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Bibliometric study of DESIDOC Journal of Library and Information Technology

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Abstract: *This study provides a bibliometric analysis of the DESIDOC journal of library and information technology during 2012–2022. Research data for this study has been exported from the SCOPUS database. A total of 638 articles published during the study period were analyzed to determine the most cited articles, most prolific author, growth of publication, occurrence of keywords, citation pattern, and authorship pattern. To visualize the occurrence of keywords and the co-citation of the author network, Vosviewer software was used. This study also reveals that bibliometric, scientometrics, e-resource, and citation analysis are the most prolific research areas.*

Keywords: Bibliometric, DJLIT, Co-citation, Scientometrics, authorship pattern.

Introduction:

Information generation and dissemination are now increasing with the development and implementation of information technology applications. There is lots of research data generated rapidly, and research journals are the most important source of research data dissemination. Journals work as an essential part of an information dissemination channel, whose main objective is to disseminate research information or innovative ideas for the further research and development of a particular subject (Jena et al., 2012). Due to the rapid growth of research data, there is always a need to analyze the latest trend and pattern of

publication in every field. A bibliometric study is a tool to analyze the trend and pattern of publication (Pandita, 2014).

Pritchard (1996) defined bibliometric as “the application of mathematical and statistical methods to books and other media”. It is a technique that evolves trends, patterns, collaborations, and keywords using bibliographical data and uses quantitative methods to explore patterns within scientific publications, primarily concentrating on journal articles (Das, 2021). According to Mejia et al. (2021), “bibliometric methodologies are considered useful as supporting tools for decision-making in setting research priorities, tracking the evolution of science and technology, funding allocation, and rewarding scientific excellence, among others."

DESIDOC Journal of Library & Information Technology is a prominent research journal started in 1981 that serves library and information science professionals regarding developments in the field. The journal is published by the Defence Scientific Information and Documentation Centre (DESIDOC), Govt. of India, Ministry of Defence, DRDO. It is a peer-reviewed, double-blind, open-access, bimonthly journal. An original research and review paper on information systems, knowledge management, collection building, libraries, information services, etc. is preferred. It is also indexed in major indexing databases such as SCOPUS, Web of Science, Indian Citation Index, ProQuest, DOAJ, etc.

Previous Studies:

So many bibliometric studies were conducted by several researchers. For instance, Tsay & Shu (2011), in their study, analyzed subject relationships with other disciplines by citation analysis in the Journal of Documentation (JOD). revealed in their study that journal articles were the most cited resources, followed by books, and the main classes, most cited by the researcher, were library science, science, and social science.

Jena et al. (2012), in their study on Annals of Library and Information Studies, 2002–2010, revealed that the average citation per article was 16, the maximum citations were found in journal articles, followed by books, and many articles were contributed by joint authors. The degree of collaboration was 0.676.

Tella & Aisha (2014) conducted a bibliometric study of the African Journal of Library, Archives, and Information Science for the period 2000–2012 to determine the patterns of

publications. The maximum number of articles contributed by single authors were on information retrieval, and a total of 451 citations were received for volume 19 (2009), and most of the articles were theoretical papers.

Kumar et al. (2014) conducted a study to analyze the top ten SCOPUS-indexed journals to find out journal citations, degrees of collaboration, authors' productivity, etc. They found that the maximum number of articles contributed by a single author and the degree of collaboration were between 0.33 and 0.8.

Fu & Ho (2015) conducted a study of the Journal of Membrane Science for the period 1976–2010 to examine publication characteristics and growth. The researchers found that many articles were contributed by the following countries (Canada, France, Germany, Italy, Japan, Russia, the UK, and the USA) and received a higher CPP. A total of 731 articles were cited more than 50 times until 2010, and 1999 and 2001 were the most productive years with highly cited articles.

Garg et al. (2020) examined 910 articles published in DJLIT during 1992–2019 to find out the pattern of growth, citations, geographical distributions, most cited authors, etc. Most articles were published by Indian authors (86.1%), followed by the USA, and had the highest values of CPP and RCI. A total of 1698 papers were published during the studied period, and 15538 citations were received. 14.6% of the articles didn’t receive any citations.

Mejia et al. (2021) retrieved 20268 articles related to bibliometric and applied methodologies to examine major trends, regional publication patterns, databases, and tools and found that, even though the three words in the research are conceptually overlapping, authors tend to name their works using any of the terms. Only 8.5% of the publications in the databases have bibliometric, scientometrics, or informatics phrases in their title, abstract, or keywords. The most common is bibliometric.

Garg & Singh (2022) analyzed 669 research papers published during 1994–2020 in the Library & Information Science Research journal. The researcher found that many articles were published during 2015–2017, and the majority of papers were contributed by the USA, despite having a low citation rate per paper in comparison to Finland and Norway. During 1994–2020, a total of 74061 citations were received, while 41 articles didn’t receive any citations.

Objectives of the study:

The main objectives of the study are as follows:

1. To examine the growth of articles in DJLIT.
2. To find out the most cited articles.
3. To find out the yearly distribution of articles.
4. To study the degree of collaboration.
5. To know the authorship pattern.

Methodology:

The data for the study was collected from the SCOPUS indexing database for the study period, i.e., 2012–2022. The data was downloaded in the form of a comma-separated value (CSV) file. A total of 639 articles' bibliographical information was retrieved from the SCOPUS. After a detailed verification, the article titles and names of the authors were checked carefully, and it was found that there were articles that were indexed twice, which were from Volume 40, issue no. 4, year 2020 (Commemorative Issue of the DESIDOC Journal of Library and Information Technology on the DESIDOC Golden Jubilee by Alka Suri). So only 638 articles were considered for the study. For the visualization and data analysis, MS Excel and VOS Viewer software were used to find the relevant data to fulfill the said objectives.

Data Analysis:

Figure: 1 Year wise distribution of published articles.

Figure 1 represents the year-wise distribution of articles in the DESIDOC Journal of Library and Information Technology (DJLIT) from 2012 to 2022. A total of 638 articles were contributed during said period. Maximum articles of 10.82% were published in 2022, followed by 2013 and 2014, i.e., 10.34% and 9.87%, respectively. In 2016, 7.99% of articles were published, which is the lowest among the other years.

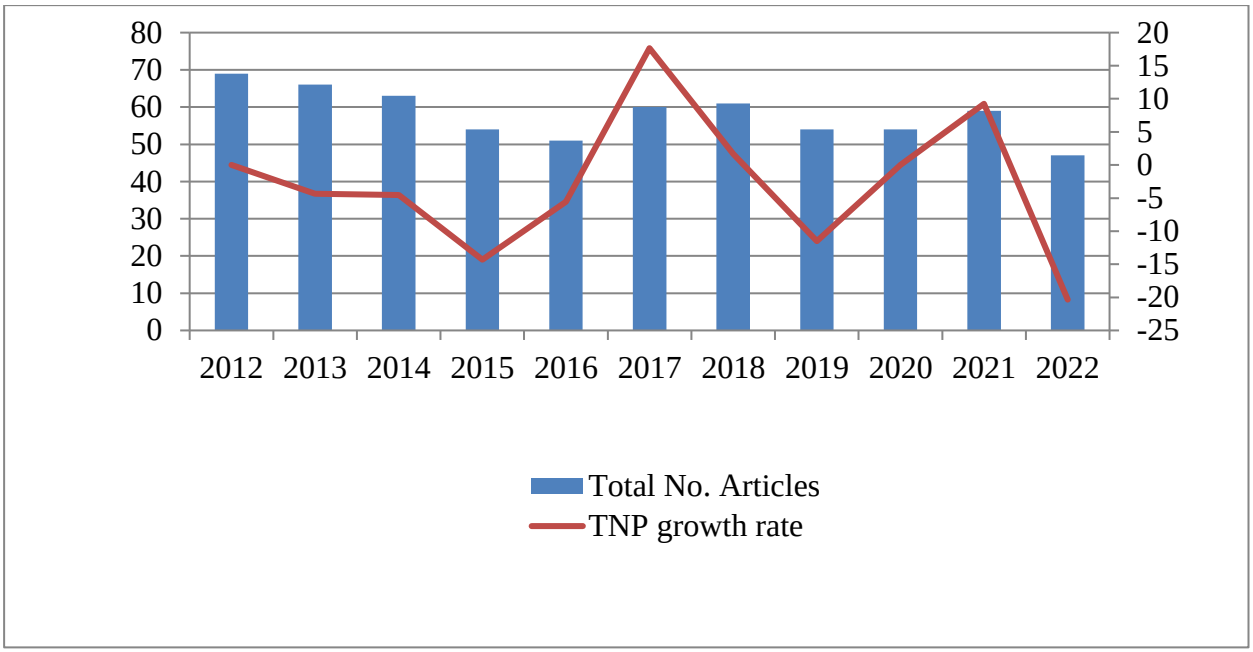

Figure 1: Year-wise distribution of Published articles

As is evident from the figure, a negative trend line shows from the year 2013 to 2016, which indicates the downfall in DJLIT. A recovery also made in 2017, i.e., 17.65%. After that, again, a negative growth rate was seen in the years 2019 and 2022, with a negative fall of -20.34% in the year 2022, which was the highest downfall in the publication of DJLIT.

Authorship pattern:

Table 01 depicts the authorship pattern of articles contributed to DJLIT by authors. A maximum of 296 articles have been published by two authors, followed by single authorship (i.e., 187) and 104 and 32 articles contributed by three authors and four authors, respectively. While 19 articles have been published under five or more authors,

As is clear from the table, out of 638 articles, 457 were published under joint authorship, and only 187 were published under single authorship.

Table: 01 Year wise distribution of authorship pattern

Year	First Author	Two Author	Three Author	Four Author	More Than Five Author	Total
2012	27	30	10	1	1	69
2013	30	26	8	2	0	66
2014	21	28	9	5	0	63
2015	17	25	10	1	1	54
2016	18	22	8	1	2	51
2017	16	35	6	2	1	60
2018	15	28	13	3	2	61
2019	15	26	10	2	1	54
2020	14	25	8	4	3	54
2021	8	28	10	7	6	59
2022	6	23	12	4	1	47
Total	**187**	**296**	**104**	**32**	**14**	**638**

Most prolific authors:

Table: 02 Most Prolific Authors

S. No.	Authors	No. of contribution
1	BM Gupta	20
2	S Kumar	14
3	A Kumar	13
4	CK Ramaiah	17
5	SM Dhawan	9
6	KC Garg	8
7	RK Bhardwaj	8
8	VD Bapte	7
9	R Pandita	6
10	S Ram	6
11	R Gupta	6
12	M. Tripathi	5
13	D Mondal	5
14	J Arora	5
15	K Mohamed Haneefa	5
16	H Solanki	5
17	K Trivedi	5
18	14 Authors	4 papers each
19	30 Authors	3 Papers each
20	121 Authors	2 Papers each
21	793 Authors	1 Paper each

Table 2 indicates the most prolific authors. BM Gupta contributed the maximum number of articles during the study period, followed by CK Ramaiah with 17 contributions. S Kumar and A Kumar contributed 14 and 13 articles, respectively; SM Dhawan 09, KC Garg, and RK Bharwaj 8 contributed by each. VD Bapte contributed 7 articles, while 6 articles were contributed by R Pandita, S Ram, and R Gupta, and six authors contributed 5 articles. It is also found that 793 authors produced single papers, 121 authors produced two papers and 30 authors, and 14 authors produced three and four papers.

Most cited papers:

Table: 03. Most cited papers

S.No.	Name of the Author	Title	Year	Cited by
1	Baskaran C.	Research productivity of Alagappa University during 1999-2011: A bibliometric study	2013	34
2	Garg K.C.; Sharma C.	Bibliometrics of library and information science research in India during 2004-2015	2017	33
3	Siwach A.K.; Kumar S.	Bibliometric analysis of research publications of Maharshi Dayanand University (Rohtak) during 2000-2013	2015	32
4	Awasthi S.	Plagiarism and academic misconduct: A systematic review	2019	32
5	Pillai Sudhier K.G.	Lotka's law and pattern of author productivity in the area of physics research	2013	30
6	Tripathi M.; Shukla A.; Sonker S.K.	Research data management practices in university libraries: A study	2017	30
7	Kumar H.A.; Dora M.; Desai A.	A Bibliometrics profile of Gujarat University, Ahmedabad during 2004-2013	2015	27
8	Shimray S.R.; Keerti C.; Ramaiah C.K.	An overview of mobile reading habits	2015	27
9	Gopikuttan A.; Aswathy S.	Publication productivity of University of Kerala: A scientometric view	2014	26
10	Dutta G.; Paul D.	Awareness on institutional repositories-related issues by faculty of University of Calcutta	2014	26
11	Mohindra R.; Kumar A.	User satisfaction regarding quality of library services of A.C. Joshi Library, Panjab University, Chandigarh	2015	25
12	Islam M.M.;	Use of social media in marketing of library and information services in Bangladesh	2015	25

	Habiba U.			
13	Nagarkar S.; Veer C.; Kumbhar R.	Bibliometric analysis of papers published by faculty of life science departments of Savitribai Phule Pune University during 1999-2013	2015	24
14	Das P.K.	Journal of Informetrics: A bibliometric profile	2013	22
15	Bansal A.	DESIDOC journal of library & information technology: A bibliometric analysis	2013	21
16	Singh S.P.; Babbar P.	Doctoral research in library and information science in India: Trends and issues	2014	21
17	Sohail M.; Ahmad S.	Use of electronic resources and services by faculty members and students of Fiji national university	2017	20

The most cited articles are listed in Table 3. The minimum criteria were set at a minimum of 20 citations; those articles are listed that received 20 citations. As is evident from the table, title 1 (Research Productivity of Alagappa University during 1999–2011: A Bibliometric Study by Baskaran C) cited the maximum number of times, i.e., 34, and secured the first rank in most cited articles, followed by title 2 (Bibliometric Research of Library and Information Science Research in India during 2004–2015) with 33 citations. Title 3 (Bibliometric analysis of research publication by Maharashi Dayan and University Rohtak during 2000–2013) and Title 4 (Plagiarism and Academic Mistake: A Systematic Review) have equal citations (32 each). It is also found from the table that articles published between 2013 and 2019 are listed because articles published in 2012 and after 2019 didn't receive a minimum citation (i.e., 20). At the end, it is indicated from the above analysis that bibliometric studies secured the top three positions, and the maximum number of bibliometric studies is listed in the table, i.e., bibliometric studies were highly cited research during the study period.

Distribution of Citation:

Table: 4. Distribution of Citation

S.NO.	No. of Citation	No. of Papers
1	1	108
2	2	68
3	3	75
4	4	57
5	5	43
6	6-10	117
7	11-15	34
8	16-20	14
9	21-25	6

10	26-30	6
11	More than 30	4
12	Uncited	106
Total		**638**

In Table 4, the citation distribution of articles has been given. Out of 638 articles, more than 30 citations were received by 04 articles; 06 articles received 26–30 and 21–25 citations, respectively. It is clear from the table that the maximum number of articles (i.e., 117) received citations between 6 and 10, 108 articles received only 1 citation, and 106 articles remain uncited.

Year wise distribution of citation:

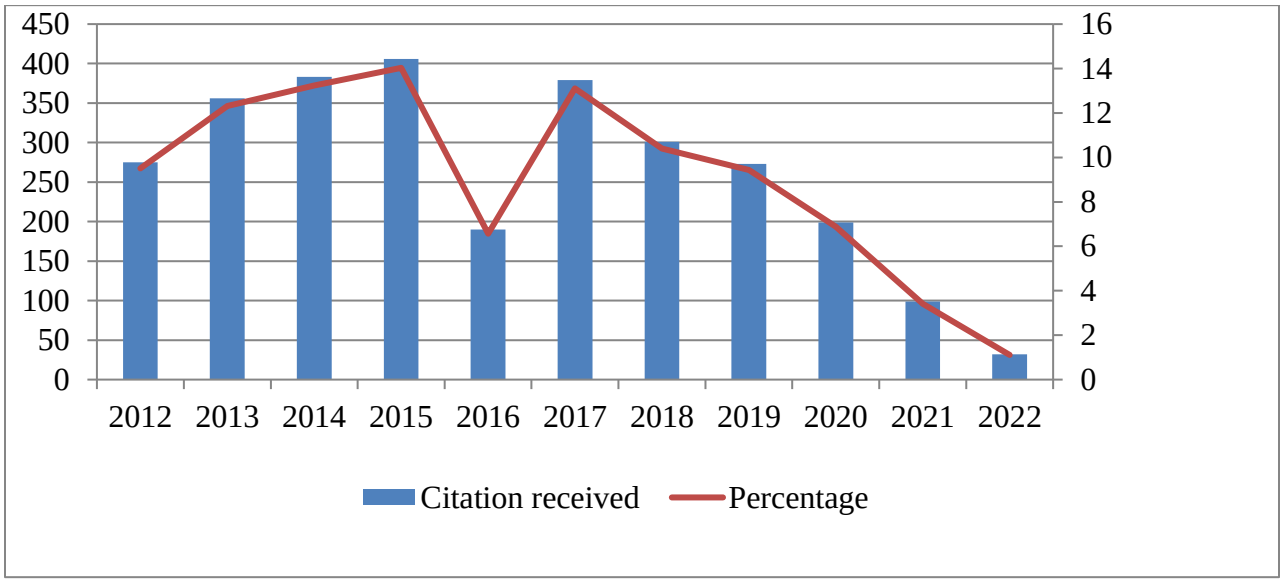

Figure 2: Year-wise distribution of citation

Year-wise citation distribution has been listed in Figure 2. A total of 2893 articles were received, and 638 articles published in DJLIT during 2012–2022. The maximum 14.03% citation received in 2015 was followed by 2014 and 2017 (i.e., 13.24% and 13.10%, respectively), while the lowest citation received in 2022 was 1.11%, which is very low in comparison to other years.

As is clear from the figure, a positive uptrend was from 2012 to 2015; after that, a negative trend started, and a minor recovery was made in 2017 (13.10%), but a continuous negative trend was shown until 2022.

Degree of collaboration:

Table: 5. Degree of collaboration

Year	First Author	Multi Authorship	Total	Degree of Collaboration
2012	27	42	69	0.61
2013	30	36	66	0.55
2014	21	42	63	0.67
2015	17	37	54	0.69
2016	18	33	51	0.65
2017	16	44	60	0.73
2018	15	46	61	0.75
2019	15	39	54	0.72
2020	14	40	54	0.74
2021	8	51	59	0.86
2022	6	41	47	0.87
Total	187	451	638	0.71

Table 5 represents, the degree of collaboration in DJLIT. The degree of collaboration was calculated as per the following:

$$\boldsymbol{C = NM \,/\, NM + NS}$$

Where C is the degree of collaboration

NM = Number of multi-authored articles

NS = number of single-author articles.

As is clear from the table, the degree of collaboration from 2017 to 2022 lies between 0.73 and 0.87. The maximum degree of collaboration in 2022 (i.e., 0.87) was followed by 0.86 in 2021, and 0.55 was the minimum in 2013.

Occurrence of Keywords:

Figure 03 shows the occurrence of keyword networks. The minimum occurrence of each keyword was set to; thus, out of 2076 keywords, 76 meet the parameter. The 76 keywords were distributed and represented by Vosviewer in nine clusters. Cluster 1 deals with 15 keywords, Cluster 2 with 13, Cluster 3 with 12, Cluster 4 with 11, Cluster 5 with 10, Cluster 6 with 6, Cluster 7 with 5, Cluster 8 with 3, and Cluster 9 with 1 keyword.

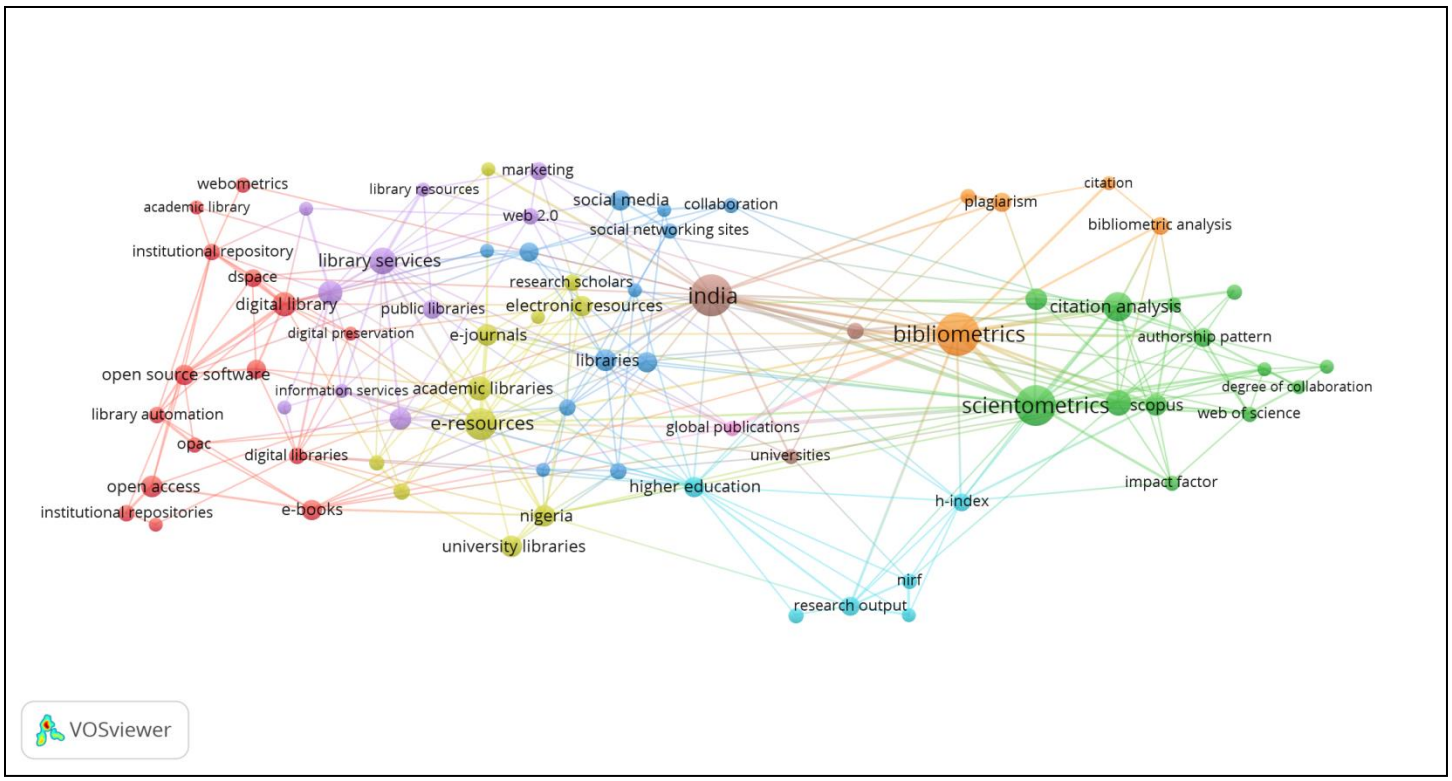

Figure 3: Occurrence of keywords

It was found that bibliographic was the most used keyword with 44 occurrences and 61 total link strength, followed by India with 43 occurrences and scientometric with 40 occurrences and 63 total link strength. E-resource and citation analysis have 25 and 21 occurrences, respectively. It is also indicated by the figure that bibliometric has the maximum number of occurrences with 61 total link strength, while scientometric got third place in the occurrence of keywords with 40 occurrences but has a maximum of 63 total link strength in comparison to other keywords.

Co-citation author network:

The co-citation author network has been represented in figure 4. Authors who had a minimum of 20 citations were considered for this analysis; thus, only 22 met the parameters and were found suitable for analysis.

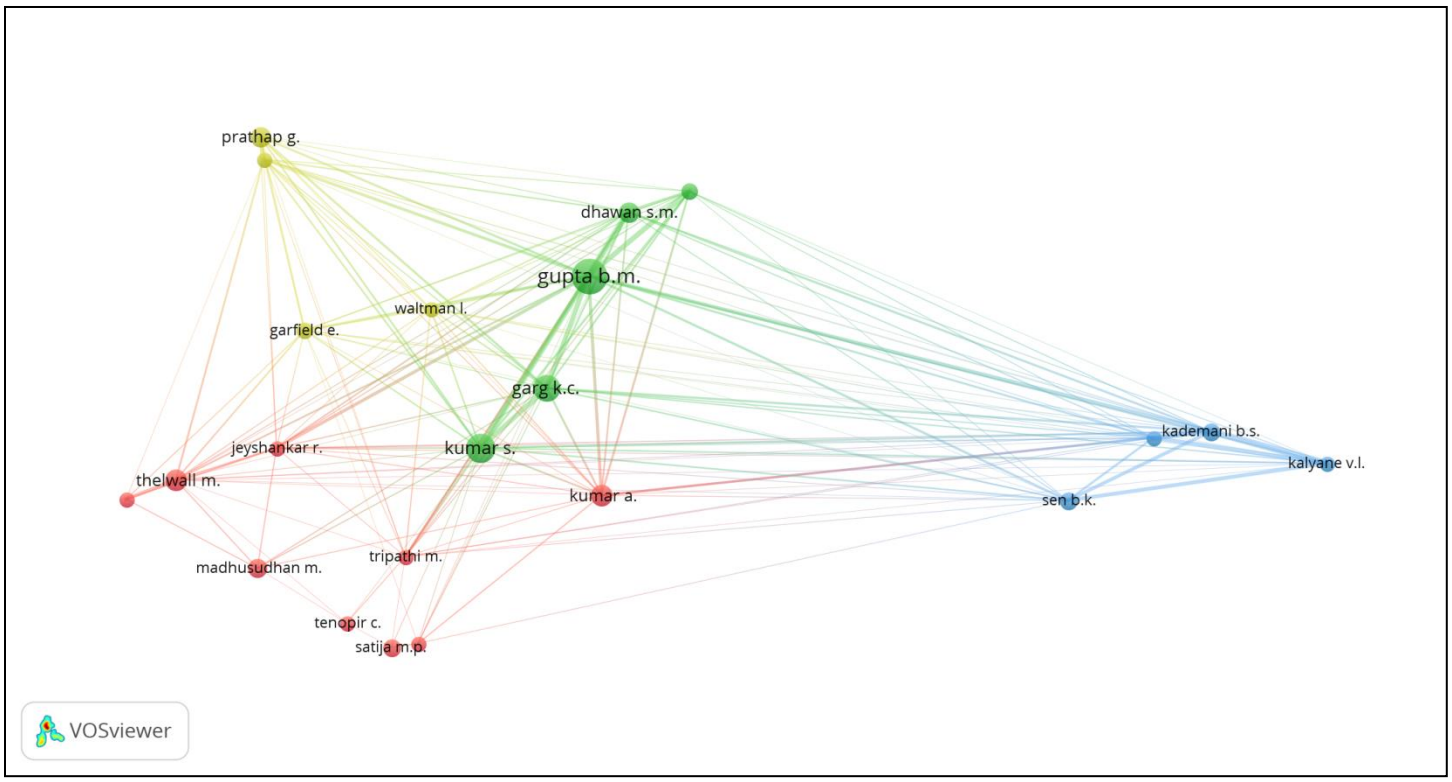

Figure 4: Co-citation author network

As is clear from the above figure, 22 authors are distributed by Vosviewer in 4 clusters. Cluster 1 (Red) consists of nine authors; Cluster 2 (Green) has five authors, Cluster 3 (Blue) has four authors and Cluster 4 (Yellow) has four authors.

BM Gupta was the most co-cited author and received the highest number of citations (133 with 642 total link strength, followed by S Kumar (76), with 334 total link strength, and KC Garg (66), with 270 total link strength. A Kumar and M Thelwall have equal citations, i.e., 41, while A Kumar has 146 total link strengths higher than M Thelwall (114 total link strengths). Over all, BM Gupta, S Kumar, KC Garg, A Kumar, and M Thelwall were the top five most co-cited authors.

Findings and Conclusion:

In this study, an attempt was made to conduct a bibliometric study of the DESIDOC journal of library and information technology to achieve the predefined objectives, such as examining the growth of publication, most cited articles, most prolific authors, degree of collaboration, authorship pattern, etc. A total of 638 articles were analyzed in this study, whose research data was exported from the SCOPUS indexing database. To visualize the occurrence of keywords and co-citation author networks, Vosviewer software was used.

This study discovered that the majority of articles were contributed in the year 2012, while a negative trend was shown from 2012 onwards, which was continued until 2016. Further, a downfall occurred in the year 2022. It

was also found that many articles were published under joint authorship, while out of 638 articles, 187 were published under single authorship.

Research productivity of Alagappa University during 1999–2011: a bibliometric study contributed by C. Baskaran published in 2013 was the most cited article with 34 citations, while BM Gupta was the most cited author. The highest number of citations were received in 2015, and there were only 16 articles that received more than 20 citations.

Further, bibliographic, Indian, scientific, e-resources, and citation analysis were the most common keywords. In terms of co-citation author network, BM Gupta, S Kumar, KC Garg, A Kumar, and M. Thelwall were the top five most co-cited authors.

This study reveals that the DESIDOC journal of library and information technology is a reputed journal in the field of library and information science and covers various areas such as bibliometric, scientometrics, e-resource, citation analysis, information retrieval, information literacy, open access, research productivity, etc.

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