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COLLECTION MANAGEMENT: A SCIENTOMETRIC STUDY

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ABSTRACT

The study deals with the Scientometric study on the publication of Collection Management Journal. Scientometric is a type of research method used in library and information science. "The study of the use of documents and patterns of publication in which mathematical and statistical methods have been applied". It utilizes quantitative analysis and statistics to describe patterns of publication within a given field. The study presents the result of detailed analysis from the data collected. The data was collected from Emerald Database for the period of 2001-2010.

The Scientometric analysis of 215 articles / papers published in the Collection Management Journal during the years 2001-2010 are taken up and analyzed based on various parameters such as year-wise distribution of papers, authorship productivity, Degree of Collaboration, Growth Rate of Publication etc.

Keywords: Scientometric, Analysis, Collection Management.

INTRODUCTION

Scientometric is the science of measuring and analyzing science. It is often done using bibliometrics that is measurement of (Scientific) Publications. (Dongare S. N, 2015).

Scientometrics is a branch of science that describes the output traits in terms of organizational research structure, resource inputs and outputs, develops benchmarks to evaluate the quality of information output. Scientometric studies characterize the disciplines using the growth pattern and other attributes. These studies have potential particularly in assessing the emerging disciplines. Scientometrics is one of the most important measures for the assessment of scientific productions. Macias-Chapula argues that "scientometric indicators have become essential to the scientific community to estimate the state-of-the-art of a given topic" (quoted In Lolis et. al.2009). Scientometrics is related to and has overlapping interests with Bibliometrics and Informetrics. Scientometrics involves the application of quantitative methods to the history of science. It is the science of measuring science; the measurement involves counting artifacts to the production and use of information, and arriving conclusions from the counts. Sangam et al (2010) say that the changes in the size of literature over specific period may be termed as growth of literature. In the information era science is becoming increasingly interdisciplinary and problem oriented, often requiring the coming together of a group of people who complement each other in terms of function and expertise which termed as collaboration (Subramanyam, 1983). The conclusions are drawn on the basis of the regularities that are revealed in the data.

Whereas the studies on Scientometric analysis of journal were done by Balasubramanyam V. 1972; Shanmghan G. 1974; Chaudhari Maitreyi, 1980; Gupta Anita,1981; Patnaik Hari Bhaskar, 1982; Manavatar R, 1982; Suseela M, 183; Vijayan B. 1983;Kandalhen U.S. 1983; Mahindre, 1984; Mahindre Parkash Wamanrao, 1985; Kuchhadiya Devji Bhura, 1986; Om Prakash, 1995; James K N, 2009; Borah Basantha Kumar, 2009; R.Lakshmi Sankari,2012; Sudesh N. Dongare,2015; Suraj M Tayade,2015.

DEFINITIONS

The term "Scientometrics" in the literature; Scientometrics is the quantitative study of the disciplines of science based on published literature and communication. This could include identifying emerging areas of scientific research, examining the development of research over time, or geographic and organizational distributions of research (R. Lakshmi Sankari, 2012**).**

Definition is provided by Tague-sutcliffe (1992 a, p.1) as a discipline or economic activity. It involves quantitative studies of scientific activities". (Pawan Kumar Saini,2014).

SOURCE JOURNAL:

Collection Management is the essential refereed quarterly journal that presents practical, research-based information about building, administering, preserving, assessing, and organizing library collections. The journal offers library professionals of all types crucial guidance in the fast-changing field of collection management, including the latest developments in sharing and providing access to resources, creating digital collections, preserving both traditional and digital library resources, applying technological developments to managing collections, training and developing staff, and managing and

analyzing the administrative data associated with building collections, such as usage, licensing or rights, access, and financial issues.

Collection Management is an essential resource for librarians and information specialists working in access services, interlibrary loan, and special collections; library administrators and educators; archivists, curators, bibliographers, academics, students, and publishers who work with libraries.

OBJECTIVES OF THE STUDY:

The major objectives of the present study covering the "Collection Management" during the period 2001-2010 are i. To find out the document types (Publication culture) and year wise contribution of papers. ii. To study the authorship pattern of the papers. iii.To indicates institution wise contribution of the papers. iv. To examine the number of citation received. v. To find out the length of paper.

SCOPE OF THIS STUDY

An attempt has been made to analyse the contributions in 40 issues of 10 volumes of the *Collection Management* is the essential refereed quarterly journal that presents practical, research-based information about building, administering, preserving, assessing, and organizing library collections during the year from 2001-2010.

METHODOLOGY

The data pertaining to journal regarding 2015 contributions made from volume 25 in 2001 to volume 35 in 2010.The analysis made an authorship (Volume wise and issue wise);authorship pattern, citation of publication and number of pages. The authorship pattern has been analysed by using K. Subramaniam's degree of collaboration in quantitative

terms. All the data were subsequently examined, observed, analysed and tabulated for making observations.

DATA ANALYSIS

1) Year wise distribution of Publications

Fig No.1 shows Year wise distribution of Publications

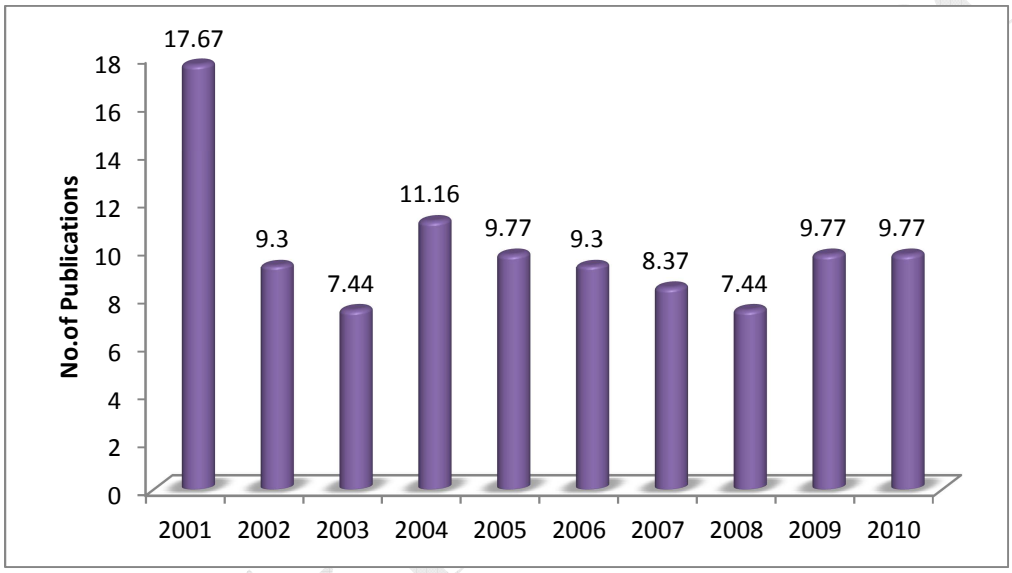


Fig No.1 shows the distribution of contributions volume& Issue -wise. Table 1 portrays that out of 215 contributions, the highest number of contribution i.e. 17.67 % of them was contributed in 2001, and the least number of contribution i.e.7.44percent of them were published in 2008.

2) Year wise distribution of Citations

Fig No.2 shows Year wise distribution of Citations

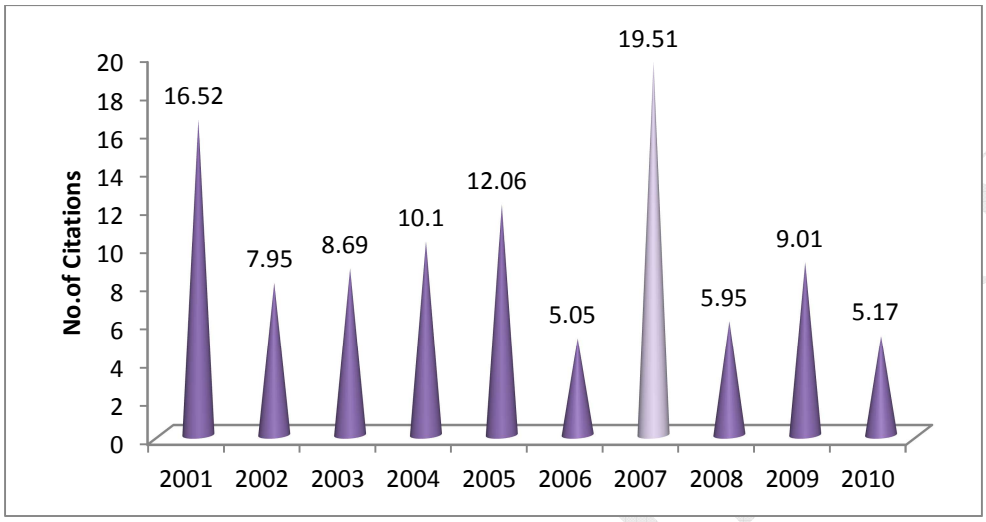


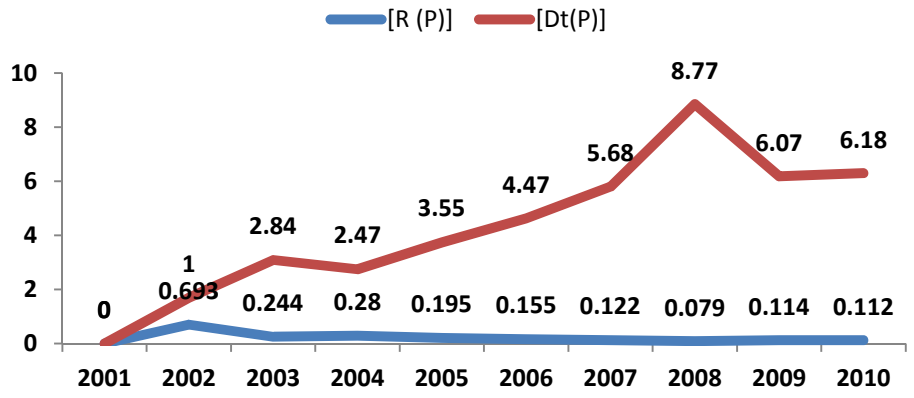
Fig No.2 shows the distribution of contributions volume& Issue -wise. Table 2 depicts that out of 3209 citations, the highest number of citations i.e. 19.51 % of them was contributed in 2007 and the least number of contribution i.e.5.17% of them were published in 2010.

3) Relative Growth and Doubling Timing of Publications

Table No.3 Relative Growth and Doubling Timing of Publications

Sr. No.	Number of articles	Cumulative no. of articles	Loge 1P	Loge 2P	[R (P)]	Mean [R(P)]	[Dt(P)]	Mean Dt(P)
2001	38	38	-	3.367	-		-	
2002	20	58	3.367	4.06	0.693		1	
2003	16	74	4.06	4.304	0.244	0.28	2.84	
2004	24	98	4.304	4.584	0.28		2.47	1.97
2005	21	119	4.584	4.779	0.195		3.55	
2006	20	139	4.779	4.934	0.155		4.47	
2007	18	157	4.934	5.056	0.122		5.68	
2008	16	173	5.056	5.153	0.079		8.77	
2009	21	194	5.153	5.267	0.114	0.16	6.07	6.23
2010	21	215	5.267	5.379	0.112		6.18	

Fig No.3 shows Relative Growth and Doubling Timing of Publications



The Relative Growth Rate (RGR) is a measure to study the increase in number of articles / pages per unit of articles / pages per unit time (Mahapatra,1985) and Doubling time is directly related to Relative Growth (RGR).it is the time required for articles / citations to become double of the existing amount.

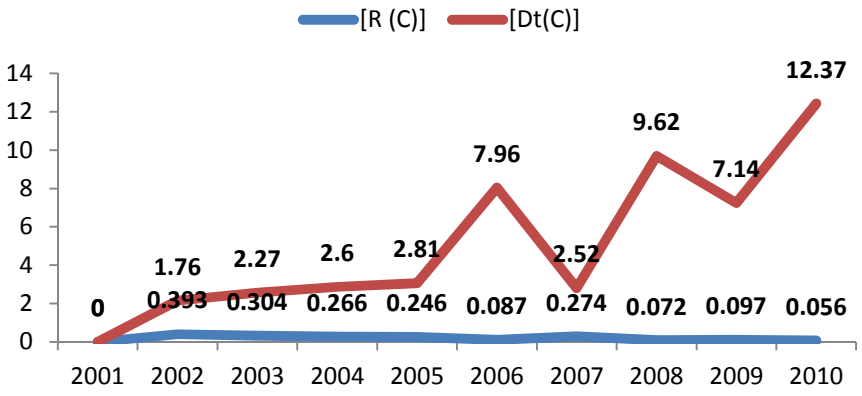
It can be noticed that the Relative Growth of publication [R(P)] decreased from the rate of 0.693 in 2001 to 0.112 in 2010.The mean relative growth for the first five years(i.e.2001 to 2010)showed a growth rate of 0.28 whereas the mean relative growth for the last five years(i.e.2006to2010)reduced to 0.16.The corresponding Doubling Time for different years [Dt(P)]gradually increased from 1 in 2001 to 8.77 in 2008 and it also shows that there is decrease in Doubling Time reduced to 6.07.Thus as the rate of growth of publication was decreased, the corresponding Doubling Time was increased. The Doubling Time for the first five years (i.e.2001 to 2010) was only 1.97 which was increased to 6.23 during last five years (i.e. 2006 to 2010).Thus as the rate of growth of publication was decreased; the corresponding Doubling Time was increased.

4) Relative Growth and Doubling Timing of Citations

Table No.4 Relative Growth and Doubling Timing of Citations

Sr.No	Number of Citations	Cumulative no. of Citations	Loge1C	Loge2C	[R (C)]	Mean [R(C)]	[Dt(C)]	Mean Dt(C)
2001	530	530	-	6.272	-		-	
2002	255	785	6.272	6.665	0.393		1.76	
2003	279	1064	6.665	6.969	0.304	0.24	2.27	1.88
2004	324	1388	6.969	7.235	0.266		2.6	
2005	387	1775	7.235	7.481	0.246		2.81	
2006	162	1937	7.481	7.568	0.087		7.96	
2007	626	2563	7.568	7.848	0.274		2.52	7.92
2008	191	2754	7.848	7.92	0.072	0.11	9.62	
2009	289	3034	7.92	8.017	0.097		7.14	
2010	166	3209	8.017	8.073	0.056		12.37	

Fig No.4Relative Growth and Doubling Timing of Citations



It is observed from Table 4 & Fig no.4 in case of citations it was observed that the relative growth rate of citations was gradually decreased from 0.304 in 2001 to 0.056 in

2010.The mean Relative Growth [R(C)] of Citations during first five years (i.e. 2001 to 2010) was higher (0.24) than the last five years i.e. during 2006 to 2010(0.11).

The corresponding Doubling Time also indicate trend of 1.76 in 2001 to12.37 in 2010.The mean Doubling Time [Dt(C)]during the half period (i.e.2001 to 2010) was 1.88 which was increased to 7.92 during 2006 to2010.

Thus the rate of growth of citations has been gradually reduced and corresponding Doubling Time has been increased.

5) Form Wise Distribution of Citations

Journals , Book, Bulletin, Reports, Conference Proceeding, Manual, Newsletter, and Magazine and other form of documents are cited in journal are shown in table no.4.The study regarding the Form Wise distributions of citations has been done in order to know the most dominant forms in which the information is cited.

Fig No.5 shows Form Wise Distribution of Citations

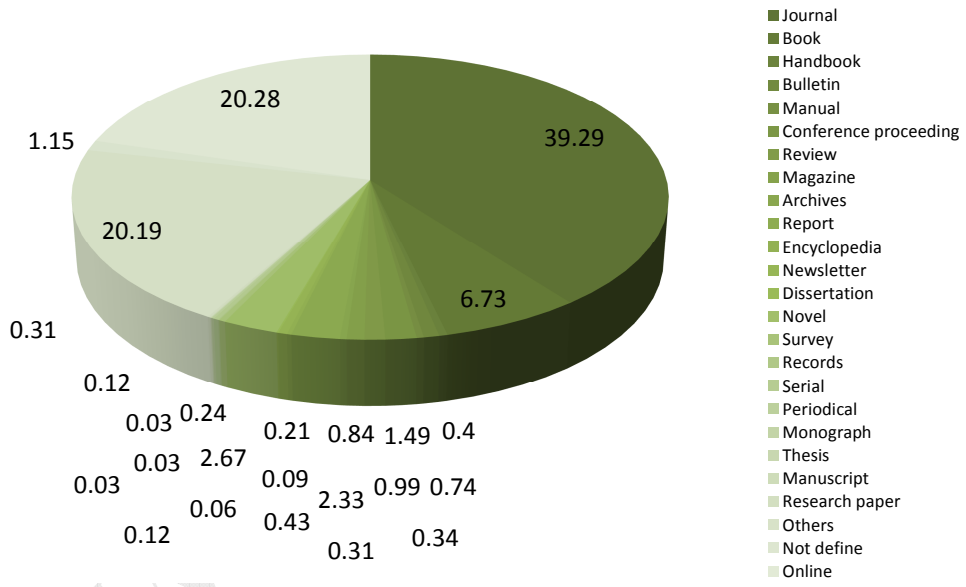


Fig No.5 gives form wise distribution of citation analysis and shows that of the total 3209 citation 1261 Citations are journal citation. It forms about 32.29% of the total. This is followed by other forms such as online 20.28%, others20.19%, Books (6.73%) etc.

6) Authorship Pattern of Publications

The authorship pattern is analyzed to determine the percentage of single and multiple authors.

Fig No.6 Authorship Pattern of Publications

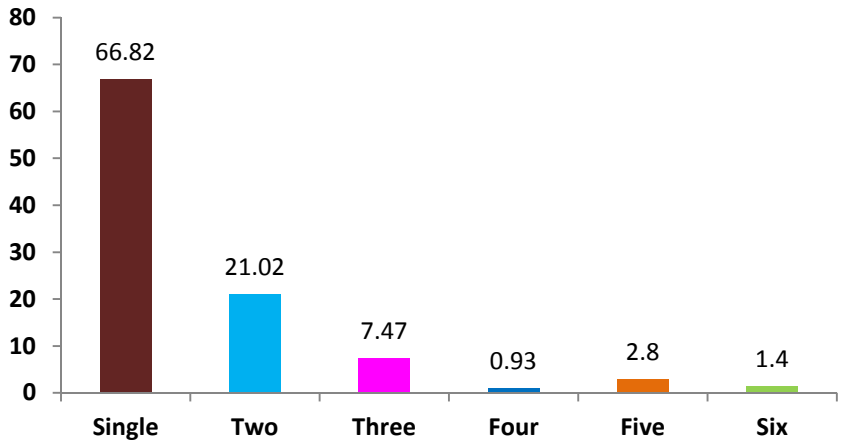


Fig No. 6 indicates that the details about the authorship pattern 143 articles (66.82%)out of 215 articles have been contributed by single author.45 articles (21.02%)by two authors and 16 articles (7.42%)by three authors.6 (2.80%) articles by 5 authors,3(1.40%) articles by 6 and the lowest is 2 (0.93%) articles by 4 authors.

7) Degree of Author's collaboration:

Various methods have been proposed to calculate the degree of research collaboration. Here, in this study the formula proposed by Subramanian (1983) has been used.

Formula,

$$C = \frac{Nm}{Nm + Ns}$$

Where,

C = Degree of collaboration in a discipline

Nm = Number of multi authored articles in the discipline

Ns = Number of single authored articles in the discipline,

Here,

Nm = 72

Ns = 143

$$C = \frac{72}{215} = 0.33.$$

Thus the degree of Collaboration is C =0.33.

So, in the study of collaboration during the overall 10 years (2001 – 2010) is 0.33.

Table No. 07: Year – Wise Degree of collaboration:

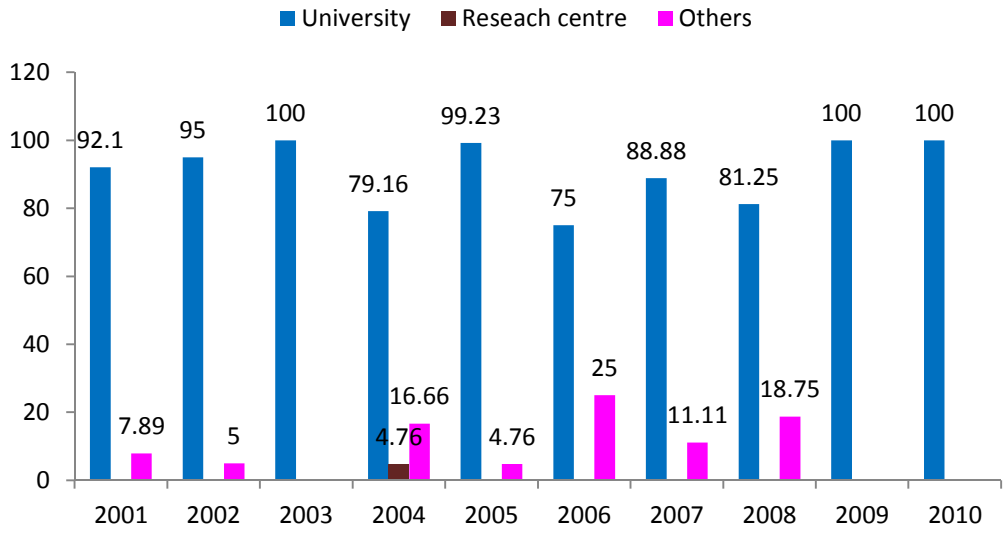
Year	Total No. of Articles	Total No. of Authors	No. of Single Author Articles	% of Articles	No. of Multi Author Articles	% of Articles	Degree of collaboration
2001	38	58	25	11.67	13	6.04	0.34
2002	20	25	14	6.51	6	2.79	0.3
2003	16	25	10	4.65	6	2.79	0.37
2004	24	27	21	9.76	3	1.39	0.12
2005	21	36	10	4.65	11	5.11	0.52
2006	20	24	17	7.9	3	1.39	0.15
2007	18	28	12	5.58	6	2.79	0.33
2008	16	27	9	4.18	7	3.25	0.43
2009	21	26	16	7.44	5	2.32	0.23
2010	21	44	9	4.18	12	5.58	1.75
Total	**215**	**320**	**143**	**66.52**	**72**	**33.45**	**0.45(mean)**

Table No. 07: shows that the single author articles are highest than multi author articles. The single author articles are highest in the year 2001 i.e.25 (11.67%) and highest multi author articles are observed in the year 2001 i.e.13 (6.04).

8) Organizational Contribution of Articles:

Fig shows organization – wise distribution of articles published in Collection Management journal during the period under study.

Fig No.07 Organizational Contribution of Articles



Authors from Universities are the major contributors with 195 (90.69) contribution from 2001-2010 and followed by other institute with 19(8.83) contribution.

9) Ranked List of Most cited Journals. The journals Citations were further analyzed to establish a list of journals. Table 9 provide ranked list of the top most frequently cited journal.

Table No. 09: Ranked List of Most cited Journals

Sr. No.	Rank No.	Name of Journal	No. of Citation	%
1	1	Collection Management	115	9.11
2	2	College & Research Library	102	8.08
3	3	Journal of Academic Librarianship	75	5.94
4	4	Library Trends	45	3.56
5	5	Library Journal	40	3.17
6	6	Library, Collection, Acquisition & Technical service	40	3.17
7	7	Collection Building	38	3.01
8	8	Library Resource & Technical service	33	2.61
9	9	The Serial Librarian	25	1.98
10	10	Serial Review	23	1.82
11	11	Journal of Interlibrary Loan Document & Delivery	23	1.82
12	12	Against the Grain	21	1.66
13	13	Journal of Library Administration	21	1.66
14	14	science & Technology Library	21	1.66
15	15	Library Acquisition :Portal & Theory	19	1.5
16	16	Library Hi Tech	18	1.42
17	17	Portal: Libraries and Academics	16	1.26
18	18	Journal of American Society for Information Science	14	1.11
19	19	Interblending & Document Supply	13	1.03
20	20	Chronicle of Higher education	12	0.95
21	21	Information Technology & Library	12	0.95

22	22	The Library Quarterly	12	0.95
23	23	Reference and User service Quarterly	12	0.95
24	24	American Libraries	11	0.87
25	25	Association of Research Library	10	0.79
26	26	Computer in Libraries	9	0.71
27	27	Journal of Information Science	9	0.71
28	28	Acquisition Librarian	9	0.71
29	29	The reference Librarian	9	0.71
30	30	Science	8	0.63
31	31	American Archivist	8	0.63
32	32	Journal of Documentation	8	0.63
33	33	Technical service quarterly	8	0.63
34	34	Information today	7	0.55
35	35	American Library Association	7	0.55
36	36	Government Information Quarterly	7	0.55
37	37	Library Administration & Management	6	0.47
38	38	Popular culture in Library	6	0.47
39	39	New Library world	6	0.47
40	40	Technicalities	5	0.39
41	41	College & Under graduate Library	5	0.39
42	42	Online	5	0.39
43	43	Library Consortium Management	5	0.39
44	44	The journal Electronic publishing	5	0.39
45	45	Journal of Business Finance	5	0.39
46	46	Library & Information Science Resource	4	0.31
47	47	Archives conference	4	0.31
48	48	Advance in Library And Network	4	0.31
49	49	RQ-22	4	0.31
50	50	Libri	4	0.31
51	51	Reference Service Review	4	0.31
52	52	School Library Journal	4	0.31
53	53	Social Science Quarterly	4	0.31
54	54	Adverting Age	4	0.31
55	55	South Africa Medical Journal	4	0.31
56	56	First Monday	4	0.31

57	57	The Book Binding Trade Journal	4	0.31
58	58	Medical reference Service Quarterly	3	0.23
59	59	Journal of Agriculture & Food Information	3	0.23
60	60	Nature	3	0.23
61	61	Journal of Midwest	3	0.23
62	62	Scientometric	3	0.23
63	63	Australian Academic And Research Library	3	0.23
64	64	Publisher Weekly	3	0.23
65	65	Kentucky Library	3	0.23
66	66	PNLA Quarterly	3	0.23
67	67	INSPEL	3	0.23
68	68	Earth science	3	0.23
69	69	Australian Library Journal	3	0.23
70	70	Scientific American	3	0.23
71	71	Special Collection	3	0.23
72	72	Scholarly Publishing	3	0.23
73	73	Communication Research	3	0.23
74	74	Journal of Broadcast and Electronic Media	3	0.23
75	75	Malaysian Journal of Library &Information Science	3	0.23
76	76	NM	111	8.8
77	77	19 Journals with two citations	38	3.01
78	78	102 Journals with one citations	102	8.08
	Total		**1261**	**100**

It was observed that the Collection Management ranked 1st in position than other journal with maximum of citations i.e.115 (9.11%).19 journals with 2 citations & 101 journals with 1 citation respectively.

10) Chronological Distribution of Citations:

Table No. 10: Chronological Distribution of Citations:

Period	Number of Citation	Cumulative Citations	Percentage of Citations	Cumulative % of Citations
1900&before	4	4	0.12	0.12
1901-1910	11	15	0.34	0.46
1911-1920	1	16	0.01	0.47
1921-1930	7	23	0.21	0.68
1931-1940	4	27	0.12	0.8
1941-1950	6	33	0.18	0.98
1951-1960	16	49	0.49	1.47
1961-1970	50	99	1.55	3.02
1971-1980	102	201	3.17	6.19
1981-1990	291	492	9.06	15.25
1991-2000	953	1445	29.69	44.94
2001-2010	1287	2732	40.10	85.04
Not Define	477	3209	14.86	99.9
Total	**3209**		**100**	

The study regarding the ranking of year wise citations has been done in order to know the most dominant year; the ten year span of period was undertaken for the study.

Table 10 gives Ranking of the year of distribution of citation which shows that 1287the highest number of citations out of a total of 3209 citations is in the year 2001-2010 and lowest number of citation in year 1911-1920.

11) Obsolescence of Collection Management

Citation analysis techniques are becoming more popular to study the characteristics of literature of a subject. Half –life and other obsolescence studies help the working librarian and information scientists in deciding which item to keep and which item to store or discard in order to maintain the need based and moderate collections in libraries.

Obsolescence has been defined as the "decline over time in neither validity nor utility of information ". It has found to vary from one subject to another and from country to another, depending on the factors such as the nature and characteristics of subjects etc.It has been found that a large number of obsolescence studies have been reported in the field of science and technologies than social sciences and humanities.

Table 11: Obsolescence of Collection Management:

Age in years	Citations	Cumulative citations	Percentage	Cumulative percentage
0-5	4	4	0.12	0.12
6-10	10	14	0.31	0.43
11-15	1	15	0.03	0.46
16-20	1	16	0.03	0.49
21-25	0	16	00	0.49
26-30	2	18	0.06	0.55
31-35	5	23	0.15	0.7
36-40	4	27	0.12	0.82
41-45	0	27	00	0.82
46-50	2	29	0.06	0.88
51-55	4	33	0.12	1
56-60	10	43	0.31	1.31
61-65	6	49	0.18	1.49

66-70	17	66	0.52	2.01
71-75	33	99	1.02	3.03
76-80	39	138	1.21	4.24
81-85	63	201	1.96	6.2
86-90	120	321	3.73	9.93
91-95	171	492	5.32	15.25
96-100	354	846	11.03	26.28
101-105	599	1445	18.66	44.94
106-110	853	2298	26.58	71.52
111-115	434	2732	13.52	85.04
116-120	477	3209	14.86	99.9
Total	**3209**		**100**	

Fig no 8: Obsolescence of Collection Management:

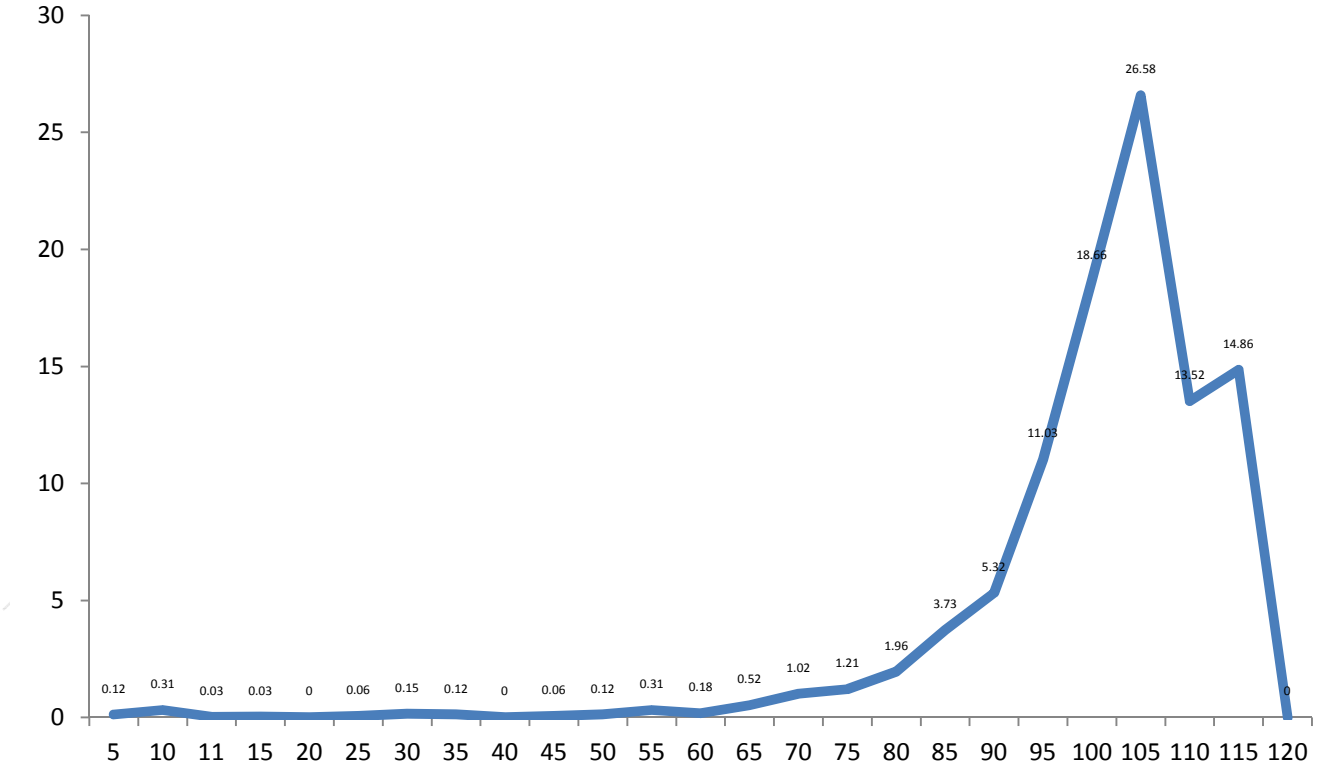


Table 11 represents the obsolescence rate of literature .It can be assessed by citation analysis which can give an indication of how far a researcher must go obtain a representative sample of the publishes literature in a given field . The present study made an attempt to determine the half period of Collection Management literature which will help the librarian in building need based collection.

To calculate the half-life period of Collection Management literature in the present study ,a graph is plotted in fig.5 based on the data given in the table 6 of obsolescence of Collection Management literature from the period of years at the cumulative number of five years on the X-axis a cumulative number of citations on the Y-axis .Parallel line from Y-axis is drawn from the point “P”(representing the half the number of the total citations)To meet the curve at the point “Q”, a perpendicular OR is drawn to the X-axis. The line “OP” represents the half of the total 3209 citations i.e.1605 and the line “QR” represents the half life period for Collection Management literature, which falls on an average for 13 years. The study shows the half period of Collection Management is 13 years approximately.

12) Year – Wise Percentage of Articles having Web reference and print Citations:

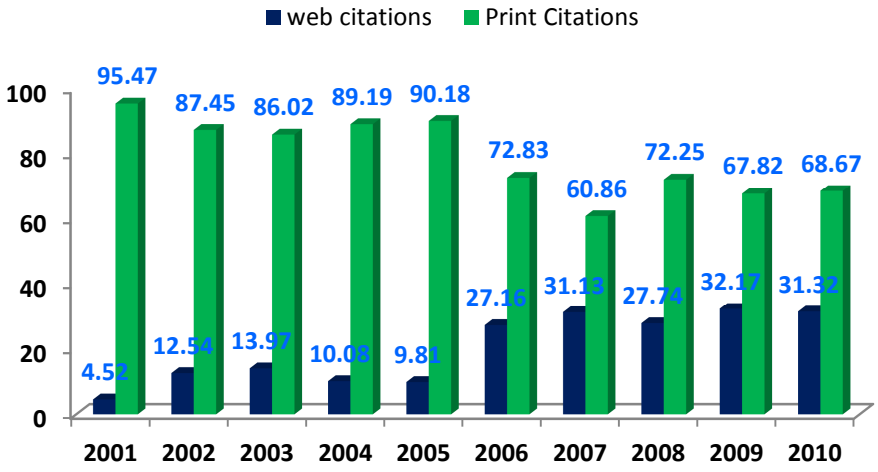


Fig No.9 Year – Wise Percentage of Articles having Web references and print Citations

Above Fig. shows that total 3209 references from 215 articles, out of which the print references are highest in number i.e.2554(79.58) and 655(20.54)are web references Of which maximum web references are seen in the year 2009i.e.93 (32.17) appended to 215 articles. Whereas maximum print references are in year2007i.e.381 (60.86) from 18 articles.

13) Length of the Articles: Indicates the details about the page length of the contributions.

Fig No. 10 Length of Articles

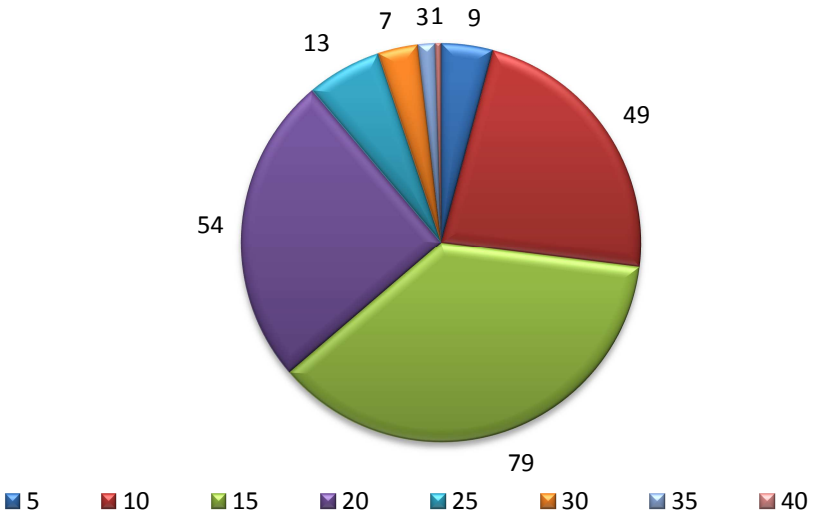


Fig No.10 above aptly reflects the distribution of length of the articles during the period of study. Out of 215 articles 79(36.74) had 11-15 pages followed by 54(25.11) had 16-20 pages. The lowest range being 3(1.39) articles in the range of 31-35.Only 1(0.46) article had length of 36-40 pages.

FINDINGS

The following findings are drawn from the study.

1) 2001has the highest score with 17.67 followed by 2004with 11.16%.

2) The majority of the publications are contributed by single authors

3) Authors from Universities are the major contributors with 195 (90.69%)

4) The print references are highest in number i.e.2554 (79.58%).

CONCLUSION

Scientometric analysis is the major technique of Bibliometrics which is used in the study. Scientometric techniques are being used for a variety of purposes like determination of various scientific indicators, evaluation of scientific output, selection of journal s for Libraries and even forecasting the potential of a particular field. It helps to evaluate information & to handle the information in libraries and information centers by the quantitative analyzed information. It deals with the mathematical and statistical analysis. This is an umbrella term used for many studies where quantitative method or techniques are used to investigate various aspect of written document. The Journal has published 215 articles during the period of the study.

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