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Applied and Environmental Microbiology Journal: A Bibliometric Perception

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Abstract *– This study evaluates the Applied and Environmental Microbiology* Journal (AEMJ). *It is a biweekly peer-reviewed scientific journal published by American Society for Microbiology*. It *was established in 1953 as Applied Microbiology and obtained its current name in 1975. The American Society for Microbiology is the largest single life science, society, composed of over 47,000 scientists and health professionals. ASM's mission is to promote and move forward the microbial sciences. The present bibliometrics study was 15291 scholarly research articles published in 'Applied and Environmental Microbiology Journal, during the period 2001-2015. The collected data were analyzed with the help of 'Bibexcel tool'. The references were collected from Mendeley. The learning also applied statistical tools such as, block wise distribution, Key word wise analysis, Country Collaboration and BRICS country collaboration.*

Keyword - *Bibliometrics, Web of science, Bibexcel, Applied and Environmental Microbiology, Authors productivity.*

I. Introduction

Bibliometric analysis has many applications in the Library and Information Science field in identifying the research trends in the subject, core journals, etc. and there by framing a new subscription policy for tomorrow. These studies will be helpful for librarians to plan a better collection development.

II. Source Journal

Applied and Environmental Microbiology Journal

Applied and Environmental Microbiology Journal is a leading quarterly journal in Asian Journal of Microbiology started publishing since 1953. Applied and Environmental Microbiology (AEM) publishes descriptions of all aspects of applied microbial research, basic research on microbial ecology, and research of a genetic and molecular nature that focuses on

microbial topics of practical value. Research must address salient microbiological principles, fundamental microbial processes, or basic questions in applied or environmental microbiology. Topics that are considered include microbiology in relation to foods, agriculture, industry, biotechnology, public health, plants, and invertebrates and basic biological properties of bacteria, fungi, algae, protozoa, and other simple eukaryotic organisms as related to microbial ecology. Manuscripts should report new and significant findings that advance the understanding of microbiology and upon which other scientists may build. To best serve its readership, the journal must accept only those papers that are most significant to the field of applied and environmental microbiology. Thus, the editors will reject manuscripts that, while scientifically sound, represent only incremental extensions of other studies, are mainly confirmatory, or do not pursue a question in sufficient depth.

Web of Science

Web of Science (Previously known as Web of Knowledge) in an online subscription- based scientific citation indexing service originally produced by the Institute for Scientific Information (ISI) now maintained by Clarivate Analytics (Previously the Intellectual Property and science business of Thomson Reuters), that provides a comprehensive citation search.

Bibexcel

Bibexcel is a versatile bibliometric toolbox developed by Olle Persson. In Bibexcel it is possible to do most types of bibliometric analysis, and Bibexcel allows easy interaction with other software, e.g. Pajek, Excel, SPSS, etc. It is designed to assist a user in analyzing bibliographic data, or any data of a textual nature formatted in a similar manner. The idea is to generate data files that can be imported to Excel, or any program that takes tabbed data records, for further processing.

III. Literature Review

This article aims to reveal the information science and biliometrics literature published, however, only a few relevant scientometrics studies have been covered for reviewing the past literature in the field.

Santosh Kumar Tunga (2013)[1] carried out eighty doctoral dissertations submitted to the Bidhan Chandra Krishi Viswavidyalaya (BCKV) and Uttar Banga Krishi Viswavidyalaya (UBKV), West Bengal from 1991-2010 by the research scholars of horticulture are taken as the as the source materials. A total number of 10845 references were appended to the eighty dissertations, of which, 8437 were journal articles. A study of twenty-year data of journals cited by the horticulture scientists was carried out to examine the applicability of Bradford's law of scattering.

Applicability of Bradford's law was tested. The journal distribution pattern of the horticulture doctoral dissertations does not fit the Bradford's distribution pattern. The distribution of the journals in three zones was made and the number of references in each zone was then estimated.

Gomathi P (2014)[2] the present study is to analyze the SERLS journals of information management (2013) a Bibliometrics study. The bibliometrics is a set of methods to quantitatively analyze academic literature; citation analysis and content analysis are commonly used bibliometrics methods. Although bibliometrics methods are most often used in the field of Library and Information Science. This paper discusses on authorship pattern, institution wise, subject wise, length of articles, number of keywords used and country wise publications.

Pandita Ramesh (2014)[3]conducted a study of DESIDOC Journal of Library and Information Technology (DJLIT) is more than three decades old journals, published in the field of Library and Information Sciences, on a bimonthly basis, by the Defense Science Documentation Centre, New Delhi, India. The journal is enjoying wide readership both at national level. The present Bibliometric study was carried on 366 scholarly research articles published in 'DESIDOC Journal of Library and Information Technology, during the period 2003-2012. The present analysis is mostly confined to examining article distribution patterns of the journal articles, authorship pattern, geographical distribution of authors and citation analysis.

Soumen Teli and Asish Maity (2015)[4] have studied on DECIDOC Journal of Library and Information Technology. The study was fully based on the citation pattern. In the authorship pattern wise analysis maximum of the articles written from single author were 290 (38.11%), followed by two authors 206 (27.07%), Institution name and Website 134 (17.61%), three authors 81 (10.64%), four authors 21 (2.76%), five authors 13 (1.71%), more than seven 10 (1.31%), seven authors 4 (0.53%) and the six authors written only 2 (0.26%) of the papers. In distribution of cited references according to type of publications analysis wise maximum of the citation acquired in the type of references in Journal articles were 466 (61.24%) its occupied the first rank compare to other. In this investigation proved that since India being the host country of the journal as 88.61% published by the journal enjoys the utmost contribution in a lot of ways.

Rajev MKG and Saju Joseph (2016)[5] has analyzed about Malaysian journal of library and information science in single journal study based bibliometric analysis. The period of 2007 to 2013 and expose the results for the publications through bibliometric analysis. The study deals that 142 articles published in the journal for the period. These relevant records were downloaded from the MJLIS websites. Its shows that maximum of articles have got a length of 11-20 pages. The

percentages of multiple authored articles were given to increase as 14% during (1996-2000). Majority of the articles were authored and co-authored by Malaysian authors 56.

Harish Kumar Sahu (2017)[6] this study was discussed on an attempt has been made to investigate the 'Asian Journal of Management' for the duration of the period of 2010 to 2017. This study examination the year and volumes – wise distribution wise references, and country wise distribution of articles, forms of cited documents, authorship patterns of research productivity, single and multi authors of research contributions has establish that the production of articles to Asian Journal of Management were not from in India but also foreign countries. In the investigation of the study having 8 volumes.

IV. Objectives of the Study

The present study intends to analyze the publication trends in AEMJ during the period 2001 to 2015. The key objectives of the study are:

1. To study the block – wise temporal Evolution of Infertility Literature
2. To sketch the Growth of Literature – Time Serious Analysis
3. To examine the Prolific Joint authors
4. To study the Indian authors Collaboration
5. To observe the H-Index level of most Prolific authors
6. To assess the Activity Index of Indian Contribution
7. To study the Annual Relative of Growth and Annual Growth Rate of BRICS countries
8. To analyze the BRICS Countries Collaboration
9. To observe the Zipf law wise Productivity
10. To analyze the Zipf law of keyword analysis from abstracts
11. To observe the citation per paper and Relative Citation Impact

V. Methodology

The methodology applied in the present study is bibliometic study which is used to detail the bibliographic features of the articles and citation analysis of reference appended at the end of each article, published in the journal of Applied and Environmental Microbiology from 2001 -2015. The data were extracted from web of science database. Then they are tabulated and analysed for making observations. The bibliographic fields were analyzed by normal count procedure and it covers the following items of information like block wise distribution, country wise distribution of documents, Activity Index and Relative Specialization Index. The following succeeding sections were analyses the collected data for this study.

VI. Data analysis and Interpretation

Table: 1 Block – wise Temporal Evolution of Infertility Literature

Blocks	Total number of Publications	%	Cumulative total number of Publications	%
2001-2005	4985	32.60	4985	32.60
2006-2010	5317	34.77	10302	67.37
2011-2015	4989	32.63	15291	100
Total	**15291**	**100**		
Average Publication per block = 15291/3 = 5097				

Above table 1 show that the block wise distribution of Temporal Evaluation of Infertility Literature. Here the majority of the articles were published from the temporal evaluation period of 2006 to 2010 were 5317 (34.77%), followed by 2011 to 2015 is 4989 (32.63%) and the minimum number of records are published from the year of 2001 to 2005 is 4985. The average publication per block is 5097.

Table: 2 Growth of Literature - Time Series Analysis in AEMJ research output

S. No	Year	No. Of Publications	X	X^2	XY
1	2001	847	-7	49	-5929
2	2002	890	-6	36	-5340
3	2003	1033	-5	25	-5165
4	2004	1009	-4	16	-4036
5	2005	1206	-3	9	-3618
6	2006	1088	-2	4	-2176
7	2007	1069	-1	1	-1069
8	2008	1036	0	0	0
9	2009	1043	1	1	1043
10	2010	1081	2	4	2162
11	2011	1157	3	9	3471
12	2012	1147	4	16	4588
13	2013	981	5	25	4905
14	2014	837	6	36	5022
15	2015	867	7	49	6069
	Total	15291		280	73

Source: Web of Science database

Straight line equation is applied to arrive at estimates for future growth under the Time Series Analysis.

Straight Line equation Y c = a+bX

a = $\frac{\sum Y}{N} = \frac{15291}{15}$ = 1019.4

b = $\frac{\sum XY}{\sum X^2} = \frac{73}{280}$ = 0.26

Estimated literature in 2020 is when X = 2020 – 2008 = 12

= 1019.4 + 0.26x12

= 1019.4 + 3.12

= **1022.52**

Estimated literature in 2025 is when X = 2025 – 2008 = 17

= 1019.4 + 0.26x17

= 1019.4 + 4.42

=**1023.82**

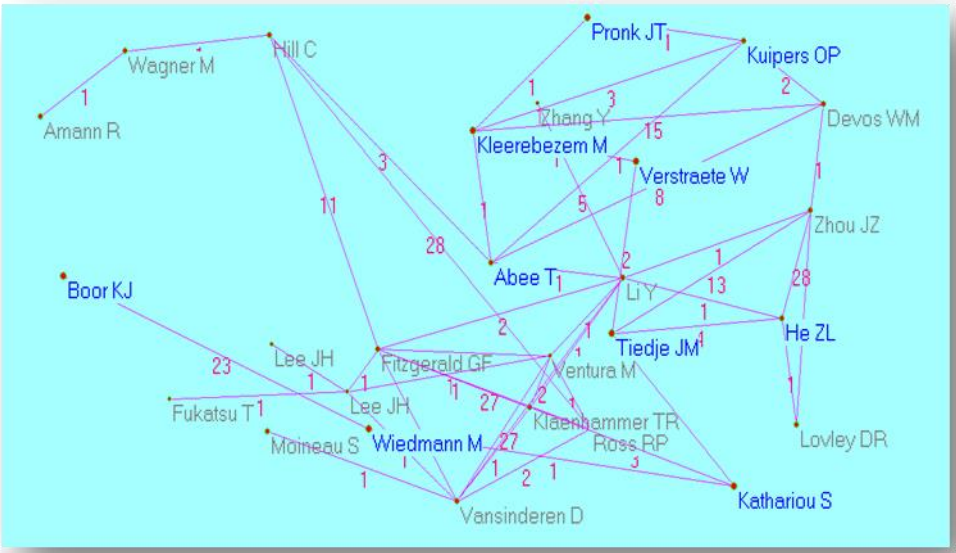
The predicted value of literature output for the year 2020 is 1022.52 and the predicted literature output for the year 2025 in 1023.82.

The inference from the calculations proved that the affirmative growth at the research literature output of Applied and Environmental Microbiology Journal research.

Table: 3 Prolific Joint Authors of AEMJ research output (Top 10)

S. No	Prolific Joint Authors		Collaborative records
1	He ZL	Zhou JZ	28
2	Hill C	Ross RP	28
3	Vansinderen D	Ventura M	27
4	Fitzgerald GF	Ross RP	27
5	Fitzgerald GF	Vansinderen D	26
6	Boor KJ	Wiedmann M	23
7	Devos WM	Kleerebezem M	15
8	Tiedje JM	Zhou JZ	13
9	Fitzgerald GF	Hill C	11
10	Fitzgerald GF	Ventura M	10

Figure: 3.1 – Prolific Joint Authors of AEMJ research with Pajek Picture



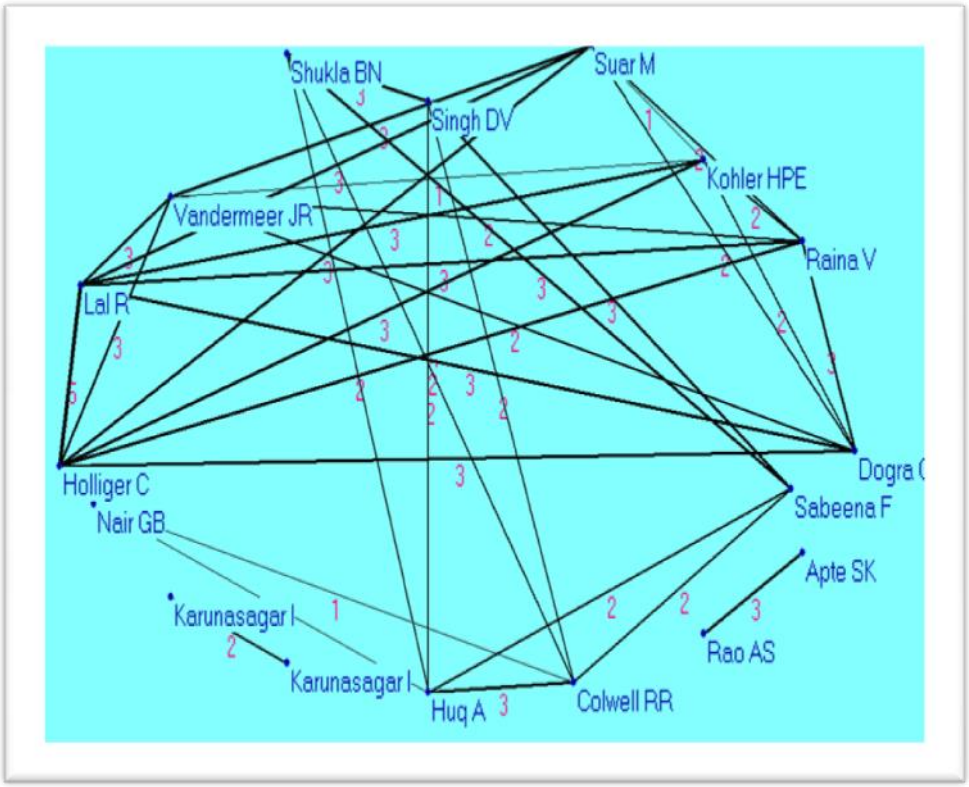
This table 3 and Figure 3.1were represented by the prolific joint authors in top forty nine authors. Here maximum of the 28 records is collaborating and written in two authors, only their namely He ZL and ZhouJZ. This is only placed on the first level compare to other collaboration.

Table: 4 Indian authors Collaboration of AEMJ research

Collaborative Authors		Collaboration Records
Holliger C	Lal R	5
Holliger C	Vandermeer JR	3
Shukla BN	Singh DV	3
Holliger C	Suar M	3
Holliger C	Kohler HPE	3
Holliger C	Raina V	3
Lal R	Raina V	3
Lal R	Suar M	3
Lal R	Vandermeer JR	3
Kohler HPE	Lal R	3
Sabeena F	Singh DV	3
Sabeena F	Shukla BN	3
Dogra C	Holliger C	3

Apte SK	Rao AS	3
Suar M	Vandermeer JR	3
Colwell RR	Huq A	3
Dogra C	Raina V	3
Dogra C	Lal R	3
Colwell RR	Shukla BN	2
Kohler HPE	Raina V	2
Colwell RR	Sabeena F	2
Raina V	Suar M	2
Raina V	Vandermeer JR	2
Dogra C	Kohler HPE	2
Huq A	Sabeena F	2
Dogra C	Vandermeer JR	2
Dogra C	Suar M	2
Karunasagar I	Karunasagar I	2
Colwell RR	Singh DV	2
Huq A	Shukla BN	2
Huq A	Singh DV	2
Huq A	Nair GB	1
Colwell RR	Nair GB	1
Kohler HPE	Vandermeer JR	1
Kohler HPE	Suar M	1

Figure: 4.1 - Indian authors Collaboration of AEMJ research with Pajek Picture



Above Table 4 and Figure 4.1 shows that the Indian Collaborative authors details on the Applied and Environmental Microbiology Journal output. Here those tables calculated on top level collaborative authors, 5 collaborated records are written by two collaborative authors namely Holliger C and Lal R. They are only occupied the first place compare to other collaboration.

Table: 5 - H-Index level of most Prolific authors of AEMJ research (Top 10)

Author	All articles	All citations	Citation sum within h-core	h-index	CPP	Rank
Steinbuchel A	66	1519	1032	24	23.02	1
de Vos WM	63	4223	3676	36	67.03	2
van Sinderen D	58	1632	1167	24	28.14	3
Lovley DR	57	5448	5083	35	95.58	4
Fitzgerald GF	56	2332	1917	30	41.64	5
Wiedmann M	55	2335	2025	29	42.45	6
Hill C	53	1977	1716	27	37.30	7
Zhou JZ	52	2963	2666	29	56.98	8
Abee T	51	1925	1616	28	37.75	9
Ross RP	50	1760	1483	24	35.2	10

(CPP – Citation Per Publication)

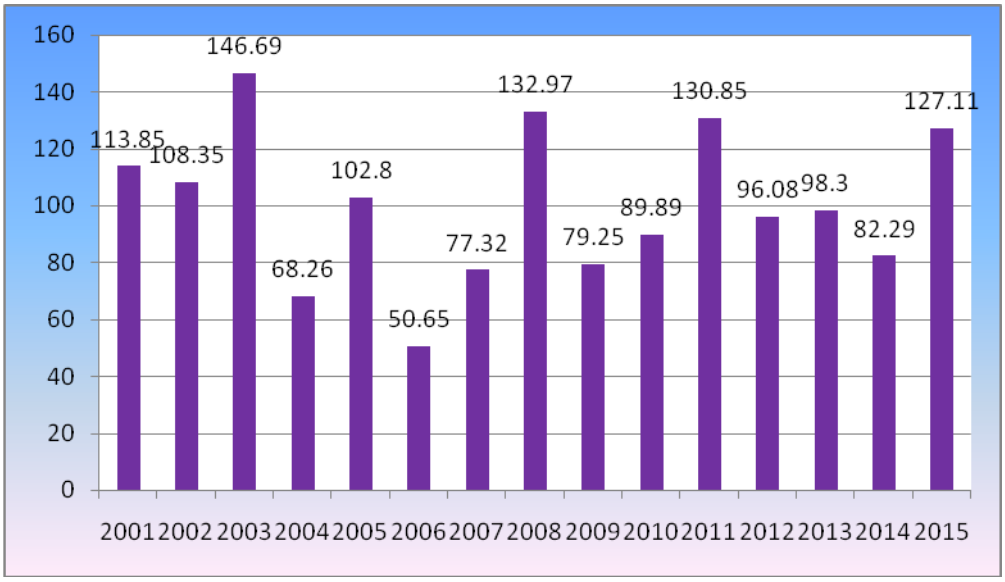
The 10 the majority prolific authors who have contributed are listed in Table 5. Which is the total excellence of Applied and Environmental Microbiology Journal literature produced the study period and these papers cover received a total of 61826 citations.

Steinchel A them to productive author also ranks first in terms of the total amount of citations and h-index. However, this is not accurate in the case of supplementary authors. The total numbers of records in listed top 30 authors are 1287, total citation 61826, citation in h-core is 55283, h-index value is 702. CPP value is 48.04.

Table: 6 Activity Index of Indian Publications

Publication Year	Indian Publications	Number of Publications	Activity Index
2001	7	847	113.85
2002	7	890	108.35
2003	11	1033	146.69
2004	5	1009	68.26
2005	9	1206	102.80
2006	4	1088	50.65
2007	6	1069	77.32
2008	10	1036	132.97
2009	6	1043	79.25
2010	7	1080	89.89
2011	11	1158	130.85
2012	8	1147	96.08
2013	7	981	98.30
2014	5	837	82.29
2015	8	867	127.11
Total	**111**	**15291**	

Figure: 6.1 - Activity Index of Indian Publications



Activity Index (AI) for India has been designed to analyze how India's research performance changes over dissimilar years. The data reveal that India's effort in Applied and Environmental Microbiology Journal research shows a standard productivity than the world's average. Activity Index ranges between from 50.65 to 146.69. The Activity Index (AI) was stealing a look in 2003 (146.69) and the lowly in the year 2006 (50.65). Further, it was observed that the Activity Index (AI) has reflected a variation trend during the study period (Figure 6.1). Only seven years, i.e. 2001, 2002, 2003, 2004, 2008, 2011 and 2015 it is greater than 100. It indicates that the activity of Applied and Environmental Microbiology research gaining momentum since 2003.

Table: 7 Annual Ratio of Growth and Annual Growth Rate of BRICS Countries

S. No	Publication Year	Records	Percent	ARoG	AGR
1	2001	33	2.68	1	1
2	2002	37	3.01	1.121:1	0.121
3	2003	54	4.39	1.459:1	0.459
4	2004	31	2.52	0.574:1	0.011
5	2005	55	4.47	1.774:1	0.774
6	2006	49	3.98	0.890:1	-0.109
7	2007	64	5.20	1.306:1	0.306
8	2008	54	4.39	0.843:1	-0.156
9	2009	85	6.90	1.574:1	0.574
10	2010	101	8.20	1.188:1	0.188
11	2011	110	8.94	1.089:1	0.089
12	2012	132	10.72	1.200:1	0.200
13	2013	129	10.48	0.977:1	-0.023

14	2014	137	11.13	1.062:1	0.020
15	2015	160	13.00	1.168:1	0.168
Total		**1231**	**100**	**1.148:1**	**0.241**

(ARoG – Annual Ratio of Growth, AGR - Annual Growth Rate)

Table 7 displayed the Annual Ratio of Growth and Annual Growth Rate of Applied and Environmental Microbiology journal research output during the study period.

Annual Ratio of Growth: This is the ratio between the numbers of publications of current year in relation to the number of publications of current year in relation of the amount of publications of the previous year. ARoG is less than 1 in 2004, 2006, 2008 and 2013 indicating less productivity than that of previous years. It is the least in the year 2004 (0.574) and the most in the year 2005 (1,774). The average ARoG for the period under study is 1.148.

Annual Growth Rate: The highest AGR ranges in the year of 2005 (0.774). AGR ranges from the lowest seen in the year 2013 (-0.023). The average AGR for the period under study is 0.241.

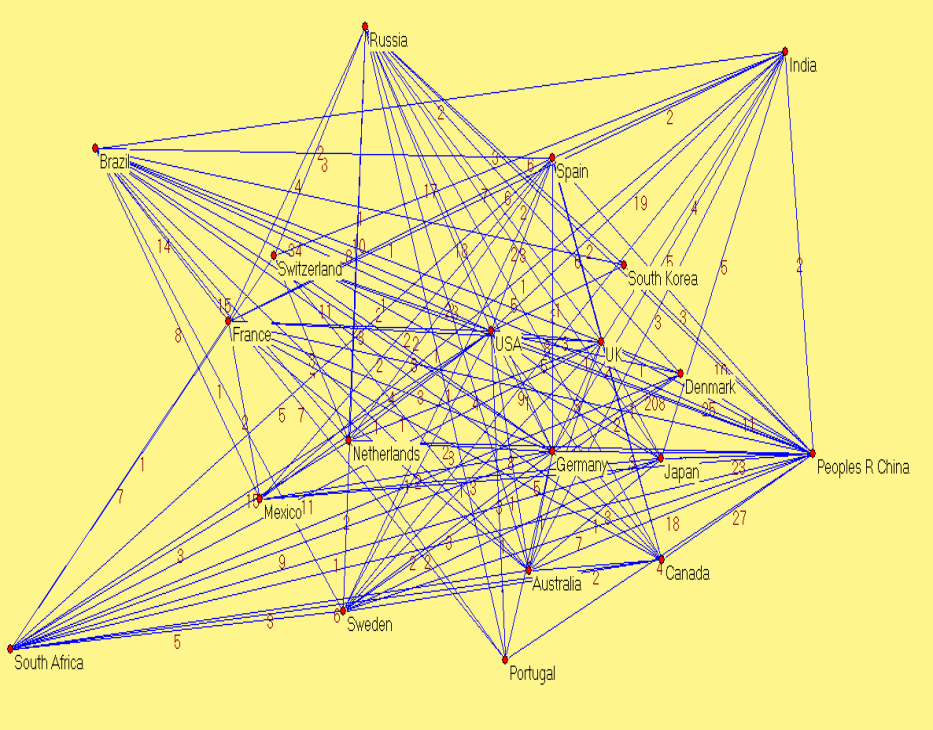
Table: 8 BRICS Countries Collaboration in AEMJ research (Top 20)

This table 8 shows that the Brics country collaboration. Here total numbers of country collaboration records are 2050. Maximum of the country collaboration acquired in the country of Peoples R China were 820 (40.00%), followed by the USA is 290 (14.15%), Brazil is 145 (07.07%), India is 111 (05.41%), South Africa is 85 (04.15%).

Country Name	Records	%
Peoples R China	820	40.00
USA	290	14.15
Brazil	145	07.07
India	111	05.41
South Africa	85	04.15
Germany	77	03.76
Russia	77	03.76
UK	53	02.59
Netherlands	43	02.10
Canada	40	01.95
France	39	01.90
Japan	32	01.56
Australia	29	01.41
Sweden	18	00.88

Spain	17	00.83
Denmark	15	00.73
Switzerland	14	00.68
South Korea	14	00.68
Mexico	14	00.68
Portugal	12	00.59

Figure: 8.1 - BRICS Countries collaboration with Pajek Picture



Zipf Law wise productivity

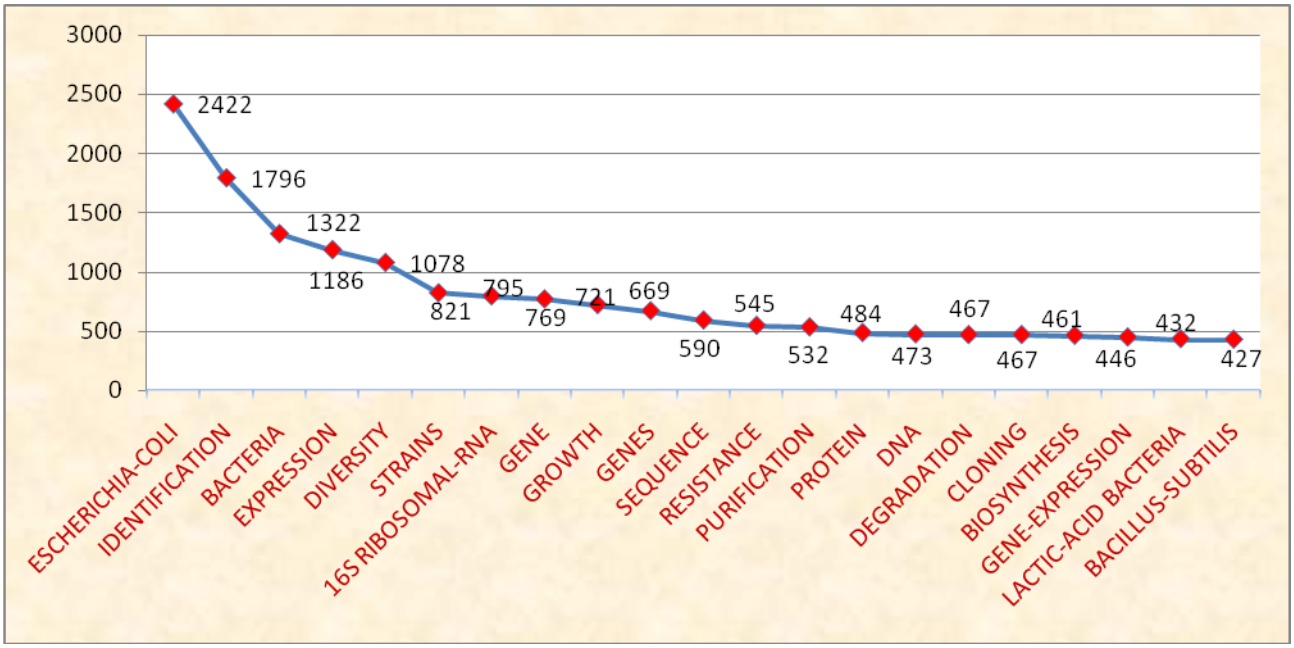
Zipf Law wise productivity was determined through keywords provided by authors. To avoid the long list only keywords counting up to top 20 rank words are displayed in the following table.

Table: 9 Zipf Law of Keyword wise distribution in the AEMJ research output

Rank	Keywords	Number of Keywords	%
1	ESCHERICHIA-COLI	2422	1.75
2	IDENTIFICATION	1796	1.30
3	BACTERIA	1322	0.96
4	EXPRESSION	1186	0.86
5	DIVERSITY	1078	0.79

6	STRAINS	821	0.59
7	16S RIBOSOMAL-RNA	795	0.57
8	GENE	769	0.56
9	GROWTH	721	0.52
10	GENES	669	0.48
11	SEQUENCE	590	0.43
12	RESISTANCE	545	0.39
13	PURIFICATION	532	0.38
14	PROTEIN	484	0.35
15	DNA	473	0.34
16	DEGRADATION	467	0.34
16	CLONING	467	0.34
17	BIOSYNTHESIS	461	0.33
18	GENE-EXPRESSION	446	0.32
19	LACTIC-ACID BACTERIA	432	0.31
20	BACILLUS-SUBTILIS	427	0.31

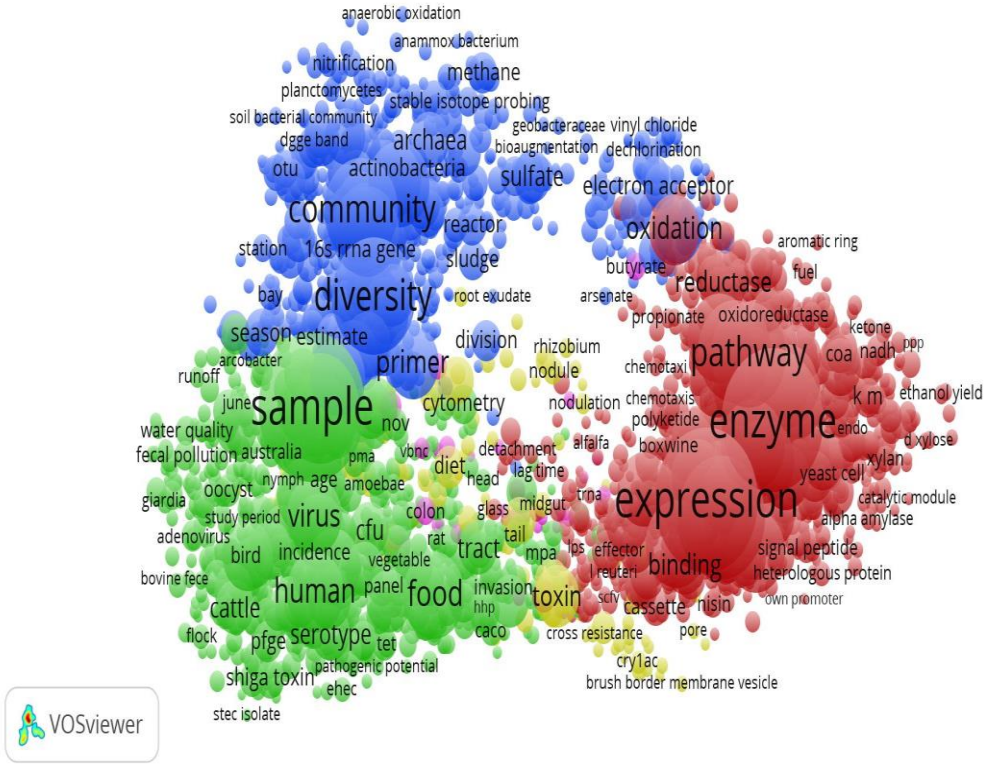
Figure: 9.1 Zipfian Curve of the AEMJ research output



From the table 9 and figure 9.1 It can be noted that the highest number of articles are on Escherichia – Coli 2422 (1.75%) during the study period and it's occupied the first rank. Followed

by Identification 1796 (1.30%) and Bacteria at third position with 1322 keywords (0.96%). Here those total numbers of top 20 keywords are 29261. And the total counts of keywords are 138383.

Figure: 10 Zipf Law of Keyword analyses from Abstracts for AEMJ research output



This picture shows that the keyword wise analysis of the abstract study from AEMJ research contributions. The first cluster depicts the “expression” word is 1759 times occurred comparatively to other keywords from first cluster. Followed by the second cluster has the maximum number if word occurrence in “sample” word the records are 1905.

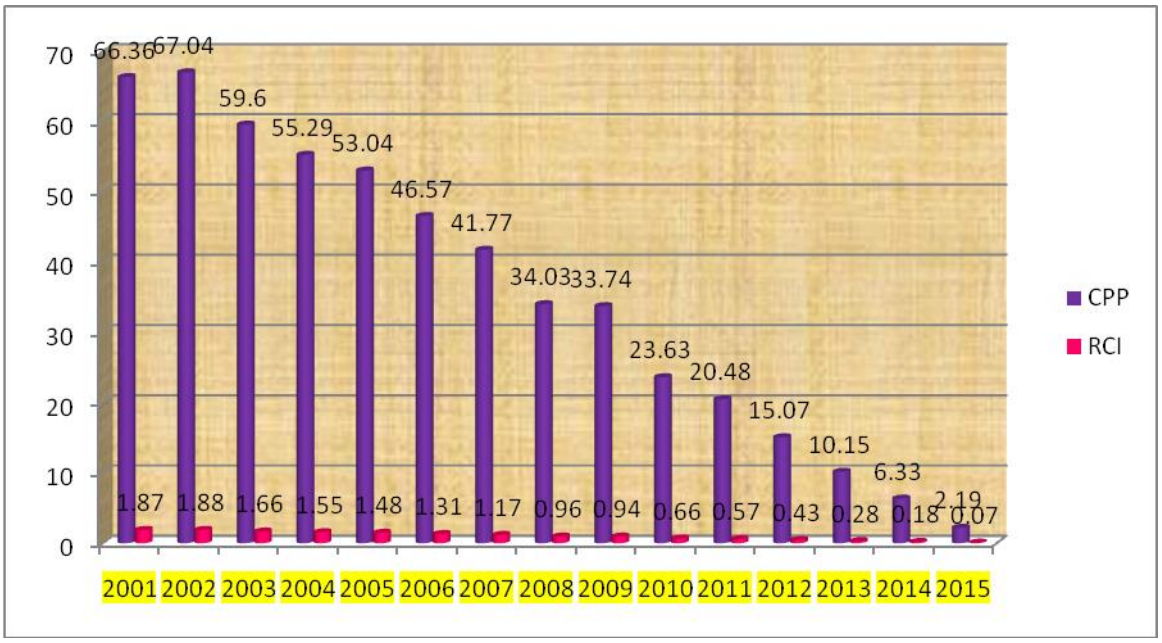
Table: 11 - Citation per Paper and Relative Citation Impact

The year-wise average Citation per Paper (CPP) and Relative Citation Impact (RCI) are calculated and tabulated.

S. No	Year	Number of Articles	%	Total number of Citations	%	CPP	RCI
1	2001	847	5.5	56206	10.3	66.36	1.87
2	2002	890	5.8	59662	10.9	67.04	1.88
3	2003	1033	6.8	61563	11.3	59.60	1.66
4	2004	1009	6.6	55786	10.2	55.29	1.55
5	2005	1206	7.9	63968	11.7	53.04	1.48
6	2006	1088	7.1	50671	9.3	46.57	1.31
7	2007	1069	7.0	44657	8.2	41.77	1.17
8	2008	1036	6.8	35254	6.5	34.03	0.96

9	2009	1043	6.8	35193	6.4	33.74	0.94
10	2010	1080	7.1	25523	4.7	23.63	0.66
11	2011	1158	7.6	23711	4.3	20.48	0.57
12	2012	1147	7.5	17281	3.2	15.07	0.43
13	2013	981	6.4	9953	1.8	10.15	0.28
14	2014	837	5.5	5298	1.0	06.33	0.18
15	2015	867	5.7	1902	0.4	02.19	0.07
Total		**15291**	**100**	**546628**	**100**	**35.75**	**1.00**

Figure: 11.1 - Citation per Paper and Relative Citation Impact



(*CPP - Citation per Paper, *RCI - Relative Citation Impact)

The CPP is at its lowest in the year 2015, where it is 02.19 and it is at its uppermost in the year 2001 where it is 66.36. The CPP is less than 10 during two years of 2014 (06.33) and 2015 (02.19). The CPP is less than 20 during two years of 2012 (15.07) and 2013 (1.15). During the eleven years of 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010 and 2011 the CPP is between below 30 to above 60. The average CPP value is 35.75.

The RCI is at its highest in the year 2001, where it is 1.87 and it is lowly in the year 2015 where it is 0.07. The RCI value of 1 is normal where as the value of greater than 1 is above normal and value less than 1 is below normal. From the table it is inferred that the 2001, 2002, 2003, 2004, 2005, 2006 and 2007 have on top of normal RCI. And remaining 2008, 2009, 2010, 2011, 2012, 2013, 2014 and 2015 have below normal RCI. The average RCI value is 1.00. This strengthens the view that citations hit the utmost after five years and Impact Factor (IF) would be more when calculated for a five year window.

VII. Findings and Conclusion

The publishing trend of a journal totally depends on the productivity and pattern of contributors along with the quality of research. The AEMJ is one such reputed journal in the field of life sciences. The majority of the articles were published from the temporal evaluation period of 2006 to 2010 were 5317 (34.77%). The predicted value of literature output for the year 2020 is 1022.52 and the predicted literature output for the year 2025 in 1023.82. Maximum of the 28 records is collaborating and written in two authors, only their namely He ZL and ZhouJZ. This is only placed on the first level compare to other collaboration. Here those tables calculated on top level collaborative authors, 5 collaborated records are written by two collaborative authors namely Holliger C and Lal R. Steinchel A them to productive author also ranks first in terms of the total amount of citations and h-index. The total numbers of records in listed top 30 authors are 1287, total citation 61826, citation in h-core is 55283, h-index value is 702. CPP value is 48.04. The Activity Index (AI) was stealing a look in 2003 (146.69) and the lowly in the year 2006 (50.65). Further, it was observed that the Activity Index (AI) has reflected a variation trend during the study period (Figure 6.1). Only seven years, i.e. 2001, 2002, 2003, 2004, 2008, 2011 and 2015 it is greater than 100. It indicates that the activity of Applied and Environmental Microbiology research gaining momentum since 2003. The average ARoG for the period under study is 1.148. The average AGR for the period under study is 0.241. Maximum of the country collaboration acquired in the country of Peoples R China were 820 (40.00%). This study can be noted that the highest number of articles are on Escherichia – Coli 2422 (1.75%) during the study period and it's occupied the first rank. The first cluster depicts the "expression" word is 1759 times occurred comparatively to other keywords from first cluster. The average CPP value is 35.75.The average RCI value is 1.00.

VIII. References

- Santosh Kumar Tunga (2013). Application of Bradford's Law of Scattering to the Horticulture Literature: A Citation Study of Doctoral Dissertations 1991-2010, SRELS Journal of Information Management, 50 (3), 305-316

- Gomathi, P (2014). SERLS Journal of Management: A Bibliometrics Study, *Asian Journal of Information and Technology*, 4 (2), 1-4

- Pandita, Ramesh (2014). DESIDOC Journal of Library and Information Technology (DJLIT): A Bibliometric Study (2003-12), *Library Philosophy and Practice (e-journal)*. Paper 1038.

- Soumen Teli and Asish Maity (2015). DECIDOC Journal of Library and Information Technology: An Analysis of Citation Pattern. *International Journal of Library and Information Studies*, 5 (3), 97-100.
- Rajev MKG and Saju Joseph (2016). A Bibliometric Analysis on Malasian Journal of Library and Information Science, *International Research: Journal of Library and Information Science*, 6(1), 159-174.
- Harish Kumar Sahu (2017). A Bibliometric analysis of research journal – Asian Journal of Management, *Asian Journal of Management*, 8 (4), 1242-1246.
- Devendra Kumar Mishra et.al (2014). Bibliometric Study of Ph.D. Thesis in English, *Global Journal of Academic Librarianship*, Vol 1 (1), 19-36
- Anyi, K.W.U., Zainab, A.N., & Anuar, N.B. (2009). Bibliometric studies on single journals: a review. *Malaysian Journal of Library & Information Science*, 14 (1), April, 17-55.
- Basak, S.C., & Sathyanarayana, D. (2010). Community pharmacy based research activity in India: A bibliometric study of the past ten years. *Southern MED Review*, 3 (1), February, 7-10.
- *Dinesh, G.K. (2007).* Literature on LIS marketing: growth and pattern. *ANNALS of Library and Information Studies*, 54 (1), March, 32-36.
- Doug Way. (2010). The open access availability of library and information science literature. *College & Research Libraries,* 71 (4), July, 302-309
- Egghe, L., Goovaerts, M., & Kretschmer, H. (2008). Collaboration and productivity: an investigation into scientometrics journal and Uhasselt repository. *COLLNET Journal of Scientometrics and Information Management,* 2 (01), June, 83-89.
- Girap, P., Surwase, G., Sagar, A., Kademani, B.S., & Kumar, V. (2009). Publication productivity of the technical physics and prototype engineering division in Bhabha atomic research center. *DESIDOC Journal of Library & Information Technology*, 29 (2), March, 39-54.
- Gupta, B.M., Kumar, S., Sangam, S.L., & Karisiddappa, C.R. (2002). Modeling the growth of world social science literature. *Scientometrics*, 53 (1), 161-164.
- *Hazarika, T., Sarma, D. & Sen, B.K. (2010).* Scientometric portrait of Nayana Nanda Borthakur: a biometeorologist. *ANNALS of Library and Information Studies*, 57(1), March, 21-32.
- Ifeanyi J.Ezema, & Brendan E.Asogwa. (2014). Citation analysis and authorship patterns of two Linguistics Journals. *Portal: Libraries and the Academy*, 14(1), 67-86.

- *Joshi, K., Kshitij, A., & Garg, K.C. (2010).* Scientometric profile of global forest fungal research. *ANNALS of Library and Information Studies*, 57(2), June, 130-139.
- Kademani, B. S., Kumar, V., Sagar, A., & Kumar, A. (2006). Scientometric dimensions of nuclear science and technology research in India: a study based on INIS (1970-2002) database. *Malaysian Journal of Library & Information Science*, 11(1), July, 23-48.
- Kademani, B.S., Surwase, G., Mohan, L., & Kumar, V. (2009). Bhabha scattering: a scientometric view. *DESIDOC Journal of Information Technology*, 29(4), 3-11.
- Kaliyaperumal, K., & Natarajan, K. (2009). Scientometric analysis of literature output on retina. *DESIDOC Journal of Information Technology*, 29(4), 33-6.
- Kumar, M., Ravi, S., & Baskaran, C. (2008). Mapping of tuberculosis research in India: a scientometric approach. *Library Programme*, 28(1), 21-30.