

Bibliometric Analysis of Literature on Information Anxiety, Library Anxiety, and Technology Anxiety

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ABSTRACT

The present paper examines the availability of literature on Information anxiety, Library anxiety, and Technology anxiety based on data extracted from the Web of Science database. The paper examines the growth of literature on the selected topic up to 2021 as indexed in the Web of Science database, measures country-wise contribution and author-wise contribution. First publication on the selected topic was recorded for the year 1990 in Web of Science database. USA has largest share of publications on the topic. Maximum number of contributions and maximum citations are noted for the year 2022. University of Malaya is top contributing institution. Onwuegbuzie is top contributing author. VOSviewer based collaborative network visualization map of journals as well as of authors are given. As per our knowledge, this study is first to explore literature output on Library Anxiety, Information Anxiety and Technology anxiety in English language. This paper will also encourage Indian authors to write on the topic as the study has found only five contributions from India in the Web of Science database. The study is useful for Researchers and faculty in the field of Library and Information Science as well as of Information Communication Technology. Bibliometric studies contribute towards knowledge management.

KEYWORDS: Library anxiety; Information anxiety; Information seeking anxiety; Technology anxiety; Bibliometrics; Scientometrics.

INTRODUCTION

In the present information society, academicians make use of technology everyday for studies, teaching, and research. The modern library has become a dynamic integration of information and technology (Jerabeck, 2001). In modern libraries, both information anxiety and technology anxiety cause hesitation in exploring

the treasure of knowledge in the form of different documents in traditional form as well as modern Internet-based information sources. Under library anxiety, students experience decreased awareness of alternate paths to access information, thereby increasing their feelings of failure and hopelessness (Nieves-Whitmore, 2021). It is an important aspect of information seeking behaviour (Hartog, 2017). Constance

Mellon first used the term 'library anxiety' (Nieves-Whitmore, 2021; Shoham and Mizrachi, 2021).

Information anxiety erupts from information overload. Advancements in communication technology have accelerated the availability of information sources. When there is an abundance of literature available in many forms, furthermore in different types of published as well as unpublished documents, one gets confused in following the right path of searching for relevant information. In this information society, which comprises many roads of search strategies interconnected through the web, one tends to slip the right path of searching, when encountered by attractive keywords. Every individual regardless of education level, accomplishments, or status, wants to be regarded as intelligent and knowledgeable (McAfee, 2018). It is not possible to scan the whole available literature. It brings frustration which leads to information avoidance and then information anxiety. Information avoidance mars the purpose of the library and information professional's efforts.

Technology anxiety is a state in which one feels unable to cope with everyday new advancements in technology. It leads to hesitation in experimenting with new avenues. Although basic library skills now require computer literacy, studies show that one-third of college students in the United States suffer from technophobia and computer anxiety (Mark & Jacobson, 1995), which is the fear and uneasiness felt by an individual while using computer technology (Beckers).

The feeling of anxiety is an important barrier in academic environments (Erfanmanesh, 2011). If we want a solution to the problem, the only solution is information literacy. An information-literate person is one who "must be able to recognize when information is needed and can locate, evaluate, and effectively use the needed information (ALA, 1989).

For developing literacy skills in students, assignments based on literature searches can be designed so that they have to conduct research as part of completing their academic

assignments (Onwuegbuzie, Jiao, and Bostick, 2004). Marketing techniques can also be applied by libraries. Marketing of library resources and services can help to promote information literacy and decreases library anxiety.

Bibliometrics analysis (Donthu, 2021) is quantitative analysis of publication output. Just like bibliographies vary in scope, so as the bibliometric analysis. It may cover literature output on some topic, by some journal, by some organization, by some country or so. Bibliometric analysis helps to identify prominent authors, journals, institutions, or countries in context of published literature on a specific subject and their co-citation patterns. Thus, it contributes to knowledge management in information explosion era and helps librarians and information specialists in selection of publications.

OBJECTIVES OF THE STUDY

1. To explore the growth of publications on 'Library anxiety', 'Information anxiety' and 'Technology anxiety'.
2. To know various research areas, in which anxiety research is mainly undertaken.
3. To explore impactful authors on the topic.
4. To identify major countries, institutions and authors contributing to the research output on the selected topic.
5. To identify journals that brought out more publications on this subject.
6. It also tries to visualise co-citation patterns using the VOSviewer.

METHODOLOGY

The present study makes use of bibliometric analysis of publications. First of all, articles on information anxiety, library anxiety as well as technology anxiety were read to explore the concept and to know various synonyms which could help in to search for the topic. Web of Science core collection (<https://www.webofscience.com/wos/woscc/summary/fdbac619-08a7-4816-93e4-c818d3316912-1e509e01/relevance/1>) was searched and data was taken from Web of

Science database to conduct a bibliometric study of literature availability on 12th January, 2022.

VOSviewer (version 1.6.15) (<https://www.vosviewer.com/>) has been used for analysis of bibliometric data.

Scope of the study: The study covers 221 articles found in the Web of Science database in January, 2022 (Data related to citations has been updated in June, 2022). Publications on the selected topic in Web of Science go back to the Year 1990. The present paper covers publications from 1990 to 2021.

Inclusion Criteria: The search query was refined by Document type excluding 'Book reviews', Meeting abstracts', Editorial materials and Letters. The publication year 2022 has also been excluded. Other filters/search limits in the context of Web of Science categories, authors, author affiliations, publishers, language, group authors, funding agencies and conference titles, were not applied.

Search Query: The search query was conducted as "Library anxiety" OR "Information anxiety" OR "Information seeking anxiety" OR "Technology anxiety". It was a phrase search. Individual search under each phrase has also been carried out and observed that the phrase search "Library anxiety" fetches 91 results while "Information anxiety" 39 results, "Information

seeking anxiety" 7 results and "Technology anxiety" fetch 94 results.

Limitation of the Study: The scope of the study is limited to the publications indexed in Web of Science database. Other publication on the selected topic, but not indexed in the Web of Science database are not included in the study.

ANALYSIS AND RESULTS

Annual growth trend of publications on "library anxiety", "information anxiety" and "technology anxiety" in web of science database

Year-wise growth of publications shows data from 1990 to 2021 (Table 1, figure 1 and figure 2). First publication was published in 1990. From 1990 to 1995, each year contributed only one publication while there is no publication in 1992 and 1994 in the database. Highest number of publications were contributed in the year 2021 (18.55%) followed by 2020 (12.67%), 2014 (6.79%), 2019 (6.36%), 2015 (5.88%), 2018 (5.43%) and 2016 (10). The remaining years have single-digit contributions. More than half ($114/221 = 51.58\%$) of the total publications are contributed from 2016 to 2021. Citations per year are shown in table 1 and figure 2. Maximum citations are noted for the year 2021 (1140) while Citations per paper are recorded as maximum for the year 2019 (39.21). On a whole, the graph shows an upward trend.

Table 1: Growth of publications and number of citations from 1990 to 2021

Year of Publication	Publications per year	Percentage	Citations per year	Citation Per Publication
1990	1	0.45%	-	
1991	1	0.45%	1	1
1993	1	0.45%	-	
1994	-	-	1	
1995	1	0.45%	2	2
1996	3	1.36%	6	2
1997	3	1.36%	7	2.33
1998	3	1.36%	21	7
1999	2	0.91%	17	8.5
2000	3	1.36%	12	4
2001	3	1.36%	23	7.67
2002	1	0.45%	20	20
2003	3	1.36%	27	9

2004	8	3.62%	40	5
2005	3	1.36%	38	12.67
2006	2	0.91%	44	22
2007	4	1.81%	54	13.5
2008	7	3.17%	92	13.14
2009	5	2.26%	85	17
2010	4	1.81%	139	34.75
2011	7	3.17%	215	30.71
2012	9	4.07%	193	21.44
2013	5	2.26%	192	38.4
2014	15	6.79%	248	16.53
2015	13	5.88%	269	20.69
2016	10	4.53%	351	35.1
2017	9	4.07%	425	47.22
2018	12	5.43%	412	34.33
2019	14	6.36%	549	39.21
2020	28	12.67%	774	27.64
2021	41	18.55%	1140	27.80

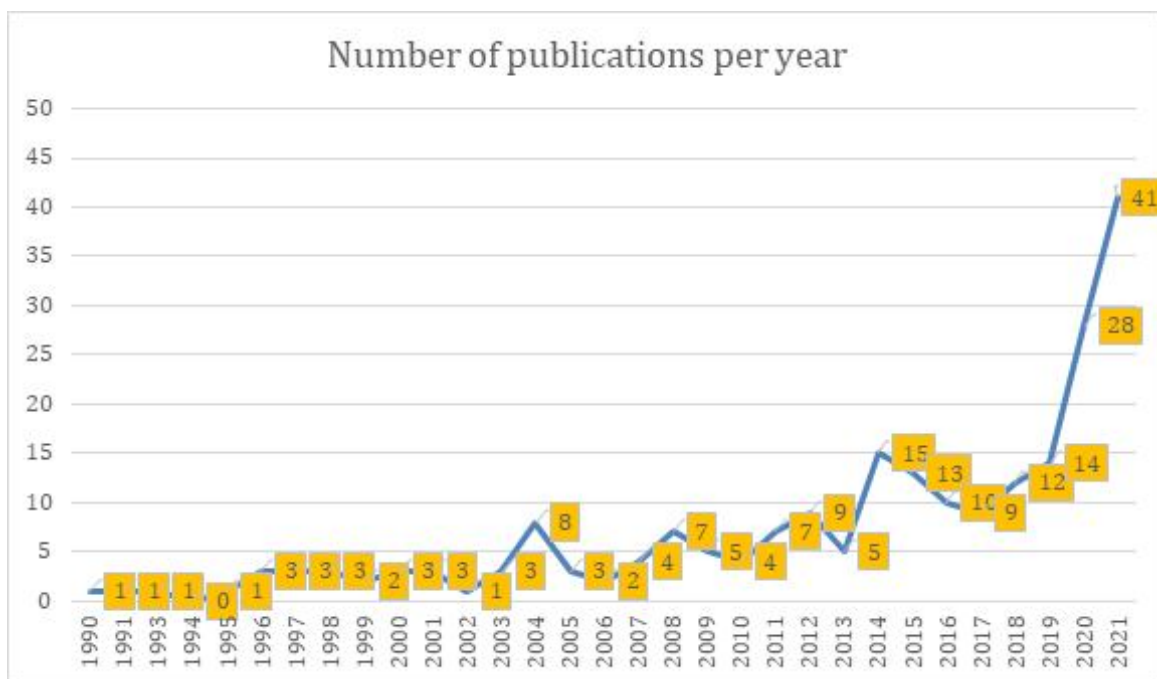


Figure 1: Growth of publications from 1990 to 2021

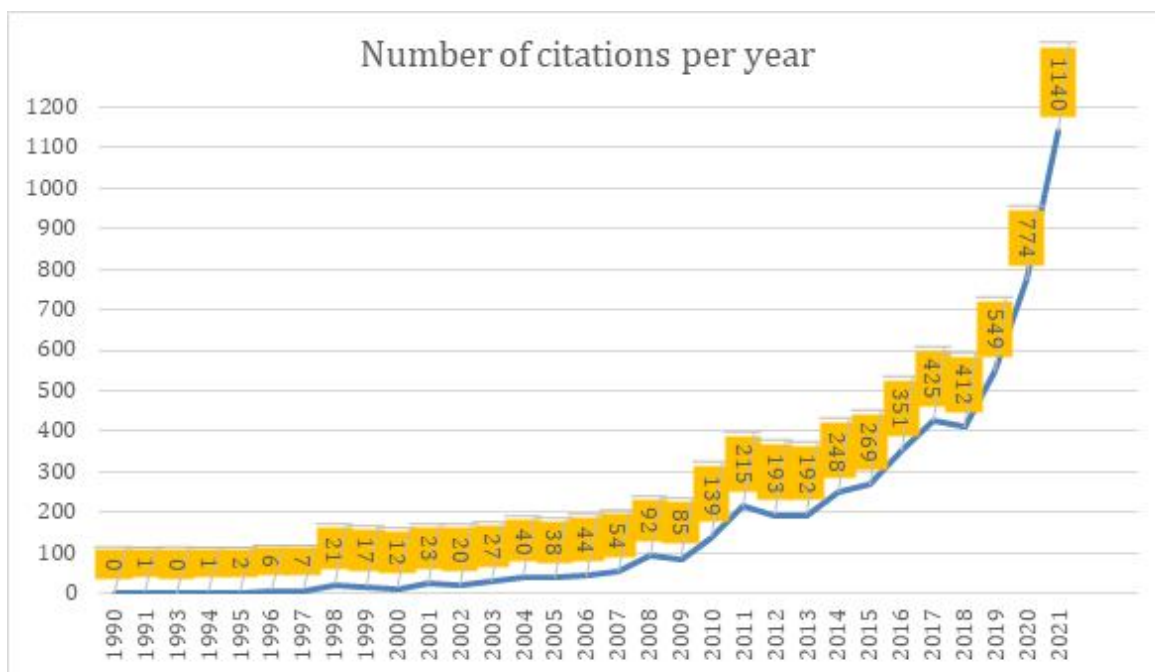


Figure 2: Growth of citations from 1990 to 2021

Analysis of Publications based on Web of Science research areas

Table 2: Distribution of publications in Web of Science research areas

Research Area	Publication Count	Percentage of Publications
Information Science Library Science	96	43.44%
Business	26	11.77%
Computer Science Information Systems	26	11.77%
Management	19	8.60%
Education Educational Research	13	5.88%
Health Care Sciences Services	12	5.43%
Hospitality Leisure Sport Tourism	9	4.07%
Environmental Studies	8	3.62%
Medical Informatics	8	3.62%
Psychology Multidisciplinary	8	3.62%
Public Environmental Occupational Health	7	3.17%
Environmental Sciences	6	2.72%
Green Sustainable Science Technology	5	2.26%
Psychology Applied	5	2.26%

Publications output on Library anxiety, Information anxiety and Technology anxiety (Table 2) are shown as classified into different research areas by the Web of Science database. Different studies on the selected topic are indexed under different headings in Web of

Science. The table includes research areas in which more than five publications are available. The largest publication share is from Information science Library science (43.44%). The research area of Business, as well as Computer Science Information Systems, have

registered an 11.77% contribution each followed by Management (8.60%), Education Educational Research (5.88%), Health Care Sciences Services

(5.43%) and Hospitality Leisure Sport Tourism (4.07%). Hence, the topic falls into many domains.

Country wise Analysis

Table 3: Country-wise contribution of publications (Top 15)

Sr. No.	Country	Publication Count	Percentage of Publication
1	USA	94	42.53%
2	Peoples R China	26	11.77%
3	Malaysia	16	7.24%
4	Taiwan	15	6.79%
5	England	14	6.34%
6	Canada	11	4.98%
7	Pakistan	11	4.98%
8	Australia	10	4.53%
9	Germany	8	3.62%
10	South Korea	7	3.17%
11	India	5	2.26%
12	Spain	5	2.26%
13	France	4	1.81%
14	Israel	4	1.81%
15	Saudi Arabia	4	1.81%

This table contains data only for 219 publications since two records do not contain data for country/region. (Database contains country-wise data from author affiliations for all collaborating authors, therefore total publication count exceeds the number of publications being analysed and the percentage is calculated out of 221). The global publication share of the 15 most productive countries varies from 1.81% to 42.53% with the largest share from USA with 42.53% publications followed by China (11.77%), Malaysia (7.24%), Taiwan (6.79%), England (6.34%), Canada and Pakistan (4.98% each), Australia (4.53%), Germany (3.62%) and South Korea (3.17%). India as well as Spain has

contributed 5 publications (2.26%) followed by France, Israel and Saudi Arabia with 4 publications (1.81%) from each. The table shows 31 countries while 16 more countries are having contribution of one publication each.

Language-Wise Analysis of Publications

English is the predominant language since 220 (99.55%) publications are in the English language. Only one publication (0.45%) is in Spanish.

Top Institutions contributing five or more publications

Table 4: Top Institutions contributing five or more publications

Sr. No.	Institution	Publication Count	Percentage of Publications (% of 221)
1.	University Malaya	12	5.43%
2.	Baruch College Cuny	10	4.53%
3.	City University of New York Cuny System	10	4.53%
4.	State University System of Florida	10	4.53%
5.	University of Punjab	10	4.53%
6.	University System of Georgia	8	3.62%

7.	Valdosta State University	7	3.17%
8.	University of Tennessee Knoxville	6	2.72%
9.	University of Tennessee System	6	2.72%
10.	California State University System	5	2.26%
11.	University of South Florida	5	2.26%

Top contribution of institutions varies from 12 to 5 publications. The University of Malaya is leading with 12 contributions. Baruch College Cuny, City University of New York Cuny System, State University System of Florida and University of Punjab have contributed 10 publications each. University System of Georgia

has contributed 8 publications. The University of Tennessee Knoxville, as well as the University of Tennessee System, have similar contribution credits of 6 publications and California State University System as well as the University of South Florida have contributed 5 publications each.

Top Five Most Preferred Journal Titles

Table 5: Top five most preferred journal titles

Publication Title	No. of publication	% of 221	Rank
Journal of Academic Librarianship	11	4.98%	1
College Research Libraries	10	4.53%	2
Library Information Science Research	10	4.53	3
Malaysian Journal of Library Information Science	9	4.07%	4
Reference User Services Quarterly	8	3.62%	5

Out of the total 221 publications, 48 (21.72%) publications are published in 5 journals covering more than 1/5 of the total share. *Journal of Academic Librarianship* has contributed 11 publications and stands on the first rank

followed by *College Research Libraries*, *Library Information Science Research*, *Malaysian Journal of Library Information Science* and *Research User Services Quarterly*.

Highly Cited Journals

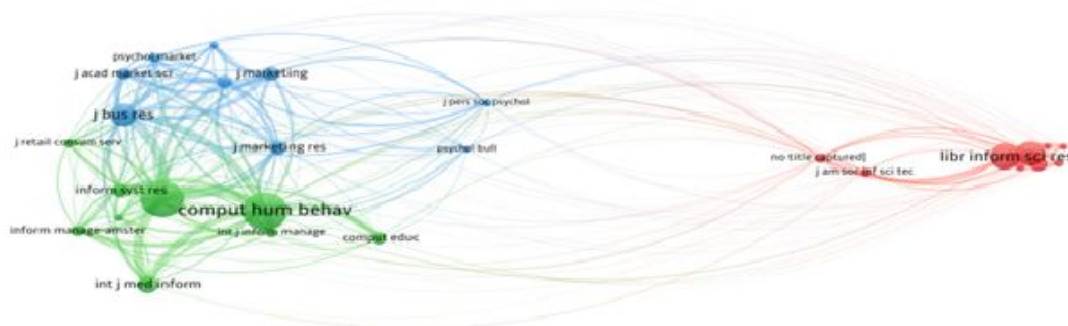


Figure 3: Co-citation analysis view of 27 most cited journals (minimum 50 citations)

Twenty-seven journals (out of 4175) were found with minimum 50 citations through VOSviewer. 'Computers in Human Behaviour' was cited 274 times with Total Link Strength (TLS) of 4612 followed by 'Library Information Science Research' (191 citations and 1968 TLS), 'College Research Libraries' (176 citations and 1554 TLS),

'Journal of Business Research' (172 citations and 4017 TLS) and International Journal of Medical Informatics (130 citations and 2114 TLS). Figure 3 shows a co-citation analysis of the 27 most cited journals having 50 or more citations. It shows 3 clusters with 284 links (25377 TLS).

Top five contributing Authors

Table 6: Profile of Top five contributing authors (out of 569 authors)

Sr. No.	Author Name	TP	% out of 221	Total Link Strength	TC	CPP
1.	A.J. Onwuegbuzie	14	6.34%	2631	145	10.36
2.	Q. G. Jiao	10	4.53%	2906	214	21.4
3.	N. H. A. Karim	10	4.53%	196	10	1
4.	M. A. Anwar	7	3.17%	659	35	5
5.	M. A. Naveed	6	2.72%	764	41	6.83

TP= Total Publications; TC= Total Citations; CPP= Citations per paper

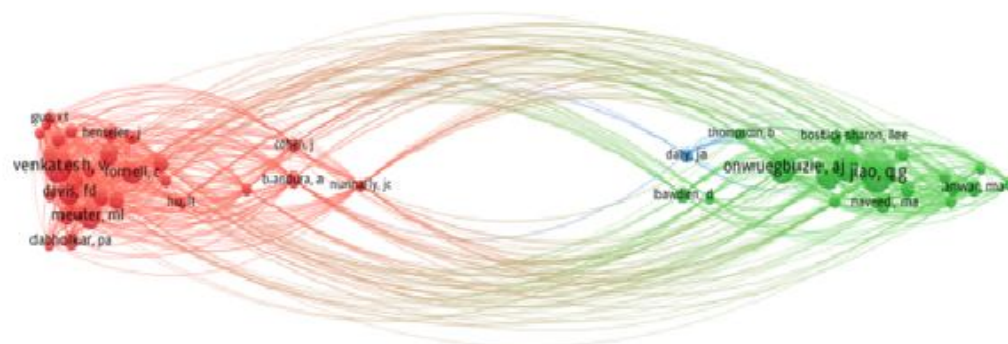


Figure 4: Co-citation collaborative network visualization map of authors

569 authors have contributed to research on the selected topic. The top 5 author's contribution ranges between 6-14 papers contributing a total of 47 (21.27%) papers with more than 1/5th share of total research output upto 2021. Onwuegbuzie is top contributing author. On the other side 5 most cited authors (Figure 5) are QG Jiao (214 citations) followed by AJ Onwuegbuzie (145 citations), V Venkatesh (139 citations), CA Mellon (98 citations) and CC Kuhlthau (96 citations). Figure 4 shows the co-citation analysis of 51 authors having 15 or more citations. It shows 3 clusters with 726 links (12297 TLS).

MAJOR FINDINGS

The study focuses on research publications on Information anxiety, Library anxiety and Technology anxiety found in the Web of Science database from the very first publication to 2021.

- It is found that 221 publications were indexed in the Web of Science database on the theme of study.
- The first publication has been indexed for the year 1990.
- A total of 1140 citations were recorded till June, 2022 for the publications upto December 2021.

- The largest share of publications (43.44%) has been recorded from the 'Information science Library science' research area.
- A total of 47 countries has a publication share in the Web of Science database on the said topic. USA has contributed the largest share with 42.53%.
- 99.55% of publications are in the English language.
- The University of Malaya is the top Contributing (5.43%) institution.
- More than 1/5 (21.72%) of total share publications are published in only 5 journals.
- *Journal of Academic Librarianship* is leading with the contribution of 4.98% publications.
- QG Jiao is the top-cited author with 214 citations in Web of Science database.

CONCLUSION

The study explores a growing trend in number of publications on the selected topic. The present paper provides a mapping of research publications on the issue of information anxiety, library anxiety and technology anxiety. The paper will also motivate researchers to write about the topic, which is need of the hour to address this problem of anxiety as a barrier in achieving academic excellence.

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