

Digital Library Output in Scopus during 1995-2016 : A Bibliometric Analysis

Dr. D. K. Veer¹, Gajanan P. Khiste²

¹Director, Knowledge Resource Center, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra, India

²Information Scientist, Knowledge Resource Center, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra, India

ABSTRACT

Scopus is a premier research platform, helping to find, analyze, and share information in the sciences, social sciences, arts, and humanities. The present study discusses the “Digital Library” as reflected in Scopus for the period from 1995–2016. The present paper investigates the highly productive authors, document Types, Present study is also aims to find out the top contributing Indian institutions, most prolific authors, the preferred sources for publications by Geographical distribution by country, Subject area, Source Type, Affiliation, and Language etc. The results indicates that there were total 18854 documents on digital library during 1995 to 2016. The main institutes contributing on Digital Library are Virginia Polytechnic Institute and State University. Fox, E.A. is the most productive author in terms of publications. At the international front, India’s contribution to Digital Library is 578 documents during 1995 to 2016 which is rank on Seventh.

Keywords : Scopus, Digital Library.

I. INTRODUCTION

Digital Libraries are an evolving area of research; Digital libraries defined as electronic information collections containing large and diverse repositories of digital objects, which can be accessed by a large number of geographically distributed users. Such repositories would exist in locations physically near or remote from the users. Digital objects include text, images, maps, sound, videos, catalogues, scientific and government data sets as well as hyper textual multimedia compositions of such element. Therefore considering the importance of Digital Library the study is taken for research purpose.

II. CONCEPTUAL ANALYSIS

2.1 Digital Library

According to William Arms an informal definition of a digital library is a managed collection of information,

with associated services, where the information is stored in digital formats and accessible over a network.

2.2 Scopus

Scopus launched in November 2004. It is the largest abstract and citation database of peer-reviewed literature, featuring smart tools to track, analyze and visualize research. With over 21,500 titles from more than 5,000 international publishers, Scopus delivers the most comprehensive overview of the world’s research output in the fields of science, technology, medicine, social science and arts and humanities.

III. OBJECTIVES OF THE STUDY

To analysis of Digital Library term in SCOPUS database by various parameters such as Author wise, Document Type wise, Country wise, Publication year wise , Research area wise , Source wise. The specific objectives of the present study are.

1. To Study the Document types and number of documents in which Digital Library term has been used.
2. To find out highly prolific authors on Digital Library.
3. To analyses the data geographically by types of documents.
4. To Identify Publication productivity on digital library by chronologically.
5. To know highly preferred journals by the authors for writing research papers on Digital Library.

IV. SCOPE & LIMITATION OF STUDY

This Study is limited to search results on the term of 'Digital Library' in SCOPUS database during 1995 to 2016 document types and number of documents in which Digital Library term was used.

V. METHODS AND MATERIALS

The growth of publications in the Digital Library research was derived from the SCOPUS published by Elsevier. During the period 1995–2016, a total of 18854 records were found for the keyword 'Digital Library'. The author has browsed the term 'Digital Library' by Virtual Library, electronic Library, Library without wall parameters, etc. Necessary data was tabulated into separate sheets in terms of authorship pattern, geographical distribution of contributors, ranking list of Sources and collaborative measures.

VI. REVIEW OF RELATED LITERATURE

Khiste G.P. & Paithankar R.R. (2017) explained Bibliometric Study is a dynamic area of research in which majority of research work is being done. Thomson Reuters, Web of Science is a premier research platform, helping to find, analyze, and share information in the sciences, social sciences, arts, and humanities. The present study discusses the "Bibliometric" as reflected in Web of Science for the period from 1989–2016. This study investigates the highly productive authors, Document Type wise, Country wise, Language wise, Publication year wise, Research area wise, Source Title or Journal wise. Documents by Language wise.

Khiste G.P. & Paithankar R.R. (2017) discusses the "Bibliometric" as reflected in SCOPUS for the period from 2008–2016. This study investigates the highly productive authors, Document Type, Geographical distribution by country.

While Krishnamurthy, M. (2014) described the objectives of digital libraries and the project in some detail. The role of the digital libraries, standards, collection management, cataloguing, stages of digital libraries, and evaluative of various aspects. A number of lessons emerged from this paper which is described, as are model for digital library.

However Lakshmi, R., & Suma, P. (1998) explained the concept of digital libraries has come and it will stay. There are many projects being undertaken in different parts of the world. Yet there are many intricacies in developing a digital library. Two ways of developing a digital library has been identified. They are converting traditional library into a digital library and direct development of digital library. But, there are no clear cut ways to plan for a digital library. Hence, in this paper an attempt has been made to provide guidelines for planning and development of a digital library. The other issues discussed in this paper are definition of digital library components of a digital library, ideal digital library, steps involved in planning a digital library and prototype for converting traditional library into a digital library.

Srivastava, R., & Saxena, S. (2014) also discusses the concept, assumption, need, objectives, characteristic, requirement, services, challenges concerning the digital libraries and the Indian scenario. In the present scenario of rapidly changing environment infrastructure and service facilities should be made available according to the need so as to compete and survive in era of globalization and competitiveness. It also provides glimpse of changing role of librarians, problems in its implementation, and advantages.

Veer, D.K. (2009) has highlight the various facets relating to preservation of library resources in the digital era such as digital collection and digital preservation, approaches and techniques of preservation and their requirements, process of preservation, key measures towards digital preservation in India and those prominent Indian institutes and

libraries which are supports for implementation of the policy and digitization and preservation.

VII. CHRONOLOGICAL ANALYSIS

It is observed from the collected data that very huge documents were written on Digital Library which is reflected in Table 1.

Table 1. Year wise documents published in Scopus on Digital Library

Sr. No.	Year	Documents	Percentage
1	2016	829	4.39
2	2015	826	4.38
3	2014	966	5.12
4	2013	995	5.27
5	2012	1000	5.30
6	2011	1084	5.75
7	2010	1077	5.71
8	2009	1194	6.33
9	2008	1169	6.20
10	2007	1384	7.34
11	2006	1433	7.60
12	2005	1367	7.25
13	2004	1243	6.59
14	2003	928	4.92
15	2002	823	4.37
16	2001	802	4.25
17	2000	527	2.80
18	1999	322	1.71
19	1998	363	1.95
20	1997	245	1.30
21	1996	185	0.98
22	1995	92	0.49
	Total =	18854	100

Table 1 shows that year-wise distribution of documents. The highest number of documents were published in the year 2006 i.e., 1433 (7.60%) and lowest number of documents 92 (0.49%) was published in the year 1995. However on an average 857 documents were published per year during last 22 years i.e. 1995-2016.

VIII. MOST PROLIFIC AUTHORS

Table 2. Top 10 Authors which write highest documents on the term Digital Library

Sr. No.	Author Name	Documents
1	Fox, E.A.	184
2	Nelson, M.L.	92
3	Giles, C.L.	90
4	Bainbridge, D.	84
5	Witten, I.H.	72
6	Goh, D.H.L.	70
7	Gonçalves, M.A.	65
8	Furuta, R.	64
9	Cunningham, S.J.	62
10	Ferro, N.	58

Table 2 depicts highly productive authors. It is observed that Fox, E.A. ranks first who has contributed a maximum number of 184 documents, followed by Nelson, M.L. with 92 documents and on 10th rank 58 documents published by Ferro, N.

IX. DATA ANALYSIS BY SUBJECTS

Table 3. Subject wise Documents Availability on Digital Library

Sr. No.	Subject	Documents
1	Computer Science	12105
2	Social Sciences	5278
3	Engineering	4419
4	Mathematics	3460
5	Decision Sciences	472
6	Business, Management and Accounting	456
7	Medicine	445
8	Biochemistry, Genetics and Molecular Biology	424
9	Physics and Astronomy	412
10	Arts and Humanities	377
11	Materials Science	285
12	Chemistry	243
13	Chemical Engineering	184
14	Earth and Planetary	177

	Sciences	
15	Health Professions	102
16	Energy	92
17	Environmental Science	75
18	Agricultural and Biological Sciences	71
19	Multidisciplinary	59
20	Psychology	47
21	Economics, Econometrics and Finance	39
22	Nursing	34
23	Pharmacology, Toxicology and Pharmaceutics	15
24	Immunology and Microbiology	14
25	Neuroscience	12
26	Dentistry	9
27	Undefined	16

Table 3 presents the subject-wise categorization of the documents retrieved. Subject-wise analysis indicates that maximum number of contributions was in the area of Computer Science i.e. 12105 followed by Social Sciences with 5278 records .The document contribution in the area of Dentistry is less i.e. 9. However , if compare the total documents with Table 2 & 3 it shows there are unmatched the figure ; that means considering the interdisciplinary approach of subject same documents were reflect in more than one subject Therefore, it can be possibility of subject overlapping.

X. DOCUMENTS BY SOURCES

Table 4. Top Ten Source Titles

Sr. No.	Source Title	Documents
1	Lecture Notes In Computer Science	2604
2	CEUR Workshop Proceedings	1243
3	Proceedings Of The ACM International Conference On Digital Libraries	569
4	D Lib Magazine	360
5	Electronic Library	330
6	Communications In Computer And Information Science	245
7	ACM International Conference Proceeding Series	199

8	Proceedings Of SPIE The International Society For Optical Engineering	180
9	International Journal On Digital Libraries	169
10	Library Hi Tech	151

Table 4 indicates that highest ranking sources in which documents was published. It shows that Lecture Notes in Computer Science ranks first with 2604 documents to its credit, followed by CEUR Workshop Proceedings ranking on second with 1243 documents. Library Hi Tech is on Tenth rank with 151 documents.

XI. CLASSIFICATION BY TYPES OF DOCUMENTS

The documents on digital libraries were classified in fourteen different types of documents which are classified by Scopus & it is presented in Table 5.

Table 5. Types of Documents available on Digital Library

Sr. No.	Document Type	Documents	Percentage
1	Conference Paper	10893	57.78
2	Article	5848	31.02
3	Review	1085	5.76
4	Book Chapter	346	1.84
5	Conference Review	334	1.77
6	Editorial	105	0.56
7	Note	100	0.53
8	Book	59	0.31
9	Short Survey	54	0.29
10	Article in Press	18	0.10
11	Erratum	5	0.02
12	Letter	5	0.02
13	Business Article	1	0.00
14	Report	1	0.00
	Total =	18854	100

Table 5 shows that the maximum number of papers published under the category of Conference Paper i.e.

10893(57.78%), whereas 5848 (31.02%) under the category Article. There are 1085(5.76%) Review and the Book Chapters are 346 (1.84%). A small number of contributions are categorized under Business Article and Report.

XII. GEOGRAPHICAL ANALYSIS OF DOCUMENTS

The Fourteen types of documents on digital libraries were written by various authors and published from different countries. However author has presented geographical distribution of top twenty countries & presented in Table 6.

Table 6. Top 20 Country credits highest documents

Sr. No.	Country Name	Documents
1	United States	6303
2	China	1467
3	United Kingdom	1427
4	Germany	1133
5	Italy	883
6	Spain	627
7	India	578
8	France	575
9	Canada	526
10	Japan	496
11	Greece	383
12	Netherlands	363
13	Taiwan	355
14	Singapore	327
15	Brazil	323
16	Australia	308
17	New Zealand	281
18	Switzerland	257
19	South Korea	254
20	Austria	220

Table 6 depicts the geographical distribution of authors. Among 18854 documents, United States tops the list with 6303 documents, followed by China with 1467 documents to its credit. United Kingdom published 1427 documents and Germany produced 1133 documents. India's contribution to Digital Library is 578 documents during 1995–2016 which is ranked

on 7th and Austria published 220 documents with rank 20th position.

XIII. DATA ANALYSIS BY AFFILIATION

The Compiled data has been analysed by affiliation institute & presented in Table 7. It reflects the status of contribution of documents written on digital libraries.

Table 7. Affiliation wise Distribution of Documents

Sr. No.	Affiliation Name	Documents
1	Virginia Polytechnic Institute and State University	229
2	Nanyang Technological University	210
3	University of Waikato	204
4	UC Berkeley	198
5	University of Illinois at Urbana-Champaign	182
6	Pennsylvania State University	168
7	University of Maryland	153
8	Texas A and M University	148
9	Indiana University	146
10	University of Strathclyde	133

Table 7 presents the list of top ten Affiliation contributions on the subject Digital Library. The institution affiliation from the address field is taken as the data for this categorization. Among 160 Affiliation the top listed institutions are only considered in this study. Virginia Polytechnic Institute and State University contributed 229 articles which is the highest while Nanyang Technological University has 210 articles to its credit & University of Strathclyde contributed 133 articles.

MAJOR INFERENCES

- In Scopus, under the category Digital Library, 18854 items were retrieved among which maximum number of documents was contributed in the year 2006 and minimum in 1995.
- Subject-wise analysis indicates that maximum number of contributions was in Computer Science i.e. 12105 & Minimum in Dentistry with 9 records.

- Document-wise study reveals that the maximum numbers of documents published are under the category “Conference Paper”.
- Institution-wise distribution shows that Virginia Polytechnic Institute and State University contributed 229 articles which is the highest while Nanyang Technological University has 210 articles to its credit & University of Strathclyde contributed 133 articles.
- Country-wise analysis indicates that United States tops the list with 6303 documents, followed by China with 1467 documents to its credit. United Kingdom published 1427 documents and Germany produced 1133 documents. India’s contribution to Digital Library is 578 articles during 1995–2016 which is ranked on 7th and Austria published 220 documents with rank 20th positions.
- The data suggest that there was a significant research activity in the field of Digital Library during the study period. The contributions of authors indicate a healthy pattern of progress in this field.

XIV. CONCLUSION

It is age of information technology during 1980’s number of writings was produced on the term digital library itself. Therefore present study reveals while observed chronologically analysis only 92 documents were observed on digital library. Now digital library is a common application in the field of library information science. Hence ample of literature were published on digital library.

XV. REFERENCES

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