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## Scientometric Analysis of Knowledge Management: Research Productivity and Collaborative Authorship

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### Abstract

The study focuses on the Scientometric analysis of "Knowledge Management" as a published book. The data is gathered from the Web of Science Databases for the years 2003 through 2022. The Web of Science database revealed a total of 3068 papers. According to the report, the majority of researchers decided to publish their findings in journals, and more papers were published in 2022. The trend in authorship indicates that out of the 3068 pieces of writing written, single authors accounted for 7.89% and multiple authors for 92.11%. The total number of 33568 articles has been provided by 3000 authors. Additional evaluations of coverage growth rates, the most prolific authors, the degree of collaboration, and the study's focus areas are also acknowledged and citation in this study.

**Keywords:** Author Productivity, Citation, Knowledge Management, Bibliometrics

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### Introduction

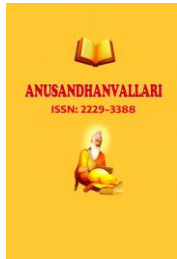
The Knowledge Management growth study of publications could yield some insightful findings on the development of literature and authors' output in the field of science in that correction. An important area of information science research in recent years has been the Scientometric examination of scientific publications.

### Review of Literature:

The study of the authorship pattern and collaboration is an important aspect of Scientometric analysis. Kollé, S.R. (2017) The research is explain in this studied the global literature on Information Literacy from Web of Science database from 2005 to 2014 and noticed that there is high amount of growth of literature more than citation per article decreased during 2011 to 2014. That the most creative author and Spain institution is top 28 articles ranked first. Pinto Maria et.al. (2019) studied the literature on mobile Digital information literacy period 2006-2017 and found that the number of articles on mobile information literacy distended from 3 to 5 per year. They used LISA, WoS and SCOPUS database for the study. The keywords and author references were used for the study. Islam et.al. (2022) in their research article from "Library Philosophy and practice" e-journal, explain the information literacy papers from bibliometric future from Scopus database of all forms of literature 2017-2021 and found that an average author citations per document and citations per year. They used SCOPUS database to retrieve the data. The keywords and author references were used for the study.

**Objectives:** This Paper aims to identify author production in the research of Knowledge Management proceeds with the goals as following:

1. To Identify Year wise Distribution of Cited Reference and Authors



2. To find out the Total Global Citation and Local global citation output
3. To find Country wise , State wise and Citation output
4. To find out the top most productive authors and authorship pattern
5. To Identify Co – authorship on Knowledge Management research
6. To know degree of collaborations among authors

### Data collection

The source Web of Science (WoS), a bibliographic and citation database, was utilised to gather the publication data. The information was gathered between 2003 until 2022. The whole records in plain text format were obtained. This paper's study of data covered almost 20 years.

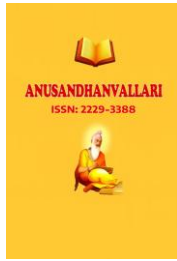
### Methodology

All of the Web of Science data. In order to analyse the trend in the growth of knowledge management in bibliometric analysis, this study is being done. On the basis of the sample data, it is also focused on tracing historical patterns in the area of Knowledge Management research output in bibliometric and scientometric analyses. From 2003 to 2022, the profit growth rates in relation to research productivity are examined. 3068 pieces of information were collected in total. The data has been looked at, examined, and organised into the Bibexcel, HistCite, and Pajek software tools. It is also precise in nature behind the trial truth in light of use of genuine, working tools.

### Analysis

**Year wise Distribution of Cited Reference and Authors:** The number of authors, the average number of authors per article, and the mean values for all cited references are determined based on the production of Knowledge Management research publications for each year. One can see that from table 1 below completely For 20 years, from 2003 to 2022, 3068 records on knowledge management research in the library field were created by 3068 authors. Total of 994 times, as determined by other scientists, cited sources. The records for the year 2022 received the most citations over the course of the period. Every Knowledge Management article was quoted more than 35 times per year. In 316 research publications, the year 2021 provided the most authors and received 1794 citations It is concluded from these analysis highest cited references of 4745 times cited by others in the year 2021. 2019 in this year author contributed 269 records and the citation high in others to all in 4745 times. Very Lowest contribution of only 20 in 2003 and cited reference 429 only.

**Country wise Output of Knowledge Management:** Data on country-specific contributions to the overall knowledge management research output. It should be noticed that the figure increased when compared to other nations in the most recent report released in KM. Its Country's contribution, though, was on the decline. It is believed that India's economic growth in the Topes has gradually diminished. India was mentioned 533 times locally and 56281 times globally out of the 3044 papers that were published in this article's top-ranking record. The USA holds the second-highest KM record (428) and TLCS record (77 TGCS 16240 records).



The United Kingdom comes in third place with 267 records, 77 records from TLCS, and 10394 citations from TGCS. When it comes to contributions, publication of all sources of Knowledge Management research output has increased from 2003 to 2022. The table explains the top 25 countries published in this study.

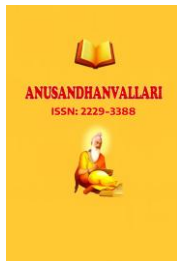
**State wise Overall Output of Knowledge Management:** Data on country-specific contribution to the overall knowledge management research output. It should be noticed that the number of top papers published in KM increased when compared to other nations. Its country's contribution, though, was on the decline. It appears that Tamilnadu's top-country growth has been steadily declining. Karnataka was included in the highest two of 332 papers. New Delhi has the third spot out of 317.

Maharashtra is in fourth place with 305 papers produced. Uttarpradesh finished 298 papers. From 2003 to 2022, more Knowledge Management research output publications were made across all sources. The top 25 countries mentioned in this study are explained in the table. Explain Map 1 and this dialogue in the output.

**Authors Productivity in Publications:** According to the quantity of publications, writers are ranked in Table 1. With 74 records, authors 'Kumar A' published the most articles throughout the study period. They also had the highest citation score with 1139. The next most prolific author during the research period was 'Kumar S', who published 58 records and earned the second-highest citation score of 864. Then "Singh A" published with a citation score of 583 in third place out of 41 recordings. Describe how this table of the top 25 authors' productivity demonstrates that. The authors who are quoted the most are different from those who are published the most. According to the analysis, author productivity in the growth of research in knowledge management as research articles may be subject to Lotka's law.

**Table 1: Author Productivity of Top 25 Most Productive Authors**

S.No	Author	Record	TLCS	TLCS/t	TLCSx	TGCS/t	TLCR	TGCS/t	TLCR	TLCSb	TLCSe
1	Kumar A	74	2.4	13	183	6	1139	153.71	22	8	
2	Kumar S	58	1.9	8	1.15	3	864	159.66	8	1	
3	Singh A	41	1.3	15	1.83	9	583	96.08	18	5	
4	Kumar R	39	1.3	4	0.4	2	676	123.35	11	0	
5	Singh R	36	1.2	14	1.53	6	600	93.45	12	9	
6	Gupta S	29	0.9	4	0.99	2	297	61.55	10	0	
7	Sharma S	29	0.9	3	0.21	3	438	50.95	3	1	
8	Kumar P	28	0.9	2	0.3	0	454	92.81	6	0	
9	Sharma A	27	0.9	2	0.22	1	408	88.85	3	0	
10	Kumar V	26	0.8	4	0.46	2	605	74.28	4	0	
11	Singh RK	26	0.8	26	2.75	11	373	35.9	16	10	2
12	Kumar M	21	0.7	5	1.25	3	487	109.23	2	0	
13	Sharma R	21	0.7	0	0	0	252	27.97	4	0	
14	Singh AK	21	0.7	7	0.87	3	247	27.27	12	6	

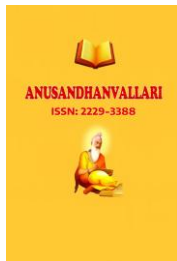


15	Gupta N	19	0.6	7	0.85	2	155	32.19	4	3	
16	Singh SK	19	0.6	7	1.49	4	361	65.33	8	1	
17	Singh M	18	0.6	2	0.26	1	214	38.21	3	0	
18	Gupta A	17	0.6	3	0.19	2	409	60.62	0	0	
19	Singh S	17	0.6	0	0	0	170	38.54	4	0	
20	Das AK	16	0.5	0	0	0	151	31.89	3	0	
21	Singh P	16	0.5	3	0.58	1	152	29.26	3	0	
22	Singh V	16	0.5	1	0.33	0	172	22.47	0	0	
23	Gupta R	15	0.5	5	0.53	2	692	93.8	3	1	
24	Srivastava A	15	0.5	2	0.25	0	141	27.33	7	2	
25	Das S	14	0.5	2	0.25	1	146	23.62	1	1	

**Authorship Pattern of Knowledge Management:** Bibliometric analysis includes the investigation of authorship patterns as an important component. It aims to examine how well academics do both individually and collectively in contributing research output. Later, the equal must be analyzed in light of the current study's end purpose. The authorship structure of the Knowledge Management research output is described in Table 2. According to the total number of papers published during the test period, it is possible that three author donated papers hold the top spot at 436 (14.21%), followed by two author and four author sponsored papers at 407 (13.27%). According to this study, multi-author publications have a higher impact than those with just one author. The year 2022 recorded the greatest publishing of 413 records in the analysis of the previous 20 years.

**Table 2: Authorship Pattern of Papers Published**

Year	Single	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten & > 10	Total
2003	4	2	1	4	4	3	2				20
2004	3	4	5		2	2	1	1			18
2005	3	7	9	1	2	1	1				24
2006	6	4	2	5	3	2	5	1			28
2007	8	12	2	5	4	3	4				39
2008	9	5	6	10	5	4	3				45
2009	7	10	6	9	9	3	11	15	6	5	81
2010	31	24	30	26	24	16	12	3	5	6	177
2011	4	19	30	20	14	16	3	3	5	13	127
2012	6	28	25	25	8	8	3	5	4	13	125
2013	7	20	20	26	12	11	3	2	10	19	130

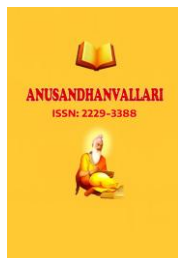


2014	6	17	25	29	11	10	11	12	13	12	146
2015	18	27	30	27	19	19	15	3	13	1	172
2016	20	20	20	23	25	18	14	10	15	25	190
2017	19	41	31	31	16	17	14	16	16	22	223
2018	18	19	33	23	23	22	16	18	26	24	222
2019	15	30	27	36	26	25	16	26	31	37	269
2020	12	45	34	40	33	30	36	24	26	27	307
2021	1	32	47	26	36	31	35	29	25	36	316
2022	27	41	53	41	41	30	31	48	50	51	413
<b>Total</b>	<b>242</b>	<b>407</b>	<b>436</b>	<b>407</b>	<b>317</b>	<b>271</b>	<b>236</b>	<b>216</b>	<b>245</b>	<b>291</b>	<b>3068</b>
<b>%</b>	<b>7.89</b>	<b>13.27</b>	<b>14.21</b>	<b>13.27</b>	<b>10.33</b>	<b>8.83</b>	<b>7.69</b>	<b>7.04</b>	<b>7.99</b>	<b>9.9</b>	

**Single Vs Multiple-Authored Research Output and Degree of Collaboration:** The single type multi-author research output during the period 2003-2022 is empirical. It is experiential that from the above table shows, the single-author donated papers constitute 7.89% of the total publications where-as the enduring majority 92.11% of the papers are contributed by multi-authorship. In order to regulate the collaboration in numerical terms, the formula apply in this study was tested and analysis the research. It is conditional from Table 3 that at the total level, the degree of collaboration during the study period 2003–2023. Out of total 3068 literature published, 92.11 % of them were published under the joint authors of publications in Knowledge Management research output. The period wise analysis shows that its level is rather less in the first ( 2003-2010) period in single Author and it has shown. An reducing trend during the period (2011-2022). Based on this study, the result of the degree of teamwork  $C=0.079$  percent of collaboration authors articles published during the study periods.

**Table 3: Single Vs Multiple Authored Research output and Degree of Collaboration**

Year	Single Author		Multiple Author		Total	%	Degree Collaboration
	Output	%	Output	%			
2003	4	20	16	80	20	0.65	0.2
2004	3	16.67	15	83.33	18	0.59	0.167
2005	3	12.50	21	87.50	24	0.78	0.125
2006	6	21.43	22	78.57	28	0.91	0.214
2007	8	21.05	30	78.95	38	1.24	0.211
2008	9	21.43	33	78.57	42	1.37	0.214
2009	7	8.64	74	91.3	81	2.64	0.086
2010	31	17.51	146	82.49	177	5.7	0.175

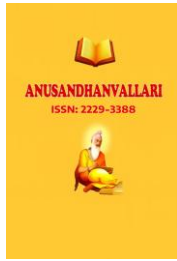


2011	4	3.15	123	96.85	127	4.14	0.031
2012	6	4.80	119	95.20	125	4.07	0.048
2013	7	5.38	123	94.62	130	4.24	0.054
2014	6	4.11	140	95.89	146	4.76	0.041
2015	18	10.47	154	89.53	172	5.61	0.105
2016	20	10.53	170	89.47	190	6.19	0.105
2017	19	8.52	204	91.48	223	7.27	0.085
2018	18	8.11	204	91.89	222	7.24	0.081
2019	15	5.58	254	94.42	269	8.77	0.056
2020	12	3.91	295	96.09	307	10.01	0.039
2021	19	6.01	297	93.99	316	10.30	0.060
2022	27	6.54	386	93.46	413	13.46	0.065
Total	242	7.89	2826	92.11	3068	100.00	0.079

**Author Pattern of h-Index (h-core):** It is experiential from below table-4 the Author pattern Index for single authors is decline for top twenty five in 2003 -2022. Kumar A published in 75 articles then h- index is 16, h-core of 898 and 1151 citations .Second one is Kumar S 58 articles are published, h-index is 15, h-core 898 and 864 citations also.

**Table 7: Author Pattern of h- Index (h-core)**

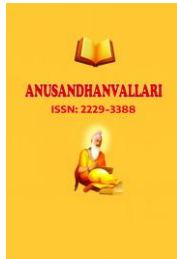
S.No	Author	hi-index	Citation sum within h-core	All citations	All Articles
1	Kumar A	16	898	1151	75
2	Kumar S	15	693	864	58
3	Singh R	14	549	600	36
4	Singh A	12	463	583	41
5	Kumar M	10	445	487	21
6	Maikhuri RK	10	258	279	14
7	Gupta S	9	234	297	29
8	Kumar V	9	564	605	26
9	Singh SK	8	332	361	19
10	Das AK	8	126	151	16
11	Singh AK	8	213	247	21



12	Jain V	8	310	315	10
13	Sharma S	8	393	438	29
14	Gunasekaran A	8	670	670	8
15	Singh RK	8	311	393	26
16	Gupta N	8	117	155	19
17	Kumar P	8	404	454	28
18	Kumar R	8	608	676	39
19	Rao KS	7	222	233	11
20	Mangla SK	7	468	480	10
21	Sharma N	7	92	107	12
22	Sharma A	7	351	408	27
23	Joshi R	7	92	97	8
24	Singh M	7	195	223	19
25	Singh N	7	147	155	13

### Major Findings:

- Totally 3068 records were produced for 20 years from 2003 to 2022 on Knowledge Management research. Totally 56565 times cited references measured by other researchers. The year of 2022 records were cited by highest times cited references during period. Each year records were cited more than 56565 times at every article of Knowledge Management. The year of 2022 had contributed the highest number of authors in 413 research publication. It is concluded from these analysis highest cited references of 5406 times cited by others in the year 2017.
- To find out author „Kumar A“ published highest number of articles for the study period with 74 records and also had highest citation score of 1151. The following authors „Kumar S“ published next highest number of articles for the study period with 58 records and also had next highest citation score of 864.
- From the outcome of this study, we come to realize that the multi-author distribution is the most elevated contrast with single-author distribution. In twenty years analysis, year 2022 has recorded the most noteworthy distribution appropriation of 413 followed continuously 2021, 2020 recorded next highest records.
- It is observed from this study the Co-Authorship Index for single authors is declined from 7.89% in the year 2003 to 2022.
- The findings of the square root value located at just 0.89% percent of publications. Most of the 50 % authors are contributed very less number of times in Knowledge Management.
- This study investigated the outputs of Country wise Citation research publications is India contributed more records and TLCS 533 , TGCS 56281.
- The highest number in India 3044 publications was published .State wise highly published in Tamilnadu majority contribution in 353. The majority of the research outputs was published highest language in English.



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