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EXTRACTA MATHEMATICAE: A SCIENTOMETRIC ANALYSIS

Abstract

Scientometric analysis of 77 articles published in the extracta mathematicae during the year 2007 to 2010 are taken up to observe the distribution of contributions (volume – wise), authorship pattern of contributions (volume – wise), contributions (institutions – wise), types of publications cited, average citation per contribution in each volume, subjectwise distribution of articles. Results indicate that highest number of papers have been written by single authors. The growth and popularity of this journal is found to show an (increase) upward trend.

Keywords

Scientometrics , distribution of contribution, geographical distribution , extracta mathematicae.

1.INTRODUCTION

Scientometrics is a branch of science. Scientometrics deals with evaluation factors like progress, levels of development, relevance, policy in science. Scientometrics is one of the most important measures for the assessment of scientific productions. Macias-Chapula argues that "scientometric indicators have become essential to the scientific community to estimate the state-of-the-art of a given topic" (quoted In Lolis et. al. 2009). Scientometrics is related to and has overlapping interests with Bibliometrics and Informetrics.

Sengupta viewed scientometric as "Organisation, classification and quantitative evaluation of publication patterns of all macro and micro communications along with their authorship by mathematical and statistical calculus."

Broadus presented a historical overview of various definitions of scientometric and proposed an alternate definition. According to him, "Scientometric is the quantitative study of physical published units or of bibliographic units or of surrogates of either." Besides, scientometric analysis aims to integrate the cognitive or intellectual structure of research with a

view to appraise the relations among the authors, institutions, journal articles, and as a means of assisting the peer-review procedure. This study aims to apply the scientometric analysis of the literature output of Indian biophysicst and crystallography Legend Prof. GNRamachandran as a tribute to him as well as to focus on the meticulous and commendable works done by the great Indian genius when the Indian research infrastructure was at infantile stage.

2.SOURCE JOURNAL

The journal Extracta Mathematicae (EM) was created to provide a forum for the timely diffusion of relevant papers in mathematics. To this end, the Journal publishes carefully selected original research papers as well as expository high-level survey articles. The journal Extracta Mathematicae publishes carefully selected original research papers. High-level expository articles of exceptional quality will be considered. The journal emphasizes the publication of papers in the following areas and their interplay:

- 1.functional analysis
- 2.operator theory
- 3.real and harmonic analysis
- 4.commutative algebra
- 5.homological algebra
- 6.non - commutative algebra
- 7.differential geometry and geometric mechanics.

3.OBJECTIVE OF THE STUDY

The objective of the present study were:

1. Yearwise Distribution of The Articles
2. Authorship Pattern of The Articles
3. Average Number of References Per Articles
4. To Study The Subject Coverage of Articles
5. Geographical Distribution of The Articles.

4. SCOPE OF THE STUDY

An attempt has been made to analysis the contributions in 12 issues of 4 volumes of the *extracta mathematicae* in the field of functional analysis, operator theory real and harmonic analysis, cumulative algebra, homological algebra, differential geometry, and non- cumulative algebra during the year from 2007 to 2010.

5. METHODOLOGY

The data pertaining to *extracta mathematicae* regarding 77 contributions made from volume 22 , 2007 to volume 25, 2010. The analysis made an authorship pattern, geographical pattern, citation of publication and number of page of *extracta mathematicae*. The authorship pattern has been analysed by using K. Subramaniam's degree of collaboration in quantitative examined, observed, analysed and tabulated for making observation.

6. DATA ANALYSIS

Table : 1 distribution of contributions (volume – wise)

Table : 1 portrays that out of 77 contributions 29.58 % of them were contributed in 2007 , 2008, 22.08 % of them were published in 2009, and the rest of them were published in the year 2009. It is inferred from the table of distribution of contributions from 2007 to 2010 that the level of the

percentage of distribution has decreased. A notable attribute of the study is that the year 2007, 2008 shows the maximum number of contributions.

Year	Volume no:	No. of issues	No. of contributions	Percentage
2007	22	3	23	29.87
2008	23	3	23	29.87
2009	24	3	17	22.08
2010	25	3	14	18.10
Total		12	77	100

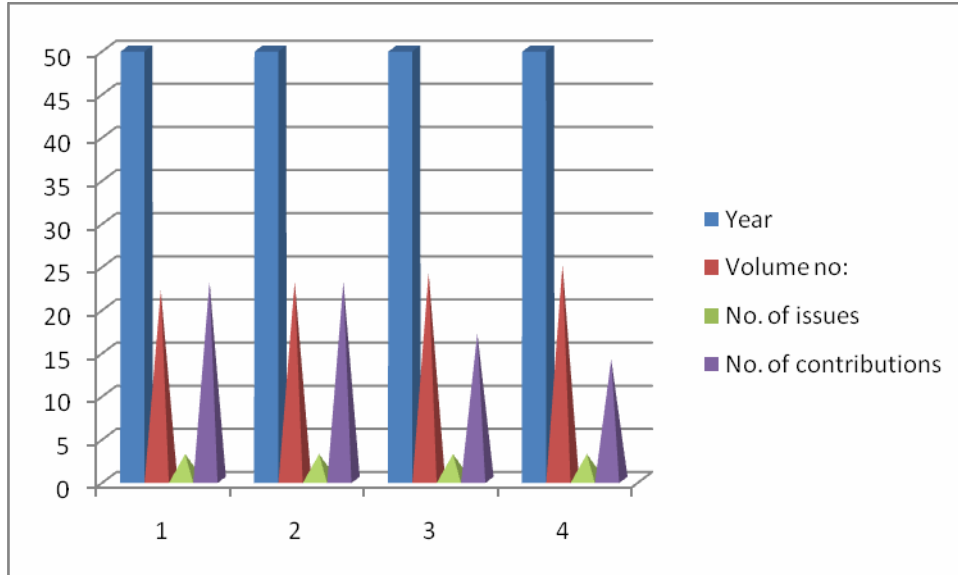


Table : 2 authorship pattern of contributions:

No. of	No. of	Total no. of	Percentage
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Authors	Contribution	Authorship	
Single author	38	38	29.01
Two author	31	62	47.33
Three author	5	15	11.45
Four author	3	16	12.21
Total	77		100

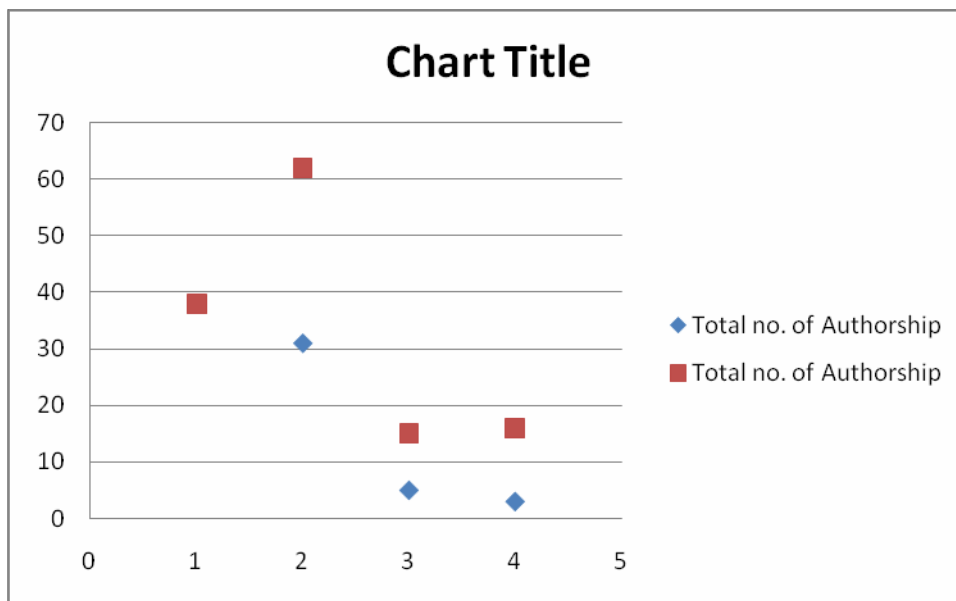


Table 2 explicates the authorship pattern of contribution. Out of 77 contributions a single author has contributed 29.01 % of the total articles, 47.33 % of the contribution were published with two authors, 11.45 % of the contributions were contributed by three authors, 12.21 % of the

contribution were published by four authors. A significant note of the study is that the majority of the articles are contributed by two authors.

Degree of collaboration in the Extracta Mathematicae

The formula given by K Subramanyam is useful for determining the degree of collaboration in quantitative terms. The study followed the same formula which is mathematically put as:

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

Where C = Degree of Collaboration

NM = Number of Multi authored papers

NS = Number of single authored papers.

In the present study

NM = 39

NS = 38

Thus C = **0.51**

Thus the degree of collaboration in **Extracta Mathematicae** is **0.51** which clearly indicates its dominance upon individual contribution.

Table:3 authorship pattern of contribution (volume-wise)

Table 3 depicts the authorship pattern of contributions volume wise. Regarding contributions by a single author volume no: 22 records the highest percentage. Regarding the two author contribution, volume no: 23 shows the maximum percentage. Regarding the three author contribution volume no: 22 depicts the highest percentage. Any how it may be concluded that the single author contributions has the maximum percentage.

Volume no	Single	Two	Three	Four author
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	author	author	author	
22	13	6	3	1
23	9	13	1	-
24	9	6	-	2
25	7	6	1	-
Total	38	31	5	3

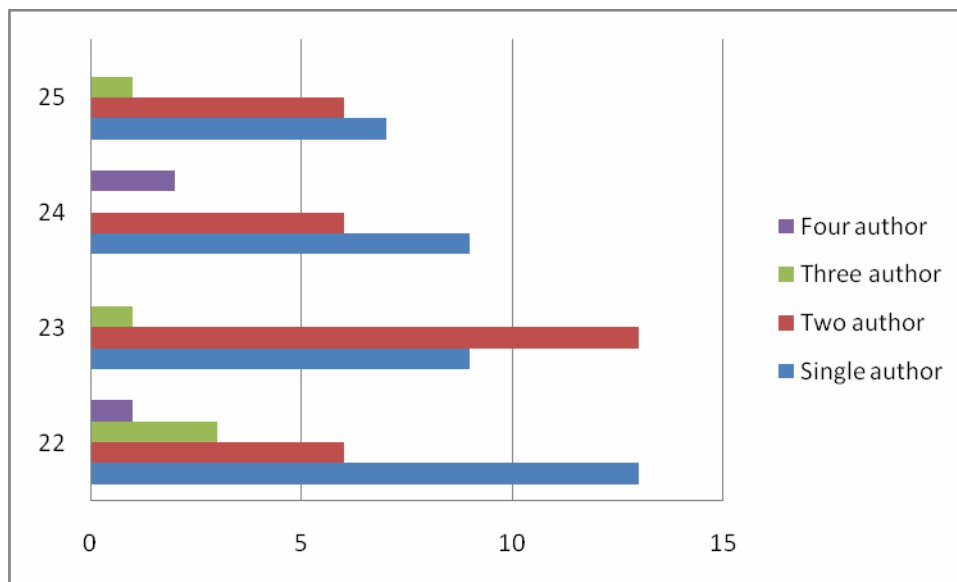


Table : 4 contributors (institution – wise)

Table 4 depicts the geographical distribution of contributions university – wise at the national level, followed by institutions and colleges. It is inferred from the above table that university wise contribution were the maximum.

Volume no	Year	University	Institution	College	Total
22	2007	16	6	1	23
24	2008	13	4	6	23
24	2009	11	4	2	17
25	2010	12	2	-	14
Total		52	16	9	77

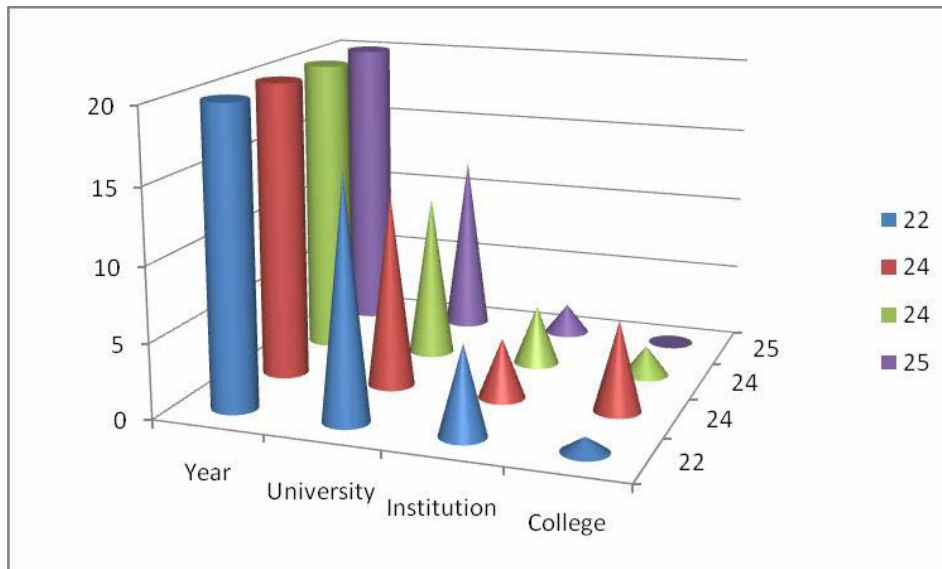


Table : 5 types of publications cited (volume – wise)

Volume No	Books	Journals	Others	Total
22	135	230	63	428
23	77	195	29	301
24	64	184	79	327
25	74	175	85	334
Total	350	784	256	1390
Percentage	25.18	56.40	18.42	

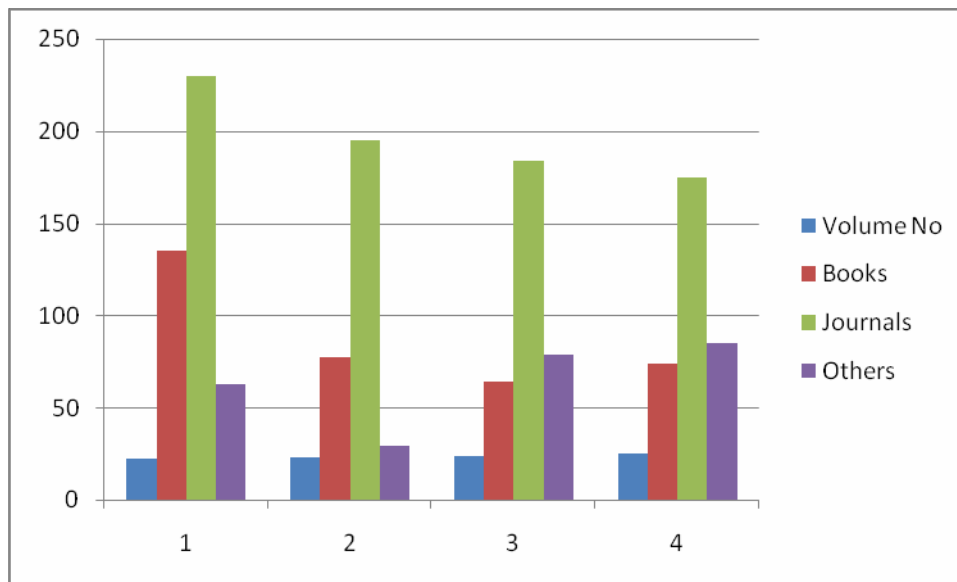


Table : 6 average citation per contribution in each volume:

Table 5 shows that 12 issues of 4 volumes of extracta mathematicae contained 1390 citations. Based on analysis it has found that mathematicians make use of journals the most that is 784 (56.40 %) citations. That is followed by books 350 (25.18%) citations. The remaining 256 (18.42 %) citations are from the other sources, which include conference proceedings, thesis and dissertation reports, personal notes, etc.

Volume no	No. of contribution	No. of citations	Average
22	23	326	26.25
23	23	290	23.35
24	17	313	25.20
25	14	313	25.20
Total	77	1242	100

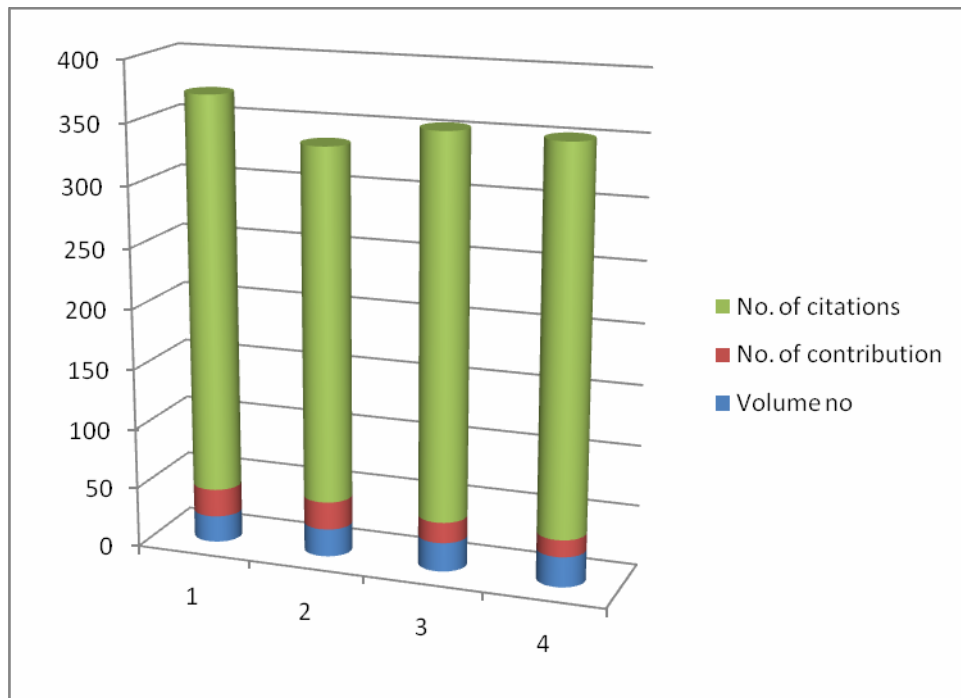


Table : 7 subject wise distribution of articles:

Table 7 shows that majority of the contributions appeared under differential geometry (22.08 %) the next position is taken by operator theory (18. 18 %). This is followed is taken by functional analysis (15.58 %) and real and harmonic analysis (14.29 %).

Subject	Total no. of articles	percentage
Functional analysis	12	15.58
Operator theory	14	18.18
Real and harmonic analysis	11	14.30
Commutative algebra	9	11.69
Homological algebra	8	10.39
Differential geometry	17	22.08
Non – commutative algebra	6	7.79
Total	77	100

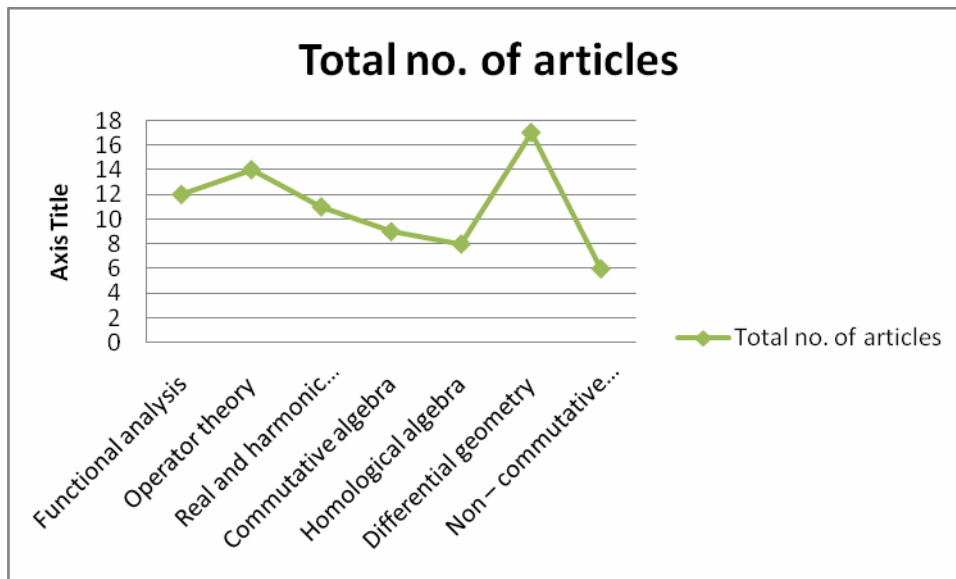
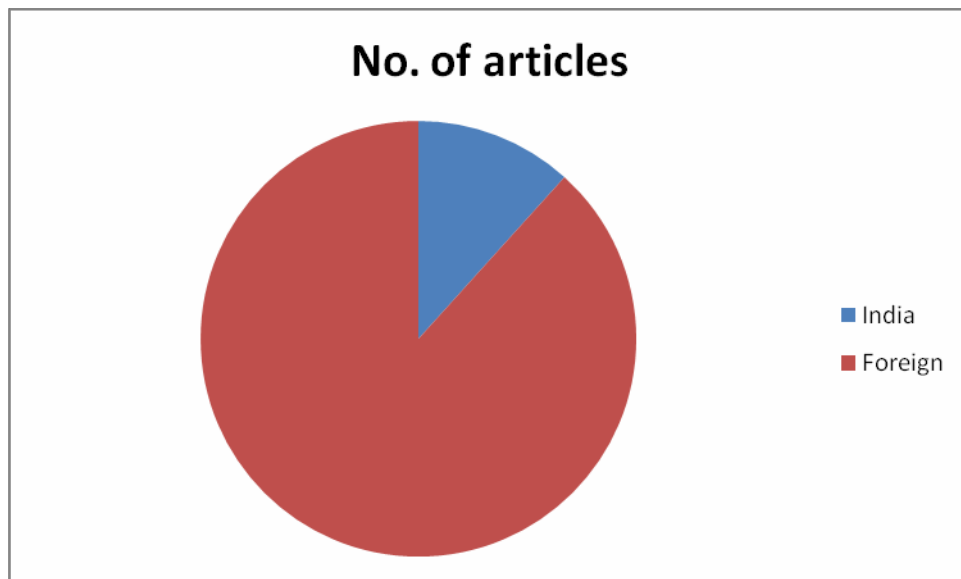


Table : 8 geographical distribution of articles:

Table 8 showed that most of the contributions are from foreign sources with 88.31% and the rest 11.69 % only from India.

Area	No. of articles	Percentage
India	9	11.69
Foreign	68	88.31
Total	77	100



7. SUMMARY

Summary of the findings is as follows.

1. The journal has published 77 articles during the period of study 2007 to 2010.

2. The present study reveals the highest number of articles have appeared in the area of graphs, hypergraphs.
3. The journal publishes on an average of 15 articles per year
4. Maximum number of articles were contributed by two author and more than two authors of the total articles.
5. Almost all articles included a brief abstract and keywords.
6. Most of the articles have emanated from academic institutions
7. Inclusion of charts, diagrams, photos and tables in each articles indicates the articles are highly technical in nature.
8. The number of articles in the journal is not consistent and varies from volume to volume.
9. The journal references on an average of 310 reference per year.
10. Volume number 22,23 (2007, 2008) has maximum articles contributed.
11. The degree of collaboration in *extracta mathematicae* is 0.51 which clearly indicates its dominance upon individual contribution.

8. REFERENCES

1. Arruda, D., & et. al. (2009). Brazilian computer science research: Gender and regional distribution. *Scientometrics*, 79 (3), 651-665.
2. Hood, W.W. & Wilson, C. (2001). The literature of bibliometrics, scientometrics, and informetrics. *Scientometrics*, 52 (2), 291-314.

3. Dr. K. Kaliyaperumal, library and information science objective type – UGC/ SLET/JRF, SKM Publication, 3rd edition, 2009, page no: 243.
4. Sengupta, I.N. Bibliometrics and its applications. In Information science and libraries, edited by Pushpa Dhyani. Atlantic, New Delhi, 1990. p.256
5. Broadus, R.N. Definition of bibliometrics. Scientometrics, 1987, 12(5-6), 373-79
6. S. Nattar, Indian journal of physics: A scientometric analysis, International Journal of Library and Information Science Vol. 1(4) pp. 055-061, September, 2009

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