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A comparative study of Journal of documentation and Journal of knowledge Management during the period 2005-2015

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Abstract: This paper presents bibliometric profile of Journal of Documentation during the year 2005-2015, based on the year wise productivity, subfield wise article distribution, type of research documents published, geographical distribution of articles, Institutional wise productivity, citation distribution of articles degree of collaboration of authors. The study found that total 489 research documents published during the time period 2005-2015. Most number of articles published on the topic Information seeking behaviour. The study also revealed author productivity through the implementation of Lotka's Law of productivity.

Keywords: Bibliometric profile, Documentation, Scientometric study, Journal of Documentation, Author productivity, Quantitative analysis.

INTRODUCTION:

The term metric originated from the French word métrique, which has been derived from metre, an unit of measurement. This word was first used in 1864 (Metrics, 2015). The metrics science i.e librametrics, scientometrics, bibliometrics, informetrics, econometrics, technometrics, biometrics, sociometrics, psychometrics, educametrics and so on developed in the twentieth century(Dutta, 2014). In all this metrics science, scientometrics is used for evaluating journals by author's productivity, institutional contribution, and country wise productivity etc. Scientometrics is the coupling term between two words i.e. Science and Metrics, simply means the mathematical application on science (Senapati, 2009).

In the subject Library and information science, scientometrics is not a new term but this term is used in different connotation on the terminology like 'Bibliometrics' coined by Pritchard to describe quantitative studies related to bibliography, Ranganathan used 'Librametry' to refer to quantitative aspect in libraries (Pritchard, 1969).

The present study deals with the Journal of Documentation, the longest-established academic journal in library and information science, providing a unique focus on theories, concepts, models,

frameworks and philosophies related to documents and recorded knowledge, published since 1945. The study has been restricted to the research articles published between the time periods 2005-2014 in this journal.

REVIEW OF RELATED LITERATURES

Garg (2008) conducted journal scientometric profile of the journal Mousam during the year 2003-2006. Journal Mousam published total 369 articles. The study indicated that 72% items were research papers, 23% letters to the editors, 4% reports and rest 1% are articles. The study found that most of the research papers are published from Indian Meteorological Department. Other departments contributed remaining 56% of the total output.

Santhi (2008) conducted scientometric analysis of all journal articles published in IEEE transactions on Control Systems Technology from the year 1998-2007. The objectives of the study were to identify publication output, country wise productivity, authorship pattern, most prolific author and productive institution. This study analyzed 935 articles with 20579 citations.

Hamadicharef (2010) presented a bibliometric study of Journal NeuroImage during the year 1992-2009. Author collected all the data from Elsevier science database. This study showed journal's bibliometrics which helped to identify the main features of the journal. The author conducted the study with 11604 contributions.

Joshi (2010) examined 3313 research articles on the subfield forest mycology. Objectives of the study showed the global trends of publication and its citation impact. After analysis this study indicated that number of publications increased especially during 2004-2008. Total 3313 publications are scattered over 619 journal titles which originated from 50 countries and 839 institutions.

*Garg (2011)*analyzed 32574 papers in the field of Plant genetics and breeding research during the year 2005-2009, published by USA, UK, China, India and Brazil from Web of Science database. It was found that most number of articles are published from USA followed by China. India contributed 9% to the total world publication. Indian scientists have published 574 papers in International collaboration with 70 different countries. Of these, highest no of collaborations are with USA (153) followed by Germany.

Tamilselvan (2011) performed a scientometric study on research performance of faculties of National Institute of Technology in India. This study covered 10 years of faculty publications in 20 NITs all over India. The study collected all the data from ISI Web of science, Scopus, Ei-Compendex Science and Citation Index Expanded (SCIE). The study found that a total of 8372 documents are published where Article (7133), Review (648), Meeting Abstract (224), Editorial Material (203) and Bibliographic Item (164) are found from various database. The study adopted many bibliometric laws i.e. Lotka's law, Subramaniam's formula, Bradford's law of scattering.

After data analysis the study found that NIT, Tiruchirappalli ranks first in order by contributing 17.07 percent of total research output.

Velvizhi (2011) represented a scientometric profile in the subject solar energy. This study covered 1422 research articles which are published from India during the year 1999-2011 in Web of Science database. After analysis the study found that most numbers of publications were Journal articles 1197 (84.2%), Proceedings Paper, Review 98(6.9%), and other publications were 123 (8.6%). In the respect of authors contribution single author contributed 6.6%, two authors contributed 30% and 24.6% publication contributed by three authors.

Raja (2012) conducted a scientometric analysis of the subject Space neuroscience during the year 1999-2012 from Web of Science. The study found 486 research articles published by the scientists during the time period. The study observed that the highest no of articles i.e. 70 in number are published in the year 2010. In case of author productivity Rabinovich MI and Spence C each with 6 papers, dealing with space neuroscience research has 1.2% of all papers published in this research field. USA contributed 39.9% of total documents and only very few number of articles are published from UAE 0.2%.

Roy and Basak (2013) in a very similar study on the Journal of Documentation during the period 2005-2010 examined the articles in the journal for authorship pattern, degree of collaboration, geographical distribution of papers and citation analysis.

RESEARCH GAP

The above studies on bibliometrics and scientometrics are very important and interesting. A very similar study by Roy and Basak has been made but the time period of study is restricted to only 6 years which is insufficient to calculate Lotka's law of author's productivity. Also the article has not tried to find out the institution wise productivity and the types of articles published in the journal which is included in the present study.

OBJECTIVES OF THE STUDY

The objectives of the current study are as follows:-

1. To investigate the research output of the Journal of Documentation during the period 2005-2015.
2. To observe the authorship pattern of the articles
3. To find the article types in each journal throughout the period of time.
4. To know the geographical distribution of articles.
5. To identify the institutions from where there are maximum contributions to the field.
6. To find out the year and group wise citation distribution.
7. To measure Degree of Collaboration (DC) of authors.

IMPORTANCE OF THE STUDY

Growth of a subject depends on the research output of any field and research publications can be judged in a way with the journal article publications. The present research on scientometric study of the Journal of Documentation during the period 2005-2015 is very important because:

(1) This study will help to find out the current status of the subject and growth pattern of the subject during the above mentioned period.

(2) It will also help to identify the areas where comparatively less number of researches are done. It will investigate the degree of collaborative researches in the field and thereby give a clear picture of the global research scenario in the field of library and information science.

(3) By the study of citations the study gets an idea of the different types of literature and publications available in the subject along with the core publications.

(4) The authors of high repute and their contributions can be recognized.

SCOPE AND COVERAGE: The study covers only "Journal of documentation" published by Emerald Group and subscribed by UGC Infonet digital library consortium during the period 2005–2015 in India. Only those journal articles will be selected which are in English language.

ABOUT THE JOURNAL

Journal of Documentation is the premier journal of library and information science and has successfully completed 70 years of publication. It has got worldwide recognition and steadily growing journal. Currently Journal of Documentation is peer-reviewed, bi-monthly journal. This journal is included in both ISI and SCOPUS database.

METHODOLOGY:

The study adopts specific journal investigation which includes aspects of quantitative investigation. The data is collected from the Journal of Documentation available at the UGC Infonet Digital Library Consortium database by searching the journal issues one by one during the period 2005-2015. There are a total of 489 articles collected from the above mentioned journal. The journals are then studied and data put into excel sheets for finding out the year-wise productivity, authorship pattern, degree of collaboration (by Subramanyam's formula), sub-field wise productivity, and geographical distribution of authors and citation count of the articles. Lotka's law of scientific productivity has been tested for studying the authorship. For the citation count Web of Science database has been used. The collected data are then analysed to derive the results.

FINDINGS, ANALYSIS AND INTERPRETATION

Table no: 1 Year wise productivity

Year	Journal of Documentation		Journal of knowledge Management	
	No of articles	Percentage	No of articles	Percentage
2005	44	9.00	59	8.60
2006	36	7.36	62	9.04
2007	41	8.38	66	9.62
2008	43	8.79	70	10.20
2009	41	8.38	73	10.64
2010	42	8.59	57	8.31
2011	40	8.18	58	8.45
2012	42	8.59	57	8.31
2013	44	9.00	55	8.02
2014	54	11.04	62	9.04
2015	62	12.68	67	9.77
TOTAL	489	100	686	100

Table 1 shows the total number of publication during the period 2005-2015. The table reveals that the highest number of publications are in the year 2015 followed by the year 2014. The average number of publications in the journal per year is found to be 44.45~ 45 (approx.).

Table no: 2 Authorship pattern

Sl. no	Authorship pattern	Journal of documentation		Journal of knowledge Management	
		No of Papers	Percentage (%)	No of Papers	Percentage (%)
1	Single authors	232	47.44	170	24.78
2	Double authors	157	32.11	242	35.28
3	Three authors	58	11.86	200	29.15
4	Four authors	28	5.73	56	8.16
5	Five authors	9	1.84	13	1.90
6	Six authors	3	0.61	4	0.58
7	Seven authors	2	0.41	0	0
8	Ten authors	0	0	1	0.15

The study shows that single authored publications are more in Journal of Documentation followed by two authored publication. So we can say that single authorship trend is higher in Journal of Documentation.

Applicability of Lotka's Law

According to Lotka's Law the number of authors making n contributions is about $1/n^a$ of those making one contribution.

The general formula says:

$X^n \cdot Y=C$ Or $Y=C/X^n$

Where *X* is the number of publications, *Y* the relative frequency of authors with *X* publications, and *n* and c are constants depending on the specific field.

Table 3: Lotka's Law of Author Productivity

Number of Papers(X)	Journal of Documentation		Journal of knowledge management	
	Number of Author observed(Y)	Number of Author observed (%)(Y)	Number of Author observed(Y)	Number of Author observed (%)(Y)
1	535	81.43	1154	87.16
2	75	11.42	120	9.06
3	22	3.35	33	2.49
4	11	1.67	10	0.76
5	6	0.91	4	0.30
6	4	0.61	1	0.08
7	2	0.30	0	0.00
8	2	0.30	1	0.08
9	0	0	0	0
10	0	0	1	0.08

Calculation of Lotka's Law	
Journal of Documentation	**Journal of knowledge Management**
Here x =1, Y =81.43 Xa*Y=C 1*81.43=C **C =81.43** From column 2 the value of a is Xa*Y=C Here x =2,Y= 11.42 2a*11.42 = 81.43 2a = 81.43/11.42 2a =7.13 alog2 =log 7.13 a =0.853/0.301 **a =2.83** So we have found the number of Y Xa *Y=C OR Y=C/Xa	Here x =1, Y =87.16 Xa*Y=C 1*87.16=C **C =87.16** From column 2 the value of a is Xa*Y=C Here x =2,Y= 9.06 2a*9.06 = 87.16 2a = 87.16/9.06 2a =9.62 alog2 =log 9.62 a =0.983/0.301 **a =3.26** So we have found the number of Y Xa *Y=C OR Y=C/Xa

Table 4: Observed value and expected values with data set on Journal of Documentation (JDOC) and Journal of Knowledge Management (JKM)

Number of Papers (X)	Number of Author observed (Y)		Number of Author observed (%)(Y)		Number of author expected		Number of author expected (%)	
					(a=2.83)	(a=3.27)		
	JDOC	JKM	JDOC	JKM	JDOC	JKM	JDOC	JKM
1	535	1154	81.43	87.16	535.00	1154.00	81.43	86.83
2	75	120	11.42	9.06	75.24	119.63	11.45	9.00
3	22	33	3.35	2.49	23.88	31.77	3.63	2.39
4	11	10	1.67	0.76	10.58	12.40	1.61	0.93
5	6	4	0.91	0.30	5.62	5.98	0.85	0.45
6	4	1	0.61	0.08	3.35	3.29	0.51	0.25
7	2	0	0.30	0.00	2.17	Error	0.33	Error
8	2	1	0.30	0.08	1.48	1.29	0.23	0.10
9	0	0	0.00	0.00	0.00	Error	0.00.	Error
10	0	1	0.00	0.08	0.00	0.62	0.00.	0.05

It has found that observed value and expected value of authors is almost same for the data set of Journal of Documentation. Therefore we can say that Lotka's law of scientific productivity conforms in this case.

Table no: 5 Degree of collaboration

The Degree of Collaboration (DC) is defined as the ratio between single and multiple authors' collaboration in the discipline during a certain time period. The formula suggested by Subramaniam (1983).

N_m= Number of multiple authors, N_s= Number of single authors.

It is expressed as: $C = \frac{Nm}{Nm+Ns}$

Where, C is the DC in a discipline,
Nm - The number of multi-authored papers in a during year,
Ns - The number of single-authored papers published during the same year. Using this formula,
The DC is determined.
The formula is where,

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

Calculation of 'Degree of collaboration'	
Journal of Documentation	**Journal Knowledge Management**
C= Nm/(Nm+Ns) C = Degree of collaboration Nm = Number of multiple authors Ns = Number of single authors C= 257/(257+232=489) =0.59 In this study, the value of C is 0.59	C= Nm/(Nm+Ns) C = Degree of collaboration Nm = Number of multiple authors Ns = Number of single authors C= 516/(516+170=686) =0.75 In this study, the value of C is 0.75

Journal of Documentation											
Year of publication	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**Total**
single author (Ns)	28	19	14	18	25	19	18	19	17	25	30	232
Multi author paper (Nm)	16	17	27	25	16	23	22	23	27	29	32	257
Total (Nm + Ns)	44	36	41	43	41	42	40	42	44	54	62	489
Degree of collaboration	0.36	0.47	0.67	0.58	0.39	0.54	0.55	0.54	0.61	0.53	0.52	0.59
Journal of Knowledge Management												
single author (Ns)	20	17	26	25	21	12	10	11	9	10	9	170
Multi author paper (Nm)	39	45	40	45	52	45	48	46	46	52	58	516
Total (Nm + Ns)	59	62	66	70	73	57	58	57	55	62	67	686
Degree of collaboration	0.66	0.73	0.61	0.64	0.71	0.79	0.83	0.81	0.84	0.84	0.87	0.75

Table 6 : Type of articles

Sl no	Articles type	Journal of documentation		Journal of knowledge Management	
		No of articles	**Percentage (%)**	**No of articles**	**Percentage (%)**
1	Research Paper	367	75.05	470	68.51
2	Conceptual Paper	78	15.95	82	11.95
3	Literature review	16	3.27	24	3.50
4	General review	12	2.45	37	5.39
5	View Point	12	2.45	11	1.60
6	Case study	4	0.82	55	8.02

7	Technical Paper	0	0	7	1.02
Total		489	100	686	100

Table 7 reveals that the most number of papers are published in the form of research articles 367 (75.05%). It is followed by conceptual paper 78 (15.95%), Literature review 16 (3.75%), view point 12 (2.45%), General review 12 (2.45%) and rest articles published in the form of case study 0.82%.

Table 7: Geographical distributions of articles

Rank no.	Journal of Documentation			Journal of knowledge Management		
	Country name	**No of contributors**	**Percentage**	**Country name**	**No of contributors**	**Percentage**
1	UK	158	28.73	USA	119	14.53
2	USA	113	20.55	UK	93	11.36
3	Finland	37	6.73	Australia	63	7.69
4	Sweden	29	5.27	Spain	51	6.23
5	Australia	25	4.55	Italy	37	4.52
6	Denmark	25	4.55	Canada	32	3.91
7	Canada	24	4.36	Germany	30	3.66
8	Belgium	13	2.36	France	29	3.54
9	Spain	12	2.18	China	26	3.17
10	China	10	1.82	India	23	2.81
11	Germany	10	1.82	Taiwan	21	2.56
12	Slovenia	10	1.82	Finland	18	2.20
13	Singapore	8	1.45	Malaysia	17	2.08
14	Norwey	7	1.27	New Zealand	17	2.08
15	Iran	6	1.09	South Korea	17	2.08
16	Italy	5	0.91	Sweden	15	1.83
17	Switzerland	5	0.91	Saudi Arabia	14	1.71
18	Taiwan	5	0.91	Japan	13	1.59
19	Netherland	4	0.73	Greece	12	1.47
20	France	3	0.55	Netherlands	12	1.47
21	Israel	3	0.55	Austria	11	1.34
22	Japan	3	0.55	Brazil	11	1.34
23	Brazil	2	0.36	Switzerland	11	1.34
24	Czech Republic	2	0.36	Hong Kong	10	1.22
25	Greece	2	0.36	Mexico	10	1.22
26	Hungery	2	0.36	Thailand	10	1.22
27	Ireland	2	0.36	Israel	9	1.10
28	New	2	0.36	Denmark	8	0.98

	Zealand					
29	South Africa	2	0.36	Iran	6	0.73
30	Amsterdam	1	0.18	Norway	6	0.73
31	Austria	1	0.18	South Africa	6	0.73
32	Bahrain	1	0.18	Portugal	5	0.61
33	Croatia	1	0.18	Turkey	5	0.61
34	Cyprus	1	0.18	United Arab Emirates	4	0.49
35	Hong Kong	1	0.18	Bahrain	3	0.37
36	Iceland	1	0.18	Ireland	3	0.37
37	India	1	0.18	Liechtenstein	3	0.37
38	Kuwait	1	0.18	Russian Federation	3	0.37
39	Lithuania	1	0.18	Slovenia	3	0.37
40	Malta	1	0.18	Belgium	2	0.24
41	Nambia	1	0.18	Colombia	2	0.24
42	Nigeria	1	0.18	Egypt	2	0.24
43	Oman	1	0.18	Iceland	2	0.24
44	Paris	1	0.18	Lebanon	2	0.24
45	Poland	1	0.18	Pakistan	2	0.24
46	Saudi Arabia	1	0.18	Poland	2	0.24
47	South Korea1	1	0.18	Saudi Arabia	2	0.24
48	Tanzania	1	0.18	Bosnia	1	0.12
49	Turkey	1	0.18	Croatia	1	0.12
50	Uganda	1	0.18	Czech Republic	1	0.12
51	------	-------	------	Ghana	1	0.12
52	------	-------	------	Hungary	1	0.12
53	------	-------	------	Jamaica	1	0.12
54	------	-------	------	Jordan	1	0.12
55	------	-------	------	Kuwait	1	0.12
56	------	-------	------	Luxembourg	1	0.12
57	------	-------	------	Morocco	1	0.12
58	------	-------	------	Nigeria	1	0.12
59	------	-------	------	Oman	1	0.12
60	------	-------	------	Peru	1	0.12
61	------	-------	------	Sri Lanka	1	0.12
62	------	-------	------	Tunisia	1	0.12
63	------	-------	------	Uruguay	1	0.12

64	------	-------	------	West Indies	1	0.12
Total		550	100	Total	819	100

Table 7 shows 489 research documents are contributed by authors from 50 countries during the period 2005-2015. This table shows that 28.73% of the total articles are contributed by the authors from UK, followed by USA (20.55%) and Finland occupies third position with 6.73% of total published document. Only 1 article has been contributed by Indian author out of the total output.

Table 8: Institution wise productivity

Rank no	Journal of Documentation		Journal of Knowledge management	
	Name of the institution	No of publications	Name of the institution	No of publications
1	University of Sheffield	30	Lakehead University	11
2	University of Tampere	28	Nanyang Technological University	9
3	Loughborough University	21	Griffith University	8
4	City University London	19	McMaster University	7
5	Royal School of Library and Information Science	16	Bangkok University	6
6	University College London	14	Loughborough University	6
7	University College of Boras	14	University of Waikato	6
8	University of Strathclyde	12	Queensland University of Technology	5
9	University of Ljubljana	11	Second University of Naples	5
10	University of Toronto	10	Tampere University of Technology	5
11	Aberystwyth University	9	Curtin University	5
12	Charles University.	9	The Hong Kong Polytechnic University	5
13	Indiana University Bloomington	8	Macquarie University	5
14	University of Texas	8	------	------
15	Seven articles contributed by 4 Institutions	28	------	------
16	Six articles contributed by 3 Institutions	18	------	------
17	Five articles contributed	10	------	------

	by 2 Institutions			
18	Four articles contributed by 9 Institutions	36	Four articles contributed by 13 Institutions	52
19	Three articles contributed by 17 Institutions	51	Three articles contributed by 34 Institutions	102
20	Two articles contributed by 38 Institutions	76	Two articles contributed by 112 Institutions	224
21	Single articles contributed by 187 Institutions	187	Single articles contributed by 459 Institutions	459
Total		615	Total	920

Table 8 shows that authors from 274 institutions are involved in publishing in the Journal of documentation. The most productive institution is University of Sheffield with 30 publications followed by University of Tamper 28, Lough Borough University 21, University of London 19 and so on. 187 institutions contributed single article and 38 each institutions contributed two articles.

Table 9: Year wise citations distribution

Year	Number of articles published		Number of articles receiving citation		Total Number of citations received		Average citation received		Percentage (%)	
	JDOC	JKM	JDOC	JKM	JDOC	JKM	JDOC	JKM	JDOC	JKM
2005	44	59	40	59	990	2213	24.75	37.51	16.95	20.55
2006	36	62	35	61	750	1233	21.42	20.21	12.84	11.45
2007	41	66	40	65	776	1398	19.04	21.51	13.29	12.98
2008	43	70	42	69	1017	1090	24.21	15.80	17.42	10.12
2009	41	73	39	72	577	1573	14.79	21.85	9.88	14.60
2010	42	57	41	52	579	893	14.12	17.17	9.92	8.29
2011	40	58	39	58	459	941	11.76	16.22	7.86	8.74
2012	42	57	38	56	279	660	7.34	11.79	4.78	6.13
2013	44	55	37	53	224	504	6.22	9.51	3.84	4.68
2014	54	62	39	51	143	182	3.67	3.57	2.45	1.69
2015	62	67	27	44	45	84	1.66	1.91	0.77	0.78
Total	427	686	417	640	5839	10771	14.85	16.83	100	100

Table 10: Group wise citations distribution

No of citation	Journal of documentation			Journal of knowledge Management		
	No of paper	Percentage	Total citation	No of paper	Percentage	Total citation
1—5	165	39.57	437	205	32.03	552
6—10	83	19.90	642	136	21.25	1055
11—15	54	12.95	691	87	13.59	1135
16—20	33	7.91	603	52	8.13	948
21—25	24	5.76	545	43	6.72	987
26—30	13	3.12	364	29	4.53	808
31—35	12	2.88	393	18	2.81	585
36—40	11	2.64	372	14	2.19	529
41—45	4	0.96	173	12	1.88	514
46—50	1	0.24	49	9	1.41	439
>51	17	4.08	1570	35	5.47	3219
Total	417	100	5839	640	100 (approx)	10771

Table 9 and Table 10 shows year wise and group wise citations distribution and also shows the number of papers receiving citations. The study found that out of 489 articles, only 417 articles received 5839 citations, others did not receive any citations and the average number of citations received is 14.85.

CONCLUSION:

After analyzing all the data, following general conclusion can be drawn from this study that 489 research documents are published in the Journal of Documentation during the period 2005 to 2015. The study found that 49 foreign countries have published their research results in the particular journal and UK holds 1st rank by publishing 158 research documents followed by USA published 113 and Finland published 37 documents. In case of authorship pattern the present study found that single author contribution is higher than the two, three, four and multiple author's contribution. From this study it has been found that Information seeking behaviour and Information retrieval both are the most prominent LIS research area followed by Classification of knowledge, ICT, Information literacy and so on. As the Journal of Documentation is one of the leading journals in the field of Library and Information Science in the international scenario therefore we can identify the trend of research from this particular journal. Also some of the very significant but untouched areas like library education, academic libraries, document preservation etc. can be explored more and researches can be done on them has been revealed from the study.

References

[1] Dutta, B.,*The journey from librametry to altmetrics: a look back.* Paper presented at Golden Jubilee Celebration in Department of Library and Information Science, Jadavpur University, 2014.

[2] Garg, K.C., Sharma, P. & Kumar, S., *Scientometric profile of journal Mousam.* Annals of Library and information Studies, (Vol) 55, 2008, pp. 76-80.

[3] Garg, K.C., Kumar, S., Bhatia, V.K., Ramasubramanian, V., Kumar, A. &Kumari, J., *Plant genetics and breeding research: scientometric profile of selected countries with special reference to India*. Annals of Library and information Studies, (Vol.) 58, 2011, pp. 184-197.

[4] Hamadicharef, B., *Scientometric Study of the Journal NeuroImage 1992-200*. In Web Information System and Minning (WISM), 2010 International Coference on (Vol.) 2, 2010, pp. 201-204.

[5] Joshi, K., Kshitij, A. &Garg, K.C., *Scientometric profile of fungal research.* Annals of Library and Information Studies, (Vol.)57, 2010, pp.130-139.

[6] Metrics.,In Merriam-Webster Online: Dictionary and Thesaurus. Retrieved Aug.2, 2015 from http://www.merriam-webster.com/dictionary/metric.

[7] Pitchard, A., *Statistical bibliography or bibliometrics*. Journal of Documentation, (Vol.) 25, 1969, pp. 348- 349.

[8] Raja, S., *A Scientometric Analysis of Space Neuroscience Research Publication in Global: 1999-2012.* International Journal of Applied Engineering and Technology, (Vol.) 2(2), 2012, pp.190-199.

[9] Santhi, J., *A Scientometric Study on IEEE Transactions on Control Systems Technology* (Doctoral thesis, Bharathidasan University, Tiruchirappalli, Tamil Nadu), 2010, http://hdl.handle.net/10603/5109

[10] Senapati, S. K., *Bibliographic control of periodical literature on building materials Published in India: a scientometric study*. (Doctoral thesis, Punjab university, Patiala), 2009.

[11] Subramanyam K., *Bibliometric study of research collaboration: A review*. J Inf Sci., 1993.

[12] Tamilselvan, N., *Evaluation of Research Performance by Faculties in National Institutes of Technology in India: a Scientometric Analysis*. (Doctoral thesis, Bharathiar University, Madurai), 2010.

[13] Velvizhi, J., Murugesapandian, N., Surulinathi, M. &Srinivasaragavan, S. (2011). *Scientometric profile of solar energy research in India.* Recent Research in Science and Technology, (Vol.)3(10), pp.112-117.