



BIBLIOMETRICS & RESEARCH IMPACT

LIBRARY TIPS #6 JUNE 2025

Bibliometrics – what is it and why is it important?

- * A set of statistical methods to **measure and analyse** the patterns, impact, quality and trends in **scientific and academic production**.

Understand the impact and contribution of research output over time.



Performance comparison and promotion of best practices (Benchmarking).



Useful for decisionmaking regarding funding and resources allocation in different scientific areas.

Identifiers & Indicators

* Identifiers are designed to ensure findable, interoperable attribution and to minimise ambiguity. They can be assigned to documents (DOI), researchers (ORCID ID), organisations (ROR), or journals (ISSN).



* Indicators are quantitative metrics that evaluate data from publications. They are employed to assess the performance of researchers, journals, scientific fields, institutions, or countries, providing objective and reproducible data for research evaluation and comparison. Do you know you can export your Pure outputs to ORCID? (only for Pure users)



- Log in on Pure and go to Personal > Personal overview > Edit Profile > Click
 <u>Create or Connect your ORCID ID</u>
- Enter the required information > Click *Register* > Accept Pure permission to access your ORCID > Click *Save*
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Manual exportation All content is re-exported to ORCID, regardless of when it was last updated.

Automatic exportation Updated daily (only synchronise

Updated daily (only synchronise content modified since the last export).

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Metrics

Document count # of items published

The most basic metric, it counts the number of publications (articles, books, patents, and technical reports, among others) and their respective growth over a given period.

Field-Weighted Citation Impact (FWCI) # of citations received by a document

expected # of citations for similar

Citation count # of citations accumulated since publication date

Measures the impact of a publication, author or journal. However, it is important to use it with complementary citation-based metrics (e.g. Field-Weighted Citation Impact).

Journal Quartile ranking system that divides academic journals into four groups (Q1, Q2, Q3, Q4)

H-index

of articles (h) that have received at least (h) citations over a period of time

Calculated by finding the highest number of publications (h) that have each been cited at least h times. It balances the number of publications with the number of citations they receive.

• e.g. an h-index of 10 means a researcher has published 10 papers with at least 10 citations.

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documents

Measures how a publication's citation impact compares to similar publications in the same field, publication type, and year.

• A score of 1 indicates the publication is cited as expected based on the global average. A score greater than 1 means the publication is cited more frequently than expected (e.g. FWCI of 1.48 signifies it is cited 48% more than the average).

Ranks journals within a specific subject category, based on performance and impact metrics (e.g. impact factor or citation counts).

- Q1 represents the top 25% of journals in terms of citations.
- Q4 represents the bottom 25%.

Journal Impact Factor

of citations in a year documents published in the previous 2 years

Calculates the citation frequency of the "average article" of a journal. Based on Web of Science data, this metric is annually released in June following the year of coverage as part of the Journal Citation Reports.



Beyond Traditional Metrics

Traditional metrics often exclude valuable contributions that do not fit into standard measures, such as:

- Social and community impact.
- Diversity, Equity, and Inclusion contributions.
- Open Science practices.
- Interdisciplinary and inter-institutional collaboration.
- Mentorship and community contributions (e.g. peer reviewing).
- Qualitative assessment & peer narratives (e.g. narrative CVs).
- Alternative metrics (Altmetrics) can complement the traditional metrics helping capture social engagement.
- A However, they should be interpreted carefully and within context (e.g. popularity ≠ quality; high engagement may stem from controversy/ misinformation).



- Usage: clicks, views, downloads...
- Captures: favorites, reference
 manager saves
- Mentions: posts, news, comments...
- Social media: tweets, likes, shares...



Responsible Use of Metrics

- * Indicators have limitations and should be interpreted in context when assessing research quality:
 - Be careful with metric-based ranking of individuals, avoid single metric to rank researchers. Do not overlook factors like career stage, fields of study and their different publishing/ citing patterns, or collaborative authorship.
 - Combine quantitative and qualitative assessments (e.g. peer review, research contributions, mentoring, social impact).
 - Bibliometrics often favor older / established areas comparing to recent work that has not accumulated citations yet.

* Align Metrics with values:

- Metrics should support openness, rigor, collaboration, and social impact rather than just publication volume.
- Metrics can guide decisions but should not replace human judgment.
- Metrics misuse can lead to unfair or unethical practices (e.g. excessive self-citation, "salami slicing" of research).



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