Authorship Pattern on International Journal of Food Microbiology Output during 2007-2016: A Bibliometric Study

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Abstract

Authorship pattern Productivity is one of the important aspects in the Bibliometric analysis. This type of research method is an emerging area of research in the library and information field with a sample of 3544 articles collect from International Journal of Food Microbiology. This study covers to the total number of ten years (2007-2016). This paper discusses on Year wise, authorship patter, citation analysis, publication efficiency index, relative growth rate, and exponential growth rate also. This study provides the insights and development of the journal towards excellence.

Keywords

Bibliometrics; Authors wise distribution; Relative Growth Rate.

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INTRODUCTION

The term "bibliometrics" was first used by Pritchard (1969) in his article "Statistical Bibliography or Bibliometrics" published in the "Journal of Documentation". "Biblio" means book and "Metric" means a scale or measure. Bibliometric means application of statistical studies in library and information science. According to Pritchard (1969), bibliometrics is defined as "the application of mathematics and statistical methods to books and other media of communication." Potter (1981) defines bibliometrics as "the study and measurement of the publication pattern of all forms of written communication and their author"

The International Journal of Food Microbiology publishes papers dealing with all aspects of food microbiology. Articles must present information that is novel, has high impact and interest, and is of high scientific quality. They should provide scientific or technological advancement in the specific field of interest of the journal and enhance its strong international reputation. Preliminary or confirmatory results as well as contributions not strictly related to food microbiology will not be considered for publication. Full-length original research papers, short communications, review articles and book reviews in fields'of bacteriology, mycology, virology, parasitolo gical, and immunology as they relate to the production, processing, service and consumption of foods and beverages are welcomed. Within this scope, topics of specific interest include:

(1) Microorganisms, microbial interactions, microbial ecology of foods, intrinsic and extrinsic factors affecting microbial survival and growth in foods, and food spoilage;
(2) food safety, assurance, food preservation and microbial risk assessment;
(4) food borne microorganisms of public health significance, and microbiological aspects of food borne diseases of microbial origin;
(5) methods for microbiological and immunological examinations of foods, as well as rapid, automated and molecular methods when validated in food systems; and (6) the biochemistry, physiology and molecular biology of microorganisms as they directly relate to food spoilage, food borne disease and food fermentations.

Papers that do not have a direct food or beverage connection will not be considered for publication.

This journal also publishes special issues of selected, peer-reviewed papers from suitable meetings, workshops, conferences, etc, related to the field of food microbiology.

REVIEW OF LITERSTURE

Surulinathi, M et al. (2013)[1] has analyzed the growth and development of green computing, as reflected in publication output covered by Web of Science (WoS) online database during the 1956-2011. Among these 42 countries, Germany has produced 270 (16.24%) articles and it occupies the first place of the European continent. France and Italy have more than 200 articles produced in this field UK and Spain contributed more than 100 articles. 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 and found that 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. Uma and Dhanavadan (2015)[4]. discussed about the published research articles and its citation available in the Indian Citation Index by the authors from University of Madras. It found that the citation during the period 419 citations were made. Among the 419 Citations, 109(26.01%) citations in 2004, 59(14.08%) citation in 2005, 49(11.69%) citations in 2006 and 44(10.50%) citation in 2007 was identified, Uma and Dhanavandan (2015)[6] discussesed about the scientometric analysis for citations and literature growth of the Management Science subject. It includes the year wise publication, to identify, cited and uncited total publications. During the period of 1976-2013 there were 3754 publications were published. The highest numbers of articles were published in the year 2013 that is 600 (15.98%) which is highest of the total publication. It found that only 3 (0.08%) of publications are single authored, 506(13.48%) contributions were contributed by two authors.

OBJECTIVE OF THE STUDY

1. To find out the year wise distribution of articles,
2. To Study of the authorship pattern
3. To Determine the degree of Collaboration,
4. To identify of ranking of authors
5. To Study of the authorship productivity
6. To examine the Relative Growth rate and Doubling time for research output
7. To evaluate the arithmetic mean value

RESEARCH METHODOLOGY AND LIMITATION OF THE STUDY

The data for the study were retrieved from wed of science database, which is a scientific and indexing service maintained by Thomson Reuters. The International Journal of Food Microbiology research output from the year 2007-2016. The present study is based on over all 339 articles appended in Annals of Library and information Studies 10 years. For this study bibliographic detail such as author, document type, collaboration, etc. was analyzed using bibexcel. Bibexcel is a software package used for bibliometric analysis and information visualization. The collected data were analyzed with the bib excel software, Pajek, Manual, Microsoft Excel Sheet and presented in the form of tables.

DATA ANALYSIS AND INTERPRETATION

According to the objective of the study, analysis and findings of the study are outline below.

Table 1: Year wise distribution of articles

S. No	Year	Records	%
1	2007	376	10.61
2	2008	385	10.86
3	2009	343	9.68
4	2010	384	10.84
5	2011	347	9.79
6	2012	350	9.88
7	2013	319	9.00
8	2014	336	9.48

9	2015	368	10.38
10	2016	336	9.48
Total		3544	100

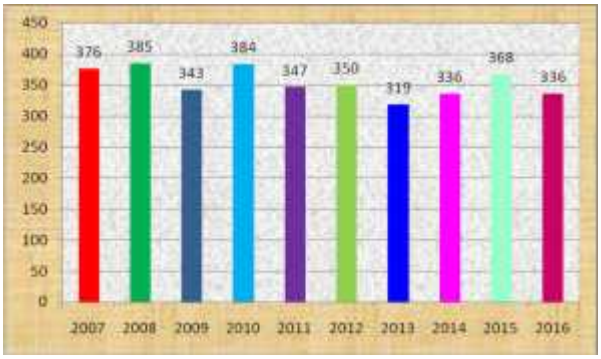


Figure -1 Year wise Distribution of Articles

Table 1 and figure 1 shows that year wise distribution of publication on International Journal of Food Microbiology research output in the year of 2007 to 2016 (10 years) a total of publications 3544 were published. The highest number of publications 385 (10.86%) in the year 2007 followed by 2010 i.e. 384 (10.84%) followed by 2007 i.e. 376 (10.61%) followed by 2015 i.e. 368 (10.38%). The lowest number of publications 319 (9.00%) in the year 2013. The study reveals that the majority of the articles published in the year of 2007,385 (10.86%).

Table 2: Authorship pattern of Publication

S. No	Authors	No. of. Publications	%
1	Single author	70	1.98
2	Two authors	282	7.96
3	Three authors	504	14.22
4	Four authors	655	18.48
5	Five authors	709	20.01
6	Six authors	546	15.41
7	Seven authors	302	8.52
8	Eight authors	222	6.26
9	Nine authors	98	2.77
10	Ten authors	75	2.12
11	Above ten authors	81	2.29
Total		3544	100

Table 2 examine that the year wise authorship pattern. Among this authorship pattern, higher level papers is five authors 709 (20.01%), followed by four authors the value 655 (18.48%), three authors were 504 (14.22%), seven authors were 302 (8.52%), two authors were 282 (7.96%), eight authors were 222 (6.26%), nine authors were 98 (2.77%), more than ten authors were 81 (2029%), ten authors were 75 (2.12%), single authors 70 (1.98%). This study reveals that the majority of the articles published by five authors 709 (20.01%).

Table 3: Single vs. Multi Authors

S. No	Authorship Pattern	Publications	%	DC
1	Single author	70	1.98	0.98
2	Multiple Authors	3474	98.02	
Total		3544	100	

Table 3 show that the single author Vs multiple authors of International Journal of Food Microbiology research output. For the purpose of analysis, the researchers have classified the study two phase viz., first phase Single author and next phase Multi-authors. It is clear from the following that the Single author records are 70 (1.98%) and multiple authors were 3474 (98.02%). Finally the majority of the articles published in multiple authors in this period from 2007 to 2016.

It was calculated using Subramanian's formula:
C=NM/(NM+NS)

Where C = Degree of Collaboration,
Nm = Number of Multi-authored works
Ns = Number of single-authored works.
It is found that the degree of author collaboration in the International Journal of Food Microbiology,
Where C = Degree of collaboration 3544 (0.98), Nm = Number of multi-authored works 3474, Number of single –authored works 70.

Table 4: Authors Productivity

S. No	Year	No. of Papers	No. of Authors	AAPP	Productivity per Authors
1	2007	376	684	1.82	0.55
2	2008	385	696	1.81	0.55
3	2009	343	705	2.06	0.49
4	2010	384	655	1.71	0.56
5	2011	347	524	1.51	0.66
6	2012	350	852	2.43	0.41
7	2013	319	854	2.68	0.37
8	2014	336	658	1.96	0.51
9	2015	368	951	2.58	0.39

10	2016	336	759	2.26	0.44
Total		3544	7331	20.82	4.93

Notes: Average per Paper (AAPP) = Number of authors/ Number of Papers.

Productivity Per author = Number of Papers/ Number of authors.

Table 4 shows that the data to authors productivity. The total average number of authors per paper is 20.82 and the average productivity per author is 4.93. The highest number of author's productivity 951 was in 2015. The minimum number of author's productivity 524 was in 2011.

Table 5: Relative Growth Rate and Doubling Time of Annals of Library and Information studies Publications

Years	No. of. Publications	Cumulative No. of. Publications	W1	W2	R(a) (W2-W1)	Mean R (a) 1-2	Doubling Time	M Dt (a) 1-2
2007	376	376	-	5.93	-		-	
2008	385	761	5.93	6.63	0.7		0.99	
2009	343	1104	6.63	7.01	0.38	0.32	1.82	1.72
2010	384	1488	7.01	7.31	0.3		2.31	
2011	347	1835	7.31	7.51	0.2		3.47	
2012	350	2185	7.51	7.69	0.18		3.85	
2013	319	2504	7.69	7.83	0.14	0.13	4.95	
2014	336	2840	7.83	7.95	0.12		5.76	4.45
2015	368	3208	7.95	8.07	0.12		5.78	
2016	336	3544	8.07	8.17	0.1		6.93	
Total	3544					0.45		6.17

Table 5 Indicates that the relative growth rates of articles output and also doubling time of publication. It could be observed that the relative growth rates of all source of research output have decreased from 0.7 in 2008 to 0.1 in 2016. The mean relative growth rates for the periods 2006-2015. The study period witnessed a mean relative growth rate of 0.45. The doubling time for publication have increased from 0.99 in 2008 to 6.93 in 2016. The mean doubling time for publications for the periods of 2006-2015 was 6.17.

Table 6: Exponential Growth Rate

S.No	Year	Publications	Exponential Growth Rate
1	2007	376	-
2	2008	385	1.0
3	2009	343	0.89
4	2010	384	1.12
5	2011	347	0.90
6	2012	350	1.01
7	2013	319	0.91
8	2014	336	1.05
9	2015	368	1.09
10	2016	336	0.91
Total		3544	8.88

Table 6 Shows that the Exponential Growth Rate of publication in International Journal of Food Microbiology during the period of 2007-2016 (10 years). The highest growth rate 1.12 was founded during 384 publications. It is also found that the Exponential growth rate was found to be 8.88.

Table 7: Type of document wise distribution of Publications

S. No	Document Type	Records	%
1	Article	3199	90.27
2	Article; Proceedings Paper	184	5.19
3	Review	96	2.71
4	Correction	29	0.82
5	Editorial Material	18	0.51
6	Letter	16	0.45
7	Biographical-Item	1	0.02
8	Reprint	1	0.02
Total		4206	100

Table 7 reveals that the type of document wise distribution of publications. It is an accepted fact that most of the scholarly communication of scientific research is published in articles 3199 (90.27%).

Followed by articles; proceedings paper were 184 (5.19%), review were 96 (2.71%), correction were 29 (0.82%), Editorial Material were 18 (0.51%), letters were 16 (0.45%), Biographical item were 1 (0.02%). reprint 1 (0.02%). Finally, most of the scholarly communication of scientific research is published in articles 3199 (90.27%).

Table 8: Language wise distributions

S. No	Language	No. of. Publication	%
1	English	3544	100
Total		3544	100

The distribution of International Journal of Food Microbiology literature by language is shown in table 8 the scholarly communication is effected through English language in almost all the countries, irrespective of the native language of the subject of International Journal of Food Microbiology which published about 3544 (100 %) of the research output in English. The study concludes that the majority of the articles is published in English Language i.e., 3544 (100%).

Table 9: Arithmetic Mean value on the year wise

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	AM
Records	376	385	343	384	347	350	319	336	368	336	354.4

Table 9 Shows that the arithmetic mean value on the year wise. The average of the arithmetic mean value was 354.4.

FINDINGS AND CONCLUSION

- The study reveals that the majority of the articles published in the year of 2007,385 (10.86%).
- This study reveals that the majority of the articles published by five authors 709 (20.01%).
- The majority of the articles published in multiple authors in this period from 2007 to 2016..
- The minimum number of author's productivity 524 was in 2011.
- The study period witnessed a mean relative growth rate of 0.45. The mean doubling time for publications for the periods of 2006-2015 was 6.17.
- The highest growth rate 1.12 was founded during 384 publications. It is also found that the Exponential growth rate was found to be 8.88.
- Most of the scholarly communication of scientific research is published in articles 3199 (90.27%).
- The study concludes that the majority of the articles is published in English Language i.e., 3544 (100%).
- The average of the arithmetic mean value was 354.4.

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