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## A SCIENTOMETRIC ANALYSIS OF RESEARCH JOURNAL OF CHEMISTRY AND ENVIRONMENT (2005-2019)

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## A SCIENTOMETRIC ANALYSIS OF RESEARCH JOURNAL OF CHEMISTRY AND ENVIRONMENT (2005-2019)

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### ABSTRACT

*In this study presents the Scientometric analysis of the Research Journal Chemistry and Environment during the year 2005 to 2019. The study reveals that the total no. of articles 1,470 include 1,408 Research Articles, 45 Reviews, 10 Mini Reviews and 7 Short Communications were published in this journal has been carried out. Fifteen volumes of the journal containing 24 issues from 2005 to 2012 (Quarterly Journal) and it updated to Monthly journal from 2013 to 2019 it containing 84 issues (totally 108 issues) have been taken into consideration for the present study. The number of contributions, authorship pattern, author productivity, average citations, and collaborative papers of all necessary information are compiled, recorded, tabulated and analysed for making observations as indicated in the study.*

**Keywords:** *Chemistry and Environment, Scientometric analysis, Degree of Collaboration*

### INTRODUCTION

The study covers a popular Research Journal of Chemistry and Environment, for this study the data has been taken for 15 years from 2005 to 2019. Scientometric is a scientific discipline which measuring and analysing science. Scientometric is a branch of the science; it includes all quantitative aspects of science of science. It measured the impact of publication. The present research paper aims to explore the characteristics of research publication reflected in various communication channels. In his study, the author have discussed, analysed and calculated different aspects such as collaborative paper, average author paper

## ABOUT THE JOURNAL

Research Journal of Chemistry and Environment (JRCE) was selected for the present research study. The Peer Reviewed, international monthly journal “Research journal of Chemistry and Environment” (E-ISSN Number 2278-4527; Print ISSN Number 0972-0626).

The journal have been collected the research papers, review, mini reviews, short communications in the fields of

- Agriculture and Biological Sciences
- Biochemistry, Genetics and Molecular Biology
- Chemical Sciences
- Civil Engineering
- Earth and Planetary Sciences
- Energy, Sustainability and the Environment
- Environment Science
- Pharmaceutical Sciences etc.



The journal have been published regularly from the year (quarterly journal upto 2012) by SRI ranking of India the journal had SCImago impact factor of 0.636 for the year 2012 assessed from January 2012 to December 2012. The impact factor of this journal for the year 2011 was 0.379; for the year 2010 it was 0.292 and for the year 2009 it was 0.323, this journal is under re-evaluation of SCI in the year 2017. This journal is indexed and abstracted in SCOPUS and Chemical Abstracts

## REVIEW OF LITERATURE

Bibliometric / Scientometric / Citation studies have done earlier by different authors on the different individual journal publications and literature on specific subject's area. The following studies related to the objectives of this study have been reviewed. A number of studies have been carried out that may be useful supplementary analysis for the study presented here

**Rajendran, Jeysankar and Elango (2011)** determine 633 research articles published in Journal of Scientific and Industrial Research. They found majority of papers were by multi authors and india authors. Neha Varma, Kunwar Singh (2017) examined the pattern of authorship and degree of collaboraton in International Journal of Library and Information Science during the period 2010-2016.

**Ravikumar S, Ashutosh Agrahari and Singh S N (2015)** analysed the mapping the intellectual structure of scientometric: a co-word analysis of the journal Scientometrics (2005-2010). During their study period, they described the total of 959 full text articles have been studied to explore the intellectual structure of Scientometrics in the research period.

**Vaishali Kharparde and Shubhangi Pawar (2013)**, In their study period, analysed the sample of 17917 articles were collected from the LISA in the year 2000-2009 and calculated from the study the degree of collaboration is same in all the years and the value is 0.49 during their study period 2000-2009.

**T Thangapandi, Dr M Palaniappan and C VinothKumar (2018)** determine 2814 publications were published during their research period 2008-2017 in the journal Scientometrics. They analysed most of publications 112 (4.0%) were published by Katholieke University Leuven and also examined the keyword 'Science' occupied the first place.

## **OBJECTIVES**

The objectives of the study include

- To assess year wise distribution of articles
- To find out the document wise research journal of chemistry and environment
- To determine the authorship pattern
- To examine the Single Author VS Multi Author
- To know the country wise distribution of articles
- To study the author's productivity
- To analyse year wise degree of collaboration

## **SCOPE AND METHODOLOGY**

In this study analysis the International journal of "Research Journal of Chemistry and Environment" is to collect details from Research Journal of Chemistry and Environment through online. The present study tries to find out the authorship and collaborative pattern distribution of articles of the journal. Data presented through table and graph and was analysed using statistical method. Authorship pattern, Year wise distribution, types of information sources, author productivity etc are collected from the articles published from this research journal during the year 2005 to 2019.

## **LIMITATIONS**

- The present study based on 15 volumes and 108 issues of Research Journal of Chemistry and Environment during the research period 2005-2019
- It generalizations based on the data collected through online for the fifteen years (2005-2019) and it analysing the growth of publications

## RESULTS AND DISCUSSION

The present study has research journal of chemistry and environment from the year 2005-2019. The data were collected through online database, total number of research journal, no. of reviews, mini reviews and short communications were found for the named journal.

## DATA ANALYSIS AND INTERPRETATION

**TABLE-1 YEAR WISE PUBLICATIONS OF RESEARCH JOURNAL OF CHEMISTRY AND ENVIRONMENT**

Year	Total number of Publications	Percentage of Publications
2005	48	3.26
2006	53	3.60
2007	65	4.42
2008	65	4.42
2009	63	4.28
2010	69	4.69
2011	69	4.69
2012	88	5.98
2013	175	11.90
2014	158	10.74
2015	113	7.68
2016	75	5.10
2017	88	5.98
2018	127	8.63
2019	214	14.55
<b>TOTAL</b>	<b>1470</b>	<b>100.00</b>

**Figure-1**

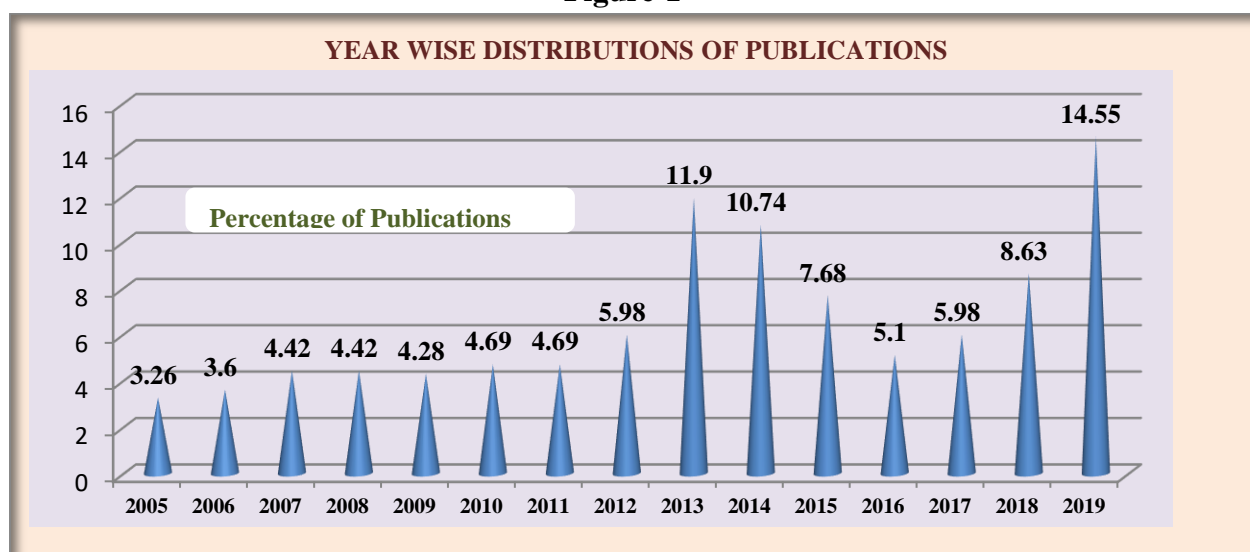


Table-1 and figure-1 portrays the year wise distribution of publications of Research Journal of Chemistry and Environment during the fifteen years (2005-2019). Out of 1470 publications, in

2005, 48 (3.26%) followed by in 2006, 53 (3.60%), in 2007, 65 (4.42%), in 2008, 65 (4.42%), in 2009, 63 (4.28%), in 2010, 69 (4.69%), in 2011, 69 (4.69%), in 2012, 88 (5.98%), in 2013, 175 (11.90%), in 2014, 158 (10.74%), in 2015, 113 (7.68%), in 2016, 75 (5.10%), in 2017, 88 (5.98%), in 2018 127 (8.63%), in 2019, 214 (14.55%). The Research Journal of Chemistry and Environment is the highest number of publications were published in the 2019 i.e., 214 (14.55%) and the lowest number of publications 48 (3.26%) was published in the year 2005.

**TABLE-2 YEAR WISE DISTRIBUTION OF RESEARCH PUBLICATIONS**

Year	Volume Number	Issue Number	Total No. of Publications	Total No. of Research Publications	Percentage of Research Publications (%)
2005	9	1-4	48	45	93.75
2006	10	1-4	53	49	92.45
2007	11	1-4	65	58	89.23
2008	12	1-4	65	64	98.46
2009	13	1-4	63	54	85.71
2010	14	1-4	69	60	86.95
2011	15	1-4	69	64	92.75
2012	16	1-4	88	87	98.86
2013	17	1-12	175	168	96.00
2014	18	1-12	158	156	98.73
2015	19	1-12	113	111	98.23
2016	20	1-12	75	74	98.66
2017	21	1-12	88	88	100.00
2018	22	1-12	127	123	96.85
2019	23	1-12	214	207	96.72
<b>TOTAL</b>			<b>1470</b>	<b>1408</b>	<b>95.78</b>

**Figure-2**

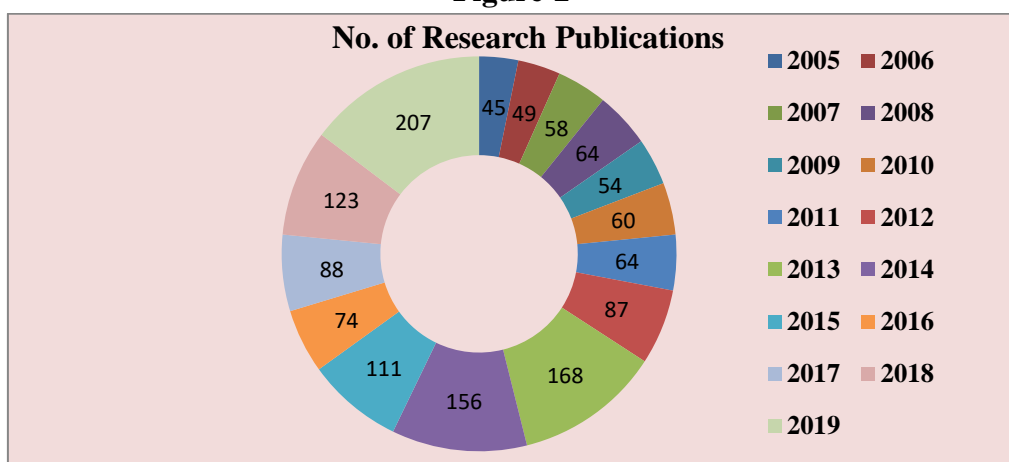


Table-2 and Figure-2 shows the year wise distribution of Research Journal of Chemistry and Environment from the year 2005-2019. The output is totally 1,408 research articles published with the percentage 95.78 of total publications. Out of 1,408 research articles in 2005, 45 out of 48 publications (93.75%) followed by in 2006, 49 out of 53 (92.45%), in 2007, 58 out of 65 (89.23%), in 2008, 64 out of 65 (98.46%), in 2009, 54 out of 63 (85.71%), in 2010, 60 out of

69 (86.95%), in 2011, 64 out of 69 (92.75%), in 2012 87 out of 88 (98.86%), in 2013, 168 out of 175 (96.00%), in 2014, 156 out of 158 (98.73%), in 2015, 111 out of 113 (98.23%), in 2016, 74 out of 75 (98.66%), in 2017, 88 out of 88 (100%), in 2018, 123 out of 127 (96.85%), in 2019 207 out of 214 (96.72%). The highest number of research publications 207 (96.72%) were published in the year 2019 and the lowest number of research publications 45 (93.75%) was published in the year 2005

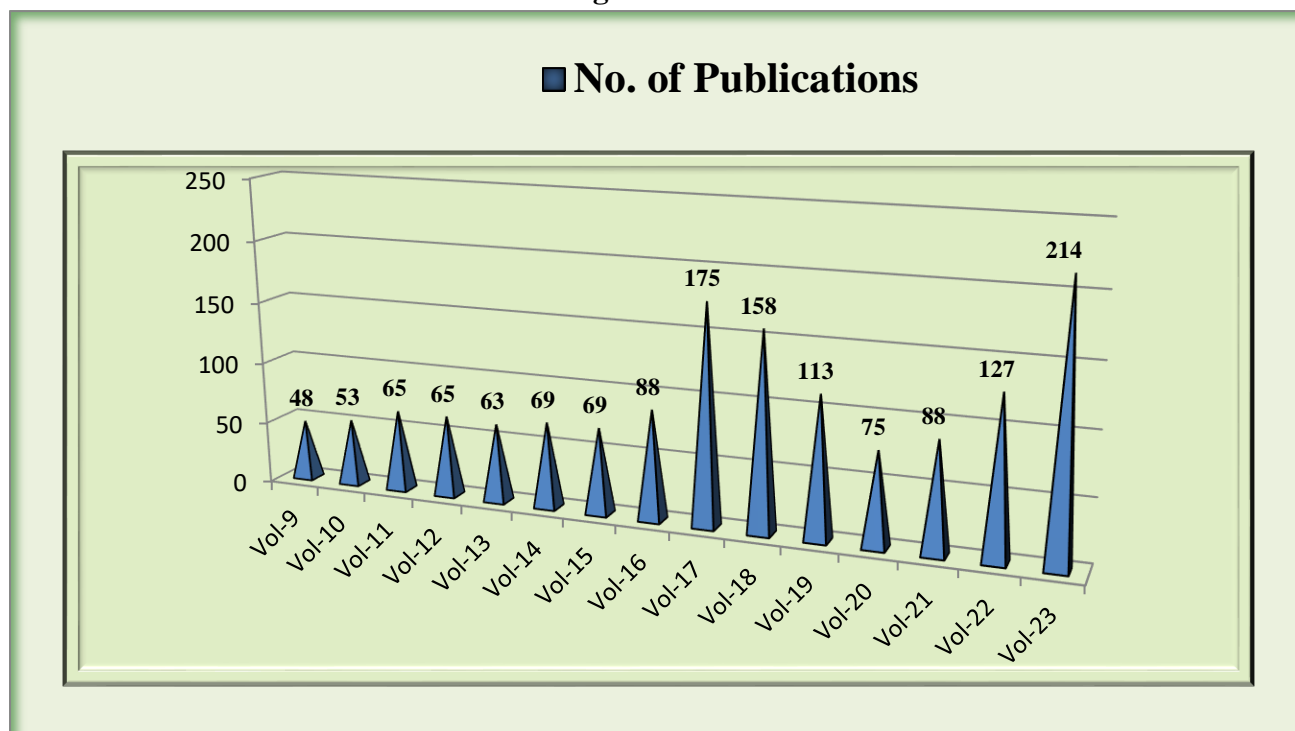
<b>TABLE-3 MONTHLY WISE DISTRIBUTIONS</b>															
<b>Month</b>	<b>Year (2005-2019)</b>														
	<b>2005</b>	<b>06</b>	<b>07</b>	<b>08</b>	<b>09</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>
	<b>Quarterly Journal</b>							<b>Monthly Journal</b>							
<b>Jan</b>	9	18	17	17	15	17	19	16	13	13	12	7	6	8	13
<b>Feb</b>									12	14	12	6	9	9	14
<b>Mar</b>									11	14	11	6	8	8	12
<b>Apr</b>	12	18	16	14	18	17	18	15	13	14	10	8	9	7	16
<b>May</b>									13	13	10	8	8	11	16
<b>Jun</b>									14	11	12	5	6	11	20
<b>July</b>	9	-	16	18	15	18	15	22	11	12	9	6	7	10	19
<b>Aug</b>									14	12	8	6	7	11	23
<b>Sep</b>									16	13	8	5	6	13	22
<b>Oct</b>	8	17	16	16	15	17	17	35	19	14	8	6	7	13	19
<b>Nov</b>									17	15	6	5	7	11	19
<b>Dec</b>									22	13	7	7	8	15	21
<b>Total</b>	<b>48</b>	<b>53</b>	<b>65</b>	<b>65</b>	<b>63</b>	<b>69</b>	<b>69</b>	<b>88</b>	<b>175</b>	<b>158</b>	<b>113</b>	<b>75</b>	<b>88</b>	<b>127</b>	<b>214</b>

Table-3 represents the articles output of Research Journal of Chemistry and Environment in the form of during the period of Twelve months from January to December on the study period of 2005-2019.

<b>TABLE-4 VOLUME WISE DISTRIBUTIONS OF PUBLICATIONS</b>																
<b>Issue Number</b>	<b>Volume Numbers</b>															<b>Total</b>
	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	
<b>1</b>	9	18	17	17	15	17	19	16	13	13	12	7	6	8	13	<b>200</b>
<b>2</b>	12	18	16	14	18	17	18	15	12	14	12	6	9	9	14	<b>204</b>
<b>3</b>	9	-	16	18	15	18	15	22	11	14	11	6	8	8	12	<b>183</b>
<b>4</b>	18	17	16	16	15	17	17	35	13	14	10	8	9	7	16	<b>228</b>
<b>5</b>	-	-	-	-	-	-	-	-	13	13	10	8	8	11	16	<b>79</b>
<b>6</b>	-	-	-	-	-	-	-	-	14	11	12	5	6	11	20	<b>79</b>
<b>7</b>	-	-	-	-	-	-	-	-	11	12	9	6	7	10	19	<b>74</b>
<b>8</b>	-	-	-	-	-	-	-	-	14	12	8	6	7	11	23	<b>81</b>
<b>9</b>	-	-	-	-	-	-	-	-	16	13	8	5	6	13	22	<b>83</b>
<b>10</b>	-	-	-	-	-	-	-	-	19	14	8	6	7	13	19	<b>86</b>
<b>11</b>	-	-	-	-	-	-	-	-	17	15	6	5	7	11	19	<b>80</b>
<b>12</b>	-	-	-	-	-	-	-	-	22	13	7	7	8	15	21	<b>93</b>

Total	48	53	65	65	63	69	69	88	175	158	113	75	88	127	214	1470
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Figure-3



The Table-4 and Figure-3 shows the volume wise dispersal of publications. The highest number of paper were published in the year 2013, 2019 the volume number is 17 (175 publications) and 23 (214 publications) which forms about 11.90% and 14.55% of the total publications and the year 2005, 2006 the volume number 9 and 10 have the lowest publications of total output. It is evident that the table represent the volume number 9 (48 publications) and 10 (53 publications) which forms about 3.26% and 3.60% of the total output. The volume number 20 and the issue number 6,9 and 11 have the lowest publications of only 5 paper published and the volume number 10, issue number 3 have the none of publication of total output.

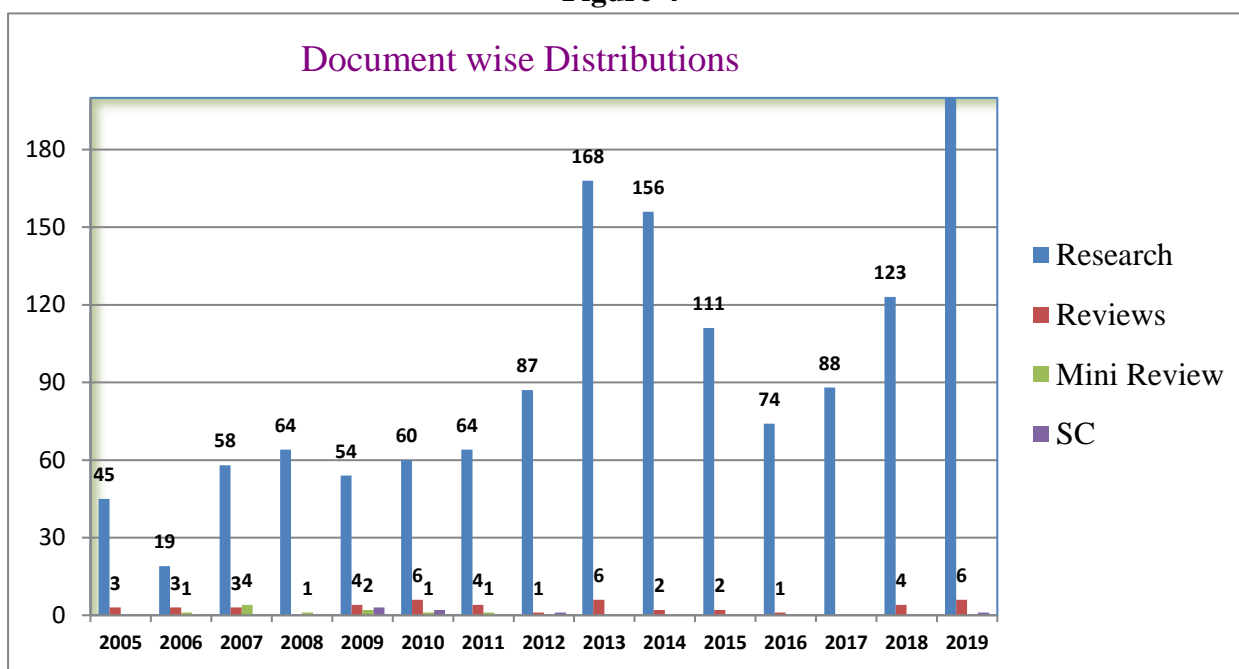
TABLE-5 DOCUMENT WISE DISTRIBUTION

Year	Research Articles	Review Papers	Mini Review Papers	Short Communications	Total
2005	45	3	-	-	48
2006	49	3	1	-	53
2007	58	3	4	-	65
2008	64	-	1	-	65
2009	54	4	2	3	63
2010	60	6	1	2	69
2011	64	4	1	-	69
2012	87	1	-	-	88
2013	168	6	-	1	175



2014	156	2	-	-	<b>158</b>
2015	111	2	-	-	<b>113</b>
2016	74	1	-	-	<b>75</b>
2017	88	-	-	-	<b>88</b>
2018	123	4	-	-	<b>127</b>
2019	207	6	-	1	<b>214</b>
<b>Total</b>	<b>1408</b>	<b>45</b>	<b>10</b>	<b>7</b>	<b>1470</b>
<b>Percentage</b>	<b>95.78%</b>	<b>3.06%</b>	<b>0.68%</b>	<b>0.47%</b>	<b>100%</b>

**Figure-4**



The table-5 and Figure-4 represents the proportion of different types of sources forming the total number of publications. The research articles formed the first 95.78%, the review papers formed the second 3.06%, mini review papers formed the third 0.68% and the Short communications formed the last portion 0.47% of the total output.

**TABLE-6 AUTHORSHIP PATTERN**

Authors	No. of Publications	Percentage (%)
Single	147	10.00%
Double	444	30.20%
Triple	398	27.07%
Multi Authors	481	32.73%
<b>Total</b>	<b>1470</b>	<b>100%</b>

**Figure-5**



The table-6 and Figure-5 exhibits the authorship pattern of the publications. Single author contributions were 147 in number, which formed 10.01% followed by 30.10% double author (442), 27.04% by triple authors (397) and 32.83% by multi authors of the total contributions. Whereas multi authored contributions is the highest number (482) of publications. It can be derived from the table that the more than the three authorship publications dominate over the single authored publications

**TABLE-7 YEAR WISE AUTHORSHIP PATTERN**

Year	Single Author	Double Author	Triple Author	Multiple Author	Total
2005	7	17	13	11	48
2006	6	17	14	15	53
2007	11	12	12	30	65
2008	10	14	23	18	65
2009	6	20	18	19	63
2010	2	21	21	25	69
2011	8	16	22	23	69
2012	13	25	23	27	88
2013	18	43	61	52	175
2014	12	52	45	49	158
2015	14	41	34	24	113
2016	9	22	21	23	75
2017	6	39	19	24	88
2018	12	39	25	51	127
2019	13	66	47	88	214
<b>Total</b>	<b>147</b>	<b>444</b>	<b>398</b>	<b>481</b>	<b>1,470</b>

**Figuer-6**

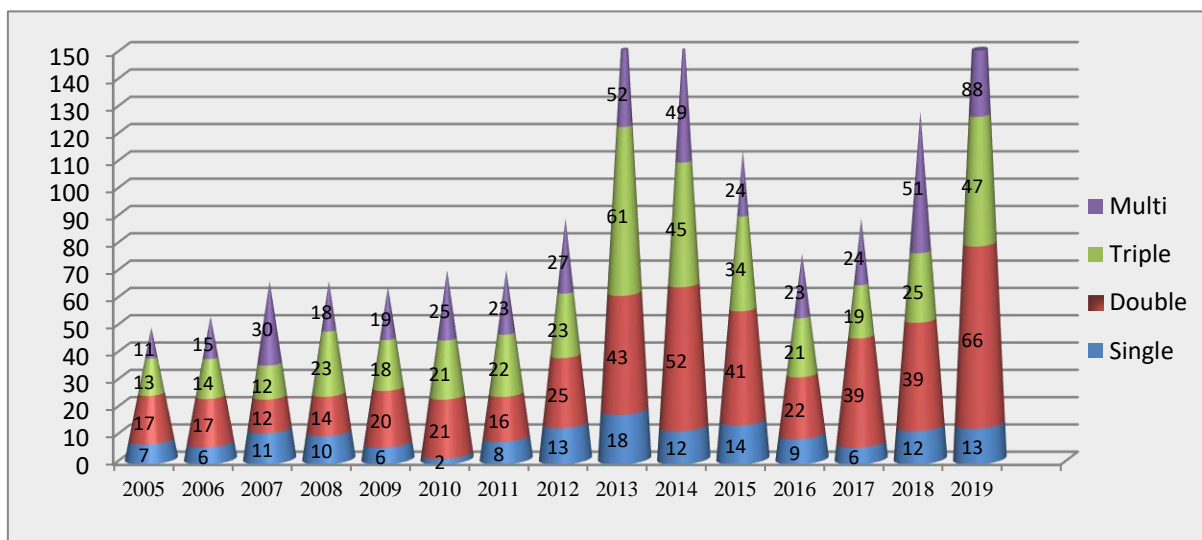


Table-7 and Figure-6 represents the year wise contribution of Research Journal of Chemistry and Environment. Respecting the single authored contributions, the year 2010 (2) have the lowest contributions followed by double authored, triple authored contribution , the year 2007 have 12 contributions both and the multi authored contribution in the year 2005 (11) have the lowest contributions of total output. Regarding Single authored contribution in the year 2013 (18) the year 2019 Double, Triple and Multi authored contribution with 66,47 and 88 respectively have the highest contributions of total output. It can be analysed from the table that the multi authorship dominate the single, double and triple contributions with 481 out of 1,470 publications.

#### DEGREE OF AUTHOR COLLABORATION BY SUBRAMANIAM FORMULA

**TABLE-8 DEGREE OF COLLABORATION**

Year	Single Authors (NS)	Multiple Author (NM)	Total (MN+MS)	DC
2005	7	41	48	0.85
2006	6	47	53	0.88
2007	11	54	65	0.83
2008	10	55	65	0.84
2009	6	57	63	0.90
2010	2	67	69	0.97
2011	8	61	69	0.88
2012	13	75	77	0.97
2013	18	157	175	0.89
2014	12	146	158	0.92
2015	14	99	113	0.87
2016	9	66	75	0.88
2017	6	82	88	0.93
2018	12	115	127	0.90
2019	13	201	214	0.93
<b>Total</b>	<b>147</b>	<b>1323</b>	<b>1470</b>	<b>0.9</b>

The table-8 represents the degree of author collaboration. To calculate the degree of collaboration in quantitative terms, K Subramaniam formula is used

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

Where C is the degree of collaboration

NM is the Number of Multiple Authored Papers

NS is the Number of Single Authored Papers

1323

$$C = \frac{1323}{1323 + 147} = 0.9$$

It is clear from table 7 that multiple authors were more contributed than single authors during the study period. The degree of collaborations lies between 0.83 and 0.97. The mean degree of collaboration is 0.9

### AUTHOR PRODUCTIVITY

The table-9 shows the total average number of author per paper is 2.9 and the average productivity per author is 0.3 of total output. Productivity has been calculated with the following formula

$$\text{Average Authors Per Paper (AAPP)} = \frac{\text{No. of Authors}}{\text{No. of Papers}}$$

$$\text{Productivity Per Paper (PPA)} = \frac{\text{No. of Papers}}{\text{No. of Authors}}$$

**TABLE-9 AUTHOR PRODUCTIVITY**

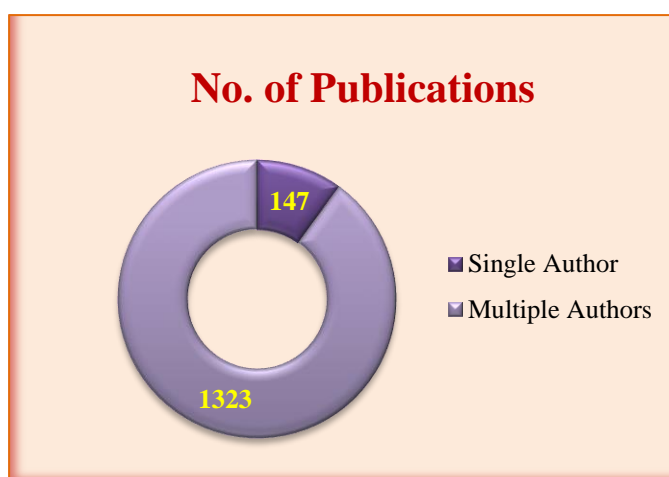
Year	Total No. of Papers	Total No. of Authors	AAPP	PPA
2005	48	132	2.75	0.36
2006	53	152	2.86	0.34
2007	65	221	3.4	0.29
2008	65	194	2.9	0.33
2009	63	195	3.0	0.32
2010	69	230	3.3	0.3
2011	69	232	3.3	0.29
2012	88	242	2.75	0.36
2013	175	546	3.12	0.32
2014	158	468	2.96	0.33
2015	113	303	2.68	0.37
2016	75	222	2.96	0.33
2017	88	259	2.94	0.33
2018	127	401	3.15	0.31
2019	214	731	3.41	0.29

### SINGLE AUTHOR VS MULTIPLE AUTHOR

The Table-10 and Figure-7 represents that the single author VS multiple author of the Research Journal of Chemistry and Environment during the study period 2005-2019. According to the above table most of the publications. For analysed, researchers have classified the study phase viz., the first phase was the single author and the next phase multiple authors. Out of 1,470 publications there are 147 articles published by single and 1323 articles published by multiple authors

<b>TABLE-10 SINGLE AUTHOR VS MULTIPLE AUTHOR</b>		
<b>Authors</b>	<b>No. of Publications</b>	<b>Percentage (%)</b>
Single Author	147	10.00%
Multiple Authors	1323	90.00%
<b>Total</b>	<b>1470</b>	<b>100%</b>

**Figure-7**



## **FINDINGS**

- The publication on Research Journal of Chemistry and Environment during the study period 2005-2019 (15 years ) a total number of publication 1,470 were published
- It is found that, single author formed 147 publications, double 444 and triple formed 398 publications Finally, the highest number of research papers contributed by multi authored 481 publications
- The highest number of publication 214 (14.55%) in the 2019 and the lowest number of publication 48 (3.26%) in the year 2005 out of total publications
- The degree of Collaboration was calculated by K Subramaniam's formula, it is evident from the table during the study period that the mean value of DC is 0.9

## **CONCLUSION**

From the above study of "Research Journal of Chemistry and Environment", concluding results from the analysis of collected data appended to 1,470 articles in 15 volumes are presented in a manner of correspondence. The highest numbers of publications were published in the year 2019 i.e. 214 and the lowest contributions is 48 in the year 2005. The author productivity will

be validated by the formula. The relative growth rate for the total publication has been shown an increasing and decreasing the trend.

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