

CONTENT ANALYSIS OF “WORLD JOURNAL OF MICROBIOLOGY AND BIOTECHNOLOGY”

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Abstract

This paper attempts to highlights the quantitative assessment of status of the Journal by way of analyzing the various features of Journal “World Journal of Microbiology and Biotechnology”. During 2010-2014 a total of 1603 Articles were published in the Journal “World Journal of Microbiology and Biotechnology” by researchers in various countries.

KEYWORDS: Authorship pattern, international collaboration pattern, communication channels.

1 INTRODUCTION

Content analysis is rapidly becoming less of a tool to be used in the experimental manipulation of the communication process. In these instances of experimental studies, systematic changes in content are made and documented through content analysis, and the audiences are observed for the effects of these changes.

The specific role to be played by content analysis in organizing for recall the world’s store of recorded knowledge. Content analysis appears to have two general and major functions. The first is to provide the descriptive abstract of any document at a level and of such a nature as will indicate what information may be found in it. The second is to provide guidelines in transforming document content from one medium to another and in reducing content for ease of bibliographic access.

The “World Journal of Microbiology and Biotechnology” is an international, peer-reviewed journal published monthly that aims to its readers with a unique forum for the exchange and sharing of information in social economics.

2 OBJECTIVES OF THE STUDY

The main objective of the study is to analyze the content of Journal of “World Journal of Microbiology and Biotechnology” and make the quantitative assessment of status of the Journal by way of analyzing the following features of Journal

1. To find out year-wise growth of publications,
2. To find out Geographical distribution of research output,
3. To find out the authorship and collaboration pattern in the publication,
4. To find out the extent of international collaboration,
5. To find out the most productive authors in the field,
6. To find out organization – wise distribution of publication,
7. To find out the channels of communications used by the scientists and
8. To find out the high frequency keywords appeared in the channels of communication.

3 SCOPE & LIMITATION OF THE STUDY

Scope of study is restricted to the “World Journal of Microbiology and Biotechnology” published during 2010 to 2014. The papers presented in the Journal are analyzed using content analysis technique.

The present study is limited to the total numbers of 1603 papers published during 2010 to 2014.

4 HYPOTHESIS OF THE STUDY

The study consists of following hypothesis:

1. Authorship trend is towards multiple authored papers.
2. USA is the high productive country.
3. Majority of the affiliated Institution are from USA.

5 ANALYSIS OF “WORLD JOURNAL OF MICROBIOLOGY AND BIOTECHNOLOGY”

In views of the objectives of the present study, analysis of “International Journal of World Journal of Microbiology and Biotechnology” is presented further (World Journal Of Microbiology And Biotechnology, 2014).

5.1.1 YEAR-WISE PUBLICATION PRODUCTIVITY AND COLLABORATION RATE

The word publication means the act of publishing .Productivity refers to measures of output from production processes, per unit of input. Collaboration is a recursive process

where two or more people or organizations work together toward an intersection of common goals

Table 5.1: Year-Wise Publication Productivity and Collaboration Rate

Year	Single authored publication	Multi authored publication	Total no. of publication	Collaboration Rate
2010	10	273	283	0.96
2011	6	345	351	0.98
2012	5	361	366	0.99
2013	3	258	261	0.99
2014	8	334	342	0.98
Total	32	1571	1603	0.98



Figure 5.1: Year-Wise Publication Productivity and Collaboration Rate

It can be observed from Table No.5.1 & figure No. 5.1 that during 2010-2014 a total of 1603 Articles were published in the World Journal of Microbiology and Biotechnology by researchers in various countries.

5.2 GEOGRAPHICAL DISTRIBUTION OF RESEARCH OUTPUT

Geographical distribution of research output means the article published from different countries. In political geography and international politics, a country is a political division of a geographical entity. Frequently, but not exclusively, a sovereign territory, the term is most commonly associated with the notions of both state and nation, and also with government.

Table 5.2: Country-Wise Distribution of Articles

Sr.No.	Name of The Country	Publications	Percentage
1	China	2901	36.98
2	India	993	12.66
3	Brazil	556	7.09
4	USA	207	2.64
5	Italy	191	2.43
6	Iran	179	2.28
7	Korea	165	2.10
8	Mexico	162	2.07
9	Thailand	153	1.95
10	Japan	150	1.91
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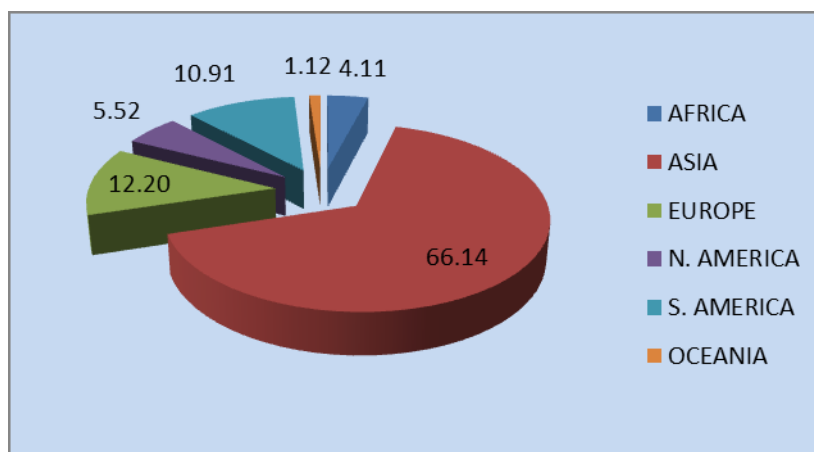


Figure 5.2: Country-Wise Distribution of Articles

It can be observed from Table No 5.2 and Figure No. 5.2 that, there were as many as 89 countries carrying out research and produced 1603 articles. Table no.2 provides ranked List of countries contributing to this field, the number of publications of each country and their share in percentages is the top producing country with 2901 publications (36.98) of the total output. Therefore, the hypothesis, “China is the high productive country” (Hypotheses No.2) is invalid. It can be stated that China being the publishing country the output is more than other country.

5.3 AUTHORSHIP AND COLLABORATION TREND:

Gupta, D.K.⁽⁴⁾ Authorship is an observable phenomenon reflecting the contemporary scholarly practices clearly showing the communication, productivity and collaborative patterns and influences among researchers even though their quantities and qualities are not well understood.

Collaboration in research is said to have taken place when 2 or more persons work together on a scientific problem of project and effort, both physical and intellectual.

Table 5.3: Authorship and Collaboration Trend

Year	Single Author	Number of papers with various authorship								Total Publications
	1	2	3	4	5	6	7	8	more than eight	
2010	10	30	45	55	52	48	25	8	10	283
2011	6	34	62	69	72	50	29	20	9	351
2012	5	33	57	75	66	52	33	20	25	366
2013	3	27	23	59	39	51	28	17	14	261
2014	8	29	51	68	62	48	29	24	23	342
Total	32	153	238	326	291	249	144	89	81	1603
%	2.00	9.54	14.85	20.34	18.15	15.53	8.98	5.55	5.05	100.00

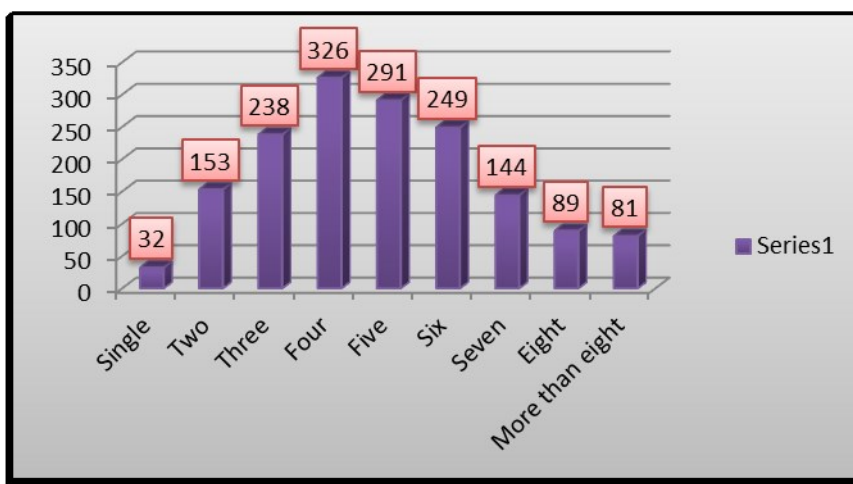


Figure No.5.3: Authorship and Collaboration Trend

It can be observed from Table No.5.3 and Figure No.5.3 that, year-wise authorship and collaboration trend is given in table 3. Authorship trend is towards multiple-authored papers. Single authored papers accounted for 2.00 %. **Therefore, the hypothesis, “Authorship trend is towards multiple authored papers. (Hypothesis No.1) is valid.**

5.4 INTERNATIONAL COLLABORATION PATTERN OF ARTICLES

The International collaborative production of articles is the simultaneous action of many people who try to combine their ideas to make a new one. In fact “collaborative” is the process where two or more people work together toward a common goal and they don’t required leadership.

Table5.4: International Collaboration Pattern of Articles

Year	No. of Countries		Total No. of Publication
	Single	Collaboration	
2010	224	59	283
2011	309	42	351
2012	312	54	366
2013	218	43	261
2014	291	51	342
Total	1354	249	1603
%	84.47	15.53	100.00

The distribution of the collaboration of the various countries and their institutions respectively are given in the further table.

It can be observed from the table no. 5.4 and table no.5.4 that, out of 1603 articles, 249 articles (15.53) are written in collaboration with International Institutions.

The country which has maximum collaboration is China (235), India (95) Brazil (88) USA (81), Thailand (61) Korea (56) Japan (54) Tunisie (50) Iran (44) France (43) Malaysia (37) Italy (36) Spain(33) Germany (31) Chile (29) Canada (28) Turkey (26) Pakistan (23) South Korea (23) Portugal (21) Egypt (18) Mexico (17) UK (16) Argentina (14) Greece (13) each Australia, Bulgaria, People's Republic of China (12)and Republic of Korea (11), each Algeria, Russia,and Saudi Arabia(10) each Nepal, Taiwan, The Netherlands and Vietnam(9) each Morocco, New Zealand,and Philippines (8) Hungary, Singapore, Slovak Republic and Sweden (7) Cuba, Nigeria, South Africa (6) Ukraine(5) Croatia, Czech Republic, Indonesia, Oman and Poland(4) Colombia, Hong Kong, Romania, Serbia, Bulgaria and Switzerland (3) Belgium Denmark, Fiji, Sri Lanka,and United Kingdom(2) each Cambodia, Cyprus, El Salvador, Finland, Ireland, Israel, Norway, Republic of Panama, and Zimbabwe (one) respectively.

5.5 MOST PRODUCTIVE AUTHOR

An author is defined both as "the person who originates or gives existence to anything" and as "one who sets forth written statements" in the Oxford English Dictionary.

Table No.5.5: Most Productive Author

Sr. No.	Name of the Author	Country	No. of Publication	Rank
1	Saisamorn Lumyong	Thailand	9	1
2	Wei Zhao	China	7	2
3	Bin Yao	China	7	2
4	Yan Li	China	6	3

5	Wei Zhang	Australia	6	3
6	Qirong Shen	China	6	3
7	Five Authors Publishing Papers (5x16)		80	4
8	Four Authors Publishing Papers (4x42)		168	5
9	Three Authors Publishing Papers (3x127)		381	6
10	Two Authors Publishing Papers (2x612)		1224	7
11	Single Author Publishing Papers (1x5950)		5950	8
	Total		7844	

It can be observed from Table No. 3.6 that, the most productive authors are Hiroyuki Kitagawa and Saisamorn Lumyong (Thailand) who had the highest number (9) of the publication. Wei Zhao (China) and Bin Yao (China) with 7 Publications each. Six Authors with 3 publications, 17 Authors with 5 publications. four Authors with 168 publications. Three Authors with 381 publications. Two Authors with 1224 publications and 5950 authors with single publication.

5.6 INSTITUTES WISE DISTRIBUTION OF ARTICLES PUBLISHED

Institution is a society or organization for the promotion of science, education etc. ⁽⁵⁾ .An institute is a permanent organizational body created for a certain purpose. Often it is a research organization (research institution) created to do research on specific topics. An institute can also be a professional body. In some countries institutes can be part of a university or other institution of higher education, either as a group of departments or an autonomous educational institution without a classic full university status such as a University Institute.

Table 5.6: Institutes wise distribution of articles

Sr. No	No. of the Institution	No. of Publication	Rank
1	Key Laboratory for Feed Biotechnology of the Ministry of Agriculture, Feed Research Institute, Chinese Academy of Agricultural Sciences, Beijing, 100081, People's Republic of China	22	1
2	Department of Genetics and Plant Molecular Biology and Biotechnology, The University of Lodz, S. Banacha 12/16, 90-237, Lodz, Poland	20	2
3	Jiangsu Province Key Laboratory for Molecular and Medicine Biotechnology, College of Life Science, Nanjing Normal University, No. 1 Wenyuan Road, Nanjing, 210046, Jiangsu, People's Republic of China	18	3
4	Department of Plant Pathology, College of Agronomy and	16	4

	Biotechnology, China Agricultural University, Beijing, 100193, China		
5	Shanghai Key Laboratory of Agricultural Genetics and Breeding, Biotechnology Research Institute, Shanghai Academy of Agricultural Sciences, 2901 Beidi Road, Shanghai, People's Republic of China	15	5
6	Department of Industrial Biotechnology, Faculty of Agro-Industry, Prince of Songkla University, Songkhla, 90112, Thailand	14	6
7	Department of Infectious Diseases, First Hospital of Jilin University, Key Laboratory for Zoonosis Research, Ministry of Education, Institute of Zoonosis, Jilin University, Changchun, 130062, China	13	7
8	State Key Laboratory for Conservation and Utilization of Subtropical Agro-bioresources, Key Laboratory of Ministry of Education for Microbial and Plant Genetic Engineering, College of Life Science and Technology, Guangxi University, 100 Daxue Road, Nanning, 530004, Guangxi, China	13	7
9	Institutions publishing 12 publication (12 x 5)	60	8
10	Institutions publishing 11 publication (11 x 7)	77	9
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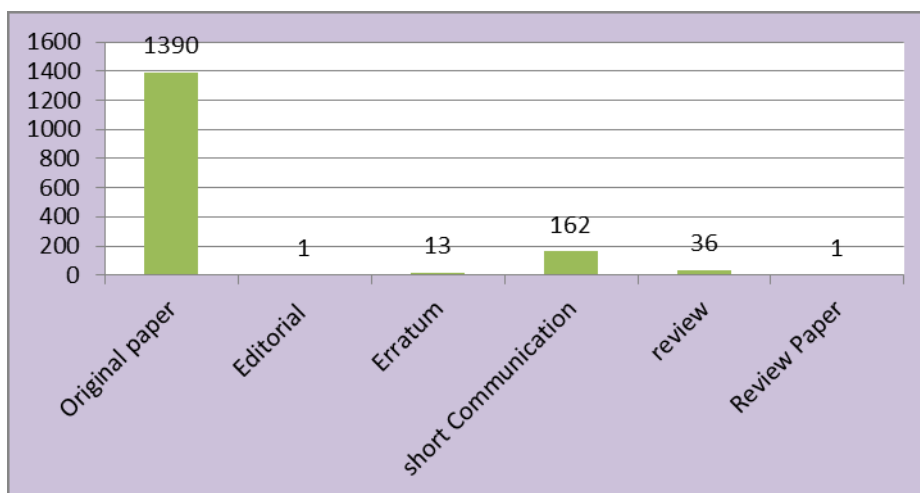
It can be observed from Table No. 5.6 that, there were 7844 organizations involved in research activity. The organizations that have contributed in the publication during 2010-2014. Key Laboratory for Feed Biotechnology of the Ministry of Agriculture, Feed Research Institute, Chinese Academy of Agricultural Sciences, Beijing, 100081, People's Republic of China topped the list with 22 publication followed by 20 to 10 institutions with 11 publications each. 16 institutions with 9 publications, 39 institutions with 8 publications, 63 institutions with 7 publications, 132 institutions with 6 publications, 173 institutions with 5 publications, 173 institutions with 5 publications, 173 institutions with 5 publications, 301 institutions with 4 publications, 385 institutions with 3 publications, 615 institutions with 2 publications and 1313 institutions with Single publication. Therefore the hypothesis **“Majority of the affiliated institution are from China (Hypothesis No.3) is invalid”**.

5.7 DISTRIBUTION OF LITERATURE IN VARIOUS CHANNELS OF COMMUNICATION

Channel, in communications, refers to the medium used to convey information from a sender (or transmitter) to a receiver. Researchers communicated their publication through variety of communication channels.

Table 5.7: Distribution of literature in various Channels of Communication

Sr.No.	Channels of communication	No. of Publication	Percentage
1	Original paper	1390	86.71
2	Editorial	1	0.06
3	Erratum	13	0.81
5	Short Communication	162	10.11
6	Review	36	2.25
7	Review Paper	1	0.06
	Total	1603	100

**Figure No: 5.7 Distribution of literature in various Channels of Communication**

It can be observed from table no. 5.7 and Figure No.5.7 that, 86.71% of the Literature was published in short Communication (10.11%) and the review (2.25%). The total content of World Journal of Microbiology & Biotechnology that is Original Paper Editorial, Erratum, Short Communication, Review, Review Paper etc. is analyzed.

5.8 DISTRIBUTION OF KEYWORDS

“A word occurring natural language text of documents or its surrogate that is considered significant for indexing and information retrieval.”⁽²⁾

Keywords are the words that are used to reveal the internal structure of an author's reasoning. Keywords are one of the best scientometric indicators to understand the grasp instantaneously the thought content of the articles and to find out the growth of the subject field. By analyzing the keywords appeared either on the title or article will help in

knowing in which direction the knowledge grows. Keyword is a word that succinctly and accurately describes the subject discussed in a document".⁽⁶⁾

Table No.5.8: Keywords

Sr. No	Keywords	Frequency	Percentage(%)	Rank
1	Biodegradation	49	0.64	1
2	Purification	28	0.36	2
3	Characterization	24	0.31	3
4	Laccase	24	0.31	3
5	Pseudomonas aeruginosa	24	0.31	3
6	Fermentation	23	0.30	4
7	Saccharomyces cerevisiae	22	0.29	5
8	Antimicrobial activity	21	0.27	6
9	Streptomyces	21	0.27	6
10	Bacterial diversity	20	0.26	7
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It can be observed from Table No. 5.8 that, the high frequency keywords were Biodegradation 49 (0.64), Purification 28 (0.36), Characterization, Laccase and Pseudomonas aeruginosa 24(0.31), Fermentation 23(0.30), Saccharomyces cerevisiae 29(0.29), Table gives a list of keywords appeared in the articles.

6 CONCLUSION

The World Journal of microbiology and Biotechnology retains a European brand identity, a truly international journal, actively encouraging global contributions from scholars across the broad domain of marketing. It welcomes novel and ground-breaking contributions from a wide range of research traditions within marketing, particularly encouraging innovative ideas in conceptual developments and research methodologies. The EJM is not preferentially disposed towards either empirical work or pure theory, nor towards one particular method or approach.

The average numbers of articles published per year were 100. The highest numbers of Articles (366) were produced in 2012. There were as many as 89 countries carrying out research and produced 1603 articles. China is the top producing country with 2901 publications (36.98) of the total output. Authorship trend is towards multiple-authored papers. Single authored papers accounted for 2.00 %. Out of 1603 articles, 249 articles (15.53%) are written in collaboration with International Institutions. The collaboration is observed with two countries and three countries. The most productive author is Saisamorn Lumyong who had the highest number (9) of the publication. There were 7844 organizations involved in research activity. Researchers communicated their publication through variety of communication channels, 86.71% of the Literature was published in Research papers followed by Editorial, Review, Review paper, Erratum, etc. Keywords are one of the best scientometric indicators to understand the grasp instantaneously the thought content of the articles and to find out the growth of the subject field. By analyzing the keywords appeared either on the title or article will help in knowing in

which direction the knowledge grows .The high frequency keywords were Biodegradation 49 (0.64), Purification 28 (0.36), Characterization, Laccase and Pseudomonas aeruginosa 24(0.31), Fermentation 23(0.30), and Saccharomyces cerevisiae 29(0.29), Table gives a list of keywords appeared in the articles.

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