61	32	4	60	2	71	2	30	77	9	22	160	530

Table no.5 indicated the discipline-wise distribution of Mendeley readers of articles of the University of Calicut. A total of 239 readers from the disciplines of Agricultural and Biological science followed by 207 readers in Medicine and Dentistry. All of the tabulated disciplines possess readers and most of the readers didn't mention their subject domain, therefore 530 numbers of them come under the unknown category.

5.8 Correlation between the Citation score Altmetric Attention score

Table no. 6 Pearson Correlation between the Citation score Altmetric Attention score

	Dimension	Google Scholar	Web of Science
Pearson Correlation (r)	-.146	-.102	-.174
Altmetric Attention Score Sig. (2-tailed) (p)	.603	.717	.534
N	15	15	15

Pearson correlation was used to determine the relationship between altmetric attention score and various citation scores from the dimension, Google scholar, and Web of science. There is no significant correlation found between the AAS and citations score as the 'p' value comes in the range of 0.5 to 0.7.

6. CONCLUSION

The societal impact has a major role in the overall development of the country which is determined by what people read and do. Social media have wider recognition and greater acceptability than that of any of the communication media. Therefore the social interactions have high value and help them stay connected with the scholar community. The scholarly impact on social media helps to get an idea about the social talks about the scholarly communication activities and research. The past century fails to quantify the social interactions and it measured since 2010 with the discovery of altmetrics by Jason Priem. The social media impact is identified through various actions performed by the reader like downloads tweets, bookmarks, reads, save, etc. Even though it is a better metric to know the social attentions but also facing challenges like Twitterbots dwarfed human tweeting. The study mainly focused on mapping the scholarly impact of scholarly articles of the University of Calicut on social media identified that Mendeley and Twitter are the most disseminating platforms and lack of positive correlation exists in between the altmetric score and citation score. The social media platform has global visibility with wider coverage of audiences from various professional communities of different disciplines.

REFERENCES

- Altmetric. (2017). *The donut and Altmetric Attention Score – Altmetric*. retrieved from <https://www.altmetric.com/about-our-data/the-donut-and-score/> on 21st January 2021.
- Barakat, A. F., Nimri, N., Shokr, M., Mahtta, D., Mansoor, H., Masri, A., & Elgendy, I. Y. (2019). Correlation of Altmetric Attention Score and Citations for High-Impact General Medicine Journals: a Cross-sectional Study. *Journal of General Internal Medicine*, 34(6), 825–827. <https://doi.org/10.1007/s11606-019-04838-6>
- Batcha M, S. (2018). Do Citations make Impact on Social Media? : An Altmetric Analysis of Top Cited Articles of University of Madras, South India. *Library Philosophy and Practice (e-Journal)*, 1795. <https://digitalcommons.unl.edu/libphilprac/1795>
- Costas, R., Zahedi, Z., & Wouters, P. (2015). Do “altmetrics” correlate with citations? Extensive comparison of altmetric indicators with citations from a multidisciplinary perspective.

Journal of the Association for Information Science and Technology, 66(10), 2003–2019.
<https://doi.org/10.1002/asi.23309>

Huang, W., Wang, P., & Wu, Q. (2018). *A correlation comparison between Altmetric Attention Scores and citations for six PLOS journals*. <https://doi.org/10.1371/journal.pone.0194962>

Mansoureh Serati Shirazi, & Marzieh Goltaji. (2018). An Altmetric Study on Scientific Articles of “Health Literacy” in Social Media. *Payeshj*, 17(3), 249–256.
<http://payeshjournal.ir/article-1-43-en.html>

Roemer, R. C., & Borchardt, R. (2012). From bibliometrics to altmetrics: A changing scholarly landscape. *College & Research Libraries News*, 73(10), 596–600.
<https://doi.org/10.5860/crln.73.10.8846>

Shiah, E., Heiman, A. J., & Ricci, J. A. (2020). Analysis of alternative metrics of research impact: A correlation comparison between altmetric attention scores and traditional bibliometrics among plastic surgery research. *Plastic and Reconstructive Surgery*, 146(5), 664E-670E. <https://doi.org/10.1097/PRS.00000000000007270>

Tattersall, A., & Carroll, C. (2018). What Can Altmetric.com Tell Us About Policy Citations of Research? An Analysis of Altmetric.com Data for Research Articles from the University of Sheffield. *Frontiers in Research Metrics and Analytics*, 2, 8.
<https://doi.org/10.3389/frma.2017.00009>

Thelwall, M. (2020). The Pros and Cons of the Use of Altmetrics in Research Assessment. *Scholarly Assessment Reports*, 2(1). <https://doi.org/10.29024/sar.10>

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