

BIBLIOMETRIC ANALYSIS OF INDIAN JOURNAL OF CLINICAL BIO-CHEMISTRY FROM THE YEAR 2004-2013

Manzoor Ahmad Hajam

Professional Assistant/In-charge E-Resources,
Allama Iqbal Library, University of Kashmir,
Hazratbal, Srinagar, India.
E-mail:manzoorha@gmail.com

Abstract

This is a bibliometric analysis of 776 articles published in ten volumes of Indian journal of Clinical Bio-chemistry from volume 19(2004) to volume 28 (2013). The study has been carried out to observe the authorship pattern, year-wise/volume-wise distribution of contributions, distribution of keywords, length of papers, geographical distribution of contributions, Institution-wise contribution of articles and volume-wise/period-wise distribution of citations. The journal has started its publication from the year 1986 and is constantly being published since then. From the year 1986 to 1990 the journal has remained as a single issue publication and after 1991 to 2003 it has got two issues annually. Subsequently, from the year 2004 its growth of periodicity has reached to four issues a year and is now a quarterly publication. The present study reveals that there are 19496 citations, 32 issues, 776 contributions of ten volumes of the journal. Highest number of articles published is found in volume 23, in the year 2008 and there is a predominance of 5 and more authored contributions. Indian contribution has occupied top position 651(83.90) followed by foreign contributions with just 125(16.10%) only.

Key words: Bibliometrics, Bibliometric analysis of Indian Journal of Clinical Bio-Chemistry.

Introduction

Bibliometrics is a method of research used in the field of library and information science. It is a quantitative analysis of various aspects of literature used to identify the pattern of publication like authorship, length of papers, geographical distribution, & citations etc. used to know journal coverage to gain insight into the dynamics of growth of knowledge in the areas under consideration. This is very useful study for libraries for better organization of information resources in an effective and efficient way. Bibliometrics has many applications in identifying the research trends in subjects, core journals etc. These studies are very beneficial for libraries framing new subscription policies and collection development.

Pritchard (1969) is known as the founder of the term 'Bibliometrics' who defined the concept as, "the application of mathematical and statistical methods to books and other communication medium". Small's (2006) definition 'Bibliometrics' (2013) is, "a method for description, evaluation, and monitoring of research surrounding of a particular field or it can describe the quality and focus of research output by a particular organization". With the advent of Information and Communication Technology (ICT), faster web applications, and availability of online journals and databases, the field of Bibliometrics has gained momentum (Patra et al, 2006). Currently, bibliometric studies are conducted for a given field of knowledge on specific literature, research output of a prolific author, research productivity of an organization or of an individual journal for a specific period of time. The present study focuses on bibliometric analysis of Indian Journal of Clinical-Biochemistry comprising the year 2004-2013.

Review of literature

Swain, Dillip K, Swain, Chandrakanta & Rautaray, Bijayalaxmi.(2014) have analyzed the publication pattern of the journal Business Economics like the number of papers published, types of contributions, authorship pattern and ranking of authors. This study also identifies the core institutions having significant contributions to the journal. Maharana, Rabinder K, Das, Ashok Kumar & Choudhry, Bijay Kumar.(2014) in their study have examined the contents of papers published in the Defense Science Journal its average growth, authorship pattern, degree of collaboration, length of papers and distribution of citations. Narang, Asha & Sukhdev Singh. (2014) have carried out bibliometric analysis of 15786 citations appended to 1310 articles published in the Indian Journal of Pure & Applied Mathematics. The study includes the observation like distribution of contribution, authorship pattern, geographical distribution, citation analysis and the number of pages etc. Srimurugan, A & Nattar, S.(2013) have examined the articles published in online D-Lib Magazine for authorship trend, contribution of teaching and professional, country-wise contribution, degree of collaboration and productivity within various facets of digital/electronic libraries. Panday, Jay Prakash. (2013) analysis the papers presented in IATLIS Conferences in different ways to find out most productive author, state and organization etc. Keshava, Kusugal, N B. (2013) presents a bibliometric study of research trends in the field of nano-technology based on Web of Science. It deals with the growth of nano-technology literature, institutions contribution, productivity of top ten countries of the world, language and most productive authors. Tsay, Ming-Yueh. (2011) .This study explores the bibliometric characteristics of the journal of information science & the subject relationship with other disciplines by citation analysis.

Akhter, Hussain, Nishat, Fatima & Kumar, Devendra.(2011) have made a bibliometric study of papers published in the Electronic Library Journal covering year-wise distribution of articles, Category-wise classification of papers, subject-wise distribution of articles, authorship pattern & institution-wise distribution of contributions. Thanuskodi, S. (2011).This study makes an analysis of the papers published in Indian Journal of Chemistry from different angles i.e. authorship pattern, number of contributions, geographical distribution, length of articles and the number of documents cited. Warraich, Nosheen Fatima

(2011) have studied 11 issues of the journal of Library & Information Science on the basis of different parameters, viz author productivity, author collaboration, author institutional and geographical affiliation, language and length of papers, number of citations and the year-wise distribution of papers. Crawley-low, Jill. (2006) has used bibliometric technique to analyze the citation patterns of researches published in the American Journal of Veterinary Research(AJVR).Journal titles have been ranked in decreasing order of productivity to create a core list of journals most frequently used by veterinary medical researchers.

About the journal

The journal is an official publication of Association of Clinical Biochemists of India. It covers accreditation programmes pertaining to health and disease and acts as a bridge between disciplines in various areas of medicine. The journal is listed in: SCOPUS .Chemical Abstract Service (CAS), EMVASE, Expanded Academic, Google, INIS Atom Index, Ind Med, Index Copernicus, Indian Science Abstracts, MedInd, Chem. It is indexed / abstracted in PubMed (12 months embargo), PubMedCentral, SCOPUS, EMBASE, Chemical Abstracts Service (CAS), Google Scholar, Academic OneFile, Elsevier Biobase, Expanded Academic, Indian Science Abstracts, IndMed, INIS Atomindex, MedInd, OCLC, SCImago, Summon by ProQuest, Zoological Record. The journal has started publication from the year 1986 and is constantly being published as a peer reviewed publication since then.

Objectives

1. To ascertain the number of papers published in Indian Journal of Clinical-Biochemistry 2004 to 2013.
2. To find out the number of contributions published during the period of study
3. To examine the authorship pattern and collaboration trend of research in the journal.
4. To examine the authorship pattern of papers.
5. To carry out the study of key-words.
6. To study the distribution of key-words in the papers.
7. To identify institution-wise contribution of papers.
8. To study geographical distribution of contributions.
9. To determine the length of papers.
10. To identify the contributions with reference /without references.
11. To find out volume-wise and period-wise no. of citations.
12. To study the citation counts of all the published papers of the journal.

Methodology

In the present study the methodology applied is bibliometric analysis, used to study the bibliographic features of articles and citation analysis of references appended at the end of each article, published in the journal from 2004-2013.For this study the relevant data has been collected from volume 19(2004) to 28(2013).The data recorded has been tabulated and

analyzed for making observations regarding the progress and development of Indian journal of Clinical Bio-chemistry for the last ten years.

Data Analysis

❖ Year wise/Volume-wise Distribution

Table 1 reveals about the total number of papers published in ten volumes (Vol. 19-28) from the year 2004-2013 in the Indian journal of Clinical Bio-chemistry. This is study of 32 issues in which 776 articles have been published. As per the data given in the table below, the number of articles is high in the year 2008 (vol.24) having 90 articles (11.60%) published in it. The lowest number of articles i.e. 66 papers (8.51%) are found during the year 2007. The average publishing range in the journal is 78 and 79(10.5 -10.18%). From 2004-2007 the journal has only two issues published in a year. While as from 2008 on words it has increased from two to four issues a year.

Table 1. Year wise/Volume-wise Distribution of Articles

Year	Vol.No.	No. of Issues	No. of contributions	Percentage
2004	19	2	69	8.89
2005	20	2	79	10.18
2006	21	2	80	10.31
2007	22	2	66	8.51
2008	23	4	90	11.60
2009	24	4	78	10.05
2010	25	4	78	10.05
2011	26	4	79	10.18
2012	27	4	78	10.05
2013	28	4	79	10.18
Total		32	776	100

❖ Distribution of Articles

As observed from the table 2, the distribution of articles is very high in the first issue of the journal published in the month of January each year (i.e. 197 in total). The issue number 3 figures at the second position with a score of 188 contributions. After analyzing the data given in the table below the first two and last two issues during the year 2006 and 2007 have not been published at the regular interval of time. These issues are found to be delayed by one month from the actual time of their publication.

Table 2. Distribution of Articles (issue wise)

Year	Volume number	Issue-wise Contribution of Papers						Total
		January	March	April	July	September	October	
2004	19	31			38			69
2005	20	41			38			79
2006	21		42			38		80
2007	22		31			35		66
2008	23	25		21	23		21	90
2009	24	20		19	20		19	78
2010	25	20		21	15		22	78
2011	26	21		20	17		21	79
2012	27	18		19	20		21	78
2013	28	21		20	17		21	79
Total		197	73	120	188	73	125	776

❖ Authorship Pattern

The data related to authorship pattern is revealed in the table 3 showing maximum number of articles emanating from 5 and more authors with 242 (2.48%). The highest number of contributions at second position are the articles by 4 authors i.e. 169 (21.77%) while as the contributions by a single author have been found lowest just 62(7.99%) only.

Table 3. Authorship Pattern

Year	Number of Authors					Total
	1	2	3	4	5 & more	
2004	1	16	16	20	16	69
2005	4	18	18	22	17	79
2006	4	19	24	19	14	80
2007	7	10	19	10	20	66
2008	8	18	14	23	27	90
2009	5	11	12	20	30	78
2010	9	11	10	16	32	78
2011	8	9	18	13	31	79
2012	9	16	13	10	30	78
2013	7	7	14	16	35	79
Total	62 (7.99)	135 (17.40)	158 (20.36)	169 (21.77)	252 (32.48)	776 (100)

Note: Data in parentheses indicates percentage

❖ Degree of Collaboration

A study of degree of collaboration in an area of bibliometric studies, shows the tend in pattern of single and joint authorship in the Indian journal of clinical-biochemistry from 2004 to 2013, as shown in the table 4. The degree of collaboration ranges from 0.884 to 985. The average degree of collaboration is 0.921 during the period under study. The extent of collaboration in research can be computed with the help of Subramanyam's (1983) formula.

$$DC = \frac{NM}{NM+NS}$$

Where C = Degree of Collaboration

NM = Number of Multiple authors

NS = Number of Single authors

Table 4. Degree of Collaboration

Year	Single author paper(NS)	Multiple author paper (NM)	NM+NS	Degree of Collaboration(C)
2004	1	68	69	0.985
2005	4	75	79	0.949
2006	4	76	80	0.95
2007	7	59	66	0.893
2008	8	82	90	0.911
2009	5	73	78	0.935
2010	9	69	78	0.884
2011	8	71	79	0.898
2012	9	69	78	0.884
2013	7	68	79	0.985
Total	62 (7.98)	714 (92.02)	776(100)	0.920

Note: Date in parentheses indicates percentage

❖ Distribution of Key words

From the table 5 it is observed that there are 3209 key words attached to 776 papers with an average of 4.13 key words per paper. Volume 23 published in the year 2008 has the highest number of key words but due to more number of papers its average keywords per paper has gone down to 4.08 only. Therefore, volume 20 published in the year 2005 comes at first position as per the average number of keywords appended to each paper.

Table 5. Distribution of Key words.

Year	Volume	Rank	No. of papers	Total keywords	Average keywords per paper	Cumulative	
						keywords	%age
2004	19	9	69	275	3.98	275	8.57
2005	20	2	79	344	4.35	619	19.28
2006	21	8	80	304	3.80	923	28.77
2007	22	10	66	272	4.12	1195	37.23
2008	23	1	90	368	4.08	1563	48.71
2009	24	4	78	336	4.30	1899	59.17
2010	25	6	78	326	4.17	2225	69.34
2011	26	5	79	327	4.13	2552	79.52
2012	27	7	78	317	4.06	2869	89.40
2013	28	3	79	340	4.30	3209	100
Grand Total			776	3209	4.13	3209	100

❖ Institution-wise contribution of articles

Table 6 shows that majority of the articles 315 (40.60%) are contributed by the scholars from Colleges followed by 233 (30.2%) by Research Institutions and 219 (28.32%) from Universities at national and international level.

Table 6. Institution-wise contribution of articles

Name of the Institution	No. of Articles	Percentage
Universities	219	28.32
Colleges	315	40.60
Research Institutions	233	30.02
Miscellaneous	09	1.15
Total	776	100

❖ Geographical Distribution of Articles

Table 7 presents the data about rank-wise contributions from 26 states of India. The data reveals that Karnataka is the top contributor (95) followed by Maharashtra (90), Delhi (89), U. P (75), Tamil Nadu (52) and so on.

Table 7. Geographical Distribution of Articles (National)

S.No.	Name of the State	No. of Articles	Percentage	Rank
01.	Andhra Pradesh	41	5.29	6
02	Assam	05	0.64	16
03	Bihar	03	0.38	18
04.	Chandigarh	12	1.56	13
05.	Delhi	89	11.47	3
06.	Chhattisgarh	01	0.13	23
07	Gujarat	20	2.59	10
08.	Haryana	18	2.32	11
09.	Himachal Pradesh	02	0.26	21
10.	Jammu & Kashmir	03	0.38	19
11.	Karnataka	95	12.27	1
12.	Kerala	36	4.64	7
13.	Madhya Pradesh	12	1.56	14
14.	Maharashtra	90	11.61	2
15.	Manipur	02	0.26	22
16.	Meghalaya	01	0.13	24
17.	Nagaland	01	0.13	25
18.	Odisha	10	1.29	15
19.	Pondicherry	03	0.38	20
20.	Punjab	18	2.32	12
21.	Rajasthan	28	3.62	8
22.	Sikkim	04	0.51	17
23.	Tamil Nadu	52	6.73	5
24.	Uttar Pradesh	75	9.67	4
25.	Uttarakhand	01	0.13	26
26.	West Bengal	28	3.62	9
Total		651	83.89	

❖ Geographical Distribution of Articles (International)

Table 8 gives geographical distribution of 33 countries rank-wise and percentage wise. Out of the total 776 contributions, 651 have been made by Indian scholars. The rest of the contributions i.e.125 has been made by the scholars of other countries. The top contributor among the foreign countries is Iran (23) followed by Nigeria (18), and Egypt (15). This indicates that the researchers from these three countries have contributed more than that of other countries after India in the Indian Journal of Clinical Bio-Chemistry.

Table 8. Geographical Distribution of Articles (International)

S.No	Name of the Country	No. of Articles	Percentage	Rank e
01.	Australia	8	1.03	5
02.	Bolivia	1	0.13	19
03.	Belgaum	2	0.26	12
04.	Belgrade	1	0.13	20
05.	Bhutan	1	0.13	21
06.	China	5	0.64	6
07.	Columbia	1	0.13	22
08.	Denmark	1	0.13	23
09.	Egypt	15	1.93	3
10.	Ethiopia	1	0.13	24
11.	Ghana	2	0.26	13
12.	Iran	23	2.96	1
13.	Iraq	1	0.13	25
14.	Italy	1	0.13	26
15.	Nepal	2	0.26	14
16.	Malaysia	10	1.28	4
17.	Nigeria	18	2.31	2
18.	Pakistan	2	0.26	15
19.	Lebanon	1	0.13	27
20.	Japan	2	0.26	16
21.	Kenya	1	0.13	28
22.	Saudi Arabia	3	0.38	9
23.	Slovakia	2	0.26	17
24.	South Africa	1	0.13	29
25.	Sri Lanka	2	0.26	18
26.	Tanzania	1	0.13	30
27.	Turkey	4	0.51	7
28.	Thailand	3	0.38	10
29.	U.A.E	1	0.13	31
30.	U.K	3	0.38	1
31.	U.S.A	4	0.51	8
32.	Yugoslavia	1	0.13	32
33.	Yaounde	1	0.13	33
Total		125	16.10	

❖ Length of Articles

The table given below reveals volume-wise/year-wise length of papers published in different issues of Indian journal of Clinical Bio-chemistry. More than half of the papers are in

between 1-5 pages in length i.e. 485 (62.5%), followed by 264(34.02%) papers covered with 6-10 pages, 22(2.84 %) covered with 11-15 pages, 4(0.51%) covered with 16-20 pages and only 1(0.13%) covered with 20 & more than 20 pages.

Table 9.Length of Articles

Year	Volume	Pages					Total
		1-5	6-10	11-15	16-20	20 & more	
2004	19	52	15	2	0	0	69 (8.89)
2005	20	48	28	2	1	0	79 (10.18)
2006	21	54	25	1	0	0	80 (10.31)
2007	22	48	16	2	0	0	66 (8.51)
2008	23	73	15	1	0	1	90 (11.60)
2009	24	43	32	2	1	0	78 (10.05)
2010	25	40	35	2	1	0	78(10.05)
2011	26	48	28	2	1	0	79 (10.18)
2012	27	38	37	3	0	0	78(10.05)
2013	28	41	33	5	0	0	79 (10.18)
Total		485 (62.5)	264(34.02)	22(2.84)	4(0.51)	1(0.13)	100 (100)

❖ Articles with references/without references

It is observed from the below mentioned table that there are 761(98.06%) articles appended with references/citations. Papers published in the journal without citations/reference 15 (1.94%), are generally published in the form of editorials, book reviews and articles reviews etc.

Table 10. Articles with references/without references

Category	No. of references	Percentage
With references	761	98.06
Without references	15	1.94
Total	776	100

❖ Volume-wise Distribution of Citations

Table 11 indicates volume-wise distribution of citations 776 contributions of the journal having 19496 citations which means that every issue published 24 papers and each article has an average 25.13 citations. The table reveals that maximum numbers of citations have been

published (2202 in number) in volume 28, 2013. Hence volume 28 stood in the first position with maximum number of citations per paper. This is followed by vol.25, 23, 24 and so on.

Table 11. Volume-wise Distribution of Citations

Year	Vol.	Rank	No. of papers	No. of citation	Average no. of citations/paper	Cumulative	
						Citation	%age
2004	19	10	69	1575	22.82	1575	8.08
2005	20	8	79	1857	23.50	3432	17.61
2006	21	7	80	1859	23.23	5291	27.14
2007	22	9	66	1632	24.72	6923	35.50
2008	23	3	90	2099	26.91	9022	46.27
2009	24	4	78	2075	26.60	11097	56.92
2010	25	2	78	2173	27.85	13270	68.07
2011	26	6	79	1973	24.97	15243	78.18
2012	27	5	78	2051	26.29	17294	88.71
2013	28	1	79	2202	27.87	19496	100
Grand Total			776	19496	25.48	19496	100

❖ Period-wise Citation Range

Table 12 presents period-wise range of citations per paper with percentage. A total of 254 (32.74 %) articles top the list within the citation range between 21-30. This is followed by 241(31.05%) papers having in between 11-20 citations, 97(21.5%) in between 31-40 citations, and 88(11.35%) in between 1-10 citations respectively. A total of 15 (.94%) articles do not have citations.

Table 12. Period-wise Citation Range.

No. of citations	Period-wise citation range										Total
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Nil	-	4	1	0	3	2	3	0	1	1	15 (1.94)
1-10	8	9	8	8	11	7	5	12	12	8	88 (11.34)
11-20	24	23	23	24	32	28	18	27	17	25	241 (31.05)
21-30	28	26	35	19	32	16	28	23	25	22	254 (32.73)
31-40	3	7	9	9	6	16	16	7	13	11	97 (12.5)
41-50	2	5	0	3	3	3	4	6	0	7	36 (8.12)
51-60	2	1	2	0	1	2	2	3	1	2	16 (2.06)
61-70	0	2	0	0	0	0	1	1	0	0	4 (0.51)
71-80	1	0	1	2	1	2	1	0	1	1	10 (1.29)
81-90	0	1	1	0	0	0	0	0	0	0	2 (0.26)
91 & above	1	1	0	1	1	2	1	2	2	2	13 (1.68)
Total	69 (8.9)	79 (10.18)	80 (10.31)	66 (8.51)	90 (11.60)	78 (10.05)	78 (10.05)	79 (10.18)	78 (10.05)	79 (10.18)	776 (100)

Note: Date in parentheses indicates percentage

Findings & Conclusion

- The journal is an official publication of the Association of Biochemists of India. It has started its publication from the year 1986 and is constantly being published since then.
- From the year 1986 to 1990 the journal has remained as single issue publication and after 1991 to 2003 it has got two issues annually. Subsequently, from the year 2004 its growth of periodicity has reached from two issues to four issues a year and is now a quarterly publication.
- The total number of contributions in the journal during the period of this study (i.e. from vol.19-28) is 776 and it has 32 issues.
- Volume 23 (2008) has maximum number of contributions 90 (11.60%) followed by volume 21 (2006) with (10.31%) and so on.
- There is pre-dominance of 5 & more authored contributions (21.77%) followed by 3 authored contributions (20.36%) respectively. Hence it indicates that the joint authorship has top position as compared to single authorship in the journal during the period of study.
- There are 3209 key words attached to 776 papers with an average of 4.13 key words per paper. It is observed that volume 23 published in the year 2008 has the highest numbers key words but due to more number of papers its average keywords per paper has gone down to 4.08 only. Therefore, volume 20 published in the year 2005 comes at first position as per the average number of keywords appended to each paper
- Institution-wise contribution is more from Colleges 315(40.60%) followed by research institutions 233(30.2%) and Universities 219(28.32%) both at national and international level respectively.
- Indian contribution has occupied top position 651(83.90) followed by foreign contributions with just 125(16.10%) only.
- The maximum number of papers published in ten volumes of the journal has the length of 1-5 pages (62.5%) followed by 6-10 pages (34.02%), 11-15 pages (2.04%) and so on.
- The number of articles with reference are 761 (98.06%).The other 15 (1.94%) articles published in the journal are generally in the shape of editorials, book reviews, case studies, short communications and article reviews etc.
- As per the volume-wise distribution of citations, there are 19496 citations appended to 776 papers published in the journal. Maximum number of citations have been found with 2202(20.87%) in volume 28 (2013). The average number of citations per paper comes out to be 25.13%.
- The total of 254 (32.74%) articles top the list with in the citation range between 21-30. This is followed by 241(31.05%) articles in between 11-20 citations, 97(12.5%) in between 31-40 citations respectively.
- On the whole, the growth rate of the journal is showing upward trend in terms of periodicity, number of contribution, number of Indian contribution, number of pages

and the number of citations etc. The journal is of great interest to the people of Clinical-Biochemistry and related subjects. Furthermore, this study can also be beneficial to library and information science scholars in conducting the bibliometric research.

References

1. <http://www.springer.com/life+sciences/biochemistry+%26+biophysics/journal/12291> Swain, Dillip K, Swain, Chandrakanta & Rautaray, Bijayalaxmi. (2014). Bibliometric analysis of the journal Business Economics from 2008-2013. *International Journal of Digital Library Services*, 4(2):93-108.
2. Maharana, Rabinder K, Das, Ashok Kumar & Choudhry, Bijay Kumar. (2014). Bibliometric Analysis of Defense Science Journal. *International Journal of Information Dissemination & Technology*, 4(1):55-64.
3. Narang, Asha & Sukhdev Singh. (2014). Bibliometric Analysis of Indian Journal of Pure & Applied Mathematics. *SRELS Journal of Information Management*, 51(2):99-109.
4. Srimurugan, A & Nattar, S. (2013). D-Lib Magazine: A Bibliometric Study. *Indian Journal of Library & Information Science*, 7(3):367-370.
5. Panday, Jay Prakash. (2013). Professionals performance measure in LIS education: a bibliometric analysis of IATLIS Conference volumes. *Professional Journal of Library & Information Technology*, 3(2):101-111.
6. Keshava, Kusugal N B. (2013). Research Trend in the field of Nano-Technology: A Bibliometric study. *Indian Journal of Library & Information Science*, 7(1):97-100.
7. Tsay, Ming-Yueh. (2011). A Bibliometric Analysis on the Journal of Information Science. *Journal of Library & Information Science Research*, 5(2):1-28.
8. Akhter, Hussain, Nishat, Fatima & Kumar, Devendra. (2011). Bibliometric analysis of the Electronic Library Journal. *Webology*, 8(1):1-9.
9. Thanuskodi, S. (2011). Bibliometric Analysis of the Indian Journal of Chemistry. *Library Philosophy and Practice*, 14(1): 1-6. retrieved at <http://www.webpages.uidaho.edu/~mbolin/thanuskodi-bibmet.htm>
10. Warraich, Nosheen Fatima (2011). Pakistan Journal of Library & Information Science: A Bibliometric analysis. *Pakistan Journal of Library & Information Science*, 11(1):1-7. retrieved at <http://pu.edu.pk/images/journal/pjlis/pdf/pjlis-12-warraich1.pdf>
11. Thanuskodi, s. (2010). Bibliometric Analysis of the Journal Library Philosophy and Practice. *Library Philosophy and Practice*, 13(1):1-6. retrieved at <http://www.webpages.uidaho.edu/~mbolin/lpp2010.htm>.
12. Crawley-low, Jill. (2006). Bibliometric analysis of the American Journal of Veterinary Research. *JMED Libr. Assoc* 94(4):430-434.