

# Transforming Libraries in 21<sup>st</sup> Century

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## Chapter 24

# Mapping the Landscape: A Bibliometric Analysis of CALIBER 2022 Convention Publications

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### ABSTRACT

*The present study employs sophisticated bibliometric methodologies to examine the conference papers presented at CALIBER 2022. By employing an array of bibliographic analysis techniques, encompassing authorship patterns, collaboration levels, and various other parameters such as gender, author designation, institutional affiliation, and geographical distribution, this research delves into a comprehensive evaluation of CALIBER 2022. Furthermore, the study scrutinizes the contributions made by each state, shedding light on the state-wise distribution of references utilized in the articles. The analysis is based on a dataset consisting of 45 papers authored by 100 individuals, which were published within a one-year span. These contributors drew upon a vast array of sources, incorporating 763 references from journals, books, and websites in their research endeavors. Notably, authors hailing from Uttar Pradesh emerged as the foremost contributors, with 17 articles accounting for 17.00 per cent of the total, closely followed by Maharashtra with 14 articles, constituting 14.00 per cent of the overall publication count. Furthermore, this research study includes an examination of authorship measures, particularly focusing on the degree of collaboration, which was calculated to be 1.15. Within the scope of this investigation, a total of 100 scholars made valuable contributions, with males comprising 75*

per cent of the total author count. Additionally, it is noteworthy that universities emerged as the most prolific contributors, responsible for the publication of 71.00 per cent of the articles within the designated time frame.

**Keywords:** *Bibliometric, Bibliometric study, CALIBER, Degree of collaboration, Authorship pattern.*

## Introduction

The CALIBER 2022 conference presents a unique and invaluable opportunity for information professionals and knowledge managers to broaden their horizons and enhance their professional expertise. This focused event revolves around the exploration of the latest trends within an important theme and its sub-themes. CALIBER serves as a global platform, bringing together practitioners and academicians in the fields of library and information science, as well as computer science. Esteemed experts, IT gurus, and vendors from around the world actively participate in this event. Notably, CALIBER has established itself as a forum where distinguished speakers, renowned for their ground-breaking insights, stimulate strategic discussions among librarians, information specialists, and publishers from across the country and beyond. CALIBER is an international convention that invites high-quality papers encompassing research, technical works, case studies, and technology updates related to the convention's themes and sub-themes. This convention provides a unique platform for library and information professionals, teachers, IT professionals, consultants, and users involved in library automation, networking, and information provision to gather and interact on subjects of mutual interest. The 13th International CALIBER convention is centered around the theme of "Envisioning Digital Transformation in Libraries for NextGen Academic Landscape." In the year 2022 the CALIBER is organized in collaboration with INFLIBNET and Banaras Hindu University, Varanashi, Uttar Pradesh. Bibliometrics and visualization have been recognized as indispensable tools for detecting emerging infectious disease outbreaks and evaluating scientific research. This observation holds particular relevance in the current era, where massive volumes of data are being generated and exchanged. The application of bibliometrics extends across various disciplines, facilitating the quantitative and qualitative assessment of scientific research. The primary aim of this paper is to analyze the data collected from the online conference proceedings of CALIBER Convention 2022. This study focuses on 45 articles included in the conference proceedings. The data has been meticulously analyzed using various parameters, and the findings are presented in tabular and graphical formats, aligned with the objectives of this study.

## Review of Literature

The relevant literature in the field of bibliometric studies encompasses the following works:

Mahapatra (1980) conducted a study wherein they examined the relationship between the doubling of articles in a specific subject over a given period and the logarithmic difference between the initial and final numbers. They established that this difference should correspond to the logarithm of the number 2.

In a subsequent study, Mahapatra (1985) focused on assessing the Relative Growth Rates (RGR) as a metric to analyze the increase in the number of articles or pages per

unit of time. This measure provides valuable insights into the growth patterns within the field.

Suradkar P.A. and Dr. Dalve Daya (2016) explored the authorship patterns and collaborative research in the Academic Emergency Medicine Journal. Their study encompassed a sample of 3586 articles published between 2001 and 2013, allowing them to identify and analyze trends in authorship practices.

Maity, Asish, and Sahu, Dr. Nivedita Bhattacharyya (2019) conducted an investigation specifically focused on the Journal of Documentation, which has been a prominent academic journal in the library and information science field since its inception in 1945. Their study delved into research articles published between 2005 and 2014 within this journal, providing insights into theories, concepts, models, frameworks, and philosophies related to documents and recorded knowledge.

Suradkar, Priya A., Kalbande, Dattatraya T., and Hemke Digambar (2019) undertook a study based on 8871 articles from E-journals of Health Science. The data for their research was collected from ten Medicine E-Journals indexed in the Health Science consortium in Nashik, covering the period from January 2001 to December 2013. The study employed various parameters to analyze the data, presenting the findings in tabular and graphical formats aligned with the study's objectives.

In a recent study conducted by Wang, Chen, and Li Si (2023), the aim was to conduct an in-depth analysis of scientific production in the field of digital literacy studies, while also evaluating the impact of the pandemic on such research. Utilizing bibliometric methods, the researchers identified and analyzed 7523 documents published between 1990 and 2022, using the Web of Science database as their primary source of data. This comprehensive analysis provided valuable insights into the current research landscape in the field of digital literacy.

## **Scope and Limitation**

This research endeavor focuses on evaluating the scholarly contributions of professionals in the field of Library and Information Science (LIS), specifically within the context of the 13th international conference proceedings of CALIBER Convention 2022. This esteemed convention was jointly organized by the INFLIBNET Center, located in Gandhinagar, Gujarat, and Banaras Hindu University, situated in Varanasi, Uttar Pradesh. The study centers around a curated selection of 45 published papers that are part of CALIBER Convention 2022.

## **Research Methodology**

Efficiently locating and accessing relevant publications is crucial for researchers. In this study, bibliometric analysis is employed as a robust and quantitative research methodology, relying on mathematical and statistical methods. This analytical approach enables the representation of historical achievements, exploration of development trends, and even prediction of future directions within a specific research domain.

The research design focuses on a specific conference proceeding, which serves as the primary source for quantitative investigation. The data is collected from the conference proceeding of CALIBER Convention 2022, providing a comprehensive dataset for analysis. To ensure accessibility, 45 full-text articles are retrieved from the INFLIBNET Center's website. Additionally, these same published articles are available

for download from the Institutional Repository of INFLIBNET Center and can be obtained in printed form.

Upon gathering the necessary data, a meticulous process of tabulation, organization, and analysis is carried out. MS-Excel is utilized as the statistical tool and technique for these purposes, enabling efficient data management and analysis.

## **Objective of the Study**

The study has set forth several objectives to guide its research process, including:

1. Identify the themes and sub-themes that have garnered significant attention among the contributions in CALIBER 2022.
2. Analyze the authorship pattern of the contributions to gain insights into the collaborative dynamics within the field.
3. Evaluate the degree of contribution among authors, shedding light on their individual research outputs and involvement.
4. Conduct a bibliographic analysis of CALIBER 2022, utilizing various parameters such as gender, author designation, institutional affiliation, and more, to delve deeper into the characteristics of the contributions.
5. Investigate the geographical distribution of the authors, examining the regional representation within the conference proceedings.
6. Quantify the number of references cited in the articles and calculate the average number of references per article, providing an understanding of the scholarly influences and information sources utilized in the research contributions.

## **Analysis and Interpretation of the Result**

To collect the necessary data, the conference proceeding of CALIBER Convention 2022 hosted on the INFLIBNET Centre website was utilized. Within the defined scope period, a total of 45 articles were downloaded from the conference proceeding, and relevant details were meticulously recorded in an MS-Excel sheet. These details encompassed various aspects such as the sub-themes of the contributions, the number of authors involved, the gender distribution, institutional affiliations, author designations, and other pertinent information. Following the data collection phase, a comprehensive analysis and interpretation were conducted in alignment with the research objectives, yielding insightful findings as presented below.

### **Distribution of Articles among the Sub Themes of CALIBER 2022**

CALIBER 2022 had the main theme of convention on “Envisioning Digital Transformation in Libraries for NextGen Academic Landscape” and three sub-themes for authors. The Table 1 displays the sub-themes of CALIBER 2022 and a total number of published contributions towards them.

Table 1 provides an overview of the distribution of papers across the various sub-themes within CALIBER 2022. Among the three sub-themes considered, Open Science and Open Library emerged as the most prominent, accounting for 22 papers (48.89 per cent) of the total. This was followed by the sub-theme of Emerging Technologies and Trends in Libraries, which constituted 22.89 per cent of the papers. Lastly, the Inceptive Approach of Libraries for National Education Policy (NEP 2020) garnered 10 papers, representing 22.22 per cent of the total.

**Table 1: Distribution of Articles among the Sub Themes of CALIBER 2022**

Sl.No.	Title of the Sub Themes	No of Paper	Percentage per cent
1	Inceptive Approach of Libraries for National Education Policy (NEP 2020)	10	22.22
2	Emerging Technologies and Trends in Libraries	13	28.89
3	Open Science and Open Library	22	48.89
	<b>Total</b>	<b>45</b>	<b>100</b>

**Authorship Pattern in CALIBER 2022**

Table 2 presents the authorship pattern observed in the articles that were accepted for full-text publication in CALIBER 2022. The analysis reveals that the most prevalent authorship pattern in this conference was double authorship, accounting for 28 (62.22 per cent) articles of the total. It is followed by the three-authorship pattern, which constituted 7 (15.56 per cent) articles. The one authorship pattern accounted for 6 (13.33 per cent) articles and so forth.

**Table 2: Authorship Pattern in CALIBER 2022.**

Sl.No.	No. of Authors	No. of Paper	Per cent NOP	Total. of Authors	Per cent TOA
1	One Author	06	13.33	06	6.00
2	Two Author	28	62.22	56	56.00
3	Three Author	07	15.56	21	21.00
4	Four Author	03	6.67	12	12.00
5	Five authors	01	2.22	05	5.00
	<b>Total</b>	<b>45</b>	<b>100</b>	<b>100</b>	<b>100</b>

NOP: Number of Paper TOA: Total of Author

**Degree of Collaboration CALIBER Convention 2022**

Various methods have been proposed to calculate the degree of research collaboration. Here, in this study the formula proposed by Subramanyam (1983) has been used.

$$\text{The degree of collaboration: } C = \frac{Nm}{Nm + Ns}$$

where,

C = Degree of collaboration in a discipline.

Nm = Number of multi-authored papers in the discipline.

Ns = Number of single-authored papers in the discipline.



So, as per our Formula

$$N_s = 06$$

$$N_m = 39$$

$$C = \frac{39}{39 + 6} = 1.15$$

Table 3 displays the Degree of Collaboration among the authors who collaborated for CALIBER 2022, which is calculated to be 1.15. The Degree of Collaboration serves as an indicator of the level of collaboration within the research works. A higher degree of collaboration signifies a greater extent of collaborative efforts, while a lower degree indicates relatively less collaboration.

**Table 3: Degree of Collaboration CALIBER Convention 2022**

<i>Authorship Pattern</i>	<i>Articles</i>
Single Author Paper (Ns)	06
Multi Authors Paper (Nm)	28
Total (Nm +Ns)	45
<b>Degree of Collaboration</b>	<b>1.15</b>

### Gender-wise Productivity

Table 4 reveals that a total of 100 scholars contributed within the defined scope period. Among them, 75 contributors were identified as males, while the remaining 25 contributors were females.

**Table 4: Gender-wise Productivity**

<i>Sl.No.</i>	<i>Gender</i>	<i>No of Authors</i>	<i>Percentage per cent</i>
1	Male	75	75.00
2	Female	25	25.00
	<b>Total</b>	<b>100</b>	<b>100</b>

### Authors Designations

**Table 5: Authors Designations**

<i>Sl.No.</i>	<i>Designations</i>	<i>No. of Authors</i>	<i>Percentage per cent</i>
1	Research Scholar	25	25.00
2	Assistant Professor	14	14.00
3	Assistant Librarian	13	13.00
4	Professor and Head	9	09.00
5	Deputy Librarian	8	08.00
6	Librarian	7	07.00

<i>Sl.No.</i>	<i>Designations</i>	<i>No. of Authors</i>	<i>Percentage per cent</i>
7	Scientist	4	04.00
8	Library Assistant	3	03.00
9	Associate Professor	3	03.00
10	Director	2	02.00
11	Senior Research Fellow	1	01.00
12	Head and Chief Librarian	1	01.00
13	Technical Off.	1	01.00
14	STO	1	01.00
15	Sr. Associate Professor	1	01.00
16	Library In charge	1	01.00
17	Library and Head	1	01.00
18	Taxonomist	1	01.00
19	Semi. Prof. Assistant	1	01.00
20	Trainee Library Professor Assistant	1	01.00
21	Scientific Officer	1	01.00
22	NM	1	01.00
	<b>Total</b>	100	100

### Contributors (Institutional-wise)

Table 6 presents the distribution of different designations found within the study, with the top five ranked designations and their corresponding number of published articles displayed in the table above. The highest rank is obtained by research scholars, with a total of 25 articles attributed to this designation. Following closely is the designation of assistant professor, with 14 articles. The designation of assistant librarian accounts for a total of 13 articles, while professor and Head contribute 9 articles. Deputy librarians have a total of 8 articles, and librarians have 7 articles. Additionally, other designations collectively contribute 24 articles.

**Table 6: Contributors (Institutional-wise)**

<i>Sl.No.</i>	<i>Institutions</i>	<i>No. of Authors</i>	<i>Percentage per cent</i>
1	University	71	71.00
2	Institute	18	18.00
3	College	08	08.00
4	Cancer Centre	01	01.00
5	Library association	01	01.00
6	School	01	01.00
	<b>Total</b>	100	100

### Geographical-wise Retracted Documents

This study presents the names of authors along with their affiliations to various types of institutions. The institutions associated with the first authors of the publications were classified into categories such as universities, institutes, colleges, cancer centers, schools, and private institutions. These affiliations were tabulated to analyze the research output from different institutions. The findings clearly indicate that authors from universities made the highest contribution, accounting for 71.00 per cent of the articles. This can be attributed to the fact that research is a fundamental component of university institutions, where extensive research work is conducted at various levels such as Ph.D. and M.Phil. Following universities, institutes contributed 18.00 per cent of the articles, colleges contributed 8.00 per cent, and other institutions contributed 11.00 per cent of the articles.

**Table 7: Geographical-wise Retracted Documents**

Sl.No.	Name of State	No of Authors	Per cent Percentage
1	Uttar Pradesh	17	17.00
2	Maharashtra	14	14.00
3	West Bengal	13	13.00
4	Gujrat	7	07.00
5	Jammu and Kashmir	7	07.00
6	Mizoram	6	06.00
7	Panjab	4	04.00
8	Odisha	4	04.00
9	Tamil Nadu	4	04.00
10	Assam	3	03.00
11	Delhi	3	03.00
12	Bihar	2	02.00
13	Haryana	2	02.00
14	Manipur	2	02.00
15	Rajasthan	2	02.00
16	Sikkim	2	02.00
17	Tripura	2	02.00
18	Arunachal Pradesh	1	01.00
19	Bhopal	1	01.00
20	Indore	1	01.00
21	Jharkhand	1	01.00
22	Kerla	1	01.00
23	Karnataka	1	01.00
		<b>100</b>	<b>100</b>

Table 7 provides an overview of the distribution of authors in CALIBER 2022 based on their respective states. The analysis reveals that Uttar Pradesh has the highest number of contributors, accounting for 17 per cent of the total. Following closely is Maharashtra

with 14 per cent contribution, while West Bengal accounts for 13 per cent of the authors. Additionally, Gujarat and Jammu and Kashmir both contribute 7 per cent each. These are just a few examples, as authors from 23 different states across India participated in CALIBER 2022 and contributed research articles.

### Reference Study of CALIBER 2022

Table 8 presents the data on the number of references per article in CALIBER 2022. Out of the 45 published papers, a total of 763 references were identified. Upon examining Table 8, it is evident that CALIBER 2022 has an average of 16.96 per cent references per article.

**Table 8: Reference Study of CALIBER 2022**

Sl.No.	No. of Papers	No. of Citations	Percentage Per cent
1	45	763	16.96

### Finding and Conclusions

Upon comprehensive analysis of the data, the following key findings and conclusions emerge from this study based on the 13th international conference proceeding of CALIBER Convention 2022:

- ☆ The sub-theme of Open Science and Open Library received the highest number of papers, accounting for 22 publications or 48.89 per cent of the total.
- ☆ The authorship pattern of Indian research productivity in CALIBER Convention 2022 indicates a predominance of multi-authored papers.
- ☆ A total of 100 scholars contributed to the scope period, with 75 per cent being male and 25 per cent being female contributors.
- ☆ The majority of the articles (28) were written collaboratively by two authors. The degree of collaboration, as measured by the study, was found to be 1.15.
- ☆ Among different designations, research scholars attained the highest rank in the analysis.
- ☆ Authors affiliated with universities made the highest contribution, accounting for 71.00 per cent of the published articles.
- ☆ Uttar Pradesh emerged as the state with the highest number of contributors, representing 17 per cent of the total.
- ☆ The average number of references per article in CALIBER 2022 was found to be 16.96.

These findings provide valuable insights into the research landscape of CALIBER Convention 2022 and contribute to a deeper understanding of the conference's outcomes.

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