

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Library Philosophy and Practice (e-journal)

Libraries at University of Nebraska-Lincoln

4-2012

Annals of Library and Information Studies, 2002–2010: A Bibliometric Study

Kamal Lochan Jena

Librarian, College of Engineering & Technology, kljena@rediffmail.com

Dillip K. Swain

KIIT University, swaindk_69@yahoo.co.in

K. C. Sahoo

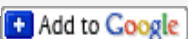
Gour University, Sagar, Madhya Pradesh, India, drkcsahoo@yahoo.com

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



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

Lochan Jena, Kamal; Swain, Dillip K.; and Sahoo, K. C., "Annals of Library and Information Studies, 2002–2010: A Bibliometric Study" (2012). *Library Philosophy and Practice (e-journal)*. 716.
<https://digitalcommons.unl.edu/libphilprac/716>



<http://unllib.unl.edu/LPP/>

Library Philosophy and Practice 2012

ISSN 1522-0222

Annals of Library and Information Studies, 2002–2010: A Bibliometric Study

[Dr. Kamal Lochan Jena](#)

Librarian, College of Engineering & Technology
Bhubaneswar, Odisha, India

[Dr. Dillip K Swain](#)

Lecturer
PG Dept of Library and Information Science
North Orissa University
Baripada, Odisha, India

[Dr. K. C. Sahoo](#)

Dean
School of AIS
Professor and Head
Dept. of Library & Information Science
Dr. H. S. Gour University
Sagar, Madhya Pradesh, India

Introduction

Research publications are the embodiments of the intellectual thought contents expressed in published literature whose key objective is to transmit innovative ideas or information to any specific field of knowledge towards the further development of a subject or a discipline. In this respect bibliometric study is regarded as one of the crucial areas of research in the field of Library and Information Science. Moreover, bibliometrics study is used as an instrument in the collection building policy by providing the precise and much needed information to the managers to take the right decision in right time as to what documents they should select and what documents they should discard from the existing collections of their respective libraries. Contextually, the present study attempts to measure the publication traits of a premier Indian referred journal namely, *Annals of Library and Information Studies* (ALIS) from 2002 to 2010.

ALIS is a leading library science journal being published by The National Institute of Science Communication and Information Resources (NISCAIR), New Delhi on quarterly basis. This journal publishes articles, documentation notes and research reviews on library, documentation and information science, information systems, services and products, information technology, information users, bibliometrics, scientometrics and informetrics, education and training and other related topics (www.niscair.res.in). Therefore a bibliometric study of this journal is of immense significance.

Review of Literature

Though the statistics was applied to study the literature in any subject but the first recorded study of Bibliometric topic was in 1917 by Coles and Eales (1917) with the title '*Statistical analysis of literature of history of comparative anatomy*' which served as a model for applying the counting technique in the

evaluation of international activities. Pritchard (1969) first introduced the term 'Bibliometrics' in 1969 to mean 'the application of mathematics and statistical methods to books and other media of communications'. Roy (1983) has defined bibliometrics as a 'study of the process of information use by analyzing the characteristics of documents and their distribution by statistical methods. Mote and Deshmukh (1996) in their study on *Annals of Library Science and Documentation* found that journals are most cited form of communication amongst the library and information scientists and the source journal is the most cited publication. Shokeen and Kaushik (2004) in their study on *Indian Journal of Plant Physiology* found that journal articles are predominant with 81% of total citations. The ratio of author self citation to total citations is 1:16.65. The ratio of Journal Self Citation to total citation is 1:31.91. The results also highlight that 398 citations are below 10 years old, whereas 358 citations are below 20 years but more than 10 years old.

In the aforesaid direction, Jena (2007) in his study on *Indian Journal of Fibre and Textile Research, 1996–2004* revealed various details of the trend of publications of this journal. Biswas, Roy and Sen (2007) conducted a bibliometric study on *Economic Botany* from 1994-2003 and revealed that among the citations, books accounted for 59%, journals 41% while, e-citations were quite negligible. Furthermore, they found that the highest numbers of contributions were emanated from academic institutions such as universities. Zao, et al.(2007) in their study on *Educational Psychology* identified six clusters of journals, including general educational psychology/learning/literacy, school psychology, measurement and counseling, Germany-based educational psychology, creativity, and the other related themes. Furthermore, the study revealed that a small number of journals accounted for a relatively high percentage of the intra-disciplinary citations; the majority of the selected journals cited more than being cited in the field. Turk (2008) indicated that there is quite a uniform way about methodology of citation counts and substantial research about motivation for URL citations to LIS articles. Willet (2008) found that many of the most cited papers in the *Journal of Chemical Information and Modeling* describe software packages that play a key role in modern chemoinformatics research. Zainab, Ani and Anur (2009) in their bibliometric study on *Malayasian Journal of Computer Science* evaluated the article productivity of the journal from 1985 to 2007 using Lotka's Law. The study further revealed authorship, co-authorship pattern by degree of authors' collaboration that ranged from 0.25 to 0.95. Asha and Anil (2010) under took a bibliometric study of 4798 citations appended to 400 articles in five volumes (2003-2007) of the *Indian Journal of Pure and Applied Mathematics* and found that the most cited documents are articles from research journals and the foreign authors have contributed more than Indian authors. Swain (2011) in his scientometric analysis of *Library Philosophy and Practice* from 2004 to 2009 found that the degree of collaboration in LPP ranged from 0.222 to 0.52 and the highest numbers of contributors hailed from Nigeria, followed by USA, India, and Iran. Swain and Panda (2012) conducted a bibliometric study on *Journal of Intellectual Property Rights, 2002 to 2010* and found that due to absolute domination of solo contributions, the visibility of collaborative contribution was found remarkably less. The study further revealed that about one third of the total publications received citations, more than half of the cited articles carried just one citation, one fourth got 2 citations, and the rest received citations between 3 to 9 times. Jena, Swain and Sahu (2012) in their bibliometric study of *The Electronic Library* from 2003 to 2009 revealed some interesting bibliometric traits of this journal. Taking the above mentioned literature into context, the present study aims to provide some value addition to the corpus of literature on bibliometric studies.

Objectives of the Study

The present study intends to analyze the publication trends in ALIS during the period 2002 to 2010.

The key objectives of the study are:

- To study the year wise distribution of articles;
- To study the citation pattern of articles;
- To study the bibliographical forms of documents;
- To study the authorship pattern;
- To study the length of articles;
- To study the geographical distribution of authors; and
- To study the age of documents.

Methodology

For the analysis of the study, nine volumes (Vol 49 to 57) containing 36 issues of "Annals of Library and Information Studies" published during the year 2002 to 2010 have been taken up for evaluation. The details with regard to each published article such as number of articles in each issue of the journal, number of authors, name of authors, place of authors, number of references and their forms, number of pages, etc., were recorded and analyzed for making observations. The data were collected; organised and analysed using MS-Excel spreadsheets. The tables and graphs were generated in accordance with the objectives of the study. For the sake of convenience, only three major forms of citations comprising of *journals, books and web resources* were taken into the purview of the study while proceedings (conference/seminars/workshops), reports, theses, notes, lectures, speeches, press releases, white papers, employment gazettes, interviews, commentary, news items and such other materials which were found relatively less by their individual numbers were clubbed up into *others* category. Furthermore, web resources were differentiated from electronic journals. The gathered data after due scrutiny, were tabulated and processed for analysis and subsequent interpretation. The degree of collaboration (DC) of the contributors was derived using the Subramanyam(1983) formula which states that the degree of collaboration is the ratio between the number of multiple authored papers and the number of multiple authored papers plus number of single authored papers. This formula can be represented as follows:

NM

DC= -----

NM + NS

Where, DC = Degree of collaboration

NM = Number of multiple authored papers

NS = Number of single authored papers

Analysis and Discussion

Year Wise Distribution of Articles

Table 1: Year Wise Distribution of Articles

Year	No of Articles in Each Issue				Total	% of Articles	Cumulative Total of Articles	Cumulative % of Articles	Cumulative Average no of Articles per Issue
	Mar	Jun	Sep	Dec					
2002	5	4	5	4	18	7.287	18	7.287	4.500
2003	5	4	5	5	19	7.692	37	14.980	4.625
2004	5	6	6	4	21	8.502	58	23.482	4.833
2005	5	6	6	6	23	9.312	81	32.794	5.063
2006	6	6	7	7	26	10.526	107	43.320	5.350
2007	6	9	6	7	28	11.336	135	54.656	5.625
2008	9	10	9	7	35	14.170	170	68.826	6.071
2009	7	8	9	10	34	13.765	204	82.591	6.375

2010	9	9	15	10	43	17.409	247	100.00	6.861
------	---	---	----	----	----	--------	-----	--------	-------

Table 1 reveals that there is a steady rise in the number of publications of articles ranging from 2002 to 2010. Out of the total 247 articles the maximum numbers of articles are reported to have been published in the year 2010 (43 articles; 17.4%) while the least number of articles have been published in the year 2002 (18 articles; 7.29%). On an average, ALIS has accommodated 7 articles per issue.

Year Wise Distribution of Articles and Corresponding Citations

Table 2: Year wise Distribution of Articles and Citations

Year	Articles /Year	Total Citations /Year	Cumulative Total of Articles	Cumulative Total of Citations	Average Citations /Article	Cumulative Average Citations/ Article
2002	18	172	18	172	9.556	9.556
2003	19	330	37	502	17.368	13.568
2004	21	160	58	662	7.619	11.414
2005	23	321	81	983	13.957	12.136
2006	26	386	107	1369	14.846	12.794
2007	28	384	135	1753	13.714	12.985
2008	35	590	170	2343	16.857	13.782
2009	34	675	204	3018	19.853	14.794
2010	43	1038	247	4056	24.140	16.421

Figure 1: Year Wise Distribution of Articles and Corresponding Citations

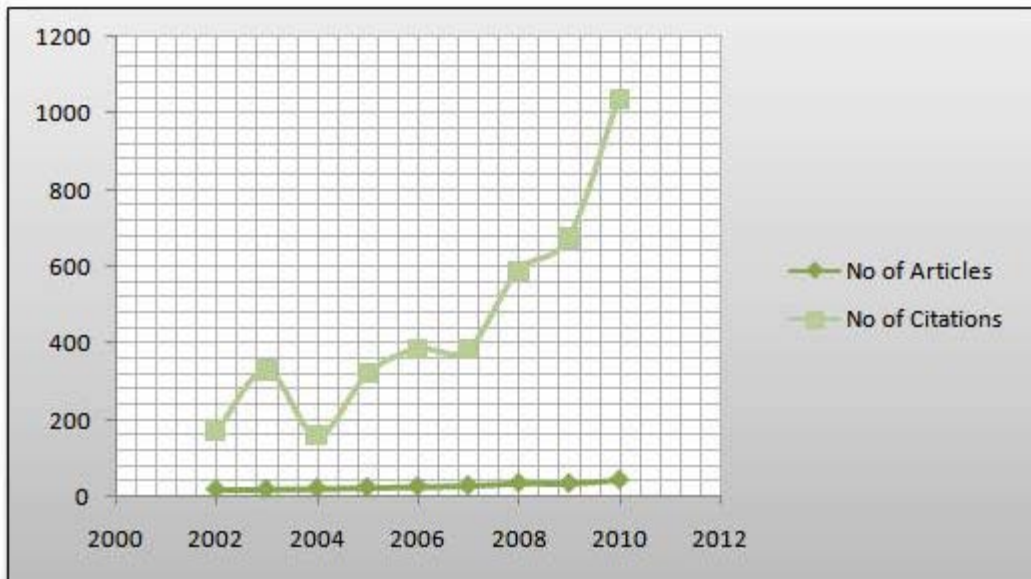


Table 2 shows the year wise distribution of articles, the corresponding total number of citations and the

average number of citations per article. It is found that there is a total of 4056 citations distributed over 36 journal issues carrying a total of 247 articles. Moreover, it is found that the rate of citations of articles has witnessed an increasing trend. The lowest number of average citations per article is found in the year 2002 (nearly 10 citations per article) and the highest number of average citations per article is reported in the year 2010 (24 citations per article).

Bibliographic Forms of Documents

Table 3: Bibliographical Forms of Documents

Sl No	Bibliographical Form	No of Citations	% of Citations	Cumulative no of Citations	% of Cumulative Citations
1	Journals	2329	57.421	2329	57.421
2	Books	671	16.543	3000	73.964
3	Web resources	470	11.588	3470	85.552
4	Others	586	14.448	4056	100.00

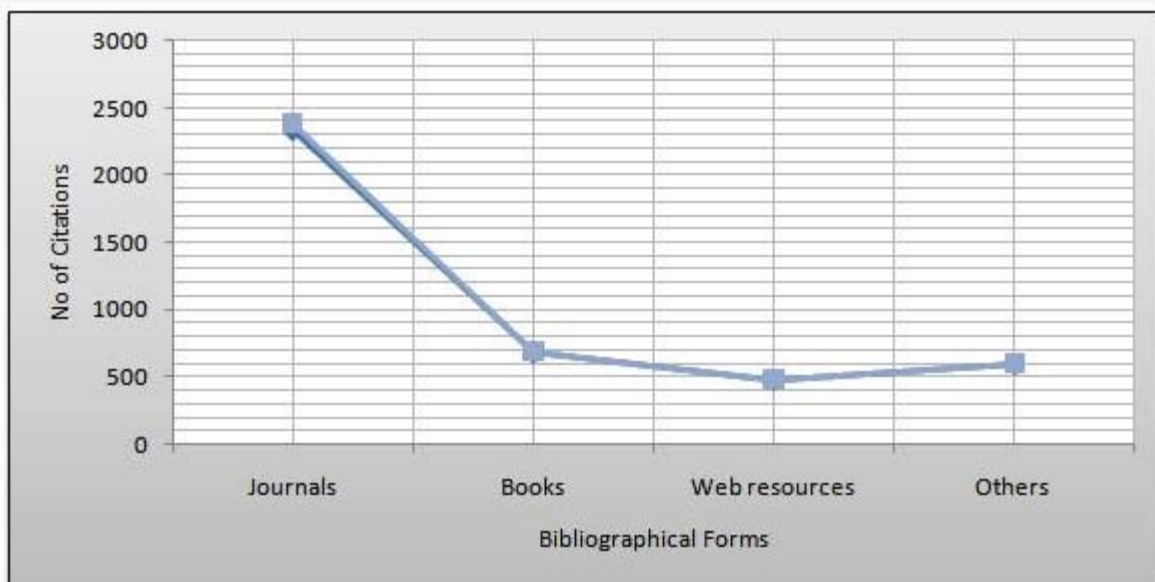


Figure 2: Bibliographic Forms of Documents

Table 3 depicts the distribution of bibliographical forms of citations. It is observed that unlike other related studies, the *journal* form is the most predominant form followed by *books* and *web* resources. Out of the total citations, journals carry the highest number of citations (2329 citations; 57.4%) followed by *books* (671 citations; 16.5%), and *web resources* (470 citations; 11.6%). The rest forms which are grouped into '*others*' were found less.

Authorship Pattern

Table 4: Authorship Pattern

Sl No	Rank	Authorship Pattern	No of Articles	% of Articles	Cumulative Articles	Cumulative % of Articles
1	1	Two	117	47.368	117	47.368
2	2	Single	80	32.389	197	79.757

3	3	Three	43	17.409	240	97.166
4	4	> Three	7	2.834	247	100.00

Table 4 indicates that majority of authors preferred to publish their research results in two authorship mode (47.4%) followed by individual authorship mode (32.4%) and three authorship mode (17.409%) while, articles published by *more than three authors* (7 articles; 2.9%) were quite negligible. The Degree of Collaboration of authors can be calculated as

$$DC = 167 / (167 + 80) = 0.676$$

As DC value exceeds 0.5 and tends to 1, it is deduced that multi-authored citations occupy the prominent position and the research is based on team research rather than solo ones.

Ranking of Authors

Table 5: Ranking of Authors

Sl No	Rank	Name of Contributor	No of Contributions
1	1	Sen B K	20
2	2	B M Gupta	8
3	=2	K C Garg	8
4	3	Bidyarthi Dutta	6
5	4	V K J Jeevan	5
6	=4	Suresh Kumar	5
7	=4	G K Manjunath	5
8	=4	Vijai Kumar	5
9	5	Dineesh K Gupta	4
10	=5	Haneefa K Mohamed	4
11	=5	B S Biradar	4
12	=5	B T Sampath Kumar	4
13	=5	D Shivalingaiah	4
14	=5	Anup Kumar Das	4
15	=5	S Kumar	4
16	=5	V L Kalyane	4

17		18 Nos of Authors	3 each
18		45 Nos of Authors	2 each
19		239 Nos of Authors	1 each

Table 5 depicts the ranking of authors. There are a total of 318 authors who contributed 247 numbers of articles to *Annals of Library and Information Studies* from 2002 to 2010. From Table 5 it is found that B K Sen, who happens to be a bibliometric exponent in India, is the leading author contributing *twenty* articles followed by B M Gupta and K C Garg with *eight* articles each securing the second position. Bidyarthi Dutta contributed *six* articles and ranked third. V K J Jeevan, Suresh Kumar, G K Manjunath and Vijai Kumar contributed *five* articles each securing fourth rank. Dinesh K Gupta, Haneefa K Mohamed, B S Biradar, B T Sampath Kumar, D Shivalingaiah, Anup Kumar Das, S Kumar and V L Kalyane who contributed *four* articles each are bracketed in the fifth rank. Besides the above mentioned authors, 18 authors contributed *three* articles each, 45 authors contributed *two* articles each and 239 authors contributed *one* article each.

Length of Articles

Table 6: Length of Articles

Year	No of Articles	Cumulative Total of Articles	Pages	Cumulative Total of Pages	Average Pages per Article	Cumulative Average No of Pages
2002	18	18	162	162	9.000	9.000
2003	19	37	165	327	8.684	8.838
2004	21	58	149	476	7.095	8.207
2005	23	81	154	630	6.696	7.778
2006	26	26	202	832	7.769	7.776
2007	28	54	193	1026	6.929	7.600
2008	35	89	310	1336	8.857	7.859
2009	34	123	276	1612	8.118	7.902
2010	43	166	393	1998	8.977	8.089

Table 6 shows that the minimum average length of article is 7 pages which is reported for the cumulative issues of 2004 while, the maximum average page of the article is 9 pages for the year 2002. Taking all the issues from 2002 to 2010 into account, it is found that ALIS has accommodated on an average 8 pages per article.

Geographical Distribution of Contributors

Table 7: Geographical Distribution of Contributors (Equal Credit Method)

Sl No	Rank	Credit Points	Country	No of Contributions	Percentage of Contribution

1	1	232.5	India	454	95.378
2	2	2.5	Nigeria	4	0.840
3	3	2	The Netherlands	2	0.420
4	=3	2	USA	2	0.420
5	4	1.833	Belgium	3	0.630
6	5	1.5	Botswana	2	0.420
7	6	1	Bangladesh	2	0.420
8	=6	1	Srilanka	2	0.420
9	=6	1	Honolulu	1	0.210
10	7	0.667	Hungery	2	0.420
11	8	0.5	China	1	0.210
12	=8	0.5	Nepal	1	0.210
13			Total	476	100.00

From Table 7 it is evident that there are a total of 476 authors representing 12 different countries. The geographical distribution of articles is decided basing upon the address of authors' affiliation given in the article. Here, equal credit method (Chua, et al, 2002; Lowry et al; Serenko, et al, 2010) is employed for ranking of country productivity by scores. This method assigns *one* point to each article which is equally shared among authors. For example, if an article has been contributed by *n* authors, then each author will earn $1/n$ points for his country. For instance, three authors from USA, two authors from India, and one author from UK have contributed one article. In that case, each author will earn $(1/6)$ a score of 0.167 for his country and by that way USA will score 0.50, India-0.334, and UK- 0.167. In this study, the share of contribution of India (232.5 points; 454 contributions) is found to be at the top. Among other countries, Nigeria (2.5 points) with the contribution of *four* articles ranked second. The Netherlands and USA have 2.0 points with *two* contributions each ranked third in the list. Rest countries have scored less than 2.0 points and the contribution of articles with varied contributions from *one* to *three* articles.

Table 7(a): Geographical Distribution of Contributors (Indian States)

SI No	Rank	Credit Points	Name of State	No of Contributions
1	1	57.239	New Delhi	101
2	2	39.229	Karnataka	81
3	3	20.246	West Bengal	40
4	4	18.908	Maharashtra	51

5	5	17.5	Kerala	24
6	6	14.972	Uttar Pradesh	32
7	7	13.077	Tamilnadu	33
8	8	7.83	Madhya Pradesh	19
9	9	6.75	Rajasthan	10
10	10	5.332	Uttaranchal	9
11	11	5.167	Manipur	10
12	12	5	Odisha	8
13	13	4.5	Andhra Pradesh	9
14	14	3.5	Haryana	6
15	15	2.667	Assam	3
16	16	2.5	Punjab	3
17	17	2	Himachal Pradesh	2
18	18	1.5	Chandigarh	2
19	=18	1.5	Gujarat	4
20	19	1	J & K	2
21	20	0.75	Pondicherry	2
22	21	0.5	Sikkim	1
23	=21	0.5	Mizoram	1
24	22	0.333	Jharkhand	1
	Total	232.5		454
Total Credit points for India is 232.5				

From Table 7, it is found that India has scored 232.5 points contributing 454 numbers of articles and has 95.378 % of total number of contribution. So it was decided to make a study of geographical distribution of contributors among different states of India which is presented in Table 7(a). The analysis shows that New Delhi scored 57.239 points with 101 numbers of contributions and ranked first. Among the other states Karnataka scored 39.229 points with 81 contributions, West Bengal scored 20.246

points with 40 contributions ranked second and third respectively. Between the score 10 to 20 points Maharashtra scores 18.908 points with 51 contributions, Kerala scores 17.5 points with 24 contributions, Uttar Pradesh scores 14.972 points with 32 contributions, Tamilnadu scores 13.077 points with 33 numbers of contributions and ranked fourth, fifth, sixth and seventh respectively. Other states have less than 10 points with the contribution of less than 20 articles each.

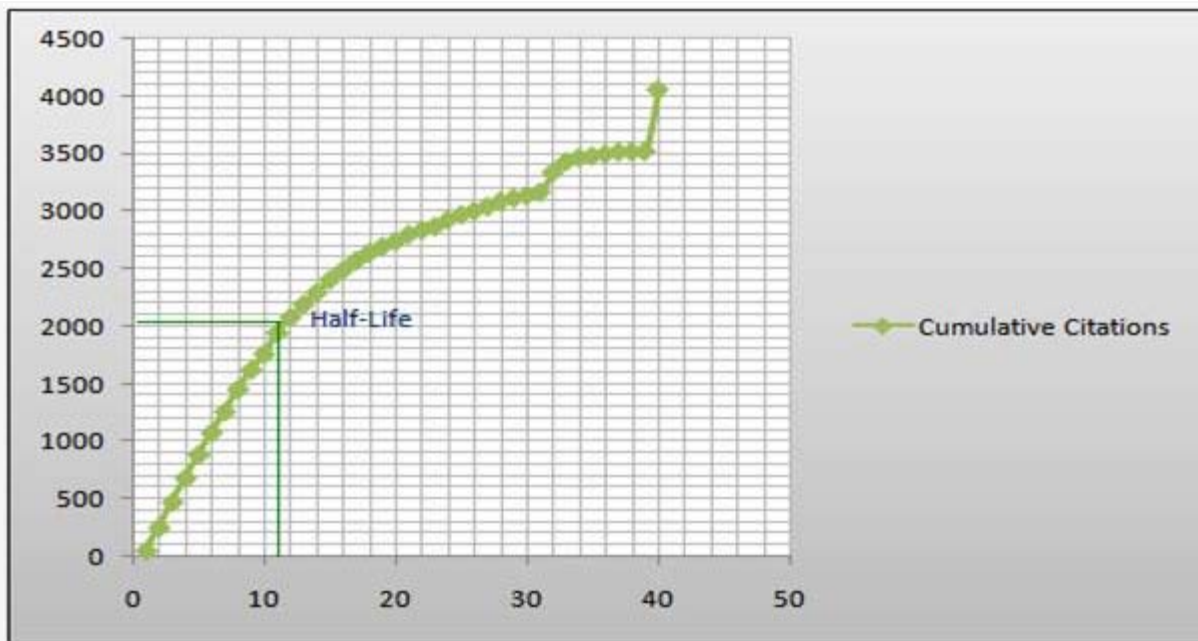
Chronological Distribution of Citations

Table 8: Chronological Distribution of Citations

<i>Sl No</i>	<i>Age of Citations</i>	<i>No of Citations</i>	<i>Cumulative no of Citations</i>	<i>% of Citations</i>	<i>Cumulative % of Citations</i>
1	0	57	57	1.405	1.405
2	1	202	259	4.980	6.386
3	2	219	478	5.399	11.785
4	3	208	686	5.128	16.913
5	4	203	889	5.005	21.918
6	5	192	1081	4.734	26.652
7	6	182	1263	4.487	31.139
8	7	195	1458	4.808	35.947
9	8	166	1624	4.093	40.039
10	9	139	1763	3.427	43.466
11	10	184	1947	4.536	48.003
12	11	134	2081	3.304	51.307
13	12	114	2195	2.811	54.117
14	13	101	2296	2.490	56.607
15	14	110	2406	2.712	59.320
16	15	85	2491	2.096	61.415
17	16	82	2573	2.022	63.437
18	17	68	2641	1.677	65.113
19	18	55	2696	1.356	66.469

20	19	43	2739	1.060	67.530
21	20	61	2800	1.504	69.034
22	21	36	2836	0.888	69.921
23	22	33	2869	0.814	70.735
24	23	57	2926	1.405	72.140
25	24	44	2970	1.085	73.225
26	25	34	3004	0.838	74.063
27	26	37	3041	0.912	74.975
28	27	44	3085	1.085	76.060
29	28	29	3114	0.715	76.775
30	29	23	3137	0.567	77.342
31	30	29	3166	0.715	78.057
32	31-40	173	3339	4.265	82.322
33	41-50	91	3430	2.244	84.566
34	51-60	36	3466	0.888	85.454
35	61-70	15	3481	0.370	85.823
36	71-80	17	3498	0.419	86.243
37	81-90	17	3515	0.419	86.662
38	90-100	3	3518	0.074	86.736
39	101-200	3	3521	0.074	86.810
40	N.D.	535	4056	13.190	100.000

Figure 3: Half Life Period



The analysis of the age of citations helps to determine the useful life of information resources used in any field of knowledge. It is also used by academic librarians to maintain or discard monographs or serials in the library which would be no longer needed by researchers (Sharma, 2009). Table 8 represents the age distribution of all documents. It is found that authors' citation of documents ranged from very recent year of publication to as old as documents of 200 years old, and the half life of the cited documents is about 11 years.

Findings

The findings of the study are summarized as:

The contribution of articles to each volume of *Annals of Library & Information Studies* is constantly increasing from year to year

The average citations per article is 16;

The average number of pages per article is 8;

It is found that the *journal* citations are predominant (57.4% of the total citations) followed by *books* (16.5%) and *web resources* (11.6 %);

Two authored papers are found to be the highest followed by single-authored and then three- authored papers. The degree of collaboration in *Annals of Library & Information Studies* is found to be 0.676;

In regards to country productivity, India topped the list. In regards to states, New Delhi stood first; and

The half life period of document citations is 11 years.

Conclusion

Annals of Library and Information Studies earlier published as *Annals of Library and Documentation* that brought out its maiden issue in the year 1952, is identified as one of the best referred journals in the field of Library and information Science in India with a publishing history of 58 years. Due to its standard editorial policy, ALIS has felt its presence in the academic arena by bringing out quality publications that have been highly appreciated by teachers, students, research scholars and authors as well. Moreover, authors feel proud of having a rich publishing experience with ALIS. The study has depicted a nice portrait of ALIS which speaks volumes about the publication policy of this journal. Nevertheless, it has gradually promoted its value through its global readership as it is indexed in DOAJ as an open access journal. It is expected that ALIS will further grow its stature in the days ahead.

References

1. Asha, N. & Anil, K. (2010). A bibliometric study of journal of Pure and Applied Mathematics. *SRELS Journal of Information Management*. 47 (1); Available: www.indianjournals.com (Viewed June 12, 2010).
2. Biswas, B. C., Roy, A. & Sen B. K. (2007). Economic Botany: A bibliometric study. *Malaysian Journal of Library & Information Science*. 12 (1):23-33.
3. Chua, C., Cao, L., Cousins, K. & Straub, D. W. (2002). Measuring research-production in information systems. *Journal of the Association for Information Systems*. 3:145-215.
4. Cole, F. J. & Eales, N. B. (1917). The history of comparative anatomy. Part – 1: a Statistical analysis of literature. *Science Progress*. 11: 578-96.
5. Jena K. L. (2006). A bibliometric analysis of the journal 'Indian Journal of Fibre and Textile Research, 1996–2004. *Annals of Library and Information Studies*. 53 (1):22-30.
6. Jena, K.L., Swain, D. K. and Sahu, B. B. (2012). Scholarly communication of The Electronic Library from 2003-2009: a bibliometric study. *The Electronic Library*. 30(1), pp.103-119. DOI: 10.1108/02640471211204097.
7. Lowry, P. B., Karuga, G. G. & Richardson, V. J. (2007). Assuring leading institutions, faculty, and articles in premier information systems research journals. *Communications of the Association for Information Systems*. 20:142-203.
8. Mote, M. V. & Deshmukh, P. P. (1996). Citation analysis of Annals of Library Science and Documentation. *Annals of Library Science and Documentation*. 43 (1): 11-25.
9. Prichard, A. (1969). Statistical bibliography or bibliometrics. *Journal of Documentation*. 25 (4): 348-49.
10. Roy, P. M. (1983). Towards a theory of citing in citation analysis studies. In *Developing horizons in Library and Information science*, Vol 1 by C D Sharma and Kailas Vyas, Print Well; Jaipur: 223-35.
11. Serenko, A., et al. (2010). A scientometric analysis of knowledge management and intellectual capital academic literature (1994-2008). *Journal of Knowledge Management*. 4 (1):3-23.
12. Sharma, R. M. (2009). Research Publication trend among scientists of Central Potato Research Institute: A Bibliometric Study. *Annals of Library and Information Studies*. 56 (1): 29-34.
13. Shokeen, A. & Kaushik, S. K. Indian Journal of Plant Physiology: A citation analysis. *Annals of Library and Information Studies*. 51:108-115.
14. Subramanian, K. (1983). Bibliometric Studies of Research Collaboration: A Review. *Journal of Information Science*. 6: 35-37.
15. Swain, D. K. (2011). Library Philosophy and Practice, 2004-2009: A Scientometric Appraisal. *Library Philosophy and Practice*; Available in <http://unllib.unl.edu/LPP/>
16. Swain, D. K. and Panda, K. C. (2012). Journal of Intellectual Property Rights, 2002-2010: A Bibliometric Study. *Chinese Librarianship: an International Electronic Journal*. 33; Available: <http://www.iclc.us/cliej/cl133SP.pdf>
17. Turk, N. (2008). Citation impact of open access journals. *New Library World*. 109 (1/2):65-74.
18. Willett, P. (2008). A bibliometric analysis of the literature of chemo informatics. *Aslib Proceedings: New Information Perspectives*. 60 (1): 4-17.
19. Zainab, A. N., Ani, K. W. U. & Anur, N. B. A single journal study: Malaysian Journal of Computer Science. *Malaysian Journal of Computer Science*. 22 (1):1-18.
20. Zao, et al. (2007). Scholarly communication in Educational Psychology: A journal citation analysis. *Collection Building*. 26 (4):112-118.

