Winter 2-5-2019

AMERICAN JOURNAL OF BIOCHEMISTRY AND BIOTECHNOLOGY: A BIBLIOMETRIC STUDY

SHAMILI N
shamilikannanmsc@gmail.com

SILAMBARASAN D
silambarasandurai666@gmail.com

AMERICAN JOURNAL OF BIOCHEMISTRY AND BIOTECHNOLOGY: A BIBLIOMETRIC STUDY

N.Shamili
Ph.D Research Scholar
Annamalai University
nshamili95@gmail.com

D.Silambarasan
M.L.I.S Student
Annamalai University
silambarasandurai666@gmail.com

Abstract

The present study reveals the bibliometric study of the "American journal of biochemistry and biotechnology" the study covers the growth of literature and authorship pattern of the journal. Further, it analyzed various other bibliometrics aspects such as subject wise distribution of article, intuition wise distribution article, country wise distribution of article, bibliographical wise distribution of citation and self citation.

1. INTRODUCTION

Bibliometrics is a type of research technique used in library and information science. Bibliometric is the analysis of the structure of literature, applying difference methods and tools. The study of the structure of literature is general to all subject. Structural study of literature is vital for information retrieval. Bibliometrics distribution helps to measure the scattering of articles over different journals, the frequency of occurrence of words in text and the efficiency of authors in items of the scientific papers produced by him. These aspects of bibliometrics studies have been codified and known as bradford's law of dealing with the scattering of articles over different journals. Ranking of journals is an important factor in bibliometric analysis. It highlights the significance and wider utility of some journals in a discipline as also the retreating importance of some is helps researches identify potential journals in their discipline.

Key words: Bibliometric, Information, Journal, American journal of biochemistry and biotechnology,

2. SOURCE JOURNAL

"American Journal of Biochemistry and Biotechnology" has been selected as the source journal. It is quarterly biochemistry and biotechnology journal published by science publication, New york . It contains research papers in English dealings with all aspects of fundamental and applied research in biochemistry and biotechnology So for the journal has published 13 volumes, but to determine the publication pattern, the number of contribution published during the last ten years 2008-2017 (i.e., from Vol. 4 to 13) has been taken for this study.

3. OBJECTIVES OF THE STUDY

The objectives of the present study are listed below:

- To find out the chronological wise distribution of articles/publications.
- To observe the authorship pattern.
- To determined the subject-wise distribution of articles in biochemistry and biotechnology research publications.
- To know Institute wise distribution of articles.
- To observe the Geographical wise distribution of publication.
- To study the bibliographical and year wise distribution of citation.
- To calculate the average length of articles.

- To estimate the pattern of self – citation.

4. HYPOTHESES

- Multi author papers are higher in number compared to single author papers.
- There is a considerable level of variation in different branches publications or articles.

5. METHODOLOGY

For this study the volume 4-13 (2008-2017) was taken into consideration. Data were collected with adequate detail such as title of article, name of the contributors, and their address and affiliations details for each article. At the same time, the reference appended by the respective authors at the end of each article were also counted and tabulated. Finally, all the collected data were analysed for making observations.

Table 6.1 Chronological wise distribution of articles

S. No	Vol. No	Year	Number of Publication/article	Percentage
1.	4	2008	55	15.94
2.	5	2009	32	9.27
3.	6	2010	35	10.14
4.	7	2011	23	6.67
5.	8	2012	32	9.23
6.	9	2013	45	13.04
7.	10	2014	30	8.69
8.	11	2015	30	8.69
9.	12	2016	33	9.57
10.	13	2017	30	8.69
	Total		345	100

Table 6.1 gives the chronological wise distribution of articles in source journal. The number various form years to year. Out of 345 articles, the maximum number or articles published the year 2008. which is 15.94 percent to the total publication. The minimum number of articles (23) are in the year of 2011.

It is evident from the table that there are variation found among the study period and there is no any increasing and decreasing trend from year to year.

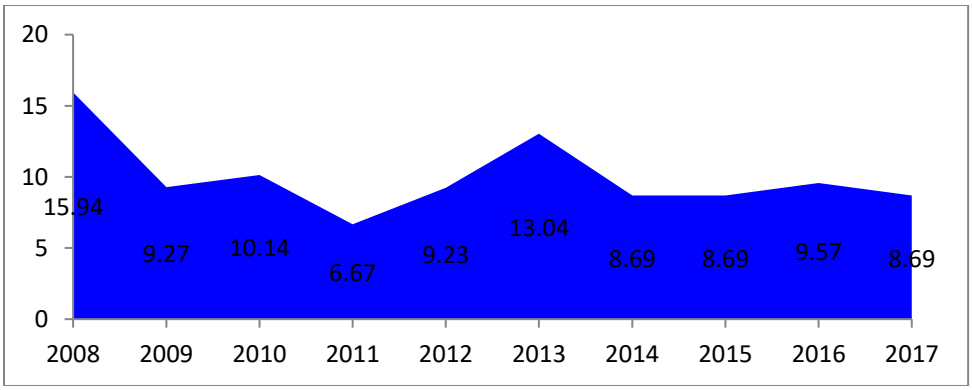

Table 6. 2 Authorship pattern

S.NO	Year	No. of Author				total	percentage
		Single authors	Two authors	Three authors	More than three authors		
1.	2008	5	7	15	28	55	15.94
2.	2009	5	2	5	20	32	9.27
3.	2010	7	3	3	22	35	10.14
4.	2011	3	3	6	11	23	6.67
5.	2012	6	6	9	11	32	9.23
6.	2013	1	6	8	28	45	13.04
7.	2014	-	4	3	23	30	8.69
8.	2015	7	1	6	16	30	8.69
9.	2016	2	2	9	21	33	9.57
10.	2017	-	4	3	23	30	8.69
Table		37 (10.72)	38 (11.01)	67 (19.42)	203 (58.84)	345	100

Table 6.2 indicates the authorship pattern in the journal "American Journal of Biochemistry and Biotechnology". It could be observed that more than three authors collaborated papers occupied the first position (58.84%) in respect to total number or articles published during the period of analysis. Three authors collaborated papers come next in order (19.42%) or sharing the total output during the period of examination. Two authors contributed papers occupy the third position (11.01) with regard total output noted during the study. Single author collaborated papers occupy the fourth position (10.72%) with respect to total number of papers recorded in the study period.

Table 6.3 Ranking of authorship pattern

Rank	Authorship pattern	Number of contribution	Percent of contribution	Cumulative of contribution	Percent of Cumulative contribution
4	Single author	37	10.73	37	10.73
3	Two author	38	11.03	75	21.75
2	Three author	67	19.43	142	41.16
1	More than three author	203	58.9	372	100

Table 6.3 indicates the ranking of the authorship pattern. More than three author collaborative paper occupies the first rank. Three author papers comes next in order of sharing the total output during the period of examination. Two authors paper come under the third

position and single author paper comes under fourth rank in this study. it indicate that majority of the authors prefer to publish their paper jointly with others.

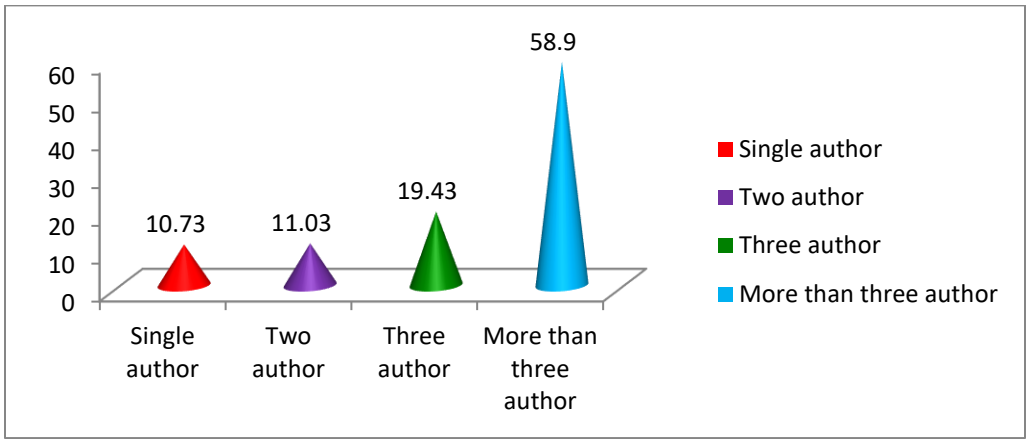

Table 6.4 Single Vs Multi – Authored Articles in biochemistry and biotechnology Research

Year	Single author contribution		Multi authored contribution		Total
	Articles	Percentage	Articles	Percentage	
2008-2012	26	14.94	148	85.05	174
2013-2017	11	6.43	160	93.75	171
Total	37	10.72	308	89.78	345

Table 6.4 shows that the distribution of single and multi authored articles published in the field of biochemistry and biotechnology. It is found that 10.72 percent of the article are published by single author and 89.78 percent of the articles are by multi authors. It is evident from the table that single author contributions are very less in number compared to multi authored papers. it could be learnt from the above discussion that the percentage of single authored paper is less than that of multi authored papers. in order to determine the collaboration in quantitative term, the formula suggested by K.Subramanyan was tested

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

NM – No. of multi authored papers
NS- no. of single authored papers
C-Degree of collaboration

Table 6.5 showing degree of collaboration in biochemistry and biotechnology research output

Year	Degree of collaboration
2008-2012	0.85
2013-2017	0.93
	0.89

6.5 Degree of collaboration in biochemistry and biotechnology research out put it is inferred from that table 4.5 that the aggregate level of the degree of collaboration is 0.89 percent . The period wise analysis indicate that the level is more or less equal in both first period 2008-

2012 and second period 2008-2017. This brings out clearly the level of collaborative research in biochemistry and biotechnology output is maintained as 0.85

Table 6.6 Subject wise distribution of article in "American journal of biochemistry and biotechnology"

S.No	Subject	No. of Articles	Percentage
1.	Genetics	42	12.17
2.	Plant biochemistry	32	9.27
3.	Cell biology	30	8.69
4.	Biotechnology	27	7.82
5.	Nutrition	25	7.24
6.	Molecular chemistry	24	6.95
7.	Genetic Engineering	22	6.37
8.	Environmental chemistry	20	5.75
9.	Metabolism	20	5.79
10.	Animal biochemistry	13	3.76
11.	Immunology	11	3.18
12.	Bioluminescence	11	3.18
13.	Pharmaceuticals	11	3.18
14.	Hematology	10	2.89
15.	Enzymologist	8	2.31
16.	Molecular Chemistry	8	2.31
17.	Photo chemistry	8	2.31
18.	Toxicology	8	2.31
19.	Endocrinology	6	1.73
20.	Enzymatic chemistry	5	1.44
21.	Neurochemistry	4	1.15
Total		**345**	100

Table 6.6 reveals that Subject wise distribution of article in "American journal of biochemistry and biotechnology". It is observed from the table that out of 345 articles published during the study period, majority 12.17 % of the paper published in Genetics and it is followed by 9.27% of the paper published in Plant biochemistry It is also shows that 8.69 % and 7.82% of the paper published in the subject of "Cell biology " and "Biotechnology

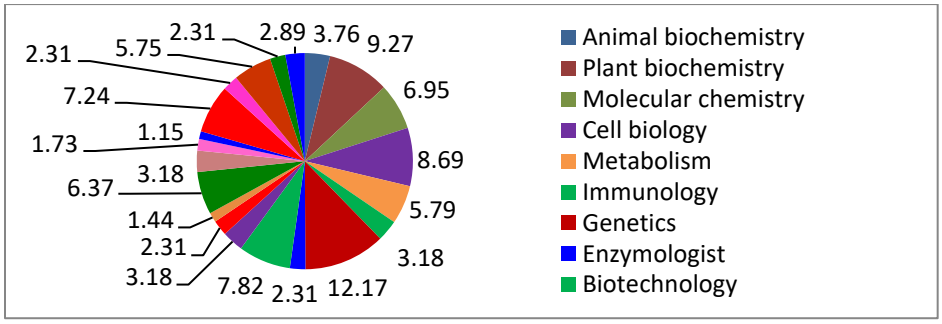

Table 6.7 Institution wise distribution of article 2008-2017

S. No	Institution	No. of contribution	Percentage	Cumulative percentage	Rank
1.	Dalhousie university	16	4.64	4.64	1
2.	University putral Malaysia	15	4.35	8.99	2
3.	Taif university	11	3.19	12.18	3
4.	King Khalid university	10	2.90	15.08	4
5.	Benha university	9	2.61	17.69	5
6.	Jilin university	9	2.61	20.30	5
7.	University of prishitna	8	2.32	22.62	
8.	Jiangnan university	6	1.74	24.36	
9.	West Bengal university of technology	6	1.74	26.10	
10.	Bogor agricultural university	5	1.45	27.55	
11.	Islamic azad university science and research branch	5	1.45	29.00	
12.	Shandong university of technology	5	1.45	30.45	
13.	Southern federal university	5	1.45	31.90	
14.	Agricultural university of hebei	4	1.16	33.06	
15.	Jiangam university	4	1.16	34.22	
16.	King abdul aziz university	4	1.16	35.38	
17.	Lemonasav Moscow state university	4	1.16	36.54	
18.	Mittelhessen university of applied sciences	4	1.16	37.70	
19.	University badji mokhtar	4	1.16	38.86	
20.	Ain shams university	3	0.87	39.73	
21.	Guangdong medical college	3	0.87	40.60	
22.	Hengyang normal university	3	0.87	41.47	
23.	Institute of bioscience	3	0.87	42.34	
24.	Japan chemical innovation institute	3	0.87	43.21	
25.	King faisal university	3	0.87	44.08	
26.	Laurentian university	3	0.87	44.95	
27.	Pancasila university	3	0.87	45.82	
28.	The university of waikota	3	0.87	46.69	
29.	University of Malaya	3	0.87	47.56	
30.	A1-azhar university	2	0.58	48.14	
31.	Atma jaya catholic university	2	0.58	48.72	
32.	Banaras hindu university	2	0.58	49.30	
33.	Bharathidasan university	2	0.58	49.88	

34.	Case western reserve university	2	0.58	50.46	
35.	Centro de investigaction en biotechlogical applicade del institute politecnico nacional	2	0.58	51.04	
36.	Gadjab mada university	2	0.58	51.62	
37.	Golestan university of medical science	2	0.58	52.20	
38.	Helwan university	2	0.58	52.78	
39.	Henan university of animal husbandry and economy	2	0.58	53.36	
40.	Institute of biological science	2	0.58	53.94	
41.	International Islamic university of Malaysia	2	0.58	54.52	
42.	Jiangsu university of technology	2	0.58	55.10	
43.	Johrom university of medical science	2	0.58	55.68	
44.	Jordan university of science and technology	2	0.58	56.26	
45.	Laboratory of natural products and center for innovation in chemistry	2	0.58	56.84	
46.	LNB – DIMES university of genova	2	0.58	57.42	
47.	Manipur university	2	0.58	58.00	
48.	Mansoura university	2	0.58	58.58	
49.	Medical microbiology and immunology	2	0.58	59.16	
50.	Mississippi state university	2	0.58	59.74	
51.	National institute of science education and research	2	0.58	60.32	
52.	Nys inlitute for basic research in development disabilities	2	0.58	60.90	
53.	Sahand university of technology	2	0.58	61.48	
54.	Second university of naples	2	0.58	62.06	
55.	Shahjala university of science and technology	2	0.58	62.64	
56.	Tianjin university of science and technology	2	0.58	63.22	
57.	Tianjin university of science and technology	2	0.58	63.8	
58.	tshwane university of technology	2	0.58	64.38	
59.	Universidade federal do pampa	2	0.58	64.96	
60.	University libre de bruxelles	2	0.58	65.54	
61.	University of Alaska Fairbanks	2	0.58	66.12	
62.	University of lome	2	0.58	66.70	
63.	University of tsukuba	2	0.58	67.28	
64.	University Sains Malaysia	2	0.58	67.86	
65.	VIT university	2	0.58	68.44	
66.	A1 ahliyya amman university	1	0.29	68.73	
67.	A1- jouf university	1	0.29	69.02	
68.	Albany state university	1	0.29	69.31	
69.	Alexion pharmaceuticais inc	1	0.29	69.60	

70.	Amity university	1	0.29	69.89	
71.	Annaba university	1	0.29	70.18	
72.	Antonomous university of san luis potosi	1	0.29	70.47	
73.	applied university	1	0.29	70.76	
74.	Arak university of medical sciences	1	0.29	71.05	
75.	Ayya nadir janaki ammal college	1	0.29	71.34	
76.	Biochemistry institute	1	0.29	71.63	
77.	Bowling green state university	1	0.29	71.92	
78.	Bu-ali sina university	1	0.29	72.21	
79.	Cairo university	1	0.29	72.50	
80.	California state university	1	0.29	72.79	
81.	Cheju nation university	1	0.29	73.08	
82.	Chulalongkor university	1	0.29	73.37	
83.	Children's hospital Oakland research institute	1	0.29	73.66	
84.	College of medical science	1	0.29	73.95	
85.	CSIR central leather research instituts	1	0.29	74.24	
86.	CSM medical university	1	0.29	74.53	
87.	Dar es salaam institute of technology	1	0.29	74.82	
88.	Department of chemical and process engineering	1	0.29	75.11	
89.	Department of chemistry	1	0.29	75.40	
90.	Department of histology and anatomy	1	0.29	75.69	
91.	Department of radiologic technology	1	0.29	75.98	
92.	Depaul university	1	0.29	76.27	
93.	Diponegoro university	1	0.29	76.56	
94.	Doylechnic university	1	0.29	76.85	
95.	Eastern new mexico university	1	0.29	77.14	
96.	Faso university of medical science	1	0.29	77.43	
97.	Federal university of bahia	1	0.29	77.72	
98.	Ferdowsi university of mashhad	1	0.29	78.01	
99.	Harvard medical school	1	0.29	78.30	
100.	Human engineering potytechnic	1	0.29	78.59	
101.	Indian institute of chemical biolosy	1	0.29	78.88	
102.	Indian institute of science education and research	1	0.29	79.17	
103.	Institute do agrobiotechologia del litoral	1	0.29	79.46	
104.	Institute of food science and technology	1	0.29	79.75	
105.	International child development resource center	1	0.29	80.04	
106.	Jiwaji university	1	0.29	80.33	
107.	Justus liebig university	1	0.29	80.62	
108.	Kerman university of medical science	1	0.29	80.91	

109.	Khulna university	1	0.29	81.20	
110.	King saud university	1	0.29	81.49	
111.	Kogi state university	1	0.29	81.78	
112.	Kuban state technological university	1	0.29	82.07	
113.	Lakehed university	1	0.29	82.36	
114.	Lampang rajabhat university	1	0.29	82.65	
115.	Manash university	1	0.29	82.94	
116.	Manimonides medical center	1	0.29	83.23	
117.	Ministry of food processing industries	1	0.29	83.52	
118.	Ministry of health Kurdistan	1	0.29	83.81	
119.	Minufiya university	1	0.29	84.10	
120.	Molecular medicine research center	1	0.29	84.39	
121.	Nambu university	1	0.29	84.68	
122.	Nankai university	1	0.29	84.97	
123.	Nanyang medical college	1	0.29	85.26	
124.	Narsee monjee institute of management	1	0.29	85.55	
125.	National chemical laboratory	1	0.29	85.84	
126.	National research centre	1	0.29	86.13	
127.	North south university	1	0.29	86.42	
128.	Osaka ohtain university	1	0.29	86.71	
129.	Pieta research	1	0.29	87.00	
130.	Rajiv Gandhi technology university	1	0.29	87.29	
131.	Rasi university	1	0.29	87.58	
132.	Research department of zoology	1	0.29	87.87	
133.	San jose state university	1	0.29	88.16	
134.	Sathyabama university	1	0.29	88.45	
135.	Shiraz university of medical sciences	1	0.29	88.74	
136.	Singhania university	1	0.29	89.03	
137.	Suez university	1	0.29	89.32	
138.	Tamil nadu agricultural university	1	0.29	89.61	
139.	Tarbiat modares university	1	0.29	89.90	
140.	Temple university school of pharmacy	1	0.29	90.19	
141.	Thiruvalluvar government arts college	1	0.29	90.48	
142.	University autonama de Coahuila	1	0.29	90.77	
143.	University industry Selangor	1	0.29	91.06	
144.	University kebangsaan	1	0.29	91.35	
145.	University of Zagreb	1	0.29	91.64	
146.	University of agri Faisalabad	1	0.29	91.93	
147.	University of Alabama at sirmingham	1	0.29	92.22	

148.	University of Allahabad	1	0.29	92.51	
149.	University of basrah	1	0.29	92.80	
150.	University of California	1	0.29	93.09	
151.	University of campinas	1	0.29	93.38	
152.	University of cancepction	1	0.29	93.67	
153.	University of Cincinnati	1	0.29	93.96	
154.	University of compania	1	0.29	94.25	
155.	University of delhi south camopus	1	0.29	94.54	
156.	University of fort hare	1	0.29	94.83	
157.	University of Ibadan, Ibadan	1	0.29	95.12	
158.	University of jinan	1	0.29	95.41	
159.	University of Michigan – Dearborn	1	0.29	95.70	
160.	University of Minnesota	1	0.29	95.99	
161.	University of new England	1	0.29	96.28	
162.	University of nigerai	1	0.29	96.57	
163.	University of sebelas maret Surakarta	1	0.29	96.86	
164.	University of sistan and baluchestan	1	0.29	97.15	
165.	University of Sydney	1	0.29	97.44	
166.	University of Szeged	1	0.29	97.73	
167.	University of the republic	1	0.29	98.02	
168.	University of the west indies	1	0.29	98.31	
169.	University of venda	1	0.29	98.60	
170.	University of western Ontario	1	0.29	98.89	
171.	Universities lambung mangkural	1	0.29	99.18	
172.	University hospital of the west indies	1	0.29	99.47	
173.	University of Jordan	1	0.29	99.76	
174.	University of Arkansan formdical science	1	0.29	100.0	

Table 6.7 shows the institution wise distribution of articles in "American journal of biochemistry and biotechnology". It is observed from the table that Dalhousie University Ranks first in order sharing 4.64 % of the total publication of research articles in source journal. It is followed by University putral Malaysia 4.35%, Taif University, King Khalid University 2.90% Benha university ,Jilin University 2.61%, University of Prishitna 2.32%, of the total research articles published over the study period.

Table 6.8 Country wise distribution of articles

S. No	Rank	Country	No. of contribution	percentage
1.	1	China	46	13.56
2.	2	Egypt	30	8.84
3.	2	India	30	8.84

4.	2	Malaysia	30	8.84
5.	2	USA	30	8.84
6.	3	Saudi Arabia	22	6.48
7.	4	Iran	19	5.60
8.	5	Canada	18	5.30
9.	5	Indonesia	18	5.30
10.	6	Thailand	12	3.53
11.	7	Africa	10	2.94
12.	8	Russia	9	2.65
13.	9	Kosova	7	2.04
14.	9	South America	7	2.06
15.	10	Japan	6	1.76
16.		Germany	5	1.47
17.		Israel	5	1.47
18.		Italy	5	1.47
19.		Bangladesh	4	1.17
20.		France	3	0.88
21.		Iraq	3	0.88
22.		News land	3	0.88
23.		South Africa	3	0.88
24.		Algeria	2	0.58
25.		Austrasia	2	0.58
26.		Clevedna	2	0.58
27.		England	2	0.58
28.		Europe	2	0.58
29.		Jamaica	2	0.58
30.		Marshall	2	0.58
31.		Pakistan	2	0.58
32.		Spain	2	0.58
33.		United kingdom	2	0.58
	Total		345	100

Table – 6.8 Show that country wise distribution of articles published during the study period. Out of 345 total publication, majority 46 articles contributed by China with 13.56% and it is followed by USA,India ,Malaysia ,Egypt (8.84%), Iran (5.60%) Canada (5.30%)

Table 6.9 Bibliographical wise distribution of citations

S. No	Forms of documents	Total citation	Percentage
1.	Journal	11156	94.09
2.	Book	418	3.57
3.	Conference Proceeding	137	1.16
4.	Thesis	14	0.11
5.	Report	19	0.16
6.	Year book	3	0.02
7.	Symposium	1	0.008
8.	Hand book	2	0.01
	Total	11750	100

Table 6.9 shows the bibliographical wise distribution of citation. Citation were divided in to the following categories namely journal, book, conference proceeding, thesis, Report, Project, Symposium. Hand book. Though various other forms were present but the convenience they were merged in to the above limited numbers. Table 8 represents the ranking list of the cited documents. It has been seen that journals are predominantly in all the years followed by books. Out of the total citation, journals constitute (94.09%) whereas books constitute only 3.57%.

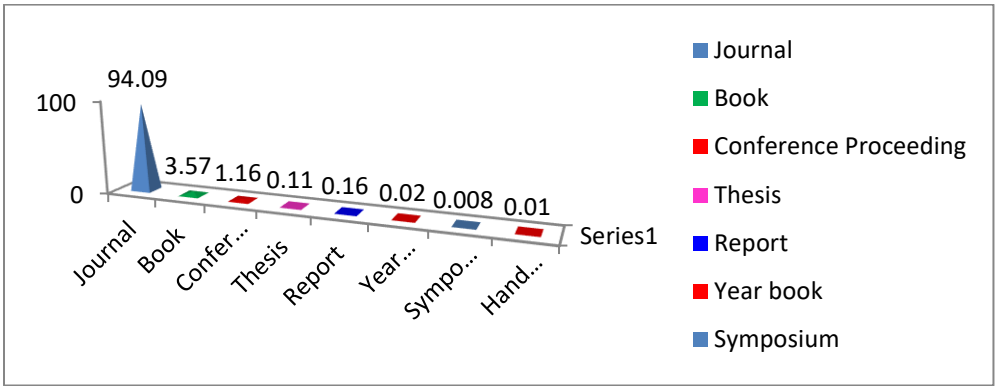

Table 6.10 Years wise distribution of citation

S. No	Vol. No	Year	Number of Citation	Percentage	Cumulative no. of Citation	Percent of Cumulative Citation
1.	4	2008	693	5.65	693	5.65
2.	5	2009	788	6.42	1,481	12.07
3.	6	2010	928	7.56	2,409	19.63
4.	7	2011	986	8.03	3,395	27.66
5.	8	2012	1046	8.53	4,441	36.19
6.	9	2013	1358	11.08	5,799	47.27
7.	10	2014	1468	11.97	7,267	59.24
8.	11	2015	1556	12.68	8,823	71.92
9.	12	2016	1648	13.45	10,471	85.37
10.	13	2017	1794	14.63	12,226	100
Total			12,265	100		

Table 6.10 shows that the Year wise distribution of citations. Citation per year is varing form year to year. The higher number of citation per articles available in the year of 2017 and lowest number of citation available is in the year 2008.

Table 6.11 Average length of article (2008-2017)

Year	No. of Articles	Cumulative no. of articles	Pages	Cumulative no. of Pages	Average page per articles
2008	55	55	449	449	8.0
2009	32	87	228	677	7.0
2010	35	122	306	983	8.0
2011	23	145	203	1186	8.0
2012	32	177	228	1414	7.0

2013	45	222	458	1872	10
2014	30	252	294	2166	9.0
2015	30	282	227	2393	7.0
2016	33	315	276	2669	8.0
2017	30	345	251	2920	8.0
Total	345	2002	2920	16729	

Table 6.11 Shows that length of articles for the year 2008-2017. It is observed from the table the higher average page per article 9.0 in the year of 2014 and lowest average page per articles is 7.0 in the year of 2009,2012 and 2015.

Table 6.12 Pattern of self citation

S. No.	Subject wise distribution	Number of self citation	Percentage
1.	Animal biochemistry	4	0.72
2.	Plan biochemistry	7	1.27
3.	Molecular	10	1.82
4.	Cell biology	13	2.37
5.	Metabolism	15	2.73
6.	Immunology	17	3.10
7.	Hematology	21	3.83
8.	Enzymologist	23	4.19
9.	Biotechnology	25	4.56
10.	Bioluminescence	26	4.74
11.	Molecular Chemistry	28	5.10
12.	Enzymatic chemistry	29	5.29
13.	Genetic Engineering	31	5.65
14.	Pharmaceuticals	33	6.02
15.	Endocrinology	35	6.38
16.	Neurochemistry	37	6.75
17.	Nutrition	41	7.48
18.	photosynthesis	45	8.21
19.	Environmental	48	8.75
20.	Toxicology	51	9.30
21.	Genetics	53	9.67
	total	548	100

Table 6.12 is indicates self citation used by varies areas “American Journal of Biochemistry and Biotechnology”. It is inferred that Biochemistry and biotechnology researchers used 12,226 citation out of these self citation made by them account to 548 and it takes 4.48% of use total citations.

7. Findings

The findings of the present study lead to the following observations.

- The result shows that there are variation found among the study period and there is no any increasing and decreasing trend from year to year regarding to the articles publication.
- It is found from the study that majority of the papers were more than three authors publication with the percentage of 58.84% during the study period.
- Regarding to ranking of authorship pattern, more than three authors paper occupies the first rank.
- It is found that, out of 345 total articles published during the study period, maximum number of articles (42) published in the subject of Genetics among the different subdivisions of biochemistry and biotechnology research.
- Regarding to institution wise distribution of articles, maximum number of articles are contributed by Dalhousie University, Canada with sharing 4.63 percent of the total publication.
- The findings of country wise distribution of articles shows that out of 345 total articles published during the study period, 46 articles were published by China
- Regarding to bibliographical wise distribution of citation, the highest 94.09 percent of the citations belongs to "Journal" documents.
- The findings of year wise distribution of citation shows that the higher 1794 citations available in the year of 2017 out of 12,265 total citations during the study period.
- It is found that higher average page per articles is 10 in the year 2013.
- Regarding to pattern of self citation, out of 548 self citation, Genetics covered 53 self citation with 9.67 percent.

8. Conclusion

The present study reveals the research trends in the field of biochemistry and biotechnology. It is concluded that most of the research scholar interested to do the collaborative research and it is also found from the study that majority of the articles published in the current topic of Genetics.

Due to inadequate fund allotted by the authority to libraries, this types of study will be a most useful source to select and subscribe journals in the field of biochemistry and biotechnology

Reference

1. Azeta A. A., M. O. Oyelami and C. K. Ayo "Development of an E-Learning Web Portal: The Foss Approach", *The Turkish Online journal of distance education,* 9. 2, (2008): 188-201.
2. Beard, Jill, Dale, Penny and Hutchins, Jonathan "The Impact of E-Resources at Bournemouth University 2004/2006." *Performance Measurement and Metrics*, 8. 1, (2007): 7-17.
3. Kathleen, Bauer and Nisa, Bakkalbasi. (2005). "An Examination of Citation Counts in a New Scholarly Communication Environment", D-Lib Magazine, 11.
4. Kushkowski, J.D. Parsons, K.A. & Wiese, W.H. (2003). "Master's and doctoral thesis citations: Analysis and trends of a longitudinal study", portal: Libraries and the Academy, 3, 459-479. Retrieved September 22, 2003, from http:// muse. jhu. Edu / journals portal_ libraries_ and_ the_ academy I v003 I 3. 3kushkowski. pdf.