Does High Reads Lead to High Citations? A Case Study of Highly Cited Articles of the Journal *Library Philosophy and Practice* in ResearchGate

Renjith V. R.
Technical Assistant (Library)
Dept. of Geology, Kariavattom Campus
University of Kerala, Thiruvananthapuram – 695 581
renjithliber@gmail.com

Abstract

Academic social networking platforms have drastically changed the dissemination of scientific research output among the scholars. Library Philosophy and Practice (LPP) is a well-known online free access and peer reviewed international journal in the field of Library and Information Science (LIS). The present study aims to investigate whether high reads of LPP journal articles in ResearchGate (RG) results in high citations. A total of 49 highly cited articles were retrieved from ResearchGate. The parameters analysed are authorship pattern, publication year and the indicators RG reads and citations. The study assessed the level of reads and level of citations, correlation of reads with citations and the influence of reads on citations.

Keywords: *Altmetrics, Library and Information Science Journal, Library Philosophy and Practice, ResearchGate, Academic Social Media, Highly cited articles*

1. Introduction

The impact measurement of scientific publications is of great necessity to scholars and academic institutions across disciplines. The traditional approach is to measure scholarly impact using bibliometric indicators based on citation analysis. Citations to the scholarly output are used as the key sources for measuring the impact of research articles, journals, individual scholars and the different subject disciplines. Since there are so many limitations to the traditional citation-based metrics, there is a transformation from traditional bibliometric impact score to new indicators. Now the spectrum of scholarly research impact measurement has changed with the wider application of different academic and non-academic social web platforms like Facebook, Twitter, Slideshare, CiteULike, Mendeley, ResearchGate, and Academia.edu. etc. Now-a-days there are several options to communicate scholarly work using these social networks designed especially for academic purpose. This will provide a platform for the dissemination, discussion, sharing and forming new collaborations in scientific scholarly work.

The measurement of academic research publications in the above academic and non-academic social networking sites is termed 'Altmetrics'. Altmetrics measures the number of times a research output gets cited, tweeted about, liked, shared, bookmarked, viewed, downloaded, mentioned, favourited, reviewed, or discussed. It harvests these numbers from a wide variety of open source web services that count such instances, including open access journal platforms, scholarly citation databases, web-based research sharing services, and social media. Although Altmetrics is often thought of as metrics about articles, they can be applied to people, journals, books, data sets, presentations, videos, source code repositories, web pages and so on.

ResearchGate (RG) is an academic social networking site launched in 2009. This site allows uploading papers taking part in discussions and following other researchers. It is the site that most indicators show at author level, going from social measurements (followers, following) and usage metrics (page view, document downloads) to bibliometric indicators (impact points, papers and citations). For journals, bibliometric indicators available in RG are reads, citations and RG score. *Library Philosophy and Practice* is an international peer-reviewed online open access Library and Information Science journal that publishes articles exploring the connection between library practice and the philosophy and theory behind it. These include explorations of current, past and emerging theories of librarianship and library practice, as well as reports of successful, innovative, or experimental library procedures, methods, or projects in all areas of librarianship, set in the context of applied research.The present study analyses the highly cited LPP articles in RG using informetricmethods.

2. Review of Literature

Asemi and Heydari (2018) investigated and compared the correlation between the number of citations of Iranian scholars' articles indexed in WoS and their readership rate in the two social networks of Mendeley and RG. Based on the Spearman's correlation coefficient, correlation between the number of citations of the articles and the degree of readership in Mendeley was 0.352 and the correlation between the number of citations of the articles and the rate of readership in RG was 0.177. The study clearly shows the value of academic social networks in the dissemination of scientific productions and encourages scientists to share their scientific productions on these networks.

Ramezani-Pakpour-Langeroudi, Okhovati and Talebian (2018) investigated the presence of Iranian highly cited clinicians in social networking sites. This scientometric study observed significant relationship between the RG score, citations, reads indicators in RG, and citation numbers. The study also found significant relationship between the number of document indicators in Academia and the citation numbers. The study also recommends the scientists to be present at social networking sites to gain better visibility and also to improve citation.

RG is an academic social network site designed primarily for scholars to create their own profiles, upload their scholarly work, and communicate among peers. There are several studies discussing the presence of scholars in the academic social networking sites and the results of showing correlation between altmetric indices and traditional citation metrics.

Singsonand Amees (2017) in their study in Pondicherry University, India explored the motives, activities and benefit researchers seek or gain from joining ResearchGate. The result of the study indicated that ResearchGate is popular among research scholars for connecting with people who have similar interests. Similarly, majority of the scholars stated that the main activity they involve themselves, besides many activities in ResearchGate, is reading articles and reviewing paper posted by others. ResearchGate also has enhanced their ability to stay abreast with new/latest developments in their field of research.

Thelwall and Kousha (2015) assessed the RG usage among different countries. RG had most users in Brazil and India, whereas Academia is used more in China, South Korea, and Russia. Iran also had many RG members. Madhusudhan (2012) in his study found that RG is the most used academic social networking site followed by Academia, LinkedIn and CiteULike by scholars at the University of Delhi.

3. Objectives

The major objectives of the present study are:

i. to find the authorship pattern of highly cited articles of LPP in RG;

ii. to trace the publication year of highly cited articles;

iii. to assess the level of 'reads' and level of 'citations' of highly cited articles;

iv. to find the correlation of 'reads' and 'citations'; and

v. to reveal the influence of 'reads' on 'citations' of highly cited articles.

4. Null Hypotheses

H_{01}: There is no significant difference between single and multi-authored articles with regard to their 'reads' and 'citations' of highly cited articles of LPP in RG.

H_{02}: There is no association between level of reads and level of citations of highly cited papers of LPPin RG.

H_{03}: There is no relationship between 'reads' and 'citations' of highly cited articles of LPP in RG.

H_{04}: 'Reads' do not positively influence 'citations' of highly cited articles of LPP in RG.

5. Scope and Methodology of the Study

For the present scientometric study, data was collected from the ResearchGate website of the journal *Library Philosophy and Practice* available at https://www.researchgate.net/journal/ 1522-0222_Library_Philosophy_and_Practice.The articles which received five or more citations were selected for the present study. Forty nine papers which received five or more citations were collected on 31 December 2018. The bibliographic specifications of the articles were extracted including authorship pattern and publication year. Further,bibliometric indicators like 'Reads' and 'Citations' of these cited articles were also collected for analysis. The collected data was entered in an Excel sheet and appropriate statistical tests were applied based on the normality of the distribution. The statistical package SPSSwas used for the analysis of the data.Inferential statistical techniques were applied to test the null hypothesis.

6. Analysis and Discussion

6.1 Reads and Citations in Authorship Pattern of Highly Cited Papers of LPP in RG

Since the data do not meet the general assumptions of the independent-sample *t* test, the non-parametric Mann-Whitney U test was used. The test shows that

Table 1

Reads and citations in authorship pattern of highly cited papers of LPP in RG

Indices	Authorship Pattern				z value	p value
	Single Authored		Multi-authored			
	N	Mean Rank	N	Mean Rank		
Reads	24	27.60	25	22.50	-1.251	0.211
Citations	24	26.17	25	23.88	-0.565	0.572

there is no significant difference between single authored and multi-authored papers with regard to their reads and citations($p>0.05$). As hypothesized, reads of multi-authored papers (M_{rank} = 22.50) were not less than that of single-authored papers (M_{rank} = 27.60), U= 237.5,z = -1.251, p = 0.211. Similarly, citations of multi-authored papers (M_{rank} = 23.88) didnot report less than that of single authored papers (M_{rank} = 26.17), U= 272,z = -0.565, p = 0.572 (Table 1). Hence the null hypothesis *(H_{01})* is accepted.

6.2 Reads and Citations in Publication Year of Highly Cited Papers of LPP in RG

Table 2 presents the analysis of the highly cited articles of LPP in RG were published during the period of 2006-2015.

The highest number of highly cited papers (17) were brought out during 2010-2011 followed by 13 papers published during 2006-2007. The highest mean reads (93.24) are for the articles published during 2010-2011 followed by mean reads (28.70) for the publication period 2014-2015. The highest mean citations (18.23) are for the articles published during 2006-2007 followed by mean citation of 9.59 for the articles published during the period of 2010-2011.

6.3 Level of Reads Vs. Level of Citations of Highly Cited Papers of LPP in RG

As can be seen in Table 3, based on row percentage, 58.3% of articles having low level reads belong to the group of low level citations, 25% of articles of low level read to moderate level group of citations and 16.7% of low level read articles to the group of high level citations. Overall, there are 38.8% (19) of articles at low level citations, 34.7 % (17) articles at moderate level and 26.5% (13) articles at high level citations. With regard to level of reads, 12 articles are at low level reads, 25 articles are moderate level reads and 12 articles at high level reads.

Since $p>0.05$, the null hypothesis (H02) is accepted at 5% level of significance. Hence concluded that there is no association between level of reads and level of citations of highly cited papers of LPP in RG.

6.4 Correlation between Reads and Citations of Highly Cited Papers of LPP in RG

The correlation between Reads and Citations of Highly Cited Papers of LPP in RG is presented in Table 4.

The correlation coefficient between reads and citations is 0.323 (Spearman's rank correlation coefficient) which indicates 32.3% positive relationship between reads and citations at 5% level. Spearman's rho statistical correlation revealed a moderate (between 0.3 and 0.6) correlation between reads and citations. Figure 1 illustrates scatter plot presenting the correlation between citations and self-citations.

Table 2

Reads and citations in publication year of highly cited papers of LPP in RG

Publication Year of Articles	N	Mean Reads	SD	Mean Citations	SD
2006-2007	13	24.23	21.22	18.23	18.687
2008-2009	3	15.67	5.51	6.33	2.309
2010-2011	17	93.24	239.436	9.59	5.702
2012-2013*	6	18.17	22.248	9	4.733
2014-2015	10	28.70	23.875	8.20	5.007

**There is no article for the published year 2013.*

Table 3

Level of reads vs. level of citations of highly cited papers of LPP in RG

Level of Reads	Level of Citations			Total	Chi-square	p value
	Low	Moderate	High			
Low	7 (58.3%) [36.8%]	3 (25%) [17.6%]	2 (16.7%) [15.4%]	12 (100%) [24.5%]	6.428	0.169
Moderate	9 (36%) [47.4%]	11 (44%) [64.7%]	5 (20%) [38.5%]	25 (100%) [51%]		
High	3 (25%) [15.8%]	3 (25%) [17.6%]	6 (50%) [46.2%]	12 (100%) [24.5%]		
Total	19 (38.8%) [100%]	17 (34.7%) [100%]	13 (26.5%) [100%]	49 (100%) [100%]		

The value within ( ) refers to row percentage
The value within [ ] refers to column percentage

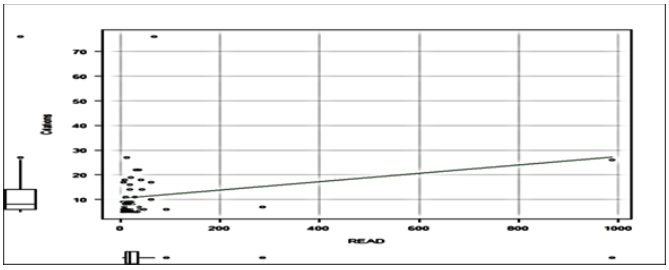
Table 4

Correlation between reads and citations of highly cited papers of LPP in RG

			Reads	Citations
Spearman's rho	Reads	Correlation Coefficient	1.000	.323*
		Sig. (2-tailed)	.	.023
		N	49	49
	Citations	Correlation Coefficient	.323*	1.000
		Sig. (2-tailed)	.023	.
		N	49	49
* Correlation is significant at the 0.05 level (2-tailed).				

Fig. 1

Scatter plot showing correlation between reads and citations



The hypothesis (H03) was 'there is no relationship between 'reads' and 'citations' of highly cited articles of LPP in RG'. As not hypothesized, reads was significantly and positively related to citations.

6.5 Direct Impact of Reads on Citations

A linear regression was run to test whether there is a direct impact of reads on citations, whereby citations was taken as the dependent variable and reads as the independent variable. Table 5 shows the model summary of the regression that was performed. The result shows that reads of the articles explain only 4.8% of variability in citation value of highly cited articles. The R-squared value (0.048) shows a weak effect (<0.3) with the size of reads of articles on citations.

Table 6 shows that reads of the articles of LPP in RG is not significantly associated with the citation of articles of LPP in RG. In other words, reads of the articles do not explain a statistically significant proportion of the variability in citations. The Beta value 0.218 shows the slope in standardised format (Table 7). The hypothesis (H_{04}) was 'reads' do not positively influence 'citations' of highly cited

Table 5

Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.218[a]	.048	.027	10.967

Predictors: (Constant), Reads

Table 6

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	282.177	1	282.177	2.346	.132[b]
	Residual	5652.598	47	120.268		
	Total	5934.776	48			

a. Dependent Variable: Citations

a. Predictors: (Constant), Reads

Table 7

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.517	1.653		6.361	.000
	Reads	.017	.011	.218	1.532	.132

a. Dependent Variable: Citations

articles of LPP in RG. The result of the regression supports the null hypothesis.

7. Findings

1. There is no significant difference between single authored and multi-authored papers with regard to their reads and citations in RG.
2. The highest mean reads (93.24) are for the articles published during 2010-2011 followed by mean reads (28.70) for the publication period 2014-2015. The highest mean citations (18.23) are for the articles published during 2006-2007 followed by mean citation of 9.59 for the articles published during 2010-2011.
3. There is no association between level of reads and level of citations of highly cited papers of LPP in RG.
4. *Spearman'srho* statistical correlation revealed a moderate correlation between reads and citations. Reads was significantly and positively related to citations.
5. Reads of the articles of LPP in RG are not significantly associated with citation of articles of LPP on RG. Reads of the articles do not explain a statistically significant proportion of the variability in citations.Reads do not positively influence citations of highly cited articles of LPP in RG.

8. Conclusion

Citation counts are the total number of citations an article receives. Such counts are offered by Web of Science (WoS) and SCOPUS. In general, the higher the number of citations, the greater the perception of quality for that article. Citations are, after all, the greatest currency that scholars use to acknowledge their intellectual forebears. Filtering through search results on a database can be useful to sort results by citation counts to understand which publications are the most highly-regarded on a particular topic. So the scholars presence on academic social networking sites may boost their citations for the publications and thereby the journal's citations.

Social networking sites have introduced new channels for scholars to disseminate and communicate information. Scholars have interest in reading articles on the social networks.Being a research-oriented academic social network, RG is available among scholarly people for freediscussion and debate with the researchers. The capabilities of this social network includes discussion groups on a particular topic, specialized queries and answers, gathering of users belonging to similar occupation groups, finding articles and researchers, their ranking with the RG score index etc. This study indicated that mere reads of articles in RG didnot lead to its citations, though the presence of papers in social networking sites can increase the chance of citation by its increased visibility among scholarly people. LPP being an international online open access journal its presence and readership in other social networking sites are also important factor for citations of its articles.

References

Asemi, A. & Heydari, M. (2018). Correlation between the articles citations in Web of Science (WoS) and the readership rate in Mendeley and ResearchGate (RG). *Journal of Scientometric Research, 7*(3), 145-152.

Madhusudhan, M. (2012). Use of social networking sites by research scholars of the University of Delhi: A study. *The International Information & Library Review*, *44*, 100-13.

Ramezani-Pakpour-Langeroudi, F. & Okhovati M, Talebian A. (2018). Do highly cited clinicians get more citations when being present at social networking sites? *Journal Education and Health Promotion 7,* 18. doi: 10.4103/ jehp.jehp_69_17

ResearchGate (2015). https://www.ResearchGate.net/about. Retrieved on 5thJanuary 2019.

Singson, M. & Amees, M. (2017). Use of ResearchGate by the research scholars of Pondicherry University: A study. *DESIDOC Journal of Library & Information Technology, 37*(5), 366-371.

Thelwall, M. & Kousha, K. (2015). ResearchGate: Disseminating, communicating, and measuring scholarship? *Journal of the Association for Information Science and Technology,66*(5), 876-889.

Thelwall M. & Kousha K. (2015). Web indicators for research evaluation. Part 2: Social media metrics. *El Profesional de la Informacion*, *24*(5):607-620.

Appendix

i10 Cited Articles and their reads of LPP Journal in RG

Sl. No.	Title of the Article	Author/Authors	Published Year	Reads	Citations
1	Using Google Analytics for Improving Library Website Content and Design: A Case Study	Wei Fang	Nov 2006	68	76
2	No Longer the Sacred Cow - No Longer a Desk: Transforming Reference Service to Meet 21st Century User Needs	Gabriela Sonntag& Felicia Palsson	Feb 2007	13	27
3	Factors Affecting Information and Communication Technologies (ICTs) Use by Academic Librarians in Southwestern Nigeria	YacobHaliso	Apr 2011	987	26
4	The Impact of the Internet on Research: the Experience of Delta State University, Nigeria	Oghenevwogaga David Toyo & OghenevwogagaBensoAdogbeji	Apr 2006	37	22

5	Attitude of Students Towards E-learning in South-West Nigerian Universities: An Application of Technology Acceptance Model	EgbeAdewole-Odeshi	Jan 2014	30	22
6	Games for Teaching Information Literacy Skills	Felicia A. Smith	Apr 2007	20	19
7	The Challenges of Computerizing a University Library in Nigeria: The Case of Kashim Ibrahim Library, Ahmadu Bello University, Zaria	Nok Grace	April 2006	41	18
8	Promoting Open Access to Research in Academic Libraries	Priti Jain	May 2012	9	18
9	Open Access, Institutional Repositories, and Scholarly Publishing: The Role of Librarians in South Eastern Nigeria	Michael Okoye& AnthoniaEjikeme	Feb 2011	7	17
10	Study Habits of Postgraduate Students in Selected Nigerian Universities	Stella E. Igun& Oghenevwogaga Benson Adogbeji	Nov 2007	62	17
11	Personal and Socio-Economic Determinants of Agricultural Information Use by Farmers in the Agricultural Development Programme (ADP) Zones of Imo State, Nigeria	UmunnaNnaemekaOpara	Oct 2010	19	16
12	Teaching Effectiveness, Availability, Accessibility, and Use of Library and Information Resources Among Teaching Staff of Schools of Nursing in Osun and Oyo State, Nigeria	Moses OladeleAdeoye& S.O. Popoola	Sep 2011	44	14
13	The Pains and Gains of the Publication Requirement: a Survey of Librarians at Delta State University, Nigeria	P. A. Tiemo& J. E. Onohwakpor	Apr 2006	18	14
14	The Great Library of Alexandria?	Heather Philips	Sep 2010	29	11
15	Standing Up for Open Source	Lee David Jaffe& Greg Careaga	Jun 2007	10	11
16	Citation Analysis of PhD Theses in Psychology of Selected Universities in Andhra Pradesh, India	Makkini Anil Kumar& V.Pulla Reddy	Jan 2014	61	10