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Bibliometric Analysis of ISTL Journal (2010-2020)

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Abstract:

This paper presents a bibliometric analysis of the Issues in Science and Technology Librarianship (ISTL) journal for the period of 10 years (2010-2020). Total no. of 224 articles of 35 issues of "ISTL Journal" have been taken up for data analysis. The aim of this paper is to analysis the forms of articles, distribution of the articles, authorship pattern, geographical distribution, institutional contribution and ranking of leading authors. It is found from the analysis that single author contribution during the whole duration persist at 50% obsess highest position compared to benefaction of two author articles which continued to be 30%. The year 2020 has got highest average 31.20 followed by 2017 and 2019 with average 23.64 and 22.59 reference per article. In case of reference distribution total number of 3512 references were cited in 310 articles. There are total number of 430 authors have contributed in 224 articles.

Keywords: Bibliometric, Science Librarianship, authorship pattern, reference distribution, sci-tech Librarians, Bibliographies.

Introduction

Bibliometric analysis is not a new terminology in the field of research. The journey of it started from the year 1969 when Pritchard coined the term "bibliometrics" for the first time. Since then decades after decades lots of research work conducted. Because it is a quantitative study of various aspects of literature on a topic and is used to identify the pattern of publication, authorship, and secondary journal coverage to gain insight into the dynamics of growth of knowledge in the areas under consideration. This can lead to better organization of information resources, which is essential for effective and efficient use. Bibliometrics has attained sophistication and complexity with a national, international, and interdisciplinary character.(Thanuskodi, 2010). Bibliometric analysis not only inculcate the various aspects of literature on a topic published in different publication platform, but also helps librarians to choose right periodicals of a particular subject by effective utilization of their inadequate financial resources. Vindicating the above points, the present article entitled 'bibliometric

analysis of the journal Issues of Science and Technology Librarianship (ISTL) during 2010-2020 onwards has conducted.

Genesis of the journal

Issues in Science and Technology Librarianship (ISTL) publishes quarterly substantive content of interest to science and technology librarian's science 1991 by University of Alberta Libraries. It serves as a vehicle for sci-tech librarians to share successful initiatives and innovative ideas, and to publish peer-reviewed or board-accepted papers, including case studies, practical applications, theoretical essays, web/bibliographies, and research papers relevant to the functions and operations of science and technology libraries in all settings. Through its columns ISTL also publishes reviews, opinions, and best practices. ISTL is an open access journal. All content is freely available without charge. Users are allowed to read, download, copy, distribute, print, search, or link to the full text of the articles in this journal without asking prior permission from the publisher or the author. The journal is indexed in INSPEC, Library and Information Science Abstracts (LISA), Library Literature, and Scopus.*(ISTL(2020)*, n.d.)

Related Work

Abdi et al., (2018) have studied bibliometric Analysis of IP&M Journal during the period from 1980 to 2015. The analysis showed that 2,913 papers were published in journal of IP&M from 1980 to 2015. The highest percentage was articles (67.15%) among the published document types. They identified top 10 prolific authors, top 10 institutions and top 24 prolific countries with number of papers. Researchers from USA have been made the most percentage of contributions (50.88%). They also identified that from the period 1980-1985 to the period 2010-2015 degree of collaboration has been increased in 3 times. Singh, (2013) has analysed the various bibliometric components of the articles published in the Chinese Librarianship: An International Electronic Journal between 2009 and 2012. The result shows that in the year 2012, CLIEJ published the highest number of articles with more authors than before. The highest numbers of articles were contributed by single authors and most of the authors belonged to various non-teaching categories. India has contributed more articles than any

other countries, followed by Nigeria, Pakistan, USA, etc. There is a clear trend that CLIEJ is publishing more articles each year. (Pareek, 2013) conducted a bibliometric analysis of the literature of IFLA Journal during 2001-2010. The journal has published 283 articles during the period of study. The year 2001 shows the maximum number of contributions (34 articles; 12.01 percent) to the IFLA journal. This study reveals that the categories of article distributions are remarkable in this research journal. Almost 99 percent articles are written in English language. The majority of the articles were contributed by single authors (214 articles; 75.62 percent); and most authors were librarians, faculty members or researchers affiliated with academic or research institutions. Similarly, most of the contributions are from USA with (71 articles; 18.35 percent), while Indian contribution is very less. The study revealed that maximum number of citations accounted in the period 2008 (12.01 percent). And maximum lengths of the citations are belonging to 11-20 citations. (Pandita, 2013) has conducted a bibliometric study on the journal entitled, 'Annals of Library and Information Studies (ALIS)' during the period 2002-2012. At the time of data mining of said journal, 310 articles were published India since being the host country, as such proved to be one of the major contributors of the journal in every respect. On average 7.04 articles have been published in each issue of each volume. After analysing 5307 references, on average 17.11 references have been assigned to each article. Researchers from 16 different countries across the world have contributed research articles to the journal during the period of study. 65.81 % articles contributed to the journal during the period of study are based on co-authorship pattern, unveiling the fact that most of the research undertaken these days is on joint authorship pattern. Thanuskodi (2010) presented a bibliometric analysis of the journal, DESIDOC Journal of Library and Information Technology, for the period between2006 and 2010.The result showed that out of 199 articles, 116(58.29%) articles were contributed by joint authors while the rest 83 (41.71%) articles were contributed by single author. The study reveals that most of the contributors are from India with 93.97 %, and the remaining 6.03 % were from foreign authors. (Kumar & Moorthy, 2011) have worked on bibliometric analysis of DESIDOC Journal of Library and Information Technology during 2001-2010. The results of the study show that, The Journal has a remarkable change after 2006. The number of papers published increased substantially. The average length of papers was 6-10 pages, which is an ideal length for research articles. Papers from single authors formed the major chunk of total papers published. Out of 3428 references sourced by the authors, 1382 were quoted from the

journals. Fifty-seven issues brought out during the period included 14 special issues from eminent LIS professionals; the Journal has published thematic issues at an average of 3 every year since 2007. Authors from government research institutes (104), and universities (139) were the main contributors. (Swain et al., 2014) examined the patterns of publications in the Journal of Educational Media and Library Science (JoEMLS) from 2008 to 2012. It is observed that publications of JoEMLS are led by two-author papers, followed by single-author papers and three-author papers. The degree of collaboration in JoEMLS publications is found to be 0.63. Taiwan occupies the top position in the country-wise ranking of publications, followed by China and Malaysia. The frequent occurrences of keywords indexed in the articles, like 'bibliometrics', 'information literacy' and 'digital archive', indicate its research focus on promising areas of librarianship. On examination of citations of all the published articles of JoEMLS, it is found that among the 99 published papers, only 17 have received their relative impact as they have been more or less cited in other different published sources. Vellaichamy & Jaishankar (2015) have examined bibliometric analysis of 158 papers published in the journal "Webology" during the period 2004-2013. The result of the study shows that the most preferred subject which produces a greater number of papers (26.58%) while the single authorship also possesses a lead role in this subject (60.13%). Alireza Noruzi is most prolific author (18) in the present study. The analysis shows that majority (22.03 %) of the contributions were Indians.

Objectives

The objectives of the study are as follows:

1. To examine various forms of articles published in ISTL journals during 2010 to 2020.
2. To study distribution of the articles by year.
3. To study year-wise authorship pattern of the articles.
4. To study geographical distribution of the contributors.
5. To study type of institutional contribution of paper.
6. To examine reference distribution pattern of the articles.
7. To find out the ranking of leading contributors.

Methodology

To conduct the study entire data was collected from the website of ISTL journal using excel software. For the analysis of the study, total no of 35 issues of "ISTL Journal" published during the year 2010 to 2020 have been taken up for evaluation. It is necessary to mention here that when the data collected the researcher found only one issues in the year 2020. It may be due to covid 19 situation. After collecting data, it was organised and analysed using Ms-Excel spreadsheets. For the sake of convenience, this was informed that the researcher has found total 310 articles in various forms during this period. But for the data analysis purpose the author has rejected some forms of articles. Such as Book Reviews, Tips from the experts, viewpoints, ACRL Science and Technology Sections, editorials and letters. Last of all 224 articles have been selected and rejects 86 articles.

Analysis

To analyse data for the present study all the collected has put into excel format to calculate simple operation like addition, substruction, multiplication, division, average, percentage etc. Up to two decimal place value has been considered for executing percentage and mean value.

Forms of articles published in ISTL journals during 2010 to 2020

Table 1: Forms of Publication by Year

Forms	Years											Total Articles	%
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
BAA	6	7	5	3	5	2	0	0	0	0	0	28	9
RA	13	15	14	8	16	16	10	9	11	15	3	130	42
BR	9	5	4	4	0	1	3	0	0	0	0	26	8
STRI	7	4	4	0	2	7	2	3	1	1	0	31	10
SLSJ	0	0	0	0	0	0	0	0	0	0	1	1	0
WLG	0	0	0	0	0	0	0	0	0	1	0	1	0
TFE	3	2	0	1	3	5	3	0	4	3	2	26	8
VP	4	4	3	2	2	1	1	0	1	0	0	18	6
ERR	2	1	1	2	0	0	0	0	3	1	0	10	3
DRR	2	0	0	0	0	0	0	0	0	0	0	2	1
TAT	0	0	0	0	3	3	3	1	2	3	1	16	5
SC	0	0	0	0	0	1	2	1	0	1	0	5	2
ACRL -STS	0	0	0	0	0	1	0	0	1	0	0	2	1
ETDL	0	3	0	2	3	0	2	1	0	1	0	12	4
LETTER	1	1	0	0	0	0	0	0	0	0	0	2	1
Total	47	42	31	22	34	37	26	15	23	26	7	310	100

Here, **BAA**=Board-Accepted Articles; **RA**=Refereed Articles; **BR**= Book Reviews; **STRI**= Science And Technology Resources On The Internet; **SLSJ**= Science Librarianship And Social Justice; **WLG**= Webliographies; **TFE**= Tips From The Experts; **VP**= Viewpoints; **ERR**=Electronic Resources Reviews; **DRR**=Database Reviews and Reports; **TAT**= There's An App For That; **SC**= Short Communications; **ACRL-STS**=ACRL Science and Technology Sections; **ETDL**= Editorials.

Table 1 shows year-wise different forms of publications. There are 310 articles available in the journal of Issues in Science and Technology Librarianship during the year 2010 to 2020 onwards. These are categorised in various forms as shown in the table in short form and again repeated the full form of each under the table. It is seen from the table that, highest number of 130(42%) articles are Referred Articles (RA) followed by 31(10%) articles are in the form of Science and Technology Resources on The Internet (STRI) and 28(9%) articles are Board Accepted Articles (BAA). The number of Book Reviews (BR) articles and Tips from The Experts (TFE) are same i.e. 26(8%) each. On the other hand, minimum number of 1 each article is found in the forms of Science Librarianship and Social Justice (SLSJ) and Webliographies (WLG). It is also seen from the table that the new forms of articles named There's an App for That (TAT) started from the year 2014 and continues. Another two forms of articles viz, Short Communications (SC)and ACRL Science and Technology Sections (ACRL-STS) continues from the year 2015 each.

Distribution of the articles by year

Table 2: Distribution of Articles by Year

Year	Issue Name	Issue No.	No. of Articles	Articles by Year	Percentage
2010	Winter	60	8	30	13.4%
	Spring	61	8		
	Summer	62	6		
	Fall	63	8		
2011	Winter	64	8	27	12.1%
	Spring	65	8		
	Summer	66	5		
	Fall	67	6		
2012	Winter	68	6	24	10.7%
	Spring	69	6		
	Summer	70	6		
	Fall	71	6		
2013	SPRING	72	4	13	5.8%
	SUMMER	73	6		
	FALL	74	3		
2014	WINTER	75	5	26	11.6%
	SPRING	76	5		
	SUMMER	77	8		
	FALL	78	8		
2015	WINTER	79	6	29	12.9%
	SPRING	80	9		
	SUMMER	81	7		
	FALL	82	7		
2016	WINTER	83	7	17	7.6%
	SPRING	84	2		
	FALL	85	8		
2017	SPRING	86	6	14	6.3%
	SUMMER	87	8		
2018	WINTER	88	9	17	7.6%
	SPRING	89	3		
	SUMMER	90	5		
2019	SPRING	91	6	22	9.8%
	FALL	92	9		
	WINTER	93	7		
2020+	SPRING	94	5	05	2.2%
Total		35 Issues	224	224	100.00%

Table 2 shows year-wise distribution of articles in ISTL journals. Basically, the journal published four issues in a year namely winter, spring, summer and fall. It is seen from the table that the year 2013, 2016 and 2018 have only 3 issue. Two issue absent in 2017. In the 2020 the researcher has got only one issue. It may be due to COVID 19 situation. For the sake of convenience, this was informed that only 224 articles have been selected and rejects 86 articles. The reason behind has already described in methodology part. Out of 224 articles maximum number of 30(13.4%) articles published in 2010 followed by 2015 with 29(12.9%) and 2011 with 27(12.1%) articles has published. Very least number of 05(2.2%) articles has

found in 2020 followed by 2013 with 13(5.8%) and 2017 with 14(6.3%) articles has published. There is a miracle in the journal that same number of 17(6.3%) articles have published in the year 2016 and 2018.

Year-wise authorship pattern of the articles.

Table 3. Year-wise authorship pattern of articles.

Year	Issue No.	Single Author	Two Authors	Three Authors	More Than Three Authors	No. Of Articles	Articles by Year
2010	60	7	1	0	0	8	30
	61	6	1	0	1	8	
	62	3	1	1	1	6	
	63	2	3	1	2	8	
2011	64	5	3	0	0	8	27
	65	6	2	0	0	8	
	66	3	1	0	1	5	
	67	3	0	2	1	6	
2012	68	2	3	1	0	6	24
	69	1	4	1	0	6	
	70	1	2	0	3	6	
	71	4	1	1	0	6	
2013	72	3	1	0	0	4	13
	73	5	1	0	0	6	
	74	1	1	0	1	3	
2014	75	3	1	0	1	5	26
	76	4	1	0	0	5	
	77	2	2	4	0	8	
	78	2	4	2	0	8	
2015	79	5	0	0	1	6	29
	80	8	1	0	0	9	
	81	3	2	2	0	7	
	82	4	2	1	0	7	
2016	83	2	4	0	1	7	17
	84	0	1	1	0	2	
	85	2	5	1	0	8	
2017	86	4	0	0	2	6	14
	87	3	4	1	0	8	
2018	88	6	3	0	0	9	17
	89	0	2	1	0	3	
	90	3	1	1	0	5	
2019	91	3	2	0	1	6	22
	92	4	4	0	1	9	
	93	2	1	2	2	7	
2020+	94	1	2	1	1	5	5
Total	35 Issues	113	67	24	20	224	224
Percentage	NA	50%	30%	11%	9%	100	100

Table 3 is restricted to authorship pattern and distribution of authorship pattern wrap up the issues of journal volumes under study. Single author contribution during the whole duration persist at 50% obsess highest position compared to benefaction of two author articles which continued to be 30%. On the other hand, 11% contribution of the articles offered jointly by three authors and only 9% contribution of the articles were offered by more than three authors together. The crucial aspect which is seen from the table is that 224 articles have been authored by 430 persons.

Geographical distribution of the contributors

Table 4: Geographical distribution of the contributors

Sl. No.	Name of the country	No. of contributions	Percentage	Rank
1	California	27	9.71%	1
2	New York	23	8.27%	2
3	Illinois	20	7.19%	3
4	Indiana	18	6.47%	4
5	Pennsylvania	15	5.40%	5
6	Minnesota	13	4.68%	6
7	Colorado	10	3.60%	7
8	Florida	10	3.60%	7
9	Maryland	10	3.60%	7
10	Tennessee	10	3.60%	7
11	Canada	9	3.24%	8
12	Ohio	8	2.88%	9
13	Michigan	7	2.52%	10
14	Oregon	6	2.16%	11
15	Texas	5	1.80%	12
16	Virginia	5	1.80%	13
17	Alabama	4	1.44%	14
18	Massachusetts	4	1.44%	14
19	Mississippi	4	1.44%	14
20	Saskatchewan	4	1.44%	14
21	British Columbia	3	1.08%	15
22	Cornell	3	1.08%	15
23	Kansas	3	1.08%	15
24	North Carolina	3	1.08%	15
25	Washington dc	3	1.08%	15
26	Other countries (2 each)	34	0.72%	16
27	Other countries (1 each)	17	0.36%	17

Table 4 shows the geographical distribution of papers of the journal of ISTL under study. It is seen from the Table that, the highest number of 27(9.71%) has been contributed by California

followed by New York, Illinois, Indiana, Pennsylvania and Minnesota are on 2nd, 3rd, 4th, 5th and 6th rank having 23(8.27%), 20(7.19%), 18(6.47%), 15(5.40%) and 13(4.68%) contributions respectively. Four countries namely: Colorado, Florida, Maryland and Tennessee got 7th rank with 10(3.60%) contribution. Out of 278 contribution under study 17 countries contributed 1 article each are in the lowest rank with 0.36% score and another 17 countries with 2 articles each are in the second lowest rank having 0.72% score. The name of top ten contributing countries is: California, New York, Illinois, Indiana, Pennsylvania, Minnesota, Colorado, Florida, Maryland, Tennessee, Canada, Ohio and Michigan.

Contribution by type of Institution

Table 5: Contribution by type of Institution

Type of Institute	No. of contribution	%
Universities	236	86%
Laboratories	1	0.36%
Academic Library	2	0.72%
Technical Institution	12	4.35%
Institute of Technology	6	2.17%
Special Library	1	0.36%
Colleges	9	3.26%
Academy	1	0.36%
School	2	0.72%
NASA	2	0.72%
Polytechnic Institution	3	1.09%
OCLC	1	0.36%
Total	276	100

It is observed in Table 5 that among different types of Institution, Universities are the highest no of 236(86%) contribution followed by Technical institutions with 12(4.35%) and Colleges with 9(3.26%) articles contributed in the journal ISTL during 2010-2020 time period. Four types of Institution like Laboratories, Special Library, Academy and OCLC are the lowest contributors with 1 article each.

Reference distribution pattern of the articles

Table 6. Reference distribution pattern

Year	No. of Articles	Total reference	Percentage	Avg. reference per article
2010	30	292	8.31%	9.73
2011	27	441	12.56%	16.33
2012	24	408	11.26%	17.00
2013	13	174	4.95%	13.38
2014	26	325	9.25%	12.50
2015	29	342	9.74%	11.79
2016	17	284	8.09%	16.71
2017	14	331	9.42%	23.64
2018	17	262	7.46%	15.41
2019	22	497	14.15%	22.59
2020	5	156	4.44%	31.20
Total	224	3512	100%	15.68

Table 9 shows pattern of reference distribution in most convenient way. Total number of 3512 references were cited in 310 articles. It means each article get average 15.68 reference. The year 2020 has got highest average 31.20 followed by 2017 and 2019 with average 23.64 and 22.59 reference per article. On the other hand, the year 2010 represents lowest average 9.73 reference per articles. Lowest reference (4.44%) percentage has observed in 2020 contrary to 14.15% reference found in 2019.
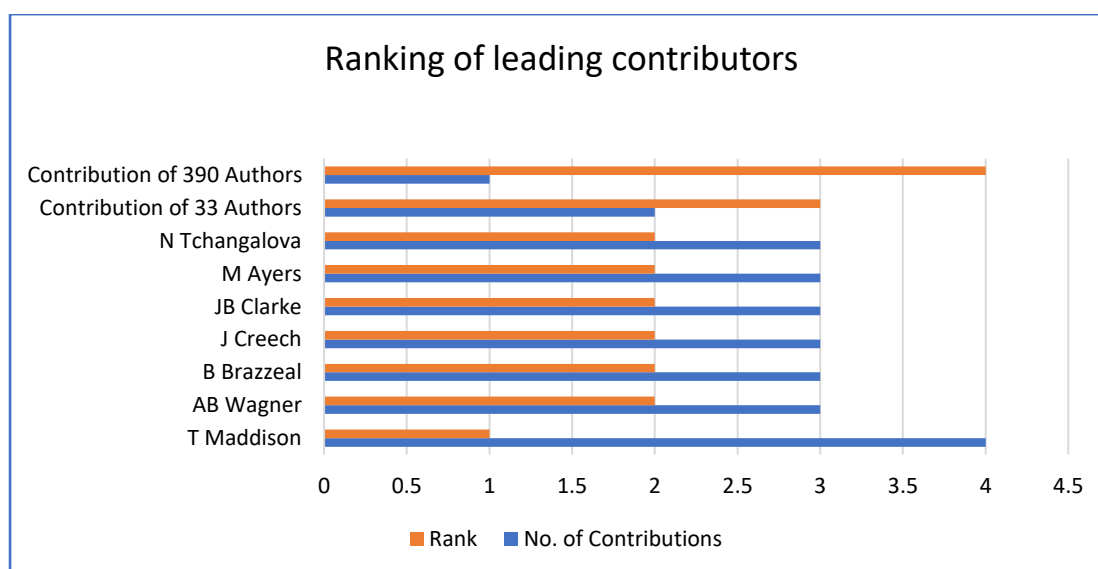
Ranking of leading contributors

Figure1: Ranking of authors

Figure 1 shows leading contributors of the paper during the period under study. There are total number of 430 authors have contributed in 224 articles. The author named T Maddison is the top contributor of the journal ISTL during the period. He has contributed in 4 articles. Six authors named AB Wagner, B Brazzeal, J Creech, JB Clarke, M Ayers and N Tchangalova have placed in 2ⁿᵈ rank as each of them contributed in 3 articles. Out of 430 authors 33 authors have contributed in 2 articles each and rest 390 authors have contributed only single article each.

Conclusion

Issues in Science and Technology Librarianship (ISTL) is one of the oldest and prestigious journals and a vehicle for sci-tech librarians to share successful initiatives and innovative ideas, and to publish peer-reviewed or board-accepted papers, including case studies, practical applications, theoretical essays, web/bibliographies, and research papers relevant to the functions and operations of science and technology libraries in all settings. It started its journey since 1991. The present bibliometric study from the period 2010-2020 of the journal aims to reveal the image of the journal in the field of library science. This may be helpful for the librarian to make a decision in their acquisition policy. After completion of the study it is found that, there are 310 articles available in the journal during the year 2010 to 2020 onwards in various forms. Out of these only 224 articles have been selected for the study. The maximum number of 30(13.4%) articles in 2010 followed by 2015 with 29(12.9%) and 2011 with 27(12.1%). Single author contribution during the whole duration persist at 50% obsess highest position compared to benefaction of two author articles which continued to be 30%. The name of top ten contributing countries is: California, New York, Illinois, Indiana, Pennsylvania, Minnesota, Colorado, Florida, Maryland, Tennessee, Canada, Ohio and Michigan. Among different types of Institution, Universities are the highest no of 236(86%) contribution. In case of reference distribution total number of 3512 references were cited in 310 articles. It means each article get average 15.68 reference. The year 2020 has got highest average 31.20 followed by 2017 and 2019 with average 23.64 and 22.59 reference per article. There are total number of 430 authors have contributed in 224 articles. The author named T Maddison is the top contributor of the journal ISTL during the period. He has contributed in 4 articles. Six authors named AB Wagner, B Brazzeal, J Creech, JB Clarke, M Ayers and N Tchangalova have placed in 2ⁿᵈ rank as each of them contributed in 3 articles.

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