

SCIENTOMETRIC STUDY ON JOURNAL OF INFORMATION TECHNOLOGY & LIBRARIES ON DOAJ

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ABSTRACT: - *The present study attempts on the Scientometric analysis of journal of Information Technology & Libraries during 2005-2014. The present study is based on 4813 references appended to 217 articles contributed by the authors in Information Technology and Libraries on DOAJ. The degree of collaboration was calculated & it was found that the single authorship trend is increasing gradually in Information Technology & Libraries. It was seen that researchers cite latest documents.*

KEY WORDS – Directory of Open Access Journals, Information Technology & Libraries, Scientometrics.

INTRODUCTION:

Scientometrics can be defined as the “quantitative study of science, communication in science, and science policy” (Hess, 1997, 75).

What started as Eugene Garfield’s idea of an index to improve information retrieval in the 1960s and resulted in the creation of the Science Citation Index (SCI) (Garfield, 1979; Wouters, 1999) was soon recognized as a novel instrument in the empirical study of the sciences (e.g., Price, 1965; Cole & Cole, 1973). The availability of output indicators (such as databases of publications and patents) complemented ongoing efforts by the Organization of Economic Cooperation and Development (OECD) in Paris to

standardize input statistics of the scientific enterprise (OECD, 1963, 1976). Based on these data, the National Science Board of the U.S.A. initiated the biannual series of Science Indicators in 1972.

The increased access to large datasets through the Internet led to the development of the network sciences as part of computing and applied physics during the first decade of this century (e.g., Newman, 2010). A number of these studies used co-authorship and citation data for modeling the network dynamics. Although these efforts to model the evolution of the sciences statistically (e.g., Scharnhorst *et al.*, 2012) often do not aim at contributing to social-scientific understanding and

theorizing, the new methods (e.g., visualization techniques) developed by these researchers are partly derived from and have also been adopted by scientometricians. Such interdisciplinary exchanges make Scientometrics an active research specialty that in the 2000s has been experiencing a spectacular growth in its literature. More recently, the specialty can increasingly be considered as a “research front” in terms of the turnover of the referencing patterns (Milojević & Leydesdorff, 2013; Wouters & Leydesdorff, 1994).

Directory of Open Access Journals:

DOAJ is an online directory that indexes and provides access to quality open access, peer-reviewed journals. There is a new process to have journals indexed in the DOAJ. All journals must apply using our new Application Form. Due to the extensive and detailed information we require, only a journal's publisher should complete the form.

The **Directory of Open Access Journals (DOAJ)** is website that lists open access journals and is maintained by Infrastructure Services for Open Access (IS4OA). Until January 2013, the DOAJ was maintained by Lund University. The project defines open access journals as scientific and scholarly journals that meet high quality standards by exercising peer review or editorial quality control and "use a funding model that does not charge readers or their institutions for access." The Budapest Open

Access Initiative's definition of open access is used to define required rights given to users, for the journal to be included in the DOAJ, as the rights to "read, download, copy, distribute, print, search, or link to the full texts of these articles" (http://en.wikipedia.org/wiki/DirectoryofOpen_Access_Journal).

Information Technology & Libraries :

Information Technology and Libraries is began publication with volume 1 in 1982. It moved to an open-access, electronic-only publishing model with Volume 31 (2012). *ITAL* (Library and Information Technology Association) is the successor to the *Journal of Library Automation (JOLA)*, published from 1968-1981. *Information Technology and Libraries (ITAL)* is a refereed journal published quarterly by the Library and Information Technology Association (LITA), a division of the American Library Association. Library and Information Technology Association is published quarterly. This journal provides immediate open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge. This journal utilizes the LOCKSS system to create a distributed archiving system among participating libraries and permits those libraries to create permanent archives of the journal for purposes of preservation and restoration.

(<http://ejournals.bc.edu/ojs/index.php/ital/index>).

REVIEW OF LITERATURE:

Review of relevant literature is an important step for research. Review of literature is an early step for conducting research.

Khaparde (2011) she studied the pattern of information use by researcher in the field of library and information science. It is based on the references appended to International Journal of "Library Hi Tech" during 2005-2009. The present study is based on 3876 references appended to 247 articles contributed by the authors Library Hi Tech. In Authorship pattern it was found that Solo Research is Predominant than Collaborative Research. The degree of research collaboration was calculated and it was found that the single authorship trend increased gradually in Library Hi Tech.

Khaparde and Pawar (2013) studied the authorship pattern and author's collaborative research in Information Technology with a sample of 17917 articles collect from LISA during 2000-2009. The average number of authors per article is 1.80. In the study the degree of collaboration (C) during the overall 10 years (2000-2009) is 0.71, but the year wise degree of collaboration is almost same in all the years of mean value 0.49. According to 10 years of period, the multi-authorship articles are higher and predominant on single authorship. The study found that the researches in Information Technology are keep toward team research / group research rather than solo research.

Khaparde (2013) conducted the Bibliometric Analysis of Research Publication of Department of Chemistry, Dr. Babasaheb Ambedkar Marathwada University, from 1975 to 2012. 774 research publications were analyzed from 144 journals. The study examines year-wise distribution of papers, authorship pattern, journal in which author publish. Results revealed that the number of publications was increasing consistently from 1975 to 2012. Out of 774, there are 25% of publications made in 2009, 2010, and 2011. The majority of the publications are made with 4 authors. And also the majority of the research paper published in journal of heterocyclic chemistry.

SCOPE & LIMITATION:

The present study is based on 10 volumes, 40 issues of the Information Technology & Libraries during 2005-2014.

DATA COLLECTION:

The Data was collected from DOAJ on journal of Information Technology & Libraries 10 volumes, 40 issues of the during Period in 2005-2014.

DATA ANALYSIS:

The present chapter deals with the Scientometric analysis of different E- journals as per the following parameters.

1. To Find out the Distribution of contributions. (Volume-wise)
2. To Find out the Authorship pattern of contributions.
3. To find out the Relative Growth Rate (RGR) and Doubling Time (DT) of Articles.
4. To Find out the Authorship pattern of contributions. (Volume-wise)
5. To Find out the Year- wise Degree of collaboration.
6. To Find out the Distribution of contributions. (institution- wise)
7. To Find out the Country wise Distribution.
8. To Find out the Type of publications cited. (Volume- wise)
9. To examine Average citation per contributions in each volume.
10. To examine Average pages. (per volume per contributions)
11. To examine Domain of E-Mail Id of the Contributors.
12. To examine Number of References wise Distribution of the Article.

1. Distribution of contributions (Volume-wise)

The Volume wise Distribution of contributions is shown in Table No.

Table No. 1: Distribution of contributions (Volume-wise)

Distribution of Contribution's (Volume-Wise)					
Sr. No	Year	Volume No.	No. of Issue	No. of contribution	Percentage
1	2005	24	4	24	11.06
2	2006	25	4	24	11.06
3	2007	26	4	20	9.22
4	2008	27	4	22	10.14
5	2009	28	4	23	10.60
6	2010	29	4	23	10.60
7	2011	30	4	19	8.76
8	2012	31	4	25	11.52
9	2013	32	4	19	8.76
10	2014	33	4	18	8.29
Total			40	217	100%

The Distribution of contributions (Volume- wise) is shown in Table No. 1 & Figure No. 1 out of the total 217 contributions majority of the contributions i.e. 24 (11.06%) contributions were contributed in 2005 & 2006 were as minimum contributions i.e. 18 (8.29%) contributions were contributed in 2014.

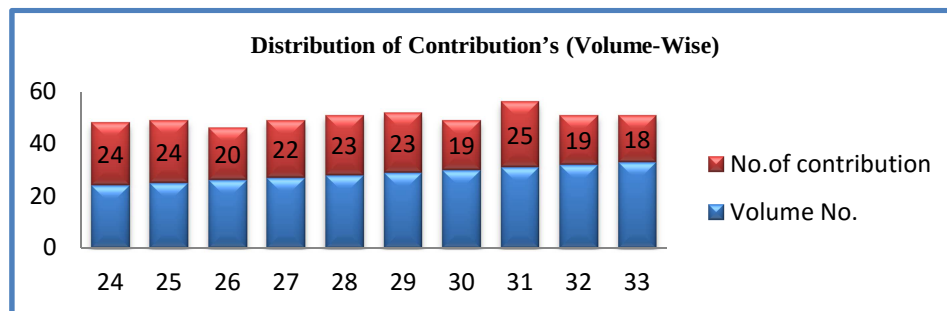


Figure No.1 Distribution of Contribution's (Volume-Wise)

2. Authorship pattern of contribution

The Authorship pattern of contributions is shown in Table No.2

Table No.2: Authorship pattern of contributions

Authorship Patterns of Contributions			
Sr. No	No. of Author	No. of contribution	Percentage
1	Single authors	124	57.14
2	Two authors	54	24.88
3	Three authors	22	10.14
4	Four Authors	11	5.07
5	More than Four Authors	6	2.76
Total		217	100 %

Table No. 2 & Figure No. 2 indicates that the maximum percentage is single author. In which “Majority of the contributions are contributed by Single authors”

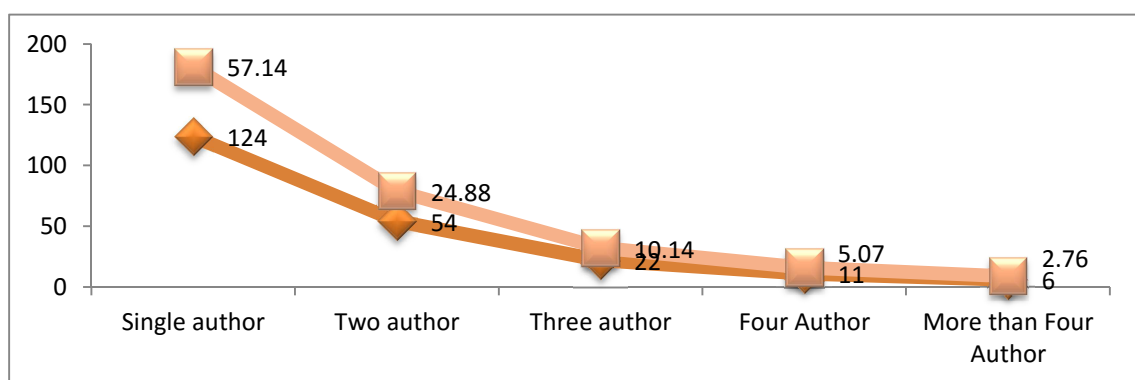
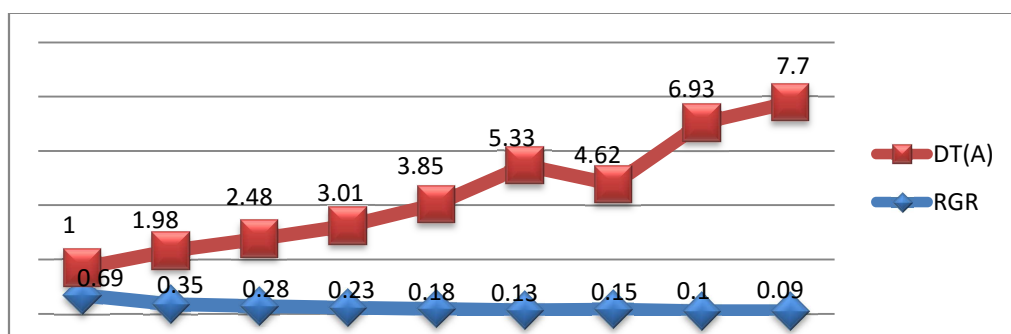


Figure No.2 Authorship pattern of contribution

3. Relative Growth Rate (RGR) and Doubling Timing (DT) of Articles

Relative Growth Rate & Doubling Timing of Articles								
Year	No. of articles	Cumulative Frequency	W1	W2	RGR	Mean [R(A)]	DT(A)	Mean DT (A)
2005	24	24		3.18		0.31		1.69
2006	24	48	3.18	3.87	0.69		1.00	
2007	20	68	3.87	4.22	0.35		1.98	
2008	22	90	4.22	4.50	0.28		2.48	
2009	23	113	4.50	4.73	0.23		3.01	
2010	23	136	4.73	4.91	0.18	0.13	3.85	5.69
2011	19	155	4.91	5.04	0.13		5.33	
2012	25	180	5.04	5.19	0.15		4.62	
2013	19	199	5.19	5.29	0.1		6.93	
2014	18	217	5.29	5.38	0.09		7.70	

Table No.03 & Figure No.3 It noticed that The mean relative growth for the first five years 2005 to 2009 is (0.31), and the mean relative growth rate for the last five years 2010 to 2014 reduced to (0.13). While the Doubling time for different years [Dt(p)] gradually increased from (1.00) in 2006 to (7.70) in 2014. The mean doubling time for the first five years (i.e. 2005 to 2009) is only (1.69) which is increased to (5.69) during the last five years (2010 to 2014). Thus as the rate of growth of Articles was decreased, the corresponding Doubling Time was increased.



Relative Growth Rate (RGR) and Doubling Timing (DT) of Articles

4. Authorship pattern of contribution (Volume- wise)

The authorship pattern of contributions is revealed shown in Table No.4

Table No. 4: Authorship pattern of contribution (Volume- wise)

Authorship Pattern of Contribution's (Volume- Wise)					
Volume No.	Single Author	Two Authors	Three Authors	Four & more than Four Authors	Total Articles
24	15	5	3	1	24
25	14	4	4	2	24
26	9	7	1	3	20
27	17	4	1	0	22
28	11	6	2	4	23
29	15	4	3	1	23
30	11	3	3	2	19
31	9	13	2	1	25
32	12	7	0	0	19
33	11	1	3	3	18
TOTAL	124	54	22	17	217

Table No. 4 & Figure No.4 shows the authorship pattern of contributions (Volume- wise). Distributions of contribution by a single author in volume No. 27 indicate that the maximum percentage is of single author. Two authors' contributions in volume No. 31 show the highest percentage. Table No. 3 & figure No. 3 indicates the majority of the contributions are contributed by single author.

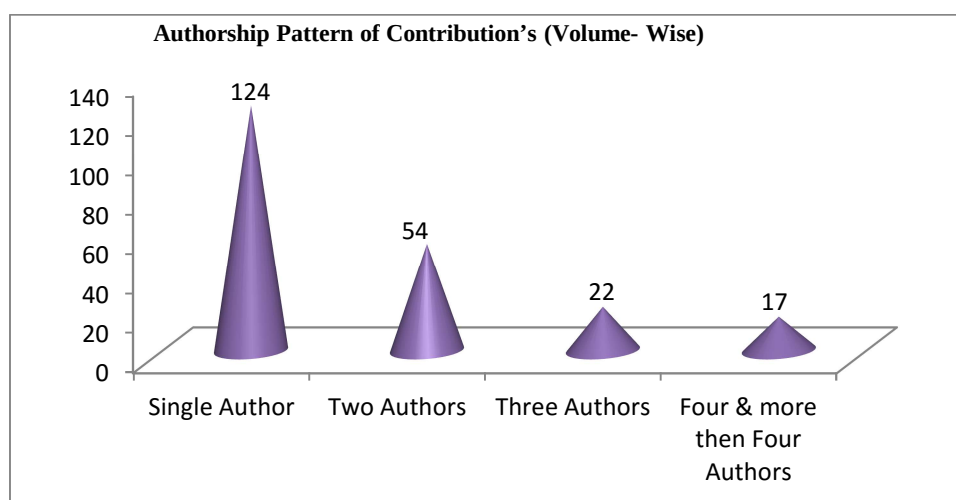


Figure No.4 Authorship pattern of contribution (Volume- wise)

Degree of collaboration in the international journal of “Computer Mediated Communication”

the formula given by k. Subramanyam is useful for determining the collaboration in quantitative terms. The study followed the same formula which is mathematically put as;

$$C = \frac{NM}{NM + NS}$$

Where,

C= Degree of collaboration

NM= Number of multi authored papers

NS= Number of single authored papers

In the present study

NM=93

NS= 124

$$= \frac{93}{93+124} = \frac{93}{217} = 0.4286$$

Those, C= 0.4286

Thus the degree of collaboration in the international journal of “Information Technology & Libraries” is 0.4286 which clearly indicates its dominance upon individual contribution.

5. Year wise Degree of Collaboration

The Degree of collaborations is shown in Table No. 5

Table No. 5: Year wise Degree of Collaboration

Degree of Collaboration (Year- Wise)							
Year	Total No. of articles	Total No. of authors	No. of single authored articles	% of article	Multi Authored articles	% of articles	Degree of collaboration
2005	24	24	15	0.069	9	0.041	0.38
2006	24	24	14	0.065	10	0.046	0.42
2007	20	20	9	0.041	11	0.051	0.55
2008	22	22	17	0.078	5	0.023	0.23
2009	23	23	11	0.051	12	0.055	0.52
2010	23	23	15	0.069	8	0.037	0.35
2011	19	19	11	0.051	8	0.037	0.42
2012	25	25	9	0.041	16	0.074	0.64
2013	19	19	12	0.055	7	0.032	0.37
2014	18	18	11	0.051	7	0.032	0.39
Total	217	217	124	0.571	93	0.429	0.43

Table No. 5 & Figure No.5 shows that in the 10 years period, the single authorship articles are higher and predominant than multi author. The multi authored articles are highest in the year 2012. It is seen that the single authorship trend is increasing.

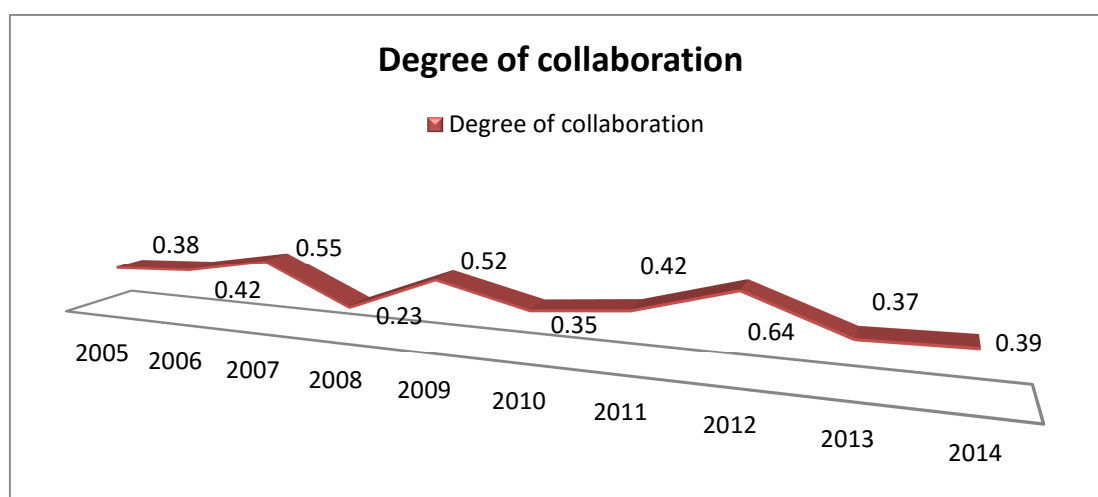


Figure No.5 Year wise Degree of Collaboration

6. Contributions (Institution wise)

Distribution of institution wise contributors in shown in Table No. 6.

Table No. 6: Contributions (Institution wise)

Distribution of institution wise contributors						
Volume No.	Year	University	Institution	College	Not Mention	Total
24	2005	17	3	4	1	25
25	2006	18	4	2	1	25
26	2007	15	3	3	0	21
27	2008	18	1	2	0	21
28	2009	21	1	2	0	24
29	2010	19	1	1	0	21
30	2011	17	1	1	0	19
31	2012	20	2	3	0	25
32	2013	17	1	1	0	19
33	2014	13	3	1	0	17
Total		175	20	20	2	217

Table No. 6 & Figure No.6 shows distribution of institutions wise contribution and volume wise. University wise at the national level followed by colleges. It was seen that university wise contribution were maximum (175) than institution wise (20) and (20) contributions were contributed by the colleges. Table No. 5 shows that the highest number of contributions are of university level.

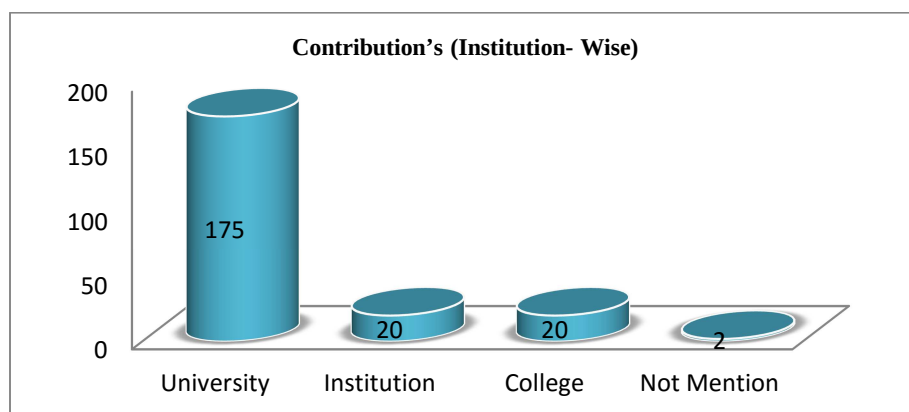


Figure No. 6 Contributions (Institution wise)

7. Country wise Distribution of contributions

The Country wise Distribution of contributions in shown in Table No. 7.

Table No. 7: Country wise Distribution of contributions

Country wise distribution			
Sr.No	Name of Country	No. of Contributions	Percentage
1	United States	178	82.03
2	Canada	12	5.53
3	Spain	7	3.23
4	United Kingdom	2	0.92
5	Serbia	2	0.92
6	Italy	2	0.92
7	Ireland.	2	0.92
8	Russia	1	0.46
9	Poland	1	0.46
10	Mexico	1	0.46
11	India	1	0.46
12	China	1	0.46
13	Africa	1	0.46
14	Not Mentioned	6	2.76
	Total	217	100%

Table No. 7 & Figure No.7 shows the Country wise distribution of contributions which indicates that the majority of the contributions were contributed by USA (82.03%) were as the minimum contributions were contributed by other countries i.e. (0.46%) respectively.

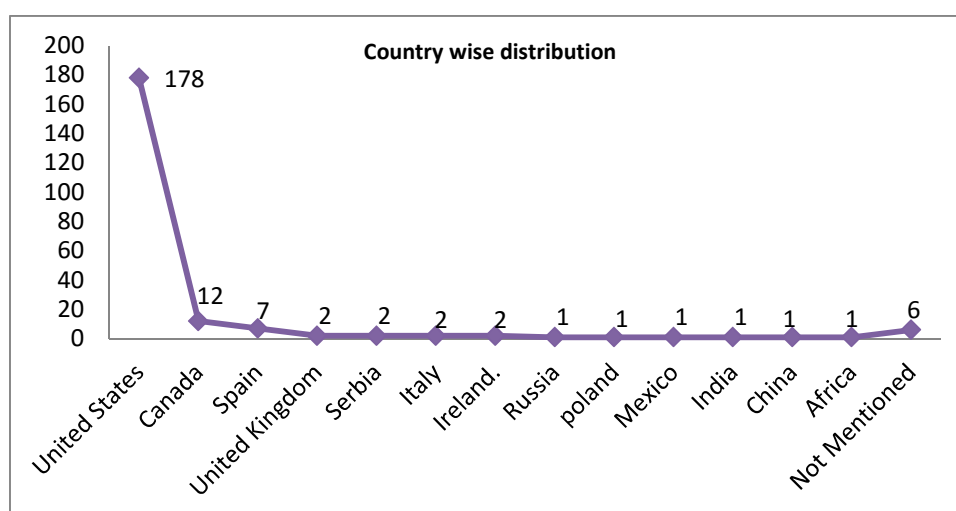


Figure No.7 Country wise Distribution of contributions

8. Types of Publication (Volume wise)

Types of publication Volume wise is displayed in Table No. 8

Table No. 8 Types of Publication (Volume wise)

Types of publication cited						
Year	Volume No	Article	Editorial	Communication	Tutorial	Total
2005	24	19	0	5	0	24
2006	25	19	1	2	2	24
2007	26	17	2	1	0	20
2008	27	11	5	5	1	22
2009	28	19	2	0	2	23
2010	29	18	3	0	2	23
2011	30	13	0	3	3	19
2012	31	22	2	0	1	25
2013	32	17	2	0	0	19
2014	33	9	3	6	0	18
Total		164	20	22	11	217
		75.58%	9.22%	10.14%	5.07%	100%

Table No. 8 & Figure No.8 shows the types of publication volume wise. of the total 217 contributions majority (75.58%) of the citations are the Article citations and minimum (5.07%) are Tutorial citations.

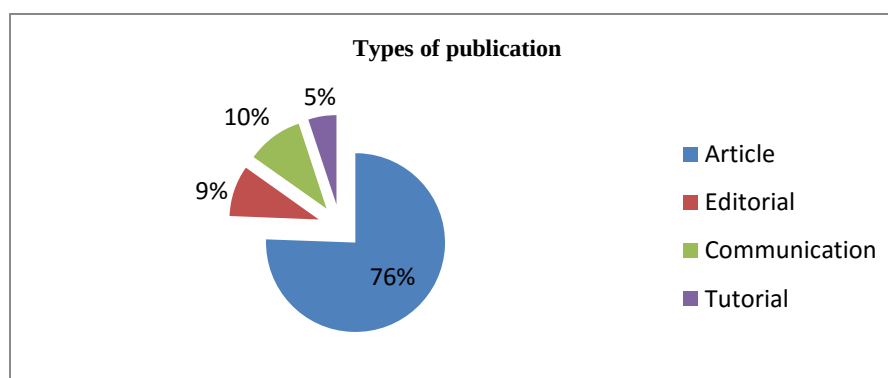


Figure No.8 : Types of publication Cited (Volume wise)

9. Average citation per contribution in each volume

Average citation per contribution in each volume is shown in Table No.9

Table No. 9 Average citation per contribution in each volume

Average Citation Per Contribution In Each Volume			
Volume No.	No. Of Contribution	No. Of Citation	Percentage
24	24	520	10.80
25	24	510	10.60
26	20	436	9.06
27	22	438	9.10
28	23	448	9.31
29	23	574	11.93
30	19	452	9.39
31	25	541	11.24
32	19	367	7.63
33	18	527	10.95
Total	217	4813	100%

Table No. 9 & Figure No.9 shows the average citation per contribution in each volume, of the total 217 contributions were. Maximum numbers of citations were contributed by volume no. 31 (11.24%) and the minimum (10.95%) contributions were contributed by volume no. 33.

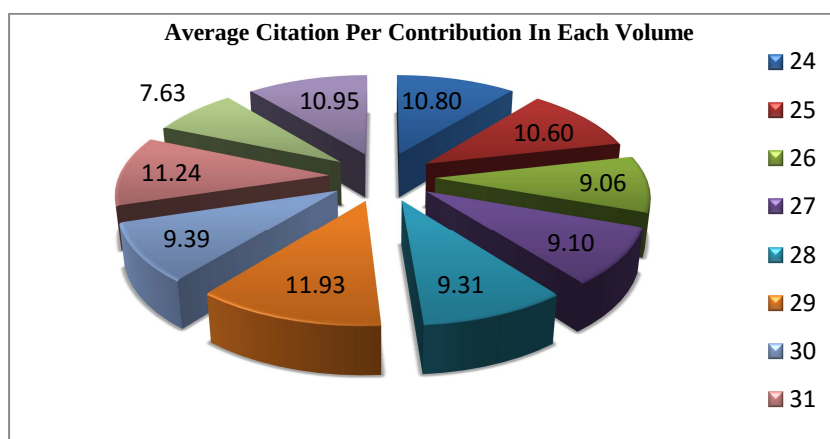


Figure No.9 Average citation per contribution in each volume

10. Average pages (per volume & per contributions)

Average pages (per volume & per contributions) in displayed in Table No. 10

Table No. 10 Average pages (per volume & per contributions)

Volume No.	Total Pages	No. Of Article	Percentage
24	207	24	9.35
25	208	24	9.39
26	190	20	8.58
27	163	22	7.36
28	175	23	7.90
29	197	23	8.89
30	177	19	7.99
31	391	25	17.65
32	270	19	12.19
33	237	18	10.70
Total	2215	217	100%

Table No. 10 shows the average pages (per volume & per contributions). The maximum pages were covered in volume no.31 (17.65%) & minimum pages were covered in volume no. 27 (7.36%).

11. Domain of E-Mail Id of the Contributors

Domain of E-Mail Id of the Contributors is Displayed in Table No.11

Table No.11 Domain of E-Mail Id of the Contributors

Domain of E-Mail Id			
Sr. No	Mail Domain	Frequency	Percentage
1	Educational	73	33.64
2	Gmail	33	15.21
3	organizational	28	12.90
4	Commercial	15	6.91
5	Governmental	10	4.61
6	yahoo	8	3.69
7	others	47	21.66
8	Not Mentioned	3	1.38
Total		217	100%

Table No.11 Show that the Websites on Education Maximum 73 (33.64%) out of 217 of the Articles have mentioned their email address in the paper. Followed by Gmail Domain of email 33 (15.21%) then organizational Domain of email the 28 (12.91%) .

12. Number of References wise Distribution of the Article

Number of References wise Distribution of the Article shown in Table no 12

Table No.12 Number of References wise Distribution of the Article

Number of References wise Distribution of the Article				
Year	Web Ref	Print Ref	Total	Percentage
2005	162	358	520	10.80
2006	171	339	510	10.60
2007	131	305	436	9.06
2008	126	312	438	9.10
2009	216	232	448	9.31
2010	169	405	574	11.93
2011	151	301	452	9.39
2012	189	352	541	11.24
2013	117	250	367	7.63
2014	227	300	527	10.95
Total	1659	3154	4813	100%

Out of 217contributions, it is seen that the Maximum References 574 (11.93%) 2010 in the year. followed by minimum references were367 (7.63%) 2013 in the Year. It was seen the maximum references used print references i.e.3154 whereas 1659 references were web references.

Findings and Conclusion:

The findings are based on the analysis of collected data appended in 217 articles and 4813 references in Journal of Information Technology & Libraries on DOAJ.

1. The Distribution of contributions (Volume-wise):- The total 217 contributions majority of the contributions i.e. 24 (11.06%)

contributions were contributed in 2005 & 2006 were as minimum contributions i.e. 18 (8.29%) contributions were contributed in 2014.

2. Authorship pattern of contributions: - indicates that the maximum percentage is of single author.
3. Relative Growth Rate (RGR) and Doubling Timing (DT) of Articles :-

The mean relative growth for the first five years 2005 to 2009 is (0.31), and the mean relative growth rate for the last five years 2010 to 2014 reduced to (0.13). While the Doubling time for different years [Dt(p)] gradually increased from (1.00) in 2006 to (7.70) in 2014.

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5. Year wise Degree of collaboration: - shows the 10 years period, the single authorship articles are higher and predominant than multi author. It is seen that the single authorship trend is increasing.
6. Contribution institutions wise: - The highest numbers of contributions are of university level.
7. Country wise distribution: - indicates that the majority of the contributions were contributed by USA (82.03%).
8. Types of publication volume wise: - The total 217 contributions majorities (75.58%) of the citations are the Article citations and minimum (5.07%) are Tutorial citations.
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