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PROGRAM: ELECTRONIC LIBRARY & INFORMATION SYSTEMS: A SCIENTOMETRIC STUDY

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ABSTRACT:

Scientometric analysis of 252 articles published in Program: electronic library and information systems during the period of 2005-2014. For the analysis of the study 10 volumes containing 40 issues have been taken up for evaluation. The paper covers the scientometric analysis of average no. of references per articles, Relative Growth Rate & Doubling Time of publications, Form wise distribution, authorship patterns, year-wise Degree of Collaboration, Organizational contributions of articles, Country-wise distribution of articles and Length of articles.

KEYWORDS: *Scientometric, Electronic library, Information system.*

INTRODUCTION:

Scientometrics is the 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. (Ramchandra, 2012). Scientometrics is the

science of measuring and analyzing science. In practice, Scientometrics is often one using Bibliometrics which is a measurement of the impact of (scientific) publications. Scientometrics is one of the most important measures for the assessment of scientific productions. Scientometrics is the English translation of the title word of Nalimov's classic monograph Naukometriy in 1969, which was relatively unknown to western scholars even after it, was translated into English. Scientometrics is a discipline which analyses scientific publications to explore the structure and growth of science Rajendran (2011).

PROGRAM: ELECTRONIC LIBRARY & INFORMATION SYSTEMS:

Program: electronic library & information system is a scholarly refereed journal which published in the year 1966. It's published from UK. Its publication frequency is four issues per year. Mostly covering Information Science and Information System aspects. From 2013, the journal started to shift its focus to cover to all aspects of the data revolution brought about by the Internet and the World-Wide-Web.

REVIEW OF LITERATURE:

Alhamdi & others (2014) has conducted a Scientometric analysis. The study revealed that most of the papers (71.4%) contributed by multiple authors. USA is the top producing country with8 (14.3%). All the articles were in English language. The mean doubling time for the first five years (i.e. 2004 to 2008) is only (1.05) which is increased to (6.07) during the last five years (2009 to 2013).

Khaparde(2011), in her study of "bibliometric study of Electronic journal of Academic and Special Librarianship" also reached to the results that Journals gained highest(33.88%) citations.

Devi and Lekshmi (2014) conducted scientometric study. The scientists of JNTBGRI prefer mostly Indian journals. Journal of Economic Taxonomic Botany tops the list with the highest number of articles 50 (9.11%). India is the leading country with 54.67% of total journals. **Gomathi** (2014) had done six years study. The finding are as the maximum of articles was published during 2007 constituting 20.43%. It reveals that the majority of articles 448 (60.62%) have the length of 1-5 pages. Universities contributed more 273 articles (36.94%). India scores 610 (82.54%) contributed.

Khaparde(2011), in her study of "E-journals in library and information science: A Bibliometric study "reported that single authors followed by joint author have made high position in citations.

Khaparde V S 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 V S (2013) her paper conducted the Bibliometric Analysis of Research Publication of Department of Chemistry, Dr. Babasaheb Ambedkar Marathwada University, from 1975 to 2012. 774 research publications were analysed 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 them publications are made with 4 authors. And also the majority of the research paper published in journal of heterocyclic chemistry.

Alhamdi, Khaparde & Kanekar(2014) They attempted on a bibliometric analysis of ten volumes (57-66) in the field of journal of Documentation. It is based on the references appended to International Journal of "Journal of Documentation" during 2001-2010. The present study is based on 15150 references appended to 364 articles contributed by the authors in Journal of Documentation. It was found that Journals Citations are more in number than other citations. Also it was found that Solo Researchers are Predominant than Collaborative Researchers. The extent of collaboration was not much popular among the Journal of Documentation. The mean relative growth for articles and citation in the first five years 2001 to 2005 is reduced according to the last five years 2006 to 2010.The value of group co-efficient (gp)was only 0.46. It was seen that researchers cited latest documents. Out of 364 articles there are 175 articles have pages length from 11 to 20.

Alhamdi, Khaparde & Kanekar, (2014) The present study deals a Scientometric analysis of 56 papers published in the Library and Information science &Technical Abstract (LISTA) on internet use in the subject of library &Information science during the period 2004 -2013. The study focused on various aspects: such as document types, growth Rate (GR) and doubling time

(DT) of publications and citations, year-wise, authorship pattern, institutions involved, most prolific authors of the journal. The study revealed that most of the papers(71.4%) of papers were contributed by multiple authors.USA is the top producing country with 8 (14.3%)publications of the total output. All the articles were published in English language. The mean doubling time for the first five years (i.e. 2004 to 2008) is only (1.05)which is increased to (6.07) during the last five years(2009 to 2013). Maximum 35 (62.5%) out of 56 of the authors are not mentioned their email address in the paper.

Gupta and Gupta (2014) have done ten year study. The global share of Indian pneumonia research was 2.74% during 2004-2013. USA contributed the largest share of 50.56% during 2004-2013. Among the subjects, medicine contributed of 76.28% during 2004-2013. **Kumar** (2014) conducted scientometric study of Digital Literacy in Online LISTA. Results indicate that majority of articles published during the year 2009-2011 and focus mainly on academic education. International Information & Library Review has published greater number of articles on digital literacy.

Khaparde V S (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 in 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.

Nattar (2011) conducted a scientometric analysis of 454 articles published in Indian Journal of chemistry (section A) during the 2006-2008. Maximum no. of paper are by two authors. The degree of collaboration is 0.96. 73.35 % contributions from India.

RESEARCH METHODOLOGY:

The survey, Sampling and Scientific research method is being adopted for the collection data. These methods areas recognized and accepted function of gathering information, and also help of field and table research prepared table.

OBJECTIVE:

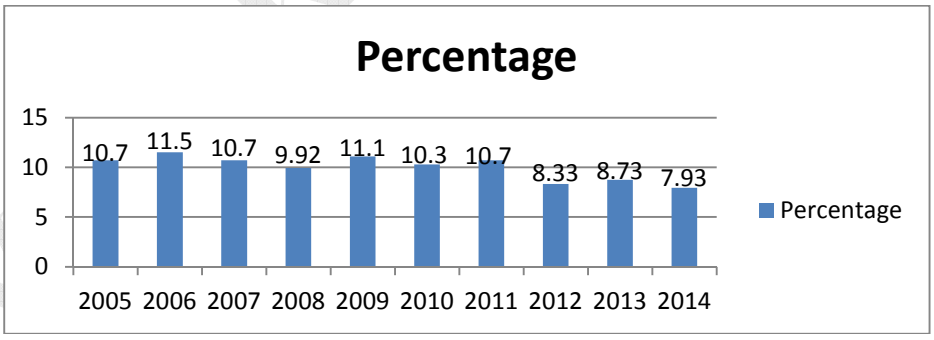
1. To identify the number of references per article.
2. To know relative growth and doubling time of publication.
3. To identify the authorship pattern of references per articles.
4. To identify the year-wise degree of collaboration.
5. To know the organization wise contribution of articles.
6. To find out the country wise distribution of cited articles.
7. To find out the lengths of articles.

DATA ANALYSIS:

Table No. 1 Average No. of references per Article

Year	Volume No.	No. Of Articles	No. of References	% of Articles
2005	39 (1-4)	27	368	10.7
2006	40 (1-4)	29	325	11.5
2007	41 (1-4)	27	278	10.7
2008	42 (1-4)	25	512	9.92
2009	43 (1-4)	28	492	11.1
2010	44 (1-4)	26	335	10.3
2011	45 (1-4)	27	726	10.7
2012	46 (1-4)	21	845	8.33
2013	47 (1-4)	22	905	8.73
2014	48 (1- 4)	20	737	7.93
		252	**5523**	**100**

Fig No. 1 Average number of references per articles



From table and fig no. 1. Attempt was made to find out the references per article during 2005 to 2014 was 5523. It observed that the highest number of references of articles in 013 i.e. 905. While the lowest number of references per article showed in the year respectively.

2. Relative Growth Rate [R(P)] And Doubling Time [Dt(p)]

Relative Growth Rate (RGR) is a measure to study the increase in number of articles/pages per unit of articles/ pages per unit of time (Mahapatra, 1985).

Table No. 2 Relative Growth Rate [R(P)] AND Doubling Time]Dt(p)] for Publication

Year	No. Of Publication	Cumulative no. of Publication	$Log_e 1^P$	$Log_e 2^P$	[R(P)]	Mean [R(P)]	[Dt(P)]	Mean [(Dt(P)}
2005	27	27	-	3.29	-		-	
2006	29	56	3.29	4.02	0.73		1.08	
2007	27	83	4.02	4.41	0.39	0.32	2.1	1.45
2008	25	108	4.41	4.68	0.27		1.61	
2009	28	136	4.68	4.91	0.23		2.47	
2010	26	162	4.91	5.08	0.17		4.33	
2011	27	189	5.08	5.24	0.16		2.56	
2012	21	210	5.24	5.34	0.1	0.12	2.77	3.58
2013	22	232	5.34	5.44	0.1		3.3	
2014	20	**252**	5.44	5.52	0.08		4.95	

The Relative Growth Rate [R(P)] and Doubling Time [Dt(P)] of publications are derived and presented in Table & Fig. no. 2. It can be noticed that the Relative Growth Rate of publications [R(P)] decreased from the rate of 0.73 in 2006 to 0.08 in 2014. The mean relative growth for the first five years (i.e. 2005 to 2009) showed a growth rate of 0.32 whereas the mean relative growth rate for the last five years (i.e. 2010 to 2014) reduces to 0.12. The corresponding Doubling Time for different years [Dt(P)] gradually increased from 1.08 in 2006 to 4.95 in 2014.

Table – 2 Relative Growth rate & Doubling Time of Publication

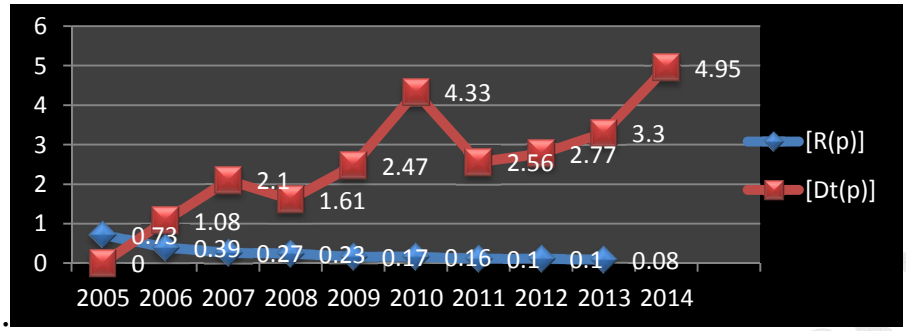


Table No.3: Authorship Patterns

Authorship Pattern	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Single	16 59.2	15 51.7	19 70.3	14 56	12 42.8	11 42.3	8 29.6	10 47.6	3 13.6	3 15	111 44.0
Two	7 25.9	11 37.9	6 22.2	8 32	9 32.1	9 34.6	11 40.7	3 14.2	8 36.3	8 40	80 31.7
Three	4 14.8	3 10.3	1 3.70	1 4	2 7.14	5 19.2	7 25.9	2 9.52	5 22.7	5 25	35 13.8
More than Three	- -	- -	1 3.70	2 8	5 17.8	1 3.84	1 3.70	6 28.5	6 27.2	4 20	26 10.3
Total	27	29	27	25	28	26	27	21	22	20	252

Fig. 3 Authorship pattern

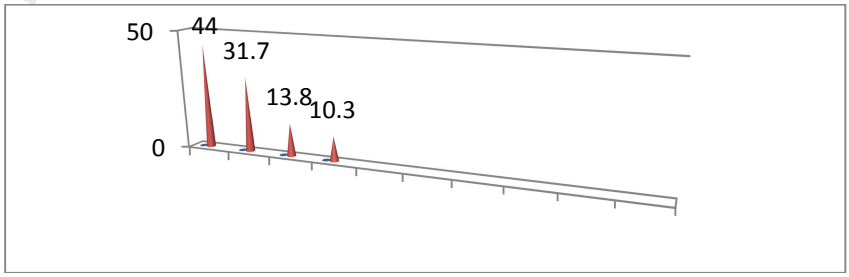


Table no 3 fig no 3, identified the distribution of articles according to the number of contributors. It shows that the number of single authors 111(44.0) and more than three is the lowest authors 26 (10.3).

Categories of Authors and Collaborative Researchers:

The Degree of Authors Collaboration is shown in Table No. 4. Various methods have been proposed to calculate the degree of research collaboration. Here in this study the formula proposed by Subramanyam (1983) has been used**.**

The degree of collaboration

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

Where,

C=degree of collaboration

Nm= number of multi author

Ns=number of single author

Table no. 4: Year-Wise Degree of Collaboration

Number of authors' Number of Publication Publication		Percentage of total Publication	Value of per $g^{p=}\frac{????}{????+????}$
Number of personal 252		44.04	
Number of single author 111(Ns)		55.95	0.55
Number of co-authors 141 (Nm)			
Two authors publications	80	31.74	0.31
Three authors publications	35	13.88	0.13
More than three authors Publications	26	10.31	0.10

From table No 4. It is seen that, among the 252 articles of Program that published during 2005 to 2014, there were 44.04 percent were written by single authors, 55.95 percent belonged to co-authors. Therefore, the extent collaborations were not much popular among the Program. The value of group co-efficient (gp) was only 0.55.

The degree of collaboration among the co-authors was maximum (0.31) in articles written by three and more than 0.13 and 0.10 respectively. So among the collaborative publications. The authors prefer to work separately.

Table No. 5: Organizational Contributions of Articles

Organization	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
University	21 77.7	20 68.9	18 66.6	16 64	17 60.7	21 80.7	21 77.7	14 66.6	18 81.8	15 75	181 71.8
Research Institute	6 22.2	9 31.0	9 33.3	9 36	11 39.2	5 19.2	6 22.2	7 33.3	4 18.1	5 25	71 28.1
Total	27 10.7	29 11.5	27 10.7	25 9.92	28 11.1	26 10.3	27 10.7	21 8.33	22 8.73	20 7.93	252 100

Fig No. 4: Organizational Contributions of articles

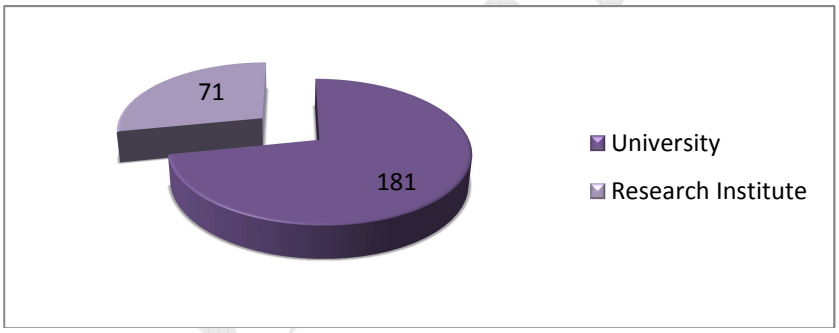
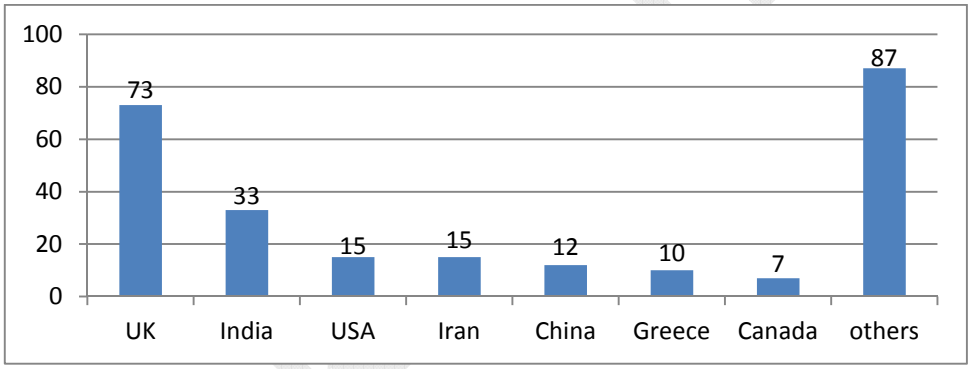


Table No 5 and fig no 4, it is seen that universities are the major contributors with 181(71.8) contributions during the period 2005 to 2014. While the research institutions contributed 71(28.1) Contributions.

Table no 6. Country-wise distribution of citations

Country wise	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
U.K	17	19	16	7	6	4	3	-	1	-	**73(28.9)**
India	2	2	1	3	3	4	11	2	2	3	**33(13.0)**
USA	2	2	1	1	4	3	-	-	2	-	**15(5.95)**
Iran	-	-	3	3	1	1	1	-	4	2	**15 5.95)**
china	-	-	1	-	1	3	1	3	2	1	**12(4.76)**
Greece	1	-	1	1	-	1	2	3	-	1	**10(3.96)**
Canada	-	-	1	-	3	-	3	-	-	-	**7 (2.77)**
Others	5	6	3	10	10	10	6	13	11	13	**87(34.5)**
Total	27	29	27	25	28	26	27	21	22	20	**252**

Fig no. 5: Country-wise distribution of citations



The Study regarding the country wise distribution of citations had been done in order to know the most dominant countries in which the records are cited. It revealed that UK, India, USA have the majority of most cited records; 73(28.9); 33(13.0); 15(5.95), respectively.

Table No.7 Length of Articles

No. of pages	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	total	%
01 - 10	6	11	1	4	-	6	4	2	14	-	48	19.04
11 - 20	18	17	24	17	27	19	18	12	7	10	169	67.06
21 - 30	3	1	2	4	1	1	5	5	1	9	32	12.69
31 - 40	-	-	-	-	-	-	-	1	-	1	2	0.79
41 - 50	-	-	-	-	-	-	-	1	-	-	1	0.39
Total	**27**	**29**	**27**	**25**	**28**	**26**	**27**	**21**	22	**20**	**252**	100

Out of 252 Contributions 48 Contributions (19.04) have page length of 1-10 pages while 169 (67.06) have length of 11-20 pages. The lowest range being articles in the range of 31-40 and 41-50 only 2 (0.79) and 1 (0.39) respectively.

FINDING AND CONCLUSION:

The findings are based on the analysis of collected data appended in 252 articles and 5523 references in Program: electronic library and information systems**.**

1. The highest number of references per articles in the year of 2013.
2. The mean relative growth for articles in the first five years 2005 to 2009 is (0.32) reduced to (0.12) in the year 2010 to 2014.
3. The number of single authors 111 (44.4) and multiple authors 141(55.95).
4. The multiple authors are higher and predominant than single authors.

5. Universities are the major contributors with 181 (71.8) from 2005 to 2014 and followed by research institute with 71(28.1).
6. UK, India, USA, have the majority of most cited records in 'Program'.
7. 169 (67.06) of publications have pages length from 11 to 20, followed by 48(19.04) have pages length from 1 to 10.

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