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Citation analysis of “IEEE/ASME transactions on mechatronics”

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Abstract

Citation analysis of “IEEE /ASME Transactions on Mechatronics” from 2001 to 2007 is carried out. 475 articles are published in the Journal during 7 years. Highest numbers (83) of articles are published in the year 2006. The journal contained 9238 citations. Average number of citation per article is 20. This study also covers the analyses of authorship patterns in citing article. In authorship pattern, Two authored citations are dominant than others and it is 33.03%.The study finds out the author self-citation and journal Self citation.

Keywords: Citation analysis, Author self-citation, Journal Self citation

Introduction

Citation analysis is the examination of the frequency, patterns and graphs of citation in articles and books. It uses citation in scholarly works to establish links to other works or others works researchers. It is one of the most widely used methods of bibliometric. For example, bibliographic coupling and co-citation are association measures based on citation analysis (shared citations or shared references)

The references cited by this 475 contributions have been taken up for analysis and discussion. Data on the type publication cited a distribution over the volumes along with their percentage and other details such as the number of citations and their distribution author- wise and the age and type of citations form part of it.

2. Scope

In this present study 9238 citations appended to 475 articles appeared in IEEE /ASME Transactions on Mechatronics published from 2001 to 2007 have been analysed. The issue numbers 6 to 12 have been covered in this study.

3. Objective

The main objectives of the study is find out the

1. Overall references.
2. Bibliographical sources of citations.
3. Authorship pattern
4. Percentage of the author self-citation
5. Percentage of the Journal self-citation

4. Methodology

The data has been compiled from online journal articles. For each article following data has been noted: Number of articles, Number of Citations, Number of authorship, bibliographical sources and other data required for the study. All the necessary information were compiled, recorded, tabulated and analyzed for making observations as indicated in the objectives of the study.

5. Data Analysis and Interpretation

5.1. Year Wise Distributions of Citations

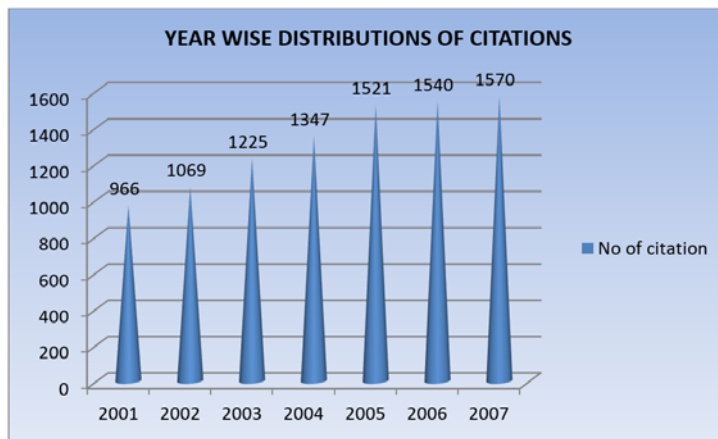
There has been tremendous increase in the review literature by the scientists. Overall distribution pattern of citation in ‘IEEE /ASME Transactions on Mechatronics during the

period 2001 to 2007 in 34 issues of 7 volumes is 9238. Table 5.1 represents the year-wise distribution of citation during the period of study. It reveals that a total of 9238 citations are appended to 475 articles. The number of citations per year

varied from a minimum of 966 citations to a maximum of 1570 citations. The average number of citations per article is calculated as 19.

Table 5.1

Year	Vol. No	No. of Articles	No. of Citations	Average Citations Per Contributions	Cumulative Percentage	
					Reference	Percentage
2001	6	55	966	18	966	10.45
2002	7	56	1069	19	1069	11.57
2003	8	58	1225	21	1225	13.26
2004	9	63	1347	21	1347	14.57
2005	10	82	1521	19	1521	16.46
2006	11	83	1540	19	1540	16.66
2007	12	78	1570	20	1570	16.99
		475	9238	19	9238	100



5.2. Form Wise and Year Wise Distribution of Cited Citations

Table 5.2 represents the data on the distribution of cited citations by types in 34 issues of the source journal with a total of 9238 citations. The authors refer to their research through various channels like IEEE Journals, Other Journals, Books, Proceedings, Thesis, Bulletin, Reports, Annual Reports, and E-Resources. This table presents a complete scenario of different forms of periodical forms and non-

periodical literature, which are referred by the authors. Table 5.2 represents year-wise distribution of individual sources from 2001-2007. As found in any other discipline, in the present study also, major portions of the citations are from others Journals. The Journals rank first in order, showing 55.22% of the total number of citations. It that IEEE Journals occupy 18.65 % and Other Journals occupy 36.57 %. The source of proceeding comes to second in order sharing 28.10 % of total citations during the study period of study.

Table 5.2: Form Wise and Year Wise Distribution of Cited Citations

Form	2001	2002	2003	2004	2005	2006	2007	TOTAL	%
IEEE Journals	174	219	209	238	278	308	297	1723	18.65
Other Journals	322	372	383	510	595	559	638	3379	36.57
Books	201	140	214	184	235	201	172	1347	14.58
Proceedings	243	318	400	376	395	436	428	2596	28.10
Thesis	10	10	6	14	0	5	18	63	0.6
Bulletins	0	0	1	0	1	0	1	3	0.03
Annual Reports	1	1	3	5	3	4	5	22	0.23
E-Resources	15	9	9	20	14	27	11	105	1.13
	966	1069	1225	1347	1521	1540	1570	9238	100

5.3. Web Resources VS Printed Sources

Citation analysis of 'IEEE /ASME Transactions on Mechatronics published during the study period 2001 to 2007 shows that 01.68 % of articles published during this

period have web references. Out of 9133 references, 98.31 % of references are printed sources and 01.68% of them are web references.

Table 5.3: Web Based Sources VS Printed Sources

Form	No of Citations	Percentage
Printed Sources	9133	98.31
Web Resources	105	1.68
	9238	100

5.4. Author Wise Distribution of Citations

The aim of the study of authorship pattern is to bring out the contribution pattern in a discipline. The authors are classified according to their citations that they have published. The total references cited by scientists are calculated to 9238 over

the study period. It could be noted that two authored citation rank first in order sharing 33.03 % of the total citations. The year wise analysis shows that the performance of two authored citations is better in almost all the years.

Table 5.4: Author Wise Distribution of Citations

Pattern	2001	2002	2003	2004	2005	2006	2007	Total	%
Single	235	280	287	287	350	331	309	2079	22.50
Two	348	355	428	399	514	501	507	3052	33.03
Three	220	252	283	332	345	368	372	2172	23.51
Four	91	102	137	163	162	176	193	1024	11.08
Five	22	41	37	63	67	63	84	377	4.08
Six	12	16	18	34	33	27	37	177	1.91
More than six	11	13	15	30	29	27	50	175	1.89
Unknown	27	10	20	39	21	47	18	182	1.97
Total	966	1069	1225	1347	1521	1540	1570	9238	100

5.5. Year Wise Distribution Author Self Citation

According to Weinstock, there are some reasons for an author to 'Cite' another author's work or his own work to give credit for a related work; to correct the work of others; to correct one's own work. Here author self-citation is recorded in table 5.5. Table 5.5 shows data on year-wise distribution of author self-citations. The year 2011 has the highest number of the author citations and attains the first rank accounting 96.36 % and the overall author self-citation is 88.42 %. This indicates the authors are more interested to cite their own work.

Table 5.5: Year wise Distribution Author Self Citation

Year	No of Contributions	No of Self Citations	Percentage
2001	55	53	96.36
2002	56	47	83.92
2003	58	49	84.48
2004	63	55	87.30
2005	82	74	90.24
2006	83	72	86.74
2007	78	70	94.59
	475	420	88.42



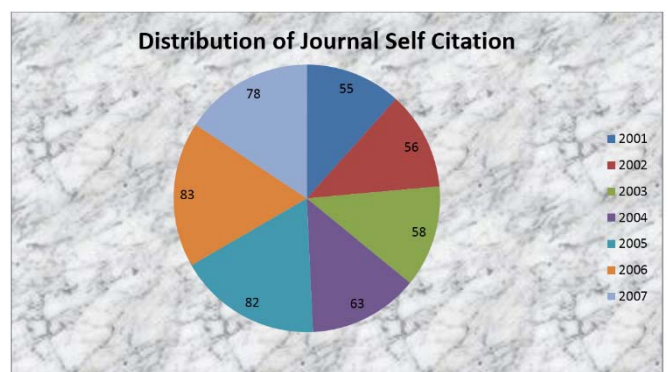
5.6. Year Wise Distribution of Journal Self Citation

Whenever journal cites any of its previous publications, the journal self-citation occurs. Journal self-citation (JSC) substantially influences the impact factor of the concerned journal. This means high percentage of JSC not only enhances the impact factor of the corresponding journal but also indicates the relevance of the content of the journal to the scientific community using it. Table 5.6 records the volume-wise distribution of Journal Citation. It is noted that the year 2005 comes in first order of JSC accounts to 35.36 %. The second rank is attained by 2006 by accounting 34.93

%. The overall Journal Self Citation is 25.89 % of the journal possibly indicates that the journal commands great repute in its own field and attracts articles pertaining to the high profile areas of research. From the table we know that the author self-citation dominates the Journal self-citation.

Table 5.6: Year wise Distribution of Journal Self Citation

Year	No of Contributions	No of Self Citations	Percentage
2001	55	8	14.54
2002	56	14	25
2003	58	10	17.24
2004	63	11	17.46
2005	82	29	35.36
2006	83	29	34.93
2007	78	22	29.72
	475	123	25.89



Conclusion

Bibliometrics is a set of methods used to study or measure texts and information. Citation analysis and content analysis are commonly used bibliometric methods. While bibliometric methods are most often used in the field of library and information science, bibliometric have wide application in other areas, In fact, many research field use bibliometric methods to explore the impact of their field, the impact of a set of researchers, or the impact of a particular paper. Bibliometric are now used in quantitative research assessment exercises of academic output which is starting to threaten practice based research.

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