Asian Journal of Information Science and Technology
ISSN: 2231-6108 (P) Vol.1 No.2, 2011, pp.60-66

DOI: https://doi.org/10.51983/ajist-2011.1.2.19

Uses of Web / Internet Sources in Current Science: A Bibliometric Analysis

B.O. Sathivel Murugan[1], S. Ally Sornam[2] and K. Sundaravadivel[3]
[1&3]IRT-Perundurai Medical College, Perundurai – 638 053, Tamil Nadu, India
[2]Department of PG & Research DLIS, Bishop Heber College, Tiruchirappalli - 620 017, Tamil Nadu, India
E-mail: irtsathivel@yahoo.co.in
(Received on 04 August 2011 and accepted on 25 November 2011)

Abstract

Bibliometric analysis of 365 articles published in Current Sciences, Vol.96 (12 Issues) and Vol. 97 (12 Issues) are taken up to observe the authorship pattern, geographical distribution of the contributors, types of articles and citations. Results indicated that the percentage of use of highest numbers of papers have been written by co-authors. Indian authors have contributed more than other countries. Web/Internet sources in the citation are low. As compared to the hard copy sources, the contributors of the journal used less than 4% of the web sources in the citation.

Keywords: *Bibliometric, Current Sciences, Scientometrics*

1. INTRODUCTION

Bibliometric is the study dealing with the qualification of written communication, which helps in the measurement of the publication knowledge. Bibliometric analysis throws light on the pattern of growth of literature interrelationship among different branches of knowledge productively authorship pattern, degree of collaboration, pattern of collection building and their use. Bibliometric studies are generally becoming interdisciplinary in nature.

Current Science journal was started as a monthly in 1932. When it began, It had the patronage of the legends of Indian Scientists, CV Raman, Birdoal Sahni, SS.Bhatnagar, JC Bose and many others and eminent scientists such as, CR Narayana Rao, M Sreenivasaya and B.Venkateshachar were involved with its production. They modeled the journal on the lines of Nature. Initially, the sections in the first few volumes of the journal were: an editorial, followed by letters to the editor, research notes, industrial out looks, scientific news, reviews followed by few general articles and announcements. It is a interdisciplinary science research journal, devoted to the cause of representing the progress of a large section of Indian science. It functions as a useful medium for scientific contact between India and the rest of world, and acts as a forum for discussion of matters of interest to scientists. Its task of disseminating scientific information to the public was made all the more efficient when the journal becomes freely available on the internet in 2000 [1]. It endeavours to bring out recent research in all fields of science.

This paper is an attempt made to identity the types of research papers presented and web source citations used.

2. REVIEW OF LITERATURE

Various authors have done many bibliometric / scientometric /content analysis / citation analysis of papers published in formal journals and online journals.

Thillainayagam (1999) used eleven years of papers in biannual journal of International Information Communication and Education: a critical survey results show that 88.25% of single authors contributed articles in the journal [2]. It is reversed and observed the significant in the following reviews, Susanta Koley and Sen [3], Ramakrishnan and Rameshbabu (2007) [4], Vijay and Raghavan (2007) [5], Nattar (2009) [6], Thanuskodi (2011) [7], Mamdapur, Govanakoppa, and Rajgoli (2011) [8], and Manoj and Moorthi (2011) study [9]. It shows that majority (above 70%) of the articles are contributed by the joint authors.

Thanuskodi (2010) has done a bibliometric study of the journal of social science published in India. 78.39%

foreign authors contributed their paper in the journal. Nearly 80% of the articles are produced by the combined author papers in the journal of social science [10].

Manoj and Moorthi (2011) carried bibliometric analysis of DESIDOC Journal of Library and Information Technology. Among the citations, 17.027% citations are web/internet sources. Its percentage is more than the use of conference proceedings / seminars/ symposia/ reports, theses/ dissertations, standards, and letters [11].

3. SELECTION OF JOURNAL

Current Science is one of the most popular fortnight science journals in India brought out by the Indian Academy of Sciences, Bangalore. 2009 full set (24 issues) is used for analyses. This journal covers the following types of articles: commentary, general, opinion, research account, research articles, research communication, research news, review articles, and special section.

4. SCOPE OF STUDY

Present study is based on 365 research articles published in 24 issues, 10,532 citations presented in Vol. 96 and Vol. 97. An average of 28.855 citations presented per article.

5. METHODOLOGY

Status of the authors, nationality and references appended in each articles were scanned, counted and tabulated employing systematic sampling method.

6. DATA ANALAYSIS

Table 1 Distribution of Authors

Types of Authors	No. of Authors	%	Total no. of Authors	%	Rank
Single	96	26.301	96	8.914	6
Two	100	27.397	200	18.570	1
Three	66	18.082	198	18.384	2
Four	35	9.589	140	12.999	3
Five	27	7.397	135	12.535	4
Six	23	6.301	138	12.813	5
Seven	5	1.370	35	3.250	8
Eight	4	1.096	32	2.971	9
Nine	3	0.822	27	2.507	10
10 and more	6	1.644	6(76)	7.057	7
Total	365	100	1077	100	

Table 1 explicates the authorship pattern of contribution. Out of 365 articles, 26.301% single authors, 27.397% two authors, 18.082% three authors, 9.589% four authors, 7.397% five authors, 6.301% six authors, 1.370% seven authors, 1.096% eight authors, 0.822 % nine authors, 1.644 % of more than ten authors contributed papers in the journal. 73.699 % of the articles are contributed by co-author.

One thousand and seventy seven authors contributed 365 articles in the journal. An average of three authors produced one article. Among the total articles, 96 articles (26.301%) have single author papers and remaining 269 articles (73.699%) have two and more than two authors. However, out of 1077 authors, 96 solo authors produced 96 articles (26.301%) and remaining 981 authors (73.699%) jointly produced 269 articles.

Degree of Collaboration

Table 1 descriptions single author papers are percentage is less than that of multi author papers. 74% of the contributions are collaborative papers. To

determine the degree of collaboration (C) in quantitative terms C = Nm/(Nm+Ns)

Nm= Number of multi author papers, Ns=Number of single author papers.

C=981/ (981+96) = 0.9109

This brings out clearly that a higher level of degree of collaborative papers are presented in the Current Science.

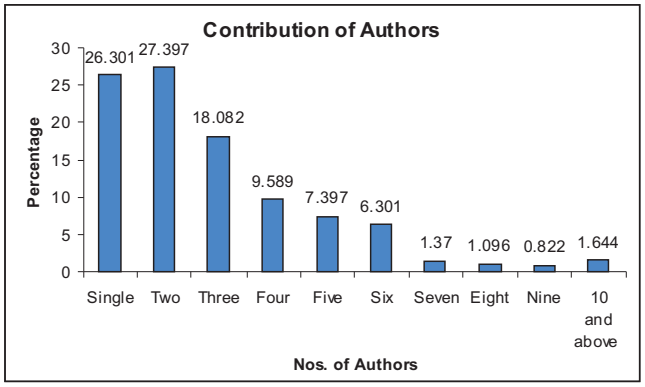

Fig. 1 Distribution of Authors

Table 2 Geographical Distribution of Authors

S.No.	Continents	Nos.	%
1	Asia (India 947; 97.428%)	972	90.251
2	America	61	5.664
3	Europe	32	2.971
4	Australia	11	1.021
5	Africa	1	0.093

Table 2 shows the geographical distribution of authors. The Asian continent authors produce 90.251% articles and the rest of other continents contribute remaining 9.749% articles. In Asia, 97.428% papers produced by the Indian authors. Remaining, 2.572% of the papers produced by the rest of Asian continent country papers. American contribution is 5.664%.

Table 3 Classification of Indian and Foreign Authorship Pattern

Authors	Total no. of Indian Authors	%	Total no. of Foreign Authors	%	Total	%
Single	78	7.242	18	1.671	96	8.914
Two	173	16.063	27	2.507	200	18.570
Three	174	16.156	24	2.228	198	18.384
Four	114	10.585	26	2.414	140	12.999
Five	130	12.071	5	0.464	135	12.535
Six	128	11.885	10	0.929	138	12.813
Seven	34	3.157	1	0.093	35	3.250
Eight	26	2.414	6	0.557	32	2.971
Nine	22	2.043	5	0.464	27	2.507
10 and more	68	6.314	8	0.743	76	7.057
Total	947	87.929	130	12.071	1077	100

Table 3 provides the detail of the contributors' authorship pattern and geographical distribution. Among the total authors (1077), 87.929% of the Indian contributors and 12.071% of the international contributors are presented their papers. 7.242% of the Indian authors and 1.671% of the foreign authors contributed single author papers. 80.687% of the Indian authors and 10.4 of the foreign authors produced collaborative / team of research papers. The following chart 2 expressed the geographical distribution of authors.

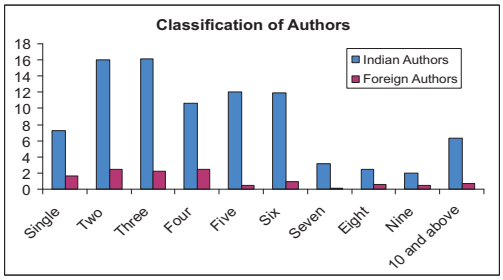

Fig. 2 Classification of Indian and Foreign Authorship Pattern

Table 4 Types of Articles and Contribution of Indian and International Authors

S.No.	Types of Articles	No. of Articles	%	No of Authors	%	Total Indian Authors	%	Foreign Authors	%
1	Commentary	30	8.219	53	4.921	43	3.993	10	0.929
2	General	36	9.863	72	6.685	70	6.5	2	0.186
3	Opinion	20	5.479	38	3.528	31	3.273	7	0.65
4	Research Account	4	1.096	15	1.393	15	1.393	0	0
5	Research Articles	39	10.69	148	13.74	135	12.54	13	1.207
6	Research Communication	146	40	545	50.6	512	47.54	33	3.064
7	Research News	17	4.658	22	2.043	22	2.043	0	0
8	Review Articles	32	8.767	107	9.935	88	8.171	19	1.764
9	Special Section	41	11.23	77	7.149	31	2.878	46	4.271
10	Total articles	365		1077	100	947	87.93	130	12.07

Table 4 expressed the types of articles presented by the Indian and foreign authors in current science. Among the total articles (365), 146 research communications (40%), 41 special section articles (11.233%), 39 research articles (10.685%), 36 general articles (9.863%), 32 review articles (8.767%), 30 commentary (8.219%), 20 opinion (5.479%), 17 research news (4.658%) and 4 research account (1.096%) are presented.

Among the total authors (1077), 71.304% contributors presented papers in the following categories, opinion, research communication, research article, research account and research news. Remaining 28.696% of articles presented in commentary, general, review articles and special section. 76.789% of the Indian authors and 4.921% of the foreign authors presented papers in the following categories opinion, research communication, research article, research account and research news.

Table 5 shows the types of articles based on citation. There are 10,532 citations used in the 365 articles. An average of 28.855% of the reference is presented in one article. Among the selected articles, 3259 of citations used in the research communication (30.944%), 2,026 citations in special section (19.237), 1,969 of citations in review articles (18.695%). However, 5,155(48.946%) of the citations are presented in authors / reviewers opinion, research communication, research articles, research account and research news. Contributors used various formal sources (96.155%) like, journals, books, review articles, thesis, conference proceedings, manuals etc. They used 10,127 hard copy sources (96.155%) and 405 web sources (3.845%) are used in references. From the results, digital environment information users are believed the hard copy sources than the digital / web sources.

Table 5 Types of Articles Based on Citations

Types of Articles	Total No. of Citations	%	Use of Hard Copy Sources	%	Use of Web Sources	%
Commentary	360	3.418	325	3.086	35	0.332
General	1022	9.704	899	8.536	123	1.168
Opinion	379	3.599	337	3.200	42	0.399
Research Account	144	1.367	144	1.367	0	0.000
Research Articles	1179	11.194	1160	11.014	19	0.180
Research Communication	3259	30.944	3203	30.412	56	0.532
Research News	194	1.842	179	1.700	15	0.142
Review Articles	1969	18.695	1943	18.449	26	0.247
Special Section	2026	19.237	1937	18.392	89	0.845
Total	10532	100	10127	96.155	405	3.845

Table 5 shows the types of articles based on citation. There are 10,532 citations used in the 365 articles. An average of 28.855% of the reference is presented in one article. Among the selected articles, 3259 of citations used in the research communication (30.944%), 2,026 citations in special section (19.237), 1,969 of citations in review articles (18.695%). However, 5,155(48.946%) of the citations are presented in authors / reviewers opinion, research communication, research articles, research account and research news. Contributors used various formal sources (96.155%) like, journals, books, review articles, thesis, conference proceedings, manuals etc. They used 10,127 hard copy sources (96.155%) and 405 web sources (3.845%) are used in references. From the results, digital environment information users are believed the hard copy sources than the digital / web sources.

Table 6 Distribution of Authors and use of Web Sources

No. of Authors	Total No. of Citations	%	Hard Copy Sources	%	Web Sources	%
Single	2856	27.117	2655	25.209	201	1.908
Two	3037	28.836	2927	27.791	110	1.044
Three	2073	19.683	2014	19.123	59	0.560
Four	722	6.855	707	6.713	15	0.142
Five	656	6.229	645	6.124	11	0.104
Six	557	5.289	556	5.279	1	0.009
Seven	127	1.206	126	1.196	1	0.009
Eight	178	1.690	177	1.681	1	0.009
Nine	75	0.712	75	0.712	0	0.000
10 and more	251	2.383	245	2.326	6	0.057
Total	10532	100.000	10127	96.155	405	3.845

Table 6 shows distribution of authors and use of hard copy and web sources. Among the total citations, 2,856 citation (27.117%) presented in the single author papers and remaining 8,676 citations (72.883%) presented in two more authors. Out of the total citations, 25.209% of the hard copy sources and 1.908% of the web sources are referred by the single authors. Multi authors use 70.946% of the hard source and 1.908% of the web references. From the table we know that one-fourth of the hard copy sources and half of the web sources are used by the single authors.

Table 7 Distribution of Web References

No. of Authors	Web Sources	%
Single	201	49.630
Two	110	27.160
Three	59	14.568
Four	15	3.704
Five	11	2.716
Six	1	0.247
Seven	1	0.247
Eight	1	0.247
Nine	0	0.000
10 and above	6	1.481
Total	405	100

Table 7 expressed practitioners' use of the web sources in citations. The single authors use 50% of the web sources, similarly, the two authors use 27.160% of the web sources and three authors use 14.568% of the sources are used by the three authors. The following chat 3. expressed the same.

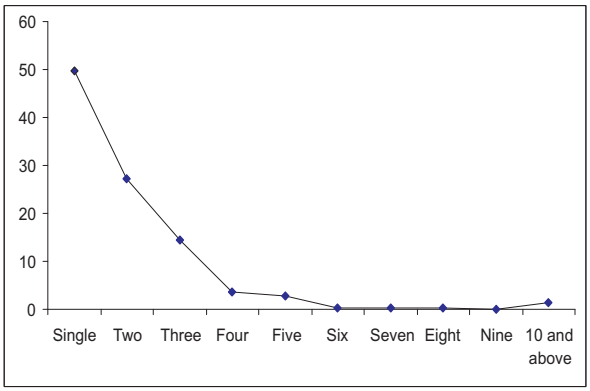

Fig. 3 Practitioners' use of web sources

7. FINDINGS

1. Three fourth (74%) of the articles are contributed by the collaborative authors (91%).
2. Out of total articles (365), 40 % of the articles are presented by two and three authors. However, ten and more authors (7.057%) contributed 1.644% of articles.
3. 87.929% of Indian authors and 12.071% of foreign authors contributed papers. It is reversed in Thanuskodi (2010) findings [10].
4. Among the content of the journal, 40% research communications, 11.233% special section and 10.685% research articles are the top three sections in the journal.
5. Among the total authors (1077), 50.604% research communications, 13.742% research articles and 9.935% review articles are top three sections presented by the authors.
6. Out of the total authors (1077), 47.539% research communications, 12.535% research articles and 8.171% review articles are presented by the Indian authors. 4.271% special section articles and 3.064% research communications are presented by the foreign authors.
7. An average of 28.855% of citations are presented in a article.
8. 96.155% of the authors used hard copy sources and 3.845% used web/internet sources for citations.
9. Out of total citations, top three ranked citations are presented in research communication (30.944%), special section (19.237%), and review articles (18.695%).
10. Hard copy sources are used in research communication (30.412%), review articles (18.449%), and special section (18.392%).
11. Among the total references, only 1.168% of the web references are presented in the general articles. This may be that scientists have more belief in hard copy sources than web sources .

12. Among the total citation, the two authors refer 28.836% of the citations, the single authors 19.683% of the citations are used by three authors' use 27.117% of the citations.

13. 27.791% of hard copy sources and 1.044% of the web sources used by the two authors. 25.209% of the hard sources and 1.908% web sources are used by the single authors. 19.123% of sources used by the three authors.

8. CONCLUSION

From the above observation it can be can concluded that the Current Science journal has covered international scope in the topices of reseacher communication in the field of science. Authers are mainly depended on hard copy sources than web / interent sources. Indian authors have contriouled maximum number of papers than interneational contributors. This study also helpful to the library persons in collection development of hard copy sources and to make necessary awarness in the digetal / online sources to the researchers in the boom of Information Technology environment.

REFERENCES

[1] Yadugiri, "The Architects of Current Science", Current Science, Vol.100, 2011, pp.409-15.

[2] Thillainayagam, "International Information, Communication and Education: A Critical Survey", Indian Journal of Information Library & Society, Vol.12, 1999, pp.165-173.

[3] Susanta Koley and Sen, "Indian Journal of Physiology and Allied Sciences: An Analysis of Citation Pattern," Annals of Library and Information Studies, Vol.50, 2003, pp.23-26.

[4] Ramakrishnan and Ramesh Babu, "Literature on Hepatitis (1984-2003): A Bibliometric analysis," Annals of Library and Information Studies, Vol.54, 2007, pp.195-200.

[5] Vijay and Raghavan, "Journal of Food Science and Technology: A Bibliometric study," Annals of Library and Information Studies, Vol.54, 2007, pp.207-212.

[6] Nattar, "Indian Journal of Physics: A Scientometric Analysis," International Journal of Library and Information Science, Vol.1, 2009, pp.55-61.

[7] Thanuskodi, "Bibliometric Analysis of the Indian Journal of Chemistry," Library Philosophy and Practice, 2011.

[8] Mamdapur,Govanakoppa and Rajgoli, "Baltic Astronomy (2000-2008)-A Bibliometric study," Annals of Library and Information Studies, Vol.58, 2011, pp. 34-40.

[9] Manoj and Moorthy, "Bibliometric Analysis of DESIDOC Journal of Library and Information Technology during 2001-2010," DESIDOC Journal of Library and Information Technology, Vol.31, 2011, pp.203-208.

[10] Thanuskodi, "Journal of Social Sciences: A Bibliometric study," Journal of Social Sciences, Vol.24, 2010, pp.77-80.

[11] Manoj and Moorthy, "Bibliometric Analysis of DESIDOC Journal of Library and Information Technology During 2001-2010," DESIDOC Journal of Library and Information Technology, Vol.31, 2011, pp.203-208.