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RESEARCH PRODUCTIVITY AND DEGREE OF COLLABORATION IN JOURNAL OF DIGITAL LIBRARY PERSPECTIVES (2016 TO 2020)

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RESEARCH PRODUCTIVITY AND DEGREE OF COLLABORATION IN JOURNAL OF DIGITAL LIBRARY PERSPECTIVES FROM 2016 TO 2020

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ABSTRACT

The present study is a bibliometric analysis of the articles published in "Journal of Digital Library perspectives" during the year 2016 to 2020. This study examines mainly the bibliometric analysis and identification of Research productivity, authorship pattern analysis, degree of collaboration, the geographical distribution of the authors, and analysing the citation during the period of the study. Results indicate that most of the papers are published by multiple authors and found 22.16% average citations per paper. The degree of collaboration is found to be 0.56. The (46.96%) USA is the highest contributor to the articles in the journal during the study period.

Keywords: Bibliometric analysis, Authorship pattern, Degree of Collaboration, Digital library perspective,

1. INTRODUCTION

Quantifying the relative performance of research in any discipline is a significant practice (Sangam, 2015). Assessing the productivity of Library and information science research literature perhaps helps to understand the trend and growth of literature and to know the research collaboration and the most productive scholar and institutions in the field. A bibliometric study is one of the tools to evaluate the published literature through the tracking of citations. Understanding their trends in the literature context is significant in assessing the impact and influence of research. In the late 1960s, Alan Pritchard first coined the term bibliometric and stresses the measurable aspect of counting reading resources, articles, publications, citations, and any statistically significant demonstration of documented

information, irrespective of subject bounds. It examines the bibliographic variables of publications such as author(s), the publication place, keywords, and the citations. This paper aims to identify the trends in LIS research collaboration among the research community, especially in the journal of digital library perspective.

2.   SOURCE OF THE JOURNAL

This journal published through Emerald Publishing Limited, United Kingdom, Before it was published in the name of OCLC Systems & Services: International digital library perspectives. In the year 2016 renamed zs Digital Library Perspectives. It publishes research related to web-based delivery, teaching, and learning and developments in the digital information environment, which related to global knowledge development, communication, world memory, digital libraries, digital repositories and standards and the latest technologies.

3. REVIEWS OF LITERATURE

The Research progress has amplified almost in every field of study. Research collaboration has initiated at different levels as an individual, institutional, national, and international. The study of research productivity, authorship patterns and collaborations are the important features of bibliometric analysis. Collaborative research and authorship trend are very much essential features in the study of informatics and bibliometric.

Hazarika and others (1995) have found in their stud of Indian Forester Bibliometric analysis of 1991-2000. The result shows that collaborative research at different levels has always been favoured by scientists. In another study, N. Zafrunnisha and V. Pullareddy (2009) have identified that the authorship pattern and collaborative research from 141 Ph. D theses submitted to the three universities during 1963–2003. The result shows that more contributions came from the multi-authored over single-authored papers. Similarly, Chandrashekara, Mulla, and Harinarayana (2010) analyzed the collaboration of authorship of 454 articles published on digital libraries during the year 1991 to 2009. The result shows that the maximum contributions found from single author 307 (67.62%), with the contribution of 145 articles USA takes first place and UK in the second with the contribution of 27.09 percent. In a scientometrics study, Singh (2014) has evaluated 657 publications in Indian Journal of Pure and Applied Physics during the period 2006-2010. The study identified the 93.46% of publications are coming from collaborative research. Imran Khan (2016) has found that a maximum number of contributions came from joint authors during the study, i.e., 61.24

percent in DJLIT from 2010-2014. In another research, Neha Verma and Kunwar Singh (2017) found that from 255 contributions 2.27 was the average authors per article and 0.76 was the degree of collaboration during the period 2010-2016. It is observed in the study that collaborative research among the authors is increasing in library and information science.

In the study of "Journal of Information Literacy": a bibliometric study for the period of 2011 to 2015 conducted by Tallolli and Mulla (2016). The study shows that 47 % of articles research in nature and found a significant contribution from the UK. Kolle (2017) examines the publications from 2005 to 2014 in the area of Global research on information literacy and found that the USA was the most contributing Nation. The most productive publication was the Journal of Academic Librarianship during the period.

4. OBJECTIVES

The prime objective to examine the articles published in the Digital library perspective between 2016 to 2020. Specifically, this study will attain the following goals.

➢ Find the number of publications published per volume during the study.
➢ Examine authorship pattern and the research collaboration during the study
➢ Identify articles length published in the journal from the year 2016 to 2020.
➢ Know the citation pattern and distribution of citations in the journal during the specified years.
➢ Classify the article types published in the journal during the years.
➢ To find out the most prolific contributors and their affiliations.

5. METHODOLOGY

The five volumes of the Journal of Digital Library perspectives from 2016 to 2020 have taken for the study. The bibliographic data related to the objectives i.e., published articles, such as the article title, number of authors, institutional affiliations, number of references, page number, etc., were collected and analyzed for making observations. Tables are filled in MS excel counting reference, and other associated data have been calculated and represented in the form of tables and figures.

6. DATA ANALYSIS & INTERPRETATION

The data has been collected based on the study's desired objectives of the study from the official journal website of the emerald publishing for five years (2016 to 2020). The Journal of Digital library perspective was published 132 articles during the study, then the

range of data extracted from each of the downloaded articles. The investigator carefully every issue article examined and recorded the exact bibliographic details. The investigator obtained the following data: year-wise publications, number of authors, and number of pages, number of citations, and the university/institution affiliation of the author.

6.1   Growth of the publications by Volume

Table one and Graph one showed that the total (132) articles published from 2016 to 2020 were from five volumes. The scattering of articles volume-wise shows that the number of publications was highest in 2020, with 34 (25.76 %). The publication range was 34 to 18 published per year.

Table-1 Year-wise distribution of the Articles

Year	Vol.No	No. of Issues	Publications	Publication%	Cumulative	Cumulative%
2016	32	4	24	18.18	24	18.18
2017	33	4	32	24.24	56	42.42
2018	34	4	24	18.18	80	60.60
2019	35	4	18	13.64	98	74.24
2020	36	4	34	25.76	132	100
			132	100		

Graph-1 Year-wise distribution of the Articles
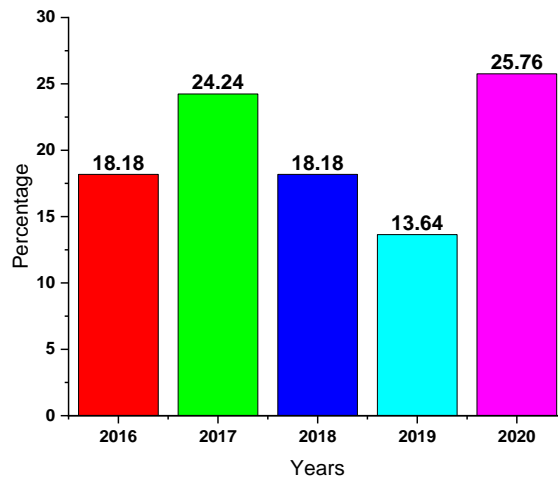
6.2 Types of Article published

Table two and graph two revealed that the 49 (37.12 %) case study and 43 (32.58 %) research papers were the significant contributions of the articles published in the Journal of digital library perspectives during the period. Then 11 (8.33%) contributions were conceptual and General review papers, followed by 4(3.03 %) were editorial and technical, and 2(1.52 %) articles have donated from the mode of Interview from the experts.

Table-2 Types of Articles Published during the period

Articles	2016	2017	2018	2019	2020	Total	percentage
Case study	10	18	12	2	7	49	37.12

Conceptual paper	5	4	2	0	0	11	8.33
Editorial	0	0	1	0	3	4	3.03
General review	4	4	0	1	2	11	8.33
Interview	0	0	0	0	2	2	1.52
Research Papers	4	4	7	12	16	43	32.58
Technical paper	0	0	2	0	2	4	3.03
Viewpoint	1	2	0	3	2	8	6.06
	24	32	24	18	34	132	100

Graph-2 Types of Articles Published During the Period
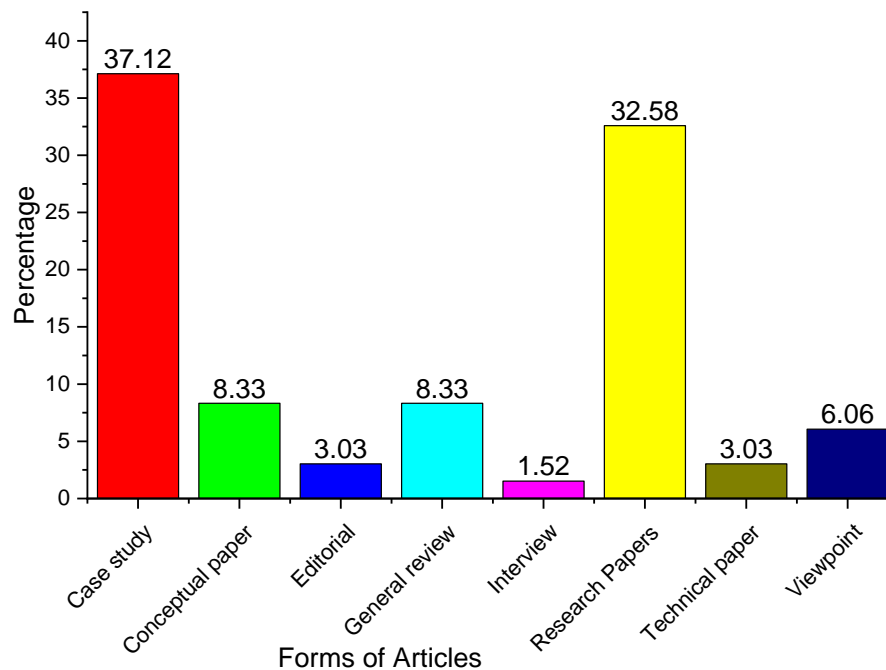
## 6.3 Distribution of Citations by Volumes

Table three and graph three show that the volume-wise citations in this study period were indicated in the Journal of Digital Library perspectives covered 2925 citations from the 132 published articles. However, in the year 2020 is the highest number of citations per article were traced 932(31.86%) and followed by 577 (19.73%) in the year 2018, 559(19.11%) in the year 2017, 551 (18.84 %) in the year 2019, and 306(10.46%) in the year 2016. Further to the average citation was fund at 22.16 percentage per article.

Table-3:Citations distribution by volumes

Year	Vol.No	No of citations	No. of Articles	Percentage of Citations	Average citation/ per paper by volume	Cumulative total	Percentage
2016	32	306	24	10.46	12.75	306	12.75
2017	33	559	32	19.11	17.47	865	29.57
2018	34	577	24	19.73	24.04	1442	49.29
2019	35	551	18	18.84	30.61	1993	68.14
2020	36	932	34	31.86	27.41	2925	100

|		2925	132	100	22.16		

Graph-3 Average Number of Citations Per Year
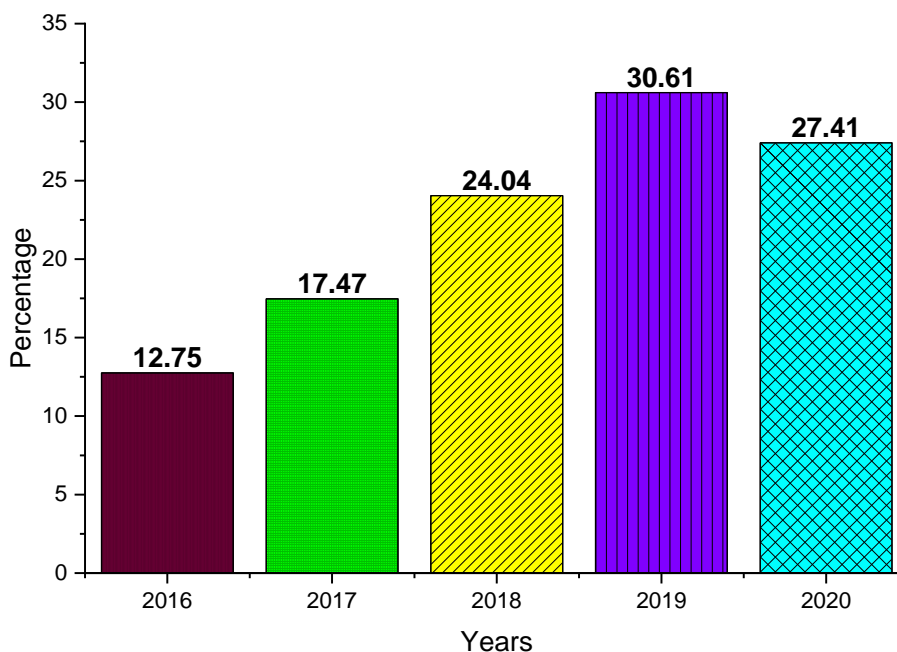
6.4 Range of percentage of citations per Article

Table four and Graph four depict that 5(3.78 %) articles did not find any citation in the publications. It is found that the range of the sources between 1 to 10 with 28.78 percentages of articles, an interval between 11 to 20 references covered 21.97% portions of papers, and citations between 21 to 30was 16.66 percentage and 41 to 50 covered 12.88% share.

Table-4: Range and percentage of citations per Articles

| Citations	No of Articles	percentage
00	5	3.78
1-10	38	28.78
11-20	29	21.97
21-30	22	16.66
31-40	12	9.09
41-50	17	12.88
51-60	7	5.3
61-70	1	0.76
71-80	1	0.76
	132	100

Graph-4: Range and percentage of citations per Articles
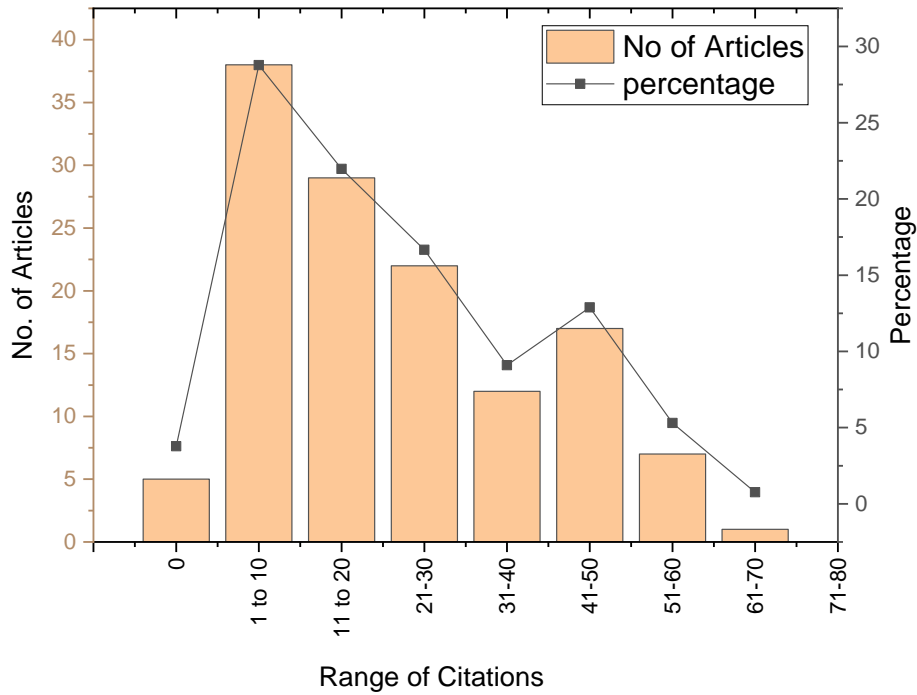
6.5 Authorship pattern with a degree of collaboration

Table five and Graph five revealed that the authorship pattern of published articles in the Journal of Digital Library perspectives traced the majority (56.06 %) of multi-author publications during the study period. The 43.94 percentages were found single author's contributions. It shows that the article publication trend was towards the multi-authors approach in this journal during the study period.

Table-5: Authorship Pattern and degree of collaboration

No of Authors	2016	2017	2018	2019	2020	Total Numbers	Percentage
Single Author	18	17	11	6	6	58	43.94
Two Author	1	9	9	7	14	40	30.3
Three Authors	2	4	3	5	6	20	15.15
Four Authors	2	1	1	0	4	8	6.06
Five Authors	0	1	0	0	3	4	3.03
Six authors	0	0	0	0	0	0	0
Seven Authors	1	0	0	0	1	2	1.52
Total	24	32	24	18	34	132	100

Graph-5: Authorship Pattern and degree of collaboration
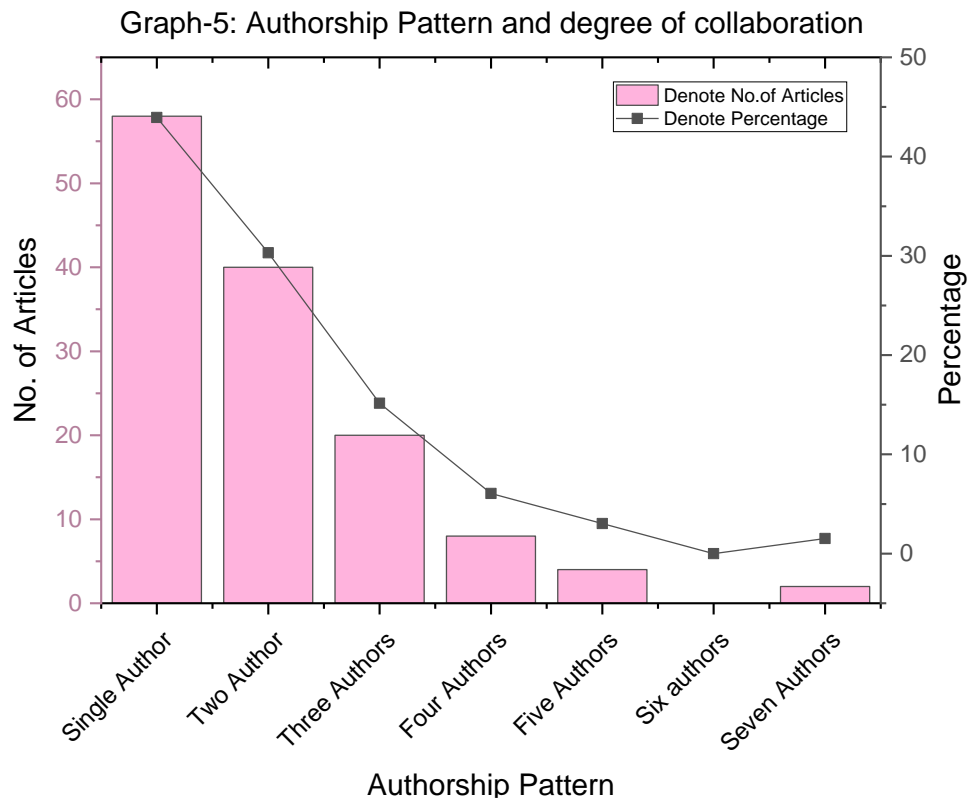
Subramanyam (1982) has suggested the formula to determine the degree of collaboration was co-authors publications among total publications during the period of the study.

DC: NM/Nm+Ns

Nm=Number of multiple authors publications

Ns=Single authors Publications

Dc: 74/ (74+58) =0.56

The degree of collaboration has been calculated through the above formula, and it is found that 0.56. It also shows that the trend of the contribution of articles in the journal of Digital Library perspectives was towards a multi-author approach.

6.6. The most prolific contributor in the study

The most prolific contributor was Robert Fox from the USA had contributed nine articles. Secondly, H. Frank Cervone from the USA has contributed eight papers, and Juan D. Machin-Mastromatteo from Mexico contributed six papers during the study period. However, 223 authors contributed to each 1 article which has shown in the below table six and graph Six.

Table: 6: Most prolific contributor

Rank	Author	Country of origin	No of Contributions	No of Authors
1	Robert Fox	USA	9	9
2	H. Frank Cervone	USA	8	8
3	Juan D. Machin-Mastromatteo	Mexico	6	6
4	Anna Maria Tammaro	Italy	3	3
4	Ebikabowei Emmanuel Baro	Nigeria	3	3
5	A.Miller	USA	2	2
5	Anna L. Neatrour	USA	2	2
5	Asad Khan	Pakistan	2	2
5	Joanna Richardson	Australia	2	2
5	Justin L. Otto	USA	2	2
5	Md. Anwarul Islam	Bangladesh	2	2
6	223 Authors	Other countries	1	223
				264
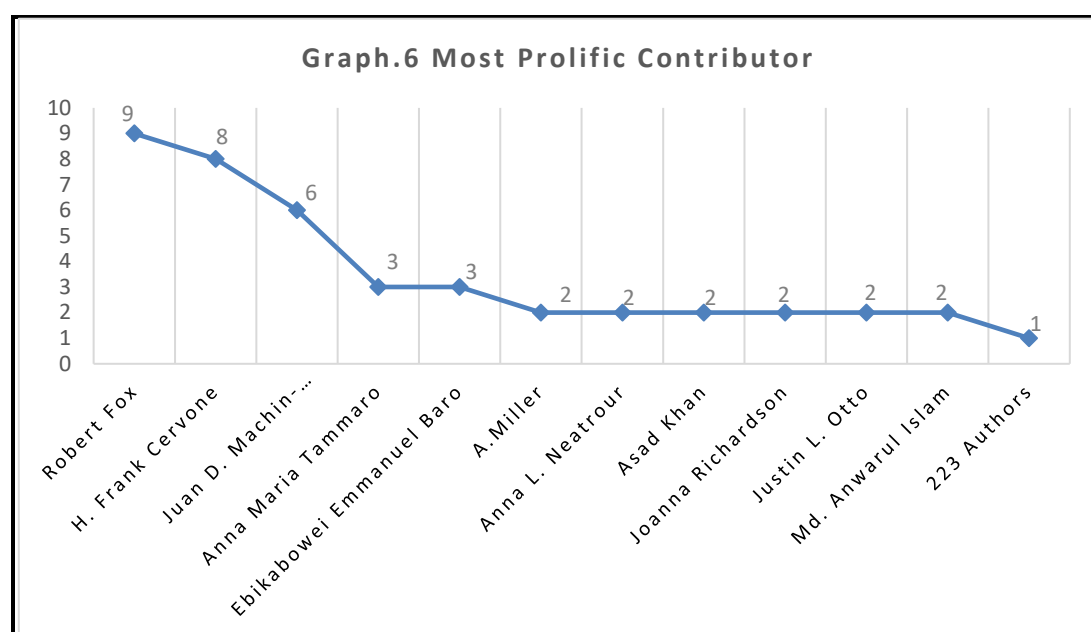
6.7 Authors by Geographical affiliation

Table seven revealed that 264 authors from 34 countries were contributed 132 articles in five years from 2016 to 2020. The majority (46.59 %) of authors contributed from the USA, and Mexico stands second with 6.82 percentages of articles among the publications. The followed by Nigeria (6.44 %) author's contributed the papers and India are in 7th rank among the other countries, the Indian 2.77 percentage of authors contributed the documents during the period.

Table.7: Ranked list of Authors by Geographical Affiliation

Rank	Country of Affiliation	No of Authors	Percentage
1	USA	124	46.96
2	Mexico	18	6.82

3	Nigeria	17	6.44
4	Canada	12	4.55
5	Pakistan	10	3.79
6	Australia	7	2.65
6	Czech Republic	7	2.65
7	India	6	2.27
7	Italy	6	2.27
8	Bangladesh	5	1.89
8	China	5	1.89
9	France	4	1.52
9	Ghana	4	1.52
9	Malaysia	5	1.89
10	Iran	3	1.14
10	Peru	3	1.14
10	South Africa	3	1.14
10	UK	3	1.14
11	Colombia	2	0.76
11	Greece	2	0.76
11	Hungary	2	0.76
11	Malawi	2	0.76
11	Philippines	2	0.76
11	Sweden	2	0.76
11	United Arab Emirates	2	0.76
12	Bosnia and Herzegovina	1	0.38
12	Denmark	1	0.38
12	Egypt	1	0.38
12	Germany	1	0.38
12	Indonesia	1	0.38
12	Jordan	1	0.38
12	Kuwait	1	0.38
12	Netherlands	1	0.38
		264	

6.8 Ranking of most productive Institution

The study found that the most prolific institutions contributed the number of authors and their contribution to the journals under the work. The most productive institution is Universidad Autonoma de Chihuahua, Chihuahua, Mexico. The affiliation numbers of the author from this institution were 13(4.92 %). The next prolific institution was the University of Notre Dame, Notre Dame, Indiana, USA. The affiliation with this university was 9(3.41 %) authors followed by other institutions, and Universities authors' affiliation is shown in table eight.

Table-8: Ranking of most productive Institution

Rank	Institute /University	No of Institutions	Percentage
1	Universidad Autonoma de Chihuahua, Chihuahua, Mexico	13	4.92
2	University of Notre Dame, Notre Dame, Indiana, USA	9	3.41
2	University of Utah, Salt Lake City, Utah, USA	9	3.41
3	Eastern Washington University, Cheney, Washington, USA	6	2.27
4	Middle Tennessee State University, Murfreesboro, Tennessee, USA	5	1.89
4	Moravian Library, Brno, Czech Republic	5	1.89
4	School of Public Health, University of Illinois at Chicago, Chicago, Illinois, USA	5	1.89

5	Federal University of Technology, Minna, Nigeria	4	1.52
5	National Institute of Standards and Technology, Gaithersburg, Maryland, USA	4	1.52
5	University of Dhaka, Dhaka, Bangladesh	4	1.52
5	University of Lille, Villeneuve d'Ascq Cedex, France	4	1.52
5	University of Management and Technology, Lahore, Pakistan	4	1.52
	Other universities /Institute etc.	192	72.72

6.9 Most productive organisations

The distribution of published papers by institution wise the table reveals that, out of 264 contributors, the highest number 210 (79.55 %) contributions came from universities. The libraries of national importance stood second of 18 (6.82 %) contributions, and the various types of college stand third place with 14(5.30 %) contributors. The institutions 11(4017 %), government organizations, and research centres were 8(3.03 %) contributors. The schools and others contributions 2(0.76 %) and 1(0.38 %) contributions respectively.

Table-9: Most productive organisations

Rank	Institution	Total	Percentage
1	University	210	79.55
2	Libraries of National importance	18	6.82
3	College	14	5.30
4	Institutions	11	4.17
5	Govt. organisation/research centres	8	3.03
6	School	2	0.76
7	others	1	0.38

6.10 Length of Articles (pages)

Table nine and graph seven shows that the length of articles in terms of pages out of 132articles 17 (12.88%) was between 1 to 5 pages in length and the 29 articles (21.97%) were 6 to 10 pages in length, and 52(39.39 %) were in 11 to 15 pages in length, 23(17.42%) were in 16-20 pages, 8(6.06%) in 21to 25in length and 2(1.52%) were in 26 to 30 pages in length. The only1 (0.76 %) in above 31 pages in length.

Table-9: Length of Articles

No of Pages	No of Articles	Percentage
1-5	17	12.88
6-10	29	21.97
11-15	52	39.39
16-20	23	17.42
21-25	8	6.06
26-30	2	1.52
Above 31	1	0.76

Graph-7: Length of Articles
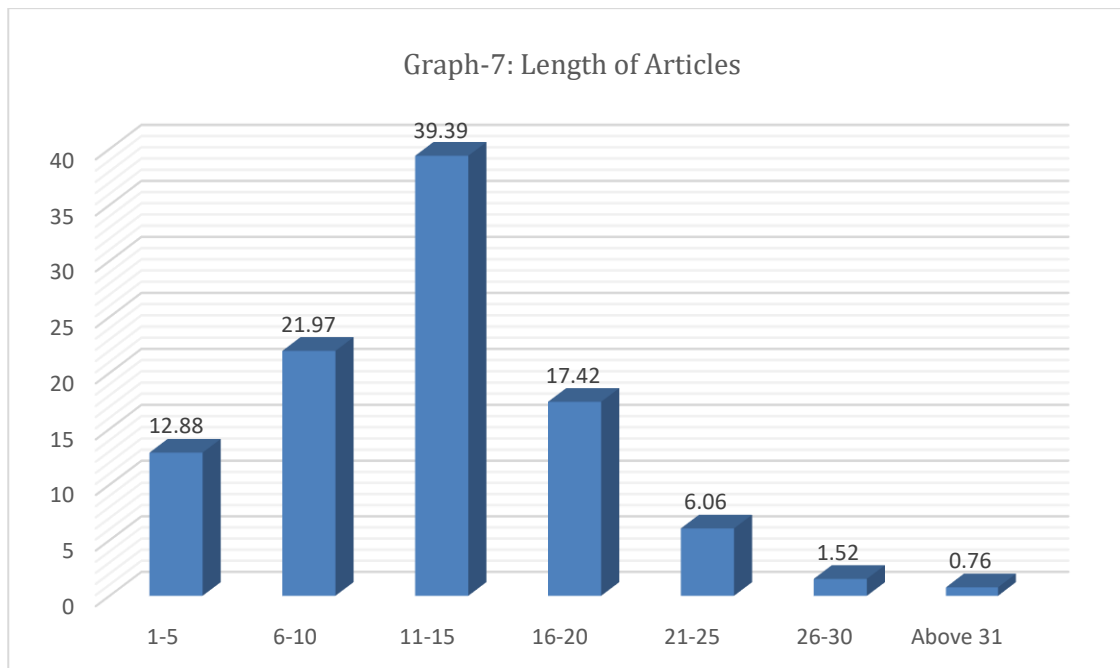
7. Findings and Conclusion

With the above discussion and interpretation, we can find the following inferences during the period of study.

1. The range of articles published per year during the period under review was 34 to 18. It also noted that the number of publications of the pieces had been increased almost every year except in the year 2019 to some extent. The average length of the paper was 12.50 pages. The highest 39.39 % are between 11 to 15 pages in length.

2. The Majority of the articles published in the Journal of Digital Library perspectives during the study period were case studies (37.12 %) and Research Papers (32.58 %). The average number of citations per article was 22.16, and the year 2020 is the highest number of citations per article traced 932 (31.86%).

3. The multi-author publications have been covered by (56.06 %). The degree of collaboration of co-authors' publications among total publications was 0.56. The most prolific contributor was Robert Fox and contributed the nine articles from five years.

4. It is found that the range of the citations between 1 to 10 with 28.78 percentages of articles, an interval between 11 to 20 references covered 21.97 rates of papers and citations between 21 to 30 was 16.66 percentage and 41 to 50 covered 12.88 percentage. The published 132 articles during the period, the maximum 52(39.39 %) were 11 to 15 pages in length.

5. The Majority (46.59 %) of authors contributed from the USA, and Mexico stands second with 6.82 percentages of articles among the publications. The Indian 2.77 percentage of authors contributed the papers during the period.

6. The most productive institution is Universidad Autonoma de Chihuahua, Chihuahua, Mexico (4.92 %).The distribution of published papers by institution wise the table reveals that, out of 264 contributors, the highest number 210 (79.55 %) contributions came from universities.

7. The highest 46.96% of authors from the USA has contributed the articles and second the Mexico 6.82 %. The most productive institution was Universidad Autonoma de Chihuahua, Chihuahua, Mexico, contributing 4.92% of the article under study.

The study measured the number of contributions, author's productivity and highlight quantitatively the contributions made by the researchers in the Journal of Digital library perspectives during the study period. A total of 132 articles have been published at the rate of 26.4 articles per year. The overall 2925 citations have been found from five volumes at the rate of 585 citations per volume. The degree of collaboration (0.56) shows research collaboration. It was a good sign among the researchers. The significant contribution found during the survey was the USA (46.96%) and Mexico (6.82%). Some good contributions from Asian countries, including India, during the study.

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