

ORIGINAL ARTICLE

Scientometric Portrait of Dr. Anil Kumar Dhiman, an Information Scientist-Part II

Surendra Singh

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ABSTRACT

Scientometric portraits have been extensively used to analyze the scholarly contributions of researchers across various scientific disciplines; there remains a noticeable gap in literature regarding similar bibliometric assessments for library and information science professionals. A review of the literature indicates that a scientometric study of Dr. Anil Kumar Dhiman's scholarly contributions was previously conducted by Sharma & Singh.¹ Building upon that work, the present study examines Dr. Dhiman's subsequent research output, providing the second phase of his scientometric portrait in the field of Library and Information Science.

Dr. Anil Kumar Dhiman, a renowned library & information science professional in the field of library & information science has contributed 37 books and more than 300 papers/articles in library field. Besides, he has 10 books and 43 articles/papers to his credit in the field of Botany. However, only his library and information science related contribution's considered in the present study.

KEYWORDS

• Bio-bibliometrics • Information Profile • Informetric Portrait • Scientometric Portrait

AUTHOR'S AFFILIATION:

Assistant Professor, Department of Library and Information Science, Centre for Distance and Online Learning, Swami Vivekanand Subharti University, Meerut, Uttar Pradesh, India.

CORRESPONDING AUTHOR:

Surendra Singh, Assistant Professor, Department of Library and Information Science, Centre for Distance and Online Learning, Swami Vivekanand Subharti University, Meerut, Uttar Pradesh, India.

E-mail: surendrasingh2015@rediffmail.com

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INTRODUCTION

The concept of a “scientometric portrait” is a subset of bibliometrics—a term popularized by Pritchard² to analyze and quantify written communication in order to understand its underlying processes and trace the development of an academic discipline.

The specific phrase “Scientometric Portrait” was pioneered by Kalyane & Kalyane³ to conduct bio-bibliometric evaluations of individual scientists’ research outputs. Around the same time, Sen & Gan⁴ introduced the overarching term “Bio-bibliometrics” to describe the study of an individual researcher’s legacy. Interestingly, despite a surge in such biographical studies, early investigators rarely featured the word “bio-bibliometrics” in their article titles; prominent works by Sinha & Bhatnagar⁵, Sinha & Ullah⁶, Munnolli and Kalyane⁷, and Sinha & Dhiman⁸ omitted it, with Tiew⁹ and Manjunath and Ramesha¹⁰ being the rare exceptions. Terminological variations were common during this period; for instance, Kalyane & Devarai¹¹ & Kalyane & Samanta¹² preferred “Informetrics” for their respective studies on C. S. Venkata Ram and K. Ramiah, while Sinha and Bhatnagar⁵ & Sinha and Ullah⁶ adopted “Information Profile.”

However, to establish conceptual clarity, Koganurmath et al.¹³ proposed reserving “Scientometric Portrait” strictly for individuals in the natural sciences and using “Informetric Portrait” for scholars in the arts, humanities, and social sciences. Nevertheless, “Scientometric Portrait” has remained the predominantly favored nomenclature across the discipline.

BIOGRAPHICAL SKETCH OF DR. DHIMAN

Dr. Anil Kumar Dhiman (b. 1965) is serving as Information Scientist at Gurukul Kangri (Deemed to be University), Haridwar, since 2003. A highly credentialed academic, he holds a unique double doctorate in both Botany and Library & Information Science. His extensive multidisciplinary qualifications include Master’s degrees in Botany, Political Science, Library & Information Science, and Computer Applications, alongside two specialized MBAs in Information Technology and Human Resource Management, and a B.Ed. Throughout his distinguished career, Dr. Dhiman has been honored with several prestigious accolades,

including the APSI Young Scientist Award (1999), the USSHLE-IJILIS-PBDBBS Award (2003), the Glory of India International Award (2006), and the LPA Best Librarian Award (2016), “Outstanding Scientist Award 2020” by VGood Technology Factory, Chennai; “Prof. K.N. Mathur ‘Shyamendra’ Lifetime Achievement Award-2021” by Global Agrobiotech and Pharma Research Foundation, Ahmedabad; “Indian Librarian Pride Award (IPA) 2022” by Anecdote Publishing House, Delhi; “Lifetime Achievement Award 2023” by Madhya Pradesh Library Association at Rani Durgawati University, Jabalpur on 13 August 2023 on the occasion of National Library Day; and “Outstanding Academic Achievement Award-2025” by Social Development Federation, Agra on the occasion of National Teachers Day at Swami Vivekanand Subharti University, Meerut on 06.9.2025.

Dr. Dhiman has published nearly 350 research papers and 47 books in the fields of Library and Information Science and Botany. He has delivered over 100 invited lectures and research presentations at national and international conferences and seminars, including presentations in Nepal (2011) and Pakistan (2015) during the centenary celebrations of Library Science education in Asia at Punjab University, Lahore. Several of his books have been prescribed as textbooks by universities. He has also served as a Library and Information Science Expert with the Commission for Scientific and Technical Terminology, New Delhi, and has successfully supervised 18 Ph.D. scholars.

Bibliometric evaluations consistently highlight Dr. Dhiman’s significant contributions to the field. In a study analyzing PEARL: A Journal of Library and Information Science, Thavamani¹⁴ ranked him as the leading contributor of research articles. This top ranking was further corroborated by Singh¹⁵ in a separate bibliometric assessment of the same journal covering the period from 2011 to 2016. Beyond journal publications, his extensive work in academic publishing was evaluated by Dadhe & Kesarwani¹⁶; Their study on the contributions of Indian publishers to library and information science (LIS) literature identified him as the third most prolific author of LIS books in the country. Reflecting the widespread impact and citation of his

research, Dr. Dhiman maintains an h-index of 16 and an i10-index of 31.

EARLIER STUDIES

Several scientometric studies have been conducted to evaluate the research productivity and scholarly impact of eminent scientists and academicians across different disciplines. One of the earliest scientometric portrait studies was carried out by Kalyane & Kalyane³, who analysed the scholarly contributions of Vinodini Reddy, Director of the National Institute of Nutrition (NIN), Hyderabad. Their investigation covered 141 research publications produced between 1960 and 1993. The analysis revealed that 41 papers were authored independently, while 100 publications were collaborative. Furthermore, Vinodini Reddy served as the principal author in 74 publications and contributed as a co-author in the remaining 67 papers.

Subsequently *et al.*¹⁷ presented a scientometric assessment of the Nobel Laureate physicist Pierre-Gilles de Gennes. Their study examined 422 research papers published during the period 1956–1995, covering diverse scientific domains including magnetism, superconductivity, hydrodynamics, polymers, liquid crystals, gels, and glues. The findings indicated that his research productivity reached its maximum during his forties. Although his publication pattern reflected a strong preference for national journals, the distribution of articles across 146 journals did not conform to Bradford's Law of Scattering.

Kademani, *et al.*¹⁸ conducted a scientometric analysis of the renowned Indian physicist Dr. K. S. Krishnan. Their study examined his 135 scholarly publications and reported the highest collaboration coefficient during the periods 1937–1938, 1944–1945, 1951–1953, 1955, and 1961. The authors further observed a productivity coefficient of 0.32, publication density of 6.43, and publication concentration of 7.69. Based on these indicators, they concluded that Dr. Krishnan's sustained scientific productivity and collaborative research practices make him an exemplary role model for emerging researchers.

Keshava *et al.*¹⁹ analysed the scientometric profile of physicist Prof. S. S. Kubakaddi using publications produced between 1974 and 2008. The study reported that he authored

a total of 85 research papers, including four single-authored and 81 collaborative publications. Among the collaborative works, 22 involved two authors, 48 involved three authors, and 11 involved four authors. His research productivity peaked in 1987 with nine publications at the age of 36 years. The highest collaboration coefficient (0.71) was recorded during the age group of 44–48 years (1995–1999), indicating increased collaborative engagement in the later phase of his career.

Munnolli *et al.*²⁰ investigated the scientometric profile of Harald zur Hausen, Nobel Laureate in Physiology or Medicine, by analysing his 285 publications produced between 1964 and 2009. The publications were classified into four major research domains: Adenoviruses (14 papers), Epstein-Barr and Herpesviruses (72), Papillomaviruses (122), and other related subjects (77). The authors reported an average annual productivity of approximately 6.19 publications. Harald zur Hausen achieved the maximum collaboration rate on thirteen occasions during his 46-year research career. His research output appeared in 74 different publication outlets, comprising 61 journals, 12 book chapters, and one research report. The most preferred journals included International Journal of Cancer, Virology, Journal of Virology, Cancer Research, and Medical Microbiology and Immunology. Additionally, the high Co-authorship Index observed in the Papillomavirus research domain indicated a greater dependence on collaborative research.

Saravanan & Prasad²¹ examined the scientometric profile of the distinguished Indian palynologist G. Thanikaimoni by analysing his publications from 1965 to 1991. Their findings showed that he produced 56 research papers, including 35 single-authored and 21 collaborative publications. Nearly one-third of his research output involved collaboration. Since he entered the field during its formative stage in India, a significant portion of his early research was conducted independently and focused on establishing the scientific foundations of tropical palynology. The authors acknowledged his substantial contribution to the development of this discipline in India.

Manjunath & Ramesha¹⁰ prepared a bibliometric profile of Sir C. V. Raman based on publications indexed in Google Scholar. Their analysis included 480 research articles

spanning a publication career of approximately 65 years. On average, Sir C. V. Raman published seven to eight papers annually, although no publication was recorded for the year 1933. His highest annual productivity was achieved in 1962 with 34 publications, followed by 22 papers in 1965 and 21 papers in 1963, reflecting remarkable research activity during the later phase of his scientific career.

Gadad & Ravi²² analysed the scientometric characteristics of Nobel Laureate Prof. Paul Greengard using records indexed in the PubMed database. Their study identified 214 research papers, of which only two were single-authored, while the remaining 212 were collaborative. The publications appeared across 66 reputed scientific journals, with the highest number (25 papers) published in the *Proceedings of the National Academy of Sciences, USA*, indicating his preference for high-impact scholarly outlets.

Dixit & Jange²³ conducted a scientometric investigation of Prof. S. Sreenivasa Murthy, Fellow of the Indian National Academy of Engineering (INAE). Their analysis covered 105 journal articles and 182 conference papers. The authors observed considerable variation in authorship patterns across both publication types. In journal publications, three-authored papers formed the largest category, whereas conference papers also demonstrated a strong collaborative trend. Overall, publications involving two and three authors accounted for nearly half of the total research output, while single-authored papers constituted approximately 17 percent. The study further reported an h-index of 15 and a total of 739 citations, identifying Bhim Singh, B.P. Singh, C.S. Jha, G.J. Berg, G. Bhuvaneswari, and A.K. Tondon as his most frequent research collaborators.

In another scientometric study, Dixit & Jange²⁴ evaluated the scholarly contributions of Prof. S. R. Niranjana, an eminent Indian biotechnologist. The analysis covered 168 research publications indexed in Scopus and Google Scholar. Citation indicators varied across databases, with Scopus reporting an h-index of 15 and 691 citations, whereas Google Scholar recorded an h-index of 23 with 1,935 citations. The study also identified H. S. Prakash, S. Chandra Nayak, H. S. Shetty, P. Hariprasad, and A. C. Udayashankar as the most active collaborators in his research network.

Panda & Sa²⁵ presented a scientometric assessment of Nobel Laureate Venkatraman Ramakrishnan by examining his publications produced between 1977 and 2019. The research output covered multidisciplinary subjects including biochemistry, genetics, molecular biology, medicine, chemistry, neuroscience, microbiology, physics, engineering, and materials science. The authors found that the second and fourth decades of his research career were equally productive, each contributing 49 publications. Kelley A. C. emerged as his most frequent collaborator. European countries constituted the largest collaborative region, while the United States was the leading collaborating nation. Triple-authored publications represented the most common authorship pattern, and the journal *Science* emerged as his preferred publication outlet. However, most of his research contributions belonged to the field of biochemistry, genetics, and molecular biology.

Kavitha & Chandrashekara²⁶ analysed the scientometric profile of Professor K. Byrappa using 378 publications indexed in Google Scholar. Their study reported that his scholarly works received 7,774 citations and achieved an h-index of 31. The authors concluded that Professor Byrappa's sustained research productivity, citation impact, and academic contributions established him as an outstanding role model for future scientists and researchers.

Garg *et al.*²⁷ studied the scientometric portrait of Prof. H. Kretschmer by taking her 68 papers of the year 1979-2021 into consideration. In the study, the year 2008 was found her most productive year and the journal "Scientometrics" as the most preferred journal for her publications. The results of the study highlight her pioneering role in shaping the field of scientometrics and collaboration.

However, the available literature also reveals a noticeable research gap. Most existing scientometric portrait studies have concentrated on scientists from the fields of physics, medicine, biotechnology, engineering, and life sciences, whereas comparatively a little attention has been devoted to distinguished scholars in Library and Information Science. Further, comprehensive scientometric portraits integrating productivity analysis, collaboration patterns, citation impact, thematic research trends, and academic contributions of senior LIS professionals remain limited. This gap

provides a strong rationale for undertaking the present investigation, which aims to develop a comprehensive scientometric portrait of Dr. Anil Kumar Dhiman, thereby contributing to the growing body of scientometric research in Library and Information Science.

OBJECTIVES OF THE STUDY

The main objective of the study is to analyze the quantitative and qualitative aspects of Dr. Dhiman's publications using scientometric tools and methods. However the present study aims to identify:

- Year wise productivity of his publications.
- Distribution of his publications by media.
- Authorship pattern of his publications.
- Authorship pattern of his journal publications.
- Authorship pattern of his chapter in books/proceedings publications.
- Quinquennium-wise productivity of publications.
- Quinquennium-wise collaboration among his journal publications.
- Quinquennium-wise collaboration among his chapters in book and proceedings publications.
- Quinquennium-wise total publications collaboration.
- Collaboration with other authors in his publications.
- List of Most preferred journals where articles/research papers are published.

METHODOLOGY

Dr. Anil Kumar Dhiman was requested to provide his detailed curriculum vitae (biodata), which served as the primary source for collecting information relating to his academic qualifications, professional career, research contributions, publications, awards, memberships, research supervision, and other scholarly achievements in accordance with the objectives of the study. To supplement and verify the information obtained from the biodata, various online sources, including bibliographic databases, institutional websites, publisher platforms, Google Scholar, and other relevant Internet resources, were consulted to obtain citation data and other bibliometric

indicators relating to his scholarly output.

Although Dr. Dhiman has made substantial scholarly contributions in two distinct disciplines—Library and Information Science and Botany—the present investigation is confined exclusively to his research contributions in the field of Library and Information Science. Accordingly, publications related to Botany have been excluded from the scope of the study. Only research papers published in scholarly journals, conference and seminar proceedings, and chapters contributed to edited books in the discipline of Library and Information Science have been considered for analysis.

The study is therefore based on a total of 130 scholarly publications produced by Dr. Dhiman in the field of Library and Information Science during the ten-year period 2017–2026. These publications comprise articles published in peer-reviewed journals, papers included in conference and seminar proceedings, and chapters contributed to edited books. The collected data constitute the basis for analysing various scientometric indicators, including publication productivity, authorship pattern, collaborative research, citation impact, publication channels, and other bibliometric characteristics relevant to the objectives of the study.

DATA ANALYSIS

The information gathered on different points from biodata of Dr. Dhiman were tabulated, presented and analyzed to ascertain the objectives of the study. The results are shown in various tables below as:

1. Year Wise Distribution of Publications

The year-wise distribution of Dr. Dhiman publications is presented in table 1 which reveals that a total of 130 publications were produced during the period 2017–2026. The publication output shows a fluctuating trend over the years. The lowest number of publications was recorded in 2017 with only 5 publications (3.85%), while the highest productivity was achieved in 2019 with 24 publications (18.46%), accounting for nearly one-fifth of the total output. Following this peak, the number of publications declined to 16 (12.31%) in 2020 and remained relatively stable in 2021 (17; 13.08%), 2024 (16; 12.31%), and 2025 (16; 12.31%).

Table 1: Year Wise Distribution of Publications

Year	Number of Publications	Cumulative Publications	Percentage (%)
2017	5	5	3.85
2018	13	18	10.00
2019	24	42	18.46
2020	16	58	12.31
2021	17	75	13.08
2022	9	84	6.92
2023	11	95	8.46
2024	16	111	12.31
2025	16	127	12.31
2026	3	130	2.31
Total	130	130	100.00

However, a noticeable decrease was observed in 2022 with 9 publications (6.92%), followed by a moderate increase to 11 publications (8.46%) in 2023. The cumulative publication count increased steadily from 5 in 2017 to 130 in 2026, indicating continuous scholarly productivity throughout the study period. By the end of 2021, the cumulative output had reached 75 publications, representing more than half of the total publications. Although only 3 publications (2.31%) were recorded in 2026, this figure may represent a partial year and should be interpreted cautiously. Overall, the data demonstrate sustained research productivity with a significant publication peak in 2019 and consistent contributions in the subsequent years.

2. Distribution of Publications by Media

The analysis of publication media in table 2 reveals that Dr. Dhiman has produced a total of 130 scholarly contributions, comprising 85 journal articles and 45 book chapters/conference proceedings papers. Journal publications constitute the largest share of the total output, accounting for 65.38% of all publications, whereas contributions in books and conference proceedings account for 34.62%.

Table 3: Types of Authorship

Types of Authors	Publications	Percentage (%)	Cumulative Percentage (%)
Single Author	37	28.46	28.46
Double Author	92 (68 as first author and 24 as second author)	70.77	99.23
More than Two Authors	01 (as second author)	0.77	100.00
Total	130	100.00	100.00

Single-authored publications account for 37 papers (28.46%), demonstrating that Dr.

Table 2: Distribution of Publications by Media

Publication Media	Publications	Percentage (%)	Cumulative Percentage (%)
Journals	85	65.38	65.38
Book /Proceedings	45	34.62	100.00
Total	130	100.00	100.00

Thus, a predominance of journal articles indicates a strong preference for publishing in peer-reviewed scholarly journals, which are generally regarded as the primary channel for disseminating research findings and achieving academic visibility. However, the substantial proportion of publications in edited books and conference proceedings further demonstrates active participation in academic conferences, professional forums, and collaborative scholarly volumes.

The cumulative percentage shows that nearly two-thirds of the author's research output is concentrated in journals, while the remaining one-third is distributed through books and proceedings. This pattern reflects a balanced publication strategy, combining the wider scholarly reach of journal articles with the thematic depth and professional networking opportunities offered by edited books and conference publications.

Overall, the analysis of the data suggest that Dr. Dhiman has maintained a diversified publication profile, although journal literature remains the dominant medium for communicating research contributions.

3. Types of Authorship Pattern

The authorship analysis of Dr. Dhiman is shown in table 3. A total of 130 publications reveals a strong inclination toward collaborative research. Among the total publications, 92 papers (70.77%) were produced under double authorship, making it the most dominant pattern. This indicates that collaborative partnerships have played a significant role in the author's scholarly productivity and research dissemination.

Dhiman has also made substantial independent contributions to the field of Library and

Information Science. These publications reflect the author's capability to undertake and publish research individually while maintaining a strong collaborative network.

Only one publication (0.77%) involved more than two authors, suggesting that large-team collaborations are relatively uncommon in the author's publication profile. The cumulative percentage further shows that nearly all publications (99.23%) fall within either single-author or double-author categories.

Overall, the data indicate that double authorship is the preferred mode of scholarly communication, highlighting the importance of academic partnerships in Dhiman's research career. The predominance of two-author publications reflects a balanced collaborative approach that enables knowledge sharing, specialization, and increased research output while still preserving a notable level of independent scholarship. However, in double authorship, his contribution is major as 68 articles/research papers are written as first author and rest 24 as second author.

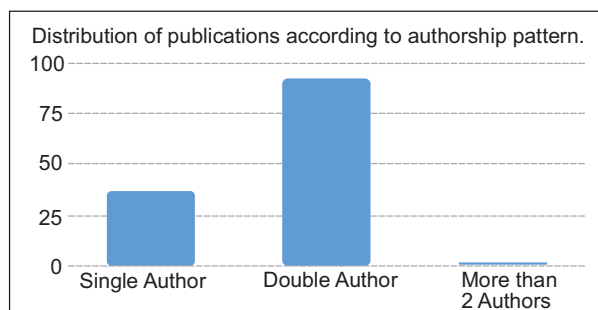


Figure 1: Types of Authorship

However, there is only article written in more than double authorship and his authorship is at the second number in that article. Figure 1 also clearly shows the analysis of authorship pattern.

4. Authorship Pattern in Journals

The table 4 reveals Dr. Dhiman has written a total of 85 articles in journals. Where the share as double authorship is dominated. His double-authored publications constitute the largest share of the author's research output, accounting for 66 publications (77.65%). This indicates a strong inclination toward collaborative research, with most scholarly works being produced jointly with another researcher. Such collaboration often facilitates the exchange of ideas, expertise, and research

skills, thereby enhancing the quality and impact of scholarly contributions.

Table 4: Distribution of Publications by Types of Authors (N = 85)

Types of Authors	No. of Publications	Percentage (%)
Single Author	18	21.18
Double Author	66	77.65
More than 2 Authors	1	1.18
Total	85	100.00

While single-authored publications represent 18 publications that is 21.18% of the contribution in journals. It demonstrates that the author has also made a significant number of independent contributions to the field. These publications reflect the author's ability to undertake and complete research projects autonomously.

However, only one publication (1.18%) falls under the category of more than two authors where he is in second place, indicating that large-group collaborations were relatively uncommon. Overall, the authorship pattern suggests that the author's research productivity is predominantly characterized by two-author collaborations, highlighting the importance of scholarly partnerships in his academic career.

5. Authorship Pattern in Book Chapters / Proceedings

Table 5 shows a total number 45 of publication in books/proceedings of the seminar and conferences. Here, authorship pattern shows that double-authored publications constitute the majority of contributions in books and conference proceedings, accounting for 27 publications (60.00%). This demonstrates a strong tendency toward collaborative writing, where the author frequently partnered with another researcher to produce scholarly works.

Table 5: Distribution of Book Chapters/Proceedings (N = 45)

Types of Authors	No. of Publications	Percentage (%)
Single Author	18	40.00
Double Author	27 (01 at second position)	60.00
More than 2 Authors	00	00.00
Total	45	100.00

Single-authored publications account for 18 publications (40.00%), reflecting a substantial level of independent scholarly contribution. The relatively high proportion of single-authored works suggests that the author has maintained a balance between individual research efforts and collaborative endeavours.

No publication falls under the category of more than two authors, indicating that multi-author collaborations were absent in the books and proceedings literature. Overall, the findings reveal that while collaboration is the dominant mode of authorship in books and proceedings, individual scholarly contributions also constitute a significant component of the author's academic output.

6. Quinquennium-wise Collaboration in Journal Articles (2017–2026)

Table 6 A presents Dr. Dhiman's quinquennium-wise collaboration in journal articles. A total of 85 articles are published during 2017–2026.

Quinquennium-wise Degree of Collaboration is calculated on the basis of (Subramanyam²⁸):

For collaboration analysis:

$$DC = \frac{N_m}{N_m + N_s}$$

Where:

N_m = Multi-authored articles

N_s = Single-authored articles

The quinquennium-wise authorship analysis of Dr. Dhiman's journal publications during the period 2017–2026 reveals a strong inclination toward collaborative research. A total of 85 journal articles were published, of which 66 (77.65%) were double-authored, 01 (1.18%) was triple-authored, and 18 (21.18%) were single-authored. The findings indicate that collaborative authorship has been the dominant mode of scholarly communication throughout the study period.

Table 6A: Quinquennium-wise Authorship Pattern of Journal Articles (2017–2026)

Quinquennium	Single Author	Double Authors	Three Authors	Total Articles
2017–2021	07	50	01	58
2022–2026	11	16	00	27
Total	18	66	01	85

During the first quinquennium (2017–2021), Dr. Dhiman produced 58 journal articles, comprising of 50 double-authored articles, 01 triple-authored article, and 07 single-authored articles. The Degree of Collaboration (DC) was 0.88, demonstrating an exceptionally high level of collaboration. This period was characterized

by active research partnerships with scholars such as S.K. Kaushik, S. Singh, B.B. Shukla, Punita Sharma, Yashoda Rani, Kuldeep Kumar, Sanjiv Kumar, and others. Most studies focused on library services, information literacy, public libraries, bibliometrics, digital resources, and higher education.

Table 6 B: Percentage Distribution of Authorship Pattern in Journals

Quinquennium	Single Author (%)	Double Authors (%)	Three Authors (%)
2017–2021	12.07	86.21	1.72
2022–2026	40.74	59.26	0.00
Overall	21.18	77.65	1.18

In the second quinquennium (2022–2026), the total output was 27 articles, including 16 double-authored and 11 single-authored publications. The Degree of Collaboration decreased to 0.59, indicating a gradual shift toward independent research. Although collaborative publications continued to dominate, the proportion of single-authored papers increased considerably. The research themes during this period expanded to include Artificial Intelligence, Internet of Things (IoT), Metaverse applications, Generative AI, research ethics, bibliometric studies, and emerging technologies in Library and

Information Science.

Overall, Degree of Collaboration (0.79) confirms that Dr. Dhiman has maintained a highly collaborative research profile. However, the increasing number of single-authored publications in the later years reflects growing subject expertise, academic maturity, and independent scholarly contributions. The predominance of double-authored publications further suggests that research collaboration has been the preferred strategy for knowledge creation and dissemination throughout the author's academic career.

7. Quinquennium-wise Collaboration Pattern of Chapters in Books /Proceedings

A quinquennium-wise collaboration of book chapters /proceedings made by Dr. Dhiman is shown in table 7 A.

Table 7A: Quinquennium-wise Collaboration Pattern of Chapters in Books /Proceedings

Quinquennium	Collaborative Chapters	Single Author Chapters	Total Chapters	Degree of Collaboration (DC)
2017-2021	13	06	19	0.68
2022-2026	14	12	26	0.54
Total	27	18	45	0.60

The Degree of Collaboration is calculated on the basis of (Subramanyam²⁸):

$$DC = \frac{N_m}{N_m + N_s}$$

Where:

- N_m = Number of multi-authored (collaborative) chapters
- N_s = Number of single-authored chapters

Table 7 B: Percentage Distribution of Authorship Pattern in Books /Proceedings

Quinquennium	Collaborative (%)	Single Author (%)
2017-2021	68.42	31.58
2022-2026	53.85	46.15
Overall	60.00	40.00

The quinquennium-wise analysis of book chapters authored by Dr. Dhiman during the period 2017-2026 reveals a strong tendency toward collaborative authorship. Out of a total of 45 book chapters, 27 (60.00%) were published in collaboration with one or more co-authors, whereas 18 (40.00%) were written individually.

During the first quinquennium (2017-2021), Dr. Dhiman published 19 book chapters, of which 13 (68.42%) were collaborative and 06 (31.58%) were single-authored. The Degree of Collaboration (DC) for this period was 0.68, indicating a high level of research collaboration. This period was characterized by extensive partnerships with scholars such as H. Sharma, S.K. Kaushik, P.R. Meena, Yashoda Rani, and

Kuldeep Kumar.

In the second quinquennium (2022-2026), the total output increased to 26 book chapters. Among these, 14 (53.85%) were collaborative and 12 (46.15%) were single-authored. The Degree of Collaboration declined slightly to 0.54, suggesting that while collaborative research remained dominant, the author increasingly engaged in independent scholarly writing. This period also witnessed a growing focus on emerging themes such as Artificial Intelligence, Digital Transformation, Bibliometrics, Research Ethics, and Public Library Services.

Overall, the Degree of Collaboration for the entire study period is 0.60, which demonstrates that collaborative authorship has been the predominant mode of scholarly contribution in Dr. Dhiman's book chapter / proceedings publications. The findings indicate a balanced research profile, combining both collaborative networking and independent academic contributions. Such a pattern reflects active participation in interdisciplinary research and sustained engagement with contemporary developments in Library and Information Science.

8. Total Quinquennium Collaboration

The total collaboration is presented below in table 8 A that clearly demonstrates the predominance of collaborative authorship, particularly double authorship, in Dr. Dhiman's journal publication output during 2017-2026.

Table 8A: Quinquennium-wise Authorship Pattern

Quinquennium	Single Author	Double Authors	Three Authors	Total Publications
2017-2021	13	63	01	77
2022-2026	23	30	00	53
Total	36	93	01	130

Table 8B: Percentage Wise Distribution of Authorships

Quinquennium	Single Author (%)	Double Authors (%)	Three Authors (%)	Total Publications (%)
2017-2021	16.88	81.82	1.30	59.23
2022-2026	43.40	56.60	0.00	40.77
Total	27.69	71.54	0.77	100.00

The Degree of Collaboration (Subramanyam²⁸) is:

$$DC = \frac{N_m}{N_m + N_s}$$

where:

N_m = Multi-authored publications

N_s = Single-authored publications

Table 8C: Total Degree of Collaboration

Quinquennium	Multi-authored Publications	Single-authored Publications	Degree of Collaboration
2017-2021	64	13	0.83
2022-2026	30	23	0.57
Overall	94	36	0.72

On the basis of above table 8A-8C present the quinquennial distribution of authorship pattern and degree of collaboration in 130 publications produced during the period 2017-2026 is calculated. During 2017-2021, out of 77 publications, 64 (83.12%) were multi-authored and 13 (16.88%) were single-authored, resulting in a high degree of collaboration of 0.83. In the subsequent quinquennium (2022-2026), the total number of publications decreased to 53, of which 30 (56.60%) were multi-authored and 23 (43.40%) were single-authored, yielding a lower degree of collaboration of 0.57. Overall, among the 130 publications studied, 94 (72.31%) were collaborative works and 36 (27.69%) were single-authored, giving an overall degree of collaboration of 0.72. The findings indicate that collaborative research remained the dominant mode of scholarly communication throughout the study period, although the extent of collaboration declined noticeably during 2022-2026 compared to the earlier quinquennium.

The table 8D presents the overall authorship characteristics of 130 publications produced during the study period. Of the total publications, 36 (27.69%) were authored by a single author, while 94 (72.31%) were produced through collaborative efforts. Among the collaborative publications, the majority were double-authored works, accounting for 93 publications, whereas only one publication involved three authors. This distribution indicates that collaboration was a preferred mode of scholarly communication, with researchers largely choosing to work in pairs rather than individually or in larger teams.

Table 8D: Overall Degree of Collaboration

Indicators	Value
Total Publications	130
Single-authored	36
Double-authored	93
Three-authored	01
Multi-authored Publications	00
Degree of Collaboration	0.72
Collaborative Publications (%)	72.31
Single-authored Publications (%)	27.69

The degree of collaboration was found to be 0.72, which signifies a high level of research collaboration among the authors. A degree of collaboration greater than 0.50 generally reflects the predominance of joint authorship over individual authorship. The findings reveal that nearly three-fourths of the total publications were collaborative in nature, demonstrating the importance of intellectual cooperation and knowledge sharing in the research process. The overwhelming dominance of double-authored publications further suggests that researchers favoured small, focused collaborative partnerships, which may have contributed to enhanced research productivity and quality. Overall, the data highlight a strong collaborative research culture during the study period.

9. Collaborators Worked with Dr. Dhiman

Table 9 presents the total collaborative contributions made by Dr. Dhiman with his co-authors. The collaboration analysis of A.K. Dhiman reveals a diverse and well-established research network comprising 21 distinct collaborators. The distribution of collaborations indicates that a substantial portion of his scholarly output has been produced through sustained partnerships with a select group of researchers.

Table 9: Collaborators of A.K. Dhiman Arranged by Number of Collaborations (Descending Order)

Rank	Collaborator	No. of Collaborations
1	Sachin Kumar Kaushik	07
2	Yashoda Rani	06
3	Aman Kumar Jagdev	05
4	Kuldeep Kumar	05
5	Surendra Singh	05
6	B.B. Shukla	04
7	Sanjiv Kumar	04
8	C.P. Pandey	03

table cont....

Rank	Collaborator	No. of Collaborations
9	S. Joshi	03
10	Punita Sharma	03
11	Vinod Kumar	03
12	A. Bhakal	02
13	Bikram K. Shukla	02
14	N. Nautiyal	02
15	S.L. Yadav	02
16	Anjana Rani Sharma	01
17	H. Rehman	01
18	R. Bharti	01
19	R. Nandwana	01
20	S.K. Sharma	01
21	Shafali Bhatt	01

Among all collaborators, Sachin Kumar Kaushik emerges as the most frequent collaborator with seven joint publications, accounting for the highest level of collaborative engagement. This is followed by Yashoda Rani with six publications, indicating a strong and consistent research association. These two collaborators represent the core of Dhiman's collaborative network and have contributed significantly to research on library science, information technology, artificial intelligence, bibliometrics, and library services.

The next tier consists of Aman Kumar Jagdev, Kuldeep Kumar, and Surendra Singh, each with five collaborative publications. Their repeated appearance reflects long-term academic partnerships and a shared interest in emerging technologies, digital libraries, information management, and contemporary issues in librarianship.

B.B. Shukla and Sanjiv Kumar, with four collaborations each, also constitute important contributors to Dhiman's research productivity. Their collaborative works largely focus on public libraries, library management, staffing patterns, and institutional library studies.

A moderate level of collaboration is evident with C.P. Pandey, S. Joshi, Punita Sharma, and Vinod Kumar, each contributing three publications. These partnerships demonstrate recurring scholarly cooperation across various areas such as information-seeking behaviour, prison libraries, website evaluation, and library services.

Further, five collaborators—A. Bhakal, Bikram K. Shukla, N. Nautiyal, and S.L.

Yadav—contributed two publications each, indicating occasional but meaningful research associations. The remaining six collaborators participated in a single publication each, reflecting the author's willingness to collaborate with a broader academic community beyond his core research partners.

Thus, Sachin Kumar Kaushik, Yashoda Rani, Aman Kumar Jagdev, Kuldeep Kumar and Surendra Singh are on the top three positions who has collaborated with him in journal contribution. Overall, the data suggest that Dr. Dhiman follows a highly collaborative research approach, maintaining a balance between enduring research partnerships and newer collaborative ventures. The concentration of publications among a few key collaborators highlights the existence of a strong scholarly network, while the presence of several occasional collaborators demonstrates academic diversity and interdisciplinary engagement. Such a pattern is characteristic of productive researchers who leverage collaboration to expand research scope, enhance knowledge sharing, and increase scholarly impact.

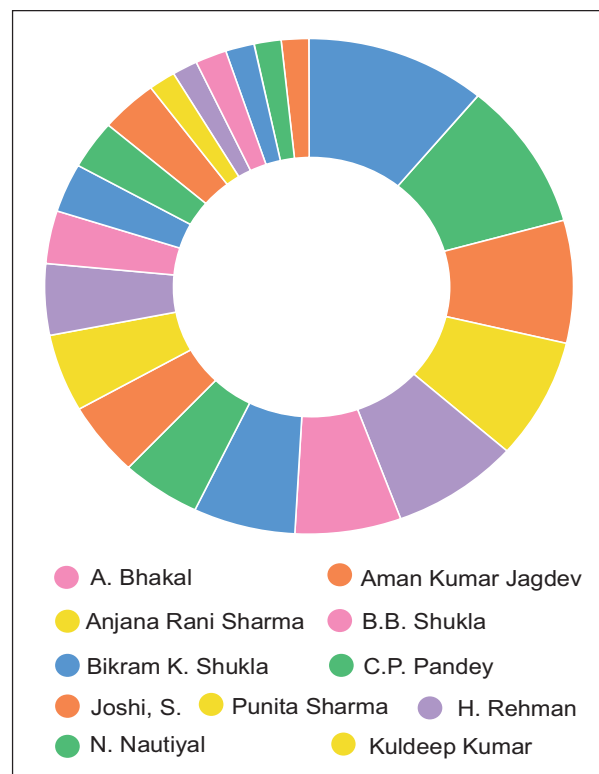


Figure 2: Collaborator-Wise Distribution of Articles

Further, the pie chart of collaborator-wise distribution of collaborations illustrates the distribution of collaborative publications

among Dr. Dhiman's co-authors. Sachin Kumar Kaushik occupies the largest share with 7 collaborations, followed by Yashoda Rani with 6 collaborations. Aman Kumar Jagdev, Kuldeep Kumar, and Surendra Singh each contributed 5 collaborative publications, forming the second most significant group of research partners.

The chart further shows that B.B. Shukla and Sanjiv Kumar each contributed 4 publications, while C.P. Pandey, S. Joshi, Punita Sharma, and Vinod Kumar contributed 3 publications each. A smaller group comprising A. Bhakal, Bikram K. Shukla, N. Nautiyal, and S.L. Yadav contributed 2 publications each.

The remaining collaborators contributed one publication each, indicating occasional research partnerships. Overall, the chart demonstrates that a major portion of Dr. Dhiman's collaborative research output is concentrated among a few key collaborators, while a wider network of occasional collaborators contributes to the diversity and interdisciplinary nature of his research activities.

10. Most Preferred Journals

The table 10 A provides a list for 85 Dr. Dhiman publications in journals in which he made his contribution as journal articles/ research papers/

Table 10 A: List of all journals for his total contribution

Name of the Journals	No. of Contributions
Professional Journal of Library and Information Technology	12
Granthalaya Vigyan	12
Indian Journal of Library and Information Science	11
Indian Journal of Information, Library & Society	08
PEARL: A Journal of Library Science	06
Library Progress / Library Progress (International)	06
ISST Journal of Advances in Librarianship	04
International Journal of Information Dissemination and Technology	03
Accent Journal of Economics, Ecology and Engineering	02
Gyan Garima Sindhu / Garima Sindhu	03
Journal of Library and Information Technology	01

Name of the Journals	No. of Contributions
Journal of Advances in Library & Information Science	01
International Journal of Information Studies and Libraries	01
B. Aadhar: Multidisciplinary International Research Journal	01
The Journal of Oriental Research Madras	01
Research Journal of Social & Life Sciences	01
Granthaalayah - International Journal of Research	01
Sodh Sanchayan	01
Shodhkosh - Journal of Visual and Performing Arts	01
Our Heritage	01
Library Waves	01
Indian Journal of Computer Science	01
Ajanta	01
Total	85

Further, table 10 B shows the ranking of most preferred journals in which Dr. Dhiman contributed in writing and publishing his articles and research papers.

Table 10 B: List of Top 10 Journals

Rank	Name of the Journal	Contributions
1	Professional Journal of Library and Information Technology	12
1	Granthalaya Vigyan	12
3	Indian Journal of Library and Information Science	11
4	Indian Journal of Information, Library & Society	08
5	PEARL: A Journal of Library Science	06
5	Library Progress	06
7	ISST Journal of Advances in Librarianship	04
8	International Journal of Information Dissemination and Technology	03
8	Gyan Garima Sindhu / Garima Sindhu	03
10	Accent Journal of Economics, Ecology and Engineering	02

The journal-wise analysis of 85 research papers reveals that Dr. Dhiman's publications are concentrated in a small group of core Library and Information Science journals. The highest number of contributions appeared in

Professional Journal of Library and Information Technology and Granthalaya Vigyan, each accounting for 12 papers (14.12%) of the total output. These journals serve as the principal channels for disseminating his research findings.

The Indian Journal of Library and Information Science occupies the third position with 11 publications (12.94%), followed by the Indian Journal of Information, Library & Society with 8 papers (9.41%). Together, these four journals account for more than half of the total research output, indicating a strong preference for established LIS journals.

The journals PEARL and Library Progress where he has contributed 06 papers each (7.06%), are demonstrating continued scholarly engagement with reputed national LIS journals. Moderate publication activity is observed in the ISST Journal of Advances in Librarianship (4 papers) and the International Journal of Information Dissemination and Technology (3 papers).

A number of papers were also published in multidisciplinary and specialized journals such as Our Heritage, Ajanta, Granthaalayah, Research Journal of Social & Life Sciences, and Indian Journal of Computer Science, reflecting the author's interdisciplinary interests in areas such as information technology, artificial intelligence, cinema studies, bibliometrics, and higher education.

Overall, the distribution indicates that Dr. Dhiman's research communication is strongly rooted in Library and Information Science journals, while also extending into interdisciplinary domains, thereby enhancing both the visibility and diversity of his scholarly contributions.

10. Major Findings from the Study

The following major findings are noted from the study after making analysis of the data and based on the interpretation.

- The publication pattern indicates consistent scholarly productivity during 2017–2026, with the highest research output recorded in 2019 (24 publications, 18.46%). Overall, the cumulative growth from 5 publications in 2017 to 130 in 2026 reflects a sustained and progressive contribution to research over the study period.
- Collaborative authorship emerged as

the dominant pattern in the author's scholarly output, indicating a strong preference for research partnerships over independent research.

- Double-authored publications constituted the highest proportion of contributions, demonstrating that collaboration with a single co-author was the most preferred mode of research communication.
- Single-authored publications also formed a substantial share of the total output, reflecting the author's capability to undertake and complete the research independently.
- Multi-author collaboration (more than two authors) were extremely rare (only 01), suggesting that the author's research network primarily involved one-to-one scholarly collaborations rather than large research teams.
- In books and conference proceedings, collaborative writing was more prominent than individual authorship, indicating the importance of intellectual partnerships in producing scholarly chapters and conference papers.
- The coexistence of both collaborative and independent publications reflects a balanced research profile, where the author actively engaged in teamwork while maintaining individual scholarly productivity.
- The predominance of two-author publications highlights the significance of professional networking and academic cooperation in enhancing research productivity and knowledge dissemination.
- The authorship trend suggests a research culture based on close scholarly associations, which may have contributed to the diversity of research themes and sustained publication output over the study period.

However, the absence of large-group collaborations indicates a focused and personalized approach to research, where contributions were generally developed through direct interaction between a limited number of researchers. Overall, the analysis reveals that collaboration served as the principal driving force behind the author's publication productivity, making joint authorship the defining characteristic of the author's scholarly communication pattern.

11. Comparison with Previous Study

A comparison with previous findings made by presenting Dr. Dhiman's scientometric scientometric portriat by Sharma & Singh in study in 2015 is made with the present study.

Table 10: Comparative Analysis of Research Authorship Pattern: 1997–2017 vs. 2017–2026

Aspect	1997–2017 Findings	2017–2026 Findings	Comparative Observation
Total Publications	172 articles/papers published over 21 years with an average of 8.19 papers per year.	130 articles/papers in last 10 years from 2017-2026 with the highest research output recorded in 2019 (24 publications, 18.46%) with an average of 13 papers per year.	Research productivity almost remained consistent and sustained across both periods with 8.19 and 13 papers per year respectively.
Dominant Authorship Pattern	Single authorship dominated with 91 publications.	Collaborative authorship became the dominant pattern.	A clear shift from individual research to collaborative research is observed.
Single-Authored Publications	91 papers (majority of output) were written independently.	37 papers were single-authored works remained significant but were not the dominant mode.	Independent scholarship continued, although its relative importance declined.
Double-Authored Publications	80 publications were collaborative, mainly involving one co-author.	92 papers are double-authored publications formed the largest share of output.	Collaboration evolved from a secondary practice to the preferred mode of scholarly communication.
Multi-Authored Publications	Only 2 publications involved more than two authors.	Only 01 multi-author publications were absent or extremely rare.	Both periods demonstrate a preference for limited and focused collaborations rather than large research teams.
Collaboration Position	61 papers were written as first author and 19 as second author in joint authorship.	68 papers were written as first author and 24 as co-author in joint authorship.	The author maintained active scholarly leadership while engaging in collaborative research.
Research Collaboration Network	Strong collaborations with Yashoda Rani (25 papers), Hemant Sharma (11), and S.C. Sinha (8).	Collaboration remained important but focused mainly on one-to-one academic partnerships. Sachin Kumar Kaushik, Yashoda Rani and Aman Kumar Jagdev are on the top three in list.	The collaborative network expanded while retaining a personalized approach to research.
Research Style	Predominantly independent research with selective collaboration.	Balanced mix of collaborative and independent research.	The research style became more collaborative and interdisciplinary over time.
Mode of Publications	Analysis focused mainly on journal articles.	Collaborative authorship was particularly prominent in books, chapters, and conference proceedings.	Later years witnessed broader scholarly engagement beyond journal publishing.
Professional Networking	Collaboration existed but individual authorship remained stronger.	Professional networking became a significant contributor to publication output.	Academic cooperation increasingly influenced research productivity.
Research Culture	Research activities reflected individual scholarly efforts.	Research culture emphasized cooperation, knowledge sharing, and academic partnerships.	The author's scholarly approach matured toward collaborative knowledge creation.
Publication Preference	Preferred journals included <i>Indian Journal of Information, Library and Society</i> (17 papers), <i>PEARL</i> (9 papers), and <i>Granthalaya Vigyan</i> (7 papers).	Preferred journals included <i>Professional Journal of Library and Information Tehcnology</i> (12 papers), <i>Granthalaya Vigyan</i> (12 papers) and <i>Indian Journal of Information, Library and Society</i> (11 papers).	The publication avenues became more diverse during the later period.

The major findings of this comparison reveal that:

- The period 1997–2017 was characterized by a strong inclination toward single authorship, reflecting Dr. Dhiman's

independent research capabilities and scholarly leadership.

- During 2017–2026, there was a noticeable transition toward collaborative authorship,

particularly in the form of double-authored publications, indicating greater engagement with research partnerships.

- In both periods, large-group collaborations were minimal, demonstrating a consistent preference for focused and direct scholarly interactions.
- The earlier period emphasized individual productivity, whereas the later period exhibited a balanced combination of independent and collaborative research activities.
- The emergence of stronger collaborative practices after 2017 suggests increased professional networking, interdisciplinary engagement, and academic cooperation.
- Despite the shift toward collaboration, Dr. Dhiman maintained his identity as an independent researcher, ensuring continuity in individual scholarly contributions.

Besides, the overall authorship trend indicates the evolution of Dr. Dhiman's research career from a predominantly solo research model to a more collaborative and partnership-oriented scholarly approach while sustaining a high level of research productivity.

CONCLUSION

The analysis of authorship patterns reveals that collaboration has been the most significant characteristic of the author's scholarly productivity. A substantial majority of the publications were produced through joint authorship, particularly involving two authors, indicating a strong inclination toward collaborative research. Such partnerships have likely facilitated the sharing of expertise, ideas, and research resources, thereby enhancing both the quality and quantity of scholarly output. At the same time, the presence of a considerable number of single-authored publications demonstrates the author's ability to conduct independent research and contribute original ideas to the field. The coexistence of collaborative and individual works reflects a balanced and versatile research profile. Further, the negligible presence of publications involving more than two authors (01 only) suggests that the author's collaborative activities were primarily based on focused partnerships rather than large research teams.

While the comparative analysis of Dr. Dhiman's scholarly publications during the periods 1997–2017 and 2017–2026 reveals a significant evolution in his research and authorship practices. During the first phase (1997–2017), his research output was predominantly characterized by single-authored publications, demonstrating his strong independent research capabilities and individual scholarly contributions. Although collaborative research was present, it remained secondary to his preference for solo authorship. However, his collaborations were largely limited to a few regular co-authors, reflecting a selective approach to academic partnerships.

Summing up, the study concludes that the present author's publication pattern is predominantly collaboration-oriented, with double authorship serving as the principal mode of scholarly communication. This pattern highlights the importance of academic cooperation in research productivity while also showcasing the author's independent research capabilities. The findings indicate that sustained collaboration, coupled with individual scholarly efforts, has played a vital role in shaping the author's academic contributions and research impact.

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