
Research Visibility of Indian Academics as reflected in Web of Science: A Study

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ABSTRACT: This paper analyses the research visibility of faculty members working at Tumkur University, India. A total of 665 articles published by the faculty members of Tumkur University during the last ten years (2013-2022) are downloaded from the Web of Science. It is observed that the number of articles published by the faculty members have been slightly increased during the last 10 years. Even though there is a positive correlation between the number of articles found in the Web of Science and the year, the correlation is not significant ($r = .028, p = .940$). Further, it is also observed that the citation counts have increased during the last ten years in the Web of Science database. Among the top 10 faculty members, Nagabhushana H., from Physics, has the highest number of publications (354) and secured 1st rank, followed by Girish (76) and Suresh (25), who secured 2nd and 3rd rank, respectively. The notable finding of the study is that there is a negative correlation between the number of articles published by the faculty members and the year. Hence, we advocate that the faculty members keep posting good number of articles in various national and international journals to have more visibility in the Web of Science.

Keywords: Research Visibility, Faculty Members, Tumkur University, Citation Databases, Web Of Science

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1. Introduction

In recent years, research publications have played a vital role in higher learning and research institutions. Further, it is noticed that research publications form an integral part of the operations of research institutes, government agencies and academic departments of universities, particularly in the sciences. Indeed, scientific publications play a central role in systematically documenting research findings and facilitating the exchange of information between researchers (Mensah & Bekoe, 2010; Klain-Gabbay & Shoham, 2018; Mingle, 2020). Research productivity refers to innovative thoughts and ideas that lead to publishing articles in leading journals, patent registration or documentation. The Web of Science is a significant citation database that provides access to the world's leading scholarly literature. The universities and research institutions have assessed the performance of academic/faculty and research staff based on the scholarly output of their employees. The study of web visibility is relatively new, and there are still evolving trends regarding research in the area. Research leads to the development and increase in the visibility of an institution and, subsequently, its ranking. The individual staff members

also benefit as it leads to their career development and contribution to the community. It also makes them famous, and they become authorities in their fields. Hence, a researcher occupies a significant position in an institution (Udo-Anyanwuet al., 2023).

Dang (2017) opines that the impact of research is far-reaching as it not only stops in the institutions but extends to the communities as new knowledge brings about new ideas and innovations. Research publications form an essential part of the activities of research institutes, government agencies and tertiary institutions, especially the academic staff. The impact of academics can be felt in the scientific community through effective research dissemination. Considering the importance of research productivity and impact, the present study has attempted to know the research visibility of faculty members of Tumkur University, Tumakuru. The Web of Science database has been used to know the visibility of articles of the faculty members.

2. Review of Literature

A plethora of research has already been conducted by various researchers about the research visibility of faculty members. Agarwal et al., (2016) believed that evaluating researchers and their research impact in modern times has become increasingly popular since the publications can easily be retrieved from any major research database such as Pubmed, Scopus, and Web of Science. Yliopisto (2019) stated that the choice of where to publish one's article is a vital factor contributing to the visibility of such articles. Ogunleye (2019) noted that the visibility of publications could be enhanced when journals use prevalent databases for publications, viz., Ulrich's Web, Web of Science and Scopus. The Web of Science, described as the most trusted publisher-independent citation database globally, is acclaimed as the search engine that affords researchers great access, reliable discovery and assessment (Web of Science Group, 2019). Mingle et al. (2020) stated that regarding academic publications, web presence indicators may include keywords (pointers to a scientist's area of specialization), choice of the journal (journal impact factor), and parent institution (website mentions/profiles and Institutional Repository), number of hits (total number of works/articles in a Google search); and citation counts (how many times an individual have been cited).

Ochollaet al. (2016) study reflected on the representation of the University of Zululand (UNIZULU) and Moi University (MU)'s research publications in WoS (Web of Science) and Scopus between 2003 and 2013 as an indicator of active research engagement, quality, and international visibility. The results reveal that the publications of most of the researchers (approximately 70%) were not indexed in the databases. The publication subject coverage at MU was largely in the Health Sciences/Medicine, while Physical Sciences coverage was stronger at the University of Zululand.

In 2018, Basavaraja conducted a study to identify the research productivity of the University of Mysore and Bangalore University. The study also tried to retrieve information regarding the total number of citations, h-index, and average citation per article of the faculty members of the University of Mysore and Bangalore University using Web of Science. The result of the study shows that 4838 records of the University of Mysore and 2784 records of the Bangalore University have been included in the Web of Science database, out of which, the majority (University of Mysore-91.28% and Bangalore University-91.38%) of the records are research articles.

Suresh and Thanuskodi (2019) attempted to analyze the growth and development of research activity of ICAR- Indian Institute of Horticulture, Bangalore. Data for the study were retrieved from the Web of Science database for 30 years, from 1989 to 2018. Web of Science indexed 1095 publications with 5952 citations for the period. Bio-technology has been identified as the most productive research division in ICARIIHR, with 149 papers (13.6%). Journal articles were the most published form of literature (90.13%), wherein the Indian Journal of Agricultural Sciences, followed by Current Science, were the top journals.

Kumar and Kumar (2019) investigated the scientific research productivity of the Indian Institute of Science (IISc), Bangalore, for a period of 05 years during 2014-2018. 12,130 research papers were retrieved as SCIE publications from the WoS bibliographical database and analyzed. The study is focused on finding out the year-wise institutional contribution in research, compound annual growth rate, areas of interest, collaborating institutions and countries, mode of publications, research funding agencies, prolific journals, prolific authors, authorship pattern, degree of collaborations, etc.

In the same year, Seeland Zierer (2019) investigated the fitness-for-purpose and soundness of bibliometric parameters for measuring and elucidating the performance of researchers in education sciences in Germany and other European countries for benchmarking. The results demonstrate that the visibility of German education in international journals is not as bad as is often assumed.

A study by Hamdiya Sherin et al., (2021) evaluated the research productivity of IISc, Bengaluru, based on the data collected from the Web of Science for twenty years from 2000-2019. A total of 29580 data were downloaded and analyzed. The study's findings revealed that the growth of publications by IISc is consistently an increasing trend, with the preferred form of publication being research articles.

Saikia (2021) explored the research productivity of central universities in Northeastern states of India based on research publications indexed by the Web of Science database from 2010 to 2020. The result of the study shows that Tezpur University has published the highest number of research publications and gained the highest number of citations, helping to gain the highest number of h-index values during the selected period.

The study conducted by Aguinis and Tosun (2021) examined the scholarly impact, which is critical to universities in their aspiration to create, disseminate and apply knowledge. The authors describe the multidimensional and multistakeholder nature of the critical and yet elusive concept of scholarly impact. The authors delineate multiple dimensions of impact, different stakeholders involved and recommendations for enhancing scholarly impact in the future.

Asubiario (2022) the study found that less than 10% of journals from Sub-Saharan Africa were indexed in the Web of Science and Scopus. Other relevant studies were outdated and only included an ordinary count of journals in the Journal Citation Report (JCR) of the Web of Science without comparison to other research indexing databases.

Basavaraja and Sampath Kumar (2022) used the Web of Science (WoS) database as a source for extracting the data, and a total of 2333 documents on Scientometrics literature were retrieved from WoS from 1980-2021. The result of the study showed that the exponential trend was found in the open-access publications on Scientometrics literature, and the R² value is 0.0161. The study found a positive correlation between the year and the number of articles ($r=.816$, $p=.000$), and the correlation is significant at 0.01 level.

Adriaanse and Rensleigh (2022) conducted the study and found that the results of the e-visibility survey reported positive responses and overall positive attitudes and perceptions towards the e-visibility training. This research emphasizes e-visibility training as part of an e-visibility strategy to increase research's online presence, researcher discoverability, and online research output accessibility to enhance the researchers' e-visibility.

Recently, Asubiario and Onaolapo's (2023) study evaluated the coverage of African journals in Web of Science, Scopus, and CrossRef. The volume of African journals in Web of Science and Scopus databases is 7.4% (N = 166) and 7.8% (N = 174), respectively, compared to the 45.6% (N = 1,017) covered in CrossRef. While making up only 17% of all the African journals, South African journals had the best coverage in the two most authoritative databases, accounting for 73.5% and 62.1% of all the African journals in Web of Science and Scopus, respectively.

3. Research questions

In the present study, the following research questions are formulated:

- a) What per cent of articles published by the faculty members are visible in the Web of Science?
- b) How many citations were received by the faculty members during 2018-2022?
- c) Who is the most productive author based on the visibility of documents and citations received?
- d) What is the H index of faculty members as reflected in Web of Science?

4. Scope and Methodology

The data was collected from the Web of Science database using the keyword "*Tumkur University*". The number of records found against the word "*Tumkur University*" in the Web of Science during the last 10 years (2013-2022) are downloaded and recorded in the MS Excel sheet for further analysis.

5. Data Analysis and Interpretation

Table 1 represents the research visibility of faculty members of Tumkur University. In the present study, the research visibility refers to the number of articles published by the faculty member of Tumkur University as reflected in Web of Science. It is observed from the table that a total of 665 records were found in the Web of Science (2013-2022). It is also noticed that a greater number of articles were found in the year 2017, with 98 (14.7%) and the most minor articles were found in the year 2013, with 37 (5.6%). To know the association between the year and number of articles published during the last 10 years, Pearson's correlation has been applied. The result of the study shows that there is no significant positive correlation between the year and the visibility of records ($r=.028$, $p=.940$).

Years	Visibility of Records	Percentage	r	p-value
2013	37	5.6	.028	.940
2014	64	9.6		
2015	87	13.1		
2016	56	8.4		
2017	98	14.7		
2018	81	12.2		
2019	70	10.5		
2020	52	7.8		
2021	61	9.2		
2022	59	8.9		
Total	665	100		

Table 2. Number of citations received by faculty members

Years	Number of citations received	Cumulative citations	Percentage	r	p-value
2013	21	21	0.2	.995	.000**
2014	212	233	1.7		
2015	568	801	4.5		
2016	668	1469	5.3		
2017	1093	2562	8.7		
2018	1309	3871	10.4		
2019	1754	5625	13.9		
2020	2013	7638	16.0		
2021	2448	10086	19.4		
2022	2502	12588	19.9		
Total	12588		100.0		

**Correlation is significant at the 0.01 level (2-tailed).

The present study also tried to know the number of citations received by faculty members during 2013-2022. It can be seen in

Table 2 that a total of 12588 citations were received by the articles published by faculty members during 2013-2022, and the number of citations increased from 2013 to 2023. The highest number of citations was received in the year 2022, with 2502 (19.9%) citations, and the lowest was in the year 2013, with 21 (0.2%) citations. Pearson's correlation has been applied to determine the correlation between the year and the number of citations received. It is found that there is a significant positive correlation between the year and the number of citations received during 2013-2022 ($r=.995, p=.000$).

Table 3. Ranking of authors based on the visibility of articles

Authors	Visibility of articles during the last ten years											Ranking	r	p-value
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total			
Nagabhushana H	14	44	53	34	61	49	36	18	29	16	354	1	-.301	.398
Girish K S	15	10	12	7	9	8	8	5	1	1	76	2	-.920	.000**
Sreenivasa Swamy	1	4	4	0	2	4	6	6	2	3	32	3	.314	.377
Suchetan P.A	3	4	2	6	3	1	6	2	0	0	27	4	-.484	.157
Suresh D	0	0	14	5	3	1	0	1	1	0	25	5	-.316	.373
Raghavendra Kumar P	0	0	2	3	1	3	5	4	1	4	23	6	.633	.049*
Devaraja S	5	2	2	2	1	0	2	2	2	3	21	7	-.271	.449
Vaidya R.G	3	1	1	2	1	0	1	1	3	1	14	8	-.152	.675
Mallesappa J	0	4	2	1	0	1	1	0	1	3	13	9	-.041	.910
Vijaya Kumar G.R	0	0	0	2	4	2	2	0	2	0	12	10	.157	.664

**Correlation is significant at the 0.01 level (2-tailed), *Correlation is significant at the 0.05 level (2-tailed).

Table 4. Ranking of Authors based on Citations

Authors	Number of citations received during last 10 years											Ranking	r	p-value
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total			
Nagabhushana H	4	81	212	271	416	507	612	757	851	871	4582	1	.996	.000**
Girish K.S	12	54	106	135	145	195	234	287	299	253	1720	2	.963	.000**
Suresh D	0	0	47	65	113	141	216	250	354	310	1496	3	.975	.000**
Devaraja S	6	10	23	21	33	38	51	77	88	109	456	4	.965	.000**
Sreenivasa S	0	3	7	12	8	15	25	49	92	105	316	5	.880	.001**
Vijayakumar G.R	0	0	0	2	55	68	59	47	37	34	302	6	.659	.038*
Raghavendra Kumar P	0	0	0	5	11	16	30	72	70	97	301	7	.916	.000**
Ramakrishna G	0	10	39	33	53	46	22	26	35	27	291	8	.361	.306
Suchetan P.A	0	0	4	10	8	17	18	38	60	58	213	9	.923	.000**
Mallesappa	0	5	19	22	25	18	31	26	29	33	208	10	.879	.001**

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed)

Table 5. Ranking of authors based on H-Index (Top-10 Authors)

Name of the Authors	Article included	Citations	H-Index	Ranking
Nagabhushana H	354	4582	54	1
Girish K S	76	1720	29	2

Suresh D	25	1496	19	3
Sreenivasa Swamy	32	316	14	4
Devaraja S	21	456	12	5
Raghavendra Kumar P	23	301	11	6
Vijayakumar G. R	12	302	9	7
Suchetan P.A	27	213	9	8
Mallesappa J	13	208	8	9
Ramakrishna	8	291	7	10

Table 6. The most cited articles (Top-10) (2013-2022)

Sl. No	Title	Authors	Name of the Journals	JIF	Publication Year	Total Citations
1	Green synthesis of multifunctional zinc oxide (ZnO) nanoparticles using Cassia fistula plant extract and their photodegradative, antioxidant and antibacterial activities	Suresh, D ;Nethravathi, PC ; Udayabhanu; Rajanaika, H ; Nagabhushana, H. , Sharma, SC.	Materials Science in Semiconductor Processing	4.1	2015	271
2	Emerging roles of hyaluronic acid bioscaffolds in tissue engineering and regenerative medicine	Hemshakar, M; Thushara, RM, Chandranayaka, S; Sherman, LS, Kemparaju, K. Girish, KS.	International Journal of Biological Macromolecules	8.2	2016	122
3	Effect of Calcination Temperature on Structural, Photoluminescence, and Thermo luminescence Properties of Y2O3:Eu3+ Nanophosphor	Krishna, RH; Nagabhushana, BM; Nagabhushana, H ; Murthy, NS; Sharma, SC; Shivakumara, C; Chakradhar, RPS	Journal of Physical Chemistry C	3.7	2013	110
4	Artocarpus gomezianus aided green synthesis of ZnO nanoparticles: Luminescence, photocatalytic and antioxidant properties	Suresh, D ;Shobharani, RM; Nethravathi, PC; Kumar, MAP; Nagabhushana, H; Sharma, SC	Spectrochimica Acta Part A-Molecular and Biomolecular Spectroscopy	4.4	2015	106
5	Effective fingerprint recognition technique using doped yttrium aluminate nano phosphor material	Darshan, GP; Premkumar, HB; Nagabhushana, H ; Sharma, SC; Prashanth, SC; Prasad, BD	Journal of Colloid and Interface Science	9.965	2016	101
6	Facile green fabrication of nanostructure ZnO plates, bullets, flower, prismatic tip, closed pine cone: Their antibacterial, antioxidant, photoluminescent and photocatalytic properties	Madan, HR; Sharma, SC; Udayabhanu; Suresh, D ; Vidya, YS ; Nagabhushana, H ;Rajanaik, H; Anantharaju, KS; Prashantha, SC; Maiya, PS	Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy	4.4	2016	100
7	Combustion synthesized tetragonal ZrO2: Eu3+ nanophosphors: Structural and photoluminescence studies	Vidya, YS; Anantharaju, KS ; Nagabhushana, H ; Sharma, SC; Nagaswarupa, HP; Prashantha, SC; Shivakumara, C; Daniithkumar	Spectrochimica Acta Part A-Molecular and Biomolecular Spectroscopy	4.4	2015	100
8	Systems biology-based approaches toward understanding drought tolerance in food crops	Jogaiah, S; Govind, Sharathchandra Ramsandra ; Tran, LSP	Critical Reviews in Biotechnology	9.0	2013	94
9	Biogenic synthesis of zinc oxide nanoparticles using Ruta graveolens (L.) and their antibacterial and antioxidant activities	Lingaraju, K; Naika, HR; Manjunath, K; Basavaraj, RB; Nagabhushana, H ; Nagaraju, G; Suresh, D	Applied Nanoscience	3.869	2016	79
10	Green synthesis of zinc oxide nanoparticles from the leaf, stem and in vitro grown callus of Mussaendafrondosa L.: characterization and their applications	Jayappa, MD; Ramaiah, CK; Kumar, MAP; Suresh, D ; Prabhu, A; Devasya, RP; Sheikh, S	Applied Nanoscience	3.869	2020	72

The study also tried to know the most productive author based on the visibility of articles as reflected in Web of Science. The table shows that, among the top 10 faculty members, Nagabhushana has the highest publications (354) and secured 1st rank, followed by Girish K.S (76) and Sreenivasa Swamy (32), secured 2nd and 3rd rank, respectively.

It is also noticed that the number of articles found in the Web of Science from 2013 to 2022 declined for most faculty members. The correlation test has also been applied, and it is found that the top five most productive authors have a negative correlation between the articles found in the Web of Science and the year.

The ranking of authors based on citations is presented in Table 4. The table shows that among the top 10 faculty members, Nagabhushana H has received the highest number of citations (4582) and secured 1st rank, followed by Girish K.S (1720) and Suresh D (1496), secured 2nd and 3rd rank, respectively. The significant finding of the study is that most of the authors have received a good number of citations to their research papers. The correlation test also indicated a positive correlation between the year and the number of citations received by most of the faculty members. Table 5 shows the ranking of authors based on H-Index. Of the top 10 faculty members of Tumkur University, Nagabhushana H. has the highest number of h-Index (54) and secured 1st rank, followed by Girish K.S (29) and Suresh D (19) who got 2nd and 3rd rank respectively.

Table 6 presents the most cited articles in Web of Science databases. It is found that the article entitled "Green synthesis of multifunctional zinc oxide..." by Suresh D and others published in 2015 has received 271 citations. Another highly cited article is "Emerging role of hyaluronic..." by Girish and others, published in 2016, received 122 citations.

6. Discussion and Conclusion

The present study found various exciting results concerning the research visibility of faculty members of Tumkur University. Firstly, the study noticed that the authors have produced many research articles in various national and international journals during the last ten years. The total number of records found on the Web of Science is 665.

However, it is observed from the study that there is no significant positive correlation between the year and the visibility of records ($r = .028$, $p = .940$). It can also be seen from the study that a total of 12588 citations were received for the articles published by the faculty members during 2013-2020. The Correlation test indicates a significant association between the number of citations received and year.

The notable findings of the study are that the number of articles found in the Web of Science from 2013 to 2022 declined for most of the faculty members. The correlation test has also been applied, and it is found that the top five most productive authors have a negative correlation between the articles found in the Web of Science and the year except Sreenivasa Swamy. In this context, it is recommended that the faculty members publish many articles in scholarly journals to have more visibility in various citation databases, viz., Scopus and Web of Science. Since there has been a decline in the number of articles during the last ten years, the faculty members need to keep publishing quality research articles in reputed journals to have more visibility.

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