Indian Contribution in Information Science and Library Science Research during 1991-2015: A Bibliometric Analysis

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ABSTRACT

Author analysed the characteristics of articles published by the Indian based authors in the 'Information Science & Library Science' subject category of Web of Science during 1991-2015. In this study, total 708 articles derived from the Web of Science database were analysed. The Indian contributions to the Information Science and Library Science quite meager in compare to world's contribution. However, the Indian based articles were kept rising from 1991 to 2015. The articles published from1996 to 2005 have greater impact and the trend is towards multiple authors. The *Scientometrics* was the most productive journal; almost 25 per cent of the Indian articles were published during the period. Gupta, BM was the most productive author and articles published by the Bhattacharya, S, Nagpaul, PS and Rao, IKR had greater impact on the subject as well as fellow researches in the subject category of IS & LS.

Keywords: Bibliometric; Web of science; Information science; Library science; Citations; Authorship pattern; Journals and India

1. INTRODUCTION

Bibliometrics is an area of research in Library and Information Science subject, which has received considerable attention from the researchers all over the world for past decade[3]. Many authors reported their work on research performance of a country in library and Information Science using bibliometric tools and techniques, for example, China[4], Bangladesh[5], South Africa[6], Pakistan[7]. Many authors had undertaken a study to evaluate the Indian research performance in library and information science using data from different databases[8-11]. No study was conducted to analysis the Indian contributions in the subject category of 'Information Science & Library Science' from the Web of Science database for the period of 1991-2015. An effort is made here to reveal the scientific output of the India in the subject category of information science and library science as reflected in the Web of Science for the period of 1991-2015, which could provide the insight into the publication trend and achievements in the subject. This study would provide information on publication trends in the Information Science & Library Science by Indian authors, which would be useful to the researchers and policy makers in India.

2. LITERATURE REVIEW

Some of the relevant studies are worth mentioning here to give the complete insight into the present research topic in a perspective. Pradhan and Chandrakar[8] also made a study to figure out the growth of (Library & Information Science)LIS

literature from Social Science Citation Index (SSCI) Database during 2000-2009. The contribution of the Indian based authors were very less (only 1.07%) compared to the world LIS literature available in SSCI database for the period 2000-2009. But, gradually Indian contributions in peer-reviewed journals are increasing. Patra and Chand[11] did an effort to reveal the contribution of India's in LIS during 1967-2004. They found that P.N. Kaula was the most productive author and the literature produced by the Indian authors rather negligible. Khan[5], *et al.* made a study on LIS research in Bangladesh during1966-1977. The study found 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.

Tiwari[12] also did a study of Indian contribution in the LIS research. The data was collected from the 30 journals, which are published from the India during 1975-1995. The study reveal that majority of the articles were from the UP based authors and *Annals of Library Science and Documentation* was the most productive journal. Wani[13], *et al.* mapped literature outputs available through Library, Information Science and Technology Abstracts (LISTA) during 1850s to 2000s. The findings indicate that the growth of literature in library and information science is on increase. U. S. A. ranks first with 301 (37.76%) publications. Maharana and Das (2014) also conducted a study to observe the growth and development of LIS research in India during 1999-2013. The findings of the study include that the annual publications of Indian researchers range from 9 to 10 articles with 0. 64 degree of collaboration. He and Wang[4] also did a study to quantitatively analyse the research activity in the area of Chinese Library and Information

Science (LIS) from 1975 to 2004 based on Social Sciences Citation Index (SSCI). Result shows solid increase in both the number of papers and the quality of publishing channels. About more than half of the total LIS papers in China were from universities and the Web of Science (WOS) journals are representative for the Chinese LIS publications in general. Kurshid[7] analysed the articles contributed in LIS by Pakistani authors for the period 1947-1997. The Pakistan based author's contributions to LIS literature quite reasonable and authorship pattern is towards multiple authors and non-resident Pakistani authors' share in the global LIS literature is much better than their counterparts living in Pakistan.

3. OBJECTIVES

The main of objectives of the study are:

(i) Review the literature produced by the Indian based authors in Information Science &Library Science subject category in Web of Science during 1991-2015

(ii) Compare the world publication output with India

(iii) Reveal the authorship pattern and citation information

(iv) Discover most productive journals

(v) Divulge the most prolific authors

(vi) Reveal the characteristics of top nine most cited articles

(vii) Aanalyse the words from the title and abstracts of the articles.

4. METHODOLOGY

The primary data for the study was extracted from Web of Science (updated on 08-07-2016). There were 85 journals listed in the subject category of Information Science & Library Science (JCR 2014). Author used advanced search techniques: WC= (Information Science & Library Science) AND AD= (India) and the time span during 1991 to 2015 to collect the required data. A total of 904 documents were found in the database, including articles (708). Further, bibliographic details such as title, authors, source, and citations were downloaded in the excel spreadsheet. As the tradition followed in the bibliometric studies, we considered the articles for analysis purpose, as the articles contain description of complete researches and results[14]. In the Web of Science database, the corresponding author is labelled as the reprint author. In this study, reprint author is referred to as the corresponding author. In a single-author article where authorship is not specified, the author is classified as both the first author and the corresponding author[15]. As for the author, if one author was assigned as the first author of one article, the article was considered as 'first author article' of the author; and if one author was assigned as the corresponding author of one article, the article was considered as 'corresponding author article' of the author[16].

5. RESULTS AND DISCUSSION

5.1 Comparison of Indian Publications over World's

The Table 1 provides comparative output of total publications and research articles of Indian and World in the subject category of Information Science & Library Science (IS & LS) in the Web of Science database during 1991-2015. In 1991, there were a total of 5,117 documents were in the subject category by World, while there were only 17 documents were

from the Indian based authors. However, in 2015, the world's publication reached to 11,154, while India's were 94 documents. This shows that India's publications were poorly represented in the subject category of IS & LS. Similarly, the research articles from Indian authors were also negligible in compare to the world's contributions. One of the reasons for this may be that most of the Indian authors may prefer to publish their research findings in the local journals[11]. The journals that are indexed in the WoS follow high stranded of editorial process, and majority of the time there is a chance of being rejected[1]. English writing skills may play a vital role while publications in the reputed journals. In 1991, Indian authors had contributed a share 0.02 % to the world's publications, later it went raising, in 2015; it has reached to 0.13% of the total articles. In total, 1.04% of the literature was contributed by the Indian authors during 1991-2015. In the study of Khurshid[7], a total of 516 articles were published by the Pakistani authors for the period of 1957 to 2011. A total of 440 articles were published in local and foreign journals by the Bangladeshi authors for the period of 1966 to 1997[5]. Similarly, China had contributed 351 publications during 1975-2004[4]. The Fig. 1 illustrates the publication trends of Indian and World's total publication in the subject category of IS & LS over years. In 1993, a striking pick up in world's publications is evident and later some slight decline is observed here and there. Indian publications were unsteady in growth from 1991 to 2013, in 2014, a good pick up is seen in the growth of a total publications. The publications trend in the articles in the subject category of IS & LS in comparison with India's and World's publications is illustrated in the Fig. 2. In 1991, there were 2,250 articles by world's, while only 13 articles were contributed by the Indian authors, which is a meager. The publication trends of world's publication were kept increasing while India's publications were growing inconsistently over years. However, the India's publications had got pick up in the 2014 and 2015.
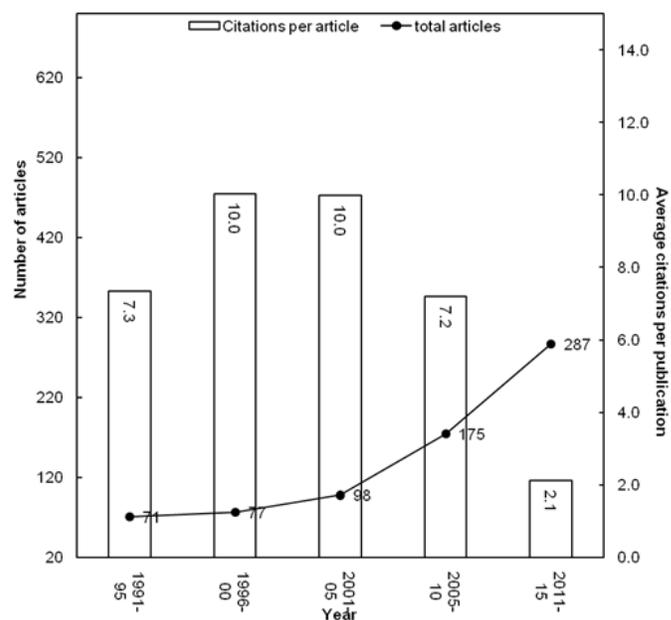
Figure 1. Trends in publication with average citations per article over years.
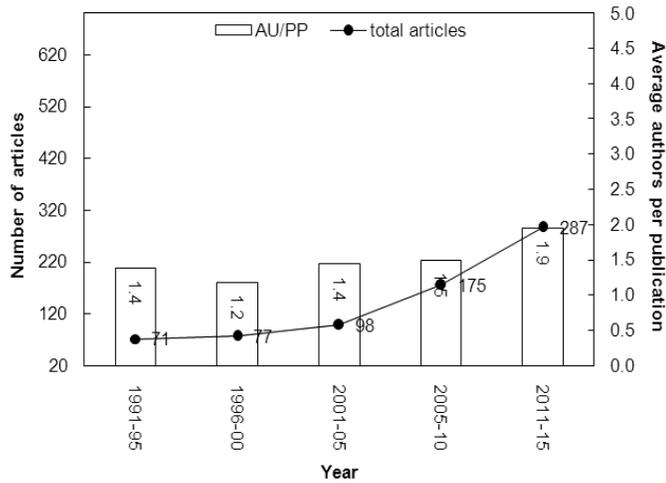
Figure 2. Trends in publication with average authors per article over years.

5.2 Types of Documents with Citations

The Table 2 provides the types of documents with average citations per document published in the subject category of Information Science and Library Science by Indian based authors from 1991 to 2015. A total of thirteen types of documents were published, article being most with 708, accounting for 78.32% of the total documents followed by the book review (73; 8.08%), proceeding paper (46; 5.09%), letter (34; 3.76%), editorial material (21; 2.32%), review (9; 1.0%), note (6; 0.66%), meeting abstract (2; 0.22%), biographical item (1; 0.1%), reprint (1; 0.11%), chronology (1; 0.11%), bibliography (1;0.11%), and item about individual (1; 0.11%), respectively. Citations are the indicators of the impact of work in the subject and on the researchers in the field of study[17-20]. The review papers have greater average citations count per article (8.89). The second greater average citations were recorded to proceeding papers (8.71) followed by the article (5.84), chronology (2.00),

Table 1. Comparison of Indian publications with World's in IS & LS during 1991-2015

PY	World publications				Indian publications				Indian Share (%)
	Total documents	%	Articles	%	Total documents	%	Articles	%	
1991	5117	2.08	2250	3.32	17	1.88	13	1.84	0.02
1992	4913	1.99	2153	3.18	20	2.21	12	1.69	0.02
1993	7514	3.05	2158	3.18	23	2.54	16	2.26	0.02
1994	11207	4.55	2551	3.76	18	1.99	11	1.55	0.02
1995	11539	4.68	2425	3.58	25	2.77	19	2.68	0.03
1996	11436	4.64	2349	3.47	14	1.55	10	1.41	0.01
1997	11383	4.62	2324	3.43	16	1.77	9	1.27	0.01
1998	11116	4.51	2311	3.41	38	4.20	26	3.67	0.04
1999	11531	4.68	2316	3.42	25	2.77	15	2.12	0.02
2000	10989	4.46	2270	3.35	25	2.77	17	2.40	0.03
2001	10829	4.39	2315	3.42	22	2.43	15	2.12	0.02
2002	10285	4.17	2376	3.50	31	3.43	17	2.40	0.03
2003	10755	4.36	2264	3.34	27	2.99	19	2.68	0.03
2004	9991	4.05	2126	3.14	25	2.77	19	2.68	0.03
2005	10212	4.14	2542	3.75	33	3.65	28	3.95	0.04
2006	10145	4.12	2524	3.72	38	4.20	32	4.52	0.05
2007	10074	4.09	2730	4.03	34	3.76	23	3.25	0.03
2008	9876	4.01	2869	4.23	46	5.09	34	4.80	0.05
2009	8844	3.59	3085	4.55	48	5.31	39	5.51	0.06
2010	9594	3.89	3226	4.76	51	5.64	47	6.64	0.07
2011	9628	3.91	3379	4.98	55	6.08	50	7.06	0.07
2012	9076	3.68	3497	5.16	44	4.87	38	5.37	0.06
2013	9558	3.88	3614	5.33	45	4.98	38	5.37	0.06
2014	9735	3.95	3772	5.56	90	9.96	75	10.59	0.11
2015	11154	4.53	4373	6.45	94	10.40	86	12.15	0.13
Total	2,46,501	100	67,799	100	904	100	708	100	1.04

and reprint (1.00), respectively. No citations were received by the meeting abstract, biographical item, bibliography and item about an individual, correspondingly.

Table 2. Types of documents with average citations

Document type	TP	%	TC_{2015}	CPP
Article	708	78.32	4139	5.84
Book Review	73	8.08	6	0.08
Proceeding paper	46	5.09	401	8.71
Letter	34	3.76	14	0.41
Editorial material	21	2.32	19	0.90
Review	9	1.00	80	8.89
Note	6	0.66	2	0.33
Meeting abstract	2	0.22	0	0.00
Biographical-Item	1	0.11	0	0.00
Reprint	1	0.11	1	1.00
Chronology	1	0.11	2	2.00
Bibliography	1	0.11	0	0.00
Item about an individual	1	0.11	0	0.00

Note: TP= total documents, %= percentage of total documents, $TC_{2015=}$ total citations till 2015, CPP= average citations per document.

5.3 Five Year's Publications Trend with Average Citations and Authors

Figure 1 shows trends in publication of Indian articles in five- 5 years span with average citations per article for the period of 1991-2015. In the years 1991-95, there were 71 articles and in 2011-15, it has reached to 281 articles. There is an absolute increase in the number of articles for every five years. It shows that the Indian based authors trying their best to publish their research findings in the Web of Science indexed journals. A total of 708 articles had received 4,139 citations with an average of 5. 84 par article. The articles that are published in the period of 1996-00 and 2001-05 had recorded average of 10 citations per article, which is quite higher than overall average citations per article (5.84). It can be note that the articles that published in this period have greater impact. A lowest citations per article (2.1) is seen for the recently published articles (2011-2015), it's quite natural that articles need sufficient time to get cited in the other articles[17].

The Fig. 2 shows the trends in authorship pattern in the articles published by the Indian based authors in the subject category of IS & LS in the period of 1991-2015, in five-5 year's time span. A total of 708 articles were contributed by the 967 unique authors with an average of 1.36 authors per article. Out of 708 articles, 207 articles were contributed by single authors, 278 articles by joint authors, 149 articles by three authors and remaining 70 articles were contributed by the more than three authors, respectively. In the period of 1991-05, there were 1.4 authors per article, while in 2001-15, it went to 1.9 authors per article. It can be noted from this result that the multiple authorship pattern is taking place in the articles published in the subject category of IS & LS subject category.

5.4 Productive Journals and Prolific Authors

Table 3 presents the journals that had published at least eight or more articles contributed by at least one of the Indian based authors in the period of 1991-2015. The journal impact factor along with global rank as per Journal Citation Report-2014 is also provided for the information. Out of 85 journals in IS & LS subject category in WoS, 77 journals had published at least one article from the Indian based authors. The journal *Scientometrics* was the most productive journal with 172 articles, which accounts for the 24.29% of the total contribution from the Indian bused authors followed by the *Electronic Library* (75; 10.59%), *Program-Electronic Library and Information Systems*(46; 6.50%), *Journal of Knowledge Management* (21; 2.97%), *Knowledge Organisation* (20; 2.82%), *Malaysian Journal of Library & Information Science* (17; 2.40%), *International Journal of Information Management* (16; 2.26%),and *Telecommunications Policy* (16; 2.26%). The journals with higher impact factor as per JCR-2014 have published considerable number of articles, such as, *Information Systems Research* (2.436), *Scientometrics* (2.183), and *Journal of Management Information Systems*(2.062), respectively. One more interesting fact is that almost a quarter of total articles published by Indian based authors are published in the *scientomtrics*, which can be the studies related to research evaluation studies based on the bibliometrics or scientometrics tools and techniques.

The evaluation of author's performance based on the total articles, first author articles, and corresponding authors articles have been studied recently[16]. Table 4 gives the list of the authors from India who has contributed at least nine or more articles in the subject category of Information Science and Library Science during the period of 1991-2015. The authorship list can be based on contribution, alphabetical order, or reverse seniority, but the approach most often used is ordering by contribution, especially for articles with few authors[21]. Generally the first author is one who is more responsible for the research work and he should get major portion of the credit as compare to others[22]. Similarly, corresponding author is one who plays a vital role in planning and execution of the project, hence, he should be rewarded with same part of credit as first author deserve[23].

Gupta, BM has emerged as most productive author with 33 articles followed by the Garg, KC (24), Prathap, G (20), Rao, IKR (15), Kumar, V (15), Rao, SS (14), Bhattacharya, S (11), Kademani, BS (10), Karisiddappa, CR (9), and Nagpaul, PS (9), respectively. Gupta, BM takes the 1st rank in the total articles and first author articles. This indicates that the author is highly involved in the research and his contribution to the IS & LS is quite reasonable. Prathap, G takes the 1st rank in case of corresponding author articles (20) and single author articles (19). This result indicates that the author is independent capable worker and prefers to conduct research alone. Kumar, V and Rao, IKR prefer to carry out research in collaboration with others. The average citation counts for articles published by Bhattacharya, S(14. 72), Nagpaul, PS (12.33), and Rao, IKR (11.66) quite higher than average citations of total articles (5.84). It confirms that the articles written by Bhattacharya, S, Nagpaul, PS and Rao, IKR hadgreater impact on the subject as

Table 3. Journals with eight or more articles by Indian based authors in 1991-2015

Journal	TP	%	IF$_{2014}$	Rank
Scientometrics	172	24.29	2.183	3208
Electronic Library	75	10.59	0.535	9533
Program-Electronic Library and Information Systems	46	6.50	0.651	8867
Journal of Knowledge Management	21	2.97	1.586	4758
Knowledge Organization	20	2.82	0.585	9230
Malaysian Journal of Library & Information Science	17	2.40	0.238	11091
International Journal of Information Management	16	2.26	1.550	4881
Telecommunications Policy	16	2.26	1.411	5389
Information Processing & Management	15	2.12	1.265	5937
Journal of Information Science	14	1.98	1.158	6382
Information Systems Research	13	1.84	2.436	2724
Journal of Information & Optimization Sciences	13	1.84	N/A	N/A
Library Hi Tech	13	1.84	0.598	9161
Online Information Review	12	1.69	0.918	7447
Libri	11	1.55	0.175	11327
Information Technology & Management	11	1.55	N/A	N/A
Information Technology for Development	9	1.27	0.553	9420
International Information & Library Review	9	1.27	N/A	N/A
International Journal of Geographical Information Science	9	1.27	1.655	4556
Journal of Management Information Systems	9	1.27	2.062	3477
Information & Management	8	1.13	1.865	3950
Interlending & Document Supply	8	1.13	N/A	N/A
Journal of Academic Librarianship	8	1.13	0.448	10043
Journal of The American Society for Information Science and Technology	8	1.13	1.846	3997
Online & Cdrom Review	8	1.13	N/A	N/A
Restaurator-International Journal for the Preservation of Library and Archival Material	8	1.13	0.212	11201

TP= Total articles, %= percentage of total articles, IF$_{2014}$=impact factor as per JCR 2014, Rank= Global ranking of the journal as per JCR (2014), N/A= not available.

Table 4. Most prolific authors with (TP ≥9)

Author	Institute	TP (Rank)	FP (Rank)	RP (Rank)	SP (Rank)	TC	CPP (Rank)
Gupta, B.M.	CSIR-NISTAD, New Delhi	33 (1)	21 (1)	18 (2)	3 (4)	213	6.45 (7)
Garg, K.C.	CSIR-NISTAD, New Delhi	24 (2)	14 (3)	18 (2)	1 (6)	242	10.08 (4)
Prathap, G.	CSIR-NISTAD, New Delhi	20(3)	19 (2)	20 (1)	19 (1)	138	6.90 (6)
Rao, I.K.R.	DRTC, Bangalore	15 (4)	3 (6)	3 (7)	3 (5)	175	11.66 (3)
Rao, S.S.	CLRI, Madras	14 (5)	14 (3)	12 (3)	13 (2)	78	5.57 (8)
Bhattacharya, S.	CSIR-NISTAD, New Delhi	11 (7)	9(4)	10(4)	2 (6)	162	14.72 (1)
Kademani, B.S.	BARC, Bombay	10 (8)	8 (5)	8(6)	N/A	45	4.50 (9)
Karisiddappa, C.R.	Karnataka University, Dharwad	9 (9)	1 (7)	1(9)	N/A	72	8.00 (5)
Nagpaul, P.S.	CSIR-NISTAD, New Delhi	9 (9)	9 (4)	9 (5)	5 (3)	111	12.33 (2)
Kumar, V.	BARC, Bombay	8 (10)	0	0	0	26	3.25 (10)

TP= total articles, FP= first author articles, RP=corresponding authors articles, SP= single author articles, TC= total citations, CPP= average citations per article with rank.

well as fellow researches in the subject category of IS & LS for the period of 1991-2015. One more interesting fact is that, out of ten most productive authors, five authors are affiliated to National Institute of Science, Technology & Development Studies (CSIR-NISTAD), New Delhi, Two from Bhabha Atomic Research Center (BARC), Science Information Resource Division, Bombay,one from Indian Statistical Institute, Documentation Research & Training Center (DRTC), Bangalore, one from Central Leather Research Institute (CLRI), Madras, and one from Karnataka University, Dharwad, India, respectively.

5.5 Word Analysis from Title and Abstract

The title of the article indicates the content of the article in a precise manner and would be useful to decide the relevance of content to the fellow researchers. Analysis of word from title of the articles is carried out by Xie[24], *et al*. The analysis of title of 708 articles is presented in the Table 5. 'India' was the most frequently appeared word, which appeared in 138 articles title followed by research (63), study (63), library (58), etc. The words such as research, science, analysis, Growth, evaluation, web, scientometrics analysis are related to research evaluation studies.

Table 5. Analysis of word from title of the articles

Words in title	No.of articles	%
India	138	7.46
Research	63	3.41
Study	63	3.41
Library	58	3.14
Analysis	47	2.54
Technology	45	2.43
Development	37	2.00
Science	37	2.00
Case study	36	1.95
Use	31	1.68
University	25	1.35
Growth	20	1.08
Information	20	1.08
Evaluation	19	1.03
Country	17	0.92
Role	16	0.86
Web	15	0.81
Digital library	12	0.65
Scientometric analysis	11	0.59
China	10	0.54

Abstract of an article can provide the brief summary of the article, which includes objective of the study, approaches, and results found in the study. Analysis of word from the abstract of the article would provide clues about the content of the article. Table 6 provides top 20 most frequently appeared words in the abstract of the 708 articles contributed by the Indian based

authors in the subject category of information science and library science in Web of Science for the period of 1991-2015. The most frequently appeared words are country(145), number (143), use (134), library (133), journal (128), science (117), user (113), author (108), field (104), etc.

Table 6. Analysis of word from abstract of the articles

Words in Abstract	Times appeared	%
Country	145	1.16
Number	143	1.15
Use	134	1.08
Library	133	1.07
Journal	128	1.03
Science	117	0.94
User	113	0.91
Author	108	0.87
Field	104	0.84
Institution	97	0.78
Service	96	0.77
Growth	92	0.74
Publication	92	0.74
Year	90	0.72
Period	79	0.63
Resource	78	0.63
Process	76	0.61
Citation	67	0.54
Survey	63	0.51
Index	61	0.49

It can be note from the word analysis of titles and abstracts, Indian authors published large number of articles in bibliometrics and scientometrics analysis studies. Second on use of electronic resources and services and application information and communication technology during 1991-2015.

5.6 Characteristics of most Frequently Cited Articles

The analysis of top most frequently cited articles would provide the most striking research area in the subject category. Many authors reported an analysis of top most cited articles such as total citations since its publication, citations in the publication year, citations in the recent year and total citations per year since publication of article[20]. The Table 7 provides the analysis of top nine most cited articles published by the Indian based authors in the subject category of Information Science and Library Science during the period of 1991-2015 with TC_{2015} (total citations in 2015),C_{2015} (citations in 2015),C0 (citations in publication year), and TCPY (average citations per year)[25-33]. The article entitled as 'Shape measures for content based image retrieval: A comparison' Mehtre, Kankanhalli and Wing[25] published in *Information Processing & Management* was the most frequently cited article with 199 citations since it publication and article ranked 1st in TC_{2015} and average citations

Table 7. Nine most frequently cited articles from India in IS & LS during 1991-2015

Rank (TC_{2015})	Rank (C_{2015})	Rank (C_0)	Rank ($TCPY$)	Title	References
199 (1)	10 (3)	1 (2)	9.95 (1)	Shape measures for content based image retrieval: A comparison	Mehtre, *et al.* 1997
112 (2)	9 (4)	0	8(2)	E-government evaluation: A framework and case study	Gupta and Jana, 2003
61 (3)	8 (5)	1 (2)	5.55 (5)	Designing web sites for customer loyalty across business domains: A multilevel analysis	Mithas, *et al.* 2006
59 (4)	2 (7)	1 (2)	2.46 (6)	Users, user interfaces, and objects - envision, a digital library	Fox,*et al.* 1993
54 (5)	15 (1)	2 (1)	7.71 (3)	An empirical analysis of the impact of information capabilities design on business process outsourcing performance	Mani, *et al.* 2010
53 (6)	14 (2)	0	5.89 (4)	Adoption of ICT in a government organisation in a developing country: An empirical study	Gupta *et al.* 2008
51 (7)	1 (7)	0	2.04 (8)	Classification of growth-models based on growth-rates and its applications	Egghe and Rao,1992
51 (8)	1 (7)	1 (2)	2.04 (8)	Citation age data and the obsolescence function - fits and explantations	Egghe and Rao, 1992
46 (9)	4 (6)	0	2.42 (7)	Mapping a research area at the micro level using co-word analysis	Bhattacharya and Basu, 1998

TC_{2015}: number of citations till 2015; C_{2015}: number of citations in 2015; C_0: number of citations in publication year; *TCPY*: average citations per year

per year (TCPY). The second most cited article is titled as 'E-government evaluation: A framework and case study' published in the *Government Information Quarterly* by Gupta and Jana[26] was ranked 2nd in case of TC_{2015} and TCPY. Similarly, the article contributed by the Mani, Barua and Whinston[27] ranked 1stin case of C_{2015} and 3rd in case of TCPY. The article entitled 'Adoption of ICT in a government organisation in a developing country: An empirical study' published in the *Journal of Strategic Information Systems* by Gupta, Dasgupta and Gupta[28] ranked 2nd in C_{2015}. Out of nine, five articles have at least one citation in their publication year and five articles were on Information and communication technology, three articles were related to scientometrics, and one article on information retrieval.

6. CONCLUSIONS

An attempt is made to reveal the bibliometric characteristics of articles contributed by Indian based authors in the subject category of Information Science and Library Science in Web of Science for the period of 1991-2015 in this paper. A total of 708 articles were contributed by the Indian authors for the period, which accounts for 1. 04 % of the global contributions. The reasons for this may that the Indian based authors prefer to publish their works in the local journals. The articles published in 1996 to 20005 have received greater citations and the analysis of authorship pattern shows that trend towards multiple authors. The journal *Scientometrics* was the preferred and productive journal among the all journals. Almost a quarter of total articles were published in the *Scientometrics* journal. Gupta, BM was the most productive author and the articles published by the Bhattacharya, S, Nagpaul, PS and Rao, IKR had greater impact on the subject as well as fellow researches in the subject category of IS & LS for the period of 1991-2015. The article entitled as 'Shape measures for content based image retrieval: A comparison' published in *Information Processing*

& Management was the most frequently cited article with 199 citations since it publication and article ranked 1st in TC_{2015} and average citations per year. It is confirmed from the analysis of word from title and abstract of the articles published by Indian based authors in IS & LS subject category that a huge numbers of articles were on bibliometrics and scientometrics analysis based studies. The limitation of the present study are that the citations presented here is solely based on WoS database and hence may not be comprehensive and also, citations may have missed in the WoS database due to the possibilities of simple spelling errors in titles and DOI[34]. However, this analysis wouldcreate awareness among the librarians, information scientists and others involved in economic, social and research policies in India.

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