



A Review Paper on Bibliometrics, Scientometrics and Information Retrieval

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Abstract- *Bibliometrics and Scientometrics are the quantitative measures of publication, author and science respectively. In this paper we study about bibliometrics, information retrieval and scientometrics. Analyze about these topics and common methods of bibliometric and information retrieval. We find the link between Information retrieval and bibliometrics/scientometrics.*

Keywords- *Bibliometrics, Scientometrics, Information Retrieval, Bradfordizing effects*

I. INTRODUCTION

Bibliometrics[1] was first defined by Otlet(1934). Bibliometrics is the quantitative analysis of books and authors. In history, Bibliometric was known as ‘statistical bibliography’.

Scientometrics[1] was defined by Nalimov(1960). This term is used as quantitative analysis of the research on development of science.

Bibliometrics and Scientometric are both related in the field of research to measure scientific publications and science in general.

Bradfordizing[4] is used for generating core document sets for subject-specific questions and to re-order result sets.

Information retrieval (IR) refers to gathering of information resources, relevant to a user information need. Information Retrieval and bibliometrics or scientometrics both are study in field of sciences. IR shows relevant result after re-ranking of the scholarly article by using bradfordizing effect.

II. METHOD

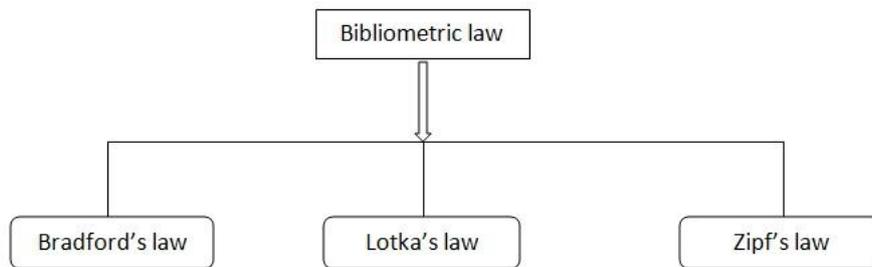


Fig 1. Bibliometric Law

Bradford's law[2] is defined by Samuel C. Bradford(1934). This law says that the article papers are distributed in different zones. More relevant and the papers have more citation is present in first zone, less will be present in second zone and so on. The number of journals in each group is proportional to $1:n:n^2$.

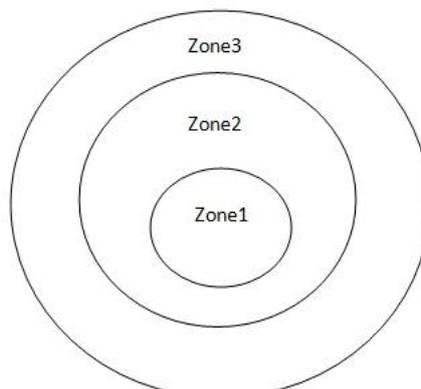


Fig 2. Distribution of papers in zones

The zone1 is the core journal zone and the result show that articles in core journals are valued more often relevant then articles in succeeding zones[4, Mayr, page no. 5].

The relevance distributions in IR test shows that after re-ranking improve at a significant level articles in the core are compared with articles in the succeeding zones[3].

Lotka's law was defined by J. Lotka. It is also known as "square root law".

$$\begin{aligned} R^s Z &= V \\ \text{Or } Z &= V/R^s \end{aligned}$$

Where

R is the number of publications

Z is the relative frequency of authors

and s and V are the constants

s is nearly equals to two

Zipf's law was states that frequency of any word is inversely proportional to its rank.

$$\begin{aligned} f &\propto 1/r \\ f &= c/r \end{aligned}$$

Where,

f is frequency

r is rank

and c is constant

By using these laws in information retrieval we got the relevant papers on the basis of their ranking. The bibliometric methods are to apply and evaluate for Information retrieval experiments.

Philipp Mayr work on these topics and the workshop held by Philipp Mayr on Bibliometric Information Retrieval (BIR) explain all the terms. The goal of the researchers is to raise awareness between information retrieval and bibliometrics/scientometrics.[3]

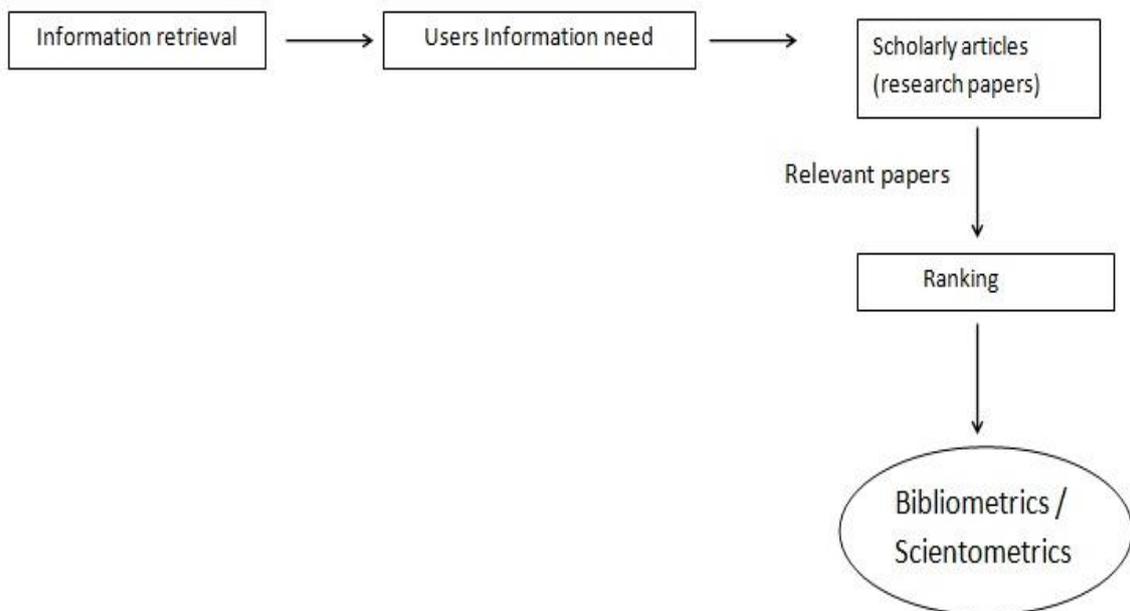


Fig 3. Steps for combining Information Retrieval and Bibliometrics/scientometrics

III. FUTURE WORK

The future work after study bibliometric and information retrieval are:

1. To find age of an article.
2. Total number of citations of an article.
3. Citation per year.

The aim is to using bibliometric and scientometric methods to analyse Information Retrieval for scholarly articles. Many researchers work to find the missing link between bibliometrics, scientometrics and information retrieval.

IV. CONCLUSION

The conclusion comes here is to combine bibliometrics, scientometrics and information retrieval[5] and find relation between them. Using bibliometric laws on information retrieval. Also conclude how bibliometrics, scientometrics statistical model is used to modify information retrieval for research papers.

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