

# Publication Pattern of Faculty Members of Tezpur University, Assam: A Study through Indian Research Information Network System (IRINS) and Web of Science (WoS)

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## Abstract

*The proposed study presents an overview of Indian Research Information Network System (IRINS), a Research Information Management (RIM) software for Intellectuals and Scholars, designed to enhance collaboration and scholarly networking within academia and R&D communities. IRINS integrates seamlessly with existing research management systems and supports various academic identities, ensuring widespread access to scholarly publications across diverse subject categories. Through its database and analytics capabilities, IRINS provides insights into scholarly activity and impact, facilitating transparent evaluation of research engagement. Additionally, the abstract discusses the significance of publishing patterns in research, emphasizing their role in disseminating knowledge, establishing scholarly reputation, and tracking research impact and productivity. The objectives of the study include identifying top faculty members, analyzing departmental productivity, and examining publication distribution. Methodology involves data collection from the Tezpur University website and the Web of Science database, followed by meticulous analysis using Excel spreadsheets. Findings highlight top authors, productive departments, and publication distribution across various academic disciplines. Overall, the abstract underscores the importance of IRINS and publishing patterns in promoting collaboration, transparency, and academic excellence within the global research landscape.*

**Keywords:** Publication Pattern, Research Productivity, IRINS, Research Publication Trends, Research Information Management, Web of Science

## 1. Introduction

IRINS, a cloud-based software as a service for Intellectuals and Scholars, stands at the forefront of promoting collaboration and scholarly networking within the academic and R&D community. It is developed by the Information and Library Network (INFLIBNET) Centre and provide web-based Research Information Management (RIM) service offers a comprehensive platform for organizations and individuals to curate and showcase their scholarly communication activities. With its seamless integration with existing research



management systems and support for academic identities, IRINS ensures the widespread access and ingestion of scholarly publications from diverse sources. Covering a wide array of subject categories, IRINS caters to the diverse research interests and disciplines within the academic and scientific community. IRINS seamlessly integrates with academic identities such as ORCID, Scopus ID, Researcher ID, Microsoft Academic ID, and Google Scholar ID.

Moreover, IRINS provides invaluable insights into scholarly activity and impact through its extensive database and analytics capabilities. By tracking Altmetrics and providing detailed analytics on faculty members distribution, publication venues, and open access publishing models, IRINS facilitates transparent and evidence-based evaluation of research impact and engagement. Through its holistic approach to impact assessment, IRINS underscores its commitment to promoting collaboration, transparency, and accountability within the scholarly ecosystem, ultimately driving progress and innovation in research.

The publishing pattern in research serves as a backbone within the academic community, facilitating the dissemination of new knowledge and discoveries, establishing scholarly reputation, and tracking research impact and productivity. From enabling intellectual dialogue to preserving scientific knowledge for future generations, publishing patterns play a multifaceted role in advancing scholarly inquiry and innovation. By providing quantitative measures of scholarly influence and reach, publishing patterns contribute to the recognition and visibility of researchers and institutions, shaping career trajectories and funding opportunities. In essence, the publishing pattern in research embodies the ethos of academic excellence, collaboration, and progress, driving positive change in the global research landscape.

## **2. Literature Review**

Sevukan et al., (2024) conducted a study that focuses on analyzing research output in plant sciences by faculty members in central universities of India using bibliometric methods. A total of 348 bibliographic records from ISI Science Citation Index – Extended (SCIE) spanning the years 1997 to 2006 were analyzed. The analysis includes examining the output by year, document type, authorship pattern, and collaboration at international, national, and local levels. Additionally, the study tests the applicability of Bradford's and Lotka's laws. Results indicate that the literature in plant sciences has grown steadily over the study period, with articles being the predominant publication type. Collaboration in plant sciences research among central universities is found to be significant. Moreover, the productivity of authors aligns with Lotka's distribution, but the scattering of journal articles does not confirm to Bradford's distribution.

Bansode & Khot, (2022) proposed a study analyzing the publishing patterns of faculty members at Shivaji University, Kolhapur, department-wise from 2015 to 2019. Data is collected from the Indian Research Information Network System (IRINS) dashboard. The primary objectives include examining the publication patterns of faculty members, departments, and their scholarly publications along with citations. Research articles in journals emerge as the most prominent form of research output during the study period, followed by conference proceedings publications and miscellaneous categories.

Tyagi & Singh, (2021) highlight the growing importance of tracking research visibility for assessing research projects and outcomes, particularly within the context of the Indian Research Information Network System (IRINS). The study is conducted for an empirical examination of twenty-three Indian Institute of Technologies (IITs) to delve into various metrics, including faculty numbers, top scholarly publications with citations from Scopus and CrossRef, departmental data, and faculty publications. The findings underscore the importance of factors such as institutional backing and technological preparedness for the successful implementation of IRINS. Additionally, the study elucidates how institutional and technological factors significantly impact the adoption and reception of IRINS within the IITs of India.

M & Anbalagan, (2020) discusses the Indian Research Information Network System (IRINS), a Reference Information Management (RIM) tool developed by Information and Library Network (INFLIBNET) Centre. It outlines the objectives of the article, which include analyzing faculty members, departments, scholarly publications, citations, and their impact. The data for analysis was obtained from the IRINS platform of Gandhigram Rural Institute – Deemed to be University, Gandhigram. The findings highlight that the Department of Chemistry has the highest number of publications and citations, with Dr. P. Balasubramaniam from the Department of Mathematics having the highest individual publications and citations. The review emphasizes the importance of IRINS in facilitating research assessment and showcases its utility in analyzing scholarly contributions within academic institutions.

Balasubramani et al., (2019) discussed the Indian Research Information Network System (IRINS), an initiative of the Information and Library Network (INFLIBNET) Centre. Serving as a platform for higher education and research institutions, IRINS allows showcasing research contributions to the scholarly community. Analyzing data from IRINS, the study focused on 15 instances of academic and research organizations, examining faculty members, departments, scholarly publications, citations, and impact. Findings highlighted KL University, Guntur for having the highest number of faculty members, while the Indian Institute of Technology Madras received the most citations from Scopus and Crossref, indicating significant scholarly impact. IRINS facilitates institutions in effectively highlighting research achievements and contributing to knowledge advancement in their respective fields.

Nongrang and Tariang, (2013) analyzed research performance among faculty members of botany subjects at North-Eastern Hill University (NEHU), Meghalaya, from 2000 to 2010, using data from ISI Web of Science and Google Scholar. With 1218 articles from 263 journals, the analysis focused on publication trends, authorship patterns, productivity, and core journal identification. Findings showed fluctuating literature growth, with a peak in 2009-2010. Three-authored papers were common, comprising 39.61% of publications. Author productivity varied, with observed values differing from Lotka's equation predictions. Bradford's law analysis revealed discrepancies in core journal distribution, suggesting inconsistencies in botany journal productivity.

### **3. Objectives of the Study**

The foremost objectives of the study are considered as mentioned below:

- ❖ To find the highly cited publications with respect to author
- ❖ To determine top 10 faculty members based on publications and citations.
- ❖ To analyze most productive departments based on the number of publications.
- ❖ To find the distribution of research publications with respect to departments.

### **4. Methodology**

The study involved data collection from two primary sources: the official IRINS instance of Tezpur University (<https://tezu.irins.org/>) and the Web of Science database. Information pertaining to scholarly publications, faculty members, departments, and other relevant data was gathered from the Tezpur University IRINS instance, while bibliographic records related to the research topic were retrieved from the Web of Science database. The collected data from both sources were then meticulously organized and analyzed using Excel spreadsheets. Various bibliometric parameters, including publication trends, authorship patterns, citation counts, and other relevant metrics, were examined using MS Excel functions and tools. Descriptive statistics and graphical representations were employed to summarize and visualize the data.

### **5. Data Analysis and Interpretation**

The faculty member / scientist profile at Tezpur University offers a diverse pool of scholarly resources and expertise across various academic designations, including Dean, Head of the Department, Professor, Adjunct Professor, and Associate Professor. With a total of 343 faculty members, the institution boasts a rich academic environment conducive to research and innovation. The scholarly resources provided encompass 6879 publications, including 4724 journal articles and 1200 conference proceedings, reflecting the institution's commitment to knowledge dissemination and academic excellence. Additionally, Tezpur University's impact is underscored by an impressive citation count of 86,719 indicative of the considerable influence and recognition garnered by its faculty member's contributions to the academic community.

#### **5.1. Highly cited publications**

The data retrieved from Web of Science comprises various publication types, including journal articles and reviews, authored by researchers affiliated with Tezpur University and other institutions. These publications cover diverse topics such as network anomaly detection, synthesis of fluorescent carbon dots, pretreatment of lignocellulosic biomass, and routing in optical networks. As depicted in Table-1, Notable papers include "Network Anomaly Detection: Methods, Systems and Tools" by Bhuyan et al., "A Green and Facile Approach for the Synthesis of Water Soluble Fluorescent Carbon Dots from Banana Juice" by De and Karak, and "Recent Trends in the Pretreatment of Lignocellulosic Biomass for Value-Added Products" by Baruah et al.

The data also highlights collaborative efforts between Tezpur University and other institutions such as the University of Electro-Communications in Japan and Nanyang Technological University in Singapore. These publications have garnered significant citation counts and usage over the years, indicating their impact and relevance in their respective fields of research.

**Table 1: Highly Cited Publications**

S1 No.	Authors	Article Title	Document Type	Cited Reference Count	Times Cited, WoS Core	Times Cited, All Data bases	Publication Year
1	Bhuyan, MH; Bhattacharyya, DK; Kalita, JK	Network Anomaly Detection: Methods, Systems and Tools	Article	226	712	805	2014
2	De, B; Karak, N	A green and facile approach for the synthesis of water soluble fluorescent carbon dots from banana juice	Article	22	663	684	2013
3	Baruah, J; Nath, BK; Sharma, R; Kumar, S; Deka, RC; Baruah, DC; Kalita, E	Recent Trends in the Pretreatment of Lignocellulosic Biomass for Value-Added Products	Review	211	504	530	2018
4	Thakur, S; Karak, N	Green reduction of graphene oxide by aqueous phytoextracts	Article	38	493	505	2012
5	Chatterjee, BC; Sarma, N; Oki, E	Routing and Spectrum Allocation in Elastic Optical Networks: A Tutorial	Article	126	443	463	2015
6	Das, K; Mukherjee, AK	Crude petroleum-oil biodegradation efficiency of Bacillus subtilis and Pseudomonas aeruginosa strains isolated from a petroleum-oil contaminated soil from North-East India	Article	37	429	501	2007

7	Choudhury, B; Choudhury, A	Ce <sup>3+</sup> and oxygen vacancy mediated tuning of structural and optical properties of CeO <sub>2</sub> nanoparticles	Article	41	304	321	2012
8	Das, SK; Mahapatra, S; Lahan, H	Aluminium-ion batteries: developments and challenges	Review	175	292	313	2017
9	Hiloidhari, M; Das, D; Baruah, DC	Bioenergy potential from crop residue biomass in India	Review	58	292	297	2014
10	Das, D; Nath, BC; Phukon, P; Dolui, SK	Synthesis and evaluation of antioxidant and antibacterial behavior of CuO nanoparticles	Article	23	286	293	201

## 5.2. Top 10 Productive Authors

The top 10 authors from Tezpur University, as identified from data found on Web of Science, have made significant contributions to their respective fields. Niranjana Karak from the Department of Chemical Sciences leads the list with 268 publications and an impressive citation count of 9313, reflecting a high level of scholarly impact with an H-index of 51 and followed by Ramesh Deka who is also from the Department of Chemical Sciences, with 219 publications and 4108 citations, demonstrating substantial research output and influence. Ashis K. Mukherjee from the Department of Molecular Biology and Biotechnology ranks third, with 133 publications and 3915 citations, indicating substantial contributions to the field. Other notable authors include Amarjyoti Choudhury and Ashok Kumar from the Department of Physics, each with over 100 publications and significant citation counts, highlighting their contributions to advancing knowledge in their respective disciplines. Overall, these top authors exemplify the research excellence and impact of Tezpur University across diverse fields of study.

**Table 2: Top 10 Productive Authors**

Sl. No.	Authors	Department	No. of Publications	No. of citations	H-index
1	Karak, Niranjana	Department of Chemical Sciences	268	9313	51
2	Deka, Ramesh	Department of Chemical Sciences	219	4108	33
3	Mukherjee, Ashis K. and Biotechnology	Department of Molecular Biology	133	3915	37
4	Choudhury, Amarjyoti	Department of Physics	107	3912	33
5	Kumar, Ashok	Department of Physics	129	3362	32
6	Dolui, Swapan K.	Department of Chemical Sciences	153	3244	31

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7	Maji, T. K.	Department of Chemical Sciences	115	2939	31
8	Sarma, Bipul	Department of Chemical Sciences	104	2608	27
9	Mandal, Manabendra and Biotechnology	Department of Molecular Biology	101	2167	28
10	Mohanta, Dambarudhar	Department of Physics	106	1167	18

### 5.3 Most Productive Departments

Table-3 offers a comprehensive overview of scholarly productivity and impact across various academic departments. Notably, the Department of Chemical Sciences emerges as a powerhouse, boasting an impressive publication count of 1184 along with substantial Scopus and CrossRef citations of 23202 and 25073 respectively, resulting in a commendable H-index of 63. Similarly, the Department of Electronics and Communication Engineering demonstrates significant scholarly output with 770 publications and notable citation metrics, underscoring its impact within the field. Conversely, departments such as Law and Education exhibit lower publication counts and citation metrics, reflecting their relatively smaller scholarly footprint. Overall, this data underscores the diverse landscape of academic disciplines, each contributing uniquely to the broader scholarly ecosystem with varying degrees of productivity and impact.

**Table 3: Department wise scholarly productivity and its impact**

Department	Pub(s) Count	Scopus Citations	Crossref Citations	H-index
Department of Business Administration	30	155	211	5
Department of Chemical Sciences	1184	23202	25073	63
Department of Civil Engineering	61	667	888	14
Department of Commerce	28	48	93	4
Department of Computer Science and Engineering	536	4969	4441	33
Department of Cultural Studies	26	11	35	2
Department of Education	6	2	5	1
Department of Electrical Engineering	59	489	483	14
Department of Electronics and Communication Engineering	770	4729	4987	28
Department of Energy	468	10542	11886	53
Department of English	33	74	97	6
Department of Environmental Science	357	6753	8209	42
Department of Food Engineering and Technology	495	6779	7654	40
Department of Law	1	0	0	0

Department of Mass Communication and Journalism	12	52	7	0	3
Department of Mathematical Sciences	246	1417		1276	19
Department of Mechanical Engineering	253	2134		2390	25
Department of Molecular Biology and Biotechnology	556	9186		10261	49
Department of Physics	801	8798		10540	46
Department of Social Work	11	34		34	3
Department of Sociology	29	75		107	5

#### 5.4 Distribution of Publications with respect to Departments

Table-4 provides important insights into the scholarly output of various academic departments across different publication types. Department of Chemical Sciences emerges as a prolific contributor with a substantial number of journal articles, book chapters, and books, demonstrating a comprehensive engagement with scholarly discourse. Similarly, Department of Environmental Science highlights a robust publication record across journal articles and book chapters, indicative of its significant contributions to the field. In contrast, few departments exhibit a more focused output, such as Department of Social Work, which primarily contributes through journal articles and book chapters. Additionally, the Central Library's contribution is noteworthy, with a balanced distribution across journal articles, conference proceedings, book chapters, and books, reflecting its role as a hub for scholarly dissemination and knowledge dissemination. Overall, this data highlights the diverse scholarly activities undertaken by different departments, each contributing uniquely to their respective fields of study.

**Table 4: Distribution of Publications with respect to Department**

Department name	Journal articles	Conference proceedings	Book chapters	Books	Others
Department of Sociology	20	0	26	5	6
Central Library	8	8	3	1	5
Department of Computer Science and Engineering	4	13	1	0	
Department of Assamese	8				
Department of Applied Sciences	19	2	5	0	5
Department of Assamese	16	1	7	1	2
Department of Business Administration	31	4	5		9
Department of Chemical Sciences	1124	25	74		72
Department of Civil Engineering	46	19	7	1	1



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Department of Commerce	32	1	1		
Department of Cultural Studies	28	1	30	1	4
Department of Education	13		7	1	
Department of Electrical Engineering	30	25	3	1	
Department of Electronics and Communication Engineering	373	376	36	0	23
Department of Energy	295	103	77	0	44
Department of English	54	6	30	7	8
Department of Environmental Science	330	8	30	0	37
Department of Food Engineering and Technology	425	1	43	8	48
Department of Hindi	0	0	0	0	0
Department of Law	1	0	0	0	0
Department of Mass Communication and Journalism	21	3	4	1	0
Department of Mathematical Sciences	266	12	3	2	4
Department of Mechanical Engineering	188	139	62	7	10
Department of Molecular Biology and Biotechnology	515	21	39	7	113
Department of Physics	749	99	26	0	26
Department of Social Work	5	0	2	0	4
Research Institute for Ubiquitous Energy Devices	69	2	8	0	9
Department of English and Foreign Languages	10		3	1	1

## 6. Conclusion

IRINS stands as a pivotal tool for fostering collaboration and scholarly networking within the academic and R&D community. Its seamless integration with existing research management systems and support for academic identities ensure widespread access to scholarly publications, promoting transparency and accountability in research evaluation. Through its extensive database and analytics capabilities, it offers invaluable insights into scholarly activity and impact, facilitating evidence-based evaluation and driving progress in research. Furthermore, the analysis of publishing patterns within academia underscores the multifaceted role of scholarly dissemination in advancing knowledge and shaping research trajectories. By recognizing the top faculty members, analyzing departmental productivity, and assessing publication distribution, this study sheds light on the diverse scholarly landscape, emphasizing the importance of data-driven approaches in understanding and enhancing scholarly contributions. Overall, IRINS and the insights gained from publishing patterns contribute significantly to the promotion of academic excellence and innovation within the global research community.

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