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Research Paper

A Scientometric Analysis of the Journal -Journal Of Robotics and Mechatronics, 1999-2013

Library Science

KEYWORDS : Scientometrics, Robotics and Mechatronics, Authorship pattern, citations.

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ABSTRACT

The Evaluation of the use of library collection is a fundamental tool for the development of a relevant and cost effective collection. Bibliometrics offers several methods to measure the level of use of collections. Bibliometrics is a type of research method used in library and information science.It is a quantitative study of various aspects of literature ona topic and is used to identify the pattern of publication,authorship and secondary journal coverage.This paper presents a scientometric analysis of the journal "Journal of Robotics and Mechatronics" for the period of 1999-2013(15 years).

1. Introduction:

Scientometrics are used to measure scientific activities mainly by producing statistics on scientific publication indexed in database. They are flexible tools used to study the sociological phenomena associated with scientific communities to conduct scientific, strategic, technical, and technologically to design and manage research programmes and to evaluate research. It helps to evaluate research.

2. Objectives of the study

The objectives of the present study are to find the following

- Year Wise Distribution of Total Number of Contributions Vs Total Number of Pages
- Year Wise Distribution of Length of articles
- Authorship Pattern of Contributions & Degree of Collaboration
- Single Vs Multiple author Publications
- Distribution of reference by Volume

3. Methodology:

Data was collected from the Journal of Robotics and Mechatronics from the period 1999-2013. It is a peer reviewed open access journal that publishes research articles in the area of robotics. Generally it consist of articles belong to mechanical Engineering. From each cited reference, the following data like number of authors, type of document, country of origin of the document/ journal, length of the articles, number of citations and other data required for analysis has been noted

4. Analysis:

4.1Year Wise Distribution of Articles and citations:

Year	Vol.no	Articles	No.of citations	Average citations per article
1999	11	86	49	0.5
2000	12	104	49	0.5
2001	13	84	0	0
2002	14	78	0	0
2003	15	82	0	0
2004	16	81	980	12
2005	17	85	1094	13
2006	18	102	1327	13
2007	19	88	1484	17
2008	20	101	1505	15
2009	21	89	1348	15
2010	22	89	1441	16
2011	23	112	1843	16
2012	24	108	1816	16
2013	25	122	2369	19
Total		1411	15305	11

Table 1: Year wise Distribution of Articles and Citations

The Findings of Year wise distribution of total publication of the journal 'journal of Robotics and Mechatronics" is with a decreasing and increasing trend from the year 1999. The range of articles published per volume during the period under study is between 81 and 122. The study has examined that totally 1411 articles have been published for the span of 15 years.

4.2 Year Wise Distribution of Total Number of Contributions Vs Total Number of Pages:

Year	Quantum of Contribution	Quantum of Total Pages	Average number of pages per Contribution
1999	86	556	6
2000	104	756	7
2001	84	626	7
2002	78	631	8
2003	82	634	8
2004	81	631	8
2005	85	696	8
2006	102	814	8
2007	88	698	8
2008	101	872	9
2009	89	750	8
2010	89	752	8
2011	112	1095	10
2012	108	980	9
2013	122	1086	9
Total	1411	11577	8

Table: 2 Distributions of Contribution Vs Pages

The findings of year wise distribution of total contribution vs. total volume pages convey the following facts: the growth of

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total contribution is increasing from 86 to 122. From the year 2011 there is a fluctuation in the number of contributions and total research publication pages. The result reveals that quantum of contribution is 1411 and the quantum of pages is 11577. And the average number of pages is accounted as 8.

4.3 Year Wise Distribution of Length of Articles:

Year	Number of Pages				
	1-5 pages	6-10 pages	11 and above	Total	%
1999	24	60	2	86	6.1
2000	13	85	6	104	7.37
2001	10	66	8	84	5.95
2002	3	68	7	78	5.53
2003	6	70	6	82	5.81
2004	5	73	3	81	5.74
2005	4	74	7	85	6.02
2006	5	91	6	102	7.23
2007	7	73	8	88	6.24
2008	4	83	14	101	7.15
2009	1	79	9	89	6.31
2010	3	71	15	89	6.31
2011	1	75	36	112	7.94
2012	2	85	21	108	7.65
2013	2	103	17	122	8.65
Total	90	1156	165	1411	100

Table: 3. Year Wise Distribution of Length of Articles

The findings of year wise distribution of length of articles shows that 90 articles covers 1-5 pages,165 articles covers above 11 pages and maximum of 1156 (81.92%) articles(81.92%) are published around 6-10 pages.

4.4 Relative Growth Rate and Doubling Time for Total Number of Pages:

Year	Number of pages	Cumulative Number of pages	W1	W2	R(p) W2-W1	Mean R(p) W2-W1	Doubling Time Dt(p)	Mean Dt(p) (1-2)
1999	556	556	0	6.32	0		0	
2000	756	1312	6.62	7.17	0.55		1.26	
2001	626	1938	6.43	7.56	1.13		0.61	
2002	631	2569	6.44	7.85	1.41		0.49	
2003	634	3203	6.45	8.07	1.62		0.42	
2004	631	3834	6.44	8.25	1.81		0.38	
2005	696	4530	6.54	8.41	1.87	1.19	0.37	0.5
2006	814	5344	6.7	8.58	1.88		0.36	
2007	698	6024	6.54	8.7	2.16		0.32	
2008	872	6914	6.77	8.84	2.07		0.33	
2009	750	7664	6.62	8.94	2.32		0.29	
2010	752	8416	6.62	9.03	2.41		0.28	
2011	1095	9511	6.99	9.16	2.17		0.31	
2012	980	10491	6.88	9.25	2.37		0.29	
2013	1086	11577	6.99	9.35	2.36	2.21	0.29	0.3
Total	11577					3.4		0.8

Table: 4. Relative Growth Rate and Doubling Time for Total Number of Pages

The findings of Relative growth rate and doubling time for the total number of pages reveals the following facts: The relative growth rate for the total research publication pages has shown an increasing trend. Contrastingly the doubling time for the pages had shown a decreasing trend.

4.5 Authorship Pattern of Contributions:

Single Vs Multiple Author Publication					
Year	Single Author		Multiple Author		Total
	Number of output	%	Number of output	%	
1999-2005	55	66.3	545	41.04	600
2006-2013	28	33.7	783	58.96	811
Total	83	100	1328	100	1411

Table: 5. Authorship Pattern of Contribution

The findings of single vs. multiple authored output, put forth the following facts: among the total publications of 'Journal of Robotics and Mechatronics' during the study period, multiple authored papers dominate with the high percent of 94.11. The single authored papers are less, which reflect the fact that the group activity in research and problem solving activities in the field of science and Technology are high.

4.6 Degree of collaboration:

Degree of Collaboration	
Year	Degree of Collaboration
1999-2005	0.908
2006-2013	0.965
Over all	0.941

The findings of degree of collaboration in paper publications and in citations referred enlighten the following facts: the degree of collaboration has shown an increasing trend from one phase of the period to other phase of the period. This brings out clearly the high level of prevalence of collaborative research in the field of Robotics and Mechatronics.

Findings:

This paper presents a scientometric analysis of the journal "Journal of Robotics and Mechatronics" for the period of 1999-2013. The study has observed 1141 articles with 15305 citations, 11577 pages during the study period. The range of articles published per volume is between 81 to 122; the average number of references per article is 11; the average length per article is 8 pages. In this analysis that single author papers have declining trend and there by collective contributions have an increasing performance in scientific research activities.

Conclusion:

The bibliometric studies are frequently used to assess research publication and to generate information that can be used by policy makers and experts. This study has proven to be useful tool in the assessment of research publication of scientists in Engineering and Technology. Taking into account the Scientist's

participation in scientific collaboration, publication and productivity pattern have been calculated. study mirrors the actual published results of the work of scientist in the journal 'Journal of Robotics and Mechatronics' during the study period.

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