



Scientometric profile of library resource sharing

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Abstract

The study is based on the Scientometric analysis of 355 research Journal published on Article of Library Science during the periods of 2019-2023. This Study will review on length of the title, numbers of pages, type of document, distribution of article, no of references print as well as web references authorship pattern, the findings must reveal various aspects of the characteristics and patterns of contributions of the study.

Keywords: Library resource sharing

Introduction

Resource sharing in libraries is an essential practice that fosters collaboration and maximizes the utilization of information and materials among libraries to meet the diverse needs of their patrons. It is a strategic approach that allows libraries to overcome the limitations of their collections and expand access to a wide range of resources. Through resource sharing, libraries can exchange books, journals, audiovisual materials, and digital content, enabling users to benefit from vast knowledge and entertainment regardless of location. This cooperative endeavor not only promotes cost efficiency but also enhances the value and effectiveness of library services, empowering users with greater opportunities for research, learning, and cultural enrichment. By harnessing the power of shared resources, libraries strengthen their roles as vital community hubs and information gatekeepers, ensuring that information remains accessible to all, irrespective of the constraints posed by individual library collections.

According to Chatterjee^[1] "It will not merely mean mutual sharing of information sources available in different libraries; it will mean utilizing the information sources of one library for generating services by another library.

Sujatha, G. (1999)^[2], "Resource sharing is nothing but sharing library resources by certain participating libraries among themselves based on the principle of cooperation. This applies to using documents, manpower, facilities, services, building space, or equipment

Scientometric

Scientometrics is the science of measuring and analyzing science. In practice, Scientometrics is often done using Bibliometrics which is a measurement of the impact of (scientific) publications. Scientometrics is the science of method scientific output similar to Bibliometrics used by librarians and information scientist. (Agrawal, Aruna, 1982)^[4]; related fields are the history of science and technology philosophy of science and sociology of scientific knowledge. (Eugene Garfield, 1995); application of mathematical and statistical methods of scientific literature (Derek de Solla, 2000)^[6]; to identify national an

international network and to map the development of new fields of science and technology as well as to know the inner logic of science development (Yadav Jaisi Ram, 1984); this enables to evaluate the size of scientific production on the assumption that the essence of scientific activity is the assumption the production of knowledge (Eugene Garfield, 2002)^[7]; open access has emerged in the last few years as serious alternative to additional commercial publishing models taking the benefits offered by technology one step further (Wasudevan K T 1995)^[12]; one significant finding in the field is principle of cost escalation to the effect that achieving further findings at a given level of importance grow exponentially more costly in the expenditure of efforts and resources (Manavalan R 1982)^[10]; other characteristics of open access journals are that author relation copyrights and they must self achieved content in an independent repository (David Wilson, 2001); modern Scientometric is mostly based on latter founded the institute for scientific information which is heavily used for Scientometric analysis (Derek, J. 1995); currently prepares and international methodological manual that will contain guidelines for creating applying and interpreting the indices based on Bibliometric data (Eva Rodenas, 2001)^[8].

Definition Analysis

1. Scientometrics

According to Bankapur, M.B. and Kumara, (1993) "Scientometric is a more general than Bibliometrics. It is interesting to know, that both disciplines have a large overlap. It is surprised to learn certain comments stating that both disciplines have a large overlap. It is surprised to learn certain comments stating that Scientometric, using Bibliometrics techniques is a part of Bibliometrics".

2. Scientometric Analysis

According to (2006), Wouters, a cart intension has always existed between academic Scientometric and political/practical, Scientometric, the latter of which has been described as a hybrid of social science and bur rerate expertise (2006).

Library Resource sharing

Resource sharing in libraries refers to collaborating and exchanging materials and information to enhance access and availability for library users. It involves sharing physical items such as books, periodicals, audiovisual materials, and electronic resources like e-books and databases. Resource sharing enables libraries to extend the reach of their collections beyond their own holdings, allowing patrons to access a broader range of materials that may not be available locally. This can be achieved through various methods, including interlibrary loans, cooperative purchasing, consortia borrowing, and digital delivery systems. Resource sharing is crucial in ensuring equitable access to information, particularly for users in smaller or under-resourced libraries with limited resources or specialized needs. By facilitating the sharing of resources, libraries can collectively optimize their collections, reduce duplication of materials, and provide a richer and more comprehensive library experience for their patrons.

Scopus Data Base

Scopus is the largest abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings. Delivering a comprehensive overview of the world's research output in the fields of science, technology, medicine, social sciences, and arts and humanities, Scopus features smart tools to track, analyze and visualize research. As research becomes increasingly global, interdisciplinary and collaborative, you can make sure that critical research from around the world is not missed when you choose Scopus. Speed is very important I can easily identify what I need to know, read it, digest it, and move on to the next one." *James, Research Pathologist, Medical Device R&D, Scopus user*

How Scopus improves product development outcomes pdf (718 KB)"Scopus informs every phase of the editorial process. I would not want to do this job without it, and I intend to continue using it throughout my career." *William, Professor of Economics, University of Tennessee* Why I wouldn't want to be without Scopus; an editor's story

[Scopus] will allow us to analyze a deeper range of research activity from a wider range of institutions than at present, including those institutions from emerging economies that account for a growing portion of the world's research output and which have shown a great hunger for THE's trusted global performance metrics." *THE Managing Director Trevor Barratt* Rankings provide a more complete picture of worldwide research

Review of Literature

Scientometric / Bibliometric / Citation studies have done earlier by different author son the different individual journal publications and literature on specific subject areas. The following studies related to the objectives of this study have been reviewed.

Srimurugan A & Natter S analyzed the D-LIB magazine published during 2000 –2007 which revealed that highest number of paper was published in 2005 and the lowest in 2007.

Vijay K R & Raghavan I analyzed the Journal of Food Science & Technology published during 2000 – 2004 and found that above 93% of contributions were by multiple authors.

A Scientometric Analysis on Indian Journal of Physics was made by Natter S during 2004 – 2008 which revealed that the year 2004 records the highest % of contributions regarding single, two and three authored.

Kannappanavar B U, Swampy C & Vijay Kumar M analyzed the publishing trends of Indian Chemical Scientists during 1996 – 2000, which revealed average number of authors per paper has increased from 7.52 to 8.39.

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Objectives of the Study

The primary objective of this study is to understand the growth of Journal of Library Science and their research output in global during the period 2019 - 2023. More specific objectives are as follows:

1. To find out the Author wise distribution of articles.
2. To study the Type of document wise distribution of article
3. To estimate the Collaborative Index (CI) of publication to estimate the Collaborative Coefficient (CC) of publication to estimate Moderate Collaborative Coefficient (MCC) of Publication to estimate Collaborative Authorship Index (CAI) of Publication
4. To estimate the Collaborative Index (CI) of publication 3.5 to estimate the Collaborative Coefficient (CC) of publication 3.6 To estimate Moderate Collaborative Coefficient (MCC) of Publication To estimate Collaborative Authorship Index (CAI) of Publication

Scope and Limitation of the Study

The present study is based on the Scientometric Profile of Library Resources sharing. The present study is based on over all 355 articles during 2019-2023.

Data Collection

Data can be numerically expressed that is quantified quantifiable or objective (Faces off and Daly, 1990) the data was collected from and Analysis with the of spss package. Library resource sharing.

Data Analysis and Interpretation

Scientometric analysis is a branch of bibliometrics. It is an important research tool for understanding the subject it aims at measuring the utility of documents and relationship between documents and fields.

The present study is based on the Scientometric Profile of journal of Library Resource sharing during 2019 -2023.The present study is based on over all 355 articles during 2019-2023.

Year wise Distribution of contribution

Year wise Distribution of contributions is shown in Table No

Table 1: Year wise Distribution of contribution

Sr. No	Year	Total No of Articles	Percentage
1	2019	67	18.87
2	2020	70	19.72
3	2021	90	25.35
4	2022	65	18.31
5	2023	63	17.75
	Total	355	100.00



Fig 1: Distribution of contributions (year-wise)

It can be observed from the table No.1 & Figure no.1 out of the total 355 contributions majority of the contributions i.e. 67 contributions were contributed in 2019 were as minimum contributions i.e. 18.87 % in contributions 2020,70 (19.72%) contributions 2021 90, (25.35%), were contributed in 2022, 65 (18.31%) contributions were contributed 2023 i.e. 63, (17.75%).

Authorship Pattern of contribution

The Authorship pattern of contributions is shown in Table No.

Table 2: Type of Author of contribution

Sr. No	Authors	Frequency	Percentage
1	Single Author	71	20
2	Two Authors	75	21.13
3	Three Authors	71	20
4	Four Authors	50	14.08
5	Five & More Authors	88	24.79
	Total	355	100.00

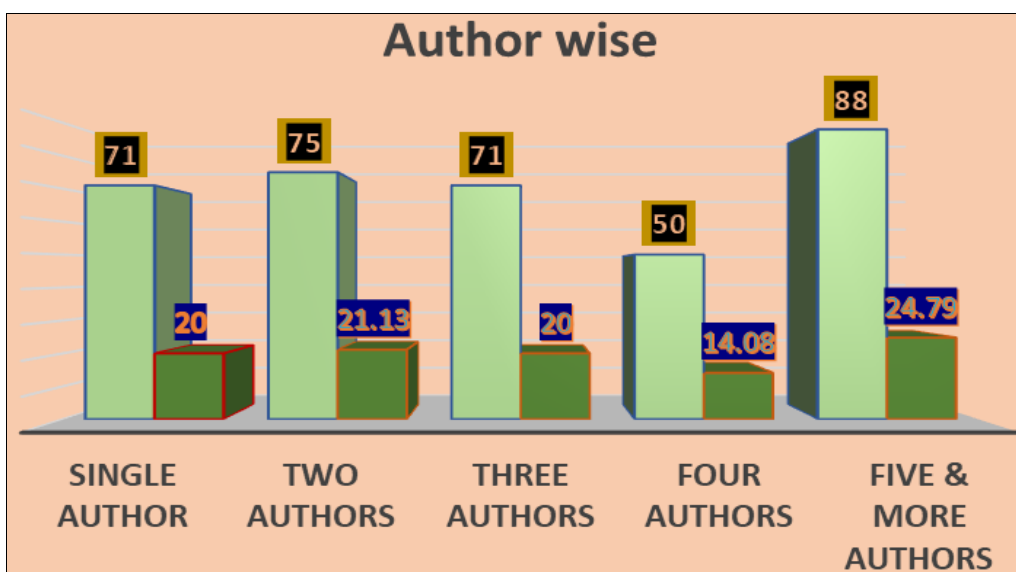


Fig 2: Authorship pattern of contributions

The distribution of Authorship pattern is given in the Table No.2. The table shows that co authorship is predominant

then single authors. Table No. 2 &Figure no. 2 indicates that majority of the contributions are contributed by co authors.

Table No 3 To Find out the Collaborative Index contribution

Table 3: Collaborative Index

Year	Single Author	Two Authors	Three Authors	Four Author	Five Above Authors	Total	CI
2019	17	15	11	8	14	65	2.80
2020	12	19	15	3	17	66	2.91
2021	18	20	17	13	19	87	2.94
2022	13	10	16	18	20	77	3.29
2023	11	11	12	8	18	60	3.18
TOTAL	71(20%)	75(21.12)	71(20%)	50(14.08)	88(24.78%)	355	15.11

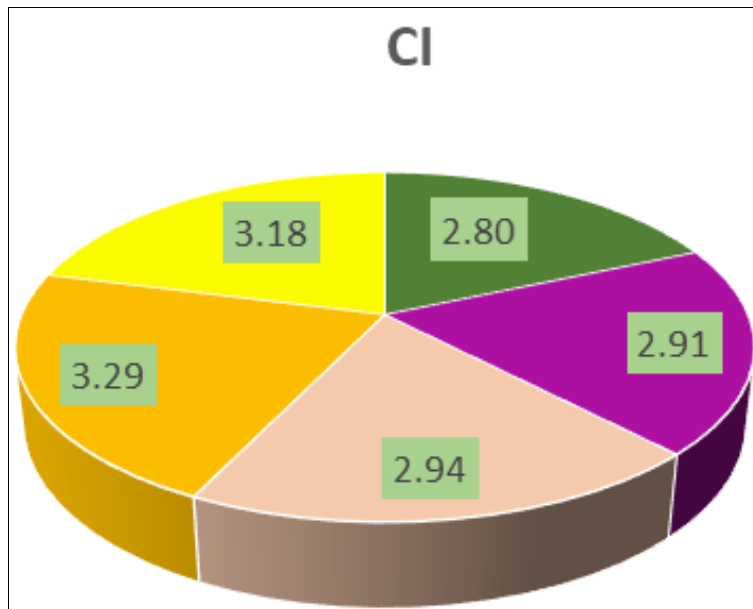


Fig 3

This is only of the early measures of degree collaborative derived by Lawani (1980)

$$CI = \sum A_j = \sum f_j n_j$$

It is a measure of mean number of authors. Although it is easily computable, it is not easily interpretable as a degree, for it has no upper limit. Moreover it gives a non-zero weight to single-authored papers, which involve no collaboration. $CI = [(f_1) 1 + (f_2) 2 + (f_3) 3 + \dots + (f_k) k] / N$

Using in the data in the table no 3. during the period of 2019-2023

$$CI = (17 + 15 \times 2 + 11 \times 3 + 8 \times 4 + 14 \times 5) / 65$$

$$= 17 + 30 + 33 + 32 + 70 = 182$$

$$= 182 / 65 = 2.78$$

Table shows the variation in the CI. It varies from 2.80 in 2019 lowest CI in the year i.e. 2.80 and highest Collaboration we can notice in 2022 i.e. 3.29 Final total Collaborative Index is 15.11.

Table No 4. To Find out the Collaborative Index contribution

Table 4: Collaborative coefficient

YEAR	Single Author	Two Authors	Three Authors	Four Author	Five more Authors	Total	CI	CC
2019	17	15	11	8	14	65	2.78	0.76
2020	12	19	15	3	17	66	2.91	0.72
2021	18	20	17	13	19	87	2.94	0.74
2022	13	10	16	18	20	77	3.29	0.76
2023	11	11	12	8	18	60	3.18	0.75
Total	71(20%)	75(21.12%)	71(20%)	50(14.08%)	88(24.78%)	355	15.11	3.73

According to Airbrakes al. (1988) who have shown the mean number of authors per paper, the proportion of multiple authorship as a measure of degree of collaboration in a discipline, is inadequate. Therefore, they have proposed a measure combining some of the merits of both measures into what is known as Collaborative Coefficient.

Suppose, if a paper has a single author, the author receives one credit; if two, each receives 1/2 credits. In general, if we

have 'n' authors each receive 1/n credits. Hence, the average credit awarded to each author of a random paper is $E [1/n]$, a value which lies between 0 and 1. If '0' is to correspond to single authorship, then the CC is defined as:

$$CC = 1 - E [1/n] = 1 - \sum (1/j) p(N=j) \text{ and its sum}$$

$$\sum \text{rate} = 1 - f_1 + (1/2) f_2 + (1/2) f_3 + \dots + (1/k) f_k N$$

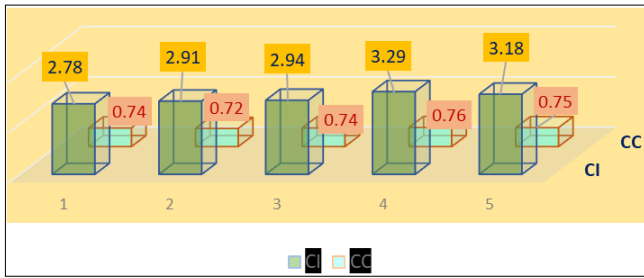


Fig 4

Table 4 shows the CC has increased from 0.74 in 2020 to 0.72 indicating that research among scientists is fairly collaborative with an average CC is 0.74. $CC = 1 - [f_1 + (1/2) f_2 + (1/3) f_3 + \dots + (1/k) f_k] / N$ Based on the data in the 4 using the values for $f_1, f_2,$ and $f_3,$ CC for the year 2019 $CC = 1 - \{[12 + (1/2) 19 + (1/3) 15 + (1/4) 3 + (1/5) 17] / 66N\}$

$$= 1 - \{[12 + 9.5 + 5 + 0.75 + 3.46] / 66\}$$

$$= 1 - [18.65 / 66]$$

$$= 1 - 0.28$$

$$CC = 0.72$$

Table No. 5. Moderate Collaborative Coefficient

The derivation of the new measure is almost the same as that of CC, as given in Airbrake *et al.* Imagine that each paper carries with it a single "credit", this credit being

Table 5: Moderate Collaborative Coefficient

Year	Single Author	Two Authors	Three Authors	Four Author	Five Above Authors	Total	MCC
2019	17	15	11	8	14	65	0.75
2020	12	19	15	3	17	66	0.72
2021	18	20	17	13	19	87	0.74
2022	13	10	16	18	20	77	0.76
2023	11	11	12	8	18	60	0.75
TOTAL	71	75	71	50	88	355	3.73

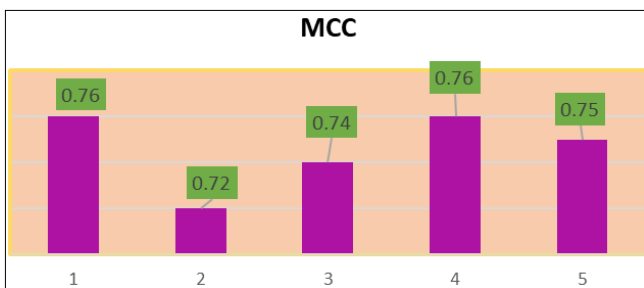


Fig 5

MCC for distribution of authorships for 2019 in Table no. 5 is calculated thus: $\kappa = A / A - 1 (1 - \sum_{j=1}^A (1/j) f_j / N) = 65 / 65 - 1$
 $MCC = (65 / 65 - 1)$
 $[1 - (1 * 17 + (1/2) * 15 + (1/3) * 11 + (1/4) * 8 + (1/5) * 14) / 65]$
 $= (15.97 [1 - (17 + 7.5 + 3.67 + 2 + 2.8) / 65])$
 $= 1.007 [1 - (15.97 / 65)]$
 $= 1.007 (1 - 0.245)$
 $= 1.007 \times 0.75$
 $= 0.75.$

Similarly, values of MCC for 2019 to 2023 are calculated and displayed along with the corresponding values of MCC in Table No. 5

shared among the authors. Thus if a paper has a single author, the author receives one credit; with 2 authors, each receives 1/2 credits and, in general, if we Nat. Volatiles & Essent. Oils, 2023; 10(01):01-14 170 have X authors, each receives 1/X credits (this is the same as the idea of fractional productivity defined by Price and Beaver as the score of an author when he is assigned 1/n of a unit for one item for which n authors have been credited.) Hence the average credit awarded to each author of a random paper is $E[1/X]$, a value that lies between 0 and 1. Since we wish 0 to correspond to single authorship, we define the Modified Collaborative Coefficient (MCC), κ , as: $\kappa = \alpha \{1 - E[1/X]\} = \alpha \{1 - \sum_{j=1}^A (1/j) P(X = j)\} = \alpha \{1 - \sum_{j=1}^A (1/j) f_j\} / N$ Where α is a normalization constant to be determined. Setting $\alpha = 1$ yields the measure CC. The requirement that $\kappa = 0$ for single authorship does not restrict α . If all N articles involve all the A authors, then $E[1/X] = 1/A$. If we want κ to satisfy the requirement that $\kappa = 1$ for maximal collaboration, then we must set $\alpha = 1 - 1/A - 1 = A/A - 1$ We thus obtain from Eqs (4) and (5) the final expression for MCC, which is: $\kappa = (1 - 1 - 1/A - 1/A) \{1 - E[1/X]\} = A \{1 - P(1/j) P(X = j)\} / A - 1$ $\kappa = A/A - 1 \{1 - \sum_{j=1}^A (1/j) f_j / N\}$ The above equation is not defined for the trivial case when $A = 1$, which is not a problem since collaboration is meaningless unless at least two authors are available. CC approaches MCC only when $A \rightarrow \infty$, but is otherwise strictly less than MCC by the factor $A/A - 1$

Table 6: Type of document wise distribution of article

Sr. No	Document Type	Frequency	Percentage
1	Article	226	63.66
2	Book	36	10.14
3	Conference paper	69	19.44
4	Note	1	0.28
5	Review	23	6.48
	Total	355	100.00

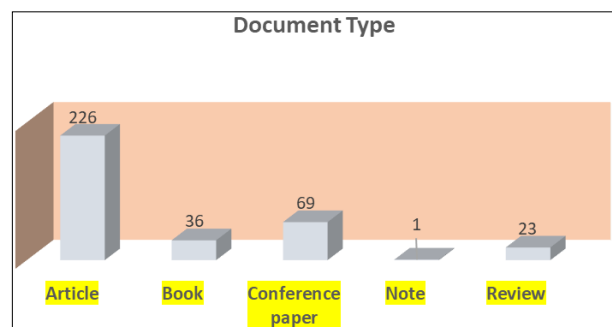


Fig 6: Type of document wise distribution of article

It can be observed from Table no.6 & fig 6 the Articles is highest 226 (63.66%) number of has review the document

type publication and 2nd rank is conference paper 69 (19.44%) 3rd is 36 Book (10.14%) Review 23 (6.48%).

Conclusion

Scientometric relatively new subject of information. It helps to evaluate information & to handle the information in libraries and information centers by the quantitative analyzed information. It deals with the mathematical and statistical analysis. This is an umbrella term used for many studies where quantitative method or techniques are used to investigate various aspect of written document. We concluded that the present study is based on library resource sharing during the period of last Five years on the “journal of library resources sharing. this study is completed with the help of SPSS. this study is helpful for research as well as library resource sharing. it is good and informative for the researcher.

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