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Author Productivity and Scholarly Impact in University of Madras Publications During (2000–2024): A Scientometric Analysis

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ABSTRACT

The study focuses on author productivity and scholarly impact in publications associated with the University of Madras from 2000 to 2024 using a scientometric approach. A total of 8,786 records were retrieved from the Web of Science database and analysed through Biblioshiny and Microsoft Excel. The research aims to identify prolific and influential authors, analyse citation patterns, and track publication trends over time. Lotka's Law was applied to assess the distribution of author productivity and contribution patterns within the research community. The study also highlights the most cited authors, leading journals, and emerging areas of collaboration and research growth. The findings provide a comprehensive understanding of the University's research landscape, scholarly influence, and contribution to global academic development, offering insights into how research productivity and impact have evolved over the past two decades.

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KEYWORDS: Author productivity, Lotka's Law, University of Madras, Scientometric analysis, Research trends

INTRODUCTION

The University of Madras, one of India's oldest and most prestigious institutions, has made significant contributions to higher education and research. Understanding its research productivity and scholarly impact helps reveal its academic progress and global influence. This study uses a scientometric approach to analyse publications from 2000 to 2024, focusing on author productivity and collaboration trends. Data from the Web of Science were analysed using Biblioshiny and Microsoft Excel. Applying Lotka's Law, the study examines patterns of author contribution, providing a comprehensive view of research growth and the evolving scholarly landscape at the University of Madras.

Scientometric analysis is an important tool used to measure and evaluate research productivity and scholarly performance through quantitative indicators. In this study, scientometric methods are applied to examine author

productivity at the University of Madras from 2000 to 2024. Data were collected from the Web of Science and analysed using Biblioshiny and Microsoft Excel. The study focuses on identifying prolific authors, assessing their contribution patterns through Lotka's Law, and understanding how author productivity reflects the university's overall research growth and academic development over time.

REVIEW OF LITERATURE

Shaikh and Khan (2025) analysed using Biblioshiny in R to explore research trends in behavioural finance and risk. Drawing from 870 Scopus-indexed papers (2009–2023) they found growing academic interest, with key contributions from Kahneman's Prospect Theory and Thaler's behavioural insights. China, Malaysia, and the U.S. lead in publications. Emerging themes include AI-driven risk assessment, climate change impacts, and sustainable development goals.

Ghorbani (2024) conducted an R-based web interface to map technology-related English publications (CALL, MALL, RALL) from 2013 to 2022. Following PRISMA guidelines, 881 WoS-indexed documents were analysed to explore intellectual and conceptual structures. The study identified key authors, sources, and research networks, offering valuable insights into evolving trends and the progression of bibliometric research across diverse academic disciplines.

Ridwan and Abdullah (2023) conducted a scientometric analysis of 78 Scopus-indexed articles on religious moderation using the Biblioshiny R application. The study examined keywords, authors, and journals to assess research dynamics in this field. Findings indicated limited development but growing integration with other disciplines. Emerging themes included moderate Islam, radicalism, tolerance, and politics, with recommendations for further exploration of religious moderation studies.

ABOUT THE UNIVERSITY OF MADRAS

The establishment of the University of Madras was initiated by a public petition dated November 11, 1839. In January 1840, the University Board was constituted with Mr George Norton as its first President. After 14 years, in 1854, the Government of India introduced a systematic educational policy, which led to the formal establishment of the University on September 5, 1857, through an Act of the Legislative Council of India. Modelled after the University of London, the University of Madras is regarded as the mother of most of the older universities in South India. In recent years, its jurisdiction has been limited to three districts of Tamil Nadu, following the creation of new universities and territorial divisions. Over the years, the University has continued to grow, strengthening its teaching and research endeavors, and it has been accredited with an NAAC A++ grade, recognizing its excellence in higher education.

OBJECTIVES

- ✓ To identify the most productive and influential authors contributing to research publications.
- ✓ To find the authors who are most cited locally and understand their impact within the research community.
- ✓ To analyse how authors' research output has changed over time and identify publication trends.
- ✓ To study the distribution of author productivity using Lotka's Law and assess patterns of contribution.

- ✓ To evaluate the local impact of authors by examining citations and their prominence in the selected research domain.

METHODOLOGY

The study, conducted at the University of Madras, focused on author productivity using a scientometric methodology. The University of Madras, one of India's oldest and most prestigious institutions, has made significant contributions to higher education and research. Understanding its research productivity and scholarly impact provides insight into its academic progress and global influence. This study adopts a scientometric approach to analyse publications from 2000 to 2024, focusing on author productivity, citation patterns, and collaboration trends. Using data from the Web of Science, analysed through Biblioshiny and Microsoft Excel, the study applies Lotka's Law to assess authors' contribution patterns, offering a clear view of research growth and the evolving scholarly landscape at the University of Madras.. Microsoft Excel was used for data organisation. The analysis explored publication trends, citation patterns, influential authors, and journals, applying Lotka's Law to assess productivity distribution within the research field.

DATA ANALYSIS AND INTERPRETATIONS

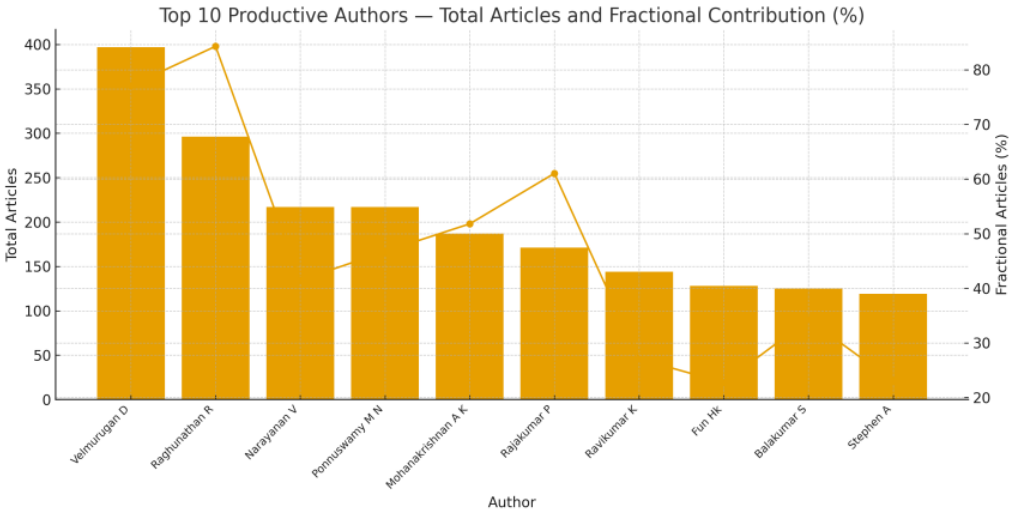
Most Relevant Authors:

Table 1.1 -Most Relevant Authors

Rank	Author	Total Articles	Fractional Articles (%)
1	Velmurugan D	397	77.10
2	Raghunathan R	296	84.29
3	Narayanan V	217	41.46
4	Ponnuswamy M N	217	46.74
5	Mohanakrishnan A K	187	51.79
6	Rajakumar P	171	61.03
7	Ravikumar K	144	27.10
8	Fun Hk	128	22.71
9	Balakumar S	125	34.29
10	Stephen A	119	22.99

Table 1.1 shows that among the most relevant authors from the University of Madras, Velmurugan D ranks first with the highest total publications (397) and a strong fractional contribution (77.10), reflecting both productivity and active research collaboration. Raghunathan R follows closely with 296 publications and the highest fractional value (84.29), indicating significant involvement in co-authored works. Narayanan V and Ponnuswamy MN have equal publication counts but differ slightly in fractional contributions, suggesting varying levels of collaboration. Authors such as Rajakumar P and Mohanakrishnan AK also demonstrate considerable scholarly engagement, while others display moderate productivity. Overall, the table illustrates that both publication quantity and fractional contribution are key indicators of research influence and collaborative strength among University of Madras authors.

Figure 1.1 Most Relevant Authors



Most Locally Cited Authors:

Table 1.2 - Most Locally Cited Authors

Rank	Author	Local Citations
1	Raghunathan R	891
2	Narayanan V	587
3	Rajakumar P	555
4	Mohanakrishnan A K	494
5	Velmurugan D	452
6	Murugan E	411
7	Stephen A	406
8	Balakumar S	373
9	Arunakaran J	359
10	Ramamurthy P	319

Table 2.2 shows that the most locally cited authors from the University of Madras hold significant influence within their respective research domains. Raghunathan R ranks first with 891 local citations, demonstrating strong recognition and frequent referencing by peers. Narayanan V and Rajakumar P follow with 587 and 555 citations, respectively, indicating substantial local impact. Authors such as Mohanakrishnan A. K and Velmurugan D also exhibit notable scholarly visibility, while Murugan E and Stephen A maintain moderate citation levels. In contrast, Balakumar S, Arunakaran J, and Ramamurthy P have comparatively fewer citations, reflecting limited local reach. Overall, the table highlights how citation frequency serves as a key indicator of research prominence, influence, and academic contribution within the University of Madras research community.

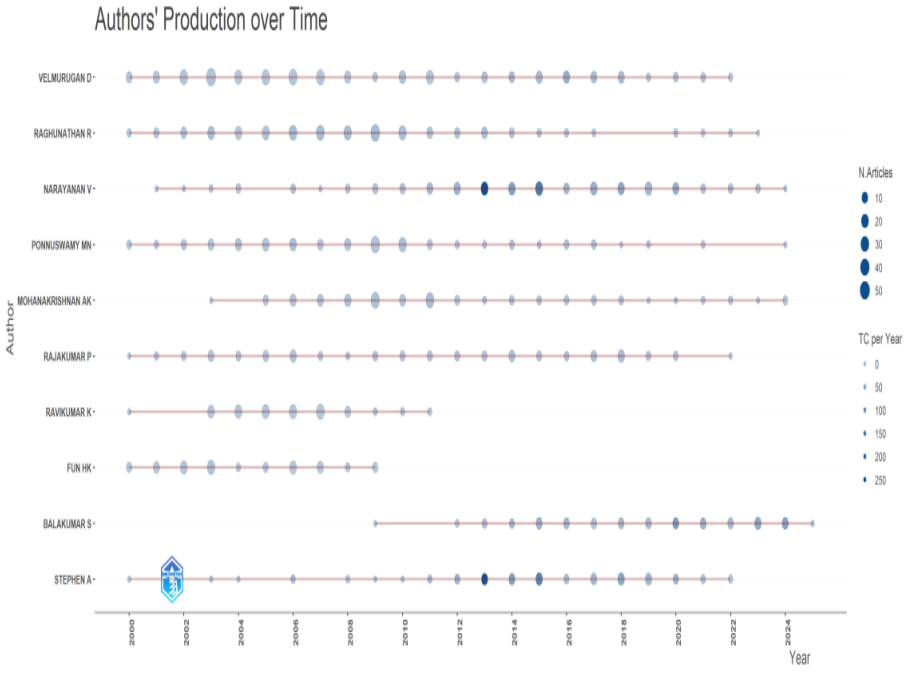
Authors' Production over Time

Table 1.3 -Authors' Production over Time

Rank	Author	Total Publications	Total Citations	Average Citations per Year
1	Narayanan V	217	9,786	38.01
2	Stephen A	141	6,729	37.38
3	Balakumar S	125	3,102	32.19
4	Raghunathan R	243	3,358	14.21
5	Velmurugan D	285	3,614	15.02
6	Mohanakrishnan A. K.	187	1,811	06.34
7	Rajakumar P	177	1,762	06.87
8	Ponnuswamy M. N.	217	1,631	04.39
9	Fun H. K.	128	751	03.28
10	Ravikumar K	166	475	02.12

Table 1.3 shows the research output and scholarly influence of ten prominent authors from the University of Madras. Narayanan V leads with the highest total citations (9,786) and an annual average of 38.01 citations, reflecting substantial academic impact. Stephen A follows with 6,729 citations, indicating significant research recognition. Balakumar S records moderate publications but strong citation performance, while Velmurugan D, despite having the highest number of publications (285), shows comparatively lower citation impact. Authors such as Ravikumar K and Fun H. K. have fewer citations, suggesting limited visibility in their respective research areas. Overall, the table illustrates that academic influence is determined not only by publication quantity but also by the quality and impact of the research contributions.

Figure 1.2 Authors' Production over Time



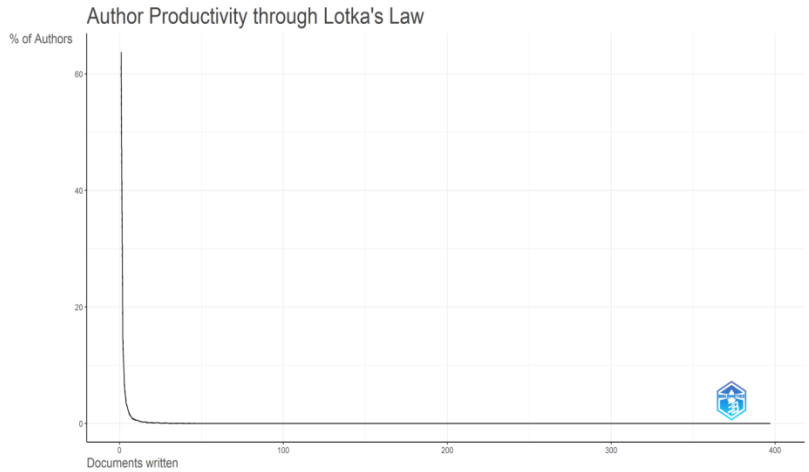
Distribution of Author Productivity Based on Lotka's Law:

Table 1.4 - Distribution of Author Productivity Based on Lotka's Law

No. of Documents Written (n)	No. of Authors (An)	Proportion of Authors (An/N)	Theoretical Value ($1/n^2$)
1	10,192	0.638	0.613
2	2,304	0.144	0.153
3	1,058	0.066	0.068
4	566	0.035	0.038
5	400	0.025	0.025
6	255	0.016	0.017
7	196	0.012	0.013
8	127	0.008	0.01
9	113	0.007	0.008
10	91	0.006	0.006

Table 1.4 presents an analysis of author productivity at the University of Madras based on Lotka's Law. It shows the number of documents produced by each author, the total authors corresponding to each output level, the proportion of authors in the sample, and the theoretical values derived from Lotka's distribution. The findings indicate that 63.8 percent of authors published only one paper, demonstrating the prevalence of single-contribution researchers. As publication counts increase, the number of contributing author's declines 14.4 percent published two papers, 6.6 percent three papers, and only 0.6 percent produced ten papers. This inverse pattern aligns closely with Lotka's principle, which states that the number of authors producing *n* papers is roughly one divided by *n^2* of those producing a single paper. The strong agreement between observed and theoretical data confirms that Lotka's Law accurately represents the author productivity distribution at the University of Madras.

Figure 1.3 Distribution of Author Productivity on Lotka's Law



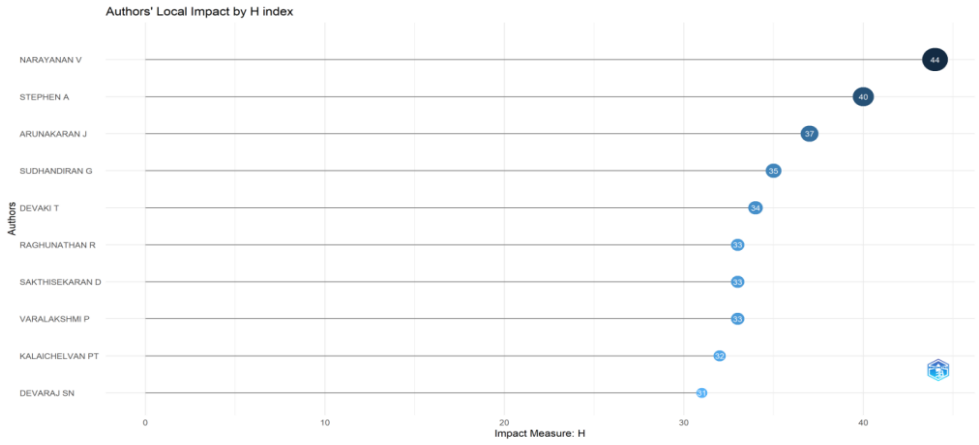
Authors' Local Impact

Table 1.5 - Authors' Local Impact

Rank	Author	h index	g index	m index	TC	NP
1	Narayanan V	44	94	1.76	9786	217
2	Stephen A	40	91	1.538	8421	119
3	Kalaichelvan P T	32	52	1.455	5475	52
4	Sudhandiran G	35	56	1.944	5040	56
5	Raghunathan R	33	50	1.269	3945	296
6	Arunakaran J	37	57	1.423	3782	92
7	Sakthisekaran D	33	59	1.269	3537	70
8	Varalakshmi P	33	51	1.269	3341	105
9	Devaki T	34	52	1.308	3062	80
10	Devaraj S N	31	48	1.24	2672	80

Table 1.5 presents the research performance of ten authors from the University of Madras using various scientometric indicators. Narayanan V ranks first with the highest total citations (9,786) and an h-index of 44, reflecting exceptional productivity and research impact. Stephen A follows with 8,421 citations and strong performance metrics, indicating substantial scholarly influence. Kalaichelvan P. T. and Sudhandiran G. also demonstrate notable citation impact despite a smaller number of publications. Authors such as Raghunathan R. and Arunakaran J. exhibit high research productivity, while Devaraj S. N. and Devaki T. show moderate scholarly influence. Overall, the table emphasizes that both the quantity of publications and the quality of citations play a vital role in determining an author's academic visibility, influence, and overall contribution within the University of Madras research community.

Figure 1.4 Authors' Local Impact



FINDINGS

The analysis of research performance at the University of Madras reveals a strong relationship between publication productivity, citation impact, and scholarly influence. Velmurugan D and Raghunathan R emerge as highly productive authors, demonstrating extensive research output and active collaboration. Raghunathan R also records

the highest local citations, indicating strong peer recognition and academic visibility. Narayanan V leads in total citations and h-index, reflecting both research quality and sustained scholarly impact. Stephen A, Kalaichelvan P. T., and Sudhandiran G. also contribute significantly to the University's research influence. Lotka's Law analysis shows that 63.8% of authors published only one paper, while productivity decreases with higher publication counts, confirming Lotka's theoretical model.

CONCLUSION

Overall, the findings highlight that both publication quantity and citation quality determine academic prominence. The study concludes that fostering collaboration, enhancing research quality, and supporting impactful scholarship can further strengthen the University of Madras's global academic reputation and scientific contribution.

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