

Bibliometric Study of Library and Information Science Journal Articles during 2014-2018: LIS Research Trends in India

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ABSTRACT

Library and information science education (LIS) has been spreading out all over India. Every state, one or more institutes/universities, offers LIS education. The research papers contributed by both academics and working professionally in the libraries. This paper examines the current trends of LIS publications in India from 2014 to 2018. The study reviewed 1357 documents from 2014 to 2018 indexed in the Scopus database. The study found that majority of the 342 (25.2%) papers published in the year 2018. Favorite source for publications was *DESIDOC Journal of Library and Information Technology*. Similarly, LIS Indians professional more likely to published research papers collaboratively. Further noted that most frequently used keywords were scientometric, bibliometrics, India and authorship patterns, etc. The degree of collaboration (DC) for five years was 0.79. The analysis of co-citations of reference sources or cited sources indicated that “Scientometric,” and “Annals of library and information studies” mentioned in their articles.

Keywords: Bibliometric; Citation analysis; Library and information science; LIS research trends; India.

1. INTRODUCTION

India is the second-largest populated country followed by China. Over 1.353 billion population found in India (World Bank, 2018). Besides, it has an extensive education system in South Asia. Every year 34.6 million peoples registered in higher education (Ministry of Human Resource Development (MHRD), 2016). The LIS education started in India since 1911 by patronage Maharaja Sayajirao III Gaekwad at Baroda, India (Singh & Moirangthem, 2015). But now a day, LIS education offer in each state in India. However, the 181 department offers LIS educations at a different level at universities/ institutes (Singh & Moirangthem, 2015). Only 931 PhDs were awarded between 1951 and 2010 (Chauhan & Mahajan, 2017). Due to emerging ICT applications and e-publishing houses, there have been large numbers of literature published every year worldwide. About 3 million articles have been published annually in peer-reviewed English journals worldwide (Johnson, Watkinson, & Mabe, 2018). This has been contributed by academics and working professionals and practitioners etc. Bibliometric study is playing pivotal role in research evaluation, and it has been applied to evaluate the performance of the individual as well as the organisation's level. The term “Bibliometrics” came into existence in 1969, and Alan Pritchard first used it in his paper (Pritchard, 1969). Since; than it has been applying in various fields and got recognised worldwide. In recent past years, the

growth rate in academic's contributions has been increased rapidly.

Conversely, the quality of education and research work can be traced by the publications and citations to the research works. Moreover, the University Grant Commission (UGC) is playing an essential role in the quality of educations and research in India. As per the Gazette Notification of the Government of India, every research scholar should publish at least one paper in a refereed journal and two papers presented at the conference during Ph.D. (University Grants Commission, 2016). In India, there have been large numbers of bibliometrics papers published in different areas. Previous studies have examined LIS papers and only concentrated on limited areas. Thus, the current research has conducted to explore the current trends of LIS publications in India.

2. OBJECTIVES

There is still a lack of published literature on LIS contributions in India. Consequently, this current study fills the gap by analyzing LIS publications from 2014 to 2018. The objectives of current research are to find out the current trends of LIS research in India during the year 2014 to 2018. Further, the study is to identify the newly emerging areas of research in LIS field. The study is also identifying the yearly growth citation and contributions, most prolific authors, core journals, core areas of research authorship pattern and degree of collaboration in LIS field in India between 2014 and 2018.

3. LITERATURE REVIEW

Research into citation analysis has a long history. Many bibliometrics studies have been conducted on different subject domains. For instance, (Chauhan & Mahajan, 2017) conducted a bibliometrics study of LIS papers published in India. Authors used Science Citation Index database, a sample of 934 articles between 1951 and 2010 (Chauhan & Mahajan, 2017) reported that 34 per cent of total publications contributed by the professionals working in technical institutions. (Jamali, Mansourian, & Alijani, 2015) examined LIS research out in Iran authors used sample of 11 Persian journals related to LIS. It has been reported that 3,466 papers published during 1991-2014 with 2,135 unique authors. (Patra & Chand, 2006) examined the trend and authorship patterns of LIS research in India between 1967 and 2004. Authors study 3,396 documents collected from LISA. The study reported that 1.24 publications per author in total 3396 publications with 2,732 unique authors. An quantitative research made by (Xiao, Zhang, & Li, 2015) using a survey method of ten LIS institutes in China. The study reported that the growth of research was not stable at educational institutes and the majority of research work based on a theoretical perspective rather than technical research works in the field of LIS in China. (Garg & Sharma, 2017) examined ten years of LIS publication published in India using bibliometrics indicators. Authors reviewed 2428 documents published in 19 journals between 2004 and 2015. (Garg & Sharma, 2017) mentioned that the annual growth of LIS publication was unstable, with a 4.0 per cent Compound Annual Growth Rate (CAGR) calculated during the year 2004-2015. Further reported that 2247 unique authors found, and most of the authors published a very less number of articles. Majority of 391 publications published in the SRELS Journal of Information Management (BI-M). (Yang & Lee, 2012) described how LIS Korean faculty published papers in peer-reviewed journals. The study sample of 159 Korean LIS faculty. It has been reported that 1.5 papers published per faculty in a year and 2,401 peer-reviewed papers published during 2001-2010. An empirical study made by (Dora & Anil Kumar, 2017) on LIS publications of India during the year 2004 to year 2015. It has been described that 3713 research papers contributed to 14 journals. Further mentioned that bibliometrics and scientometrics were the main area of research in Indian LIS publications. (Parabhoi, Bhattacharjee, & Dey, 2019) reported that 967 publications contributed by LIS faculty belong to the North East Region in India between 1980 and 2017. Authros collected faculty publications data from Google Scholar.

Moreover, the study reported that the vast majority of papers published in conferences i.e., PLANNER 54 publications and CALIBER 44 rather than Journals. (Parabhoi, Chand, & Kumar, 2019) reported that 876 publications contributed by LIS faculty from North India between 1978-2018. It has been noted that out of total publications, 46 per cent of papers had no citation. The study found that Jagtar Singh from Patiala University, Punjab contributed the highest 79 publications. Very recently (Parabhoi, 2019) reviewed 36 Google scholar profile of academic librarians in India. (Parabhoi, 2019) mentioned that 683 publications contributed during 1978 to 2018. further reported that, 458 publications had no citations received.

Table 1. Year wise distributions of articles

Year	Article	Percentage	No. of Authors	Percentage
2018	342	25.2	657	22.78
2017	291	21.45	707	24.52
2016	237	17.47	506	17.55
2015	222	16.36	509	17.64
2014	265	19.52	505	17.51
Grand Total	1357	100	2884	100

Table 2. Top ten prolific authors

Author	No. of Articles	No. of citations	ACPP	Affiliations
Bhardwaj R.K.	15	42	2.8	University of Delhi
Gul S.	14	36	2.57	University of Kashmir
Mahajan P.	14	21	1.5	Panjab University
Madhusudhan M.	12	07	0.58	University of Delhi
Shah T.A.	12	42	3.5	Central University of Kashmir
Yuvaraj M.	12	29	2.41	Central University of South Bihar
Garg K.C.	11	36	3.27	CSIR-NISTADS
Kumar V.	11	06	0.54	Babasaheb Bhimrao Ambedkar University
Thanuskodi S.	11	02	0.18	Alagappa University
Tripathi M.	11	13	1.18	Jawaharlal Nehru University

ACPP- Average citation per paper

Similarly, librarians who were serving in IITs published the maximum 216 documents as compared to IIMs librarians and NITs librarians.

4. METHODOLOGY

In this study, the bibliographical data were collected from the Scopus database since Scopus indexes a large number of peer-reviewed journals. In this study, the UGC listed LIS journals were carried out by entering their name with ISSN number. Further, the study only considered journal articles published during 2014-2018 and excluded other type documents i.e., reviews, conference papers, and book chapters, etc. The

Table 3. Year-wise authorship pattern

Authorship pattern	2018	2017	2016	2015	2014	Total	Percentage
Single Author	63	59	49	50	61	282	20.78
Double Authors	156	129	102	95	114	596	43.92
Three Authors	73	66	56	50	55	300	22.11
More Than Three Authors	50	37	30	27	35	179	13.19
No of Article	342	291	237	222	265	1357	100

Table 4. Degree of collaboration

Year	Single Author (NS)	Multi Author (NM)	Total (NS+NM)	Degree of Collaboration (C=Nm/ Nm+Ns)
2018	63	279	342	0.81
2017	59	232	291	0.79
2016	49	188	237	0.79
2015	50	172	222	0.77
2014	61	204	265	0.76
Total	282	1075	1357	0.79

Table 5. Year wise citation

Year	No. of Articles	Cited Articles	Total Citations	Percentage	Non-Cited Articles
2018	342	101	320	12.26	241
2017	291	177	582	21.49	114
2016	237	161	670	19.53	76
2015	222	170	1053	20.63	52
2014	265	215	1865	26.09	50
	1357	824	4490	100	533

data were retrieved on July 15, 2019, from Scopus and a total number of 1495 records retrieved between 2014 to 2018. After excluded other type documents finally 1357 journal articles were retained for the study. All these records were downloaded with complete bibliographic details such as author, year, title, journal information; key word etc. and export with CSV file format, further organised the data and analysed using Advanced MS Excel tools and VOSviewer software.

5. DATA ANALYSIS

A total number of 1357 journal articles was published during the year 2014 to 2018 by Indian LIS professionals. There are several indicators used to examine the research

development of LIS literature published in India. These indicators are such as degree of collaboration, authorship pattern, most prolific authors etc.

5.1 Year Wise Distributions of Articles

Table 1 shows that the trend of LIS publications in India during the year 2014 to 2018. During study period the publications rate was upward. Further, the majority of publications 342 (25.2 %) were recorded in the year 2018 out of 1357. It also indicates the maximum numbers of authors 707 (24.52 %) published their article in the year 2017.

5.2 Top Ten Prolific Authors

A total no. 2884 of authors contributed a total 1357 papers. Table 2 presents the top 10 most prolific authors with their number of documents contributed by the authros. As shown in Table 2, that Bhardwaj R.K., with 15 articles, followed by Gul S. and Mahajan P. each contributed 14 papers and ranked as first, second, and third ranks, respectively. Table 2 also shows that the Average Citation Per Paper with the author affiliations. The author Bhardwaj R.K. from University of Delhi has produce highest numbers of documents while highest number of ACPP 3.27 collected by Garg K.C. in 11 papers.

5.3 Year-wise Authorship Pattern

Table 3 represents the yearly distribution of authorship patterns. The authors were classified into four groups (i.e. single author, double authors, three authors, and more than three authors). It was observed from the Table 3 that, out of 1357 publications, vast majority 596 (43.92 %) of the publications were published by two authors followed by single-authored (282), three authors publications (300). Further, it was noted that more than three authors contributed only 179 (13.19 %) publications. It is clearly shows that authors were interested in collaborative work in the LIS field in India.

5.4 Degree of Collaboration

Table 4 to find out the ratio of the number of collaborative papers to the total numbers of paper in a specific period, the formula suggested by Subramanyam (1983) is used. (Subramanyam, 1983)

$$C = Nm / Nm + Ns$$

Where,

C= Degree of Collaboration

Nm= No. of multi-authored research paper

Ns= No. of single-authored research paper

$$C = 1075 / 1075 + 282 = 0.79$$

Therefore, it proves that 0.79 is the overall DC for the period of five years, and table revealsthat the value of DC was maximum in the year 2018 with 0.81 and minimum in the year 2014 with 0.76.

Table 6. Top sources of published journals

Journal Title	No. of published Articles	Citations	Rank	SJR 2018	Freq	cumFreq	Zone
DESIDOC Journal of Library and Information Technology	239	138	1	0.274	239	239	Zone 1
Library Philosophy and Practice	201	65	2	0.201	201	440	Zone 1
Annals of Library and Information Studies	132	69	3	0.235	132	572	Zone 1
Scientometrics	43	38	4	1.113	43	615	Zone 2
Journal of Enterprise Information Management	42	40	5	0.69	42	657	Zone 2
Education and Information Technologies	38	29	6	0.598	38	695	Zone 2
Electronic Library	32	25	7	0.537	32	727	Zone 2
Library Hi Tech News	31	21	8	0.255	31	758	Zone 2
Journal of Information & Knowledge Management	25	16	9	0.192	25	783	Zone 3
Collection Building	20	13	10	0.321	20	803	Zone 3

5.5 Year Wise Citation

Table 5 represents the yearly citation of published articles with total numbers of authors. Table 6 indicates that the maximum 215 number cited of articles published in the year 2014 with 1865 (26.09 %) citations received followed by 177 cited articles published in the year 2017 with 582 (21.49 %) citations. Similarly, 170 articles cited published papers in the year 2015 and received 1053 (20.63 %).

5.6 Top Sources of Published Journals

Bradford's Law is used to measuring the core journals in any field. Bradford's Law states the quantitative connection between journals in this law the journals are arranged in descending order of productivity and divided into equal zones. Where the number of articles is distributed in the nucleus and succeeding zones, these zones will be 1: n: n², where n is a multiplier (Bradford, 1948). Hence the study has 1357 no. of articles are divided into zone. The journals are ranked according to the decreasing order of published articles. The Table 6 reveals that 3 journals published 572 articles (1/3 of 1357 is 452). These three journals can be considered as the Core journal of LIS field in India and others journals may be considered as the Important journals. These core journals are DESIDOC Journal of Library and Information Technology Journal, Library Philosophy and Practice and Annals of Library and Information Studies.

It is clear from the Table 7 that most of the papers 239 published in "DESIDOC Journal of Library and Information Technology Journal" and received more citations (138) during the period of 2014 to 2018 it was followed by Library Philosophy and Practice with (201) with 65 citations, Annals of Library and Information Studies (139) with 69 citation numbers of journals articles respectively. It can be said that the DESIDOC Journal of Library and Information Technology was the most preferred journal in which the LIS researcher or faculty prefer to publish their research paper during the year 2014 to 2018.

6. VISUALISATION OF THE CO-CITATION ANALYSIS OF REFERENCE SOURCES AND KEYWORD ANALYSIS

6.1 Co-Citation Analysis of Reference Sources

Figure 1 Shows the co-citation analysis of network extracted from reference sources. Co-citation map was created using VosViewer software and limited 70 sources with minimum of 50 occurrences of a particular source refereed in the publications. In this map, the node represented the number of times specific journals were refereed in the total papers similarly color represents the cluster and link embodied strength of networks. As shown in the (Fig.1), "Scientometrics" has been cited more frequently in Indian LIS publications with 1058 times cited this journal similarly "Annals of Library and Information Studies" had the 315 times cited. Further, noted that journals like Electronic library, DESIDOC journals, and library philosophy and practice, etc. also referenced in Indian LIS publications.

6.2 Keywords Analysis

Figure 2 indicates the analysis of the most frequently used keywords during the year 2014 to 2018. The study found a total of 4567 unique keywords used during the study period. It can be seen in Fig. 2, the 80 most frequently used keywords. Figure 2 shows the font size and background color yellow represent the highest numbers of keywords occurrence. The first and most frequently used keyword was "India" with 144 times occurrence. Similarly, the word "Bibliometrics" 93-time occurrences and "Scientometrics" 88 times occurrence and got second and third positions, respectively.

7. CURRENT TRENDS

- The highest numbers of journals article i.e.342 has been published in the year 2018 in India during the study period from 2014-2018.
- Bhardwaj R.K. is the leading author from Central University of Delhi (Lib ScDept) has been producing

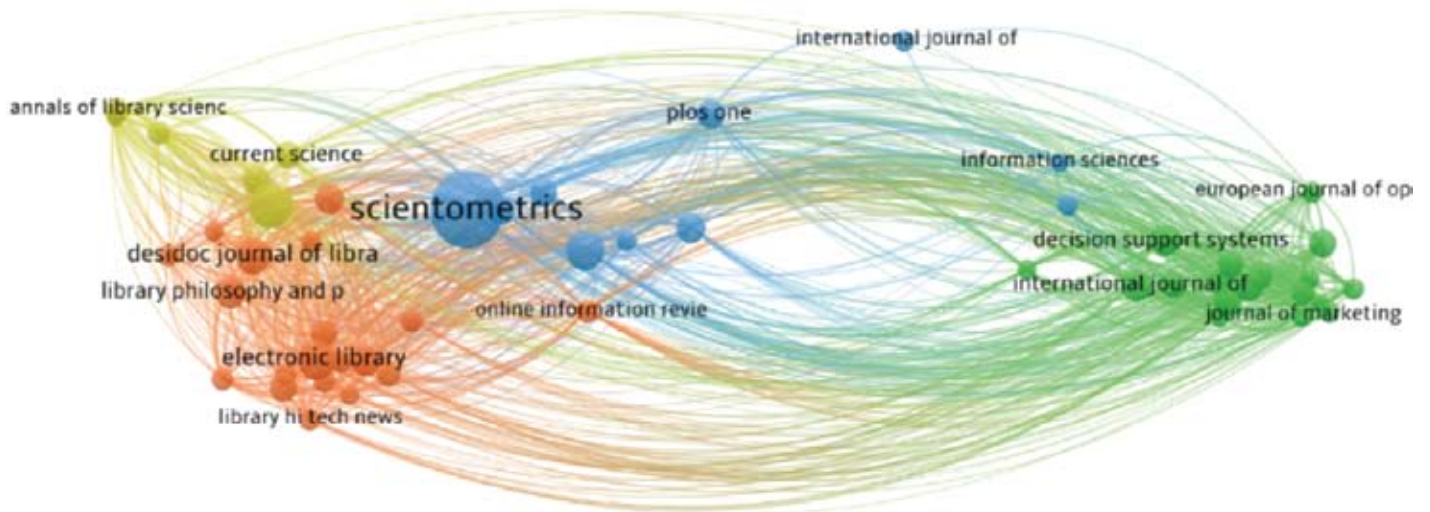


Figure 1. Co-citation analysis of reference sources.

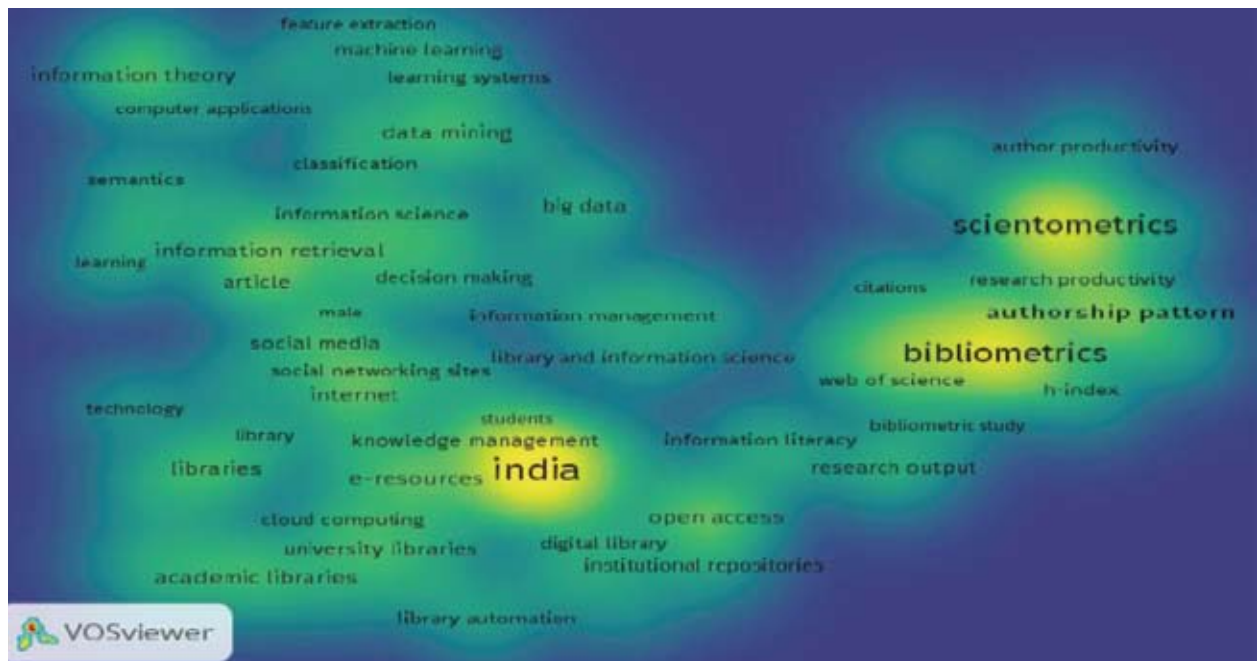


Figure 2. Keyword analysis.

- highest no. of the article as compared to others.
- It also found from the study that Double Authors have been published highest numbers of articles (596) between 2014 to 2018.
- DESIDOC Journal of Library & Information Technology*, *Library Philosophy and Practice* & *Annals of Library and Information Studies* are the “core journals” of the LIS field during the study (2014-2018).
- To find out that during the span of study the research interest among LIS professionals in India is mainly focused on Bibliometric/Scientometrics/Citation, Data mining, Knowledge management, Social Media, Big Data, E-resources, Digital library, Social networking sites etc. area of research in Library and Information Science.

In Conclusion, this bibliometric study showed that LIS

(Library Information Science) related publications all over in India from 2014-2018. This study result can be useful for LIS field especially those who are working on bibliometrics and Scientometric areas. Publications on LIS fields appeared in highly cited journals such as *DESIDOC Journal of Library & Information Technology*, *Library Philosophy and Practice* & *Annals of Library and Information Studies*, which are reflecting the deep concern of LIS field studies. This study will encourage the further study of bibliometrics and Scientometric study of LIS related publications in India.

8. CONCLUSIONS

This study-analysed contribution of Library and Information Science’s journal articles in India during 2014-2018. This study showed a general trend in the growth of research publications between 2014 and 2018. There were a

total of 1357 numbers of papers published by 2884 numbers of authors. The majority of the contributions published in the year 2018 with total no. 342 (25.2 %) of an article published by 657 authors. Bhardwaj R.K. was identified as the most productive author with 15 publications. Furthermore, the data revealed that single authors published 282 (20.78 %), double authors published 596 (43.92 %), three authors published 300 (22.11 %), and more than three authors published 179 (13.19 %) papers during the study period. It means researchers are more interested in doing collaborative research work than independently. Moreover, the study found that the overall Degree of Collaboration (DC) for five years was 0.79, and the value of DC was maximum in the year 2018 with 0.81 and minimum in the year 2014 with 0.76. Further, the study result revealed that out of 1357, journal articles 824 articles received a total 4490 citation whereas 533 publications had no citation received. It was also noted that the majority of authors preferred to published their articles in the “*DESIDOC Journal of Library and Information Technology*” journal and it is also received the highest number of citations during the study period. The analysis of co-citations of reference sources or cited sources indicated that “Scientometric,” and “Annals of library and information studies” were frequently cited in their articles. Similarly, keywords analysis revealed that words such as “Bibliometrics” “Scientometric” and “India” were mostly used in research papers. These research fields are most commonly used in the last five years.

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