

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Library Philosophy and Practice (e-journal)

Libraries at University of Nebraska-Lincoln

August 2020

Citation Analysis of Research Papers of Faculty and Research Scholars of University of Mysore to Assess the Individual's Research Productivity and Impact of Authors

Kodandarama Rama

PES College of Engineering Mandya, ramsripa@gmail.com

Follow this and additional works at: <https://digitalcommons.unl.edu/libphilprac>



Part of the [Library and Information Science Commons](#)

Rama, Kodandarama, "Citation Analysis of Research Papers of Faculty and Research Scholars of University of Mysore to Assess the Individual's Research Productivity and Impact of Authors" (2020). *Library Philosophy and Practice (e-journal)*. 4026.
<https://digitalcommons.unl.edu/libphilprac/4026>

Citation Analysis of Research Papers of Faculty and Research scholars of University of Mysore to Assess the Research Productivity and Impact of Authors

Kodandarama

Research Scholar, Department of studies in Library and Information Science, Manasagangothri,
University of Mysore, Mysuru-570006

Librarian, PES Engineering College (Government Aided), Mandya

ABSTRACT

Bibliographical details of research papers and papers citing them were analyzed to indentify the productivity and performance of faculty and research scholars of University of Mysore. Findings show Authors of University of Mysore have collaborated with most of the developed countries in the world. USA has the highest collaborative works followed by Japan. Further, Researcher has also attempted to know the publication productivity per author. Study revealed that publication productivity per author for 806 collaborative research papers is 0.1810.

INTRODUCTION

Due to the rapid development in information and communication technologies there are lots of publications coming from various institutions throughout the world. There is a remarkable contribution from Indian research institutions and the universities regarding the scholarly publications. As per the Scimago Journal Ranking, India stands 9th in terms of producing research publications. Among the universities of India, the University of Mysore has ranked 57th in the National Institutional Ranking Framework for its high quality and innovative researches as on 2017 (<http://www.uni-mysore.ac.in>). Being one of the premier institutions of India, the University of Mysore with highly qualified teachers and research scholars has actively engaged in contributing more research for the development of the nation. It has produced many scholarly publications in national and international scholarly journals and these publications have been cited in many national and international journals and conference proceedings. Publications and citations data taken from Scopus, Web of Science and Indian Citation Index pertaining to research output of institutes are used for computing the scores for ranking the Institutes/ Universities by NIRF (National Institutional Ranking Framework), India and are frequently incorporated in the decisions of career advancement and appointment of teacher and other

academic staff as required under the UGC (Minimum Qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges) Regulation, 2016.

Thus researcher has proposed the author impact factor and publication productivity factor for collaborative works to ascertain the performance of individuals.

REVIEW OF LITERATURE

The citation analysis of research publications will help in assessing the quality of a published work rather than just identifying the core journal in literature (Bhat & Kumar, 2008). Use of citation counts has been the most widely used methods in evaluating the research performance of scholars (Harinarayana & Raju, 2012; Lewison, 2001; Thomas & Watkins, 1998; Rao, 1993). The use of citation counts for evaluating research is based on the assumption that citations are a mean of giving credit and recognizing the value, quality, and significance of an author's work (Borgman & Furner, 2002; Van Raan, 1996) Many scholars has argued against the evaluation of impact of individual, article and journals based on citation counts (Aksnes & Taxt, Kostoff, 1996). It is noted in the reviews that important issue associated with evaluation is the source used for the collection of citation data. Josco (2005) compared Web of science, Scopus and Google Scholar in respect to subjects and citations coverage. Web of Science and Scopus claim strong coverage of selected peer-reviewed journals, while Google Scholar might be better able to record citations from books and nontraditional sources, such as Web sites, dissertations, and open-access online journals (Falagas et al., 2008). Web of science is one of the ways for the international scientific community to recognize most effective works of individual or institute (Abrizah, Zainab, Edzan, & Koh, 2013).

OBJECTIVES

The objectives of the study are as follows:

1. To identify the different forms of information resources of published and citing research papers
2. To classify country wise collaborative research.
3. To identify most citing authors and countries
4. To analyze the authorship pattern of research papers of University of Mysore

5. To identify the top ten journals of published and citing research papers
6. To identify the number of authors of University of Mysore and their authorship order on publications.
7. To identify the author impact factor and publications productivity factor.
8. To find out the top most prolific authors of University of Mysore

METHODOLOGY

In the present study, the quantitative method was adopted. The investigation was based on the analysis of bibliographical details of research papers of University of Mysore and citing papers. The publications of faculty and research scholars of University of Mysore covered in Web of Science Citation Index during 2012-2016 were taken as source of material for the study. The total number of research papers and citing papers are 1246 and 2935 respectively. The bibliographical details were collected in a Microsoft Excel and the data was tabulated and analyzed for results.

SCOPE AND LIMITATIONS OF THE STUDY

The scope of the study was limited to the research papers of faculty and research scholars of University of Mysore covered in Web of Science during 2012-2016. The research publication including journal articles, conference papers and others forms of publications were considered for the study.

DATA ANALYSIS AND INTERPRETATION

Table 1: Forms wise distribution of published and citing papers

Sl. No.	Forms of Publications	Type of publications	
		Published papers	Citing papers
1	Article	1162 (92.51)	2557 (86.23%)
2	Reviews	29 (2.30%)	336 (11.33)

3	Meeting abstract	24 (1.91%)	0
4	Editorial material	11 (87%)	22 (0.71)
5	Conference papers	9 (0.71%)	21 (0.70)
6	Book chapter	0	10 (0.33)
7	Correction	2 (0.15%)	9 (0.30)
8	Letter	5 (0.39%)	7 (0.23)
9	News item	12 (0.95%)	3 (0.10)
10	Retracted Publication	1 (0.07%)	0
11	Biographical item	1 (0.07%)	0
Total		1256	2965

Table No. 1 Indicates the different forms of research publications of University of Mysore and publications citing them covered in Web of Science during 2012-2016. Among the overall 1256 research publications, 1162 journal articles top the list followed by 29 reviews. Hence, it can be inferred that a large number of faculty and research scholars of University of Mysore preferred to publish their research works in journals and a considerable number of faculty and researches representing 2.30% are engaged in the critical appraisal of publications others which turned to be the reviews. The cited and citing publications have been scattered in to different forms of publications such as articles, reviews, meeting abstracts, editorial material, and conference papers, book chapter and others. Among the citing publications also journal articles representing 86.23% are more compared to other forms of publications. The total number of citing publications depicts the impact of research publications of University of Mysore in the scholarly community. Therefore it is evident from the table that the research publications of University of Mysore has good amount of National and International influence over the other researches being carried out.

Note: Total number of published research papers of University of Mysore and citing papers covered in web of science during 2012-16 are 1246 and 2936 respectively. Since the publications

are categorized in to different forms there has been overlap of 10 published papers and 29 citing papers.

Table 2: Geographical distribution of collaboration of published and citing papers (top ten countries)

Sl. No.	Country	Published papers	Country	Citing papers
1.	USA	99	China	548
2.	Japan	48	USA	283
3.	Saudi Arabia	32	Iran	138
4.	England	30	Japan	116
5.	Malaysia	26	Saudi Arabia	113
6.	Iran	26	Brazil	111
7.	Singapore	25	Egypt	94
8.	Scotland	25	Turkey	88
9.	Turkey	21	South Korea	88
10.	South Africa	19	Spain	85

Table No. 2 Indicates the country wise collaboration of published and citing papers, among the collaborated countries of published papers, United States of America stands first with 99 research papers followed by Japan with 48 research papers and Saudi Arabia with 32 research papers. Therefore it can be inferred that the faculty and researches of University of Mysore have an international cooperation in research with most of the developed countries. Further, regarding the use of publications by oversea faculty and research scholars, China attains first place with 548 research papers followed by USA with 283 research papers, use of these publications by overseas faculty and research scholars shows that the research papers of University of Mysore have good impact in global discoveries.

Table 3: Funding agency wise distribution of published research papers

Sl. No.	Name of Agencies	No. of published papers
1.	University Grant Commission	234
2.	Deanship of Scientific Research at King Saud University	18
3.	Vision Group Science and Technology Department of Science and Technology	17
4.	DST	17

5.	UGC SAP	16
6.	CSIR	15
7.	DST PURSE	14
8.	DST Indo Korea	14
9.	NSF MRI	13
10.	UGC BSR	12

Table No. 3 Indicates the top ten funding agencies of published research papers of University of Mysore. Among all agencies University Grants Commission ranks 1st with 234 papers followed by Deanship of Scientific Research of King Saud University with 18 papers. Hence, it can be inferred that National Agency of University Grants Commission India provide good amount of fund to the faculty and research scholars of University of Mysore to meet their requirements for research in specialized areas and to promote excellence in research in higher education by supporting research programmes of University various disciplines. Further funding support from agencies of foreign countries clearly attests that faculty and research scholars of University of Mysore have an international association in researches.

Table 4: Funding agency wise distribution of citing research papers

Sl. No.	Agency	No. of Citing papers
1.	Natural Science Foundation of China	244
2.	UGC	157
3.	CNPQ	37
4.	Deanship of Scientific Research at King Saud University	31
5.	Fundamental Research Funds for the Central Universities	30
6.	Capes	22
7.	DST	21
8.	NFSC	18
9.	European Union	17
10.	Department of Science and Technology	10

Table No. 4 Indicates the top 10 funding agencies of citing research papers. Among all agencies Natural Science Foundation of China stands first with 244 papers followed by University Grants Commission India with 157 publications. It shows that a majority of researches funded by China prefer to refer publications of University of Mysore.

Table 5: Top ten journals of published research papers

Sl. No.	Journals	No. of published papers
1.	Acta Crystallographica Section E Crystallographic Communications	54
2.	Molecular Crystals and Liquid Crystals	44
3.	Spectrochimica Acta Part a Molecular and Bimolecular Spectroscopy	36
4.	PLOS one	27
5.	RSC Advances	20
6.	Bioorganic Medicinal Chemistry Letters	20
7.	Tetrahedron Letters	17
8.	Journal of Food Science and Technology Mysore	16
9.	Acta Crystallographica Section E Structure Reports Online	16
10.	European Journal of Medicinal Chemistry	15

Table No. 5 Indicates the list of top ten journals of published research papers of University of Mysore. Among all journals Acta Crystallographica Section E Crystallographic Communications stands first with 54 papers followed by Molecular Crystals and Liquid Crystals with 44 papers. The study reveals that all the top ten journals belong to the category of science and technology. Hence it can be inferred that contributions of faculty and research scholars of science and technology is remarkable than other disciplines.

Table 6: Top ten journals of citing papers

Sl. No.	Journals	No. of papers
1.	RSC Advances	96
2.	PLOS one	66
3.	Spectrochimica Acta Part a Molecular and Bimolecular Spectroscopy	63
4.	European Journal of Medicinal Chemistry	54
5.	Journal of Molecular Structure	53
6.	Bioorganic Medicinal Chemistry Letters	39
7.	Molecular Crystals and Liquid Crystals	35
8.	Tetrahedron Letters	33
9.	Scientific Reports	33
10.	Molecules	31

Table No. 6 Indicates the top ten journals of citing papers. Among all journals of citing publications RSC advances stands first with 96 publications followed by PLOS one with 66 publications. Further, the presence of RSC advances, PLOS one, Spectrochimica Acta Part a

Molecular and Bimolecular Spectroscopy, European Journal of Medicinal Chemistry, Molecular Crystals and Liquid Crystals and Tetrahedron Letters in the both list of top ten journals of published and citing papers depicts their global acceptance by the research scholars and faculty for publishing and referring research works.

Table 7: Language wise distribution of published and citing research papers

Sl. No	Language	Published papers	Language	Citing papers
1.	English	1,246	English	2912
2.			Chinese	11
3.			Polish	5
4.			Spanish	2
5.			Ukrainian	1
6.			Russian	1
7.			Portuguese	1
8.			Korean	1
9.			Czech	1
		1246		2935

Table No. 7 indicates the language wise distribution of published and citing papers. It is known from the study that overall research papers of University of Mysore including foreign collaborative papers have been published in English language representing 100%. On the other hand research papers published in English language were cited by publications in other eight different languages apart from English.

Table 8: Year wise distribution of published and citing papers

Sl. No.	Year	Published papers	Citing papers
1.	2012	215	34
2.	2013	219	185
3.	2014	244	422
4.	2015	291	817
5.	2016	277	1049
7.	2017	--	428
Total		1246	2935

Table No. 8 indicates the year wise distribution of published and citing papers. Study reveals that there is an inclining trend in the production of research scholars from 2012 to 2015 and slightly

declined in the year 2016 by 14 publications. On the other side it is observed that the number of citing publications (citation) have significantly increased from 2012 to 2016. Hence it can be inferred that faculty and research scholars of University of Mysore have been actively engaged in conducting researches and their impact of research is significantly increasing from year to year.

Table 9: Top ten prolific authors of published and citing research papers

Sl. No	Author	Published papers	Name	Citing papers
1.	Rangappa K. S.	104	Rangappa K. S.	73
2.	Yathirajan H. S.	77	Panicker C. Y.	37
3.	Lokanath N. K.	57	Govindaiah T. N.	36
4.	Girish K. S.	47	Van Alsenoy C.	33
5.	Basavaiah K.	45	Basappa	33
6.	Kemparaju K.	39	Girish K. S.	32
7.	Naveen S.	36	Santosh M.	30
8.	Narayana B.	36	Mohan C. D.	27
9.	Singh M.	35	Narayana B.	25
10.	Ramachandra N. B.	35	Kemparaju K.	24

Table No. 9 Indicates the top ten productive authors of published and citing papers. Study reveals that the top ten authors of published research papers belong to the University of Mysore and most of whom have appeared to be the authors of citing papers. Hence, it can be inferred that majority of faculty and research scholars of University of Mysore tend to cite their own publications.

Table 10: Authorship pattern of published and citing research papers

Sl. No.	Authorship pattern	No. of published papers	No. of citing papers
1.	Single	16 (1.28%)	94 (3.20%)
2.	Two	226 (18.13%)	349 (11.89%)
3.	Three	215 (17.25%)	418 (14.24%)
4.	Four	21 (17.33%)	474 (16.14%)
5.	Five	191 (15.32%)	455 (15.50%)
6.	Six	166 (13.32%)	371 (12.64%)
7.	Seven	93 (7.46%)	272 (9.26%)
8.	Eight	51 (4.09%)	167 (5.68%)
9.	Nine	21 (1.68%)	128 (4.36%)
10.	Ten	15 (1.20%)	67 (2.28%)
11.	Eleven	07 (0.56%)	41 (1.39%)

12.	Twelve	09 (0.72%)	29 (0.98%)
13.	Thirteen	08 (0.64%)	18 (0.61%)
14.	Fourteen	04 (0.32%)	16 (0.54%)
15.	Fifteen	02 (0.16%)	12 (0.40%)
16.	Sixteen	03 (0.24%)	06 (0.20%)
17.	Seventeen	02 (0.16%)	06 (0.20%)
18.	Eighteen	--	02 (0.06%)
19.	Nineteen	--	01 (0.03%)
20.	Twenty	--	02 (0.06%)
21.	Twenty one	--	02 (0.06%)
22.	Twenty two	01(0.08%)	--
23.	Twenty eight	--	01 (0.03%)
24.	Thirty nine	--	01 (0.03%)
Total		1246	2935

Table No. 10 indicates the authorship pattern of published and citing papers. Study reveals that the predominance of multi authored papers over single authored publications is high. The multi-authored publications account for 98.71% and 96.79% in both published and citing research papers as a whole. Hence, it can be inferred that collaborative research work is more than the individual's research works. The degree of collaboration is measured with the help of formula given by Subramanyam (1982).

Degree of collaboration $C = \frac{N_m}{N_m + N_s}$

C=Degree of collaboration

N_m = Number of multiple authors

N_s =Number of single authors

Degree of collaboration for Cited publications $1230/1246 = 0.98$

Degree of collaboration for citing publications $2831/2935 = 0.96$

Therefore it is obvious from the study that the degree of collaboration in published research papers are more than citing papers.

Table No 11: order of authorship

Sl. No.	Authorship pattern	No of papers	No. of authors	No. of UOM Authors	Order of authorship of faculty and research scholars of University of Mysore in published research papers																
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.	Single	16	16	16	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.	Two	226	452	416	201	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.	Three	215	645	481	156	155	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.	Four	216	864	557	148	128	136	145	-	-	-	-	-	-	-	-	-	-	-	-	-
5.	Five	191	955	519	108	95	88	106	122	-	-	-	-	-	-	-	-	-	-	-	-
6.	Six	166	996	490	96	80	76	81	75	82	-	-	-	-	-	-	-	-	-	-	-
7.	Seven	93	651	316	48	40	50	40	37	54	47	-	-	-	-	-	-	-	-	-	-
8.	Eight	51	408	157	21	18	15	23	19	20	20	21	-	-	-	-	-	-	-	-	-
9.	Nine	21	189	105	12	14	10	13	11	11	8	12	14	-	-	-	-	-	-	-	-
10.	Ten	15	150	52	4	4	8	7	4	5	4	3	6	7	-	-	-	-	-	-	-
11.	Eleven	7	77	18	0	3	2	0	2	0	2	2	2	2	3	-	-	-	-	-	-
12.	Twelve	9	108	42	4	4	5	3	4	3	3	3	1	3	3	6	-	-	-	-	-
13.	Thirteen	8	104	21	2	4	2	0	0	1	2	1	2	0	2	0	5	-	-	-	-
14.	Fourteen	4	56	23	2	1	4	0	1	1	3	2	1	0	2	2	1	3	-	-	-
15.	Fifteen	2	30	8	0	3	0	1	0	0	1	1	1	0	0	0	0	0	1	-	-
16.	Sixteen	3	48	12	2	1	2	1	1	0	0	0	0	0	1	0	0	1	1	2	-
17.	seventeen	2	34	6	1	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	2
18.	Twenty two	1	22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total in numbers		1246	5805	3240	821	765	569	420	276	177	91	45	27	12	11	8	6	5	2	2	3
Total in percentage				55.81	14.14	13.17	9.80	7.23	4.75	3.04	1.56	0.77	0.46	0.20	0.18	0.02	0.10	0.08	0.03	0.03	0.05

The table 11 indicates the order of authorship of faculty and Research Scholars University of Mysore. It is obvious from the table that majority of 821 authors representing 14.14% attained first authorship followed by 765 authors who obtained second authorship and 569 authors who got third authorship. And only small numbers of authors have appeared in the authorship range of 7-17. Therefore it can be inferred that a large segment of faculty and research scholars of University of Mysore appeared in the authorship range of 1-5.

Author Impact Factor

Author impact factor has been calculated based on the formula used to measure the impact of journal (The Thomson Reuters Impact Factor - Clarivate Analytics, 2015). Here instead the number of publications number of authors is considered for computing author impact factor (AIF). The formal is shown below (<http://wokinfo.com/essays/impact-factor/>)

AIF= $\frac{\text{Number of citations received to publications}}{\text{Number of authors}}$

Number of authors

Table No. 12: Author impact factor

Sl. No.	Type of collaboration	No. of publications	No of Authors			No. of Citations	AIF for faculty and researcher		
			UOM	Others	Both		UOM	others	Both
1.	Collaboration among faculty and research scholars of UOM	440 (35.32%)	1352 (23.30%)	-- (00%)	1352 (23.30%)	1208	0.89	--	0.89
2.	Collaboration of faculty and research scholars of UOM and other Institutes	806 (64.68%)	1888 (32.52%)	2565 (44.18)	4453 (76.70%)	2665	1.41	1.04	0.59
Total		1246	3240 (58.82)	2565 (44.18)	5805 (100%)	3873	1.19	1.51	0.66

Table number 12 indicates the author impact factor, total number of faculty and research scholars of published research papers. It is obvious from the table that 440 research papers were done with collaboration of 1352 faculty and research scholars of University of

Mysore. And 806 research papers were done with collaboration of 4453 faculty and research scholars of University of Mysore and other institutes representing 32.52% and 44.18% respectively. Further, among 5805 entire authors 3240 authors representing 58.82% are the faculty and research scholars of University of Mysore and 2565 authors representing 44.18% are the faculty and research scholars of other institutes. Therefore it can be inferred that contribution of faculty and research scholars of University of Mysore is more predominant than the faculty and research scholars of other institutes.

Publication productivity factor

As the faculty and research scholars of other institutes is involved in the collaborative works the researcher has proposed the Publication Productivity Factor which is based on the number of collaborative publications and authors involved in publications. Further, this metric will be may be used to identify the degree of collaboration and can also be applied for the distribution of collaborative works among the collaborative institutes. The formula used for the computation of publication productivity factor is as below

$$\text{PPF} = \frac{\text{Total number of collaborative publications}}{\text{Total number of authors}}$$

Table 13: Distribution of Collaborative papers

Sl. No.	Collaboration type	Number of Authors		Distribution of Collaborative papers based on publication productivity factor (Total No. of Publications is 806)	
		UOM	Other institute	UOM	Other institute
1.	Collaboration with faculty and research scholars of UOM and other institutes	1888	2565	342	464
Total		4453		806	

$806/4453 = 0.1810$ is the publications productivity factor.

Further, the publication productivity factor was multiplied with the number of authors of University of Mysore and other Institutes to distribute the publications based on the contributions.

$$0.1810 * 1888 = 341.728$$

$$0.1810 * 2565 = 464.265$$

(The fraction is rounded off to the nearest number in the above table)

Table number 13 indicates the distribution of collaborative works among authors of University of Mysore and other institutes. Among the 806 collaborative research papers University of Mysore has obtained 342 and other institutes have gained 464 research papers. The distribution of collaborative research papers is done mainly to identify the degree of contribution of individual institute in a collaborative works. It is evident from the table that faculty and research scholars of other institutes contributes more in collaborative works

than faculty and research scholars of University of Mysore.

In table number 12, it is obvious that 440 researches have been authored by 1352 faculty and research scholars of University of Mysore only. Adding these 342 publications with those 440 Publications University of Mysore will have 782 publications in its credit which amounts to 62.76% of overall research papers. This way overall productivity of any institution may be derived for institutional rankings.

Findings of the study

The analytical study of citations of research papers of University of Mysore has revealed many findings. The major findings sought from the study are presented below mainly covering the impact of researches of faculty and research scholars of University of Mysore and their publication productivity.

1. Publications of research works in journal are more than other form of publications. This is the normal trend observed among the research scholars of published and citing papers. It is also found that majority of citing authors have preferred the primary sources journal articles of University of Mysore in their publications.
2. The highest number of researches of University of Mysore representing 7.94% was done with the collaboration of faculty and research scholars of United States of America.
3. Research papers of University of Mysore have received highest number of citation from china which amounts to 18.67% of overall citations.
4. Many national and international research programs, associations and agencies including UGC, Deanship of Scientific Research at King Saud University, Vision Group Science and Technology Department of Science and Technology, DST, UGC SAP, CSIR, DST PURSE, DST Indo Korea, NSF MRI and UGC BSR have supported for research activity and assisted in conducting and publishing research outcome of University of Mysore. Among all agencies University Grants Commission India has funded to majority of research works representing 18.78% of overall all researches done during 2012-2016.
5. A large percentage of researches funded by Natural Science Foundation of China representing 8.22% have quoted the research papers of University of Mysore.
6. Most of the research paper were published in the journal Acta Crystallographica Section E Crystallographic Communications which depicts the predominance of Chemistry research in the overall researches of University of Mysore
7. It is found in the study that research papers of faculty and research scholars of University of Mysore were also cited by the publications made in National languages like Chinese, Polish, Spanish, Ukranian and Russian.

8. Research papers of University of Mysore have been progressively cited from year to year. It shows that the use of research papers of University of Mysore has considerably increased in other publications at national and international [Ref. Table No. 8]
9. There is a trend of self citation among the faculty and research scholars of University of Mysore [Table No.9]
10. Collaborative research is more than the individual research [Ref. Table No. 10]
11. Out of 5805 authors 320 authors belong the university of Mysore and remaining 2565 belong the other institutes.
12. Among the total number of authors 14.14% of authors University of Mysore obtained first authorship in research papers.
13. The degree of contribution of faculty and research scholars of other institute is more predominant in collaborative works.

Suggestions

1. It is observed that collaborative researches are more among the research papers of University of Mysore. Therefore identification of Author impact factor and publication productivity factor are essential as to recognize degree of individuals' contributions or performance.
2. Research publications including collaborative works and citations data pertaining to research works of individual author or institutions from citation indices like Web of Sciences, Scopus and Google scholar are usually used for career advancement and ranking the institutions. As collaborative research is more in any institutes. It's not possible to ignore the collaborative researches done with the research scholars of other institutes in the decisions of career advancement and ranking the institutions. There is a need to identify the author impact factor and publication productivity factor as to know the actual research contributions of particular author and institutes. Thus, metrics like author impact factor and publication productivity factor may be considered while awarding the research scholars and ranking institutions for its individual research output and impact.

Conclusion

Citation analysis is one of the means adopted to identify the impact of researches of individuals, group of authors and institutions for ranking and awarding. Data obtained through citation indices may not provide the definite contributions of particular author or institute when the collaborative works with the faculty and research scholars of other institutions exists. In such cases metrics like author impact factor and publication productivity factor may be computed to have the details of the precise contribution of any individual/institute. Mysore University has been ranked 57th by National Institutional Ranking Framework. It is noted in the study that the involvement or collaboration of 2565 faculty and research scholars from other than Mysore University were remarkable in 806 publications which comprises 4453 authors and only 440 research papers comprising 1352 authors have been done without collaboration of authors of other institutes. Hence, researcher assumes that there could be a same trend of collaboration among other institutes ranked by NIRF. Therefore the accurate contribution of any individual or institute should be determined to showcase the research productivity and its impact.

References

Journal articles

Abrizah, A., Zainab, A. N., Edzan, N. N., & Koh, A. P. (2013). Citation Performance of Malaysian Scholarly Journals in the Web of Science, 2006–2010. *Serials Review*, 39(1), 47–55. Retrieved from <https://doi.org/10.1016/j.serrev.2013.01.001>

Aksnes D. W., & Taxt R. E. (2004) Peer reviews and bibliometric indicators: A comparative study at a Norwegian university. *Research Evaluation*, 13(1), 33–41.

Bavdekar, S. B. (2012). Authorship issues. *Lung India : Official Organ of Indian Chest Society*, 29(1), 76–80. Retrieved from <https://doi.org/10.4103/0970-2113.92371>

Borgman C. L., & Furner J. (2002) Scholarly communication and bibliometrics, *Annual Review of Information Science and Technology*, 36, 3–72

Bhat, V. R., & Kumar, B. T. (2008). Use of web based sources in scholarly electronic journals in the field of library and information science: a citation analysis. *NISCAIR Online Periodicals Repository*, 55, 145-152. <http://nopr.niscair.res.in/handle/123456789/1776>

Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., & Pappas, G. (2008). Comparison of PubMed, Scopus, Web of Science, and Google Scholar: strengths and weaknesses. *The FASEB Journal*, 22(2), 338–342. Retrieved from <https://doi.org/10.1096/fj.07-9492LSF>

Harinarayana, N. S., & Raju, N. V. (2012). Citation analysis of publications of LIS teachers in south India. *Information Studies*, 18(3), 143-161.

Jacso, P. (2005). As we may search—comparison of major features of the Web of Science, Scopus, and Google Scholar Citation-based and citation-enhanced databases. *Current Science*, 89(11), 1537–1547. Retrieved from <http://www.iisc.ernet.in/currsci/nov102005/1537.pdf>

Lewison, G. (2001). Evaluation of books as research outputs in history of medicine. *Research Evaluation*, 10(2), 89-95. Retrieved from <https://doi.org/10.3152/147154401781777051>

Subramanyam, K. (1982) Bibliometric studies of research collaboration: a review." *Information Scientist* 6(1), 33-38.

Thomas P. R. & Watkins D. S. (1998) Institutional research rankings via bibliometric analysis and direct peer review: A comparative case study with policy implications. *Scientometrics*, 41 (3), 335–355

Van Raan A. F. J. (1996) Advanced bibliometric methods as quantitative core of peer-review based evaluation and foresight exercises. *Scientometrics*, 36 (3), 397–420

Website

<http://wokinfo.com/essays/impact-factor/>