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# Indian LIS Literature in International Journals with Specific Reference to SSCI Database: A Bibliometric Study

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## Introduction

Scholarly communication is the process by which scholars and scientists conduct their research and make that research works and results known to the world. It plays an important role for the advancement of knowledge and a scholar's future prospect. History is the witness about the changing process of scholarly communication from oral representation to written, than to print, and now to the electronic (on-line).

In the formal process of scholarly communication; researchers, basis on the work of others, write up their own research findings and give those research papers essentially without charge to publishers. In turn, publishers manage the peer-review process, provide some editorial improvements, format design, publication of the work, and distribute that work widely by different media-online and print. The journals are then purchased by libraries which organize, provide access to, and preserve those journal publications for future generations. Thus, the journal has been playing an important role in scholarly communication of different subject domain from very past by containing the original thought contents, ideas, views, research works, and findings of researchers, scholars and academicians.

After being accepted in western countries, the subject library and information science became a recognized discipline in India as well specifically from the year 1925 onwards. In other way, it can be say that it happens only after Dr. S.R. Ranganathan. Gradually, many organizations in India started publishing national and international journals in the subject. Indian researchers and authors also took interest and started to contribute their research papers in those journals. Now, a considerable amount of literature is contributed by Indian authors in LIS international journals and its number is gradually increasing day by day. Further,

this study represents that trend.

## Literature Review

The authors found a number of bibliometric study made on library and information science research as part of literature review. Mahapatra (1994) conducted a bibliometric study of citation pattern of nine Indian library and information science journals for the period 1975-1985. The study reveals that nine journals had a total of 1,456 articles and a total of 9,182 citations received with an average rate of 6.31 citations per article. Khan, et.al. (1998) did a study on library and information science literature in Bangladesh for the period 1966-1977. The study shows that a total of 308 articles were published which were authored by 116 authors on an average of 9.62 article per year, and 2.6 articles per author. Patra and Chand (2006) studied the bibliometric phenomenon of library and information science research in India for the period of 1967 to 2004. In that study, a total of 3,396 records were analyzed to find out the growth of literature, author's productivity pattern, and core LIS journals. Oholla and Ocholla (2007) conducted a study on the journal research output in South Africa for 1993-2006 in the field of library and information science. They studied about the publication trend, authorship pattern, and type of research collaboration in South Africa's journals in LISA and Web of Science databases. Davarpanah and Asleki (2008) conducted a Scientometrics study on the productivity and characteristics of international LIS journals for the period 2000-2004. The study reveals that a total of 894 contributions were published in 56 LIS journals indexed in SSCI database 1361 authors contributed with an average author of 1.52 per paper. Out of 894 articles, 158 (about 18%) had no references; 458 (51.23%) articles were cited and 436 (48.77%) were not cited. Finally, the authors found no evidence of study done on Indian publications indexed in SSCI for the period 2000-2009. Thus, this study bridges the gape of the period.

## Objectives of the Study

The following objectives are part of this study:

- To compare the growth of Indian LIS literature with the World;
- To identify and compile a list of productive Indian authors;
- To identify authorship pattern;
- To calculate reference distribution;
- To discover citation distribution patterns; and
- To discover trends in International collaboration.

## Methodology

The present study passes through some important stages having a descriptive research approach by means of bibliometric analysis. It is limited to LIS journals indexed in Social Science Citation Index (SSCI) which is a unique product of Institute of Scientific Information (Thomson Reuters). At the time of our study (1<sup>st</sup> April-5<sup>th</sup> April, 2010), there were 80 LIS journals indexed in SSCI database. The list of journals in Appendix-1 was collected from the journals "subject category" available in the database.

The time span considered for the study is 2000-2009. In order to perform quantitative analysis, this study considered only articles published in these 80 LIS journals. Publications classified as bibliographical-item, book reviews, correction, editorial material, letter, proceedings paper, review, meeting-abstracts, correction, news item etc. were not considered for the study. At the time of searching the database the search was refined with "article". And to get the LIS publications from India, the address and country field chosen to "India" in the advanced search

option of the database and the language option was for “English”. At the time of the study, the SSCI database contained about 228 contributions (articles) contributed by Indian authors (main author/co-author). After searching all the records, their bibliographic data and citation data were directly being imported from the database itself and saved into MS Excel file. Then, to interpret and analyze the data the HistCite software was used which is a bibliometric analysis and visualization software. The data was imported to and for graphical representations MS Excel was used which is convenient and easy to use. The result of the study was also verified and checked manually for its quality by using authors and institutions name.

## Findings of the Study

Findings of the study are given below according to the objectives written below.

### Year-wise distribution of article publications

Here, an attempt was made to calculate the amount of literature and their growth of productivity that has been published during 2000-2009. Table 1 and Graph 1 & 2 present the year-wise distribution of number of articles available in SSCI database published globally from India. A total of 21197 articles were published in which 228 articles were contributed by Indian authors.

Table 1: Year-wise distribution of articles

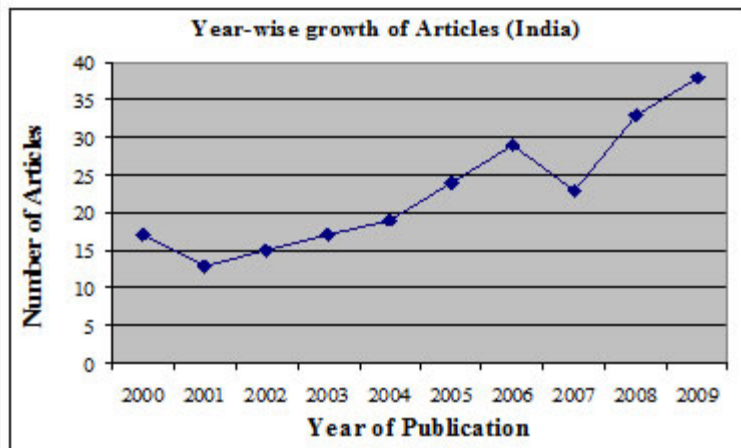
Sl. No.	Year	World (No. of articles)	Percentage	India (No. of articles)	Percentage
1	2000	1688	7.96	17	7.46
2	2001	1706	8.05	13	5.70
3	2002	1930	9.11	15	6.58
4	2003	1931	9.11	17	7.46
5	2004	1876	8.85	19	8.33
6	2005	2200	10.38	24	10.53
7	2006	2203	10.39	29	12.72
8	2007	2403	11.34	23	10.09
9	2008	2601	12.27	33	14.47
10	2009	2659	12.54	38	16.67
		21197	100.00	228	100.00

Graph 1: Year-wise growth of articles



Above Table 1 shows that average number of world publication was 2119.7 articles per year while Indian contributions were 22.8 articles per year for the period of ten years. From 2005 onwards, it has been seen a gradual growth in the total world contributions and as well as in Indian contributions where as contribution of earlier five years was less than the average publications per year. The product moment correlation of the year-wise growth of global and Indian contributions was 0.92 which shows a perfect linear increasing relationship. Out of 228 articles, 38 (16.67%) articles were published in 2009 and 13 (5.70%) articles were in 2001, which are highest and lowest in ten years respectively.

Graph 2: Year-wise growth of articles (Indian contribution)



### Journal-wise distribution of Indian contribution

Table 2 figure-out the journal-wise distribution of Indian contributions listed in the SSCI database. Only 39 journals represent Indian contributions out of the 80 journals. The study reveals that rest of the 41 journals are not represented by Indian contributors for the period.

Table 2: Journal-wise distribution of Indian contribution

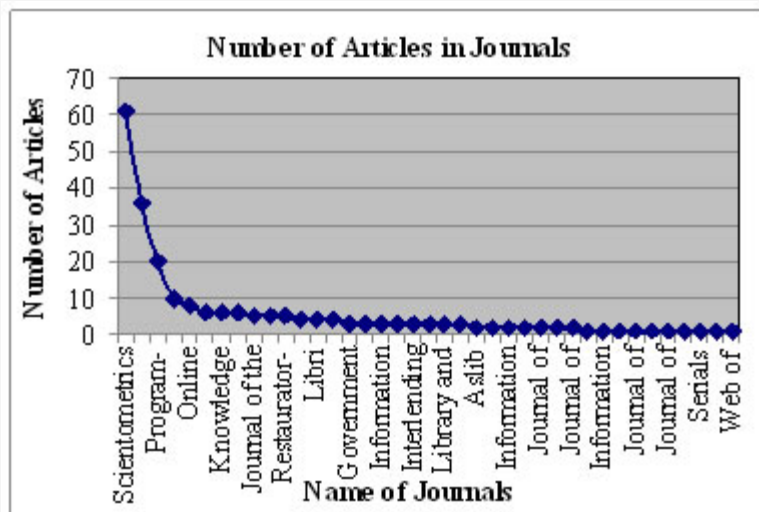
Sl. No.	Name of the Journal	(Records) No. of articles	Percentage
1	Scientometrics	61	26.75
2	Electronic Library	36	15.79

3	Program-Electronic Library and Information Systems	20	8.77
4	International Journal of Information Management	10	4.39
5	Online Information review	8	3.51
6	Journal of Knowledge Management	6	2.63
7	Knowledge Organization	6	2.63
8	Telecommunications Policy	6	2.63
9	Journal of the American Society for Information Science and Technology	5	2.19
10	Malaysian Journal of Library and Information Science	5	2.19
11	Restaurator-International Journal of the Preservation of Library and Archival	5	2.19
12	International Journal of Geographical Information	4	1.75
13	Libri	4	1.75
14	Research Evaluation	4	1.75
15	Government Information Quarterly	3	1.32
16	Information and Management	3	1.32
17	Information Processing and Management	3	1.32
18	Information Society	3	1.32
19	Interlending and Document Supply	3	1.32
20	Journal of Management Information Systems	3	1.32
21	Library and Information Science Research	3	1.32
22	Library Hi-Tech	3	1.32
23	Aslib Proceedings	2	0.88
24	Information Systems Research	2	0.88
25	Information Technology and Management	2	0.88
26	Information Technology and Libraries	2	0.88

27	Journal of Academic Librarianship	2	0.88
28	Journal of Information Science	2	0.88
29	Journal of Information Technology	2	0.88
30	Health Information and Libraries	1	0.44
31	Information Development	1	0.44
32	Information Research-An International Electronic Journal	1	0.44
33	Journal of Computer-Mediated Communication	1	0.44
34	Journal of Global Information Management	1	0.44
35	Journal of Scholarly Publishing	1	0.44
36	Library Trends	1	0.44
37	Serials Review	1	0.44
38	Social Science Computer Review	1	0.44
39	Assist Monograph Series (Web of Knowledge- an honour to Eugene Garfield)	1	0.44
		228	100.04

The above Table 2 represents that only four journals have contributions by Indian authors in two-digits. In the study, Scientometrics leads with 61 (26.75%) articles from 228 total Indian contributions. The Electronic Library is second with 36 (15.79%) articles, Program-Electronic Library and Information Systems is third with 20 (8.77%) articles and International Journal of Information Management is fourth with 10 (4.39%) articles.

Graph 3: Journal-wise distribution of Indian contribution



### Authors

### Authorship patterns

The names of all authors were figured-out in published order from all the 228 articles along with their authorship pattern. Those authors name were checked and verified according to their affiliations to organization and frequencies of authorship in articles. The data figured-out in the Table 3 shows that there were a total of 467 contributed authors for 228 articles. The average number of authors is 2.04% per article. But, while considering the name and affiliation of authors, there were a total of 300 authors out of which 246 were Indian authors and 54 were foreign authors.

Table 3: Authorship patterns

Sl. No.	Number of Authors (Units)	Records	Grand Total of Authors	Percentage
1	Single	77	77	33.77
2	Two	96	192	42.11
3	Three	33	99	14.47
4	Four	14	56	6.14
5	Five+	8	43	3.51
		228	467	100

The above Table 3 shows that there were 77 (33.77%) articles with single author and others 151 (66.23%) articles by two or more authors. The authorship patterns reveal a remarkable difference between the number of single author and multiple authors. 96 (42.11%) articles were contributed by two authors, followed by 33 (14.47%) articles by three authors, then 14 (6.14) articles by four authors, and 8 (3.51%) articles by five or more than five authors.

### Authors' productivity and their ranking



Authors' productivity can be calculated from the number of papers an author has published within a given period. It is interesting to know that the most productive authors among those 246 Indian authors for the study period, 10 authors have contributed more than 5 articles. Table 4 shows a rank of 20 most productive authors according to contributions made to these journals. Garg KC ranked first with 12 articles, followed by Gupta BM second with 11 articles, Kumar, V third with 9 articles and so on.

Table 4: Authors' productivity and their ranking

<i>Sl. No.</i>	<i>Author</i>	<i>Recs.</i>	<i>Percent (%) of 228</i>	<i>Ranking</i>
1	Garg KC	12	5.3	1
2	Gupta BM	11	4.4	2
3	Kumar V	9	3.9	3
4	Rao SS	8	3.5	4
5	Jeevan VKJ	7	3.1	5
6	Kumar S	7	3.1	5
7	Rao IKR	7	3.1	5
8	Bhattacharya S	6	2.6	6
9	Kalyane VL	6	2.6	6
10	Kademani BS	5	2.2	7
11	Arunachalam S	4	1.8	8
12	Chandrakar R	4	1.8	8
13	Karisiddappa CR	4	1.8	8
14	Kumar A	4	1.8	8
15	Mittal R	4	1.8	8
16	Padhi P	4	1.8	8
17	Sagar A	4	1.8	8
18	Suryawanshi DG	4	1.8	8
19	Dhawan SM	4	1.3	9

20	Anuradha KT	3	1.3	9
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## Reference distribution

The cited references usually called as references in articles were counted properly. Table 5 shows the distribution of records according to their frequency distribution of references. In the study of 228 articles, authors found that 3.51% articles have no reference. 91.23% of articles have in between 1-50 references and 5.26% of articles have more than 50 references. The average number of references for 220 articles with references is 21.20 per article; where as the average number of references in the articles used in the study has 20.46 references per article.

Table 5: Reference distribution

<i>Sl. No.</i>	<i>Reference Distribution (Units)</i>	<i>Recs.</i>	<i>Percentage</i>
1	0	8	3.51
2	1-10	59	25.88
3	11-20	72	31.58
4	21-30	51	22.37
5	31-40	17	7.46
6	41-50	9	3.95
7	51+	12	5.26
		228	100

## Distribution of citations

At the time of study, the 228 articles used in the study had a total of 688 citations including the self-citations. The analyzed data indicates that out of 228 articles, 87 (38.16%) articles were not cited and 141 (61.84%) were cited. Table 6 presents the distribution of number of citations. It shows that out of 141 cited articles, 43 (18.86%) articles have one citation and 18 (7.89%) articles have more than 10 citations each which were the highly cited articles during the period of study. 123 (53.95%) articles have citations between 2 to 10 times. The average number of citations for 141 cited articles is 4.87; but, as a whole the average number of citation is 3.02 citations per article.

Table 6: Citation distribution

<i>Sl. No.</i>	<i>Citation Distribution (Units)</i>	<i>Recs.</i>	<i>Percentage</i>
1	0	87	38.16
2	1	43	18.86

3	2	17	7.46
4	3	18	7.89
5	4	11	4.82
6	5	9	3.95
7	6	8	3.51
8	7	5	2.19
9	8	9	3.95
10	9	3	1.32
11	10+	18	7.89
		228	100.00

#### International collaboration

As mentioned earlier according to the affiliations, 300 total authors contributed to 228 articles, 246 were Indian and 54 were foreign authors. Following Table 7 shows the international collaboration of Indian authors.

Table 7: Percentage of International collaboration

<i>Sl. No.</i>	<i>Country/Territory</i>	<i>Recs. Count</i>	<i>Percent (%) of 228</i>
1	India	228	100
2	USA	17	7.46
3	Belgium	9	3.95
4	England	5	2.19
5	Bangladesh	2	0.88
6	Brazil	2	0.88
7	Finland	2	0.88
8	Netherlands	2	0.88
9	Singapore	2	0.88

10	Antigua & Barbua	1	0.44
11	Canada	1	0.44
12	France	1	0.44
13	Germany	1	0.44
14	Iran	1	0.44
15	Kenya	1	0.44
16	Peoples R China	1	0.44
17	South Africa	1	0.44
18	Taiwan	1	0.44

In the study, Indian authors have collaborated with authors of 17 foreign countries. Out of the 228 articles used in the study, 60 (21.96%) articles (approximately) were written with foreign collaboration. Among those, 7.46% articles were with USA which is highest in terms of collaboration, followed by 3.95% of articles with Belgium and 2.19% of articles with England. The result shows a less number of International collaboration of Indian authors.

## Conclusion

The study concludes that:

- Indian contribution in foreign journals is very less (only 1.07%) compare to the world LIS literature available in SSCI database for the period 2000-2009. But, gradually Indian contributions in peer-reviewed journals are increasing.
- The study reveals that the more Indian studies (26.75%) are in the area of bibliometrics, webometrics, and infometrics.
- Mostly, Indian author's contribution to scholarly publication is move towards single or two authors as 75.88% articles were contributed by single or two authors. International collaboration of Indian authors has less representation i.e. 0.23% foreign authors per contribution.
- In author's opinion, it may not be a complete study as it only covered peer-reviewed journals indexed in SSCI database for the period 2000-2009.

## Discussion

With the result of the study represented in Table 4 for authors productivity and ranking, the authors of this paper checked and verified all the authors' contributions manually for quality representation of the trends, where authors found that two articles of the Indian author "Chandrakar R." have been mistakenly indexed as 'editorial material' and 'proceeding paper' which are actually journal articles verified from publishers' site. While including of those two articles in the study would have changed the author's ranking from 8<sup>th</sup> to 6<sup>th</sup> by increasing his total to six articles. Therefore, authors would like to draw the attention towards the indexing error of SSCI database. However, authors opine that the overall result would not have changed drastically if those two articles were included in this

study.

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## Appendix 1

List of 80 LIS journals indexed in SSCI database.

1	<b><i>African Journal of Library Archives and Information Science</i></b>
2	<b><i>American Archivist</i></b>
3	<b><i>Annual Review of Information Science and Technology</i></b>
4	<b><i>Asist Monograph Series</i></b>
5	<i>Aslib Proceedings</i>
6	<b><i>Australian Academic &amp; Research Libraries</i></b>
7	<b><i>Australian Library Journal</i></b>
8	<b><i>Canadian Journal Of Information And Library Science-Revue Canadienne Des Sciences De L Information Et De Bibliotheconomie</i></b>

9	<b>College &amp; Research Libraries</b>
10	<b>Econtent</b>
11	<b>Ethics and Information Technology</b>
12	<i>Electronic Library</i>
13	<i>Government Information Quarterly</i>
14	<i>Health Information and Libraries</i>
15	<b>Informacao &amp; Sociedade-Estudos</b>
16	<b>Informacios Tarsadalom</b>
17	<i>Information and Management</i>
18	<i>Information Development</i>
19	<i>Information Processing and Management</i>
20	<i>Information Research-An International Electronic Journal</i>
21	<i>Information Society</i>
22	<b>Information System Journal</b>
23	<i>Information Systems Research</i>
24	<i>Information Technology and Management</i>
25	<i>Information Technology and Libraries</i>
26	<i>Interlending and Document Supply</i>
27	<b>International Journal of Computer-Supported Collaborative Learning</b>
28	<i>International Journal of Geographical Information</i>
29	<i>International Journal of Information Management</i>
30	<b>Investigacion Bibliotecologica</b>
31	<i>Journal of Academic Librarianship</i>
32	<i>Journal of Computer-Mediated Communication</i>
33	<b>Journal of Documentation</b>

34	<i>Journal of Global Information Management</i>
35	<b><i>Journal of Health Communication</i></b>
36	<i>Journal of Information Science</i>
37	<i>Journal of Information Technology</i>
38	<b><i>Journal of Informetrics</i></b>
39	<i>Journal of Knowledge Management</i>
40	<b><i>Journal of Librarianship and Information Science</i></b>
41	<i>Journal of Management Information Systems</i>
42	<i>Journal of Scholarly Publishing</i>
43	<b><i>Journal of the American Medical Informatics Association</i></b>
44	<i>Journal of the American Society for Information Science and Technology</i>
45	<b><i>Journal of the Association for Information Systems</i></b>
46	<b><i>Journal of the Medical Library Association</i></b>
47	<i>Knowledge Organization</i>
50	<i>Library and Information Science Research</i>
51	<b><i>Library and Information Science</i></b>
52	<b><i>Library Collections Acquisitions &amp; Technical Services</i></b>
53	<i>Library Hi-Tech</i>
57	<i>Library Trends</i>
58	<i>Libri</i>
59	<i>Malaysian Journal of Library and Information Science</i>
60	<i>MIS Quarterly</i>
61	<i>MIS Quarterly Executive</i>
62	<i>Online</i>

63	<i>Online Information review</i>
64	<b><i>Perspectivas Em Ciencia Da Informacao</i></b>
65	<b><i>Portal-Libraries and the Academy</i></b>
66	<b><i>Profesional De La Informacion</i></b>
67	<i>Program-Electronic Library and Information Systems</i>
68	<b><i>Reference &amp; User Services Quarterly</i></b>
69	<i>Research Evaluation</i>
70	<i>Restaurator-International Journal of the Preservation of Library and Archival</i>
71	<b><i>Revista Espanola De Documentacion Cientifica</i></b>
72	<b><i>Scientist</i></b>
73	<i>Scientometrics</i>
74	<i>Serials Review</i>
75	<i>Social Science Computer Review</i>
76	<b><i>Social Science Information Sur Les Sciences Sociales</i></b>
77	<i>Telecommunications Policy</i>
78	<b><i>Transinformacao</i></b>
79	<b><i>Zeitschrift Fur Bibliothekswesen Und Bibliographie</i></b>
80	<b><i>Journal of Global Information Technology Management</i></b>