

THE IEEE TRANSACTIONS ON NANOTECHNOLOGY BIBLIOMETRIC ANALYSIS

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ABSTRACT

The IEEE transaction on Nanotechnology published by the IEEE technology council (NTC) is a Multi-disciplinary group whose purpose is to advance and coordinate work in the field of Nanotechnology carried out throughout the IEEE in scientific, literary and educational areas. Which is rapidly emerging as one of the faster growing and most promising new technological developments for the next generation? A total of 862 articles for the period of 2010-2016 were collected from IEEE (Institute of Electrical and Electronics Engineers). This paper analysis the authorship pattern the range and frequency of references cited and examines year wise breakup of the paper.

KEYWORDS: Nanotechnology, Bibliometric.

INTRODUCTION

Nanotechnology is rapidly emerging as one of the important faster growing and most promising new technological developments for the next generation in the field of scientific, engineering and industrial application.

Bibliometric was first coined by pilchard 1963, and its usage and practice can be faced back to the second decade of the century, bolometric study was a statistical analysis of the literature. It is a quantitative as assessment of man's cultural progress. Bibliometric help to avoid duplication in research and also serves as a tool for book selection, identification and utilization of information in terms of place of publication subject and also in various forms.

REVIEW OF LITERATURE

Maujula and Amsaveni (2014) traced prolific authors and authorship pattern and collaborative research in network security during 2002 to 2011 was measures. Thavamani and Velmurugan (2013) study the analysis has been conducted with 310 contributions published in the journal during the years 2002 to 2012 Bathrinarayanan and Tamizhehelvan (2013) conducted a scientometric study on MEMS output based on the bibliographic records as reflected in scopus during 1988-2012. Mohammad Nszim and Moin Ahmad (2008) examines the scientific output in the field of nanotechnology the aim being to offer an over of research trends in this field and characterize its most important aspects such as growth of literature, authorship pattern, countries.

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A total of 2675 articles for the period of 1991-2006 were collected from Web of Science (WoS).

LAWS OF BIBLIOMETRICS

The Law of Bibliometrics facilitates to achieve the said objective. These laws are empirically founded statistical distribution. There are three laws are used in bibliometric study.

- a. Lokta's Law of productivity of author contributing in a discipline or other fields.
- b. Bradford's Law of scattering of articles over different journals.
- c. Zipts Law for frequency occurrence of words in a text

ABOUT THE JOURNALS

The IEEE Transaction on Nanotechnology is devoted to the publication of manuscripts of archival value in the general area of nanotechnology published by IEEE Nano technology council USA started on 2002. Frequency is six per year. ISSN 1536-125X.

OBJECTIVE OF THE STUDY

The main objectives of the study are:

1. To study the year wise distribution of the articles.
2. To highlight the top five countries published articles.
3. To examine the growth of journal articles in nanotechnology research during the Period 2010 to 2016.

LIMITATION

The present study is limited to a period of seven years from 2010 to 2016 based on the records as reflected in the IEEE database only.

METHODOLOGY

The primary data has been collected from the

IEEE Transactions on Nanotechnology which is available in using the search terms "IEEE Transaction on Nanotechnology" www.ieee.explore.ieee.org.

The secondary data were collected from the journals articles, books and other sources like websites. The study covers the year between 2010 to 2016 has been downloaded from the database. A total of 862 data has been identified for the analysis purpose.

TOOLS USED

The collected data were tabulated and used the simple statistics and percentage analysis is used. The study has been measured with the help of year wise distribution, publication growth of authorship pattern of papers.

DATA ANALYSIS AND DISCUSSION

A simple percentage analysis done for the major part of data analysis are explained below

The impact factor is a measure of the frequency with which the average article in a journal has been cited in a particular year.

Table 1. Impact factor

Year	Impact Score
2010	2.29
2011	1.86
2012	1.91
2013	1.80
2014	2.34
2015	2.47
2016	1.70

In the Table-1 we can clearly note down that in the year 2015 the impact score is 2.47 which are higher and in the year 2016 the impact factor is 1.70 which is lesser. The year wise contribution is clearly explained below in the form of Table format

Table 2. Year wise contribution

S. No	Year	Records	Percent	Total Author
1	2010	106	12.30	428
2	2011	131	15.19	596
3	2012	129	14.97	613
4	2013	122	14.15	508
5	2014	126	14.61	537
6	2015	128	14.85	531
7	2016	120	13.93	574
Total		862	100	3,787

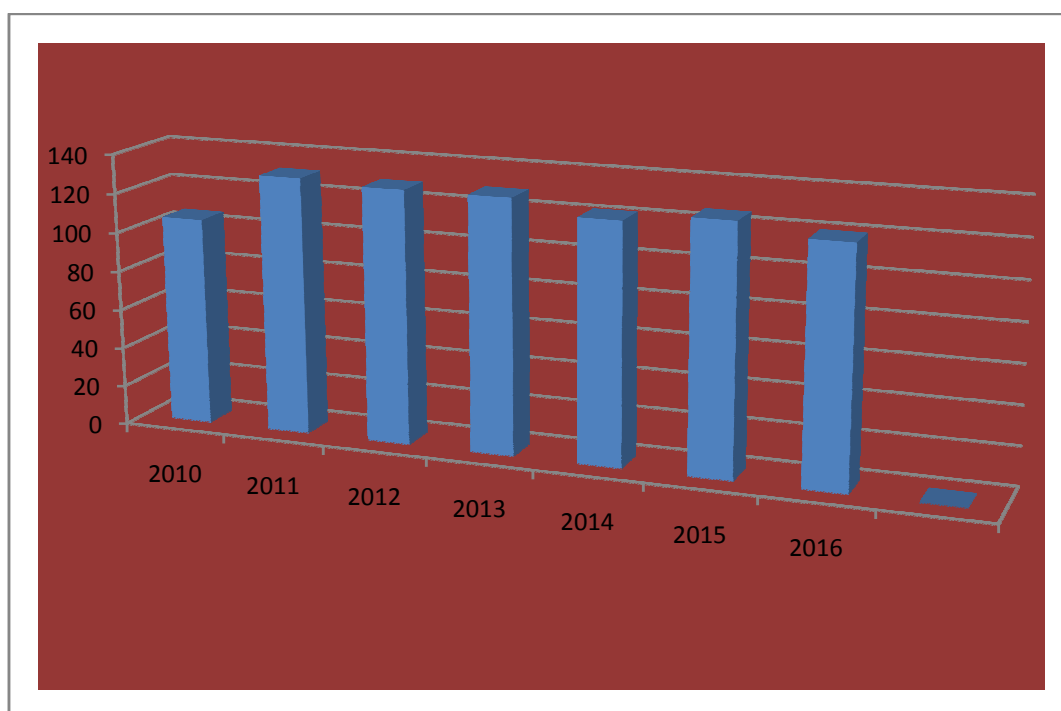


Figure 1. Year wise contribution in graphical chart

In the year wise contribution from 2010-2016 the total records is 862 .The percentages of articles published in the year 2011 is higher which

15.17% is. At the same time lower percentage is in the year 2010, which is 12.30% and it is clearly explained in the Table-2.

Table-3. Year wise contribution with cumulative records

S. No	Year	Records	Cumulative Records	Percent	Total Author
1	2010	106	106	12.30	428
2	2011	131	237	15.19	596
3	2012	129	366	14.97	613
4	2013	122	488	14.15	508
5	2014	126	614	14.61	537
6	2015	128	742	14.85	531
7	2016	120	862	13.93	574
Total		862	3415	100	3,787

In the field of Nanotechnology, from the year 2010-2016 the articles published by the authors is clearly explained in the Table-3. The total records is 862 and the total cumulative records is

3415. The percentage is higher in the year 2011 which is 15.19 and lesser in the year 2010 which is 12.30%

Table 4. Top rank countries

Year	USA	Korea	Italy	Japan	China
2010	24	2	2	2	2
2011	4	7	4	1	6
2012	18	5	2	4	6
2013	3	1	2	3	7
2014	10	2	1	5	3
2015	11	1	2	2	4
2016	9	2	1	4	4
Total	79	20	14	21	32
RANK	1	4	5	3	2

According to articles published in the field of Nanotechnology, compared with five countries of Korea, Italy, Japan, China and USA, first place goes to USA which publishes 79 numbers of

articles and the last place goes to ITALY which publishes only 14 articles and it is clearly explained in Table-4

Table 5. Top five countries

Rank	1	2	3	4	5
Countries	USA	China	Japan	Korea	Italy

Regarding the rank wise distribution of top five countries from the year 2010-2016, USA holds First rank and the last rank goes to ITALY and it is clearly explained in the Table-4

and it is clearly explained through cumulative records.

CONCLUSION

In the present study related to Bibliometric analysis the articles published in IEEE Transactions on Nanotechnology from 2010-2016. The study has analyzed in various aspects such as authorship Pattern, degree of collaboration among the authors and geographical distribution of papers. The year-wise distribution of articles in IEEE Transactions on Nanotechnology shows that the highest number 131 (15.19) total output 862 have published in the year 2010 and 2016. The Geographical distribution of papers highlights that the journal is dominated by USA. This shows that 3787 authors have done their research work

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