



# HOW ARE RESEARCH OUTPUT AND RESEARCH IMPACT MEASURED?

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Research outputs such as journal articles and other scholarly publications are a tangible result of research. They are the primary means of communicating the results of academic enquiry.

Increasingly, metrics are being used as a measure of research impact or research influence of an individual scientist or group.

Accordingly, evaluating the impact of research involves assessing the quality of the research outputs and their academic impact.

What are the most commonly used metrics?

## CITATION METRICS

These comprise the statistical analysis of citation counts, the number of times a research work, e.g. an article, is cited by other works.

## BIBLIOMETRICS

This broader term includes publication counts, citation analyses and content analyses. **Bibliometrics is a discipline** in its own right with a much broader scope than is described by the term citation metrics. However, the term bibliometrics is often used in contexts where citation metrics may be more appropriate.

## WEBOMETRICS

Webometrics include download counts and the number and type of hyperlinks. Given the rapid expansion of the internet over the past decade, measures of impact and influence have emerged, based on the use of information in cyberspace. These are now starting to be used and assessed by researchers. The measures include download counts and site hits as well as link analysis and web citation analysis.

Webometrics may also be referred to as scientometrics or cybermetrics.

## WHAT IS A CITATION COUNT?

A citation count is the number of times a research work such as a journal article is cited by other works. It is considered (by some) to indicate the quality of the work, the assumption being that important or influential articles will be cited more often than other articles.

An increasing number of databases include the citation count. Unfortunately this rarely equals the true number of times an article has been cited because, for counts to be accurate, the citing article must be included in the database.

For **books** and **most conference proceedings**, citation counts in databases are considered incomplete. True citation counts would be higher than those given in the databases as no database lists all articles, books, book chapters, patents or conference proceedings and their references.

When comparing citation counts, it is important to remember that citation patterns vary across different disciplines.



**Metrics must always be considered in context** (citation patterns vary in different disciplines) and should never be used as the only measure. When used in conjunction with **peer review**, some metrics are quite robust.

