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Do Citations make Impact on Social Media? : An Altmetric Analysis of Top Cited Articles of University of Madras, South India

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Abstract

Altmetrics is an emergent research area whereby social media is applied as a source of metrics to assess scholarly impact. Over the most recent couple of years, the enthusiasm for altmetrics has developed, offering ascend to numerous inquiries in regards to their potential advantages and difficulties. As another developing field, Altmetrics has turned into a trailblazer, and got a decent arrangement of consideration by specialists associated with the assessment of logical research. This paper aims to analyse top 15 articles of University of Madras which have scored high citations. It aims to find out to what extend the top cited articles have secured altmetric scores. Do the citation score really create any impact on the social media? This is the research question formulated and comparing tool features, social media data sources, and social media events provided by Altmetric aggregators and thus they are analysed. Spearman Rank correlation metrics shows high correlation between the ranks of citations and Altmetric scores. The tweeter and Mendeley are the media through the scholarly communication highly disseminate. The analysis of readers shows that United States tops the list, followed by United Kingdom and Spain and are mainly educational ones with Ph.D, Post Graduate and Masters. The Practitioners are observed to be the voracious readers of the social media resulting in the present altmetric analysis.

Key words: Altmetrics, Tweeter, Mendeley, Spearman Rank Correlation, Scientometrics. University of Madras.

Introduction

Since the 1960s, citations have been broadly utilized as a part of research assessment and checking. Notwithstanding, it is recognized that only they can't catch the full range of research impact (MacRoberts & MacRoberts, 1989; Kostoff, 1998). For example, uncited publications are still useful (Bornmann & Marx, 2012) partly because many non-author professionals also read research articles (Price & Gürsey, 1975; Tenopir & King, 2000). The impacts of research can go beyond knowledge advancement within science, and thus the influence of research publications in social, economic, cultural and environmental contexts should be recognized. (Bornmann, 2012; Thelwall, 2012) in research evaluation. Similarly, the Higher Education Funding Council for England (HEFCE), in the new Research Excellence Framework (REF) will think about a wide range of research impact outside scholarly world (HEFCE, 2011). In this manner, different measures are imperative (Martin, 1996) to gauge the more extensive impact of research productions. Measures got from use information have been proposed (Bollen, Van De Sompel, Hagberg, and Chute, 2009) to catch more extensive research impact yet because of an absence of data about clients of scholastic distributions the precise examinations concerning the settings where explore papers are utilized have not been directed yet. (Mohammadi, Thelwall, Haustein, & Larivière, 2015)

The engagement of researchers with various social web stages gives a novel chance to quantify diverse sorts of research impact (Cronin, 2013a) and can catch numerous sorts of non-logical research impact (Bornmann, 2012). Specifically, social web notices of scientific articles can be recovered from different stages and are frequently accumulated under the umbrella term Altmetrics (Priem, Piwowar, and Hemminger, 2012). The scholastic social site Mendeley is a platform for clients to oversee academic references, make online profiles and interact with peers. The various clients (approx. 2.6 million in October 2013), vast database, and open Applications Programming Interface (API) of Mendeley are especially helpful for incorporating utilization pointers. Specifically, the way that Mendeley gives the best 3 as far as "scholarly status" of users per record makes it conceivable to recognize the users of research outputs by various sorts of occupations and scholastic titles.(Mohammadi et al., 2015)

This paper aims to analyse top 15 articles of University of Madras which have scored high citations. It aims to find out to what extend the top cited articles have secured altmetric scores. Do the citation score really create any impact on the social media? This is the research question formulated and comparing tool features, social media data sources, and social media events provided by Altmetric aggregators and thus they are analysed. Second, we conduct a systematic review of the Altmetrics literature. The paper analyses the results of over 15 top cited articles of university of Madras with cross-metric validation and coverage of altmetrics. Finally, we highlight open challenges and issues facing Altmetrics and discuss future research areas.

The research endeavor of any nature winds up with items to be diffused and taken up by the scholarly world. The accomplishment of research item relies upon the amount it is scattered, talked about, remarked, referenced et cetera. The scattering of research through social networking sites is generally another method that is picking up prominence all through the world (Shrivastava and Mahajan, 2015).

Related Literature

Swift changes in how research is disseminated have not only challenged established models for publishing but also brought into question current strategies for estimating academic impact. Measures got from different sources than business citation indices such as Web of Science or Scopus have been upheld. These new, ‘altmetric’ measures, propose not only to solve problems with current approaches, but they also allow for the estimation of impact beyond citations in scholarly journals.

The altmetric community looks at an increasing number of modern metrics based on the social web for analyzing scholarship and providing sudden feedback. Not all metrics account scholarly impact, some of them show attention e.g Twitter activity naturally peeks a few days after publication, and reflects attention rather than impact. A few indices and measures are are great pointers of action by researchers (e.g. citations or Mendeley bookmarks), whereas other metrics reflect the attention by the general public (e.g. Facebook or HTML views) (Fenner, 2014). The academic sites-ResearchGate, Academia.edu and Mendeley include most researchers’ profiles and are most popular in the scholarly community (Nentwich & König, 2014). However, Twitters use among the researchers is developing (Priem, Piwowar & Hemminger 2012) and is often used professionally or for scientific purposes (Amsaveni & Batcha MS, 2009). In recent years, the use of the following seven platforms in the social web as alternative metrics is of primary interest: “bookmarking, reference managers, recommendation services, comments on articles, microblogging, wikipedia, and blogging” (Priem & Hemminger, 2010). The important alternative metrics seem to be F1000 scores for biomedical science, Google Books citations for humanities and book-oriented research and Mendeley readers for recent articles (Thelwall, Kousha, Dinsmore & Dolby, 2016).

Alternative measurements are currently one of the most popular research topics in scientometric investigation and the focus is moving from web citation analysis to social media usage analysis (Li, Thelwall, & Giustini, 2012). Bornmann (2015) credits easy accessible data on social media to perform statistical analysis and

measure broad impact of research for the popularity of altmetrics. While as, Wouters and Costas (2012) focussed four benefits that altmetrics offer: broadness, diversity, speed and openness. The thought behind the altmetrics is that the web is not just used by academicians and therefore data from the web about scholarly research may be useful as evidence of the wider impacts of the research. Altmetrics additionally holds potential value for financing plan assessments. Some alternative indicators have advantages to usefully complement scientometric data by reflecting a different type of impact or through being available before citation data that can be used by funding agencies as part of their funding scheme evaluations.

The importance of the alternative form of metrics is indicated by one of the biggest multidisciplinary database providers, Elsevier, by collaborating with Altmetric and Mendeley (Roemer& Borchardt, 2013). Academic authors also consider adding their article's altmetric data into curriculum vitae to demonstrate the impact of articles and other non traditional scholarly products (Piwowar, 2013).

There is a positive correlation between the corresponding altmetrics counts and citation counts (Bornmann, 2015). Ortega (2015) studied the altmetric and bibliometric indicators from RG, Mendeley, Academia.edu, Microsoft Academic Search and Google Scholar Citations for authors belonging to the Spanish National Research Council and found scant relationship at the author level. Shrivastava and Mahajan (2015) showed strong positive correlation between the altmetric indicators from ResearchGate (RG) and the bibliometric indicators from the Scopus database. Eysenbach (2011) found that highly- tweeted articles were 11 times more likely become highly-cited later. However to some scientific citation process acts relatively independent of the social dynamics on Twitter (de Winter, 2014).

Nevertheless, newer articles have an inherent advantage over older ones. Also, Journals, publishers, and specialties with a substantial social media presence may have more articles with higher altmetric scores than those that have a smaller social media presence. Additionally, the utility and reach of altmetrics may be limited in countries with restricted social media access and in developing countries with scarce internet resources (Trueger et al., 2015). The importance of altmetrics is also limited by - lack of theory, ease of gaming, possible biases (Priem, 2014) and commercialization, data quality, missing evidence, manipulation (Bornmann, 2014).

Research Questions

1. How much and what kind of altmetrics data are out there?
2. Which altmetrics sources generate enough data to be useful?
3. How exact is the altmetrics data?
4. What do altmetrics measure?
5. How do they correlate citation metrics?
6. Can we predict citation counts with altmetrics counts?

Materials and Method

The study is based on the data retrieved from Web of Science (21-03-2018). The top 15 articles with top citations were alone taken and tested with altmetric scores on 21-03-2018. The data is made available by *Altmetric.com* grounded to the queries made to the Altmetric database in March 21 2018 to find out which academic research article got most attention among the readers of social media. The data was tabulated in Microsoft Excel for analysis and other purposes.

Data Analysis and Interpretation

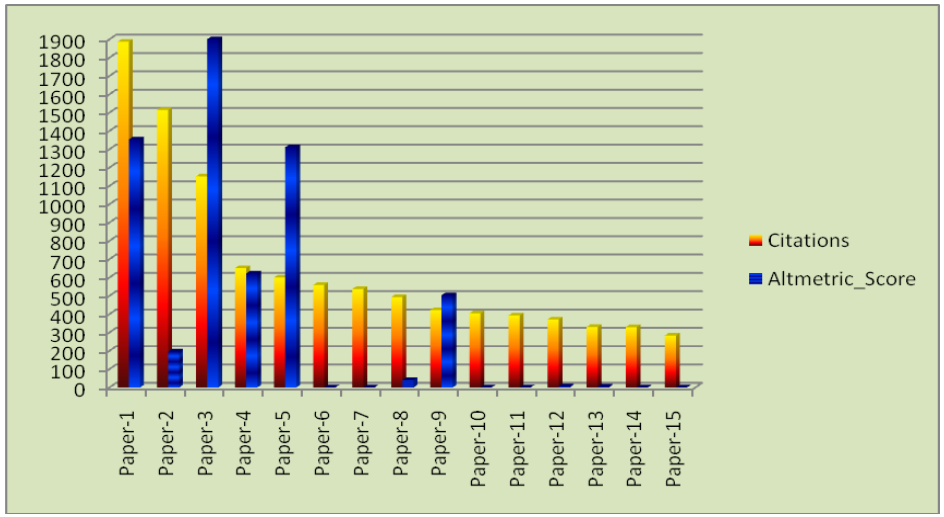
Top ranking articles The Top-15 papers that are highly shared and discussed by people are listed in Table-1. The top most cited papers of University of Madras, Tamil Nadu, India have been listed in the table 1.

Table 1: List of Publications with Citation and Altmetric Score

Paper	Authors	Title	Pub-Year	Citation	Alt Score
1.	Naghavi et al.,	Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013	2015	1887	1354
2.	Kumarasamy et al.,	Emergence of a new antibiotic resistance mechanism in India, Pakistan, and the UK: a molecular, biological, and epidemiological study	2010	1514	196
3.	Vos, Theo et al.	Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013	2015	1152	2146
4.	Murray, Christopher J. L. et al.,	Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990-2013: quantifying the epidemiological transition	2015	651	622
5.	Forouzanfar, Mohammad H.et al.,	Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013	2015	600	1311
6.	Parolini, Ornella et al.,	Concise review: Isolation and characterization of cells from human term placenta: Outcome of the first international workshop on placenta derived stem cells	2008	559	0
7.	Sakthivel, S et al.,	Enhancement of photocatalytic activity by metal deposition: characterisation and photonic efficiency of Pt, Au and Pd deposited on TiO2 catalyst	2004	537	0
8.	Munoz-Price, L. et al.,	Clinical epidemiology of the global expansion of Klebsiella pneumoniae carbapenemases	2013	493	40
9.	Kassebaum, Nicholas J et al.,	Global, regional, and national levels and causes of maternal mortality during 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013	2014	422	503
10.	Fayaz, Amanulla Mohammed et al.,	Biogenic synthesis of silver nanoparticles and their synergistic effect with antibiotics: a study against gram-positive and gram-negative bacteria	2010	405	0
11.	Krishnaraj, C. et al.,	Synthesis of silver nanoparticles using Acalypha indica leaf extracts and its antibacterial activity against water borne pathogens	2010	393	0
12.	Herrman, H et al.,	Study Protocol For The World-Health-Organization Project to Develop a Quality-of-Life Assessment Instrument (Whoqol)	1993	371	6
13.	Bork, JM et al.,	Usher syndrome 1D and nonsyndromic autosomal recessive deafness DFNB12 are caused by allelic mutations of the novel cadherin-like gene CDH23	2001	330	4
14.	Kavitha, V and Palanivelu, K	The role of ferrous ion in Fenton and photo-Fenton processes for the degradation of phenol	2004	329	0
15.	Velraj, R et al.,	Heat transfer enhancement in a latent heat storage system	1999	283	0

The Top-15 papers that are highly shared and discussed by people are listed in Table-1. The top most cited papers of University of Madras, India have been listed in the table and ranked according to the highest number of citations. The citations showed 1887 for the top one paper and it decreased to 283 at the 15th one. The highest Almetric score 2146 noted to paper 3 published by Vos, Theo et al. The second highest altmetric score is secured by the artcle published by Naghavi et al. They have secured highest citation rate yet almetric score is ranking to second. The paper by Forouzanfar, Mohammad H.et al., has acquired 1311 altmetric score as in the third place and it has 600 citations. The other 8 papers have secured altmetric score. Even though 6 papers have got considerable citation score, they have secured nil altmetric score. The graph expressed the paper wise scores of both citations and altmetrics.

Figure 1: Citation and Altmetric Score of University of Madras



RQ1. How much and what kind of altmetrics data are out there? Table 2 presents the usage of publications through different social media. All the studied publications have got good number of citations yet the analysis is made to find out the role of social media in sharing the knowledge contained in the articles. The highest altmetric score(2146) is secured by paper 3 published by Vos, Theo et al. The tweeters 1188, Mendeley 1245, News outlet 150, Wikipedia pages 87 and facebook pages 87 have been got by paper 3. There are 2 papers scoring more than thousand altmetric scores and above 100 found 3 papers. Among all the altmetric measures tweeters, Mendeley, News outlet, face book pages and Wikipedia pages are found the media in use in disseminating published information. There are 6 articles which are found unused through the social medias. RQ4. What do altmetrics measure? Mendeley users are top in rating followed by tweeters, News outlet, facebook pages and Wikipedia pages. Redditors, Video uploader, Res. Highlight platform, and Weibo users are the Medias found less in usage.

Figure 2: University of Madras Publication usage by Social Media

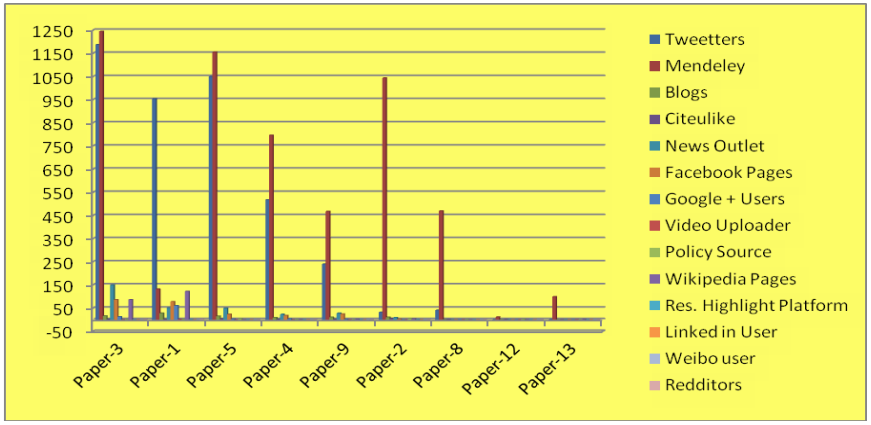


Table 2: Distributions of Publications Usage Through Different Social Media

Premise	Paper															Total
	3	1	5	4	9	2	8	12	13	6	7	10	11	14	15	
Citations	**1152**	**1887**	**600**	**651**	**422**	**1514**	**493**	**371**	**330**	**559**	**537**	**405**	**393**	**329**	**283**	**9926**
Altmetric_Score	2146	1354	1311	622	503	196	40	6	4	0	0	0	0	0	0	6182
Tweeters	1188	954	1050	518	241	33	42	-	1	-	-	-	-	-	-	4027
Mendeley	1245	133	1156	797	468	1044	470	12	100	-	-	-	-	-	-	5425
Blogs	17	29	16	10	11	11	1	-	-	-	-	-	-	-	-	95
Citeulike	2	2	4	2	2	7	1	1	-	-	-	-	-	-	-	21
News Outlet	150	52	50	24	29	10	-	-	-	-	-	-	-	-	-	315
Facebook Pages	87	79	24	19	25	3	-	-	-	-	-	-	-	-	-	237
Google + Users	13	61	3	4	2	-	-	-	-	-	-	-	-	-	-	83
Video Uploader	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Policy Source	2	2	4	1	1	5	1	2	-	-	-	-	-	-	-	18
Wikipedia Pages	87	123	-	1	2	4	-	-	2	-	-	-	-	-	-	219
Res. Highlight Platform	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	2
Weibo user	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	2
Redditors	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	3

RQ2. Which altmetric sources generate enough data to be useful? Tweeter and Mendeley generate enough data that are useful. Table 4 analyses the tweeter users in accordance with their region. The 3rd article published by Vos, Theo et al has got 1188 tweeter users and among them US and UK users are found high in numbers. There are about 424 unknown users and others 215 are accounted in altmetric score under tweeter platform. The 5 published by Forouzanfar, Mohammad H.et al is ranked second in Tweeter usage with 1050 users and they are from Argentina 197, US 103 and from UK 54. The 1 published by Naghavi et al. is with 954 tweeters among them mostly are from US and UK. India recorded 20 tweeters in both 3 and 1. The majority of the tweeter users are from US, UK, Argentina, Spain, Canada and Australia. The other countries are found with less numbers of tweeters. RQ3. How exact is the altmetrics score? The altmetric measures are not that much sure about others and unknown users. They are found more in numbers.

$$\mathbf{rs} = \frac{6\sum d^2}{n(n^2-1)} = \mathbf{0.71}$$

Table 3; Spearman Rank Correlation between Citation and Altmetric Score

	Citation(X)	Rank 1	Altmetric Score(Y)	Rank 2	d	d2
15	283	1	0	3.5	-2.5	6.25
14	329	2	0	3.5	-1.5	2.25
11	393	5	0	3.5	1.5	2.25
10	405	6	0	3.5	2.5	6.25
7	537	9	0	3.5	5.5	30.25
6	559	10	0	3.5	6.5	42.25
13	330	3	4	7	-4	16
12	371	4	6	8	-4	16
8	493	8	40	9	-1	1
2	1514	14	196	10	4	16
9	422	7	503	11	-4	16
4	651	12	622	12	0	0
5	600	11	1311	13	-2	4
1	1887	15	1354	14	1	1
3	1152	13	2146	15	-2	4
						163.5

RQ5. How do the altmetrics correlate citation metrics? Table 3 explains the rank correlation between citation and Altmetric Score of the top 15 cited publications of University of Madras. The Spearman rank correlation clearly indicates that there is high correlation found between the ranks of citation and Altmetric Scores. It is about 0.71.

Table 4: Geographic Distribution of Users of Publications through Tweeter

	Paper-3	Paper-5	Paper-1	Paper-4	Paper-9	Paper-8	Paper-2	Paper-13	Paper-6	Paper-7	Paper-10	Paper-11	Paper-12	Paper-14	Paper-15	Total
Tweeters Total	**1188**	**1050**	**954**	**518**	**241**	**42**	**33**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4027**
United States	194	103	163	106	56	1	3	-	-	-	-	-	-	-	-	626
UK	149	54	84	53	25	3	11	-	-	-	-	-	-	-	-	379
Argentina	-	197	-	-	-	-	-	-	-	-	-	-	-	-	-	197
Spain	49	45	29	30	3	1	1	-	-	-	-	-	-	-	-	158
Canada	43	17	29	16	12	-	-	-	-	-	-	-	-	-	-	117
Australia	42	17	27	15	4	1	2	-	-	-	-	-	-	-	-	108
France	17	-	23	7	3	-	-	-	-	-	-	-	-	-	-	50
Netherlands	17	12	-	7	-	11	-	-	-	-	-	-	-	-	-	47
India	20	-	20	-	-	-	2	-	-	-	-	-	-	-	-	42
Sweeden	-	-	27	-	-	-	-	-	-	-	-	-	-	-	-	27
Colombia	-	-	20	-	-	2	-	-	-	-	-	-	-	-	-	22
Ireland	18	-	-	-	-	1	2	-	-	-	-	-	-	-	-	21
Mexico	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	18
Bolivia Repub	-	12	-	-	-	1	-	-	-	-	-	-	-	-	-	13
Switzerland	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	8
Japan	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	7
South Africa	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	5
Belgium	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	4
Italy	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	4
Saudi Arabia	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Thailand	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Tunisia	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Others	215	135	203	89	47	-	3	-	-	-	-	-	-	-	-	692
Unknown	424	440	329	180	78	21	6	1	-	-	-	-	-	-	-	1479

Table 5 analyses the Demographic distribution of the usage by the different clients in the society. The majority of users of the publications of Madras University are Member public which is ranked to top with 2889 among which paper 5 published by Forouzanfar, Mohammad H.et al., paper 3 published by Vos, Theo et al. and paper 1 by Naghavi et al.,are found high in sharing by the general public. The practitioners stand next in usage followed by Scientists and

Science communicators. The articles 6 and 7 though have good numbers of citations, not recorded any usage score in tweeter. The articles from 10 to 15 also show nil tweeter score.

Table 5: Demographic Distribution of Users of Publications through Tweeter

Users	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Twitter Total	**954**	**33**	**1188**	**518**	**1050**	**0**	**0**	**42**	**241**	**0**	**0**	**0**	**1**	**0**	**0**	**4027**
Member-Public	709	19	774	338	839	-	-	30	179	-	-	-	1	-	-	2889
Practitioners (Doctors, other healthcare professionals)	91	4	213	81	103	-	-	6	21	-	-	-	-	-	-	519
Scientists	120	3	163	81	83	-	-	4	27	-	-	-	-	-	-	481
Science Communicators	33	7	38	18	21	-	-	2	13	-	-	-	-	-	-	132
Unknown	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	3

Table 6 represents the geographic region wise distribution of users who make use of the top 15 publications of University of Madras. The articles 3 published by Vos, Theo et al., Article 5 of Forouzanfar, Mohammad H.et al.,, and article 2 of Kumarasamy et al., are the top 3 publications with high Mendeley score i.e.,1245, 1156., and 1044 respectively. Te articles 4,8,9,1 and 13 have been used by more than 100 mendeley users. The article 12 has got 12 number of mendeley users. The country wise user analysis reveals the fact that majority of mendeley users are from the countries US, UK, Brazil and Spain. There are about 22 countries tabulated, among them India ranks at the 5th place. The altmetric is showing the maximum score under unknown and others which reflect more than 50 % of usage. If it is clearly distributed we can find a different result.

Table 6: Geographic Distribution of Users of Publications through Mendeley

Country	3	5	2	4	8	9	1	13	12	6	7	10	11	14	15	Total
Mendeley Total	**1245**	**1156**	**1044**	**797**	**470**	**468**	**373**	**100**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**5665**
United States	18	17	14	7	2	7	3	2	-	-	-	-	-	-	-	70
UK	11	5	22	8	4	7	-	1	-	-	-	-	-	-	-	58
Brazil	5	3	9	2	6	7	2	-	-	-	-	-	-	-	-	34
Spain	7	8	-	4	-	-	1	-	-	-	-	-	-	-	-	20
India	-	-	11	-	-	2	1	-	-	-	-	-	-	-	-	14
France	4	-	7	-	1	-	-	-	-	-	-	-	-	-	-	12
Canada	-	7	-	2	-	2	-	-	-	-	-	-	-	-	-	11
Germany	2	-	7	-	-	-	-	2	-	-	-	-	-	-	-	11
Colombia	3	3	-	4	-	-	-	-	-	-	-	-	-	-	-	10
Japan	-	-	5	4	-	-	-	-	-	-	-	-	-	-	-	9
Denmark	-	2	-	3	2	-	-	-	-	-	-	-	-	-	-	7
Netherlands	4	-	-	2	-	-	1	-	-	-	-	-	-	-	-	7
South Africa	-	2	3	-	-	1	-	-	-	-	-	-	-	-	-	6

Australia	-	-	4	-	-	1	-	-	-	-	-	-	-	-	-	5
Italy	2	-	-	-	2	-	-	-	-	-	-	-	-	-	-	4
Malaysia	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
New zealand	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
Nigeria	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	2
Norway	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Chile	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Turkey	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Uganda	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Other	31	27	41	15	8	8	-	-	-	-	-	-	-	-	-	130
Unknown	1158	1080	921	746	441	430	364	94	12	-	-	-	-	-	-	5246

Table 7 shows the Demographic wise distribution of users who make use of the top 15 publications of University of Madras through mendeley. The articles 3 published by Vos, Theo et al., Article 5 of Forouzanfar, Mohammad H.et al.,, and article 2 of Kumarasamy et al., are the top 3 publications with high Mendeley score i.e.,1245, 1156., and 1044 respectively. Te articles 4,8,9,1 and 13 have been used by more than 100 mendeley users. The article 12 has got 12 number of mendeley users. The mendeley readers' analysis shows that majority of mendeley readers are Pd.D students followed by Researchers, Master students and UG students. The unspecified group of readers is high in number, if we categories them properly we may get an improved result in the study.

Table 7: Demographic Distribution of Users of Publications through Mendeley

Users	**Paper-3**	**Paper-5**	**Paper-2**	**Paper-4**	**Paper-8**	**Paper-9**	**Paper-1**	**Paper-13**	**Paper-12**	**Paper-6**	**Paper-7**	**Paper-10**	**Paper-11**	**Paper-14**	**Paper-15**	**Total**
Mendeley Total	1245	1156	1044	797	470	468	373	100	12	0	0	0	0	0	0	**5665**
Student > Ph. D. Student	250	183	221	116	66	60	56	35	4	-	-	-	-	-	-	**991**
Researcher	186	223	175	157	89	71	59	20	-	-	-	-	-	-	-	**980**
Student > Master	235	184	158	133	79	110	55	11	2	-	-	-	-	-	-	**967**
Student > Bachelor	162	82	160	-	60	-	53	-	-	-	-	-	-	-	-	**517**
Unspecified	110	-	-	61	-	35	39	-	-	-	-	-	-	-	-	**245**
Professor	-	90	-	80	-	-	-	8	1	-	-	-	-	-	-	**179**
Student > Postgraduate	-	-	77	-	44	41	-	-	4	-	-	-	-	-	-	**166**
Other	302	394	253	250	132	186	111	26	1	-	-	-	-	-	-	**1655**

Table 8 represents the publication use by mendeley readers according to subject wise distribution. The publications of University of Madras is highly shared by the readers of Medicine and Dentistry discipline showing highest number of 2092 followed by Agricultural and Biological sciences (890) and Nursing and Health Sciences (226). The 3rd Article published by Vos, Theo et al., 5th article of Forouzanfar, Mohammad H.et al.,, and 4th article of Murray, Christopher J.

L. et al., are highly created impact among Medicine and Dentistry readers and equally created affect n the Agricultural and Biological Sciences. The articles 2 of Kumarasamy et al., and 8 of Munoz-Price, L. et al., have created impact among Biochemistry readers also. The social Science readers are benefitted by the articles 4 and 9 of Murray, Christopher J. L. et al., and Kassebaum, Nicholas J et al., respectively. The field of Neuroscience is covered by the article (13) published by Bork, JM et al., yet the category of others and unspecified have recorded more numbers which needs to be distributed properly to the exact subjects concerned so that the improved result may obtain.

Table 8: Subject wise Distribution of Users of Publications through Mendeley

Subject Wise	Paper-1	Paper-2	Paper-3	Paper-4	Paper-5	Paper-6	Paper-7	Paper-8	Paper-9	Paper-10	Paper-11	Paper-12	Paper-13	Paper-14	Paper-15	Total
Mendeley Total	**373**	**1044**	**1245**	**797**	**1156**	**0**	**0**	**470**	**468**	**0**	**0**	**12**	**100**	**0**	**0**	**5665**
Medicine and Dentistry	140	263	523	338	420	-	-	171	212	-	-	8	17	-	-	2092
Agricultural and Biological Sciences	26	381	144	50	92	-	-	122	27	-	-	1	47	-	-	890
Nursing & Health	-	-	64	47	72	-	-	-	43	-	-	-	-	-	-	226
Biochemistry; Genetics and Molecular Biology	18	91	-	-	-	-	-	43	-	-	-	-	12	-	-	164
Social Sciences	-	-	-	58	-	-	-	-	80	-	-	1	-	-	-	139
Immunology and Microbiology	-	69	-	-	-	-	-	49	-	-	-	-	-	-	-	118
Environmental Science	-	-	-	-	92	-	-	-	-	-	-	-	-	-	-	92
Psychology	-	-	79	-	-	-	-	-	-	-	-	1	-	-	-	80
Chemistry	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
Neuroscience	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	7
Sports and Recreations	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Others	111	184	345	199	322	-	-	43	75	-	-	-	10	-	-	1289
Unspecified	59	56	90	105	158	-	-	42	31	-	-	-	7	-	-	548

Discussion and Conclusion

Altmetrics is a fast growing area that might change dramatically in the years to come (Van Noorden, 2014). The tools under the umbrella of altmetric allow researchers to move out from the closed system to open web to share their ideas, findings and get their research commented, referenced and peer reviewed from a wide range of diversified users. The number of times an article is discussed on altmetric platform is an important indication of its impact and contribution to the research world. The study shows the high cited articles have their impact in social media. It indicates the research with implications to the everyday lives dominating the social media. The areas of study include Medical and Health research followed by Biological sciences and Studies in human society. The articles were highly discussed in the news outlets with maximum shares across blogs, twitter, facebook and google plus.

The analysis of readers shows that United States tops the list, followed by United Kingdom and Spain and are mainly educational ones with Ph.D, Post Graduate and Masters. The Practitioners are observed to be the voracious readers of the social media resulting in the present Altmetric analysis.

RQ6. Can we predict citation with altmetric counts? The present study analysed 15 articles that have top citation scores. Yet among them about 6 articles have not recorded any altmetrics score further the ranking of citation and altmetrics ranking differ. It is therefore it is not possible to predict citation with altmetric score. Still the spearman rank correlation supports that there is a high correlation between citation and altmetrics score that have impact on social media. It is concluded that altmetrics offer supplementary means to evaluate research impact and new ways to measure public engagement with the research world. However, the potential of altmetrics is limited due to the fact that each of the underlying sources of altmetrics has a different degree of adoption and use around the world and between different online communities (Alperin, 2015).

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