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# **A Scientometric study of Authorship and collaborative pattern of DESIDOC Journal of Library & Information Technology (DJLIT) during 2012-2020**

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## **Abstract**

*This aims of the paper published in DESIDOC Journal of Library & Information Technology (DJLIT) interpretation of fertility over nine eras (2012-2020). The theme depicts the several bibliometric circumstances in the Journal DJLIT, which was published 531 papers throughout nine years over 2013 nos. of citations. As per the investigation, in 2012-2014 most prominent of the records was proclaimed with the highest no of citations with a CPP rate of 4.21 %. The potency of the authors of CAI explicates that a whole of 525 authors published 531 papers, with a CAI varies from 91.78 to 112.18. The level of collaboration deviates from 0.61 to 0.74, with 0.68 obtaining the mean. The country Fiji and Indonesia have the highest no of collaboration, i.e., 16.67 each.*

**Keywords:** *Indicators, DC, CC, CAI, MCC, CI, VOS Viewer*

## **Introduction**

Scientometric is the field of research that considers itself monitoring and examining scholarly papers & it is a subfield of bibliometric. The significant analysis results cover the analysis of the impression of research articles and educational journals, the understanding of scientific citations, and the use of such fields in procedure and executives features. In practice, there is a meaningful overlap between scientometrics and other scientific fields such as information systems, information science, science of science policy, sociology of science, and metascience. Experts have claimed that over-reliance on scientometrics has designed a policy of wicked incentives, composing a distribute or perish atmosphere that commences to low-quality

research study. (<https://en.wikipedia.org/wiki/Scientometrics>). “DESIDOC Journal of Library and Information Technology (DJLIT) is a peer-reviewed, double-blind, open access, a bimonthly journal that publishes original study and review articles associated with library science and IT implemented to library exercises, services, and outcomes. Major subject fields incorporated Information systems, Learning management, Collection building & management, Information ethics & retrieval, librarianship & library management, Library & information services, Records management & preservation, etc (<https://publications.drdo.gov.in/ojs/index.php/djlit/about>).

### **Review of Literature**

Singh et al. (2021) examined the research productivity of the DESIDOC Journal of Library and Information Technology for period of 2012-2020. The study analysis showed that joint authors' contribution found high at the rate of 358(67.42%). B. M. Gupta was the most productive and cited author during the study period. Singh, Varma & Singh (2021) found in their study that observed that the average doubling time (Dt) was 3.56, while the maximum Dt was recorded at 8.02 in 2019 and minimum in 2008. Parida et al. (2020) evaluated the Research Productivity and Visualization of AIIMS, Bhubaneswar during 2012-2019. The conclusions of the research showed that a total of 734 publications were received during the study period. “Journal of Clinical and Diagnostic Research” is the highly Preferred Journals with 67 papers. Nayak (2018) analysed the Research Output of DESIDOC Journal of Library and Information Technology and the study analysis reported that maximum number of contributions 69 were published in the year 2012. B. M. Gupta was the most prolific author with 11 articles. Singh, Nayak & Varma (2017) examined the Partnership: The Canadian Journal of Library and Information Practice and Research. The study report revealed that maximum number of contributions 52 was published in the year 2011. Single authors, are dominating in the authorship pattern with 187 publications. On the other hand, many authors studied the authorship pattern and degree of collaboration in their studies, Patel et al. (2021); Singh, Varma & Singh (2021); Patel et al. (2021); Rai, Singh & Varma (2020); Kuri et al. (2020); Pradhan et al. (2020); Gireesh et al. (2020); Singh, Ranjan & Rai (2019); Rai, Singh & Varma (2019); Singh & Varma (2017); Singh, Varma & Pradhan (2017).

### **Objectives**

The objectives as follows:

- ✓ To find the impact of publication vs citation over the break year.

- ✓ To find CPP based on single authorship Vs multiple authorship.
- ✓ To find the co-authorship patterns.
- ✓ To find the collaborations DC, RSA, CI.
- ✓ To find the most productive county of collaboration.
- ✓ To find the most frequently author keywords used.

## **Methodology**

Data worked in the contemporary study has been downloaded from Scopus, a well-renowned and secure data expert usually practiced for citation inquiry. The search string appeared was “(SRCTITLE(DESIDOC Journal of Library & Information Technology) AND ( LIMIT-TO ( PUBYEAR,2020) OR LIMIT-TO ( PUBYEAR,2019) OR LIMIT-TO ( PUBYEAR,2018) OR LIMIT-TO ( PUBYEAR,2017) OR LIMIT-TO ( PUBYEAR,2016) OR LIMIT-TO ( PUBYEAR,2015) OR LIMIT-TO ( PUBYEAR,2014) OR LIMIT-TO ( PUBYEAR,2013) OR LIMIT-TO ( PUBYEAR,2012) ) )” All the retrieved data were rigorously investigated applying Microsoft to furnish the particulars. Data visualization doing VoS Viewer software is also used to obtain a more immeasurable opinion.

## **Scientometric Indicators used**

### **Degree of Collaboration (DC)**

(Subramanyam, 1980) propounded the DC, a measure to measure the symmetry of single & multi-authored articles.  $DC = \frac{Nm}{Ns+Nm}$

Where Nm= No of multi authored papers

Ns= No of single authored papers

### **Co-authorship index (CAI)**

Schubert and Braun (1986) elaborated CAI for the first time. Garg and Padhi (1999) proposed method to computer CAI

$$CAI = \frac{Nij/Nio}{Noj/Noo} * 100$$

$N_{ij}$  = No of Papers of  $j$  authors of an appropriate section.

$N_{io}$  = Total Output for the appropriate section.

$N_{oj}$  = No of the papers owning  $j$  authors for all section.

$N_{oo}$  = Total no of papers for total authors and all section.

### Collaboration Index (CI)

It has been measured by doing the method given by Lawani (1980).

$$CI = \frac{\sum_{j=1}^A jf_j}{N}$$

Where,

$f_j$  is the no of  $j$  authored articles published in discipline-specific period.

$N$  is the total no of research papers published in a certain discipline in a specific period

### Data Collection & Analysis

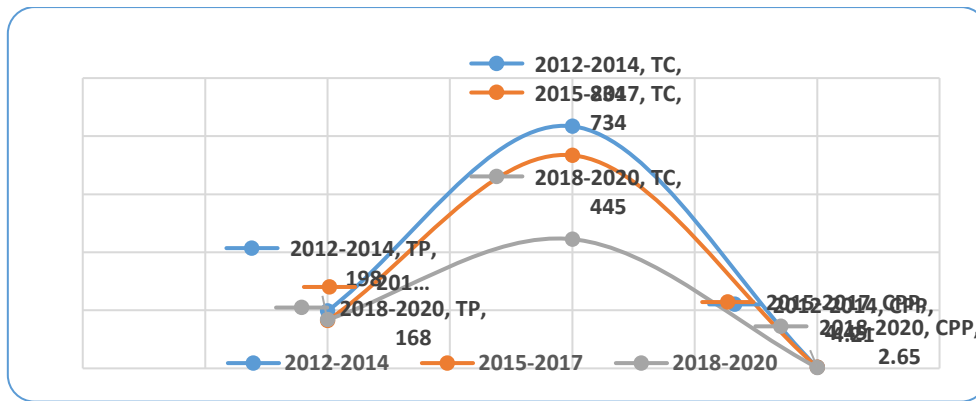
#### To discover the impact of the articles over the years

The table 1 and figure 1 represents a citation shows the quantitative impact of an article as researchers cite relevant documents in their studies. The indicator Citation per Paper (CPP) is used to find out the impact of the articles. Below table and figure shows the citation impact of the articles in which, the block year 2012-2014 has total articles 198, total citations 834 and citation per paper is 4.21. In the block 2015-2017 has total articles 165, total citations 734 and citation per paper is 4.45. Block 2018-2020 has total articles 168, total citations 445 and citation per paper is 2.65. The overall mean of citations of paper is 3.77.

Table 1

Block Year	TP	TC	CPP
2012-2014	198	834	4.21
2015-2017	165	734	4.45
2018-2020	168	445	2.65
<b>Total</b>	<b>531</b>	<b>2013</b>	<b>3.77</b>

Figure 1: Citation Impact of articles



### CPP based on Single Author Vs Multiple Author

Table 2 further categorize the impact of the citation based on the single authorship and multiple authorship. It is found that the CPP of multiple authors is greater than the CPP of single authors. It provides evidence that multiple-authored papers receive more citations than that of single-authored papers. In the year block 2012-2014 has highest no of citations rate of multiple authors papers whereas least no of citations rate of single authors papers. The CR rate good with the block year 2018-2020. The average no of CPP and CR is 5.40 and 0.54:5.40 respectively.

**Table 2**

Block Year	Total Papers		Total Citations		CPP		CR
	Single	Multiple	Single	Multiple	Single	Multiple	
2012-2014	78	120	38	796	0.49	6.63	0.49:6.63
2015-2017	51	114	29	705	0.57	6.18	0.57:6.63
2018-2020	44	124	25	420	0.57	3.39	0.57:3.39
<b>Mean</b>	-----	-----	-----	-----	<b>0.54</b>	<b>5.40</b>	<b>0.54:5.40</b>
<b>Total</b>	<b>173</b>	<b>358</b>	<b>92</b>	<b>1921</b>	-----	-----	-----

\*CR-CPP Ratio, \*CPP Citation per Paper

### Co-Authorship Index (CAI) Vs Break year

The table 3 determines that the rate of CAI for single-authors has declined of 119.55 to 82.42, this signifies there is a significant contraction in the single-authorship with deference on the overall output. In the state of dual authorship, CAI rate fluctuating. In the case of three authors, it is observed that CAI rate is gradually increasing. For more than 3 authors the CAI rate is also increasing over the beak periods. The highest collaborative application has been seen amidst the three authors (120.03).

**Table 3**

Block Year	A1	CAI	A2	CAI	A3	CAI	>A3	CAI	Total
------------	----	-----	----	-----	----	-----	-----	-----	-------

2012-2014	78	119.55	84	88.74	27	88.38	9	91.78	198
2015-2017	51	93.80	82	106.49	24	94.28	8	97.90	165
2018-2020	44	82.42	79	104.50	30	120.03	9	112.18	162
<b>Total</b>	<b>173</b>	-----	<b>245</b>	-----	<b>81</b>	-----	<b>26</b>	-----	<b>525</b>

\*A1, A2, A3 is the no of authors

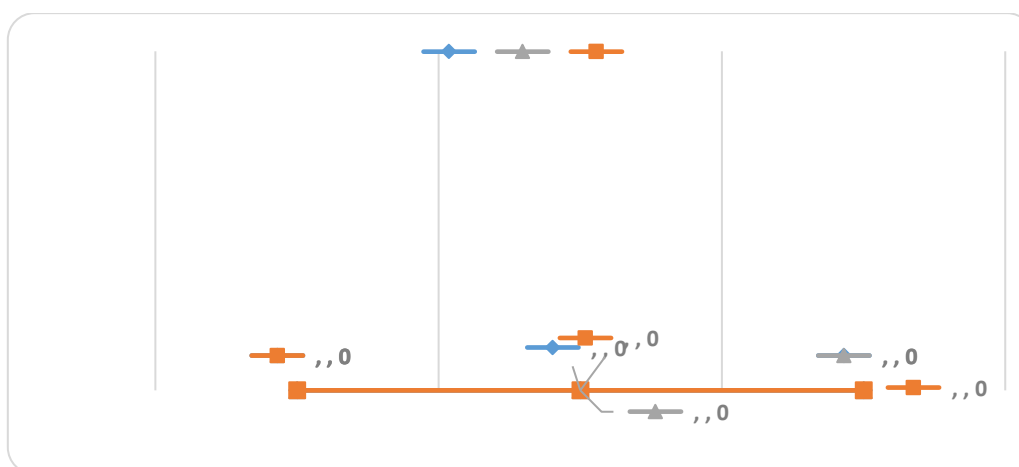
### Magnitude of Collaborative Measures

The given table 4 and figure 2 represents the year-wise period of collaboration, rate of single-authorship and collaborative index. In the other way DC is completely reverse method of RSA. In the year 2018-2020, highest no of Dc followed by 0.69 and 0.61 in the block 2015-2017 and 2012-2014 respectively. The rate of single authorship is decreasing with the years from 0.39 to 0.26. The collaborative index is approximately equal all the years. The mean of Ci is 2.43 is equivalent to the all the years.

**Table 4**

Block Year	Ns	Nm	Ns+Nm	DC	RSA	CI
2012-2014	78	120	198	0.61	0.39	2.38
2015-2017	51	114	165	0.69	0.31	2.39
2018-2020	44	124	168	0.74	0.26	2.53
<b>Total</b>	<b>173</b>	<b>358</b>	<b>531</b>	----	----	----
<b>Mean</b>	-----	-----	-----	<b>0.68</b>	<b>0.32</b>	<b>2.43</b>

Figure 2: Collaboration Pattern



### Top most productive countries/territories

Table 5 analyzed the most collaborative country with the specific time period. The country India has the highest no of collaboration with the journals 453 (85.31%) and has also the highest h-index and very less percentage of collaboration. The country Fiji and Indonesia has less no of articles, but their collaboration rate is highest 16.67% both and Indonesia has least no of h-index equivalent to United States i.e., 2.

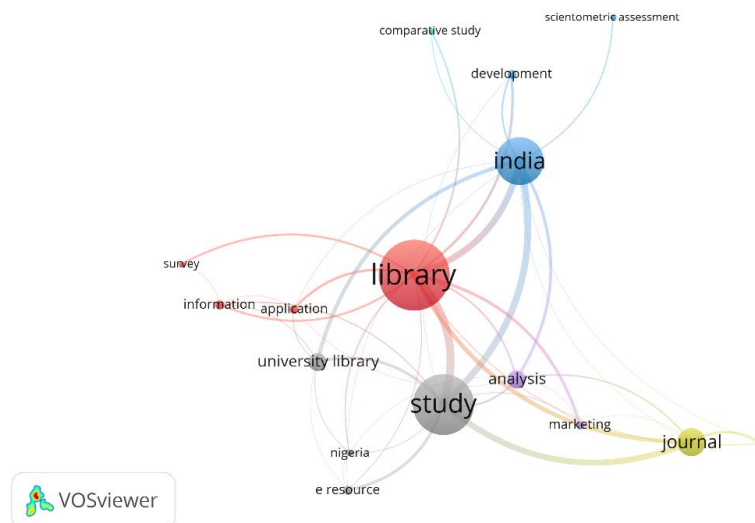
**Table 5**

SCR	Country*	No. of Papers (%)*	h-index*	No of Countries*	Collaborate %
1	India	453 (85.31)	15	10	2.21
2	Nigeria	16 (3.01)	5	1	6.25
3	United States	10 (1.88)	2	1	10.00
4	Iran	7 (1.31)	3	0	0.00
5	Fiji	6 (1.12)	3	1	16.67
5	Indonesia	6 (1.12)	2	1	16.67

### Author Keywords

The figure 3 represents the network visualization of author keywords in the given title from 2012-2020 in red, green and blue colours. The keywords “Scientometric assessment” has highest no of documents with 12 no of occurrence with 3.32, i.e., highest no of relevance. The given figure shows that library and study has the most of chain relation with other keywords used by author.

Figure 3: Author Keywords





## Findings

The following outputs are taken on research analysis.

1. The results show that the DESIDOC Journal of Library & Information Technology during 2012-2020 has 531 no of publications including articles, notes, review and editorial and 2013 no of citations.
2. CPP in the year 2012-2017 is highest i.e., 4.45.
3. CPP based on the single authorship Vs multiple authorship is 2015-2017 and 2018-2020 is 0.57 and 2015-2017 is 6.18 respectively. CPP ratio is most equalled in the year 2018-2020.
4. Co-authorship index is highest in the year 2018-2020, 112.18.
5. The collaborative measures i.e., DC, RSA, CI is 0.74 in 2018-2020, RSA in 2012-2014 is 0.39 and CI is 2.53 in 2018-2020.
6. The county Fiji and Indonesia has highest rate of international collaboration i.e., 16.67 both.

## Conclusions

DESIDOC Journal of Library and Information Technology is a reputed journal in the field of Library and Information science. One of the essential features of DJLIT is that it has excellent solicitude for surfacing and innovative tools, methods & technologies in the LIS field and their influence & application in the area. The journal periodically issues unique numbers in all volumes.

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