

Research Performance of Top Cited Indian Researchers on ResearchGate Platform: An Altmetric Analysis

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Abstract

Over the last few decades, scholarly communication is changing with the use of social media serving as an effective medium. Several new factors have emerged in the context of social media activity to accelerate the shift. The current research relied on the ResearchGate platform, an Academic Social Networking Site (ASNS), meant for scientists and scholars enabling them to share, communicate, collaborate, connect and get updated with the feeds and scholarly information. The study focused on the top 15 cited Indian researchers and their research performance on ResearchGate. The research data was collected manually and analysed using several altmetric parameters available on ResearchGate to evaluate the performance of the targeted researchers. For statistical correlation analysis, the researcher relied on JASP statistical analysis software (v. 0.16.0.0). The study findings reveal that Sujit K Bhattacharya has the maximum citations (17210) among Indian researchers on ResearchGate, accompanied by the maximum number of publications (505), the highest value of h-index (70) and Research Interests (8991). The majority of the contributions from the targeted researchers are research articles (71.95%) and 49.10% are available in full text. Researcher S G Deshmukh has asked the maximum number of questions (22), and also provide a significant number of answers (314). The publications of researcher K. M. Singh (Res. 15) received a maximum number of Read (529397), and recommendations (3179). The RG Score of S G Deshmukh is the highest (57.00) among all of the targeted researchers. Pearson's Correlations Test among five interconnected variables calculated that among 7 different types of correlation formation, "Citations - Res. Int." (0.920), "Publications - Res. Int." (0.865), "RG Score - Res. Int." (0.773), and "Publications - RG Score" (0.765) pairs possess highly positive correlation linkage. The core context of this study is helpful for the representation of India in terms of top-cited researchers and their research performance on ResearchGate. The study also promotes young researchers to disseminate their research over such ASNS platforms to increase visibility and research impact.

Keywords: Academic Scholarly Networking Sites, Altmetrics, ResearchGate, Research Impact, Scholarly Communication, Top Cited Indian Researchers

1. Introduction

The exchange of ideas through formal and informal channels has always been a key element of the scholarly communication system and a relevant part of academics' daily practice (Kronick 2001; Guédon 2001). Social Media

and Social Network Sites (SNS) have become an integral part of scholarly communication systems (Sugimoto *et al.*, 2017). There are several Academic Social Network Sites (ASNS) that are dedicated and novel in terms of their functions and services, such as ResearchGate, Mendeley, Academia, Google Scholar, Zotero, and Word Press. These

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platforms assist researchers in increasing the visibility of their works, staying connected with fellow researchers and being up to date with their research. ResearchGate (RG), as one of the most popular ASNS, launched in 2008 by physicians Dr. Ijad Madisch and Dr. Soren Hofmayer, and computer scientist Horst Fickenscher, has more than 20 million members contributing to over 135 million scholarly publication pages (ResearchGate, 2019). To evaluate the research performance of an individual researcher, ResearchGate provides several altmetric parameters based on his contributions to the RG platform. The current paper evaluates the performance of the top 15 Indian researchers in terms of citation counts in RG platform.

2. Academic Social Networking Sites (ASNS) and Altmetrics

Academic Social Networking Sites (ASNS) are similar to social networking sites but designed for the academic community in terms of functions and services. These sites allow users to upload research articles, abstracts, and links to published articles; track demand for their articles; and engage in professional interaction, discussions, and exchanges of questions and answers with other users; as well as assist in the search for jobs in their professions (Meishar-Tal & Pieterse, 2017). With millions of users and free-to-use functionality, these sites constitute a major addition to scientific media (Van Noorden, 2014). ASNS has not only attracted academic users, but they have also been susceptible to expectations for changes in the scholarly communication system, due to their standing between the formal and informal (Blümel, 2021). In addition, ASNSs can provide measures of the scholarly impact of the research contributions by a researcher (Vasquez & Bastidas, 2015). Traditionally the standard of a research publication is evaluated in terms of citation counts and the impact factor of the publishing journal (Goodyear *et al.*, 2009). With the development of various technology-informed metrics (e.g., altmetrics), the calculation of the real-time usage count and engagement is now possible to more accurately capture the influence of a scholarly work (Piwowar & Priem, 2013; Wildgaard, 2014). To build a dynamic impact profile for their research publications, young researchers prefer altmetrics more as measuring tools for research impact (Ovadia, 2013; Kelly & Delasalle, 2012). Moreover, they suggest that academics

are interacting in new public arenas, beyond the “ivory tower” (Darling *et al.*, 2013; Wildgaard, 2014). ASNS provide a wide variety of key parameters to calculate the social impact of research and a researcher and support such aforementioned services.

3. Literature Review

Under the guidance of Prof. Evens Emmanuel in the lab Chibas/Faculté des Sciences de l'Agriculture et de l'Environnement of Université Quisqueya several researchers contribute to a project to produce a monthly report compiling the performance of each of the university researchers who has an RG score. Besides publishing a monthly productivity report, educating university researchers, who do not yet have an account, about the benefits of RG by registering on this platform, encouraging researchers to put their research projects online and update them, encouraging researchers to answer questions about RG posed by colleagues working in their unique area of expertise, and encouraging researchers to read and recommend them are all part of the project. Some of these monthly reports will be addressed in this study to provide an altmetric overview of ResearchGate as a platform for academic social networking. The reports of Emmanuel *et al.*, (2020) for March (2020), St-Louis *et al.*, (2020) for April (2020), Paul *et al.*, (2020a) for May (2020), Apply *et al.*, (2020) for June (2020), Noncent *et al.*, (2020) for July (2020), Charles *et al.*, (2020) for August (2020), Joseph *et al.*, (2020) for September (2020), Paul *et al.*, (2020b) for October (2020), Benjamin & Emmanuel (2020) for November (2020), and Moise *et al.*, (2021) for December (2020) are significant to mention.

Among the research papers, Césars *et al.*, (2021) analysed the scientific productivity of Quisqueya University's agronomy, environment, and health researchers based on bibliometric and altmetric indicators. The research framework was designed using quantitative data from the academic social network ResearchGate, SCOPUS and Google Scholar. According to the study results, 19% of the 12,731 citations counted for Quisqueya University as of December 31, 2020, were for the environment, 19.3% for health, 59.9% for agronomy, and 1.8% for other sectors. For each of the indices, the Kolmogorov-Smirnov normality test was applied. Pearson's rank correlation was used to calculate the correlations between the altmetric indicator

(RG-Score) from ResearchGate and the bibliometric indicators (citation and H-index) from Google Scholar and Scopus. A significant positive correlation of $\alpha = 0.918$ was observed between the number of citations on ResearchGate and Google Scholar. A result in the same direction ($\alpha = 0.991$) was also observed between the number of citations on ResearchGate and Scopus. Kumar and Singh (2021) examined the ResearchGate profiles of King George's Medical University, Lucknow, an altmetric perspective to evaluate the scholarly publishing patterns of medical academics. The data was collected among the 32 available departments of KGMU on ResearchGate with a total contribution of 1196 publications. The study findings further revealed that the 'BMJ Case Reports' comes out as the most preferred and productive journal with 124 articles and a 10.37% share. Out of the total uploaded articles, 34.9% (418) full-text articles were available on ResearchGate and team research involving four or more authors was a norm in KGMU. Singson and Amees (2017) investigated the motivations, actions, and benefits that researchers seek or obtain from joining ResearchGate among Pondicherry University research scientists. According to the findings, ResearchGate was popular among the targeted researchers, and their motivation for joining was primarily to connect with other scholars who shared similar interests. Similarly, the majority of scholars responded that the main activity they engage in on ResearchGate to improve their capacity to stay abreast of new/latest advances in their field of research is reading and reviewing papers uploaded by fellow researchers. Shrivastava and Mahajan (2017) carried out an altmetric analysis of faculty members and research scholars of the Department of Physics and Astrophysics, University of Delhi (India) who are members of the academic social networking site ResearchGate. The data were collected manually by visiting the profile pages of all the members who had an account in ResearchGate under Univ. Delhi P and A during the first week of July 2016. The authors found a total of 173 members in ResearchGate from the department. Data were collected for publications, reads, profile views, citations, impact points, RGScore, followers and following from the profile pages of the members. Correlations were calculated amongst the metrics provided by ResearchGate to seek the nature of the relationship amongst the various ResearchGate metrics. Ali and Richardson (2017) analysed the research performance of Pakistani Library and Information

science (LIS) scholars, using the altmetrics provided by ResearchGate profiles collected between 15 January 2015 and 30 April 2016. Resultant data were analysed in SPSS version 21. According to the study findings, there was a positive correlation between publications, reads and citations for scholars who had recorded at least one publication. The majority of publications had not been published in a high-impact factor journal. In future scope, this paper produced findings of relevance to researchers in other countries and/or disciplines who may wish to conduct a similar study of a defined cohort. Ali (2021) analysed the top 10 LIS faculty member publications, RG score citations, research interest, and read. RG Score is one of the unique features of the research reputation of the researchers. The study findings identified that there was a normal level of correlation between the publication and citations of the scholar with $r = 0.665$. Further, the study highlighted the percentage of full-text availability (46%) of the uploaded papers on ResearchGate. The study results are helpful for National/International LIS professionals in the context of scholarly communication. Sheej and Mathew (2019) aimed to conduct an altmetrics analysis of sixty-four Indian Naval Architecture researchers. The study also tried to perform scientometric analysis of publication outputs, citations and H-index of the researchers using the Scopus database. The study further investigated the correlation of altmetrics and scientometric indicators with the Pearson correlation test. This research found that 65% of researchers had an account in RG and most of them received citations in a range of 1-50, H-index of 1-5, reads of 1000 to 5000 and obtained RG scores of 10-15.

4. Need of the Current Study

In the ever-evolving landscape of academia in the digital age, it is noteworthy that a number of researchers are unaware of the role that sharing research plays in enhancing its impact. Due to the rapid transformations in the realm of research, the average lifespan of a standard research paper is a mere two years. Given this temporal constraint, researchers find themselves in the position of having to prioritize a crucial endeavour: ensuring that their research garners the widest possible readership within this fleeting span.

In this context, the current study assumes significance in creating awareness among researchers

and academicians alike. Its primary aim is to underscore the paramount importance of disseminating research findings and, thereby, augmenting their influence. The study seeks to create awareness about platforms such as ResearchGate and the associated altmetric parameters, most notably the RG Score. By becoming familiar with such tools, researchers are better equipped to navigate the contemporary research landscape, enabling them to optimize the reach and impact of their scholarly contributions. Essentially, the study highlights the importance and necessity of adapting to the digital era's changing dynamics, encouraging researchers to embrace the practice of sharing their work for the greater advancement of knowledge.

5. Research Objectives

The study attempts to analyse the top 15 cited India LIS researchers' research performance based on their publications uploaded on ResearchGate with following objectives.

- To identify the 15 cited Indian researchers on ResearchGate.
- To measure the research contribution of top 15

cited Indian researchers in terms of publications and projects.

- To distinguish specific types of publications of the top 15 cited Indian researchers on ResearchGate.
- To evaluate the full-text availability among the publications of the top 15 cited Indian researchers on ResearchGate.
- To examine the Q and A participation by the top 15 cited Indian researchers on ResearchGate.
- To determine the overall research impact of the top 15 cited Indian researchers on ResearchGate.
- To calculate the h-index of the top 15 cited Indian researchers on ResearchGate.
- To observe the following and followers of the top 15 cited Indian researchers on ResearchGate.
- To analyse the RG-score of the top 15 cited Indian researchers on ResearchGate.

6. Research Methodology

The data used in this study were manually gathered from the ResearchGate database using the techniques outlined below. First of all, a targeted search based on a certain subject field is required to identify the top-

Table 1. Top 15 Cited Indian Researchers in ResearchGate

Rank	Researcher	Affiliation
1	Sujit K. Bhattacharya	Glocal Hospital, Krishnanagore, India
2	S. G. Deshmukh	Indian Institute of Technology Delhi
3	Vinay Kumar Dadhwal	National Institute of Advanced Studies
4	Manoj Murhekar	Indian Council of Medical Research
5	Atul Kohli	Princeton University
6	Guntupalli V R Prasad	University of Delhi
7	Ashish Kothari	Kalpavriksh
8	M. P. Jonathan	Instituto Politécnico Nacional
9	Seshachalam Srinivasalu	Anna University, Chennai
10	Premilla D'Cruz	Indian Institute of Management
11	Madhusoodanan M. S.	Amity University
12	Malay Mukul	Indian Institute of Technology Bombay
13	Arun Kumar Dutta	Gauhati University
14	Shouraseni Sen Roy	University of Miami
15	K. M. Singh	Dr Rajendra Prasad Central Agricultural University

cited researchers in a given country. To accomplish this, use the “Discover by Subject area” option of the RG platform. The country “India” can be accessed under the “Asia” continent in the subject field “Geoscience” among science topics. After choosing a country, “India” in this case, the “Questions”, “Publications”, and “Highly-cited researchers” sections can be perused. It’s worth noting that, in general, ResearchGate doesn’t offer any tools for automatically exporting data for intensive analysis. As a result, the data should be collected manually. Due to the time gap in updation, the list of “Highly-cited researchers” occasionally differs from the original profile of the researchers. So, after identifying the name of the researchers, it’s best to visit each RG profile of individual researchers to receive the actual data. To evaluate the research performance of an individual researcher, ResearchGate provides several altmetric parameters viz. RG score, number of publications, citation counts, h-index, reads, research interests, recommendations, full-text availability, Q and A participation, following and followers etc, based on his contributions to the ResearchGate platform. After the selection of the top 15 cited Indian researchers, the data of these altmetric parameters were collected manually on 12 December 2021, from the RG profile of individual researchers. The

name and affiliations of the selected 15 researchers are displayed in Table 1.

After analysing the acquired data using the numerous altmetric metrics of the ResearchGate platform, statistical analysis of the data variables was undertaken to identify any correlation between them. Among the variables, Publications count, Citations, RG Score, total Read, and Research Interest are considered to perform Pearson’s Correlations Test using the JASP statistical analysis tool (v. 0.16.0.0).

7. Results and Discussion

7.1 Research Output

Table 2 indicates the research output of top-cited (top 15) Indian researchers in the ResearchGate platform.

According to Table 2, Sujit K. Bhattacharya (Res. 1) contributed a maximum (16.03% of the top 15), followed by Vinay Kumar Dadhwal (Res. 3) and K. M. Singh (Res. 15) with 15.14% and 14.12% contribution respectively. Among the projects, Vinay Kumar Dadhwal (Res. 3) undertook the most (15.46% of the top 15) and both S. G. Deshmukh (Res. 2) and K. M. Singh (Res. 15) in the second position with 14.43% coverage. Overall, the top

Table 2. Research Output of Top Cited Indian Researchers in ResearchGate

Researchers	Publications	Contribution Percentage	Projects	Contribution Percentage
Res. 1	505	16.03 %	2	2.06 %
Res. 2	382	12.12 %	14	14.43 %
Res. 3	477	15.14 %	15	15.46 %
Res. 4	229	7.27 %	8	8.25 %
Res. 5	63	2.00 %	0	0.00 %
Res. 6	130	4.13 %	5	5.15 %
Res. 7	146	4.63 %	5	5.15 %
Res. 8	154	4.89 %	9	9.28 %
Res. 9	120	3.81 %	1	1.03 %
Res. 10	232	7.36 %	8	8.25 %
Res. 11	15	0.48 %	5	5.15 %
Res. 12	88	2.79 %	7	7.22 %
Res. 13	84	2.67 %	2	2.06 %
Res. 14	81	2.57 %	2	2.06 %
Res. 15	445	14.12 %	14	14.43 %
Overall	3151	100.00 %	97	100.00 %

15 (cited) Indian researchers contributed to 3151 research publications and have undertaken 97 research projects so far.

7.2 Types of Publications

Further investigation into the types of publications published by the top cited researchers reveals that, out of the 3151 publications, 71.95% (2267) are research articles, 9.97% (314) contain data files, 7.58% (239) conference papers, 7.20% (227) book/book chapters and 3.30% (104)

other types of publications like thesis, presentations, etc (Table 3).

7.3 Full Text Availability (Figure 1)

Only 49.10% (1547) of the 3151 articles of top-cited Indian researchers were available in full text, while the remaining 50.90% (1604) included only the abstract and metadata information. The total number of citations gradually reduces from Res. 1 (Sujit K. Bhattacharya) to Res. 15 (K. M. Singh). And if the ratio of Full-Text publications

Table 3. Publication types of top cited Indian researchers in ResearchGate

Researchers	Article	Book/Chapter	Conference Paper	Data	Others	Total Publications
Res. 1	410 (81.19%)	9 (1.78%)	21 (4.16%)	63 (12.48%)	2 (0.40%)	505 (100.00%)
Res. 2	243 (63.61%)	1 (0.26%)	11 (2.88%)	98 (25.65%)	29 (7.59%)	382 (100.00%)
Res. 3	396 (83.02%)	11 (2.31%)	53 (11.11%)	10 (2.10%)	7 (1.47%)	477 (100.00%)
Res. 4	187 (81.66%)	0 (0.00%)	1 (0.44%)	36 (15.72%)	5 (2.18%)	229 (100.00%)
Res. 5	46 (73.02%)	17 (26.98%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	63 (100.00%)
Res. 6	113 (86.92%)	8 (6.15%)	8 (6.15%)	1 (0.77%)	0 (0.00%)	130 (100.00%)
Res. 7	105 (71.92%)	27 (18.49%)	10 (6.85%)	1 (0.68%)	3 (2.05%)	146 (100.00%)
Res. 8	126 (81.82%)	12 (7.79%)	4 (2.60%)	7 (4.55%)	5 (3.25%)	154 (100.00%)
Res. 9	100 (83.33%)	5 (4.17%)	10 (8.33%)	1 (0.83%)	4 (3.33%)	120 (100.00%)
Res. 10	90 (38.79%)	82 (35.34%)	54 (23.28%)	0 (0.00%)	6 (2.59%)	232 (100.00%)
Res. 11	10 (66.67%)	1 (6.67%)	3 (20.00%)	0 (0.00%)	1 (6.67%)	15 (100.00%)
Res. 12	59 (67.05%)	0 (0.00%)	15 (17.05%)	13 (14.77%)	1 (1.14%)	88 (100.00%)
Res. 13	75 (89.29%)	1 (1.19%)	1 (1.19%)	1 (1.19%)	6 (7.14%)	84 (100.00%)
Res. 14	65 (80.25%)	11 (13.58%)	1 (1.23%)	1 (1.23%)	3 (3.70%)	81 (100.00%)
Res. 15	242 (54.38%)	42 (9.44%)	47 (10.56%)	82 (18.43%)	32 (7.19%)	445 (100.00%)
Overall	2267 (71.95%)	227 (7.20%)	239 (7.58%)	314 (9.97%)	104 (3.30%)	3151 (100.00%)

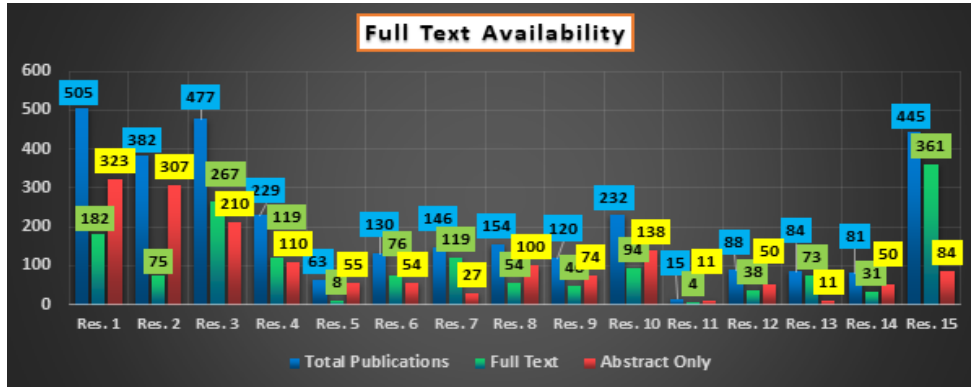


Figure 1. Total publications vs. full text publications vs. abstract only publications.

Table 4. Full text vs. abstract only and total publication ratio

Researchers	Full Text vs. Abs. Only	Full Text vs. Total Pub.	Researchers	Full Text vs. Abs. Only	Full Text vs. Total Pub.
Res. 1	0.56	0.36	Res. 9	0.62	0.38
Res. 2	0.24	0.20	Res. 10	0.68	0.41
Res. 3	1.27	0.56	Res. 11	0.36	0.27
Res. 4	1.08	0.52	Res. 12	0.76	0.43
Res. 5	0.15	0.13	Res. 13	6.64	0.87
Res. 6	1.41	0.58	Res. 14	0.62	0.38
Res. 7	4.41	0.82	Res. 15	4.30	0.81
Res. 8	0.54	0.35	Overall	0.96	0.49

with Abstract Only Publications and Total Publications is considered, the trend is not the same (Table 4). Moreover, in the case of the top 2 cited researchers, the percentage of abstract-only publications (63.96% and 80.37% resp.) is higher than with full-text publications (36.04% and 19.63% resp.). It suggested that there is no such relation between the availability of full text and citations in the

case of the publications of top-cited Indian researchers on ResearchGate.

7.4 Q and A Participation

The importance of Q and A in the research process cannot be underestimated. During the research process,

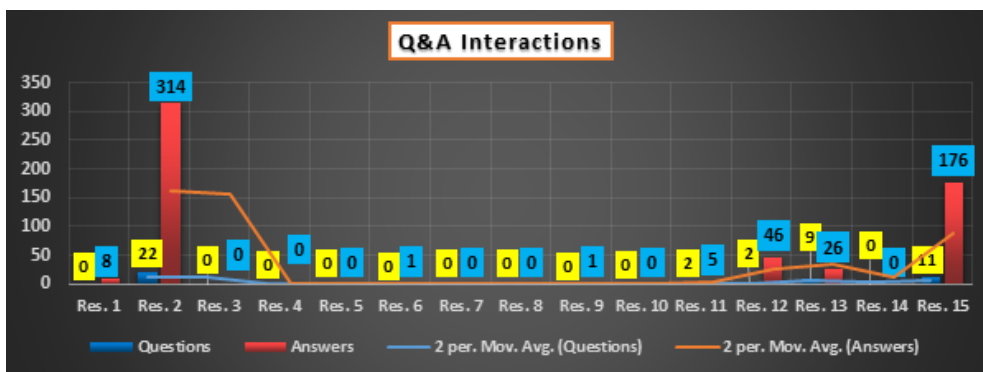


Figure 2. Q and A interactions by the top cited Indian researchers in ResearchGate.

researchers face several obstacles and have doubts and uncertainties. In such difficult situations, they not only need help from their peers and mentors but also need to seek out the global community for answers to their questions. RG holds a reputed and strong position in the domain of 21st century “Academic Social Network” (ASN) or “Scientific Collaboration Network” (SCN) through its robust scholarly communication ecosystem.

According to Figure 2, S. G. Deshmukh (Res. 2) has asked the maximum number of questions (22) among the

top 15 cited researchers, followed by K. M. Singh (Res. 15) and Arun Kumar Dutta (Res. 13) with 11 and 9 questions respectively. Among the top 15 Indian researchers, only S G Deshmukh (Res. 2) and K. M. Singh (Res. 15) provide a significant number of answers (314 and 176 resp).

7.5 Research Impact

The impact of a publication is determined by its total read count, citations, recommendations and overall research interests. Among the four, the first three are independent

Table 5. Research impact of the publications of top cited Indian researchers in ResesarchGate

Researchers	Read	Citations	Recomm- endations	Research Interests
Res. 1	65810 (3.65%)	17210 (22.05%)	245 (3.34%)	8991 (17.60%)
Res. 2	280497 (15.55%)	12226 (17.79%)	1590 (21.67%)	8290 (16.23%)
Res. 3	478888 (26.54%)	8472 (12.33%)	426 (5.81%)	8007 (15.68%)
Res. 4	57609 (3.19%)	4211 (6.13%)	423 (5.76%)	3102 (6.07%)
Res. 5	19159 (1.06%)	3670 (5.34%)	8 (0.11%)	1917 (3.75%)
Res. 6	37829 (2.10%)	3623 (5.27%)	81 (1.10%)	2577 (5.05%)
Res. 7	87848 (4.87%)	2846 (4.14%)	78 (1.06%)	2270 (4.44%)
Res. 8	38901 (2.16%)	2782 (4.05%)	228 (3.11%)	2263 (4.43%)
Res. 9	22837 (1.27%)	2448 (3.56%)	260 (3.54%)	1735 (3.40%)
Res. 10	38128 (2.11%)	2264 (3.30%)	81 (1.10%)	1558 (3.05%)
Res. 11	4889 (0.27%)	2093 (3.05%)	18 (0.25%)	1162 (2.28%)
Res. 12	56362 (3.12%)	1989 (2.89%)	182 (2.48%)	1937 (3.79%)
Res. 13	70564 (3.91%)	1714 (2.49%)	468 (6.38%)	2562 (5.02%)
Res. 14	15419 (0.85%)	1681 (2.45%)	71 (0.97%)	1079 (2.11%)
Res. 15	529397 (29.34%)	1477 (2.15%)	3179 (43.32%)	3626 (7.10%)
Overall	1804137 (100.00%)	68706 (100.00%)	7338 (100.00%)	51076 (100.00%)

variables, but the research interests of a particular article on ResearchGate are based on its citations, recommendations, and weekly reads from ResearchGate members.

Table 5 indicates that, among the top 15 Indian researchers, the publications of K. M. Singh (Res. 15) have the maximum number of reads (29.34% of the top 15), whereas, Sujit K. Bhattacharya (Res. 1) received the highest number of citations (22.05% of top 15). Again, the publications of K. M. Singh (Res. 15) received the maximum recommendations (43.32% of the top 15). In terms of overall research interests, Sujit K. Bhattacharya (Res. 1) obtained the highest value (8991 or 17.60% of the top 15).

7.6 h-Index

The Hirsch index or h-index is a widely used citation statistic that, arguably, accurately reflects the impact of a scientist. It considers both the number of publications and the frequency with which those publications are cited. The original study by Hirsh outlines how self-citations can be

corrected, but he does not include this in his definition of h-index. As a result, there is no clear consensus on whether or not self-citations should be included in computing h-index. The sole purpose of omitting self-citations is to gain a better understanding of whether other researchers are paying attention to one’s work. Google Scholar includes self-citations while calculating the h-index of a particular researcher, whereas, ResearchGate provides a value of the h-index, with inclusion and without the inclusion of self-citation.

Figure 3 indicates that for most researchers there is no significant difference between their overall h-Index and h-Index without self-citations. Among the top 15 researchers,

7.7 Followers and Followings

In ResearchGate, one can follow a researcher to get updated about his latest research. The total RG score of a researcher is also influenced by the number of followers. The followings count of researchers reveals interest in other researchers as well.

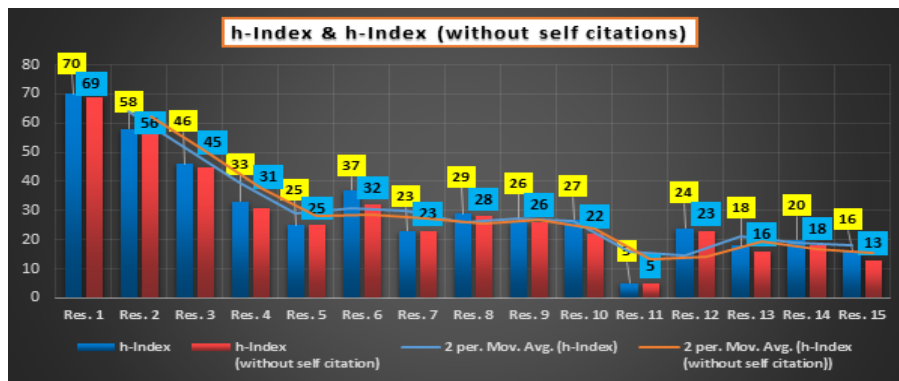


Figure 3. Overall h-Index and h-Index without self-citation.

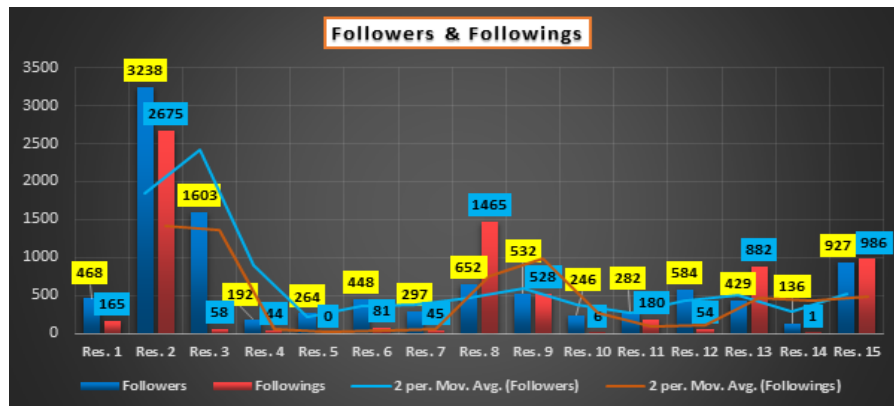


Figure 4. Followers and followings count of top cited Indian researchers in ResearchGate

Figure 4 indicates the trend in followers of the top 15 cited Indian researchers in ResearchGate.

7.8 RG-Score

The RG Score indicates the research interest of a researcher’s work perceived by peer researchers. RG score is calculated based on any contribution shared by a researcher on ResearchGate or added to his profile, such as published articles, unpublished research, projects, questions, and answers. The ResearchGate algorithm scrutinises how peer researchers receive and evaluate these contributions and who they are. The RG score of a researcher rises at a faster pace with the increase of the RG score of those who interact with his research contribution. A low-quality contribution probably won’t attract positive feedback and recognition from the community, so it won’t contribute to the RG score in any significant way. In contrast to more traditional metrics, the RG Score focuses on a particular researcher as an ever-growing community of specialists.

Figure 5 depicts that although the citation count constantly decreases from Res. 1 (Sujit K Bhattacharya) to Res. 15 (K. M. Singh), the RG Score does not follow the same trend. It meant that a researcher’s RG Score does not depend solely on the citations count but there are other contributing factors like the number of publications, project completion, followers count, and question and answer participation. Among the top 15 cited Indian researchers in ResearchGate, Res. 2 (S G Deshmukh) obtained the highest RG Score (value=57.00) due to his significant contribution to all the contributory

fields (publications=382, projects=14, questions=22, answers=314, citations=12226).

8. Statistical Correlation Analysis

A correlation expresses the strength of linkage between two variables. The most common statistical measure of correlation is the Pearson Product Moment Correlation (PPMC) which shows the relationship between two sets of data. The correlation coefficient between two continuous-level variables is called Pearson’s r or Pearson product-moment correlation coefficient, which is represented typically as the letter r and has a single value between -1 and +1. This value measures the strength of the linkage.

In the present study, total five variables possess seven different types of correlation formation with a variety of Pearson’s r value ranges between -1 and +1. All of them possess a positive correlation value ranges from 0.219 (Citations-Read) to 0.920 (Citations-Res. Int.). Depends on significant correlation value, the ‘p’ value also varies (as, * p < .05, ** p < .01, and *** p < .001). On further analysis, in the present study, the correlation link highly strong between “Citations - Res. Int.” (0.920), “Publications - Res. Int.” (0.865), “RG Score - Res. Int.” (0.773), and “Publications - RG Score” (0.765) pairs.

This analysis suggests that, “Research Interests” correlated with the number of research contributions and “Citations” count, and “RG Score” is influenced by the “Research Interests” and number of Publications. It is also seen that number of publications satisfactorily correlated with number of “Read” and “Citations” counts. Although,

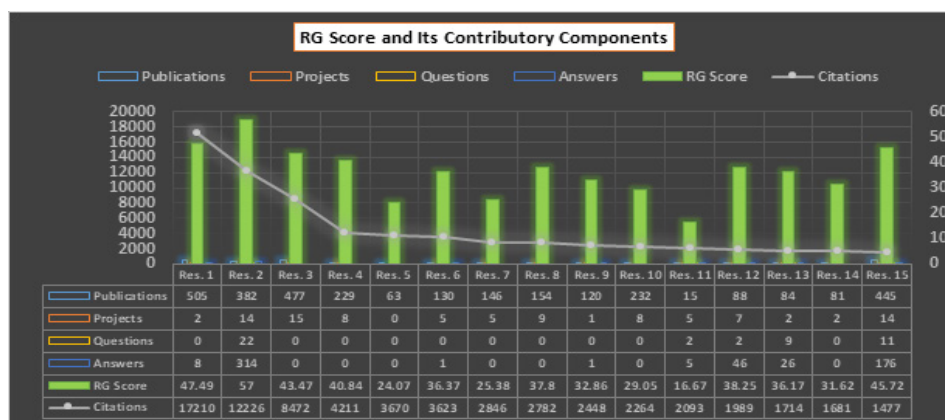


Figure 5. RG score and its contributory components.

Table 6. Pearson's correlation test results

Correlation pairs	n	Pearson's r	p	Lower 95% CI	Upper 95% CI	VS-MPR†
Publications - Citations	15	0.716**	0.003	0.321	0.898	22.993
Publications - RG Score	15	0.765***	8.985e-4	0.415	0.918	58.368
Publications - Read	15	0.744**	0.001	0.374	0.91	38.218
Publications - Res. Int.	15	0.865***	3.150e-5	0.633	0.954	1126.573
Citations - RG Score	15	0.623*	0.013	0.163	0.861	6.481
Citations - Read	15	0.219	0.434	-0.331	0.657	1.000
Citations - Res. Int.	15	0.920***	1.227e-6	0.77	0.973	22035.961
RG Score - Read	15	0.574*	0.025	0.087	0.839	3.957
RG Score - Res. Int.	15	0.773***	7.283e-4	0.431	0.921	69.917
Read - Res. Int.	15	0.556*	0.032	0.061	0.831	3.374

* $p < .05$, ** $p < .01$, *** $p < .001$

† Vovk-Sellke Maximum p -Ratio: Based on the p -value, the maximum possible odds in favour of H_1 over H_0 equals $1/(-e p \log(p))$ for $p \leq .37$ (Sellke *et al.*, 2001).

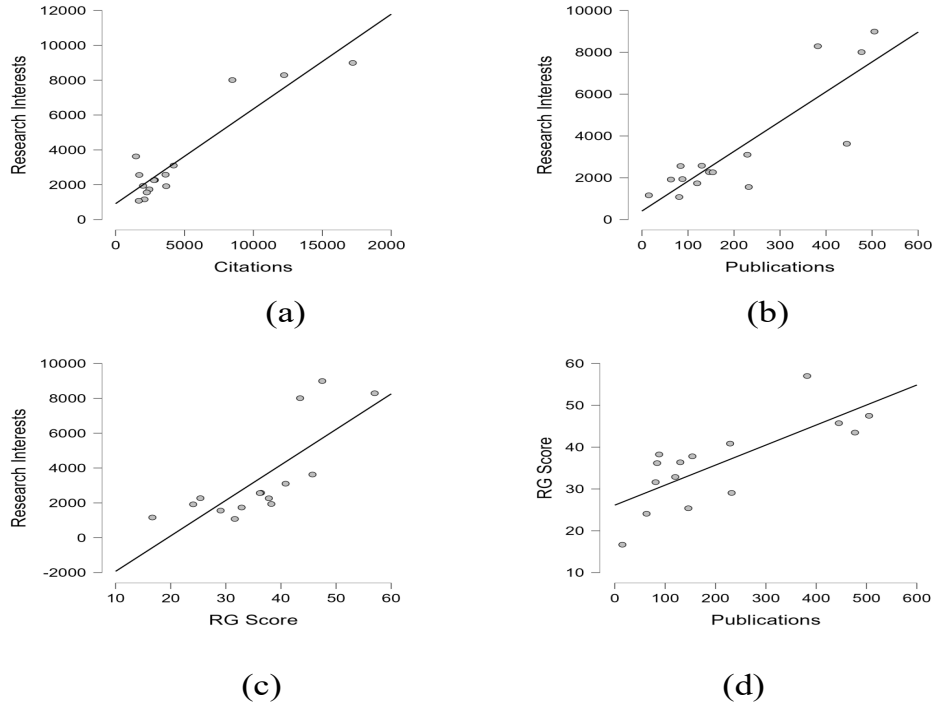


Figure 6. Scatter Plots of Highly Strong Linked Correlated Pairs. (a) Citations - Research Interests (Pearson's $r = 0.920$). (b) Publications - Research Interests (Pearson's $r = 0.865$). (c) RG Score - Research Interests (Pearson's $r = 0.773$). (d) Publications - RG Score (Pearson's $r = 0.765$).

number of “Read” of a research publication has a very little contribution to the “Citations” count.

9. Summary and Findings

The study examined the top 15 cited Indian researchers on ResearchGate, focusing on various metrics such as citations, publications, h-index, and research interests. Among them, Sujit K Bhattacharya emerged as the most cited researcher with 17,210 citations, and he also had the highest number of publications (505), h-index (70), and research interests (8,991). The majority of the contributions from the targeted researchers are research articles (71.95%) and 49.10% available in full text. Notably, the pairs “Citations - Res. Int.” (0.920), “Publications - Res. Int.” (0.865), “RG Score - Res. Int.” (0.773), and “Publications - RG Score” (0.765) showed highly positive correlation linkages.

The study findings suggested that,

- RG Score is an overall altmetric measure and is not solely dependent on citations; it is influenced by other factors such as total reads, recommendations as well.
- Although it is assumed that a research article is used and cited more if it is available in open access; but in ResearchGate there is no direct relationship between the full-text availability, reads and citations to a publication.
- The “Research Interests” score of an author shows positive correlations with the number of research contributions and the count of citations received by the author.
- The RG Score is highly influenced by Research Interests and the number of publications.
- Lastly, the number of “Reads” of a research publication has a relatively small contribution to the “Citations” count.

10. Conclusion

Traditionally, the research performance and reputation of a researcher, as well as their publications and source journals, are determined by factors such as citations count, h-index, and impact factor. However, the advent of the digital era, particularly the emergence of social media, has introduced new online tools that facilitate the dissemination of research. Alongside this, a new family

of research indicators has emerged. In today’s context, various Academic Social Networking Sites (ASNS) offer a variety of altmetric parameters that calculate the overall usage count and interests surrounding a researcher, their research publications, journals, institutions, and even countries. ResearchGate (RG) provides researchers with a set of research performance indicators, including the RG Score, which symbolizes their contribution to academia. The study underscores the importance of utilizing ASNS platforms like ResearchGate to promote research and enhance altmetric scores. By engaging with these platforms, researchers can expand the reach of their work, foster discussions, and increase their visibility, thus contributing to a more comprehensive assessment of their impact beyond traditional metrics.

It is suggested that researchers embrace the opportunities offered by digital platforms like ResearchGate to showcase their scholarly publications and broaden the assessment of their research impact through various altmetric measures. Embracing these new tools can provide a more holistic and contemporary view of a researcher’s influence and contributions to the academic community.

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