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Research Output Of Periyar University During 2020–2024: A Scientometric Study

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Abstract:

This study examines the research output of Periyar University from 2020 to 2024, based on an analysis of 2,796 publications indexed in the Scopus database. Key areas of focus include contributions from affiliated institutions, productivity of authors, funding agency collaborations, country-wise analysis, emerging research fields, and the use of keywords. The study also explores geographical research trends and institutional collaborations. Data analysis and visualization were conducted using tools such as Microsoft Excel and VOS viewer. The findings provide valuable insights into the university's research strengths, collaborative efforts, and opportunities for academic development, enhancing understanding of its scholarly contributions.

Keywords: Scientometric Study, Research Output, Scopus, Publication trends, Periyar University.

Introduction:

Research output plays a significant role in determining the academic strength and reputation of a university. Periyar University, a key educational institution in Tamil Nadu, has made substantial contributions to various research domains over the years. As a measure of its academic excellence, the research output of the university offers valuable insights into its role in knowledge generation and dissemination. This study aims to evaluate the research productivity of Periyar University from 2020 to 2024, utilizing scientometric methods to analyze publication trends, citation patterns, and the overall impact of the university's research.

Scientometrics, a specialized field of study that quantifies and analyzes scientific literature, provides a framework for understanding research output in a comprehensive manner. For this study, Scopus, a reputable bibliographic database, serves as the primary data source, offering extensive coverage of academic publications associated with Periyar University. By focusing on key aspects such as publication volume, document types, subject areas, citation patterns, and funding sources, this study provides a clear picture of the university's research activities.

The analysis will also explore collaborative networks and international partnerships, examining the global reach of the university's research efforts. Tools like Microsoft Excel and VOS viewer will be employed to process and visualize the data, providing a deeper understanding of the university's research landscape. Ultimately, this study aims to assess the strengths of periyar University's research output, identify areas for improvement, and offer data-driven recommendations to support future academic growth and impact.

About Periyar University

Periyar University, established in 1997, is located in Salem, Tamil Nadu, and is named after the social reformer E.V. Ramasamy, known as Periyar. The university aims to promote higher education, research, and societal development. It offers a wide range of undergraduate, postgraduate, and doctoral programs across disciplines, including arts, science, commerce, and management. Recognized for its academic excellence, Periyar University emphasizes research and innovation, fostering collaborations with national and international institutions. Accredited with an "A++" grade by NAAC, the university is committed to empowering students and contributing to regional and global progress through quality education and research initiatives.

Review of Literature:

Several studies have been carried out to assess the review of literature on institutional research performance and output trends.

Ravi S and Palaniappan, M (2024) discuss the concept of scientometrics, a term coined by V. Nalimov and Mulchenko in 1969. According to them, scientometrics is defined as "the quantitative methods which deal with the analysis of science viewed as an information process." It involves comparing the output and impact of science at both national and international levels and examines various aspects of the history of science and technology. Scientometrics also includes the analysis, evaluation, and graphical visual representations of scientific data. Furthermore, it serves as a tool for policy-making by measuring and analyzing disciplines. Researchers employ different scientometric tools such as citation analysis to assess research productivity from individuals and groups, which contributes to the growth of concerned fields. In India, agencies like UGC, DBT, ICSSR, and DST provide substantial funding for research projects, promoting academic and scientific advancements.

Nidhisha, P.K and Sarangapani, R. (2019) present a scientometric analysis of the research productivity of the National Institute of Technology, Calicut, during the period from 2015 to 2019. The study is based on data collected from the Web of Science database, with a total of 875 records downloaded and analyzed over the five-year period. The study's objectives include analyzing year-wise productivity, types of publications, research areas, preferred sources for publication, most productive authors, authorship patterns, and collaborations with countries and institutions. The findings indicate that articles were the most commonly published document type, constituting 95.89% of the total output. Additionally, the most frequent authorship pattern observed was two authors, accounting for 33.14% of the publications.

Vijayakumar R and Palaniappan, M (2015) conducted a comparative scientometric analysis to assess the research contributions of Periyar University and Bharathiar University from 2005 to 2014. The study, based on data from the Web of Science, revealed that a total of 2,531 articles were published by both universities. Among these, Bharathiar University contributed 1,851 (73.3%) articles, while Periyar University published 680 (26.87%) articles. The year 2014 recorded the highest number of publications, with 492 articles (19.44%), whereas 118 articles (4.66%) were published in 2005. The study highlights that Bharathiar University had the highest number of publications, consistently leading in research output compared to Periyar University. This research provides valuable insights into the academic productivity of both institutions and emphasizes the need for enhancing research capabilities to strengthen their global scientific impact.

Objectives:

1. To analyze the growth of research publications over the years at Periyar University.
2. To identify the document types in Periyar University’s research publications.
3. To investigate the funding agencies supporting research at Periyar University.
4. To examine the subject-wise distribution of research publications at Periyar University.
5. To analyze the country-wise distribution of Periyar University’s research publications.

Statement of the Problem:

Although Periyar University has increased its research output, there is a need to study the trends, methods, and topics of its research publications from 2020 to 2024. This study aims to identify gaps, emerging areas of research, and patterns of collaboration, helping us understand the current state and future direction of the university's research.

Significance of the Study:

This study will provide an overview of Periyar University's research productivity from 2020 to 2024. The findings will help researchers, university leaders, and others understand the strengths of the university's research, identify important areas for future research, and encourage collaboration across fields.

Methodology:

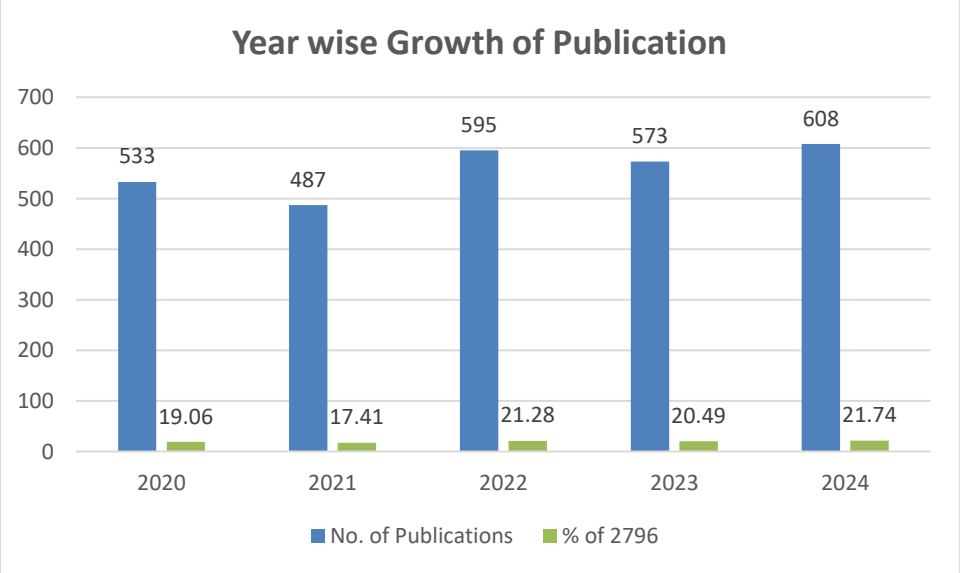
The methodology for this study involved collecting data on research publications affiliated with Periyar University. The data was retrieved from the Scopus database for the period 2020-2024 using the keyword "Periyar University" in the affiliation field. A total of 2,796 records were downloaded in Excel and BibTeX formats. These records were analyzed using statistical tools such as MS Excel for basic data processing and visualization. Additionally, VOSviewer, an open-source software, was utilized to create data maps and visualize publication trends. The analysis focused on identifying patterns in research output, collaboration networks, and other insights into the academic productivity of Periyar University.

Data Analysis and Interpretation:

Table 1: Year wise Growth of Publication

SL.No	Year	No. of Publications	% of 2796
1	2020	533	19.06
2	2021	487	17.41
3	2022	595	21.28
4	2023	573	20.49
5	2024	608	21.74
Total		**2796**	**100.00**

Figure 1

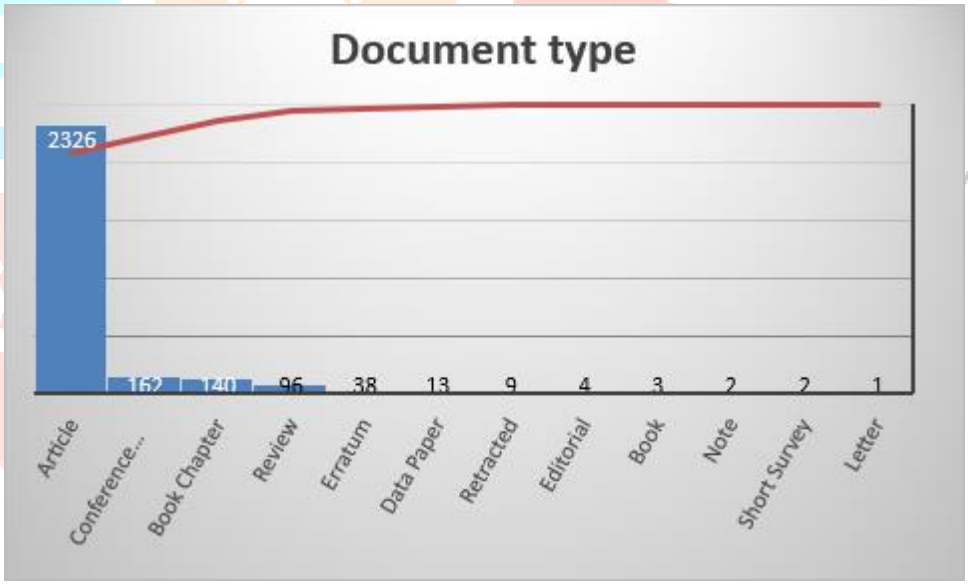


The table shows the growth of research publications from Periyar University between 2020 and 2024. In 2020, 533 publications (19.06%) were recorded, showing good productivity despite challenges like the pandemic. In 2021, the number dropped to 487 (17.41%) due to disruptions. In 2022, there was a recovery with 595 publications (21.28%), which slightly decreased to 573 (20.49%) in 2023, showing stable output. The highest number, 608 publications (21.74%), was in 2024, reflecting the university's efforts to support research. Overall, the data shows steady growth and improvement in research activities over the five years.

Table 2 Document type

Document type	No of Publication	% of 2796
Article	2326	83.19
Conference Paper	162	5.79
Book Chapter	140	5.01
Review	96	3.43
Erratum	38	1.36
Data Paper	13	0.46
Retracted	9	0.32
Editorial	4	0.14
Book	3	0.11
Note	2	0.07
Short Survey	2	0.07
Letter	1	0.04
Total	**2796**	**100**

Figure 2

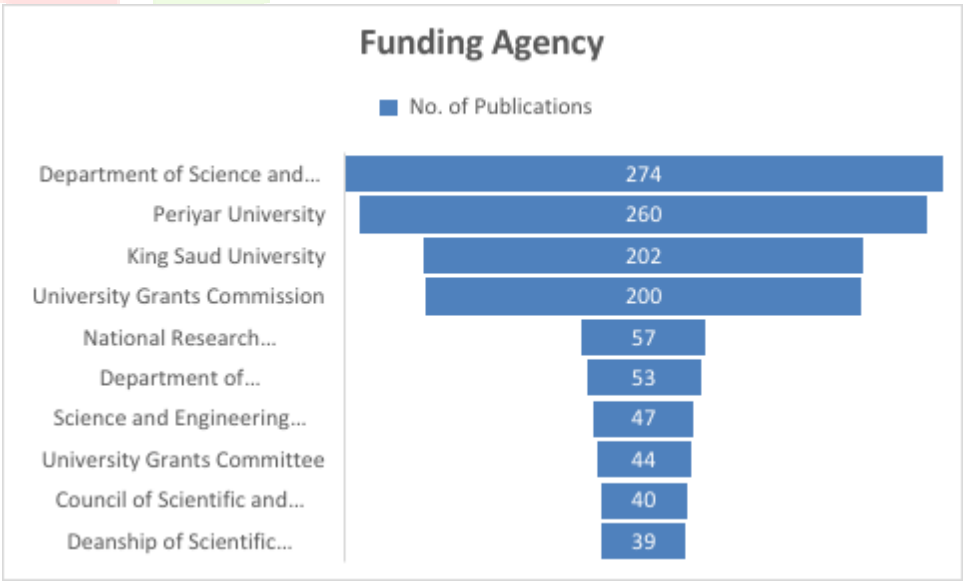


The table shows the distribution of different document types in the research publications at Periyar University. Articles dominate with 83.19% (2,326 publications), reflecting the university's focus on original research papers. Conference papers account for 5.79% (162 publications), while book chapters contribute 5.01% (140 publications), indicating significant scholarly contributions in edited volumes. Reviews (3.43%) and erratum (1.36%) are also present. Other document types like data papers, retracted articles, editorials, books, and letters are minimal, showing a preference for primary research output. The data demonstrates a strong emphasis on articles and research contributions in academic journals.

Table 3: Funding Agency

Rank	Funding Agency	No. of Publications	% of 2796
1	Department of Science and Technology, Ministry of Science and Technology, India	274	9.80
2	Periyar University	260	9.30
3	King Saud University	202	7.22
4	University Grants Commission	200	7.15
5	National Research Foundation of Korea	57	2.04
6	Department of Biotechnology, Ministry of Science and Technology, India	53	1.90
7	Science and Engineering Research Board	47	1.68
8	University Grants Committee	44	1.57
9	Council of Scientific and Industrial Research, India	40	1.43
10	Deanship of Scientific Research, King Faisal University	39	1.39

Figure 3

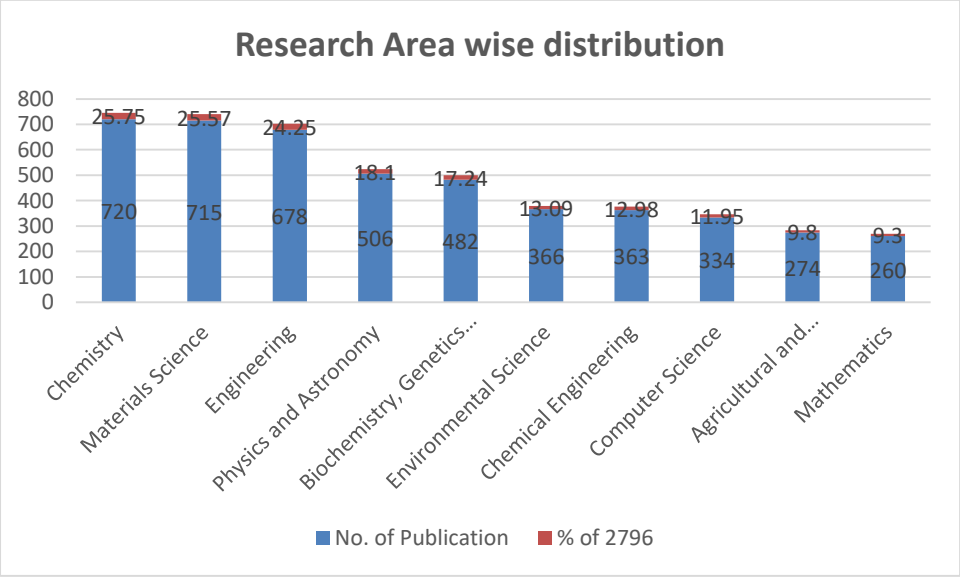


The table shows the top 10 funding agencies contributing to research publications at Periyar University, based on a total of 2,796 publications. The Department of Science and Technology, India, is the largest contributor with 274 publications (9.80%), followed closely by Periyar University itself with 260 publications (9.30%). King Saud University and the University Grants Commission contributed 202 (7.22%) and 200 (7.15%) publications, respectively. Other notable agencies include the National Research Foundation of Korea (2.04%), Department of Biotechnology (1.90%), and Science and Engineering Research Board (1.68%), reflecting a broad and diverse funding landscape for academic research.

Table 4: Research Area wise distribution

Sl. No	Research area	No. of Publication	% of 2796
1	Chemistry	720	25.75
2	Materials Science	715	25.57
2	Engineering	678	24.25
4	Physics and Astronomy	506	18.10
5	Biochemistry, Genetics and Molecular Biology	482	17.24
6	Environmental Science	366	13.09
7	Chemical Engineering	363	12.98
8	Computer Science	334	11.95
9	Agricultural and Biological Sciences	274	9.80
10	Mathematics	260	9.30

Figure 4

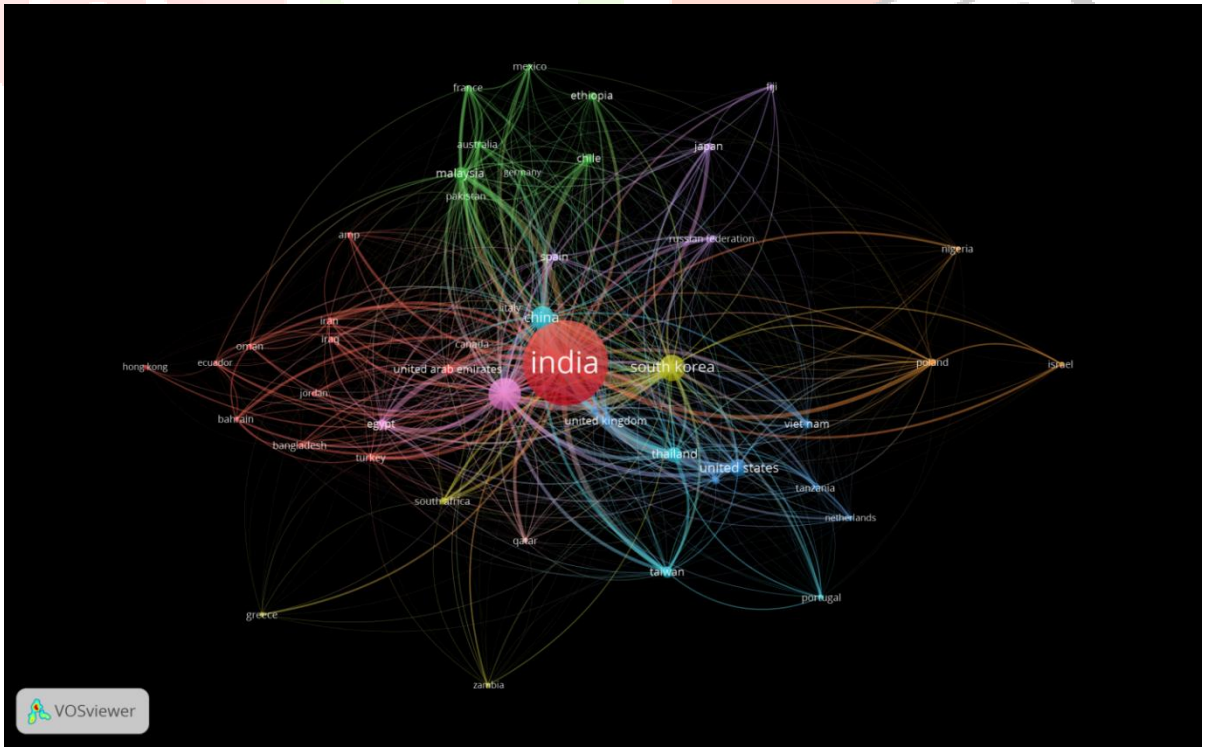


The table highlights the distribution of research publications across various fields at Periyar University. Chemistry leads with 25.75% (720 publications), closely followed by Materials Science (25.57%, 715 publications) and Engineering (24.25%, 678 publications). Other significant fields include Physics and Astronomy (18.10%, 506 publications) and Biochemistry, Genetics, and Molecular Biology (17.24%, 482 publications). Environmental Science, Chemical Engineering, and Computer Science also show notable contributions. These results reflect a diverse range of research activities across multiple disciplines at the university.

Table 5: Country wise

Sl No	Country	No of publication	% of 2796
1	India	2791	99.82
2	Saudi Arabia	430	15.38
3	South Korea	282	10.09
4	China	214	7.65
5	United States	121	4.33
6	Thailand	99	3.54
7	Malaysia	70	2.50
8	Taiwan	53	1.90
9	Egypt	46	1.65
10	Chile	45	1.61

Figure 5



The table shows the number of research publications from different countries at Periyar University. India leads with 99.82% (2,791 publications), showing most research comes from there. Saudi Arabia has 15.38% (430 publications), followed by South Korea with 10.09% (282 publications) and China with 7.65% (214 publications). Other countries like the United States (4.33%, 121 publications), Thailand (3.54%, 99 publications), Malaysia, Taiwan, Egypt, and Chile also contributed fewer publications.

Findings

The findings show that Periyar University's research has grown steadily from 2020 to 2024. The highest number of publications was in 2024 (608), showing good support for research. Most of the publications are articles (83.19%), focusing on original research, with some contributions from conference papers and book chapters. The main funding sources are the Department of Science and Technology (9.80%) and Periyar University (9.30%). Research is mainly in Chemistry, Materials Science, and Engineering, making up more than 75% of the total. Most publications (99.82%) come from India, followed by Saudi Arabia (15.38%) and South Korea (10.09%). These results show strong research growth and international collaboration.

Suggestion

Based on the findings, it is suggested that Periyar University continue to support research in high-performing fields like Chemistry, Materials Science, and Engineering to maintain its research output. Expanding international collaborations could help increase publications from countries like Saudi Arabia and South Korea. Encouraging more diversity in document types, such as reviews and data papers, may also enhance academic contributions. Additionally, securing more funding from a variety of agencies, like the Department of Biotechnology and Science and Engineering Research Board, could further boost research activities and outcomes at the university.

Conclusion

Research output refers to the quantity and quality of scholarly work produced by an institution, serving as a key indicator of its academic performance and contribution to knowledge generation. For Periyar University, research output has steadily grown from 2020 to 2024, reflecting the university's commitment to fostering research excellence. The university has consistently increased its number of publications across various disciplines, including Chemistry, Materials Science, Engineering, and more. This growth highlights the active role of faculty and students in advancing knowledge in their respective fields, supported by both national and international funding agencies. The data showcases the diverse range of research topics pursued at Periyar University, from fundamental sciences to applied technologies, with a significant focus on original articles. This research output is not only important for academic recognition but also plays a crucial role in addressing societal challenges through innovation and scientific discovery.

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