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The Journal of the Geological Society of India : A Bibliometric Analysis (2002 – 2021)

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The Journal of the Geological Society of India (JGSI) is an Indian journal, which deals with all aspects of Earth systems sciences. Reportsbibliometrics analysis of the publications published in Journalof Geological Society of India between 2002 and 2021. ScopusDatabase search results retrieved 3445 publications from the journal. The analysis of the publications covers various aspects of bibliometrics; year-wise distributions of publications, citations and citations per publications, JGSI's most prolific authors, authorship pattern and degree of collaboration, top countries with total publications, and most cited articles of JGSI. It also reveals the JGSI's author affiliations with total publications and total citations. Further, the study has illustrated science mapping analysis using visualization tool - VoS viewer. The keywords used to derive the required data are co-authorship network of JGSI's authors, Co-authorship network of JGSI's authors' affiliated institutions, co-occurrence view of author specified keywords, which helps to detect the required topics. The results of the study would certainly help scholars of earth systems sciencesto understand the development of the related subjects.

Keywords: *Journal of the Geological Society of India , Bibliometrics, Degree of Collaboration, Scopus, VoSviewer, Co-authorship*

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1 INTRODUCTION

The journal JGSI was founded in 1959 by the Geological Society of India, which was established in 1958 to develop the advanced studies in all branches of Earth Sciences. The journal publishesreview papers, research articles, short communications, notes, corporate news, correspondence, discussion and book review [14].This journal is indexed in Scopus database with impact factor (IF)1.459 according to academic – accelerator.com (2022), and ranked 113 among 251 journals in the subjectcategory of Geology. JGSI has CiteScore of 2.1, it means that the JGSI publications from 2017 to 2020 have 2.1 citations i.e., average citations in 2020 and Source Normalized Impact per Paper (SNIP) is 0.828.

Bibliometrics isused for analyzing bibliographic data, mainly scientific scholarly publications like subject, author, citations, title etc. [15]. These various types of analysis would be helpful for researchers to observe development of particular literature and pattern of research [16]. Bibliometrics is the quantitative analysis of scholarly publications, envisioned to provide an identification of their impact on academic [23]. It is alsothe statistical applications for bibliographical study [11]. There are wide range of bibliometrics applications in many fields like management[33], business and economics [26], entrepreneurship [22], fuzzy decision making [24].

The scientists are members of world-wide community of researchers, generally they work togetherto provide new vision, through their publications in various journals, which helps new researchers to work on similar subjectfield [17]. The quality and effectiveness ofpublications of an individual person are being evaluated using bibliometricsstudy. And bibliometrics is an important tool to assess the standard of journal. The word bibliometrics was coined by Pritchard (1969)[34] as “The process of written communication measuring by means of counting and analyzing by mathematical and statistical methods”. Bibliometricsfocuses onanalysis of pattern of publications, authorship and citations, author keywords, place of publications [42].

This study mainly focuses on bibliometric analysis of publications published “Journal of the Geological Society of India” (JGSI).

The main objectives of the study are-

- To analyze year-wise distribution and total citations of JGSI publications.
- To find out publication type -wise distribution.
- To examine the authorship pattern of publications.
- To calculate the degree of collaboration.

- To examine top JGSI affiliations with citations.
- To determine the geographical (countries) -wise distribution.
- To analyze the top cited articles published in JGSI.
- To analyze Co-authorship network of JGSI authors.
- To analyze Co-authorship network of JGSI's author affiliations.
- To find Co-occurrences of author specified keywords of JGSI articles.

2 METHODS

The data of publications of "Journal of the Geological Society of India" between 2002 and 2021 was conducted on 25th January 2022 using Scopus database, which is one of the prominent Indexing and abstracting database[13]. The searchhas resulted into3445 publicationsand thesedocuments were exported in to *.CSV (Comma- Separated Values) and *.RIS (Research Information Systems)files, which contains bibliographic, keywords and citation information [43].

Twobibliometrics procedures; descriptive [8] and science mapping analysis are used to evaluate the researchers' impact and productivity indicators. For descriptive analysis, we used total number of publications (TP), total number of citations (TC), citations per publications (CPP) and h-index [12].

Bibliometric analysis tools such asBibexcel[32] and Biblioshiny and Bibliometrix[3] are used to assess/deriveperformance analysis. Whereas,Visualization tool i.e., VOSviewer is used forscience mapping like co-authorship network of authors, co-authorship network of authors' affiliation and co-occurrences of author specified keywords.

3 RESULTS

The results of the study are presented in the following paragraphs according to bibliometric analysis.

3.1 YEAR-WISE DISTRIBUTION OF JGSI'S PUBLICATIONS AND CITATIONS

During theperiod of collection of data between 2002 and 2021 a total 3445 publications have been publishedby the researchers in the Journal of the Geological Society of India (JGSI). The table 1 gives detail picture of the same.

Table 1: Year-wise distribution of JGSI's publications and citations from 2002 to 2021

Year	TP	%	Cumulative	%	TC	CPP
2002	111	3.22	111	3.22	991	8.93
2003	121	3.51	232	6.73	827	6.83
2004	156	4.53	388	11.26	822	5.27
2005	235	6.82	623	18.08	770	3.28
2006	285	8.27	908	26.36	1441	5.06
2007	290	8.42	1198	34.78	1731	5.97
2008	187	5.43	1385	40.20	1130	6.04
2009	175	5.08	1560	45.28	2038	11.65
2010	141	4.09	1701	49.38	1620	11.49
2011	117	3.40	1818	52.77	1262	10.79
2012	162	4.70	1980	57.47	1375	8.49
2013	158	4.59	2138	62.06	1245	7.88
2014	138	4.01	2276	66.07	800	5.80
2015	152	4.41	2428	70.48	936	6.16
2016	150	4.35	2578	74.83	953	6.35
2017	192	5.57	2770	80.41	1150	5.99
2018	193	5.60	2963	86.01	857	4.44
2019	170	4.93	3133	90.94	480	2.82
2020	134	3.89	3267	94.83	232	1.73
2021	178	5.17	3445	100.00	48	0.27

Notes: This table shows JGSI's annual publication and citation during the study period. Here, TP = total number of JGSI publications; TC = total citations; CPP = citations per publication

The results of the data indicates that thehighest number of publications are in the year 2007(290), 2006(285) and 2005(235), but most citations are in the year 2009(2038), 2007(1731) and 2010(1620). The journal JGSI published on an average 172 publications per year. Here 2007 was the most productive year of JGSI (8.42%) with total 1731 citations during this year,which resulting intoan average 5.97 citations per publications. According to Ding &Crowin (2011)[7]; Tsay (2009)[41], citations always indicate impact. The most influential year in the JGSI publishing is 2009 (11.65 citations per publication). In the initial year of its existence, JGSI published the fewest publications (TP: 111; 3.22%) in 2002 and the publications (TP: 121; 3.51%) in 2003. The data also reveals that there is an increase in number of total publications from 2002 to 2007, whereas, it isdecreased from 2008 to 2016. The cumulative and percentage of publications of each year is shown in the same table.

3.2 TYPE-WISE DISTRIBUTION OF JGSI'S PUBLICATIONS

Table 2: Typewise distribution of JGSI's publications

Publication type	TP	%
Article	2973	86.30
Note	279	8.10
Conference Paper	52	1.51
Letter	47	1.36
Editorial	36	1.04
Review	36	1.04
Erratum	20	0.58
Short Survey	2	0.06

Publication type distribution. Here TP = total JGSI's publications

In JGSI's publications over the last 20 years, there have been eight different categories of publications, as shown in table 2. There were a total of 2973 articles published (86.30%), which is thehighestpercentage amongall publication genres. A total 279 (8.10%) itemswere published in the Notes and News category, while 52 (1.51%) were published in the Conference Papers category. The study also found very smaller number of publicationsi.e., 2 (0.06%) under short survey category.

3.3 TOP JGSI'S AUTHORS AND THEIR AFFILIATED INSTITUTIONS

Table 3 shows the top fifteen JGSI authors' impact in terms of number of contributions, total citations, citations per publication, and h-index. From 2002 to 2021, Radhakrishna, B.P., of the Geological Society of India, Bangalore, India, produced 52 (1.51 percent) publications, with 48 citations. The author Kumar, S of Kumaun University India, Nainital, India (TP: 44) is next in line with the most citations (TC: 462; CPP:10.50). Followed by A.K. Singh (TP:35; TC: 396)Wadia Institute of Himalayan Geology, Dehradun, India (CPP: 11.31).

Apart from publications and citations, Kumar, S isthe most influential author of JGSI from 2002 to 2021 withhighest h-index (11), followed by the most prolific authors are Singh, A.K. and Singh, P.K. whose h-index is 9 and 8 respectively.

Table 3: Top fifteen JGSI's authors between 2002 and 2021

Author	Affiliation	TP	TC	CPP	%TP	*h* Index
Radhakrishna, B.P.	Geological Society of India, Bangalore, India	52	48	0.92	1.51	3
Kumar, S.	Kumaun University India, Nainital, India	44	462	10.50	1.28	11
Kumar, A.	University of Delhi, New Delhi, India	35	249	7.11	1.02	7
Singh, A.K.	Wadia Institute of Himalayan Geology, Dehradun, India	35	396	11.31	1.02	9
Singh, Y.	University of Hyderabad, Hyderabad, India	27	111	4.11	0.78	5
Kumar, D.	National Geophysical Research Institute India, Hyderabad, India	27	174	6.44	0.78	6
Singh, P.K.	Banaras Hindu University, Varanasi, India	25	230	9.20	0.73	8
Sawkar, R.H.	Geological Society of India, Bengaluru, India	25	55	2.20	0.73	4
Singh, S.	Indian Institute of Technology Roorkee, Roorkee, India	23	275	11.96	0.67	7
Kumar, P.	Inter University Accelerator Centre India, New Delhi, India	22	130	5.91	0.64	6
Rao, M.S.	Geological Survey of India, Kolkata, India	22	14	0.64	0.64	3
Singh, R.	University of Lucknow, Lucknow, India	21	269	12.81	0.61	6
Singh, T.N.	Indian Institute of Technology Bombay, Mumbai, India	19	174	9.16	0.55	8
Achyuthan, H.	Anna University, Chennai, India	19	112	5.89	0.55	7
Patel, S.J.	The Maharaja Sayajirao University of Baroda, Vadodara, India	18	187	10.39	0.52	8

This table shows JGSI's highly productive authors. Here TP = total publications; TC = total citations; CPP = citations per publications

3.4 AUTHORSHIP PATTERN

Table 4: Authorship pattern and Degree of collaboration

Authorship	No. of Publications	%	Total Authors
Single	782	22.70	782
Two Authors	855	24.82	1710
Three Authors	747	21.68	2241
More than Three	1061	30.80	5341
Total	**3445**	**100.00**	**10074**
Single authored papers	782		
Multi authored papers	2663		
Degree of collaboration	**0.77**		

Table shows JGSI's authorship pattern & degree of collaboration

The authorship pattern of JGSI articles is shown in Table 4. The results of the study reveal that the total number of 10074 authors has published 3445 publications. Single-author work accounts for 22.70% (782 publications), followed by two-author works (24.82%), and three-author works (21.68%). Whereas,co-authored i.e., more than three authors work accounts for1061 (30.80%) publications. This demonstrates that research activities are more reliant oncollaborative research[2,38]

Degree of Collaboration

There are many methods to calculate the degree of research collaboration [20]. As per Subramanyam, K. (1983)[39] proposed a formula to calculate the degree of collaboration in quantitative terms.

$$\text{Degree of Collaboration (DC)} = \frac{\text{No. of multi authored papers}}{\text{No. of single authored papers + No. of multi authored papers}}$$

The Degree of Collaboration (DC) for the period of 20 years i.e., 2002 to 2021 is DC = 2663 / 782 + 2663 = 0.77. The Table 4 shows that during the period of 20 years, multi authorship publications are higher than single authorship. Thus, it revealsprevalence ofthe collaborative research[1].

3.5 THE MOST JGSI'S PRODUCTIVE INSTITUTIONS (AFFILIATIONS)

Table 5: Top-ten JGSI's affiliations with Total publications and Total citations between 2002 and 2021

Affiliation	TP	TC	CPP	%TP
Geological Survey of India	318	2072	6.52	9.23
National Geophysical Research Institute India	315	2019	6.41	9.14
Banaras Hindu University	123	1000	8.13	3.57
Atomic Minerals Directorate for Exploration and Research India	116	500	4.31	3.37
BirbalSahni Institute of Palaeobotany	116	871	7.51	3.37
Wadia Institute of Himalayan Geology	113	799	7.07	3.28
Indian Institute of Technology Indian School of Mines, Dhanbad	100	634	6.34	2.90
Government of India, Department of Atomic Energy	73	320	4.38	2.12
Indian Institute of Technology Bombay	70	708	10.11	2.03
Indian Institute of Technology Roorkee	67	443	6.61	1.94

Table shows top-ten prolific affiliations. Here TP = total publications; TC = total citations; CPP = citations per publications

Top-ten contributing affiliated institutions of the JGSI authors from 2002 to 2021 are shown in table 5. The institute 'Geological Survey of India' takes the lead with 318 (9.23%) of the totalarticles with the most citations (2072). This is followed by the 'National Geophysical Research Institute of India' with 315 (9.14%) publications while the 'Banaras Hindu University of India' with 123 (3.57%) articles and 1000 citations. This indicates that the connected institutions' papers are well-researched and widely recognized [43].

3.6. MOST PRODUCTIVE COUNTRIES

Table 6: Top ten prolific countries with total publications and citations

Countries	TP	TC	CPP	%TP
India	2901	18248	6.29	84.21
United States	78	809	10.37	2.26
Iran	57	292	5.12	1.65
Germany	55	574	10.44	1.60
China	51	357	7.00	1.48
Bangladesh	48	364	7.58	1.39
Turkey	48	185	3.85	1.39
Nigeria	38	176	4.63	1.10
United Kingdom	37	486	13.14	1.07
Canada	30	327	10.90	0.87

Table shows top-ten countries commonly affiliated with JGSI. Here TP = total publications; TC = total citations; CPP = citations per publications

Table 6 lists the top ten most productive countries in terms of publications. India (TP:2901; %TP:84.21; TC:18248) ranks first in total publications (TP), percentage of total publications (%TP), and total citations (TC), followed by the United States (TP:78; %TP:2.26; TC:809) and Iran (TP:57; %TP:1.65; TC:292). Each article in the journal that the United Kingdom has gained high recognition is listed in this table (CPP:13.14).

3.7 THE MOST CITED ARTICLES OF JGSI

From 2002 through 2021, the "Journal of the Geological Society of India" published a number of works, some of which were highly influential. Table 7 shows the information about top-fifteen most cited articles published in JGSI between 2002 and 2021. In this table, 14 of the publications are articles, while one is a reviewpaper[25,19]. The paper "Morphometric analysis of a watershed of South India using SRTM data and GIS" (2009) by Sreedevi, P.D.[37] has the most citations (TC:137; CPY:10.54). Mukhopadhyay, G et.al.'s[29] "Stratigraphic correlation between different Gondwana Basins of India" (2010) received 121 (CPY:10.08) citations, and Chadwick, B et.al's[6]"Structure and SHRIMP U/Pb zircon ages of granites adjacent to the Chitradurga schist belt: Implications for neoarchaean convergence in the DharwarcCraton, southern India" (2007) with 109 citations and 7.27 citations per year. It is found thatall the top articleshave receivedat least 100 citations in Scopus [8].

Table 7: Most cited articles published in JGSI between 2002 and 2021

Title	Authors	Year	Document Type	TC	CPY
Morphometric analysis of a watershed of South India using SRTM data and GIS	Sreedevi P.D., Owais S., Khan H.H., Ahmed S.[37]	2009	Article	137	10.54
Stratigraphic correlation between different Gondwana Basins of India	Mukhopadhyay G., Mukhopadhyay S.K., Roychowdhury M., Parui P.K.[30]	2010	Article	121	10.08
Structure and SHRIMP U/Pb zircon ages of granites adjacent to the Chitradurga schist belt: Implications for neoarchaean convergence in the DharwarcCraton, southern India	Chadwick B., Vasudev V.N., Hegde G.V., Nutman A.P.[6]	2007	Article	109	7.27
Groundwater quality in the lower Varuna River basin, Varanasi district, Uttar Pradesh	Raju N.J., Ram P., Dey S.[35]	2009	Article	102	7.85
Hydrogeochemical investigation and groundwater quality assessment of Pratapgarh district, Uttar Pradesh	Tiwari A.K., Singh A.K.[40]	2014	Article	101	12.63
Precambrian chorono stratigraphic growth of Singhbhum-Orissa craton, eastern Indian shield: An alternative model	Misra S.[27]	2006	Review	95	5.94
The lesser himalayan duplex in Sikkim: Implications for variations in Himalayan shortening	Gautam M., Kathakali B., Malay M.[10]	2010	Article	94	7.83
A geological study of earthquakes in Kutch, Gujarat, India	Biswas S.K., Khattri K.N.[4]	2002	Article	89	4.45
Late quaternary history of the Ganga Plain	Singh I.B.[36]	2004	Article	81	4.50
Landslide susceptibility mapping using analytical hierarchy process (AHP) in Tehri reservoir rim region, Uttarakhand	Kumar R., Anbalagan R.[21]	2016	Article	78	13.00
Deccan volcanism linked to the Cretaceous-Tertiary boundary mass extinction: New evidence from ONGC wells in the Krishna-Godavari Basin	Eller G.K., Bhowmick P.K., Upadhyay H., Dave A., Reddy A.N., Jaiprakash B.C., Adatte T.[9]	2011	Article	74	6.73
Potassic magmas derived from metasomatized lithospheric mantle: Nomenclature and relevance to exploration for diamond-bearing rocks	Mitchell R.H.[28]	2006	Article	65	4.06
Precambrian mafic magmatism in the Singhbhumcraton, Eastern India	Bose M.K.[5]	2009	Article	64	4.92
Watershed prioritization using morphometric and land use/land cover parameters: A remote sensing and GIS based approach	Javed A., Khanday M.Y., Rais S.[18]	2011	Article	63	5.73
The Eastern Ghats Belt - A polycyclic granulite terrain	Mukhopadhyay D., Basak K.[29]	2009	Article	60	4.62

This table lists the most frequently cited articles in JGSI during the study period. Here TC = total citations; CPY = citations per year.

3.8. SCIENCE MAPPING OF JGSI WITH VOSVIEWER

TheScience mapping of publications published in Journal of the Geological Society of India is done using VoSviewer software [31]. The data is analyzedbased on followingthree aspects i.e., Co-authorship with authors, co-authorship with affiliated institutions and Co-occurrence of author keyword network analysis.

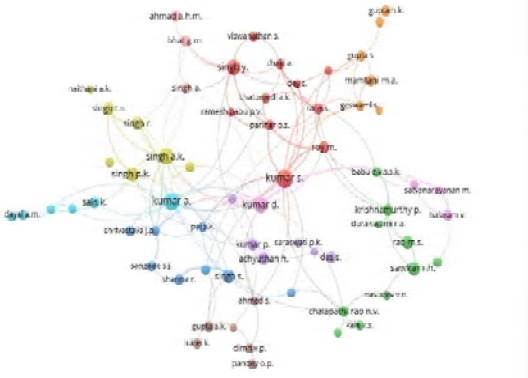

Fig1: Co-authorship network of JGSI's authors between 2002 and 2021

Figure 1 shows the co-authorship network of JGSI's publishing with minimum 10 co-authored documents with at least one citation from 2002 to 2021. In the fig 1 there are 67 items and 137 links. Kumar, S. (15 links), affiliated with Kumaun University, India and Kumar, A. (16 links), affiliated with University of Delhi have establishedhighest co-authorship network among all authorsof JGSI publications.

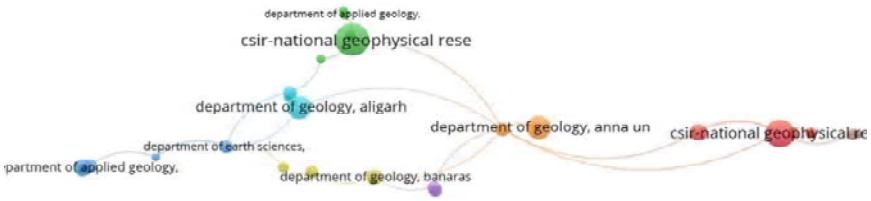

Fig 2: Co-authorship network of JGSI's authors' affiliated institutions between 2002 and 2021

Apart from the co-authorship network of JGSI's authors, figure 2 explains the co-authorship network among JGSI author affiliated institutions with at least 3 documents. There are 30 items and 36 links. CSIR-national Geophysical Research institute India exhibits strong co-authorship network.

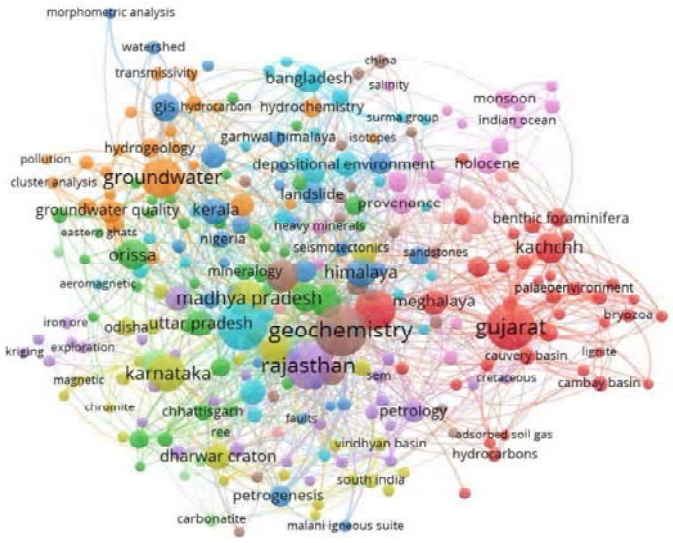

Fig 3: Co-occurrence of author specified keywords network of JGSI articles between 2002 and 2021

To get understand the topics of research published in JGSI, co-occurrence

analysis of authors specified keywords is an effective tool in view of research trend [43].

Figure 3 presents the co-occurrences of author specified keywords at least 5 times in JGSI publications between 2002 and 2021. The most frequentco-occurrence of keywords in JGSI publications are geochemistry (119 times), AndraPradesh (104), Gujarath(100) and ground water (71 times).

4 FINDINGS OF THE STUDY

Based on the results of Bibliometrics study the following major findings for publications of Journal of the Geological Society of India' are;

- In the Year-wise distribution of publications, a trend of growth in contributions published during the year between 2002 and 2021reveals thatthe trend of total citations is more than 1000 in the years from 2006 to 2013. And also, it is found that publications received highestcitations (2038) in the year 2009.
- Maximum contributions in the journal of JGSI are articles (86.30%) followed by Note (8.10%), conference papers (1.51%), letters (1.36%), and editorial (1.04%), review (1.04%).
- The JGSI author Kumar, S receives highest citations (462) for his publications among all top fifteen JGSI authors. Radhakrishna, B.P. has maximum publications (52) to his credit. Whereas, Singh, A.K. published only 35 publications but received 396 citations and Rao, M.S. published 22 papers with only 14 citations.
- The results of authorship pattern showed that the numbers of multi authored publications are increasing rapidly between 2002 and 2021.
- The degree of collaboration (DC) is 0.77 during the study period 2002 to 2021.
- Under the category affiliated institutions, Geological Survey of India (318) with highest citations (2072) is most productive institute among top ten JGSI affiliated institutions. Followed by national Geophysical Research Institute India (315) with 2019 citations. Top three JGSI affiliated institutions have at least 1000 citations among all institutions.
- The most of the contributions to JGSI are from India (84.21%) with 18248 citations, followed by United States (2.26%), Iran (1.65%), Germany (1.60%) and China (1.48%) among the productive countries.
- "Morphometric analysis of a watershed of South India using SRTM data and GIS" authored by Sreedevi, P.D. et.al. published in 2009 received highest citations (137) with 10.54 citations per year. Followed by "Stratigraphic correlation between different Gondwana Basins of India" by Mukhopadhyay, G. et. al. (2010) received 121 citations among most cited articles published in JGSI between 2002 and 2021.

- According to science mapping of co-authorship network of JGSI authors with at least 10 co-authored documents, Kumar, S. (15 links) and Kumar, A (16 links) havestrongest co-authorship network within JGSI publications
- Mapping of co-authorship network among JGSI's authors' affiliations CSIR-National geophysical research institute India has strong co-authorship network.
- The results from co-occurrences of author specified key words in JGSI publications 'geochemistry' occurred 119 times followed by 'AndraPradesh' (104 times) and 'ground water' occurred 71 times.

5 CONCLUSION

This study of analysis of "Journal of the Geological Society of India" from 2002 to 2021, mainly based on the results derived from theScopus database. This work conducts bibliometric analysis of year-wise publications trends, highly influential JGSI's authors, affiliated institutions, most productive countries, highly cited articles and science mapping analysis. The numbers of publications are gradually increasing from 2002 to 2007. Top productive affiliations are Geological Survey of India, national Geophysical Research Institute India. The most prolific author is Kumar, S (India).

Over the years, JGSI haspositioned itself as one of the most sought-after journal in the field of Earth sciences and it has continue to attract publications from authors across the globe. This is well reflected inincrease in number s of publications and citations in multiple research activities.

Bibliometric analysis is essential tool for researchers to understand research trends in particular journal. The results and findings of this study would certainly enhance the knowledge ofgeological science researchers.

REFERENCES

1. ABDI (A). et.al. Bibliometric Analysis of IP&M Journal (1980–2015)**.** Journal of Scientometric Research., 7, 1; 2018; x-x.
2. ACEDO (F J), BARROSO (C), CASANUEVA (C) and GALÁN (J L). Co-authorship in management and organizational studies: An empirical and network analysis*. Journal of Management Studies., 43, 5; 2006; 957–983. https://doi.org/10.1111/j.1467-6486.2006.00625.x.
3. ARIA (M) and CUCCURULLO (C). **Bibliometrix: An R-tool for comprehensive science mapping analysis.**Journal of Informetrics., 11, 4; 2017; 959-975, Elsevier, DOI: 10.1016/j.joi.2017.08.007
4. BISWAS (S K) and KHATTRI (K N). A geological study of earthquakes in kutch, gujarat, india. Journal of the Geological Society of India., 60, 2; 2002; 131-142.

5. BOSE (M K). Precambrian mafic magmatism in the singhbhumcraton, eastern india. Journal of the Geological Society of India.,73, 1; 2009; 13-35. doi:10.1007/s12594-009-0002-3
6. CHADWICK (B), VASUDEV (V N), HEGDE (G V) and NUTMAN (A P). Structure and SHRIMP U/Pb zircon ages of granites adjacent to the chitradurga schist belt: Implications for neoarchaean convergence in the dharwarcCraton, southern India. Journal of the Geological Society of India., 69, 1; 2007; 5-24.
7. DING (Y) and CRONIN (B). Popular and/or prestigious? Measures of scholarly esteem. Information Processing &Management., 47, 1; 2011; 80–96. https://doi.org/10.1016/j.ipm.2010.01.002.
8. DONTHU (N), KUMAR (S), PANDEY (N) and GUPTA (P). Forty years of the International Journal of Information Management: A bibliometric analysis. International Journal of Information Management, 57, 2021; 102307. https://doi.org/10.1016/j.ijinfomgt.2020.102307
9. ELLER (G K), BHOWMICK (P K)., UPADHYAY (H)., DAVE (A)., REDDY (A N)., JAIPRAKASH (B C) and ADATTE (T). Deccan volcanism linked to the cretaceous-tertiary boundary mass extinction: New evidence from ONGC wells in the Krishna Godavari basin. Journal of the Geological Society of India., 78, 5; 2011; 399-428. doi:10.1007/s12594-011-0107-3
10. GAUTAM (M), KATHAKALI (B) and MALAY (M). The lesser Himalayan duplex in Sikkim: Implications for variations in Himalayan shortening. Journal of the Geological Society of India., 75, 1; 2010; 289-301. doi:10.1007/s12594-010-0016-x
11. HAZARIKA (T), GOSWAMI (K) and DAS (P). Bibliometric analysis of Indian Forester: 1991-2000. IASLIC Bulletin., 48, 4; 2003; 213-223.
12. HIRSCH (J E). An index to quantify an individual's scientific research output. Proceedings of the National Academy of Sciences, 102, 46; 2005; 16569–16572. https://doi.org/10.1073/pnas.0507655102.
13. http://elsevier.com/en-in/solutions/scopus accessed on 25th January 2022
14. http://springer.com/journal/12594 accessed on 26th January 2022
15. HUSSAIN (A), FATIMA (N) and KUMAR (D). Bibliometric analysis of the 'Electronic Library journal (2000-2010). Webology., 8, 1; 2011; 87. http://www.webology. org/2011/v8n1/a87.html (accessed on 26th January 2022).
16. JACOBS (D A). Bibliometric study of the publication patterns of scientists in South Africa 1992-96, with special reference to gender difference. In Proceedings of the 8th International Conference on Scientometrics and Informetrics. 2001; 275-285.
17. JAIN (S), BASAVARAJ (P), SINGLA (A), SINGH (K), KUNDU (H) and VASHISHTHA (V). Bibliometric analysis of Journal of Clinical and Diagnostic Research (Dentistry Section; 2007-2014). Journal of Clinical and Diagnostic Research. 9, 4; 2015; ZC47-51.
18. JAVED (A), KHANDAY, (M Y) and RAIS (S). Watershed prioritization using morphometric and land use/land cover parameters: A remote sensing and

GIS based approach. Journal of the Geological Society of India. 78, 1; 2011; 63-75. doi:10.1007/s12594-011-0068-6

19. KESHAVARZ GHORABAEE (M), AMIRI (M), ZAVADSKAS (E K) and ANTUCHEVICIENE (J). Supplier evaluation and selection in fuzzy environments: a review of MADM approaches. Economic Research-EkonomskaIstrazivanja, 30, 1; 2017; 1073–1118. doi:10.1080/1331677X.2017.1314828
20. KHAPARDE BABASAHEB AMBEDKAR (V). (N.D.). Authorship Pattern and Degree of Collaboration in Information Technology. www.aripd.org/jcsit. (accessed on 26th January 2022)
21. KUMAR (R) and ANBALAGAN (R). Landslide susceptibility mapping using analytical hierarchy process (AHP) in tehri reservoir rim region, Uttarakhand. Journal of the Geological Society of India. 87, 3; 2016; 271-286. doi:10.1007/s12594-016-0395-8
22. LANDSTRÖM (H), HARIRCHI (G) and ASTRÖM (F). Entrepreneurship: Exploring the knowledge base. Research Policy. 41, 7; 2012; 1154–1181.
23. LIJINA (P). (n.d.). A Bibliometric Study of International Journal of Library and Information Science. International Journal of Library and Information Studies., http://www.iaeme.com/IJLIS/index.asp (accessed on 26th January 2022)
24. LIU (W S) and LIAO (H C). A bibliometric analysis of fuzzy decision research during 970-2015. International Journal of Fuzzy Systems. 19, 1; 2017; 1–14. doi:10.1007/s40815-016-0272-z
25. MARDANI (A), JUSOH (A), NOR (K M D), KHALIFAH (Z), ZAKWAN (N) and VALIPOUR (A). Multiple criteria decision-making techniques and their applications - a review of the literature from 2000 to 2014. Economic Research-EkonomskaIstrazivanja. 28, 1; 2015; 516–571. doi:10.1080/1331677X.2015.1075139
26. MERIGO (J M), ROCAFORT (A) and AZNAR-ALARCON (J P). Bibliometric overview of business & economics research. Journal of Business Economics and Management. 17, 3; 2016; 397–413.
27. MISRA (S). Precambrian chronostratigraphic growth of singhbhum-orissacraton, eastern Indian shield: An alternative model. Journal of the Geological Society of India. 67, 3; 2006; 356-378. www.scopus.com (accessed on 26th January 2022)
28. MITCHELL (R H). Potassic magmas derived from metasomatized lithospheric mantle: Nomenclature and relevance to exploration for diamond-bearing rocks. Journal of the Geological Society of India. 67, 3; 2006; 317-327. www.scopus.com (accessed on 26th January 2022)
29. MUKHOPADHYAY (D) and BASAK (K). The eastern ghats belt - A polycyclic granulite terrain. Journal of the Geological Society of India. 73, 4; 2009; 489-518. doi:10.1007/s12594-009-0034-8
30. MUKHOPADHYAY (G), MUKHOPADHYAY (S K), ROYCHOWDHURY (M) and PARUI (P K). Stratigraphic correlation between different Gondwana basins of India. Journal of the Geological Society of India. 76, 3; 2010; 251-266. doi:10.1007/s12594-010-0097-6

31. PERIANES-RODRIGUEZ (A), WALTMAN (L) and VAN ECK (N J). Constructing bibliometric networks: A comparison between full and fractional counting. Journal of Informetrics. 10, 4; 2016; 1178–1195. https://doi.org/10.1016/j.joi.2016.10.006
32. PERSSON (O), DANELL (R) and SCHNEIDER (J W). How to use Bibexcel for various types of bibliometric analysis. Celebrating scholarly communication studies 2009; 9–24.
33. PODSAKOFF (P M), MACKENZIE (S B), PODSAKOFF (N P) and BACHRACH (D G). Scholarly influence in the field of management: A bibliometric analysis of the determinants of university and author impact in the management literature in the past quarter century. Journal of Management. 34, 2008; 641–720.
34. PRITCHARD (A). Statistical bibliography or bibliometrics? Journal of Documentation. 25, 4; 1969; 348-349.
35. RAJU (N J), RAM (P) and DEY (S). Groundwater quality in the lower varuna river basin, Varanasi district, Uttar Pradesh. Journal of the Geological Society of India. 73, 2; 2009; 178-192. doi:10.1007/s12594-009-0074-0
36. SINGH (I B). Late quaternary history of the ganga plain. Journal of the Geological Society of India. 64, 4; 2004; 431-454. www.scopus.com (accessed on 27th January 2022)
37. SREEDEVI (P D), OWAIS (S), KHAN (H H) and AHMED (S). Morphometric analysis of a watershed of south India using SRTM data and GIS. Journal of the Geological Society of India. 73, 4; 2009; 543-552. doi:10.1007/s12594-009-0038-4
38. SU (J), ZHAI (Q) and LANDSTRÖM (H). Entrepreneurship research in China:Internationalization or contextualization? Entrepreneurship & Regional Development. 27, 1–2; 2015; 50–79. https://doi.org/10.1080/08985626.2014.999718.
39. SUBRAMANYAM (K). Bibliometric studies of research collaboration: a review. Journal of Information Science. 6, 1; 1983; 33-38.
40. TIWARI (A K) and SINGH (A K). Hydrogeochemical investigation and groundwater quality assessment of pratapgarh district, Uttar Pradesh. Journal of the Geological Society of India. 83, 3; 2014; 329-343. doi:10.1007/s12594-014-0045-y
41. TSAY (M Y). Citation analysis of Ted Nelson's works and his influence on hypertext concept. Scientometrics. 79, 3; 2009; 451–472. https://doi.org/10.1007/s11192-008-641-7.
42. VIJAYAKUMAR (M) and NAQVI (S H). Authorship trends in AzadirachtaIndica literature: a bibliometric study. SRELS Journal of Information Management. 39, 4; 2002; 445-455.
43. WANG (X), XU (Z) and ŠKARE (M A). Bibliometric analysis of Economic Research-EkonomskaIstraživanja (2007–2019). Economic Research-EkonomskaIstrazivanja.33, 1; 2020; 865–886. https://doi.org/10.1080/1331677X.2020.1737558