

## Knowledge Mapping of Academic Libraries Research in India: A Study from 2014-23

Jivesh Bansal  
AC Joshi Library, Panjab University, Chandigarh, India  
[jivesh@pu.ac.in](mailto:jivesh@pu.ac.in)



Manoj K Joshi  
Department of Library & Information Science, Kurukshetra University, Kurukshetra, India  
[manojkj01@yahoo.com](mailto:manojkj01@yahoo.com)

Madhu Bansal  
Department of Mathematics, Panjab University, Chandigarh, India  
[madhu@pu.ac.in](mailto:madhu@pu.ac.in)

**ABSTRACT:** **Background:** Academic libraries play a pivotal role in higher education. They occupy a prominent place in the institution. Libraries select, procure, process, and manage both print and electronic content. The present study aims to conduct a bibliometric analysis of academic library research.

**Methods:** We searched Scopus for publications up to 16.8.2024. Keywords related to “academic” and “Libraries” were used in a search query in the Scopus search engine. The time was set from 2014-23. We included all types of documents in the analysis. Data about the growth of publications, the most active countries, institutions, authors, and journals, the most cited articles, and keyword mapping to analyse research trends were analysed.

**Results:** The study examines 1717 Indian publications on academic library research during the years 2014-23, as indexed in the Scopus database. The study uses various bibliometric indicators such as the growth of publications, research impact, international collaborative papers, leading organisations and authors, etc. India ranked globally at 4th position with 5.32% global share and 10.08% publications having international collaboration. Indian publications on academic libraries research registered a citation impact per paper (CPP) of 9.1. The study found that the University of Delhi (55 papers), Alagappa University, Karaikudi (51 papers), and the University of Kashmir, Srinagar (43 papers) were the most productive organisations. Jawaharlal Nehru University, Delhi (14.23), IGNOU, N. Delhi (8.59) and Manipal Academy of Higher Education (8.33) were the most impactful organizations in terms of citations per paper. Ganie, S.A (18 papers), NS Lawal, M.T (13 papers) were the most productive authors, and Tripathi, M (12.2), Bhardwaj, R.K (10.1) and Yuvaraj, M.R (9.55) were the most impactful authors in terms of citations per paper. Library Philosophy and Practice (514 papers), DESIDOC Journal of Library and Information Technology (134 papers), and Emerald Emerging Markets Case Studies (66 papers) were the leading journals in the field. Library Philosophy and Practice (716 citations), DESIDOC Journal of Library and Information Technology (680 citations) and Electronic Library (207 citations) were the most impactful journals in the domain.

**Conclusions:** India needs to improve its research performance in the area of academic libraries. There is a dire need to strengthen academic libraries and conduct research on academic libraries. A national policy should be evolved to fund the research project as well as improve international collaboration.

**Keywords:** Scientometrics, Academic libraries, University Library, College Library, Bibliometrics, Research

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## 1. Introduction

Academic institutions are the temples of learning and scholarship. Libraries attached to universities, colleges, schools and other academic institutions are called academic libraries. Academic libraries play a pivotal role in the higher education. They occupy a prominent place in the institution. Libraries select, procure, process and manage print and electronic content. They are instrumental in discovering the resources in this networked world. Academic libraries sync about the parent organisation performing the service provider role—the strategic policy formulation by discussing key requirements with user communities and colleagues. There is a paradigm shift in academic libraries from collection-oriented institutions to service providers. Emerging technologies such as data mining, artificial intelligence, and services such as open access, remote login, institutional repositories, and maintaining subject collections profoundly impact the promotion of knowledge and scholarship. Academic libraries help manage research data, preprints and other academic collections and make work more discoverable. Libraries undertake important activities to promote information literacy, spread awareness about resource usage, and disseminate research. Libraries develop platforms for open-access publishing, managing open-access directories and hosting institutional repositories. (1-5)

Bibliometrics is the application of mathematical techniques to the field of knowledge. It helps to quantify and qualitatively analyse the subject. Research in the given field helps decide how funds are allocated to researchers and institutions to promote research.

## 2. Literature Review

Few bibliometric studies have been conducted in the domain of digital library research. Ahmad, Jian Ming and Rafi analysed the global digital library research output covered in ISI Web of Science for 2002-2016. 4206 documents were retrieved and studied for the annual productivity, prolific scholars, core journals and countries' contribution. (6) Singh, Gian, Mittal, Rekha and Ahmad, Moin examined global digital library literature from 1998-2004. The authors analysed more than 1000 articles. Sixty-one per cent of the articles were single-authored. The USA was the most productive country, and English was the most productive language. The distribution of articles had been by Bradford's law. (7) Dhawan et al. studied Indian research output on digital libraries for 2007-16 as covered in the Scopus database. India ranked 7<sup>th</sup> in global publication share and registered 10.95% growth compared to negative global growth (-3.83%). The USA is the leading collaborative country, and the DESIDOC Journal of Library Information and Technology is the most productive. (8) No comprehensive bibliometric study on academic library research is available; hence, the present study is unavailable.

## 3. Objectives

The present study is designed to examine India's research output on academic libraries during 2014-23 with the following objectives: (i) The global research output on academic libraries and publication output of the top 10 most productive countries, (ii) Indian research output on academic libraries in different areas as publication growth, citation impact, distribution by broad subject areas, identification of most productive authors, organisations and journals in the field.

## 4. Methodology

The publication data on academic library research was retrieved and downloaded from the Scopus database, an international multidisciplinary comprehensive bibliographic database (<http://www.scopus.com>) covering the period 2014-23. Keywords (Universit\* OR Academic OR College) AND libr\* were searched in "Keyword tag" and "Article Title tag" (joined by Boolean operator "OR") and limiting period 2014-23 in "date range tag". This search strategy yielded 32246 global records. The above strategy was further refined by country of publication to identify the top 10 countries (including India) on academic library research. The search strategy further focused on India's output. Citations to publications were obtained and searched from the date of their publication till 16th Aug 2024. The study analysed the data across different bibliometric indicators.

## 5. Analysis and Results

### 5.1. Publication Growth

The global research output in the domain of academic libraries research was 32,246 publications during 2014-23, an average of 3224.6 publications per year. India's publication output in the field comprised 1717 publications, averaging 171.7 publications per year. India registered a 10.19% annual growth.

India's global publication share increased from 3.66% during 2014-18 to 6.60% during 2019-23. India's annual publications increased from 81 in 2014 to 194 in 2023, registering a 10.19% annual average growth. India's cumulative publications increased from 510 during 2014-18 to 1207 during 2019-23, registering 57.75% absolute growth in contrast to 23.72% global publication growth.

Indian publications on academic library research averaged a citation impact per paper (CPP) of 9.1, decreasing from 14.42 CPP in 2014-18 to 3.8 CPP in 2019-23. 72.80% of the total Indian output appeared in journals; the rest, 27.2%, was in the form of conference papers, book chapters, reviews, books, editorials, notes, and short surveys.

Table 1. Growth of World and Indian Publications and Citations on Academic Libraries during 2001-20

| Period                                                                                                      | World |      | India |       |      |     |       |
|-------------------------------------------------------------------------------------------------------------|-------|------|-------|-------|------|-----|-------|
|                                                                                                             | TP    | TP   | TC    | CPP   | TP%  | ICP | %ICP  |
| 2014                                                                                                        | 2881  | 81   | 2304  | 28.4  | 2.81 | 9   | 11.11 |
| 2015                                                                                                        | 2545  | 89   | 1191  | 13.38 | 3.50 | 8   | 8.99  |
| 2016                                                                                                        | 2775  | 96   | 932   | 9.71  | 3.46 | 8   | 8.33  |
| 2017                                                                                                        | 2776  | 100  | 1617  | 16.17 | 3.60 | 13  | 13.00 |
| 2018                                                                                                        | 2976  | 144  | 636   | 4.42  | 4.84 | 4   | 2.78  |
| 2019                                                                                                        | 3796  | 347  | 1242  | 3.58  | 9.14 | 20  | 5.76  |
| 2020                                                                                                        | 3632  | 191  | 616   | 3.23  | 5.26 | 17  | 8.90  |
| 2021                                                                                                        | 3951  | 316  | 1525  | 4.83  | 8.02 | 26  | 8.20  |
| 2022                                                                                                        | 3409  | 157  | 837   | 5.33  | 4.63 | 30  | 18.99 |
| 2023                                                                                                        | 3505  | 194  | 378   | 1.95  | 5.53 | 38  | 19.59 |
| 2014-2018                                                                                                   | 13953 | 510  | 6680  | 14.42 | 3.60 | 42  | 8.24  |
| 2019-2023                                                                                                   | 18293 | 1207 | 4598  | 3.8   | 6.50 | 131 | 10.85 |
| 2014-2023                                                                                                   | 32246 | 1717 | 11278 | 9.1   | 5.10 | 173 | 10.08 |
| TP=Total Papers; TC=Total Citations; CPP= Citation Impact Per Paper; ICP=International Collaborative Papers |       |      |       |       |      |     |       |

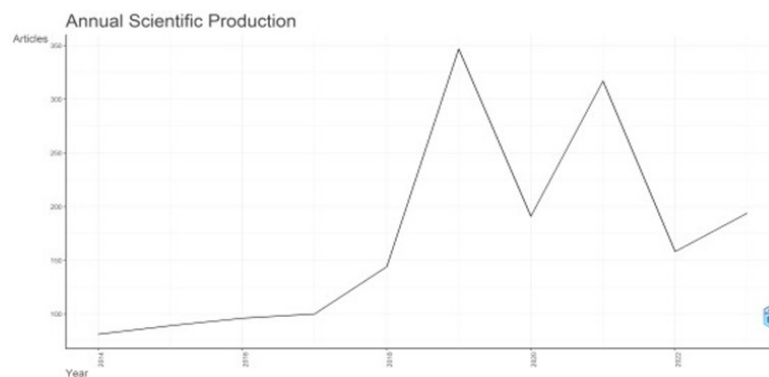


Figure 1. Growth of Publications

#### 4.2. Most Productive Countries in Academic Libraries Research

The Top 15 most productive countries contributed 70.75% of the global share. The United States is the largest contributor of scientific publications on academic library research, with a 32.12% share of global output, followed by China (8.6%) and the U.K. (6.3%). The 12 other top countries contributed between 5.32% and 1.55%. India is ranked as the 4th most productive country globally, with a 5.32% global share. The international publication share decreased in 5 countries, namely the USA, the U.K., Germany, Australia and Canada (from 11.65% to 0.65%), while it increased in the other 10 countries (from 0.02% to 5.34%) from 2014-18 to 2019-23.

Table 2. Global Publication Share and Output of Top 15 Countries in Academic Libraries Research during 2001-20

| S. No. | Name of the Country | Number of Papers |           |           | Share of Papers |           |           |
|--------|---------------------|------------------|-----------|-----------|-----------------|-----------|-----------|
|        |                     | 2014-2018        | 2019-2023 | 2014-2023 | 2014-2018       | 2019-2023 | 2014-2023 |
| 1      | United States       | 5403             | 4954      | 10357     | 38.73           | 27.08     | 32.12     |
| 2      | China               | 777              | 1996      | 2773      | 5.57            | 10.91     | 8.60      |
| 3      | United Kingdom      | 1081             | 952       | 2033      | 7.75            | 5.20      | 6.30      |
| 4      | India               | 510              | 1207      | 1717      | 3.66            | 6.60      | 5.32      |
| 5      | Canada              | 628              | 656       | 1284      | 4.50            | 3.59      | 3.98      |
| 6      | Nigeria             | 344              | 703       | 1047      | 2.47            | 3.84      | 3.25      |
| 7      | Spain               | 433              | 570       | 1003      | 3.10            | 3.12      | 3.11      |
| 8      | Australia           | 476              | 505       | 981       | 3.41            | 2.76      | 3.04      |
| 9      | Germany             | 476              | 505       | 981       | 3.41            | 2.76      | 3.04      |
| 10     | Brazil              | 259              | 472       | 731       | 1.86            | 2.58      | 2.27      |
| 11     | Italy               | 287              | 403       | 690       | 2.06            | 2.20      | 2.14      |
| 12     | South Africa        | 185              | 447       | 632       | 1.33            | 2.44      | 1.96      |
| 13     | Pakistan            | 146              | 401       | 547       | 1.05            | 2.19      | 1.70      |
| 14     | Russian Federation  | 158              | 356       | 514       | 1.13            | 1.94      | 1.59      |
| 15     | Indonesia           | 130              | 369       | 499       | 0.93            | 2.01      | 1.55      |
|        | Total               | 8705             | 13509     | 22814     |                 |           |           |
|        | World               | 13950            | 18296     | 32246     |                 |           |           |

Country Scientific Production



Figure 2. Global Output on Academic Libraries Research

#### 4.3. International Collaboration

About 10.08% (173) of India's publications on academic library research had international collaboration during 2014-23. The share of ICP in India's output on academic libraries research increased from 8.24% during 2014-18 to 10.85% during 2019-23. The UK is the most significant contributor (16.19% share) among India's ICPs, followed by Canada (10.40%), Saudi Arabia (9.25%), Australia (8.67%) etc. The ICP share increased in 6 countries from 0.49% to 6.87%, as against a decrease in 4 countries, namely Saudi Arabia, Canada, the United States and Malaysia (from 9.8% to 1.03%) from 2014-18 to 2019-23. Fig.3 shows India's collaboration with different countries.

Table 3. Contribution of Top 10 Countries in India's Collaborative Output in Academic Libraries Research, 2007-16

| S.No. | Collaborative Country    | International Collaborative Papers (ICP) |           |           | Share of ICP |           |           | TLS |
|-------|--------------------------|------------------------------------------|-----------|-----------|--------------|-----------|-----------|-----|
|       |                          | 2014-2018                                | 2019-2023 | 2014-2023 | 2014-2018    | 2019-2023 | 2014-2023 |     |
| 1     | United States            | 13                                       | 34        | 47        | 30.95        | 25.95     | 4.05      | 145 |
| 2     | United Kingdom           | 6                                        | 22        | 28        | 14.29        | 16.79     | 16.19     | 102 |
| 3     | Canada                   | 7                                        | 11        | 18        | 16.67        | 8.39      | 10.40     | 98  |
| 4     | Saudi Arabia             | 7                                        | 9         | 16        | 16.67        | 6.87      | 9.25      | 23  |
| 5     | Australia                | 2                                        | 13        | 15        | 4.76         | 9.92      | 8.67      | 73  |
| 6     | Germany                  | 3                                        | 10        | 13        | 7.14         | 7.63      | 7.51      | 79  |
| 7     | Malaysia                 | 3                                        | 8         | 11        | 7.14         | 6.11      | 6.36      | 17  |
| 8     | Nigeria                  | 0                                        | 9         | 9         | 0.00         | 6.87      | 5.20      | 12  |
| 9     | Iran                     | 0                                        | 9         | 9         | 0.00         | 6.87      | 5.20      | 26  |
| 10    | Spain                    | 0                                        | 8         | 8         | 0.00         | 6.11      | 4.62      | 42  |
|       | Total India's ICP output | 42                                       | 131       | 173       |              |           |           |     |

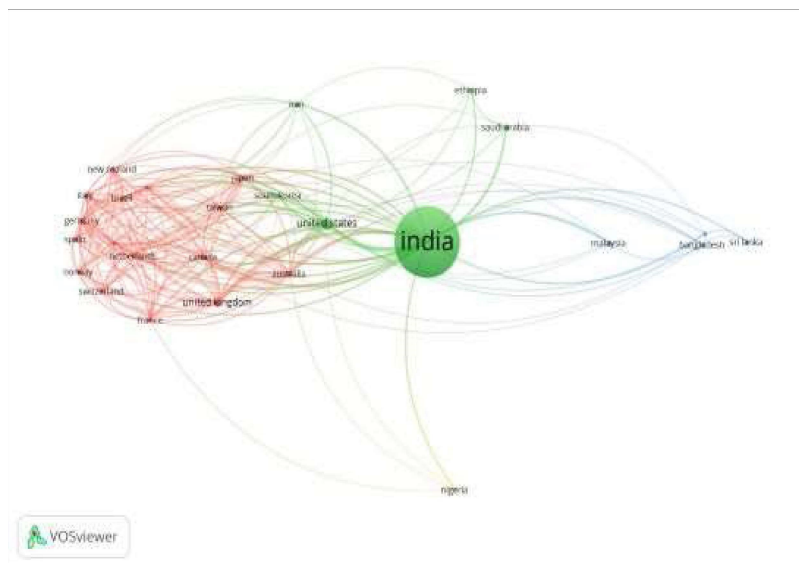


Figure 3. Network visualisation map of India's international collaboration

#### 4.4. Subject-wise Distribution

Academic library research in India has been classified into disciplines (according to Scopus classification). Social Sciences is the most dominating subject contributing to India's research on academic libraries (70.65%), followed by Arts and

and humanities (34.94%), Computer science (22.6%), Engineering (11%) and Business, management & accounting (7.92%) during 2014-23. The research activity index showed an increase in Social Sciences, Arts & Humanities, Engineering and Business, management & accounting and a decrease in Computer science from 2014-18 to 2019-23. Among different subjects, engineering registered the highest citation impact per paper of 6.95 and Arts & Humanities the least(1.42).

Table 4. Subject Wise Distribution of Indian Publications, 2001-20

| Subject                                                                                                  | No. of Papers (TP) |         |         | Activity Index |         | %TP   | TC   | CPP  |
|----------------------------------------------------------------------------------------------------------|--------------------|---------|---------|----------------|---------|-------|------|------|
|                                                                                                          | 2014-18            | 2019-23 | 2014-23 | 2014-18        | 2019-23 |       |      |      |
| Social Sciences                                                                                          | 351                | 862     | 1213    | 97.18          | 100     | 70.65 | 3665 | 3.02 |
| Arts and Humanities                                                                                      | 84                 | 516     | 600     | 45.71          | 122.86  | 34.94 | 854  | 1.42 |
| Computer Science                                                                                         | 143                | 245     | 388     | 121.74         | 86.96   | 22.60 | 2433 | 6.27 |
| Engineering                                                                                              | 45                 | 144     | 189     | 81.82          | 109.09  | 11.00 | 1313 | 6.95 |
| Business, Management & Accounting                                                                        | 32                 | 104     | 136     | 75             | 112.5   | 7.92  | 748  | 5.50 |
| Indian Output                                                                                            | 510                | 1207    | 1717    |                |         |       |      |      |
| CPP= Citations Per Paper                                                                                 |                    |         |         |                |         |       |      |      |
| *There is an overlapping of papers under various subjects and as a result is more than the actual total. |                    |         |         |                |         |       |      |      |

#### 4.5. Significant Keywords

Keywords illuminate significant research areas in the field. Few keywords in the literature on academic library research have been identified.

Fig.4 depicts the network visualisation of keywords. Different clusters have been identified. Cluster1 (Red) represents libraries, resources and automation. The most frequent keywords in this cluster are Academic libraries, Digital libraries, e-resources, e-journals, library automation, etc. Cluster 2 (Green) represents technology-related keywords like e-learning, artificial intelligence, and cloud computing.

Cluster 3 (Blue) represents keywords like human, article, review, meta-analysis, randomised controlled trial, etc. Cluster 4 (Light green) represents keywords like bibliometrics, citation analysis, India, and Library & Information Science.

Table 5. Distribution of Keywords by Frequency

| Keyword              | Frequency | TLS | Keyword                         | Frequency | TLS |
|----------------------|-----------|-----|---------------------------------|-----------|-----|
| Human                | 120       | 411 | Education                       | 39        | 90  |
| Libraries            | 116       | 214 | Machine Learning                | 37        | 35  |
| India                | 116       | 182 | Open Access                     | 35        | 40  |
| Academic Libraries   | 95        | 159 | Bibliometrics                   | 34        | 28  |
| E-resources          | 74        | 87  | Citation Analysis               | 33        | 28  |
| Digital libraries    | 72        | 142 | Information literacy            | 31        | 30  |
| Library Services     | 69        | 106 | E-Journals                      | 28        | 41  |
| Students             | 67        | 81  | Library and Information Science | 27        | 24  |
| Information Services | 65        | 138 | Library Automation              | 27        | 36  |
| Article              | 63        | 210 | Randomized Controlled Trial     | 27        | 135 |
| Library              | 62        | 111 | Male                            | 24        | 118 |
| University Libraries | 61        | 87  | College Library                 | 24        | 32  |
| Humans               | 58        | 225 | Female                          | 24        | 122 |
| Digital library      | 43        | 51  | Cloud Computing                 | 23        | 42  |
| Electronic resources | 42        | 65  | e-learning                      | 23        | 48  |
| Review               | 42        | 158 | Artificial intelligence         | 23        | 36  |
| ICT                  | 41        | 54  | Information retrieval           | 23        | 59  |
| Internet             | 39        | 62  | Priority Journal                | 23        | 95  |

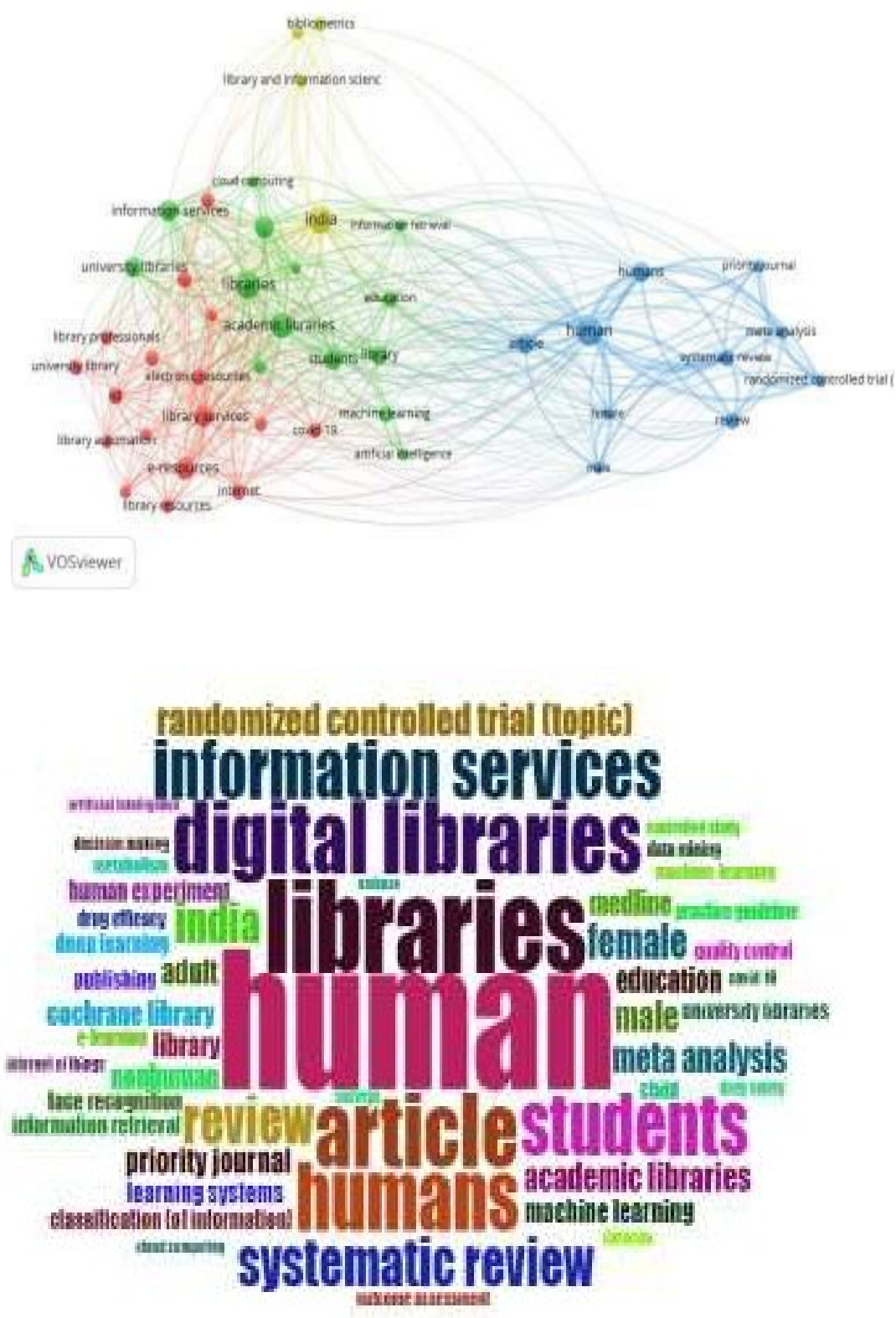


Figure 4. Network visualization map of co-occurrence of keywords

#### 4.6. India's Top 15 Most Productive Organizations

Research published on academic libraries emerged from 160 organisations in India during 2014-23. One hundred forty organisations published 1-10 papers each, 15 organisations 22-55 papers each, 29 organisations 17-10 papers each and 116 organisations 3 to 9 papers each during the years 2014-23. The productivity of the top 15 most productive organisations varied from 22 to 55 publications per organisation; together, they contributed 26.73% (459) of publication share and 18.92% (2134) of citation share of research published during 2014-23. The scientometric profile of the top 15 organisations is shown in Table.

Six organisations contributed publications above the group average (30.6) of all organisations. These are the University of Delhi (55 papers), Alagappa University, Karaikudi (51 papers), University of Kashmir, Srinagar (43 papers), Panjab University, Chandigarh (35 papers), Aligarh Muslim University (34 papers), Manonmaniam Sundranar University, Tirunelveli (31 papers). Five organisations registered their citation impact per paper and relative citation index (4.77 and 0.52, respectively) above the group average of all organisations. These include Jawaharlal Nehru University, New Delhi (14.23, 1.56), Indira Gandhi National Open University, New Delhi (8.59, 0.94), Manipal Academy of Higher Education, Manipal (8.33, 0.92), University of Delhi (7.67, 0.89), Aligarh Muslim University (5.06, 0.56).

Table 6. Productivity and Impact of the Top 15 Indian Institutions in Academic Libraries Research, 2014-23

| Organisation                                                            | TP    | TC    | CPP   | HI   | ICP | %ICP  | RCI  |
|-------------------------------------------------------------------------|-------|-------|-------|------|-----|-------|------|
| University of Delhi                                                     | 55    | 422   | 7.67  | 12   | 7   | 12.73 | 0.84 |
| Alagappa University, Karaikudi                                          | 51    | 108   | 2.12  | 5    | 0   | 0.00  | 0.23 |
| University of Kashmir,<br>Srinagar                                      | 43    | 161   | 3.74  | 7    | 2   | 4.65  | 0.41 |
| Panjab University, Chandigarh                                           | 35    | 135   | 3.86  | 6    | 1   | 2.86  | 0.42 |
| Aligarh Muslim University                                               | 34    | 172   | 5.06  | 7    | 5   | 14.71 | 0.56 |
| Manonmaniam Sundranar<br>University, Tirunelveli                        | 31    | 28    | 0.90  |      |     |       |      |
| Mizoram University, Aizwal                                              | 27    | 80    | 2.96  | 3    | 1   | 3.23  | 0.09 |
| Manipal Academy of Higher<br>Education, Manipal                         | 24    | 200   | 8.33  | 5    | 3   | 11.11 | 0.33 |
| Babasaheb BhimRao<br>Ambedkar University                                | 24    | 113   | 4.71  | 5    | 1   | 4.17  | 0.52 |
| Banaras Hindu University,<br>India                                      | 23    | 84    | 3.65  | 5    | 1   | 4.34  | 0.4  |
| Gauhati University                                                      | 23    | 38    | 1.65  | 3    | 0   | 0.00  | 0.18 |
| University of Calcutta                                                  | 23    | 55    | 2.39  | 4    | 0   | 0.00  | 0.26 |
| Annamalai University                                                    | 22    | 36    | 1.64  | 3    | 1   | 4.55  | 0.18 |
| Jawaharlal Nehru University,<br>New Delhi                               | 22    | 313   | 14.23 | 11   | 4   | 18.18 | 1.56 |
| Indira Gandhi National Open<br>University, New Delhi                    | 22    | 189   | 8.59  | 8    | 0   | 0.00  | 0.94 |
| Total of 15 organizations                                               | 459   | 2134  | 4.77  | 6.07 | 31  | 6.75  | 0.52 |
| Total of India                                                          | 1717  | 11278 | 9.10  |      |     |       |      |
| Share of 15 organisations in<br>India's total output                    | 26.73 | 18.92 |       |      |     |       |      |
| ACPP=Average Citation Per Paper; ICP=International Collaborative Papers |       |       |       |      |     |       |      |

#### 4.7. India's Top 15 Most Productive Authors

160 authors participated in Indian research on academic libraries during 2014-23, of which 152 authors published 3-9 papers each, and eight authors 10-18 papers. The research productivity of most productive scholars varied from 9 to 18 publications per author. Together, they contributed 9.38% (161) of the Indian publication share and 6.2% (699) of the Indian citations share during 2014-23. Six authors registered their publication output above the group average of 10.73: S.A.Ganaie (18), M.T.Lawal (13papers), S.Thanuskodi (12 papers), P. Balasubramanian, A.Thirumagal and M.Yuvaraj (11 papers each). Five authors registered their citation impact per paper and relative citation index above the group average (4.41 and 0.48) of all authors: M.Tripathi (12.20, 1.34), R.K.Bhardwaj (10.10, 1.11), M.Yuvaraj (9.55, 1.04), P.Mahajan (6.20, 0.68), S.Thanuskodi (4.58, 0.50).

Table 7. Productivity and Impact of 15 Most Productive Indian Authors in Academic Libraries Research, 2001-20

| Name of the Author                                                                                    | Affiliation of the Author                    | TP   | TC    | CPP   | HI | TLS | RCI  |
|-------------------------------------------------------------------------------------------------------|----------------------------------------------|------|-------|-------|----|-----|------|
| S.A.Ganaie                                                                                            | University of Kashmir, Srinagar              | 18   | 71    | 3.94  | 5  |     | 0.43 |
| M.T.Lawal                                                                                             | SRM University Delhi-NCR, Sonapat            | 13   | 5     | 0.38  | 1  |     | 0.04 |
| S.Thanuskodi                                                                                          | Algappa University, Karaikudi                | 12   | 55    | 4.58  | 4  |     | 0.50 |
| P.Balasubramanian                                                                                     | ManonmaniamSundranar University, Tirunelveli | 11   | 3     | 0.27  | 1  |     | 0.02 |
| A Thirumagal                                                                                          | ManonmaniamSundranar University, Tirunelveli | 11   | 17    | 1.55  | 3  |     | 0.17 |
| M.Yuvaraj                                                                                             | Central University of South Bihar, Gaya      | 11   | 105   | 9.55  | 5  |     | 1.04 |
| M.Tripathi                                                                                            | JNU, N.Delhi                                 | 10   | 122   | 12.20 | 6  |     | 1.34 |
| P.Mahajan                                                                                             | Panjab University, Chandigarh                | 10   | 62    | 6.20  | 5  |     | 0.68 |
| R.Jeyshankar                                                                                          | Pondicherry University, Puducherry           | 10   | 20    | 2.00  | 3  |     | 0.22 |
| R.K.Bhardwaj                                                                                          | St.Stephen College, N.Delhi                  | 10   | 101   | 10.10 | 5  |     | 1.11 |
| M.K.Verma                                                                                             | Mizoram University, Aizwal                   | 9    | 29    | 3.22  | 3  |     | 0.35 |
| M.Rao                                                                                                 | Kasturba Medical College, Manipal            | 9    | 14    | 1.56  | 3  |     | 0.17 |
| M.Mani                                                                                                | D.G Vaishnav College, Chennai                | 9    | 14    | 1.56  | 3  |     | 0.17 |
| A.Kumar                                                                                               | Central University of Gujarat, Gandhinagar   | 9    | 47    | 5.20  | 3  |     | 0.57 |
| R.Chakravarthy                                                                                        | Panjab University, Chandigarh                | 9    | 34    | 3.78  | 3  |     | 0.42 |
| Total of 15 authors                                                                                   |                                              | 161  | 699   | 4.41  |    |     |      |
| Total of India                                                                                        |                                              | 1717 | 11278 | 9.10  |    |     |      |
| Share of 15 authors in India's total output                                                           |                                              | 9.38 | 6.2   |       |    |     |      |
| TP=Total Papers; TC=Total Citations; CPP= Citations Per Paper; ICP=International Collaborative Papers |                                              |      |       |       |    |     |      |

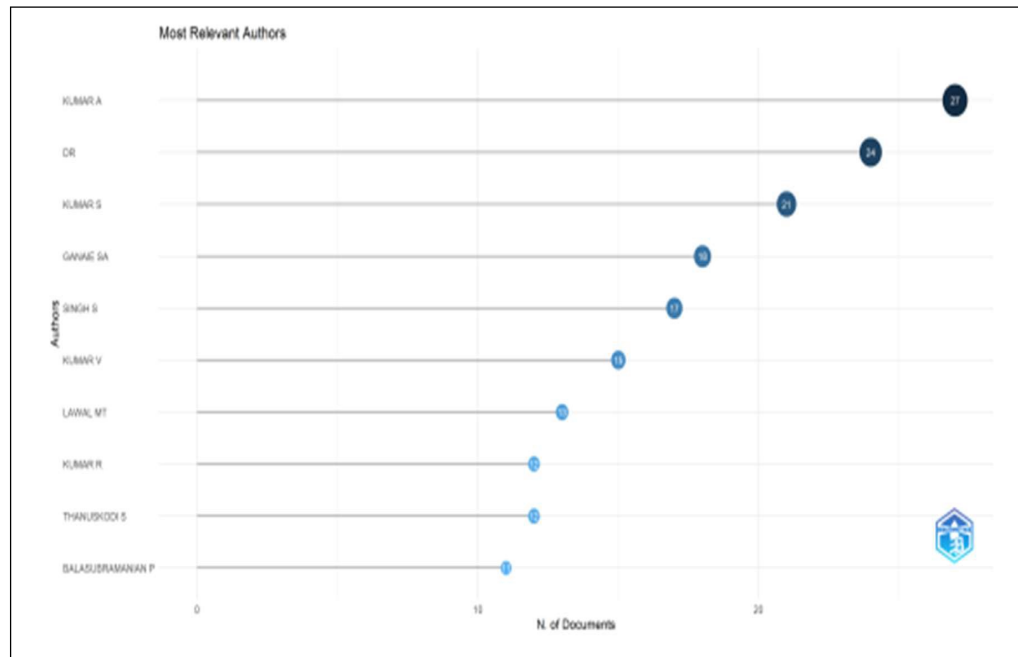


Figure 5. Network visualization map of highly prolific authors in areas of academic library research

#### 4.8. Medium of Communication

72.8% (1250) of the total Indian output on academic library research appeared in journals. 123 journals participated in academic library research. 104 journals published 1-4 papers each, 23 journals published 5-10 papers each, 11 journals 12-66 papers each, and two journals published 134-514 papers each during 2014-23. The top 15 journals publishing

Table 8. India: Communication of Academic Libraries Research Output, 2001-2020

| Journal Name                                        | No. of Papers |         |         | TC  |
|-----------------------------------------------------|---------------|---------|---------|-----|
|                                                     | 2014-18       | 2019-23 | 2014-23 |     |
| Library Philosophy and Practice                     | 61            | 453     | 514     | 716 |
| DESIDOC Journal of Library & Information Technology | 82            | 52      | 134     | 680 |
| Emerald Emerging Markets Case Studies               | 17            | 49      | 66      | 67  |
| Indian Journal of Information Sources & Services    | 0             | 50      | 50      | 23  |
| Annals of Library & Information Studies             | 23            | 15      | 38      | 136 |
| Library HiTech News                                 | 10            | 20      | 30      | 93  |
| ETTLIS 2018 Proceedings                             | 0             | 27      | 27      | 71  |
| Electronic library                                  | 15            | 3       | 18      | 207 |
| Collection and Curation                             | 1             | 13      | 14      | 40  |
| Library Management                                  | 4             | 9       | 13      | 43  |
| Lecture Notes in Networks and Systems               | 1             | 12      | 13      | 21  |
| Global Knowledge Memory & Communication             | 2             | 11      | 13      | 70  |
| ETTLIS 2015 Proceedings                             | 12            | 0       | 12      | 31  |
| Collection Building                                 | 10            | 0       | 10      | 52  |
| Library Progress International                      | 0             | 9       | 9       | 1   |

articles on academic library research accounted for 55.97% of India's journal output during 2014-23; it increased from 46.67% to 59.99% between 2014-18 and 2019-23. The top 4 most productive journals were Library Philosophy and Practice (514 papers), DESIDOC Journal of Library & Information Technology (134 papers), Emerald Emerging Markets Case Studies (66 papers) and Indian Journal of Information Sources & Services (50 papers). Library Philosophy and Practice (716 citations) tops the journal list in terms of citations received, followed by DESIDOC Journal of Library & Information Technology (680 citations), Electronic Library (207 citations) and Annals of Library & Information Studies (136 citations).

Fig.4 represents a co-citation network map of the most productive journals in different clusters. Closely related topics are allied in one cluster. The cluster in purple colour represents Library Philosophy and Practice (TLS=131), Malaysian Journal of Library & Information Science (TLS=4), 2015 4th International Symposium on Academic Libraries (TLS=7). The brown cluster includes Library HiTech News (TLS=39). The red cluster includes the Challenges of the Academic Library Program. The orange cluster includes Library HiTech, the Journal of Library Administration, and the International Journal of Science. The blue cluster includes IFLA Journal, Inter-lending and Document Support.

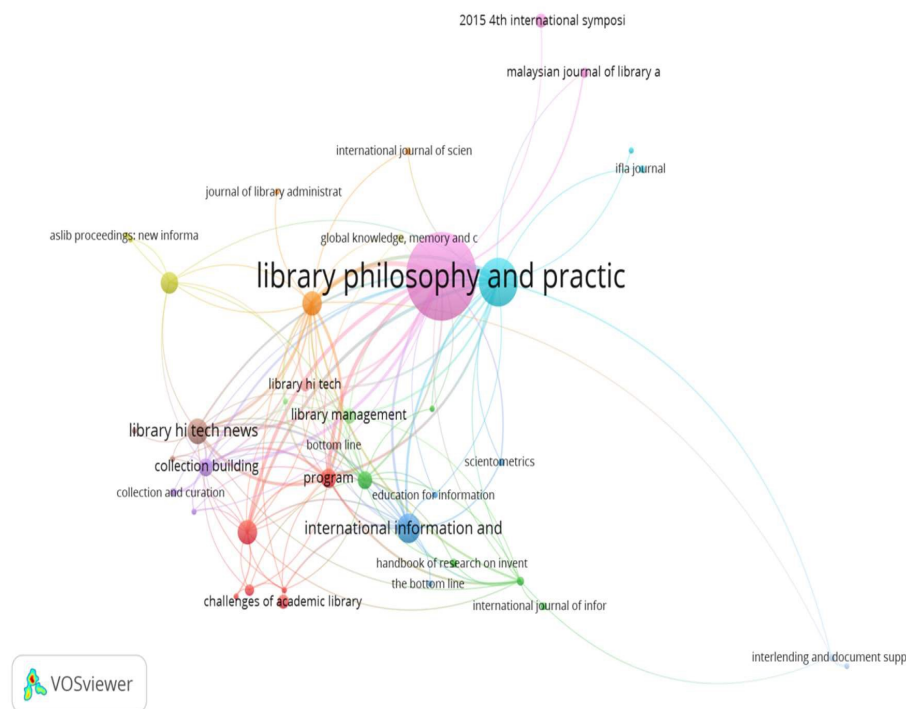


Figure 4. Co-citation network map of Journals in Academic Libraries Research

## 5. Discussion

The study reveals that India is the 4th most productive country in the world in academic libraries research. India's five-year cumulative publications increased from 510 during 2014-18 to 1207 during 2019-23, registering 57.75% absolute growth. Indian publications on academic libraries research averaged 9.1 citations per paper and contributed 5.32% to global productivity share. The top 15 most productive countries accounted for 70.75% share of global output in the subject. The USA is the leading country, with a 32.12% global publication share. Social Sciences is the leading subject (70.65%) contributing to India's research on academic libraries, followed by Arts and Humanities (34.94%), Computer Science (22.6%), Engineering (11%) and Business, management and accounting (7.92%) during 2014-23. The top 15 organisations and authors contributed 26.73% and 9.38% to India's publication share and 18.92% and 6.2% of India's citation share, respectively. The leading organisations in terms of productivity were the University of Delhi (55 papers), Alagappa University, Karaikudi (51 papers), the University of Kashmir, Srinagar (43 papers) etc. The leading Indian organisation in terms of citation per paper and relative citation index were Jawaharlal Nehru University, New Delhi (14.23 and 1.56), Indira Gandhi National Open University, New Delhi (7.36 and 2.22) and Manipal Academy of Higher Education, Manipal (8.33, 0.92). The leading authors

in terms of publication productivity were S.A.Ganie (18 papers), and M.T.Lawal (13 papers). The leading authors in terms of citation impact and relative citation index were M.Tripathi (12.20 and 1.34), R.K.Bhardwaj (10.10 and 1.11), M.Yuvaraj (9.55 and 1.04). Library Philosophy and Practice and DESIDOC Journal of Library & Information Technology are the most popular journals, publishing 514 and 134 papers, respectively.

India needs to improve its research performance in the area of academic libraries. Libraries are the heart of any educational institution. Academic institutions can contribute to a nation's social, political and economic development through their innovative research performance. Libraries are the generators and disseminators of information, contributing to research. Libraries are facing the twin crises of escalating costs and shrinking budgets. There is a dire need to strengthen academic libraries and conduct research on academic libraries. A national policy should be evolved to fund the research project and improve international collaboration.

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