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Bibliometrics of Library and Information Science research in India during 2004-2015

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ABSTRACT

An analysis of 2428 papers indexed by Indian citation Index during 2004-2015 indicate that the pattern of growth of Indian library and information science literature has been highly inconsistent with highest number of papers published in 2010. Academic institutions contributed about 86% of papers. Prolific institutions contributed about 44% of the output, with Mysore University topping the list closely followed by University of Delhi. However, highest impact as reflected by citation per paper was made by CSIR-NISTADS and CSIR-NISCAIR. B.M. Gupta of CSIR-NISTADS topped the list, but highest CPP was for K.C.Garg of the same institute. SRELS Journal of Information Management published the highest number of papers and the area of bibliometrics and scientometrics was the area of priority of LIS professionals in India.

Key words: Bibliometrics, library and information science, india, indian citation index

1. INTRODUCTION

Modern day library and information science research in India is more than a century old. In independent India, library schools developed significantly with pioneering efforts of Dr. S.R. Ranganathan which made him 'the father of Library Science in India'. His efforts introduced formal education and research in library and information science at the University of Madras, Bombay, Banaras, Delhi, etc. Delhi University was the first university in India which offered facilities for research in the area of Library and Information Science (LIS), leading to PhD degree, under the supervision of Dr. S.R. Ranganathan. Thereafter, other universities in the country introduced facilities for research in library science.

Outside the conventional university system; two institutes of national importance offered education and research in the field of LIS. These are Documentation Research and Training Centre (DRTC), Bangalore and the erstwhile Indian National Scientific Documentation Centre (INSDOC) presently CSIR-National Institute of Science Communication and Information Resources (CSIR-NISCAIR), New Delhi. So, the past of library and information science in India has been rich and is regarded as an important discipline and now seems fully developed.

Despite the rise in the number of institutions imparting LIS education and research and India's well known capabilities in ICT and its application in libraries and information centers, only an analysis of India's LIS research contributions will enable us to understand its strengths and capabilities. The present bibliometric study is an attempt in that direction. The study is based on the 19 LIS journals indexed by Indian Citation Index (ICI) during the period 2004-2015.

2. THE INDIAN CITATION INDEX (ICI)

The Indian Citation Index (ICI) was launched in October 2009 by The Knowledge Foundation with the requisite support of M/s DIVA ENTERPRISES Pvt. Ltd. The database exclusively focuses on Indian scholarly literature in the discipline of science and technology, social sciences and humanities. The database fulfilled the long time demand of Indian scholars for an evaluative tool that could help in measuring the contributions made by Indian scholars in several scholarly disciplines.

The temporal range of records ranges from 2004 to present. As of 20th October, 2016, ICI had indexed 545,677 articles, and a staggering 10,119,380 references from 950 publications. It indexes research articles, reviews, editorials, short communication, research notes, case studies, research methods, opinion papers, patents, standards and proceeding papers etc. Other useful byproducts of the database are Indian Science Citation Index, Indian Social Science Citation Index, Humanities Citation Index and Indian Journals Citation Report, etc. ICI website also provides extensive search and analytical features. ICI is a specialised information product and is an invaluable tool for researchers, policy makers, editor of journals and librarians.

3. OBJECTIVES

The study has the following objectives:

(a) Examine the pattern of growth of the research publications output in the discipline of LIS during 2004-2015

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(b) Examine the distribution of output by performing sectors like academic institutions and government funded R&D organisations

(c) Identify the most prolific research institutions in the field of LIS in India and their citation impact;

(d) Identify the most prolific Indian authors and the citation impact of their research output

(e) Identify the most preferred journals used for communicating research results

(f) Examine the pattern of citations and to identify the highly cited papers.

4. RESEARCH METHODOLOGY

The data for the study was downloaded from the website of Indian Citation Index available at http://www.indiancitationindex.com/on May 1, 2016 by searching for the records related to 'library and information science' in 'subject categories by setting the time period 2004-2015. The search resulted in 3008 records. These records were saved and imported to MS Excel 2007. The data was further refined and document types like editorials (65), reports (1), proceedings paper (1), articles not published from India (505), and 8 documents that could not be classified as either of the above were discarded. Thus, a total of 2428 records were left and were analysed to meet the above mentioned objectives. Each downloaded record contained name of the authors with their affiliation, name of the source journal and the number of times cited. Complete count method has been used for counting author citations, which has an inherent limitation that it over-weighs authors of multiple-authored papers.

5. LIMITATIONS

(a) Some fields like 'times cited' are not up to date in the ICI database, which may negatively affect impact analysis of authors and institutions

(b) In some records the address field is empty, hence leaving the decision to include or exclude that record to one's judgment

(c) ICI does not index all LIS journals published from India.

6. REVIEW OF LITERATURE

Several studies have been published in literature that dealt with bibliometric aspects of research in LIS. However, none of these studies have used the Indian Citation Index as the source for data. For instance, Patra & Chand[1] analysed LIS research literature emanating from India based on the data abstracted in *Library and Information Science Abstracts* (*LISA*) from 1967 to 2004. Authors found that most of the articles were written by a single author and the author productivity followed Lotka's law. *Herald of Library Science* was the most prolific journal and late professor P.N. Kaula was the most prolific contributor. The study also found that the highest number (208) papers were published in 1999 and thereafter, a gradual decline was observed in the research output. In another study, Barik & Jena[2] analysed the annual growth of LIS research publications in India using Scopus database for the period 2004-2013. Authors found that the highest and lowest number of articles were indexed in 2013 (20.7%) and 2005 (1.9%) respectively, and the yearly average annual growth rate was 16.5%. Two authored papers dominated the pattern of authorship. Kademani & Kumar were identified as most prolific authors. The journal *Library Philosophy and Practice* was identified as the most used journal for publishing research results. The researchers also found that author productivity did not follow Lotka's law. Maharana & Das[3] did a similar study in which the authors analysed the growth and development of LIS research carried out by Indian researchers based on the publications indexed in *Social Science Citation Index* (*SSCI*) during the period 1999-2013. Authors found that 2010 and 2000 to be most and least productive years respectively.

Analyses of productivity by authors found that 273 authors contributed a total of 140 publications with an average of 1.95 authors per publication and 0.5 papers per author. The authors also concluded that author productivity did not follow the Lotka's law. In a study Mittal[4] attempted to trace the research trends in LIS in India during January 1990-June 2010 as reflected through articles abstracted in *LISA*. Co-word analysis was used to identify the core research areas by quantifying the frequency of occurrence and the analysis of co-occurrence of 4735 descriptors assigned to 1408 articles. The author used the Kamada-Kawai algorithm for constructing the network of relations between descriptors and making spatial distribution of these. The results of co-word analysis found highest interest in bibliometrics/scientometrics/informetrics, library system and university libraries. The results also suggest that there exist substantial activities in digitisation, digital libraries and Web 2.0. Qadri & Khan[5] analysed the development of Indian LIS literature for the period of Pre 1990s to Post 1990s. The data for this study was collected from the online LISA database. The study showed that there is more interest in modern subject areas like information technology, bibliometrics, electronic resources, knowledge management, and library automation rather than in traditional subject areas like classification, cataloguing, indexing, documentation and library services etc. This study identified S.R. Ranganathan, P. Perumal and A. Neelameghan as the most prolific authors in the pre-1990s era, while V. Venkatappaiah, P.N. Kaula, and I.N. Sengupta were the most prolific authors in the post 1990s era. Single authored papers dominated the authorship pattern. The most common journals used for publishing research results were *IASLIC Bulletin*, *Bulletin of Indian Library Association, Granthalokam*, *Granthagar*, and *Herald of Library Science* prior to 1990s and *SRELS Journal of Information Management*, *Annals of Library and Information Studies* and the *International*

Journal of Library and Information Science were the most productive journal until 2011. Pradhan & Chandrakar[6] presented a bibliometric analysis of Indian LIS literature published in foreign journals using the online version of *Social Science Citation Index* database for a period of 2000-2009.

The researchers found that out of the total of 21,197 articles, only 228 were contributed by Indian authors. The volume of published literature by Indian authors was found to be increasing steadily during the period of study with the highest number (38) publications in 2009 followed by 33 papers in 2008. A journal wise distribution analysis was also conducted and the journal *Scientometrics* was found to be the most used journal with 61 publications followed by *E-Library* with 36 publications. This study also analysed authorship patterns and found that there were a total of 467 authors publishing 228 papers, and that papers with two authors were the most common followed by single authored papers.

7. RESULTS AND DISCUSSION

7.1. Pattern of Growth of Indian LIS Literature

During 2004-2015, LIS professionals from India published 2428 papers. The pattern of output and the annual rate of growth of the output of Indian LIS literature are depicted in Fig. 1. It indicates a rising trend of output during 2005 to 2008 with a steep dip in the year 2009. A gradual decline has been observed from 2010 onward till 2015 with a slight increase in 2013 and with highest number of papers in 2010. Similar results have been observed by Barik & Jena[2] who studied the growth of LIS literature in India during 2004-2013 using the Scopus database.

The annual rate of growth is highly inconsistent and has fluctuated during the period of study. The highest rate of growth was observed for the year 2007 and the lowest rate of growth was for the year 2015. The Compound Annual Growth Rate (CAGR) calculated by using the formula available at http://cagrcalculator.net/result/ was found to be 4.0% during the period of study. During the period of study (2004-2015) growth rate is more than CAGR in 2006-2008, 2010 and 2013 and in rest of the years the growth rate is lower than the CAGR.

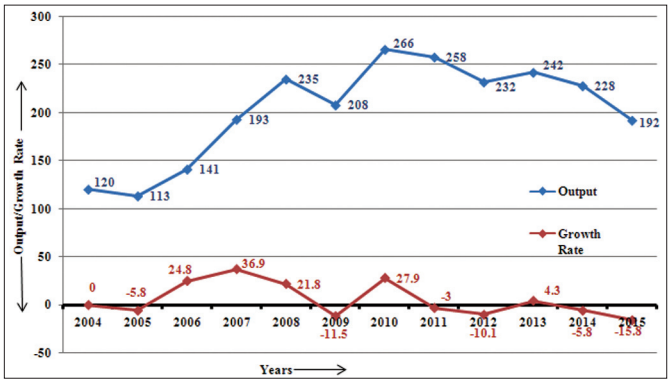

Figure 1. Pattern of research output and rate of growth during 2004-2015.

7.2. Distribution of Output by Performing Sectors

Like scientific research, several agencies like academic institutions (universities and colleges), and library professionals at the institutes of higher learning like Indian Institutes of Technology (IITs) are involved in LIS research. Besides these, professionals at several government funded laboratories under the aegis of Council of Scientific and Industrial Research (CSIR), Department of Atomic Energy (DAE), Department of Space (DOS), Indian Council of Medical Research (ICMR), Indian Council of Agriculture Research including State Agriculture Universities (ICAR), Department of Science and Technology (DST) and Defence Research and Development Organisation (DRDO) are also engaged in LIS research. Analysis of the downloaded data indicates that like scientific research academic institutions topped the list with 86.1% of the output followed by CSIR. Next in output ranked were IITs, closely followed by DRDO. Total share of research institutions were a distant second only with 11.5% of the total publications. This is because research in the discipline of LIS is not on the mandate of most research institutions under different scientific agencies, except two institutions namely CSIR-NIATADS and CSIR-NISCAIR. These two institutions work in the area of scientometrics, a sub-discipline of LIS research. However, most of the Scientometric studies undertaken by these two institutions are related to policy related research in show Table 1.

7.3. Distribution of Output by Institutions

Total output came from 426 academic, research and other institutions scattered in different parts of India. Table 2

Table 1. Distribution of output by performing sectors

S. No.	Performing Sectors	Number of papers (%)
1.	Academic Institutions (universities and colleges)	2090 (86.1)
2.	Council of Scientific & Industrial Research (CSIR)	112 (4.6)
3.	Indian Institutes of Technology (IITs)	48 (2.0)
4.	Defence Research and Development Organization (DRDO)	47 (2.0)
5.	Indian Council of Agriculture Research (ICAR)	15 (0.6)
6.	Indian Space Research Organization (ISRO)	13 (0.5)
7.	Department of Science & Technology (DST)	10 (0.4)
8.	Department of Atomic Energy (DAE)	08 (0.3)
9.	Others	85 (3.5)
	Total	**2428**

**Rounded off to the nearest whole number*

presents the distribution of output by prolific institutions along with the citations these papers received and the values of Citation per Paper (CPP). CPP is a relative indicator computed as the average number of citations per paper. It has been widely used in bibliometric studies to normalise a large disparity in volumes of published output among disciplines, countries and institutions for a meaning full comparison of research impact.

Only those institutes have been considered as prolific which published 25 or more papers during the period of study. The share of 20 most prolific institutions was 1080 (44.5%) of the total Indian research output in LIS and the remaining (55.5%) papers were published by 406 institutions located in different parts of India. This indicates that the output in the field of LIS is highly concentrated among only a few institutions. Further analysis of data indicates that of the 20 institutions listed in Table 2 most are academic institutions, except two which are funded by CSIR. The highest number (110) research papers were contributed by University of Mysore closely followed by University of Delhi.

Table 2. Most prolific institutions

S. No.	Name of the institute	TNP*	TNC*	CPP
1.	University of Mysore, Mysore	110	100	0.91
2.	University of Delhi, Delhi	107	42	0.39
3.	Annamalai University, Annamalai	75	57	0.76
4.	Anna University, Chennai	71	32	0.45
5.	Visvesvaraya Technological University, Belagaon	65	34	0.52
6.	University of Kerala, Thiruvananthapuram	64	39	0.61
7.	Guru Nanak Dev University, Amritsar	61	47	0.77
8.	Karnatak University, Dharwar	58	42	0.72
9.	Mangalore University, Mangalore	56	31	0.55
10.	CSIR-NISTADS, New Delhi	52	109	2.1
11.	Kuvempu University, Shimoga	47	57	1.21
12.	Indira Gandhi National Open University, New Delhi	41	25	0.61
13.	Banaras Hindu University, Varanasi	40	25	0.63
14.	Manonmaniam Sundaranar University, Tirunelveli	40	11	0.28
15.	Bharathidasan University, Tiruchirapalli	37	12	0.32
16.	Documentation Research and Training Centre, Bangalore	35	33	0.94
17.	University of Calcutta, Calcutta	34	19	0.56
18.	Aligarh Muslim University, Aligarh	30	34	1.13
19.	Panjab University, Chandigarh	30	18	0.6
20.	CSIR-NISCAIR, New Delhi	27	50	1.85
21.	406 Other institutes	1348	547	0.4
	Total	**2428**	**1364**	**0.56**

**TNP: Total number of papers; **TNC: Total number of citations*

Citation analysis of the published papers indicates that these papers received 1364 citations. The CPP for the entire output was 0.56. Of the listed 20 prolific institutions, the CPP for 15 institutions was either equal or more than the average CPP for all the papers. The value of CPP was less than average CPP for University of Delhi, Anna University, Visvesvaraya Technological University, Manonmaniam Sundaranar University and Bharathidasan University. The value of CPP was highest for CSIR-National Institute of Science, Technology and Development Studies (CSIR-NISTADS) closely followed by CSIR-NISCAIR. The value of CPP for these two institutes was about four times the average CPP.

7.4. Most Prolific Indian Authors

During the period of the study 2247 Indian authors contributed to 2428 papers in Indian LIS journals indexed by the *Indian Citation Index*. Generally in a given subject, most authors publish only a few articles whereas a few prolific authors publish many articles. The discipline of LIS is no different. Table 3 lists 19 most prolific Indian authors according to the number of publications they have made during 2004-2012.

It is generally believed that prolific authors get more citations as compared to non prolific authors. A look at the number of citations received indicates that authors with more publications do not necessarily have more citations. Surprisingly, four of the prolific authors received less than five citations, the lowest being for C.K. Sharma with zero citation. This low citation count may, however, be the result of flaws in Indian Citation Index's citation counting methodology. For example, the Indian Citation Index shows 14 citations for a 2006 article titled: 'Scientometric profile of Indian science as seen through *Science Citation Index*' authored by K.C. Garg, whereas Google Scholar shows 24 citations for the same article. Quick analyses of all Google Scholar citations for this article reveal that all citations come from Indian authors, and all but one citation is from 2015 or before. Therefore, the *Indian Citation Index* should show at least 23 citations for this paper, but it does not. Similar discrepancies exist between citation counts for other articles by other authors.

Over the course of 12 years, B.M. Gupta received the highest number of citations (58), followed by K.C. Garg (42). Although, since the number of citations received depend on the number of papers that an author has published, the value of citations per paper (CPP) would be a more accurate measure of impact. The value of CPP for different authors listed in Table 4 shows that K.C. Garg has the highest citations per paper (2.47) followed by B.M. Gupta with 1.87. Among all the authors L.S.R.C.V. Ramesh and C.K. Sharma had the lowest citations per paper (0.06 and 0.0 respectively).

Table 3. Prolific authors and their citation impact

S. No.	Author	TNP	TNC	CPP
1.	Gupta B.M. (CSIR-NISTADS, New Delhi)	31	58	1.87
2.	Ramesh L.S.R.C.V. (Acharya N.G. Ranga Agri. Univ.) (Hyderabad)	31	2	0.06
3.	Nikam Khaiser (Mysore University, Mysore)	29	17	0.59
4.	Jeevan V.K.J. (IGNOU, New Delhi)	24	4	0.17
5.	Satija M.P. (GNDU, Amritsar)	24	26	1.09
6.	Neelameghan A. (DRTC, Bangalore)	22	21	0.95
7.	Kumbar B.D., Karnatak University, Dharwar	21	20	0.95
8.	Sen B.K. (Ex CSIR-NISCAIR, New Delhi)	21	16	0.76
9.	Dhiman A.K. (Gurukul Kangri University, Haridwar)	19	6	0.32
10.	Balasubramanian P. (Bharathidasan University, Tiruchirapalli)	17	3	0.18
11.	Garg K.C. (CSIR-NISTADS, New Delhi)	17	42	2.47
12.	Mudhol Mahesh V. Mangalore University	17	12	0.71
13.	Sharma A.K., Shyam Lal College, Delhi	16	11	0.69
14.	Sharma C.K. (CCS University, Meerut)	16	0	0
15.	Biradar B.S., Kuvempu University, Shimoga	15	26	1.73
16.	Singh K.P. (University of Delhi)	15	14	0.93
17.	Harinarayana N.S. (Mysore University)	14	17	1.21
18.	Saravanan T., Annamalai University, Annamalai	14	12	0.85
19.	Sudhier KG Pillai (University of Kerala)	14	15	1.07
20.	Other 2228 authors	2051	1042	0.51

7.5. Journals Where the Research Results were Published

According to a study by Sen[7] there are around 130 LIS journals being published from India. The Indian Citation Index indexed only 19 journals published from India in the field of Library and Information Science. There is always pressure on professionals to publish in the best journals. Table 4 lists the top 10 journals where the research results were published. The *SRELS Journal of Information Management* published by the Sarada Ranganathan Endowment for Library Science (founded by Dr. S.R. Ranganathan in 1961) tops the list with 391(16.10%) publications, while the *DESIDOC Journal of Library and Information Technology (DJLIT)* published by Defense Scientific Information & Documentation Centre (DESIDOC), is a distant second with 290(11.94%) publications. *KELPRO Bulletin*, being published since 1997 by the Kerala Library Professional's Organisation, was the last on the list with 93 (3.83 %) publications during the period of this study.

All of the journals featured in Table 4 are peer reviewed, and most of them provide subscription based access, except two i.e. *Annals of Library and Information Studies* and *DJLIT*, which are open access and are also indexed by SCOPUS database. Further analysis of data indicate that the top 5 journals together published more than half (56%) of all publications. This suggests that subscription to the ten journals mentioned in Table 4 should be enough to provide a cheap and effective coverage of Library and Information Science literature originating from India.

Table 4. Most preferred Journals by Indian LIS researchers

S. No.	Title of the journal	No. of papers (%)
1.	*SRELS Journal of Information Management (BI-M)*	391 (16.1)
2.	*DESIDOC J. of Library & Information Technology (BI-M)*	290 (11.9)
3.	*PEARL: Journal of Library & Information Science*	263 (10.8)
4.	*Annals of Library and Information Studies (Q)*	220 (9.1)
5.	*Indian Journal of Information Library & Society*	200 (8.2)
6.	*IASLIC Bulletin (Q)*	190 (7.8)
7.	*Library Progress (International)*	172 (7.1)
8.	*Library Herald (Q)*	163 (6.7)
9.	*Information Studies*	106 (4.4)
10.	*KELPRO Bulletin*	93 (3.8)
	Other 9 journals	340 (14.1)

7.6. Distribution of Output by Sub-disciplines

It is always interesting to know the distribution of articles published in a subject by their sub-disciplines. This informs us about the current 'hot topics' for research as well as bring to our notice those subject areas which are lagging behind and where more research is needed. Table 5 depicts the number of papers dealing with each sub-discipline along with the corresponding number of papers and their percentages. Since a single research article can deal with many subjects simultaneously, the percentage column does not add up to 100. The subject of Bibliometrics/Scientometrics seems to be the most popular amongst LIS researchers with 850 (35%) papers during the period of study. Bibliometrics has always been a popular research subject see Mittal[4], perhaps because these days it is relatively easy to get bibliographic data and to perform various bibliometric analysis. The subject of 'User studies' was a distant second with 303(12.47%) publications, followed by 'Information Technology' with 289(11.9%) publications. The least popular subject was 'Information Consolidation and Repackaging' with only 4(0.16%) papers, which is surprising considering the significance of this subject in a modern information

Table 5. Distribution of output by sub-disciplines of LIS

S. No.	Sub-discipline	TNP (%)
1.	Bibliometrics/Scientometrics/ Webometrics	850 (35.0)
2.	User Studies	303 (12.5)
3.	Information Technology	289 (11.9)
4.	Digital Libraries	244 (10.0)
5.	Academic Library	206 (8.5)
6.	Library Resources	177 (7.3)
7.	Library Automation	173 (7.1)
8.	Library Services	152 (6.3)
9.	Library Professionals	117 (4.8)
10.	Library Surveys	94 (3.9)
11.	Public Library	77 (3.2)
12.	Library Consortia	68 (2.8)
13.	Library Education	64 (2.6)
14.	Information Literacy	56 (2.3)
15.	Library Management	55 (2.3)
16.	Library Classification	50 (2.1)
17.	Intellectual Property Rights	32 (1.3)
18.	Documentation and Info. Centers	30 (1.2)
19.	Library Information networks	29 (1.2)
20.	Collection Development	28 (1.1)
21.	Marketing of LIS Services	26 (1.1)
22.	Special Libraries	25 (1.0)
23.	Preservation and Conservation	20 (0.82)
24.	Others	17 (0.70)
25.	Library Cataloguing	16 (0.65)
26.	Library Cooperation	14 (0.57)
27.	Library Documentation	14 (0.57)
28.	Library Legislation	11 (0.45)
29.	Serials Control and Circulation	06 (0.24)
30.	Information Consolidation & Repackaging	04 (0.16)

society. The subject of 'Serials Control' with only 6(0.24%) papers also requires some attention. The distribution of output by its sub-disciplines was done automatically on the *Indian Citation Index*'s website using the subject category feature (still in Beta phase). One only need to input the broad subject and the time frame, and the website automatically presents a list of sub fields under that broad subject along with the number of articles under each sub field. Such tools are of immense help for researchers and are greatly appreciated.

7.6. Pattern of Citations

The publication data was subjected to an examination of citations received by the papers. Table 6 depicts the distribution of papers by citations these received. It is observed that of the 2428 papers about three-forth (73.8%) of the papers did not get any citation. Rest 635 papers were cited one or more times. Of them only a minuscule were cited more than 10 times. Table 7 lists papers which were cited 10 or more times.

Table 6. Distribution of citations

S. No.	Number of Citations	Number of Papers	Total Citations	%
1.	0	1793	0	73.8
2.	1	344	344	14.2
3.	2	135	270	5.5
4.	3	72	216	2.9
5.	4	28	112	1.2
6.	5	17	85	0.7
7.	6 to 10	29	210	1.2
8	> 10	10	127	0.4
Total		**2428**	**1364**	

7.7. Highly Cited Papers

Scholars in different disciplines have different citation practices. Hence, the average number of citations received by a paper varies from field to field. Like other disciplines in social sciences, Library and Information Science papers tend to have fewer citations[8] compared to natural sciences like physics and chemistry, or medical and life sciences. Analysis of highly cited papers reveals that a large majority of such papers dealt with the sub-discipline of bibliometrics or scientometrics.

This is not surprising considering the fact that bibliometrics is and has been the most active area of research within the LIS field. A list of top 12 most cited articles is presented in Table 7. It is interesting to note that of the top 12 most cited papers, seven were published in the journal *Annals of Library and Information Studies* (*ALIS*) published by CSIR-NISCAIR, four in *DESIDOC Journal of Library and Information Technology* (*DJLIT*) published by DESIDOC and one in *Library Herald* published by Delhi Library Association.

8. CONCLUSIONS

Based on the analyses of 2428 papers, indexed in the Indian Citation Index for the period of 12 years (2004-2015) it was found that the pattern of output and annual rate of growth is highly inconsistent and has fluctuated during the period of study. Pattern of output indicate that academic institutions were the primary contributors. Among the scientific agencies CSIR and DRDO topped the list. Among the prolific research institutions Mysore University topped the list closely followed by University of Delhi. However, CSIR-NISTADS and CSIR-NISCAIR received highest number of citations. Among the journals used for publication of research results, SRELS Journal of Information Measurement was found to be the most popular amongst Indian LIS researchers. Analysis of sub-disciplines of research topics found Bibliometrics/ Scientometrics as the most popular research area followed by User Studies. A list of prolific authors identified B.M. Gupta as the most prolific author and K.C. Garg as the

Table 7. Highly cited authors

S. No.	Bibliographic details	Total citations
1.	Garg, K.C.: Dutt, B., & Kumar, S. Scientometric profile of Indian science as seen through *Science Citation Index*, *Annals of Library and Information Studies*, **53**(3) 2006, 114-25.	14
2.	Kademani, B. S.; Kumar, V.; Sagar, A., *et al*, Scientometric dimensions of thorium research in India, *DESlDOC Bulletin of Information Technology*, **26**(3), 2006, 9-25.	14
3.	Patra, S.K. & Chand, P. Library and information science research in India: A bibliometric study, *Annals of Library and Information Studies*, **53**(4), 2006, 219-23.	13
4.	Biradar, B.S.; Rajashekar, G.R. & Kumar, B.T.S. A study of internet usage by students and faculties in Kuvempu University, *Library Herald*, **44**(4), 2006, 283-94.	13
5.	Kademani, B.S.; Sagar, A.; Kumar, V. & Gupta, B.M. Mapping of Indian publications in Science and Technology: A Scientometric analysis of publications in *Science Citation Index*, *DESIDOC Bulletin of Information Technology*, **27**(1), 2007, 17-34.	13
6.	Kumbar, M.; Gupta, B.M. & Dhawan, S.M. Growth and impact of research output of University of Mysore; 1996-2006: A case study, *Annals of Library and Information Studies*, **55**(3), 2008, 185-95.	13
7.	Vijay, K.R. Bibliometric study of research publication trends among Indian food scientists and technologists, *Annals of Library and Information Studies*, **52**(3), 2005, 77-81.	12
8.	Verma, Neerja.; Tamrakar, R. & Sharma, Priyanka. Analysis of contributions in *Annals of Library and Information Studies*, *Annals of Library and Information Studies*, **54**(2), 2007, 106-11.	12
9.	Sharma, J. & Sevukan, R. Bibliometric analysis of research output of biotechnology faculties in some Indian Central Universities, *DESIDOC Journal of Library & Information Technology*, **28**(6), 2008, 11-20.	12
10.	Nikham. Khaiser., Pramodini, B., Use of e-journals and databases by the academic community of University of Mysore : A survey, Annals of Library and Information Studies, 54(1), 2007, 19-22.	11
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most highly cited author. Analysis of highly cited papers revealed that papers dealing with the sub-discipline of bibliometrics/scientometrics received the most citations. Further, it was found that *ALIS* and *DJLIT* published the most highly cited articles.

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