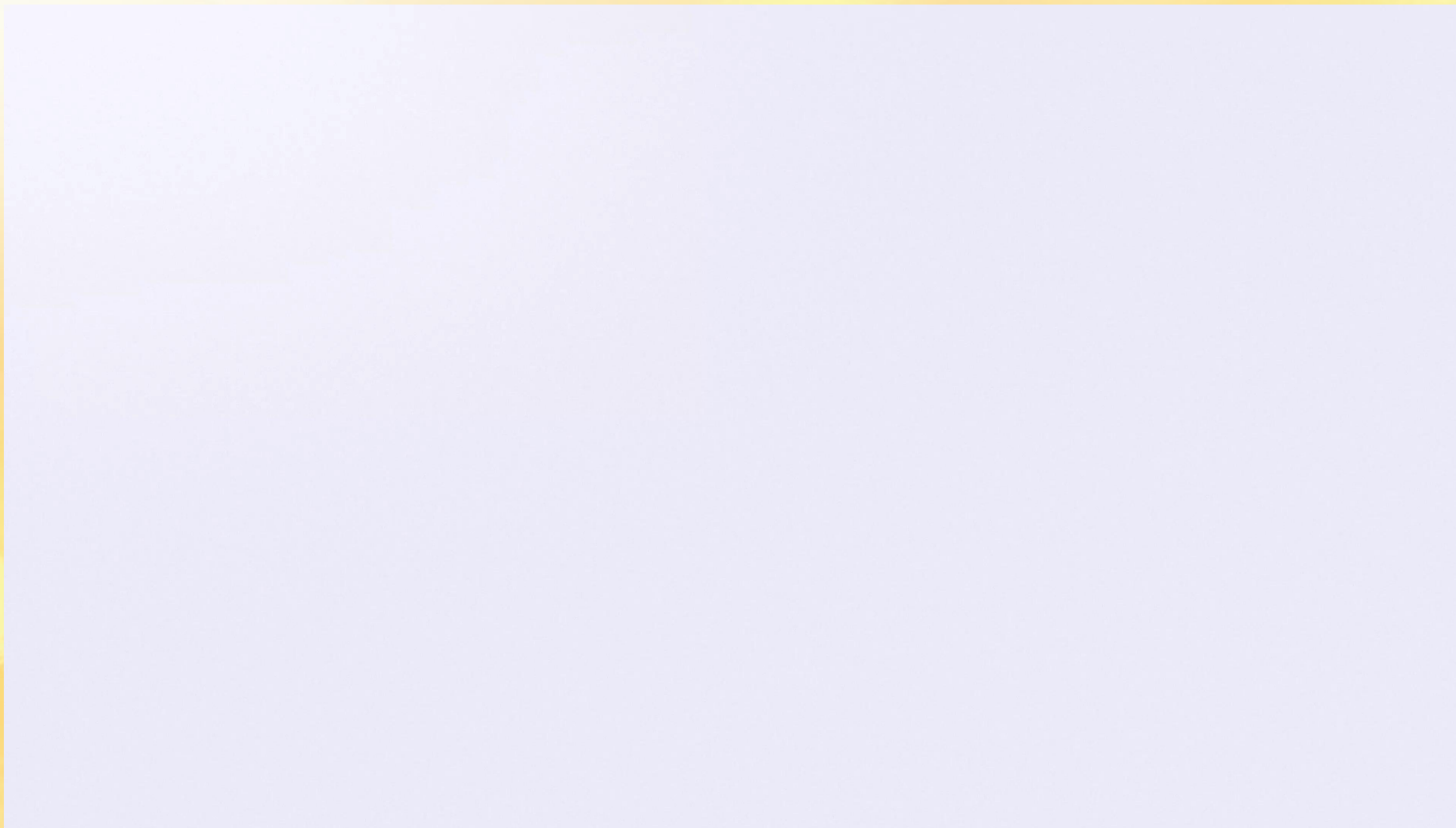




The Mycetoma Research Center
University of Khartoum

Mycetoma





The Mycetoma Research Center
University of Khartoum

Mycetoma



Prof Ahmed Hassan Fahal

**MBBS, FRCS, FRCSI, FRCS(Gal),
MS, MD, FRCPath, FRCP(London)**

Professor of Surgery

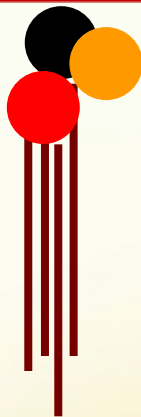




Objectives



What are your
Expectations



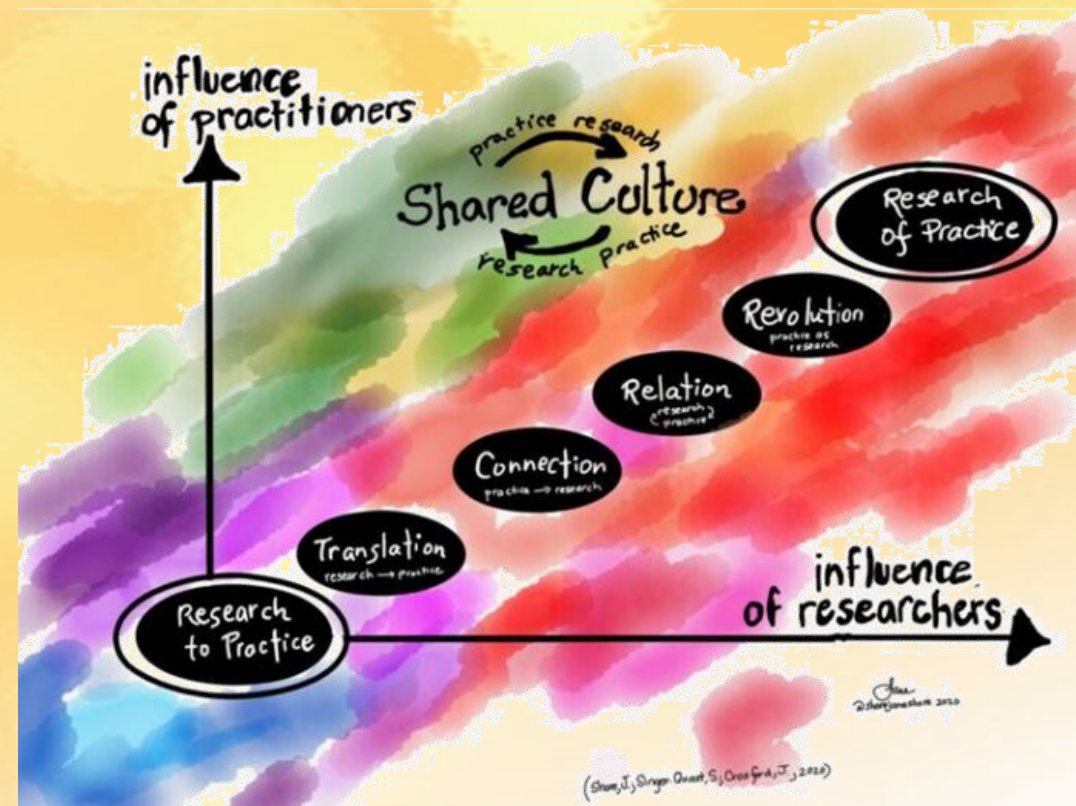
Objectives

Unpacking The Machinery Behind
Modern Research Evaluation

Balancing Quantitative Bibliometrics

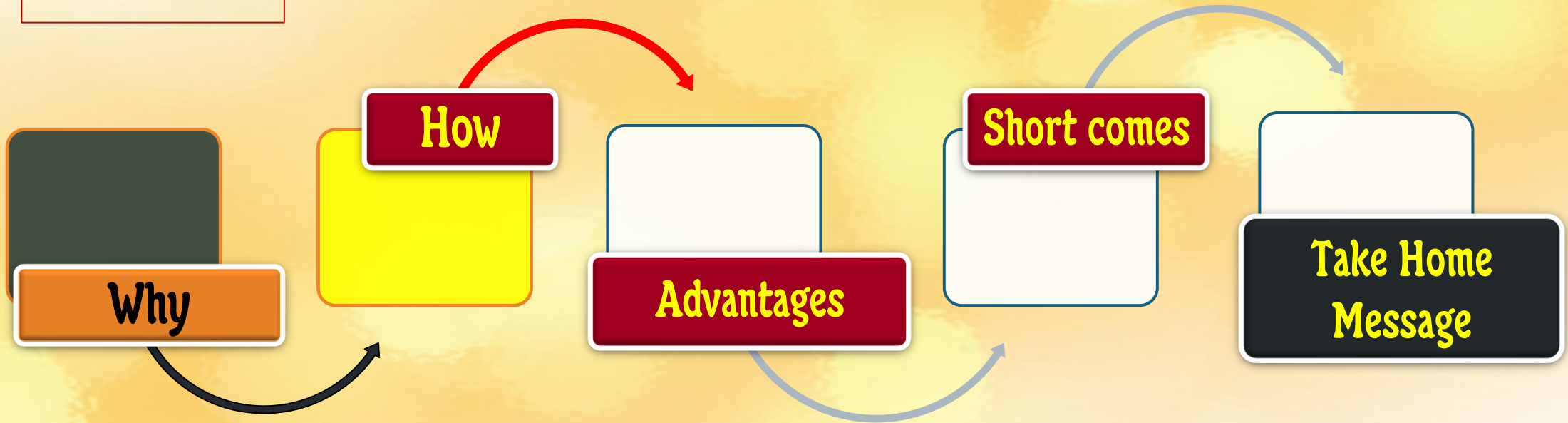
Qualitative Bibliometrics

Societal Impact





Outline





Why is it essential



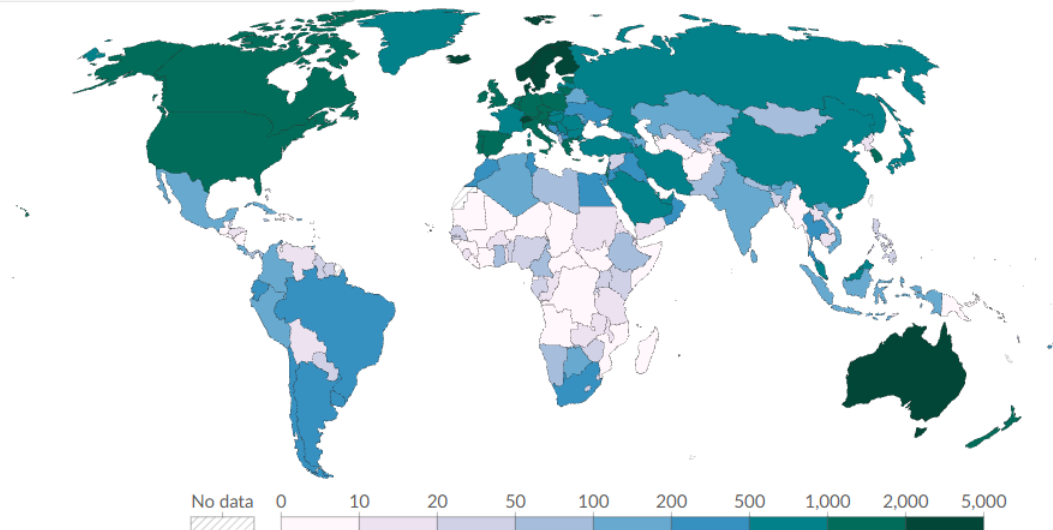
The global publishing volume bursts out

Annual articles published in scientific and technical journals per million people, 2022

Our World in Data

Includes physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences.

Table Map Line Bar



1996 2022

Data source: National Science Foundation Science and Engineering Indicators, via World Bank (2026); United Nations Population Division, national statistical offices, and Eurostat, via World Bank (2026) - [Learn more about this data](#)

Note: Articles are assigned based on the country of the first author's institution.

OurWorldinData.org/research-and-development | CC BY



Related: [In absolute numbers](#)

SELECT COUNTRIES AND REGIONS

Search for a country or region

| | | |
|--------------------------|--|-------|
| <input type="checkbox"/> | Egypt ↗ | 213 |
| <input type="checkbox"/> | Middle East, North Africa, Afghanistan and Pakistan (WB) ↗ | 264 |
| <input type="checkbox"/> | Switzerland | 2.76k |
| <input type="checkbox"/> | Denmark | 2.73k |
| <input type="checkbox"/> | Norway | 2.58k |
| <input type="checkbox"/> | Australia | 2.39k |
| <input type="checkbox"/> | Singapore | 2.25k |
| <input type="checkbox"/> | Finland | 2.16k |
| <input type="checkbox"/> | Sweden | 2.13k |
| <input type="checkbox"/> | Iceland | 2k |
| <input type="checkbox"/> | Netherlands | 1.94k |
| <input type="checkbox"/> | Slovenia | 1.93k |
| <input type="checkbox"/> | Portugal | 1.88k |
| <input type="checkbox"/> | New Zealand | 1.81k |
| <input type="checkbox"/> | Luxembourg | 1.79k |
| <input type="checkbox"/> | Ireland | 1.78k |





Why is it essential

As global publishing volume bursts out,
there is a need to **Assess** this to:

- Measure scientific success
- Dictate universities rankings
- Shape funding streams
- Define academic careers

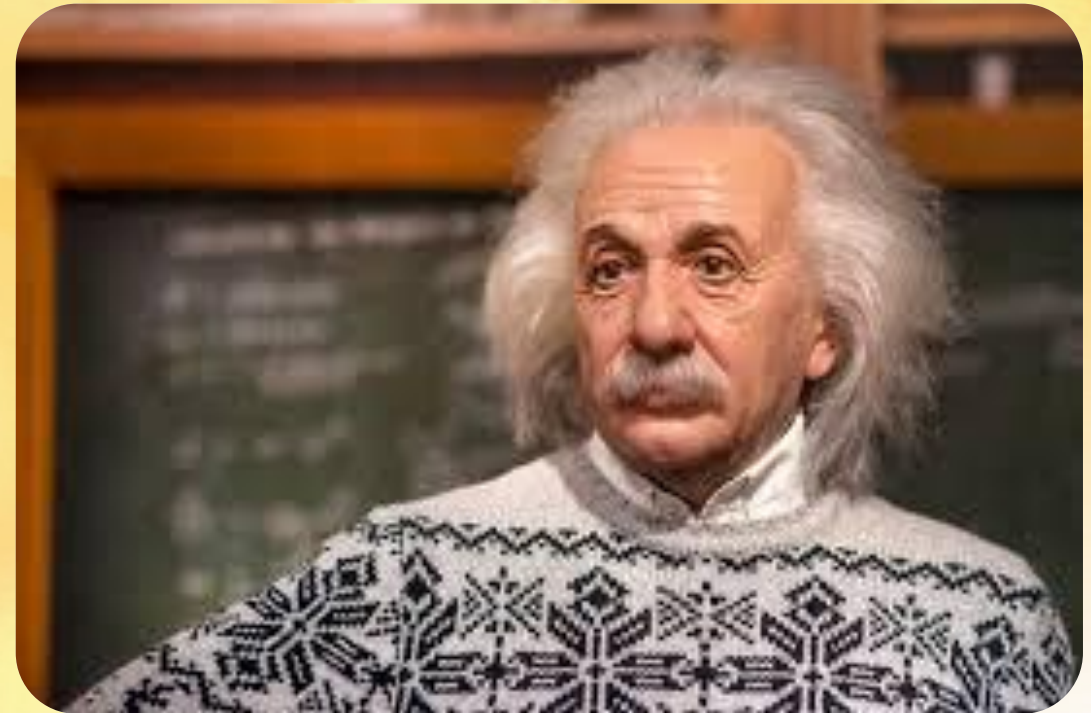


Scientific Success

Mycetoma



- It is defined by a researcher's ability to identify solvable questions that significantly advance the frontier of knowledge.
- It blends resilience, creative problem-solving and a willingness to take risks
- With a commitment to high ethical standards and collaboration.





The Mycetoma Research Center
University of Khartoum

Scientific Success

Mycetoma



12 subjects in the
global top 10

QS World University
Rankings by Subject 2026

Dictated Universities Ranking



9th
in the world

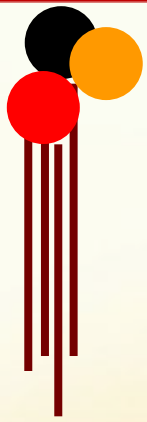
QS World University Rankings 2026



A World Top 140 University

QS World University Rankings 2026





Shapes funding
streams





The Mycetoma Research Center
University of Khartoum

Mycetoma



Scientific Success

Defines
Academic Careers





Home | About | Editorial Board | Author Guidelines | Article Charges | Contact

652 Quick Search RSS Stats Indexes

Journal of Scientometric Research
A journal devoted to Innovation Studies and Policy Research

Submit Paper

In Press | Current Issue | Past Issues | Special Issues | Advanced Search | Submit Article | Downloads

Download Factsheet (PDF)

RESEARCH ARTICLE

Published

Journal of Scientometric Research

Vol. 5 | Issue 2 | 2016 | pp. 135-147

Open Access

Assessing Impact Dimensions of

Rosy Jan¹*, Aaqib Mir¹,

A Mature, Multi-dimensional Assessment Ecosystem

Author information

Cite this Article

Affiliations

¹Department of Library and Information Science University of Kashmir, INDIA.

Corresponding author

* Rosy Jan

Department of Library and Information Science University of Kashmir, INDIA.



Vol. 5, No. 2 2016

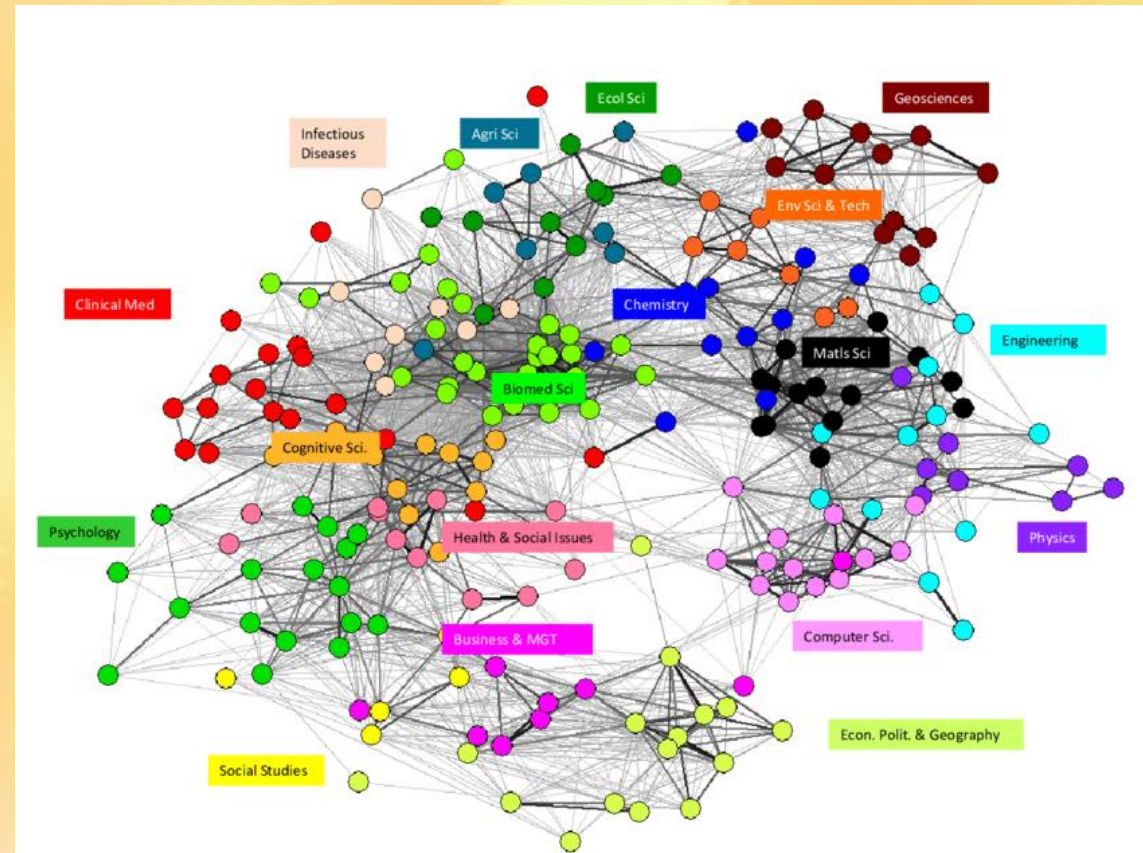
Sep 1, 2016





Bibliometrics

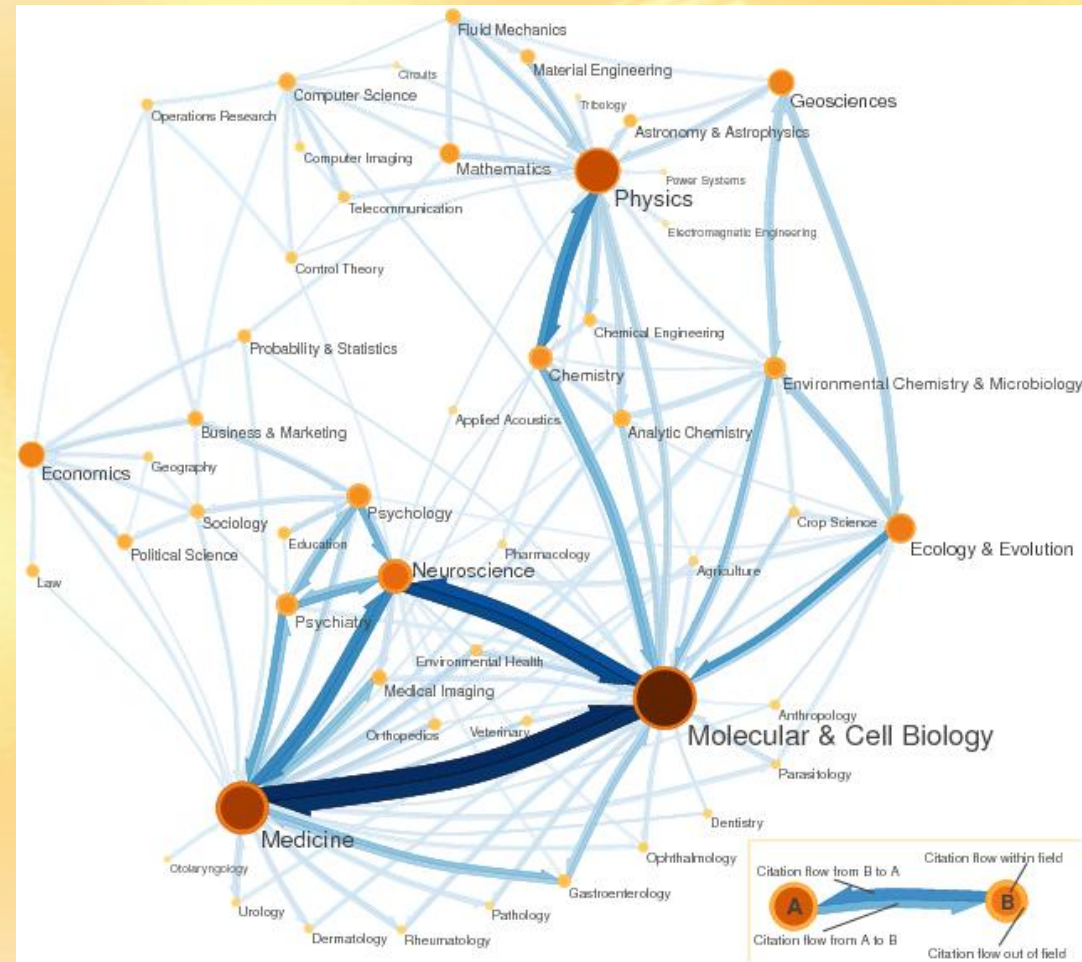
- It is the application of mathematical and statistical methods to analyse scholarly publications, such as books, journal articles, and datasets.





Bibliometrics

- It helps researchers, institutions, and **Funding Agencies** evaluate
 - Research impact
 - Funding projects
 - Identify collaboration networks
 - Map trends in scientific literature





Scientometrics

Home > Scientometrics



Scientometrics
An International Journal for all Quantitative Aspects of the Science of Science,
Communication in Science and Science Policy

Publishing model
Hybrid

[Submit your manuscript →](#) [Save journal](#)

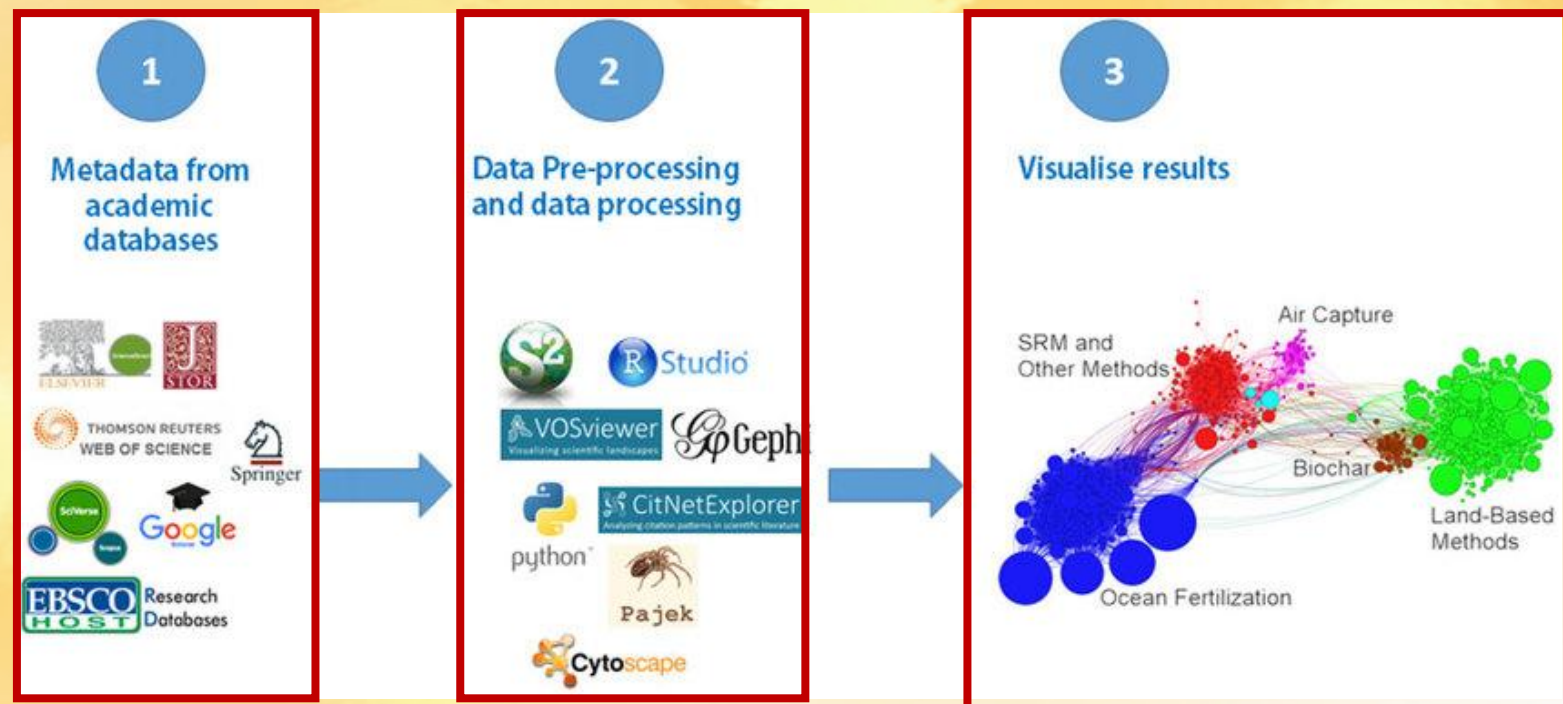


It is an international, peer-reviewed, monthly journal that publishes original research on all quantitative aspects of the production, communication, and use of scientific and technological information.



Scientometrics

It refers to a
Scientific Mapping Approach
that analyses
**Academic Knowledge
& Contributions**
within a field



Using statistical techniques, measurements, and indicators to identify trends and patterns in the scientific literature.



total articles published on bibli... Metrics | Open Access Journal | Home

mdpi.com/journal/metrics

MDPI Journals Topics Author Services Information About

Search all articles Sign in Submit

You are currently on the new version of our website. Access the old version here.

Metrics

Metrics is an international, peer-reviewed, open-access journal on informetrics published quarterly online by MDPI.

33 days
Time to First Decision

Search journal articles

Editor-In-Chief
Prof. Dr. Manuel Pedro Rodriguez Bolivar
Board Members →

Get citation

Get Altered
Add your email address to receive forthcoming issues of this journal.

Email address Subscribe

Feedback

30°C
شمس

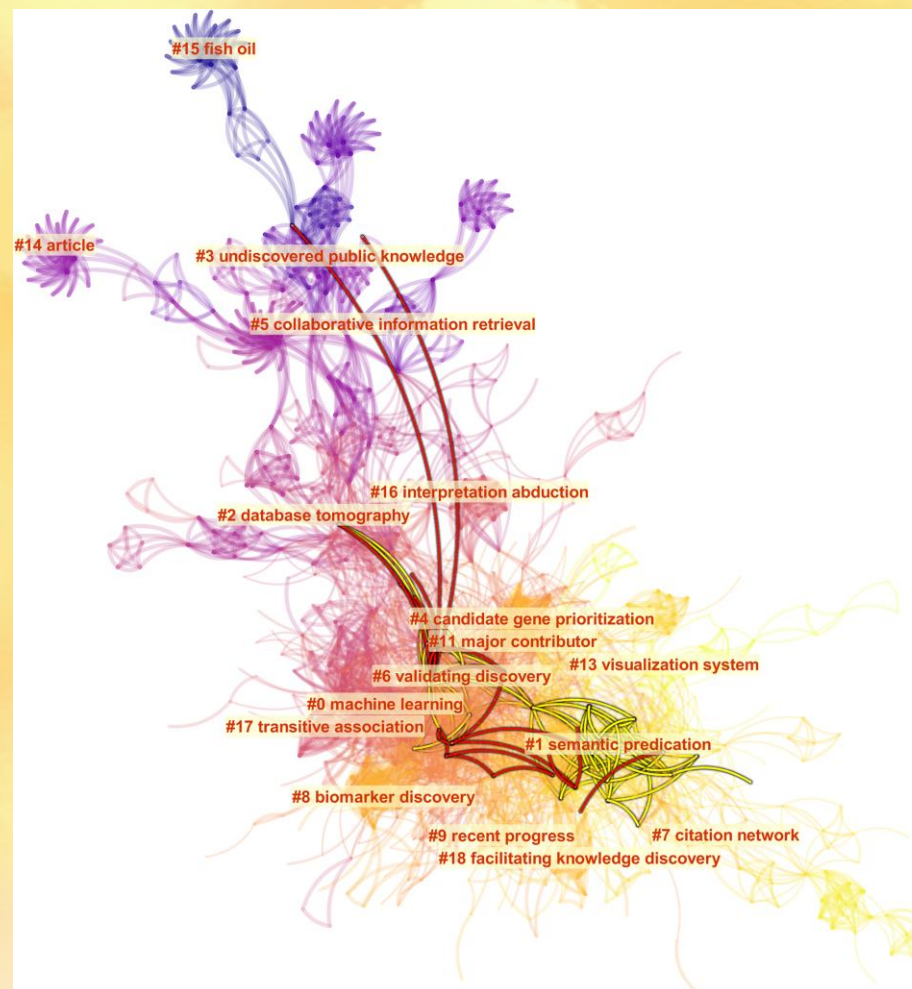
Search

ENG IN 2:33 PM 5/29/2026



Bibliometrics

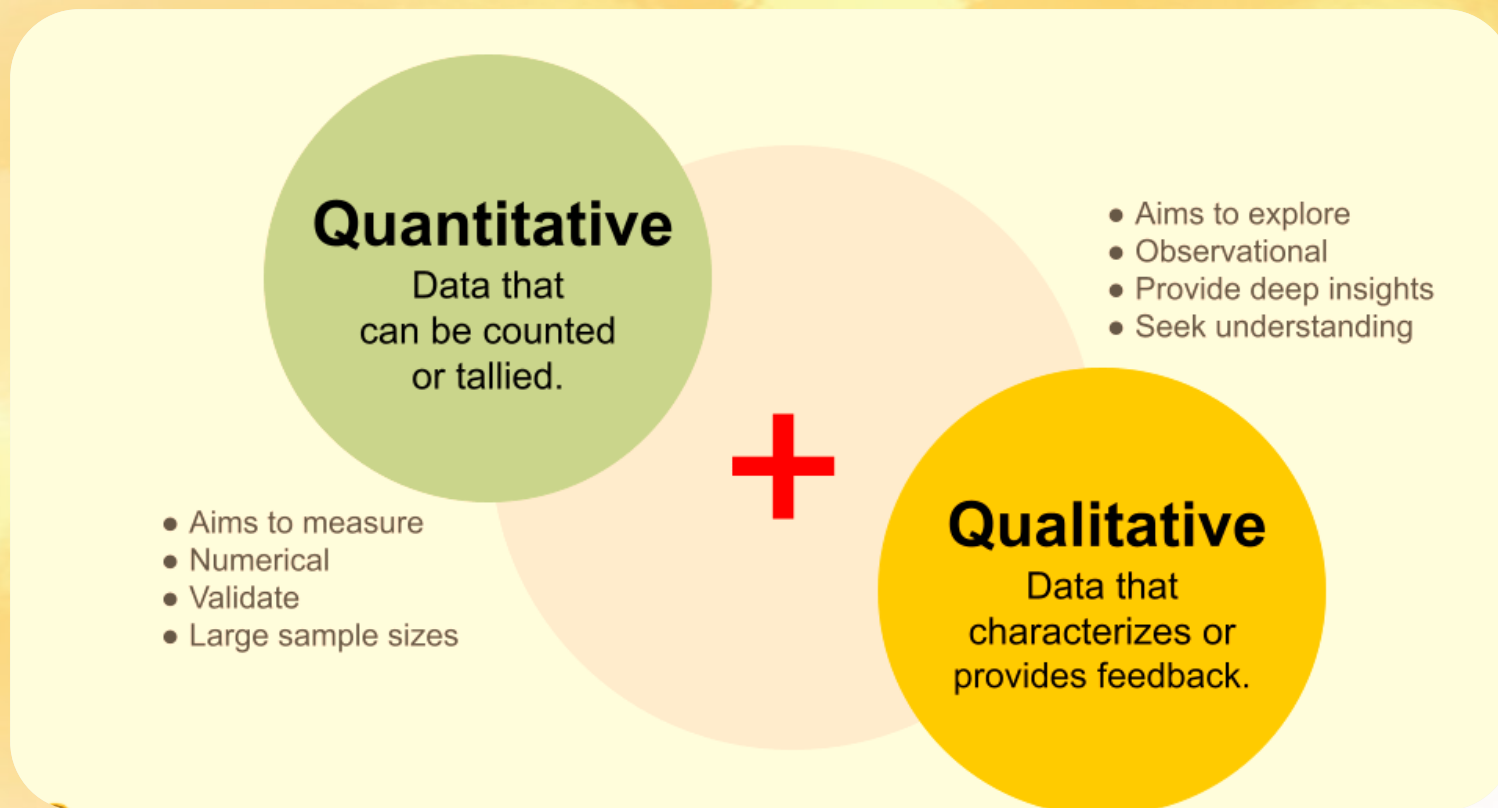
There are over **30,000** published documents (articles, reviews, and conference papers) specifically focused on bibliometric studies or analyses indexed in major databases like Scopus





Research Metrics Classification

- Quantitative Metrics
- Qualitative Metrics



Research Metrics Classification

- Quantitative Metrics
- Qualitative Metrics

Qualitative vs Quantitative Data

Qualitative Data



- Themes
- Patterns
- Insights

Quantitative Data



- Numbers
- Statistics
- Metrics

QUANTITATIVE



The Quantitative Drive:

Accelerated by

- **Digitisation**
- **Algorithmic indexing**
- **Mass data compilation**

- **Highly scalable but vulnerable to gaming.**

The Qualitative Mandate:

- **Historically rooted in expert consensus.**
- **Deeply accurate to scientific distinction**
- **Slow, expensive**
- **Prone to cognitive bias.**

The Systemic Challenge:

Over-indexing on what is easy to **Measure** rather than
what is scientifically **Valuable**.



The fundamental challenge of
Research Assessment
Lies in this divide.

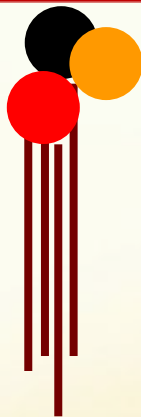
Mycetoma



Bibliometrics give clean,
Structured Data at scale.



Qualitative assessment gives
Meaning.



The Mycetoma Research Center
University of Khartoum

The fundamental challenge of
Research Assessment
Lies in this divide.

Mycetoma



Institutions rely purely on

Quantitative Data

because it is easier to read on a
spreadsheet





The fundamental challenge of Research Assessment

Mycetoma



- Quantitative Metrics
- Qualitative Metrics



The Core Conflict Metrics vs. Meaning



The fundamental challenge of Research Assessment

Mycetoma



“ Work hard in
Silence,
let your success
be your
Noise.”

“The true essence of
Scientific Discovery
gets lost in the noise.”
Hence **Assessment** is mandatory

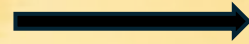




The Mycetoma Research Center
University of Khartoum

Shifting from

**Macro-level
Venue Prestige**



Down to immediate

**Public
Engagement.**



The fundamental challenge of Research Assessment

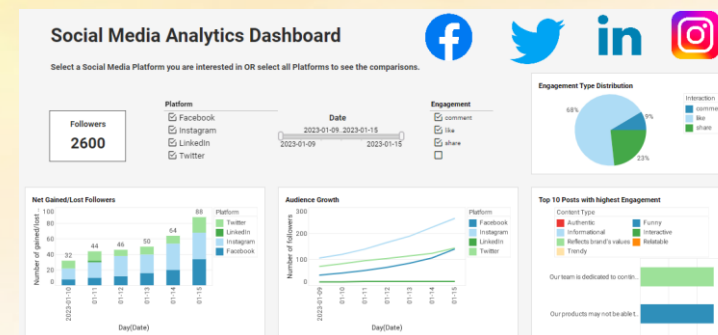
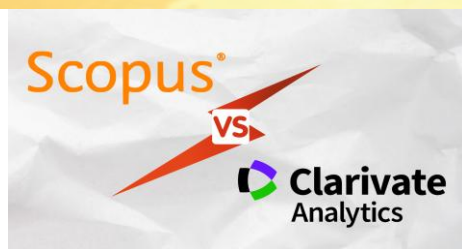
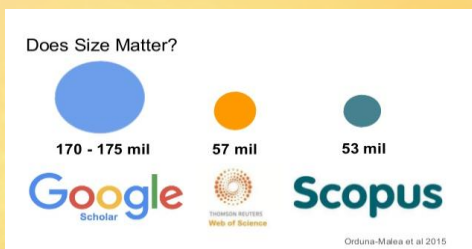


Mycetoma





Research Metrics Platforms & Tools





Clarivate Analytics Company

- Clarivate Plc is a British-American publicly traded analytics company operating a
- Collection of subscription-based services in the areas of
- Bibliometrics and scientometrics,
- Business and market

Clarivate

- Clarivate is an independent, global information and analytics company (publicly traded on the NYSE).
- Unlike Elsevier, Clarivate is not a primary publisher—they do not own or publish scientific research journals.
- Instead, they act as an independent auditor and indexer of the world's literature.
- Core Business:
 - Providing data analytics
 - Subscription-based indexing
 - Intellectual property insights
 - Metric-tracking tools to assess research quality.

Clarivate

Key Platforms & Products:


- **Web of Science (WoS):** The gold-standard citation index that tracks high-impact global journals.
- **Journal Citation Reports (JCR):** The official body that calculates and issues the annual Journal Impact Factor (JIF).
- If a journal gets "suppressed" or loses its Impact Factor due to citation manipulation, it is Clarivate that hands down that punishment.
- **EndNote:** The industry-standard reference management and bibliographic software.
- **ScholarOne:** The widespread workflow software used by journals to manage peer reviews and manuscript submissions.



Clarivate – Web of Science


Library About the Library Services E-resources Scientific Communication Publishing Conferences E-books Scientific Journals Gallery A

Library | Scientific Communication | Web of Science (Clarivate Analytics)



Web of Science (Clarivate Analytics)

- Library
- About the Library
- Services
- E-resources



Web of Science includes metrics about

- Publications
- Authors
- Journals

Based on citations from other documents indexed in the Web of Science databases.





The Mycetoma Research Center
University of Khartoum

Research Metrics Tools Web of Science

Mycetoma



Author metrics include the percentage of papers on which a researcher was

The first, last or corresponding author.





The Mycetoma Research Center
University of Khartoum

Research Metrics Tools Web of Science

Mycetoma



- Web of Science links to **Journal Citation Reports**, a tool that provides journal-level metrics.

JIF





The Mycetoma Research Center
University of Khartoum

Research Metrics Tools

Elsevier

Mycetoma



ELSEVIER

[Academic & Government](#) [Health](#) [Industry](#) [Insights](#) [About](#) [Support](#) [Security](#)

[Publish with us](#)



[Home](#) > [About](#)

Advancing human progress, *together*

Elsevier is a global leader in advanced information and decision support for science and healthcare. We believe that by working together with the communities we serve, we can shape human progress to go further, happen faster, and benefit all.



Elsevier

- Elsevier is a massive, traditional **Academic Publisher** and **Data Analytics Provider**
- Headquartered in the Netherlands.
- It is a subsidiary of the RELX Group.

Core Business:

- They actually publish the scientific research
- They own and print thousands of prestigious academic journals.

Elsevier

Key Platforms & Products:

Scopus:

- Their massive citation and indexing database (the direct competitor to Web of Science).

ScienceDirect:

- The hosting platform where millions of their published journal articles are read.

SciVal:

- Their executive analytical tool used by universities to evaluate institutional research performance.

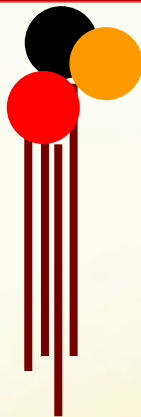
Mendeley:

- A widely used digital reference manager.



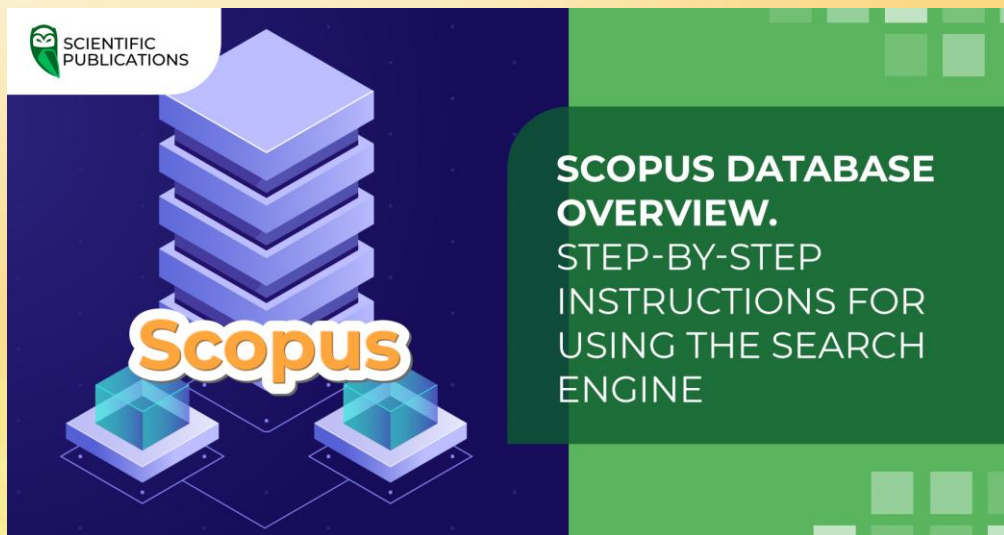
Scopus

The screenshot shows the Elsevier Scopus website. At the top left is the Elsevier logo. The navigation bar includes links for Academic & Government, Health, Industry, Insights, About, Support, Security, and a 'Publish with us' button. Below this is a secondary navigation bar with 'Scopus' and various categories like Content, Data, AI Discovery, Author Profiles, Metrics, Higher Education, Industry, and Government. The main content area features a large heading: 'Scopus: A comprehensive abstract and citation database for *impact makers*'. Below the heading is a sub-headline: 'Find relevant research, identify top experts and gain strategic insights with Scopus metrics and analytical tools.' There are two buttons: 'Contact us' and 'Go to Scopus.com'. On the right side of the main content area is a vertical stack of images showing a person's face looking up, overlaid with a globe and abstract data visualizations. At the bottom of the screenshot is a Windows taskbar showing the system tray with weather (30°C), search, and various application icons. The system clock shows 1:39 PM on 5/28/2026.



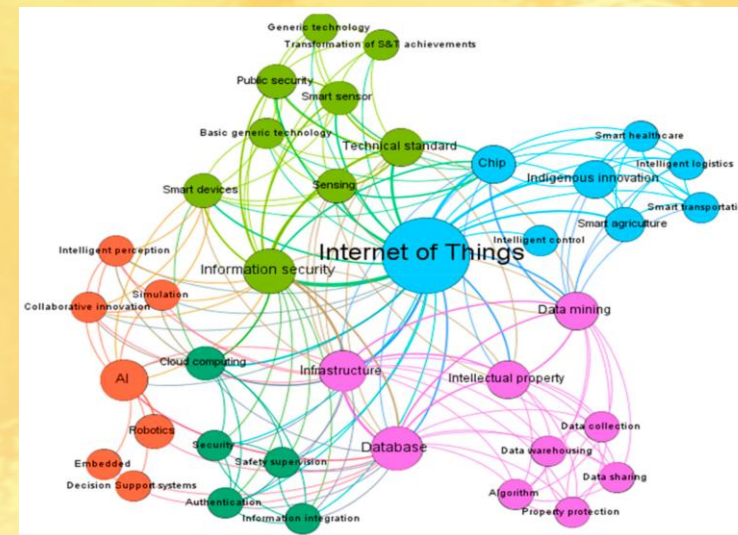
Research Metrics Tools

Analytical Frameworks (Scopus vs SCImago)



Scopus

Is the core big-data Engine



SCImago

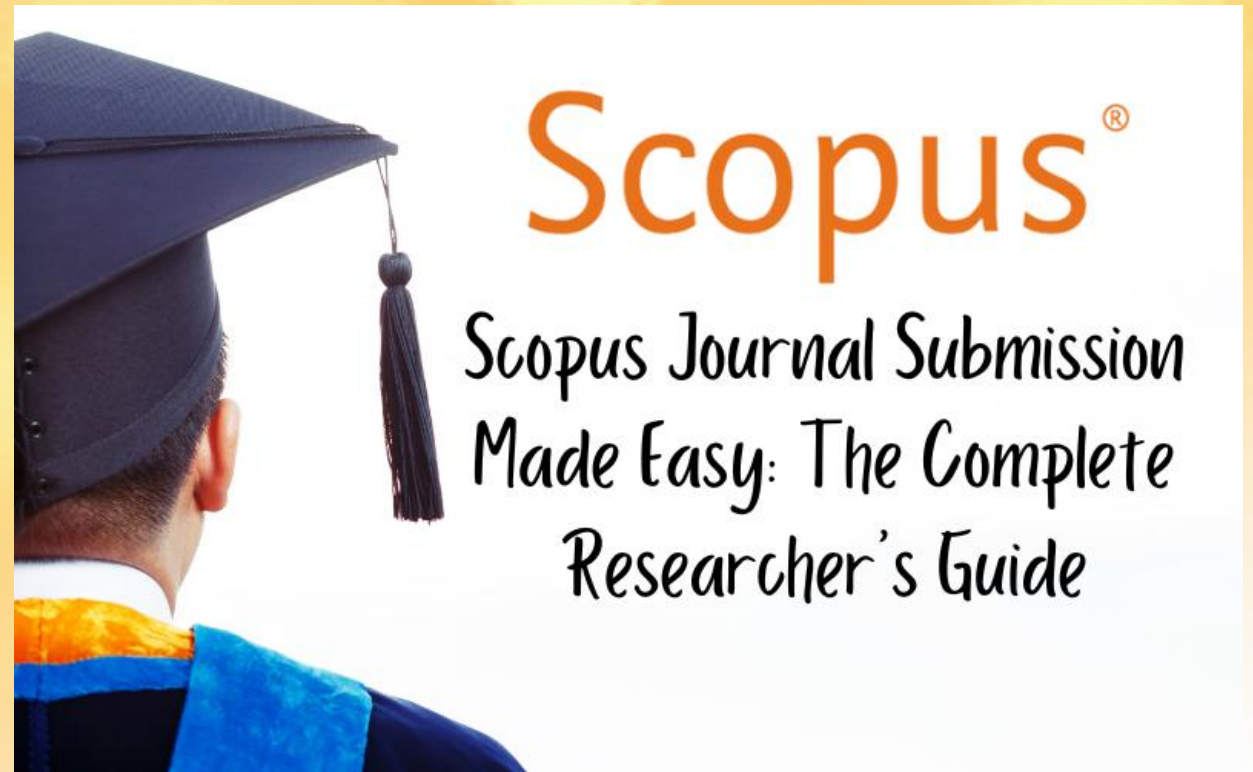
Serves as a specialised analytical Lens
for evaluating network journals

Research Metrics Tools Scopus



Scopus provides four platform-specific metrics on a publication's metrics page:

- **Total citations within a user-selected date range**
- Citations per year for a chosen period
- **Citation Benchmarking (Percentile ranking)**
- Field Weighted Citation Impact.



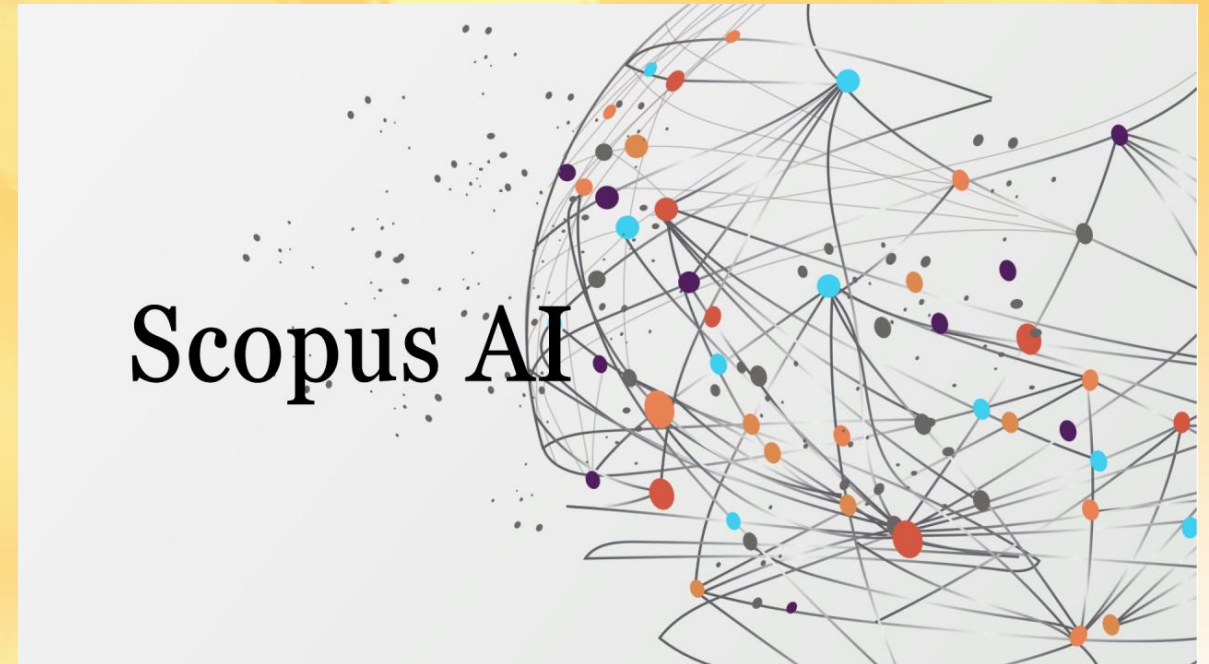
Research Metrics Tools

Scopus-Proprietary Framework



- **Scopus focuses heavily on Article-Level Metrics (ALMs)**
- **Real-time data tracking via integrated tools like**
 - **Plumx metrics (<https://www.Elsevier.Com/insights/metrics/plumx>)**
 - **Explicitly categorises usage (clicks/downloads)**
 - **Captures (bookmarks)**
 - **Mentions (blogs/news)**
 - **Social media engagement**
 - **Raw citation counts on every article page.**

- It provides access to a large, linked research database.
- It offers various metrics to assess research impact, including traditional citation counts
- **Alternative metrics (altmetrics) like social media shares and news mentions.**





LENS.ORG

Home Organisation Updates Resources Policies English

BRIDGING CULTURES

Explore global science and technology knowledge

The Lens is a world leader in providing professional search, analysis and management software for worldwide patents and global research scholarly data.

Serving global scholarly work, patent documents from over 100 countries, and biological sequences extracted from patents, The Lens bridges these cultures and links open knowledge artefacts and metadata with user friendly tools to inform effective, efficient and equitable problem solving.

[Try us out](#) [Register Now](#)

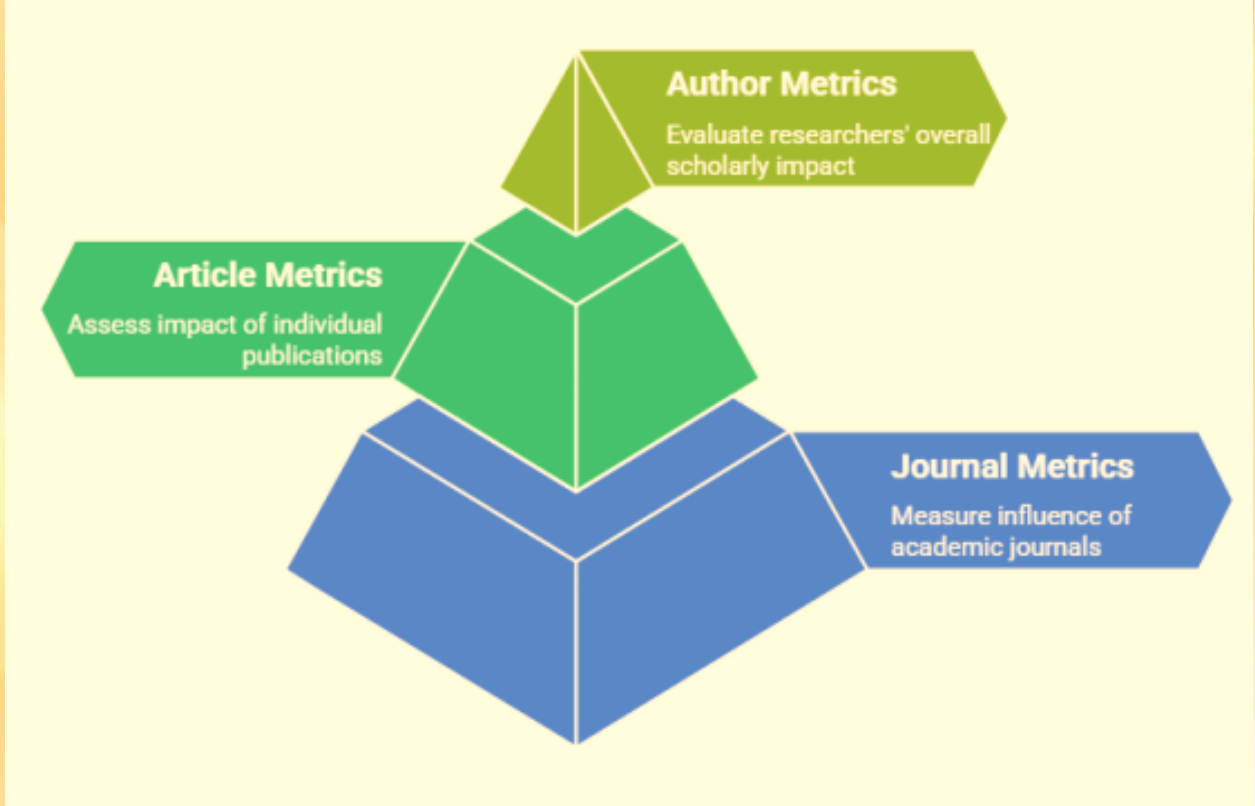
0:00 / 2:53



The evaluation ecosystem is organised into four distinct tiers

- Journal-Level
- Author-Level
- Article-Level
- Alternative

Research Metrics Classification



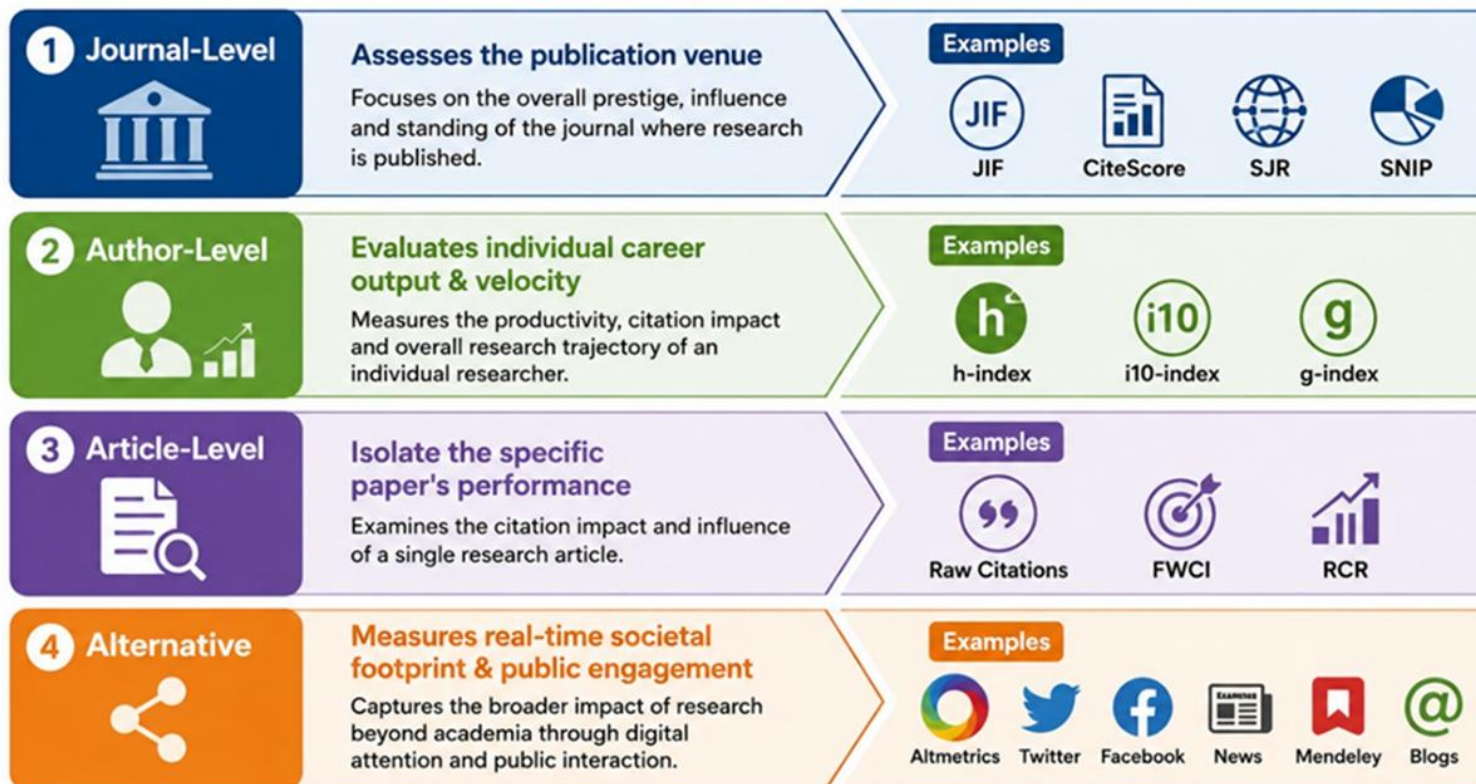
<https://library.iihs.co.in/wp-content/uploads/2025/06/Research-Impact-Metrics.pdf>



Research Metrics Classification

Classification of Research Metrics

The evaluation ecosystem is organised into four distinct tiers, shifting from macro-level venue prestige down to immediate public engagement.





Classification of Research Metrics Journal-Level Metrics



These metrics assess the

- Overall journal prestige
- Citation frequency
- Reach of a specific academic journal.



They reflect the properties of the **Venue**,
not necessarily the quality of an **Individual Article** published within it.



Classification of Research Metrics Journal-Level Metrics

Journal Impact Factor (JIF)

- Managed by Clarivate (Web of Science)
- Calculates the average number of citations received by a journal's articles over the preceding two years.

Journal Impact Factor Calculation

$$2018 \text{ Journal Impact Factor} = \frac{73,952}{1,717} = 43.070$$

HOW JOURNAL IMPACT FACTOR CALCULATED?

Formula, Steps & Examples (2026)

The Official Formula Step-by-Step Real Examples Metrics

JIF = Citations received in Year X items published in Years (X-1) and Total number of citable items published in Years (X-1)\(X-2)



CiteScore

- Developed by Elsevier for the **Scopus Database**

(<https://www.elsevier.com/products/scopus>)

- Tracks the average citations per document over a

Four-year Rolling Window

- Provides a more stable metric for slower-moving disciplines.





Source Normalised Impact per Paper (SNIP)

- SNIP normalises citation counts based on the total citation potential of a specific scientific field.
- It mathematically lowers scores for high-citation fields (e.g., **Molecular Biology**) and raises them for low-citation fields (e.g., **Mathematics**)
- To enable fair cross-disciplinary comparisons.

A graphic illustration featuring a magnifying glass over a bar chart and a line graph, symbolizing data analysis. The chart is set within a circular frame with orange and yellow accents.

**Source
normalized impact
per paper (SNIP)**

An overview

Website
www.journalindicators.com



SCImago Journal Rank (SJR)

- Based on Scopus data (<https://www.scimagojr.com/>)
- Weighs citations by the network "prestige" of the citing journal using an **Eigenfactor** centrality algorithm similar to Google's PageRank.
- A citation from an elite journal influences this score far more than a citation from an obscure one.

SCImago Journal Rank

— An overview

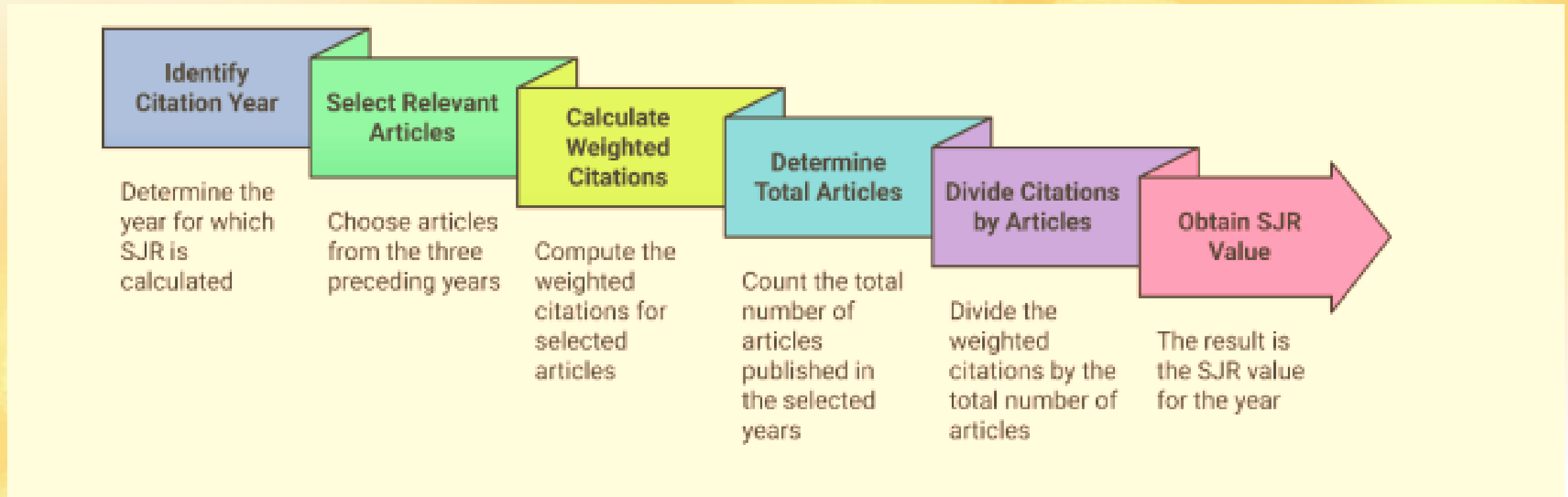
scimagojr.com



Classification of Research Metrics Journal-Level Metrics



SCImago Journal Rank Calculation Process





Eigenfactor Score

Measures the number of times articles from the journal published in the past

Five Years

have been cited in the

Journal Citation Reports (JCR) year.

EIGENFACTOR.org HOME | PROJECTS | PAPERS | ABOUT

Home > [Papers](#)

Scholarly publications

The Eigenfactor project has lead to numerous scholarly publications in several areas of research:

- Journal, author, and article metrics
- Algorithms for network clustering and mapping
- Economics of scholarly publishing
- Methods for scientific navigation
- Studies on the sociology of science

These papers are enumerated below and available for download. We also provide code and pseudocode for calculating the Eigenfactor metrics. Code for running the various forms of the Infomap network clustering algorithm is available from mapequation.org.

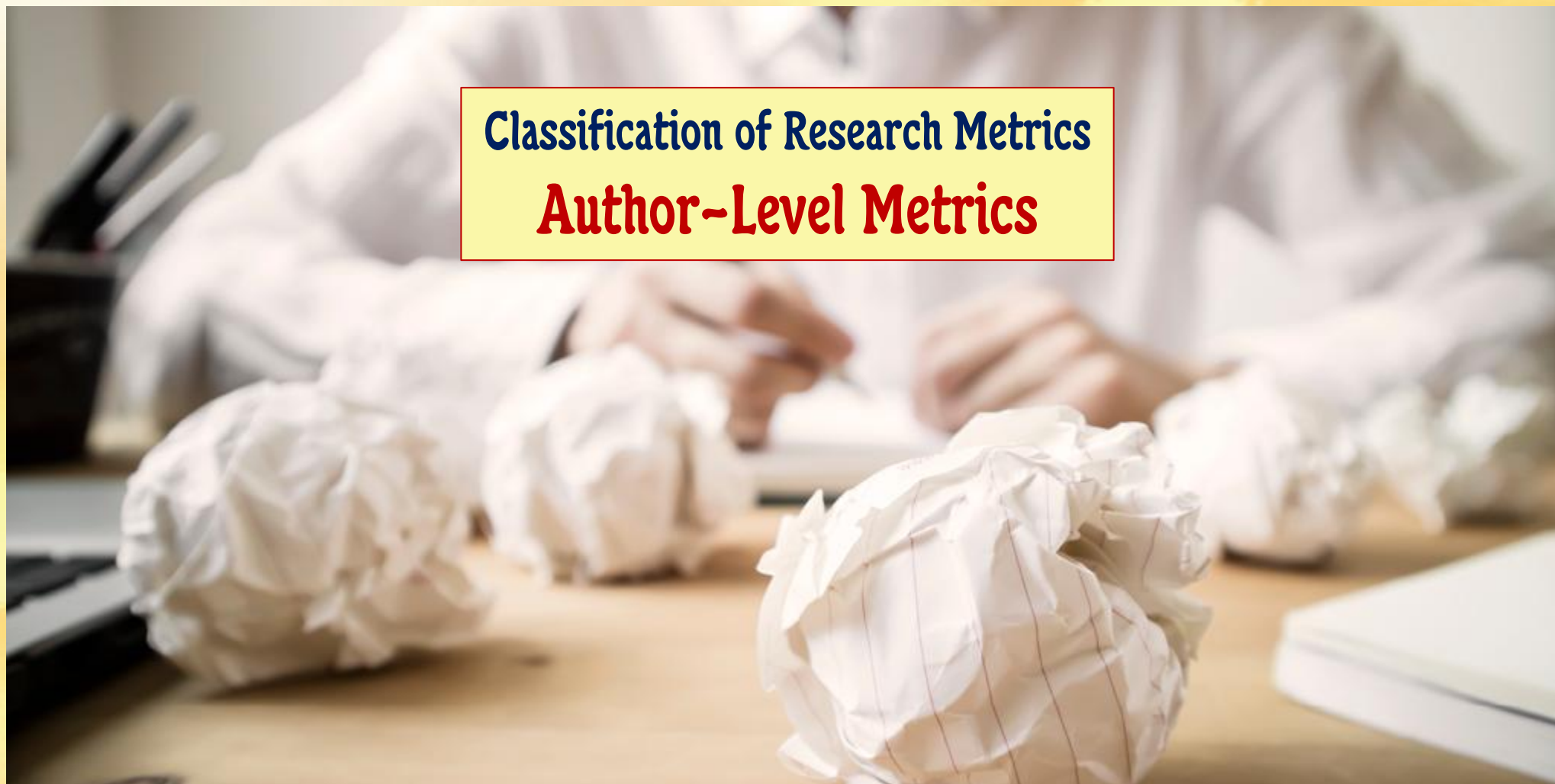
Eigenfactor Metrics

- [1]. Leveraging Citation Networks to Visualize Scholarly Influence Over Time**
J. Portenoy, J. Hullman, J.D. West (2016)
arXiv: 1611.07135 [[pdf](#)]
- [2]. Static ranking of scholarly papers using article-level Eigenfactor (ALEF)**
I. Wesley-Smith, C. T. Bergstrom, and J. D. West (2016)
The 9th ACM International Conference on Web Search and Data Mining (WSDM) [[pdf](#)]
- [3]. Author-Level Eigenfactor Metrics: Evaluating the Influence of Authors Institutions and Countries Within the SSRN Community.**
J.D. West, M.C. Jensen, R.J. Dandrea, G.J. Gordon, and C.T. Bergstrom, (2013)
Journal of the American Society of Information Science and Technology 64: 787-801 [[pdf](#)]
- [4]. Response to "Big Macs and Eigenfactor Scores: The Correlation Conundrum"**
J.D. West, T.C. Bergstrom, C.T. Bergstrom, (2010)
Journal of the American Society for Information Science & Technology 61:2592 [[pdf](#)]

[5]. Eigenfactor ranking and mapping scientific knowledge



Classification of Research Metrics
Author-Level Metrics



Classification of Research Metrics Author-Level Metrics



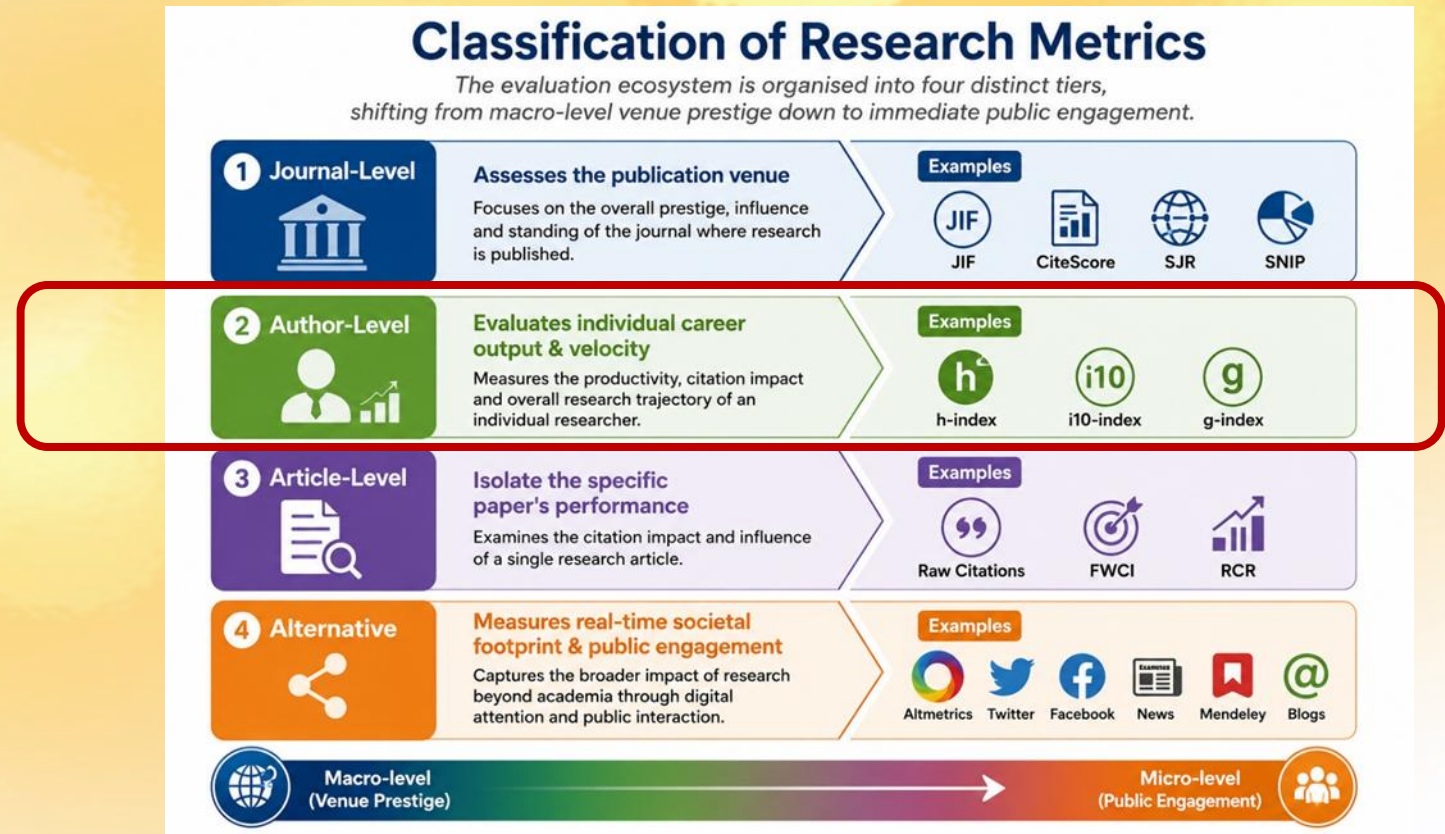
These indicators quantify an individual scientist's cumulative productivity and citation footprint over their career.

The h-index

i10-index

g-index

e. index

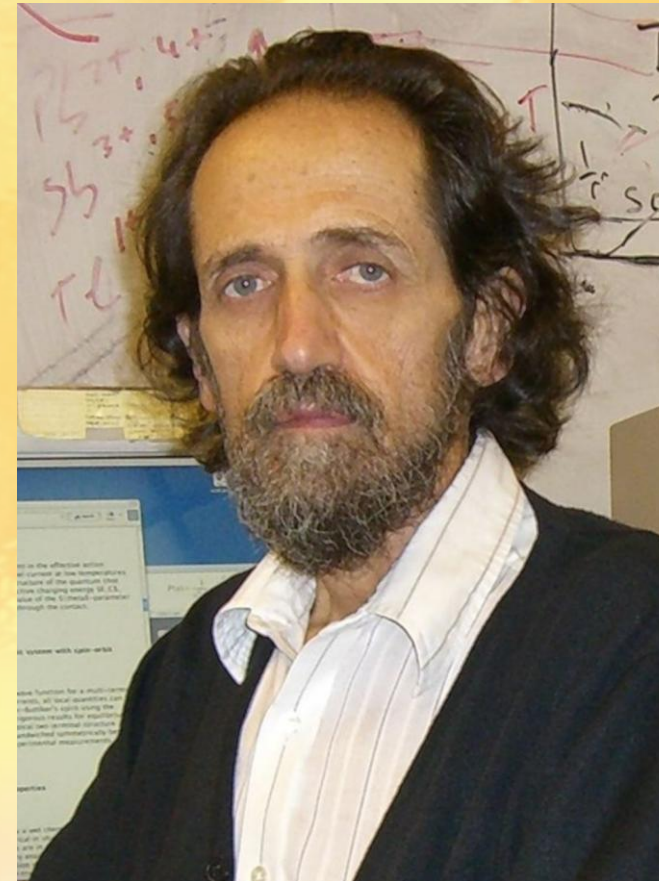




The h-index

Proposed by Jorge E. Hirsch

- An Argentine American professor of physics at the University of California, San Diego.
- He is known for inventing the h-index in 2005
- An index for quantifying a scientist's publication productivity and the basis of several scholar indices.





Classification of Research Metrics

Author-Level Metrics

The h-index

- An h-index of **15** means a scientist has published **15 Papers**, each cited at least **15 Times**
- Effectively balancing **Volume** (number of papers) with **Impact** (number of citations).

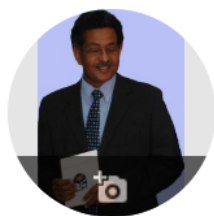




Classification of Research Metrics

Author-Level Metrics

The h-index



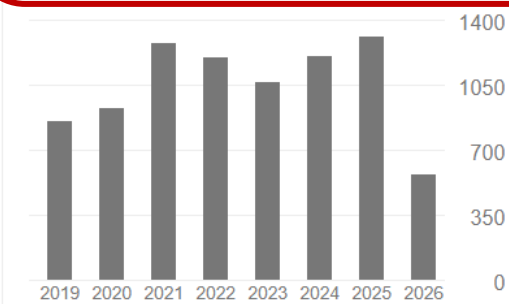
Prof. Ahmed Hassan Fahal

FOLLOWING

Professor of Surgery - [University of Khartoum](#)
Verified email at uofk.edu - [Homepage](#)
Surgery Mycetoma Medical Education

| Cited by | VIEW ALL | |
|-----------|----------|------------|
| | All | Since 2021 |
| Citations | 14128 | 6662 |
| h-index | 60 | 39 |
| i10-index | 222 | 160 |

| <input type="checkbox"/> | TITLE | CITED BY | YEAR |
|--------------------------|---|----------|------|
| <input type="checkbox"/> | <p>Genome-wide meta-analysis identifies 11 new loci for anthropometric traits and provides insights into genetic architecture SI Berndt, S Gustafsson, R Mägi, A Ganna, E Wheeler, MF Feitosa, ... Nature genetics 45 (5), 501-512</p> | 845 | 2013 |
| <input type="checkbox"/> | <p>Multiple independent variants at the <i>TERT</i> locus are associated with telomere length and risks of breast and ovarian cancer SE Bojesen, KA Pooley, SE Johnatty, J Beesley, K Michailidou, JP Tyrer, ... Nature genetics 45 (4), 371-384</p> | 685 | 2013 |





Classification of Research Metrics

Author-Level Metrics

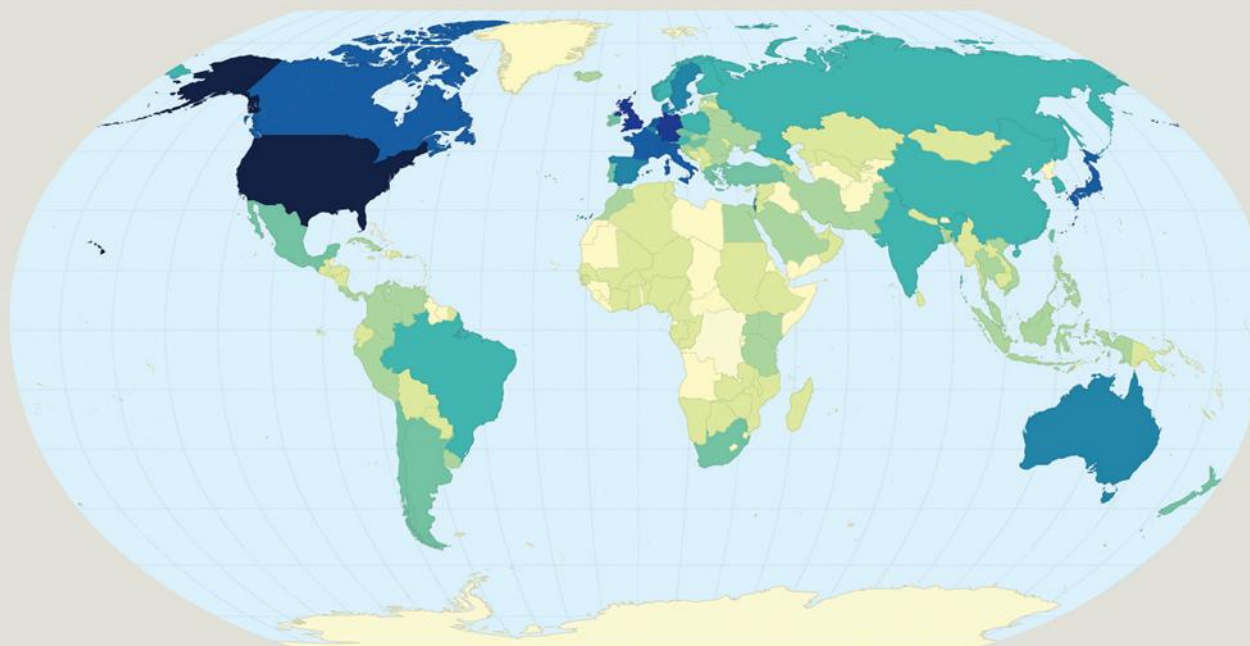
The h-index

The h-index of nations

The world map of the h-index, based on articles indexed in the Scopus database published by researchers in each country, and citations for the period 1996–2010

H-index of countries

- Less than 32
- 32 - 76
- 76 - 145
- 145 - 248
- 248 - 336
- 336 - 450
- 450 - 604
- 604 - 750
- 750 - 1,229
- No Information



SOURCE SCIMAGO JOURNAL & COUNTRY RANK



| Academic Stage | Life Sciences | Physical Sciences | Engineering | Social Sciences | Humanities | Computer Science | Business & Economics |
|---------------------|---------------|-------------------|-------------|-----------------|------------|------------------|----------------------|
| PhD Student | 2-5 | 2-4 | 2-5 | 1-3 | 0-2 | 2-4 | 1-3 |
| Postdoc | 6-16 | 5-13 | 6-16 | 4-12 | 2-6 | 7-17 | 4-13 |
| Assistant Professor | 12-25 | 10-23 | 12-25 | 9-22 | 4-14 | 13-26 | 10-23 |
| Associate Professor | 20-40 | 18-38 | 20-40 | 17-35 | 10-26 | 21-40 | 18-36 |
| Professor | 32-60+ | 30-60+ | 32-60+ | 29-55+ | 20-40+ | 33-60+ | 30-56+ |



Classification of Research Metrics Author-Level Metrics

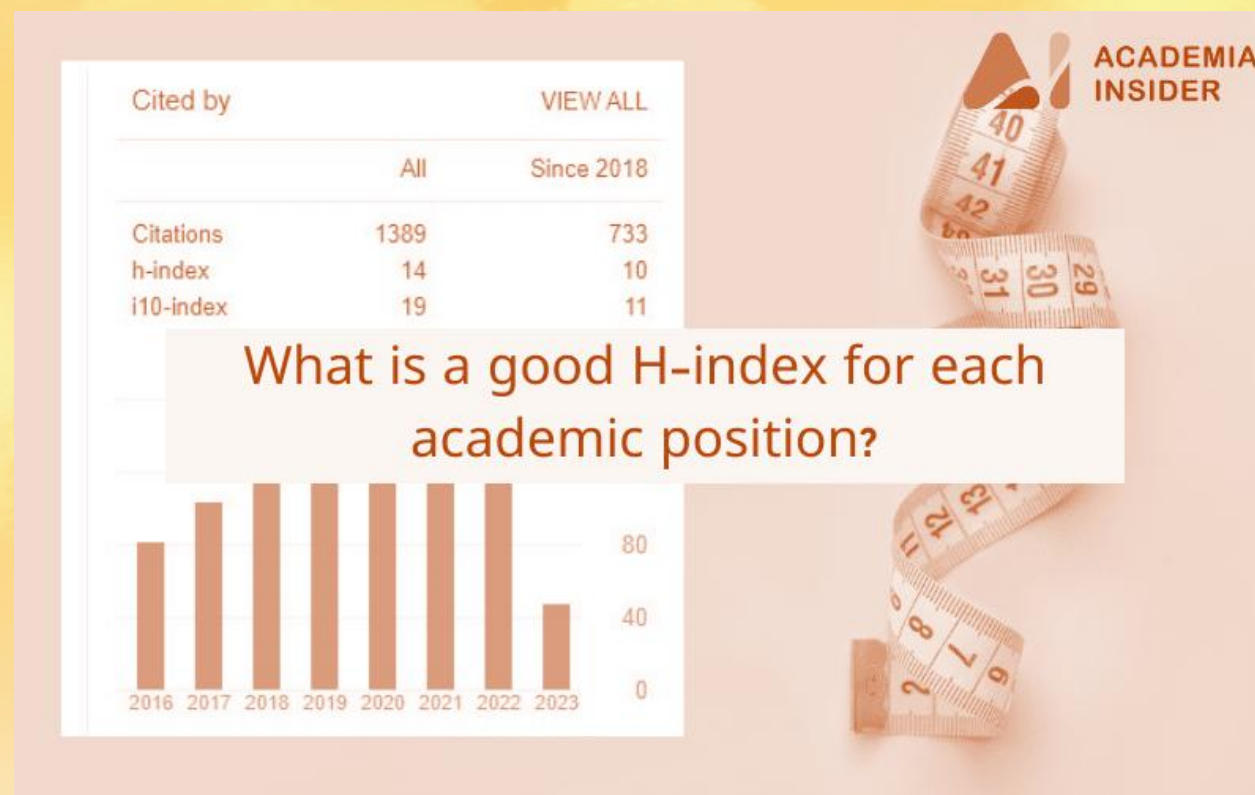


i10 -index

- Used primarily by Google Scholar

<https://scholar.google.com/>

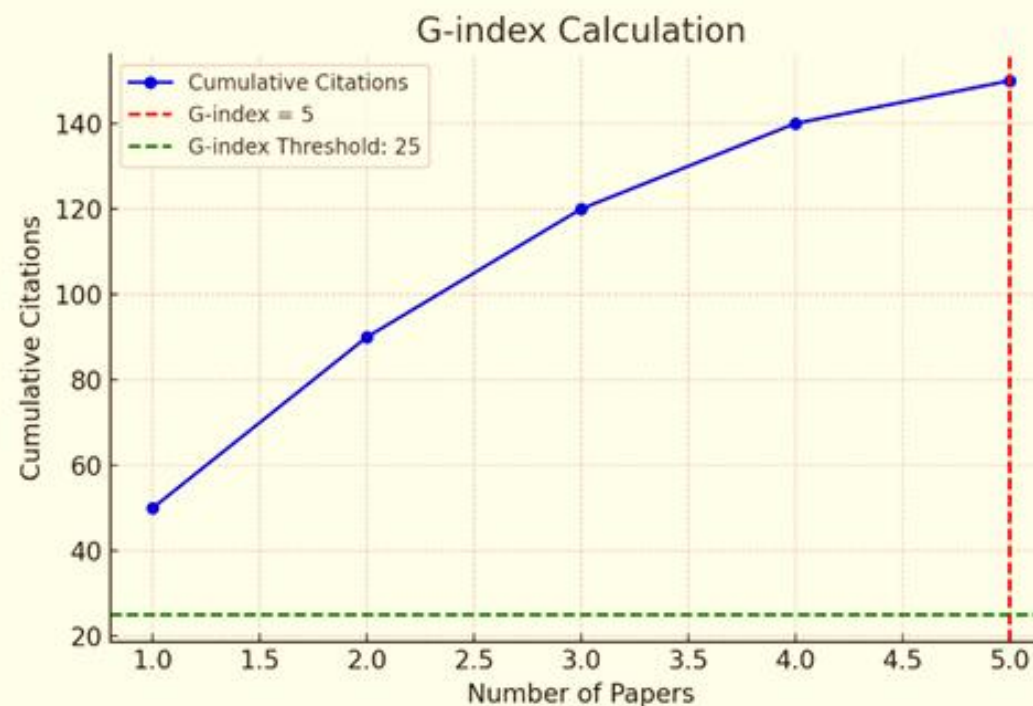
- This metric counts the total number of publications by an author that have received at least 10 citations.





g- Index

Leo Egghe proposed the **G-Index** as an improvement on the **h-index** in 2006.





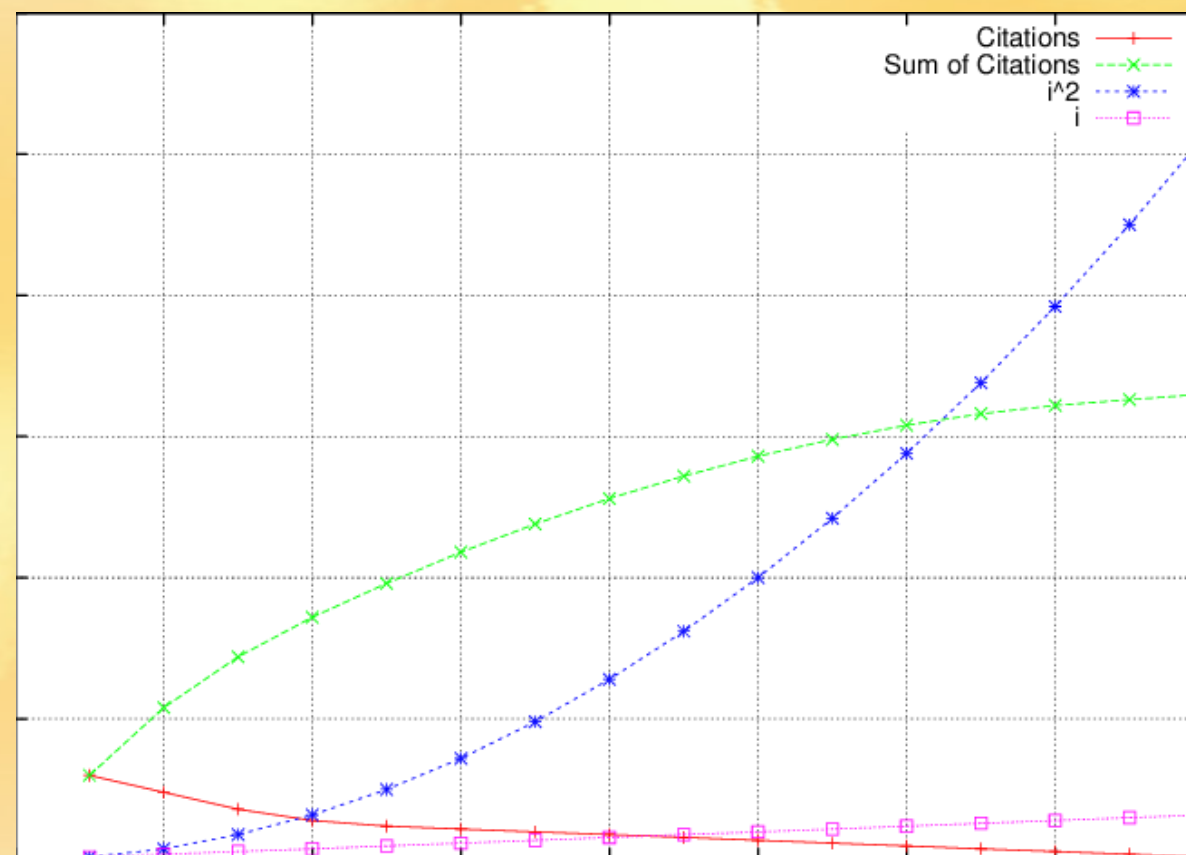
Classification of Research Metrics Author-Level Metrics



g- Index

Calculate the rank of a set of articles in decreasing order of the number of citations they received.

Then, find the largest number, G , such that the top G articles receive at least g^2 citations.

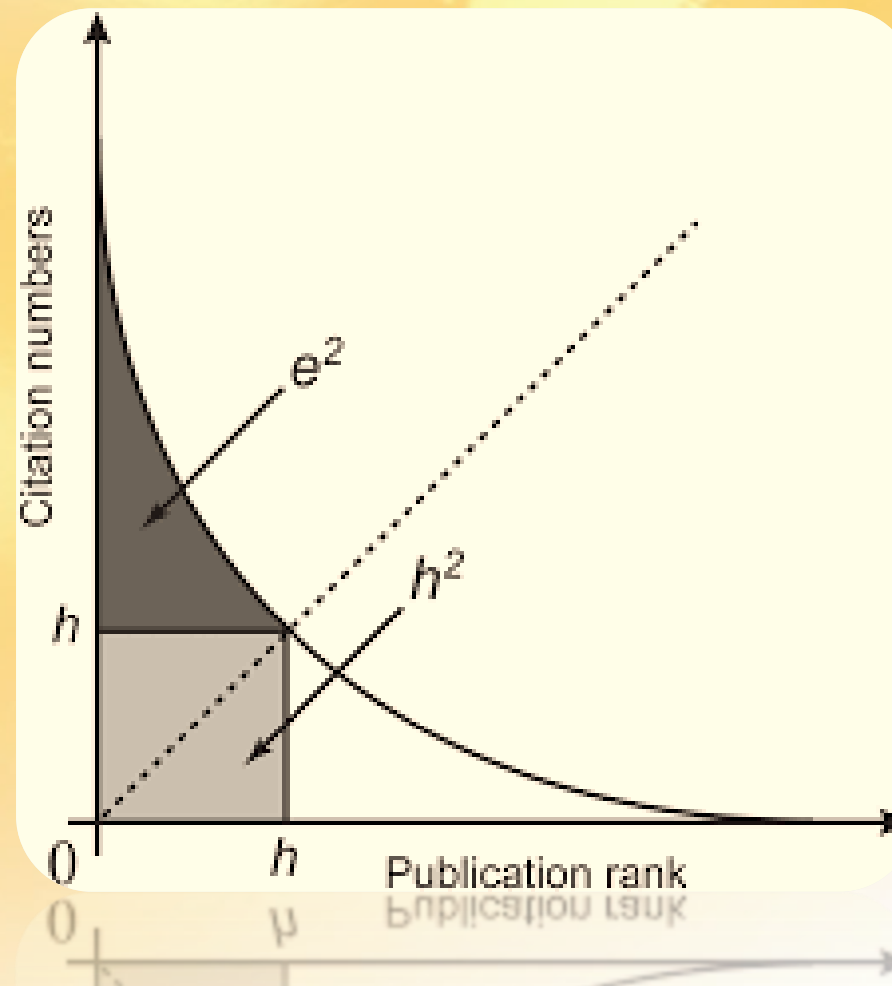




e- Index

The "e-index" is an academic
bibliometric indicator used to evaluate a
scientist's research
Impact & Productivity.

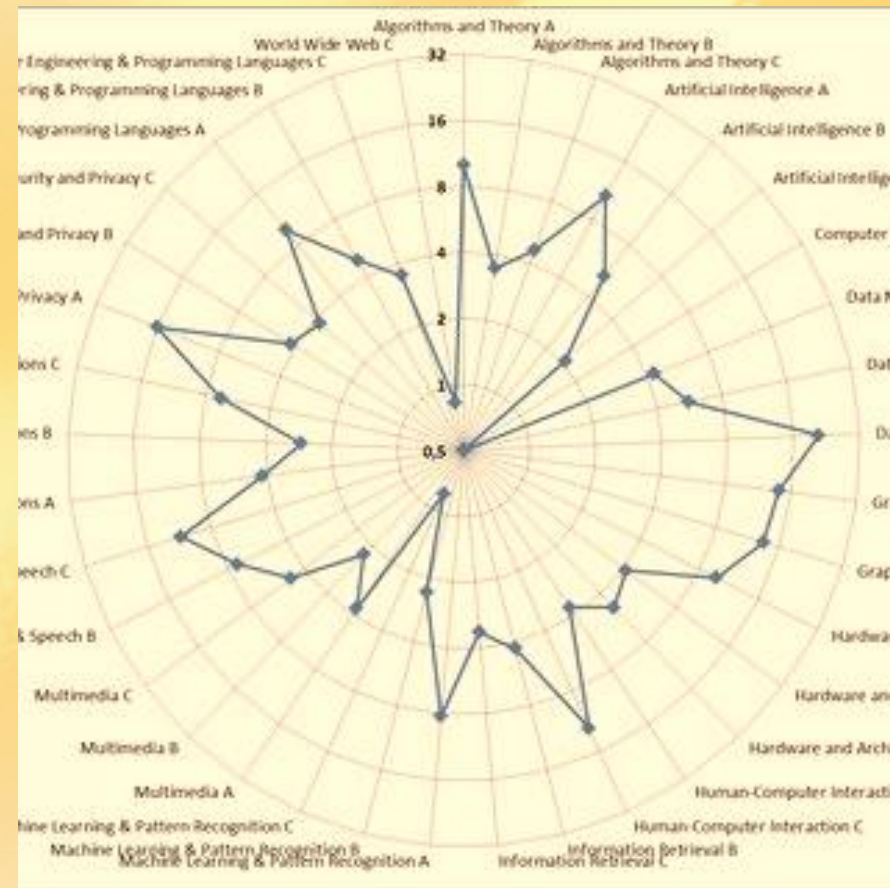
It typically acts as a complement to the
traditional h-index





e- Index

- It is designed to account for citations in excess of the h-index
- Provides a means for differentiation between
- Researchers With The Same H-index.



Zhang C-T (2009) The e-Index, Complementing the h-Index for Excess Citations. PLoS ONE 4(5): e5429. doi:10.1371/journal.pone.0005429



Research Metrics Platforms

The screenshot displays the AD Scientific Index website interface. The top navigation bar includes the AD Scientific Index logo, menu items for Rankings, SMART Solutions, About, and Find a Professional, along with a toggle switch, a globe icon, and buttons for Pricing & Registration and Login.

The main content area is titled "Academic Links & Information" and contains several interactive cards:

- Google Scholar:** Includes the Google Scholar logo and a "Visit" button.
- University Scientists Rankings:** Features the University of Khartoum logo and three sub-buttons: "H-Index Rankings", "i10-Index Rankings", and "Citations Rankings".
- AD Scientific Index ID:** Shows the AD Scientific Index logo, the ID number "102971", and a "Visit" button.
- Web Of Science Researcher ID:** Includes the Web of Science logo, the ID number "H-Index, Verified Peer Reviews, Citing Articles", and a "Visit" button.
- ORCID ID:** Shows the ORCID logo and the ID number "H-Index, Citations, Documents", with a "Visit" button.
- Scopus Author ID:** Includes the Scopus logo, the ID number "H-Index, Citations, Documents", and a "Visit" button.
- ResearchGate:** Features the ResearchGate logo, the ID number "Research Interest Score, h-index", and a "Visit" button.
- Academic Degree:** Shows the Academic Degree logo and the ID number "H-Index, Citations, Documents", with a "Visit" button.

The bottom of the screenshot shows a Windows taskbar with a search bar, various application icons, and system tray icons including language (ENG IN), network, and volume.



- Google Scholar is a very broad multidisciplinary database
- Used to track article citations and author impact metrics.
- It allows researchers to set up and curate their profiles.



Research Metrics Tools

Google Scholar

total articles published on bibli... | Bibliometric Studies as a Public... | Home | Emmanuel Edwar Siddig - Goog... | Ahmed Hassan Fahal

scholar.google.com/citations?hl=en&user=yhORQVAAAAJ

Google Scholar

Cited by

| | All | Since 2021 |
|-----------|-------|------------|
| Citations | 27036 | 26722 |
| h-index | 46 | 46 |
| i10-index | 128 | 127 |

Public access [VIEW ALL](#)

0 articles **75 articles**

not available **available**

Based on funding mandates

Co-authors

Prof. Ahmed Hassan Fahal
Professor of Surgery - University...

Global burden of bacterial antimicrobial resistance 1990–2021: a systematic analysis with forecasts to 2050 3629 2024
M Naghavi, SE Vollset, KS Ikuta, LR Swetschinski, AP Gray, EE Wool, ...
The Lancet 404 (10459), 1199-1226

Global incidence, prevalence, years lived with disability (YLDs), disability-adjusted life-years (DALYs), and healthy life expectancy (HALE) for 371 diseases and injuries in ... 3230 2024
AJ Ferrari, DF Santomauro, A Aali, YH Abate, C Abbafati, H Abbastabar, ...
The Lancet 403 (10440), 2133-2161

Global burden and strength of evidence for 88 risk factors in 204 countries and 811 subnational locations, 1990–2021: a systematic analysis for the Global Burden of Disease ... 2558 2024
M Brauer, GA Roth, AY Aravkin, P Zheng, KH Abate, YH Abate, C Abbafati, ...
The Lancet 403 (10440), 2162-2203

Global, regional, and national burden of disorders affecting the nervous system, 1990–2021: a systematic analysis for the Global Burden of Disease Study 2021 1999 2024
JD Steinmetz, KM Seeher, N Schiess, E Nichols, B Cao, C Servili, ...
The Lancet Neurology 23 (4), 344-381

Global burden of 288 causes of death and life expectancy decomposition in 204 countries and territories and 811 subnational locations, 1990–2021: a systematic analysis for the ... 1797 2024
GBD 2021 Causes of Death Collaborators
Lancet (London, England) 403 (10440), 2100

Global, regional, and national burden of stroke and its risk factors, 1990–2021: a systematic 1330 2024

30°C مشمس

Search

ENG IN 2:31 PM 5/29/2026



Research Gate

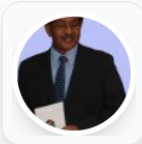
The screenshot shows the ResearchGate profile of Ahmed Hassan Fahal. The profile includes a search bar at the top, navigation links (Home, Questions, Jobs), and notification icons. The profile header shows the name 'Ahmed Hassan Fahal' with an 'Edit' button. Below the name is a bio: 'MBBS, FRCS, FRCSI, FRCS (Gal), MD, MS, FRCP (London) FRCPath · Professor at Mycetoma Research Center - University of Khartoum, Khartoum, Sudan'. A red box highlights the metrics: '4,604 Research Interest Score | 10,696 Citations | 54 h-index'. Below the metrics are tabs for 'Profile', 'Research (556)', 'Stats', 'Following', and 'Saved list', along with an 'Add research' button. A '75%' progress indicator is shown for profile completion. A 'Remind me later' button is also present. On the right, a pop-up window asks 'Is this your publication?' for the article 'The Lag in Adoption of Educational Innovations in Medical Education: Challenges and Opportunities: A Narrative Review' published in January 2026 in the Sudan Journal of Medical Sciences, listing authors Abdelmoniem S. El Mardi, Tahra Al Mahdi, Ambreen Ansar, and A. H. Fahal.




AD Scientific Index

AD Scientific Index

Rankings ▾ SMART Solutions ▾ About ▾ Find a Professional [Pricing & Registration](#) [Login](#)



Ahmed Hassan Fahal


 University of Khartoum , Sudan , Africa
 Medical and Health Sciences / General Surgery
 Research Area: Surgery | Mycetoma | Medical Education
 AD Scientific Index ID: 102971

Rankings by Total H-Index

| | | | |
|------------------------|----------------------|-------------------|------------------------------------|
| 60,893 World | 397 Africa | 1 Sudan | 1 University of Khartoum |
|------------------------|----------------------|-------------------|------------------------------------|

Research Performance Metrics

PREMIUM

Unlock Your Full Academic Profile

Highlight your academic success and stand out globally among top researchers

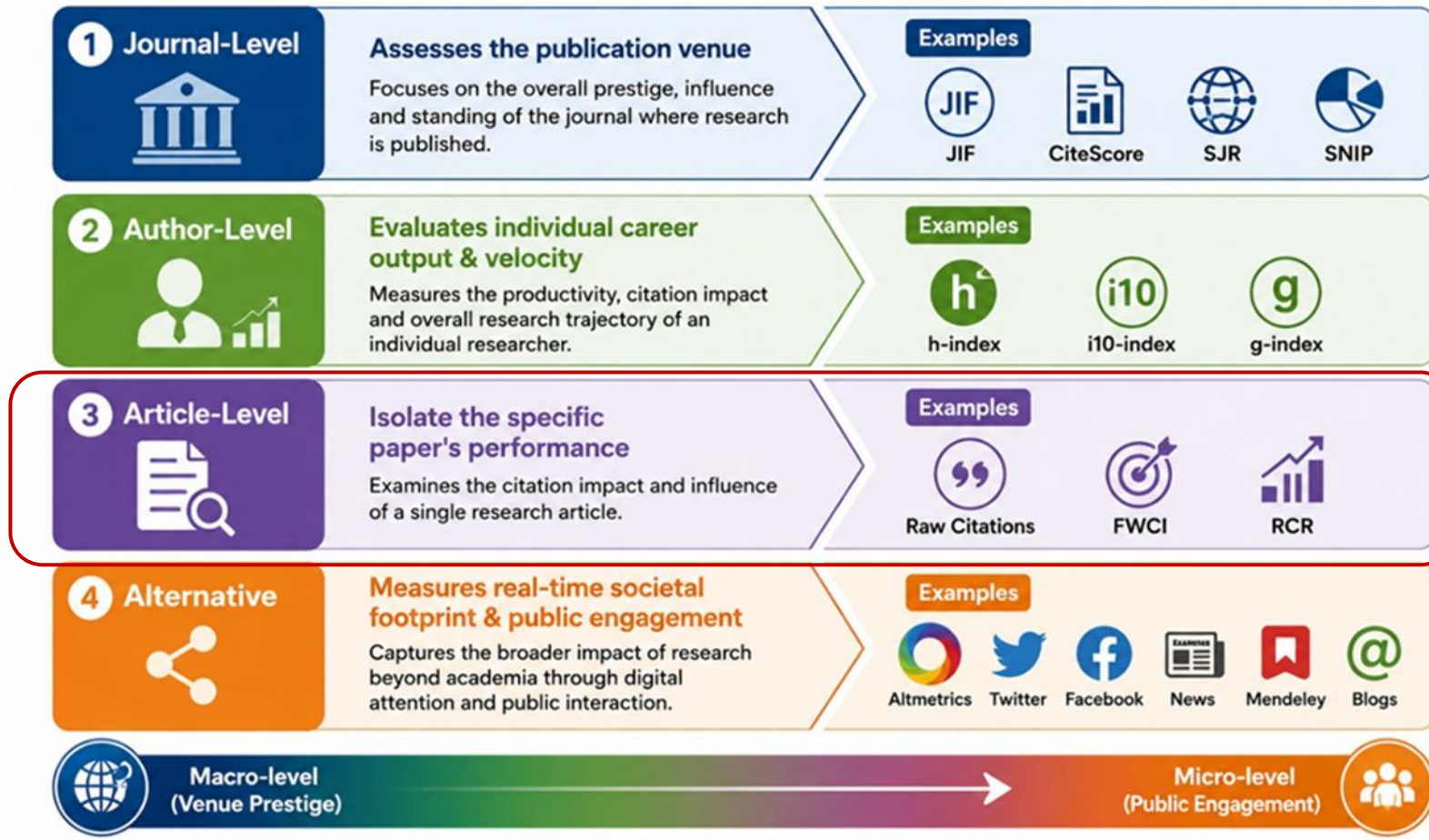
Access advanced rankings, analytics, and personalized insights

- ✓ Global ranking
- ✓ Performance analysis
- ✓ Peer comparison



Classification of Research Metrics

The evaluation ecosystem is organised into four distinct tiers, shifting from macro-level venue prestige down to immediate public engagement.





Classification of Research Metrics Article -Level Metrics

- These indicators isolate the performance of a **Single, Specific** research paper
- **Stripping away the biases of a Journal's Reputation.**



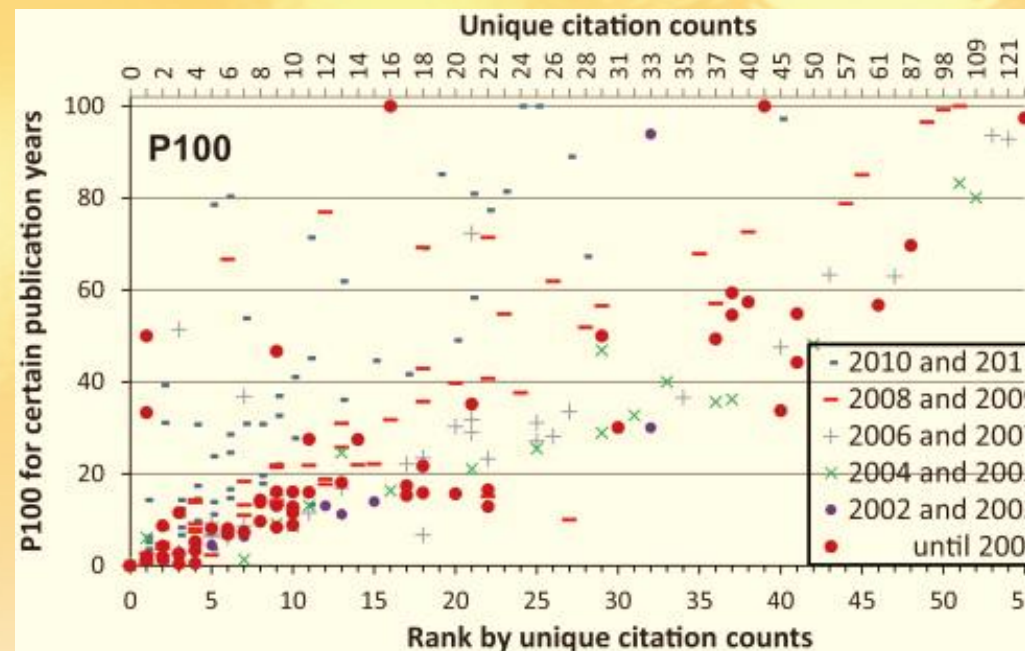


- The absolute, unadjusted number of times a specific paper has been

**Referenced
by other**

**Indexed Peer-reviewed
Articles.**

Raw Citation Count

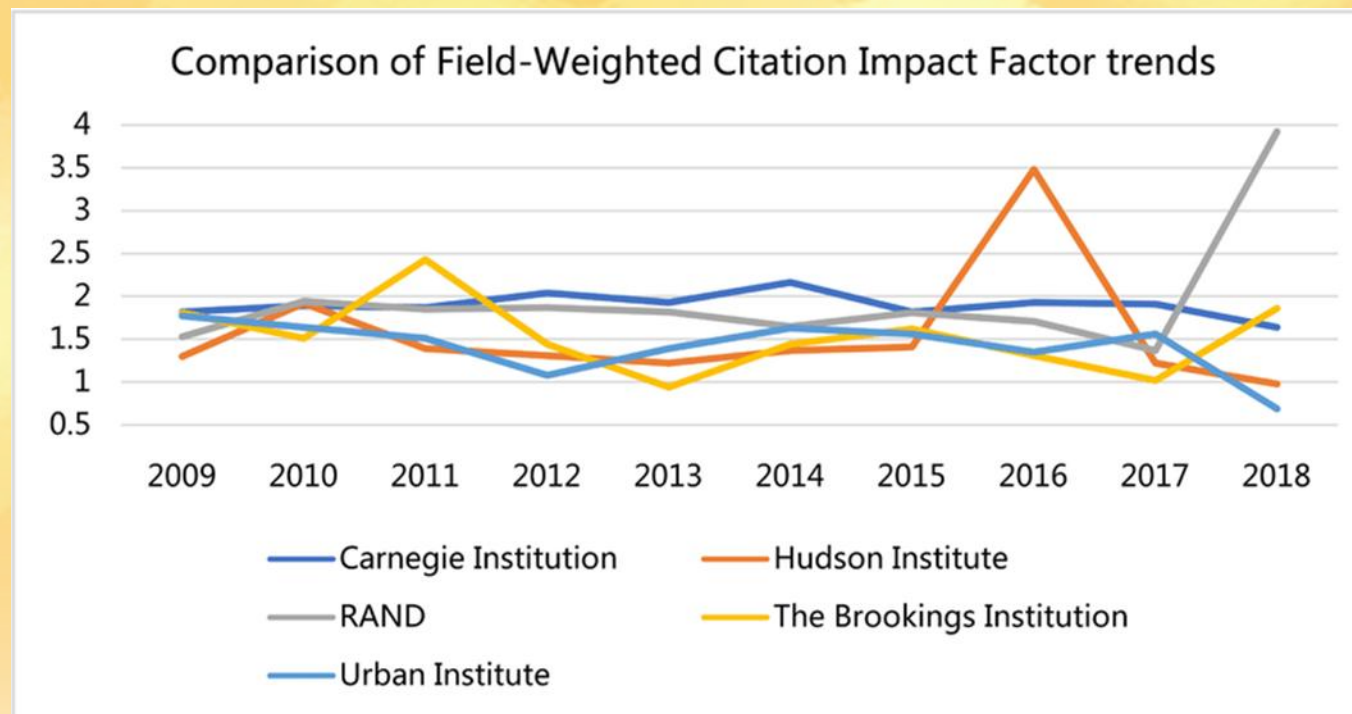




Classification of Research Metrics Article -Level Metrics

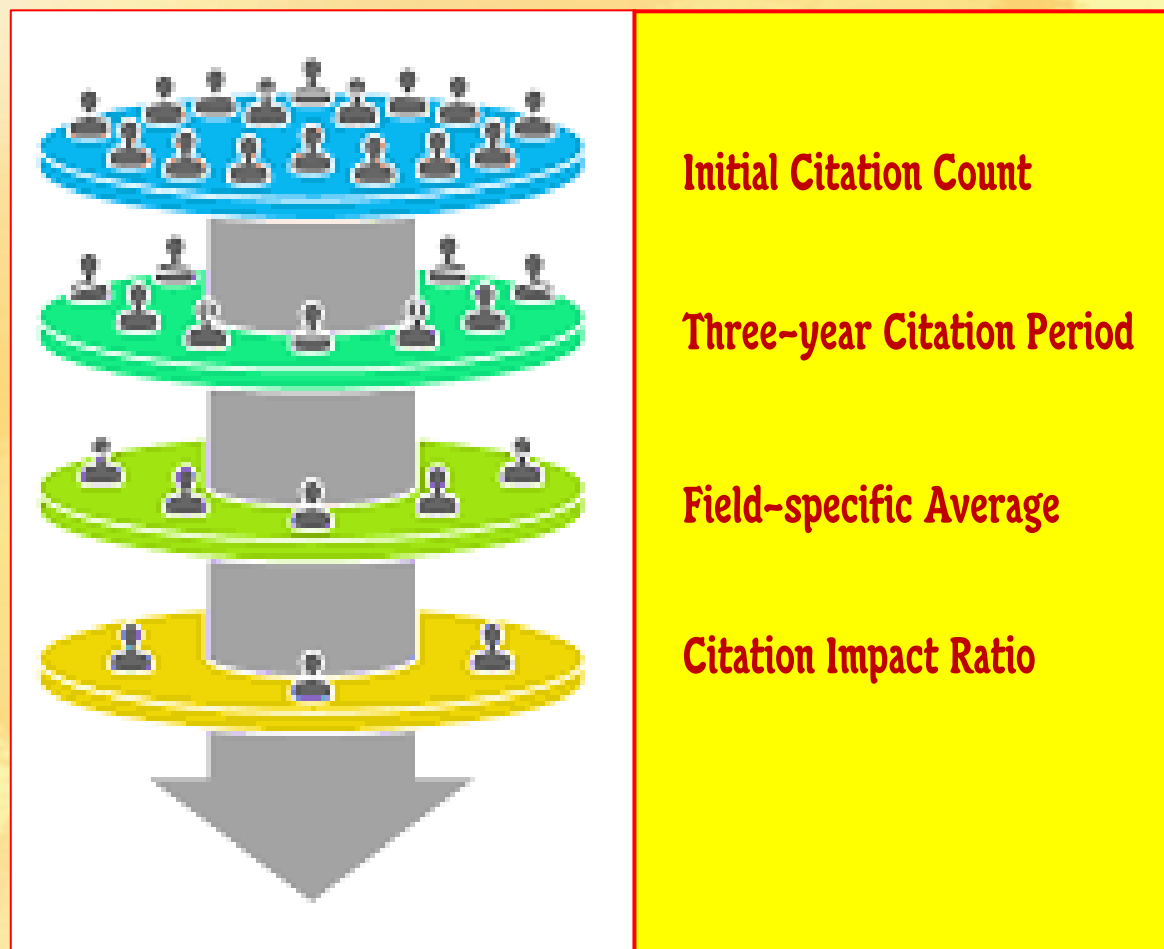
Field-Weighted Citation Impact (FWCI)

- **Maintained by Scopus**
- Compares an article's raw citations to the average number of **Citations Expected** for similar documents of the same publication year, topic field, and document type
- A score of 1.00 represents the exact global average.





Field-Weighted Citation Impact Calculation

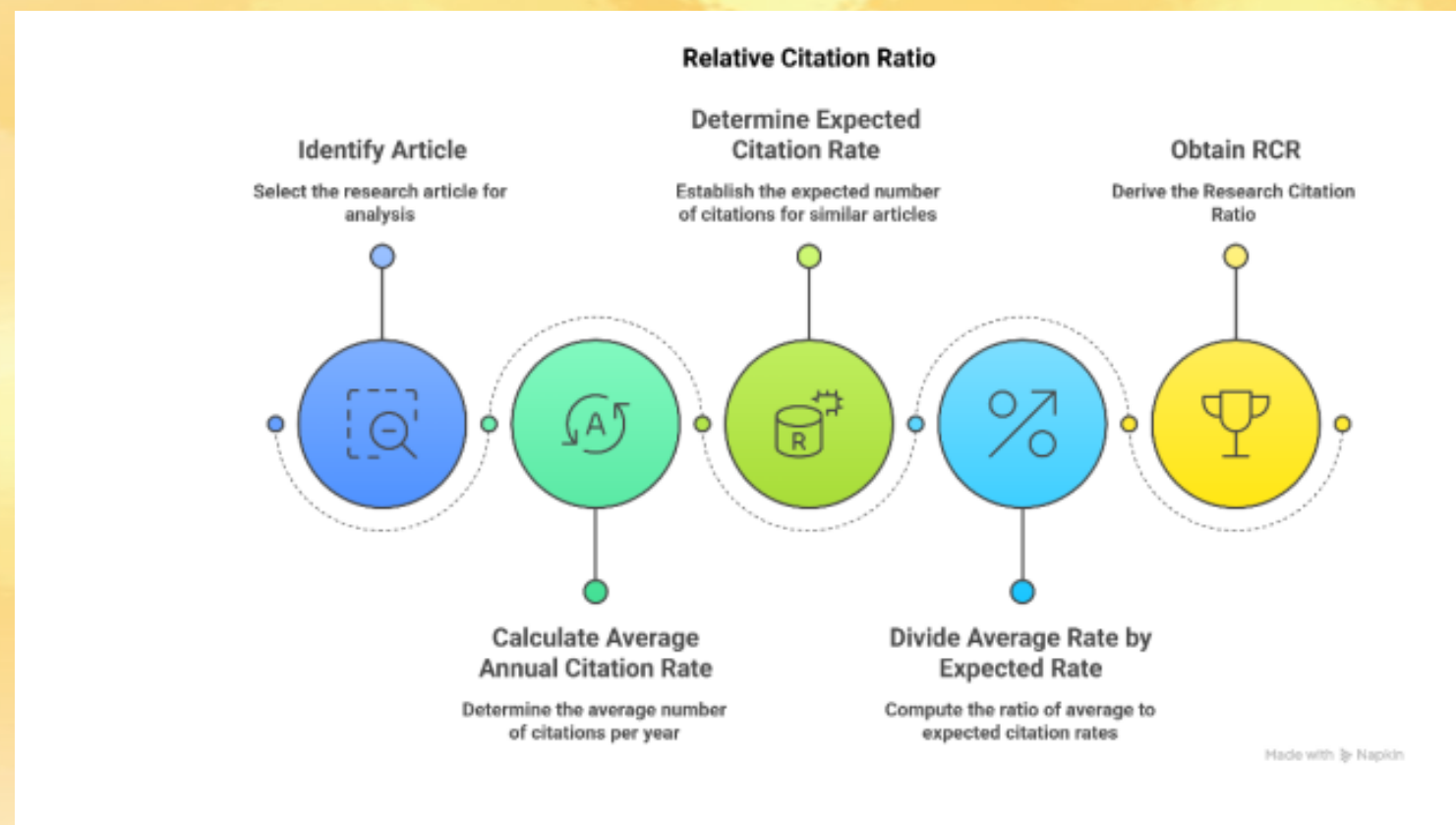




Classification of Research Metrics Article -Level Metrics

Relative Citation Ratio (RCR)

- Developed by the US National Institutes of Health (NIH)
- The RCR measures an article's scientific influence by **Dynamically Benchmarking** its citation rate against the co-citation network of papers published in that exact field.





The Mycetoma Research Center
University of Khartoum

Mycetoma





- Traditional citations are lagging indicators that can take 3 to 5 years to accumulate.

- **Altmetrics track**

- Immediate tracking
- Real-world digital footprint of a Scientific Publication

- Across society and the broader internet.





Classification of Research Metrics

Alternative Metrics (Altmetrics)

Classifications

- Policy Document Mentions (Purple)
- News and Media Captures (Red)
- Social Media Amplification (Blue/Cyan)
- Reader Bookmarks (Gold/Green)



• View via DR-NTU. [View example.](#)

DR-NTU (Digital Repository of NTU)

COMMUNITIES & COLLECTIONS RESEARCH PAPERS THESES FYPS ACADEMIC PROFILE GUIDELINES

The NTU Academic Profile (beta) has been redesigned to provide new features to showcase research output of faculty. [Read more.](#) 🔍 Login

Show simple item record Show full item record Export item record

Please use this identifier to cite or link to this item: <https://hdl.handle.net/10356/104217>

| | | |
|--------------------|---|---|
| Title: | A 21st century approach to tackling dengue : crowdsourced surveillance, predictive mapping and tailored communication | SCOPUS™ Citations 49 Updated on Dec 30, 2022 |
| Authors: | Lwin, May Oo Theng, Yin-Leng Vijaykumar, Santosh Fernando, Owen Noel Newton Cheong, Siew Ann Rathnayake, Vajira Sampath Lim, Gentatsu Chaudhuri, Subhasis Foo, Schubert | Web of Science™ Citations 43 Updated on Jan 4, 2023 |
| Keywords: | DRNTU::Social sciences::Mass media | Page view(s) 1,018 Updated on Jan 5, 2023 |
| Issue Date: | 2014 | Download(s) 316 Updated on Jan 5, 2023 |
| Source: | Lwin, M. O., Vijaykumar, S., Fernando, O. N. N., Cheong, S. A., Rathnayake, V. S., Lim, G. et al. (2013). A 21st century approach to tackling dengue: crowdsourced surveillance, predictive mapping and tailored communication. Acta Tropica, 130, 100-107. | Google Scholar™ Check |
| Series/Report no.: | Acta tropica | Altmetric 90 |
| Abstract: | This paper describes a social media system to prevent dengue in Sri Lanka and potentially in the rest of the South and Southeast Asia regions. The system integrates three concepts of public health prevention that have thus far been implemented only in silos. First, the predictive surveillance component uses a computer simulation to forewarn health authorities and the general public about impending disease outbreaks. The civic engagement component allows the general public to use social media tools to interact and engage with health authorities by aiding them in surveillance efforts by reporting symptoms, mosquito bites and breeding sites using smartphone technologies. The health communication component utilizes citizen data gathered from the first two components to disseminate customized health awareness messages to enhance knowledge and increase preventive behaviors among citizens. The system, known as "Mo-Buzz," will be made available on a host of digital platforms like simple mobile phones, smart phones and a website. We present challenges and lessons learnt including content validation, stakeholder collaborations and applied trans-disciplinary research. | |
| URI: | https://hdl.handle.net/10356/104217 | |



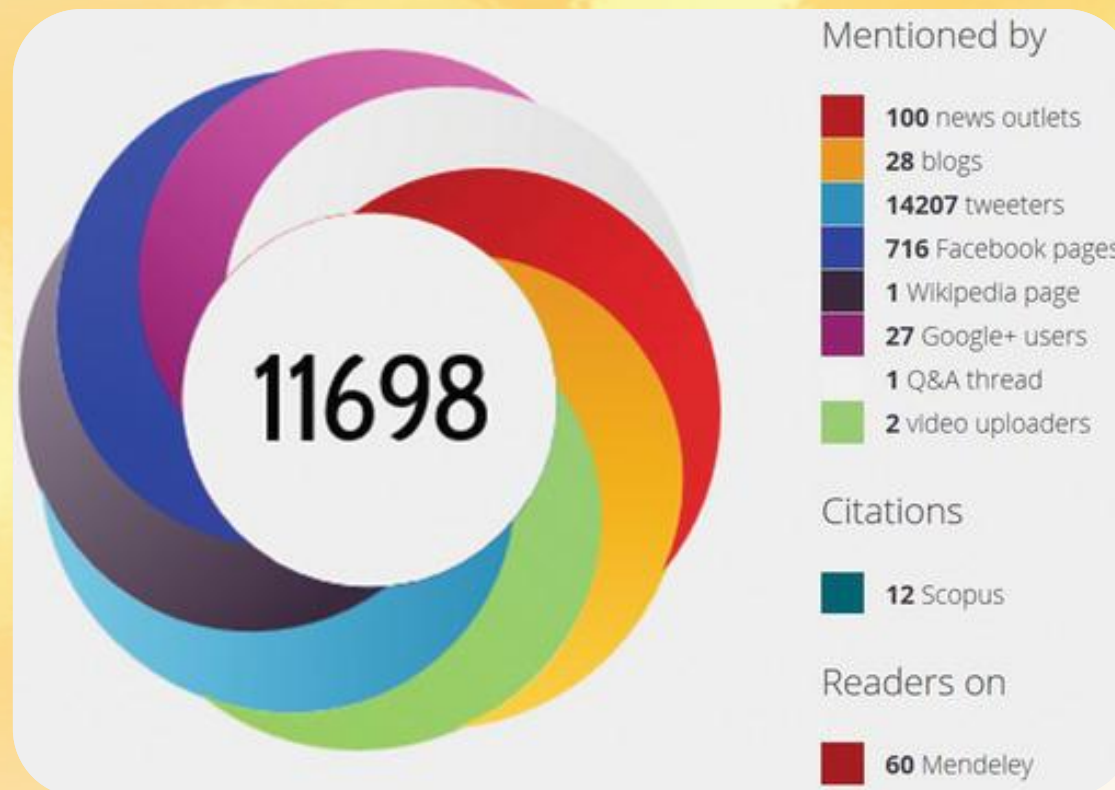
Classification of Research Metrics

Alternative Metrics (Altmetrics)



Classifications

- Policy Document Mentions (Purple)
- News and Media Captures (Red)
- Social Media Amplification (Blue/Cyan)
- Reader Bookmarks (Gold/Green)





Policy Document Mentions

(Purple)

- Tracks when an article is formally cited in **White Papers** or **Clinical Guidelines** by organisations like the World Health Organization (WHO), the CDC, or **Global Governments**.





News and Media Captures (Red)

- Measures how many **Mainstream News Outlets** (e.g., BBC, New York Times, Reuters) cover the paper's findings.





Social Media Amplification (Blue/Cyan)

- Counts shares, saves, and public discussions on **Platforms** like X, Reddit, and Wikipedia.





Reader Bookmarks (Gold/Green)

- Tracks save to **Digital Libraries** like

Mendeley (<https://www.mendeley.com/>)

Zotero (<https://www.zotero.org/>)

- Serving as a powerful leading indicator of future formal citations.





The Mycetoma Research Center
University of Khartoum

Mycetoma



Classification of Research Metrics Qualitative Assessment



The fundamental challenge of Research Assessment Lies in this divide.



Bibliometrics give clean,
Structured Data at scale.



Qualitative assessment gives
Meaning.

Expert Peer Review

Deep, sound analysis of

- Scientific truth
- Ethics
- Consistency
- Methodological soundness





Expert Peer Review

- Single
- Double-Blind
- Open
- PubPeer



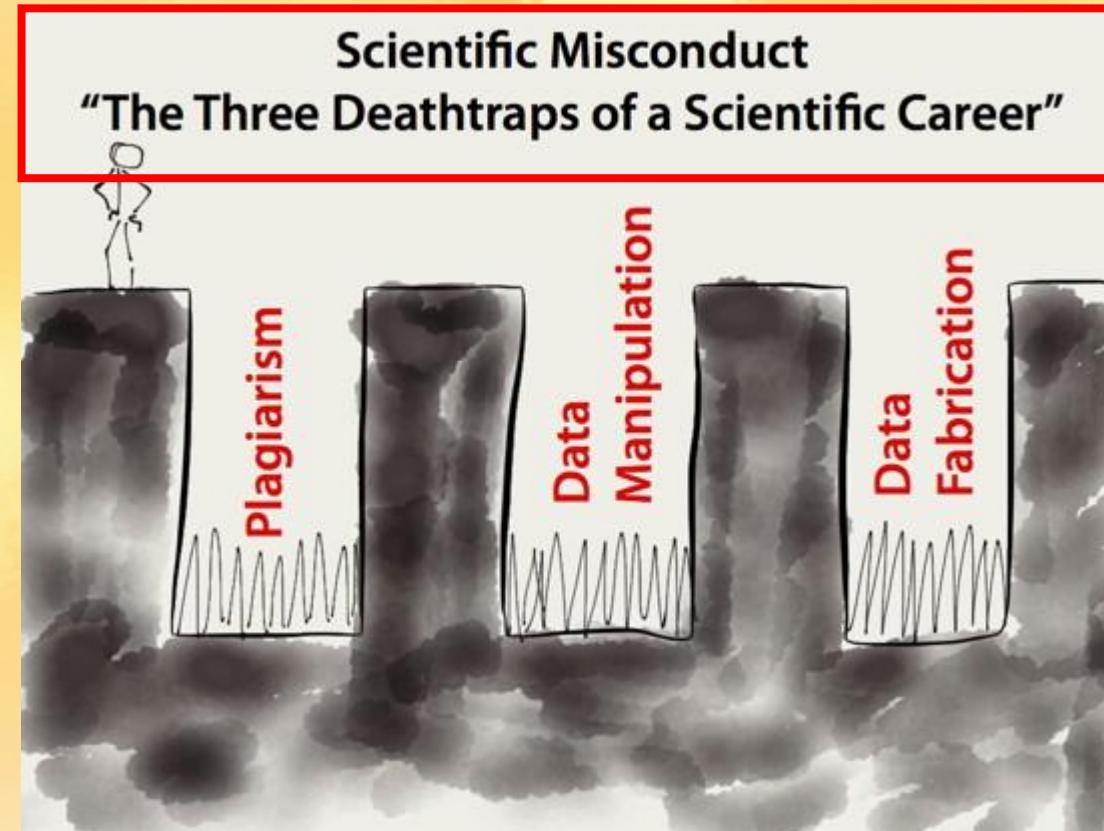


- Crowdsourced auditing platforms like **PubPeer** allow the scientific community to critique papers after publication.



Post Publication Peer Review

- This has proven highly effective at identifying
 - Data fabrication
 - Image manipulation
 - Statistical errors
- That escaped traditional pre-publication vetting.





Post Publication Peer Review

- This has proven highly effective at identifying data fabrication, image manipulation, and statistical errors that escaped traditional pre-publication vetting.

The infographic is divided into two vertical panels. The left panel has a dark blue background and is titled 'Data Manipulation' in white. It features a G2.com logo at the top left and an icon of three boxes with arrows and a cross, representing altered relationships. Below the icon, it states 'Alters relationships between data items.' The right panel has a red background and is titled 'Data Modification' in white. It features an icon of a 3x3 grid of nine squares, representing changes to actual data items. Below the icon, it states 'Changes actual data items or data sets.'

Data Manipulation

Alters **relationships** between data items.

Data Modification

Changes **actual data items** or data sets.



Structured Narrative CV

Global funding bodies and university tenure boards are swapping out long strings of metrics for

Structured Narrative CVs



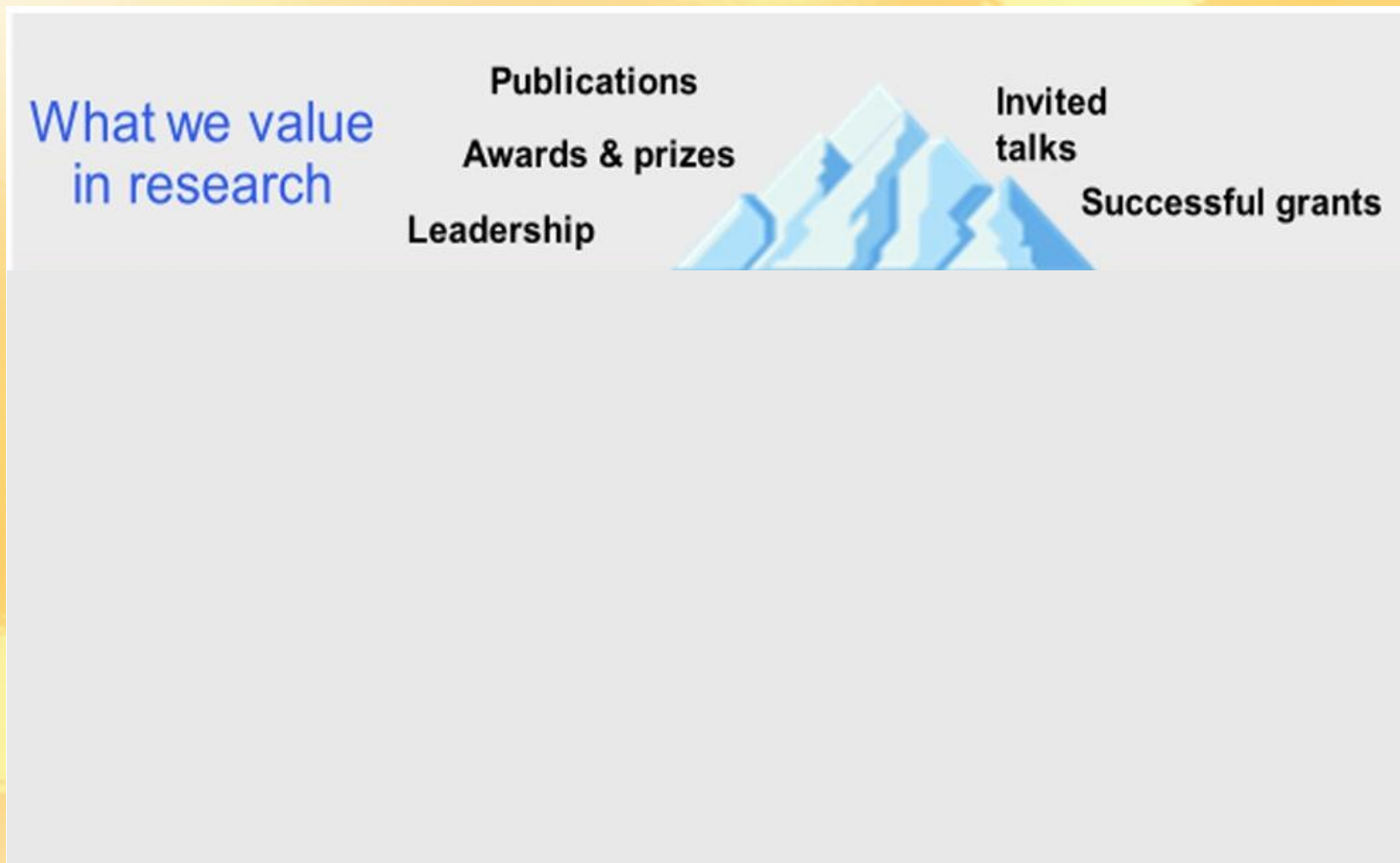


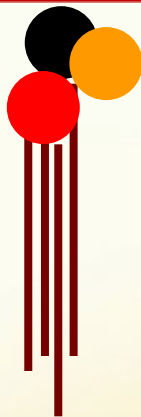
Classification of Research Metrics Qualitative Assessment

Mycetoma



Structured Narrative CV





Structured Narrative CV

Shifts away from traditional
quantitative lists, allowing
you to

Tell The Story

of your impact. Instead of
just itemising publications





Structured Narrative CV

Modular Format

is used to explain how a work has contributed to the field, detailing the context, significance, and the specific roles.

How to create a Narrative CV

dementiaresearcher.nihr.ac.uk

Hosted by Dr Yvonne Couch

Guests
Dr Katie Meadmore
Dr Ola Thomson
Dr Rosa Sancho
Dr Claartje Vinkenburg





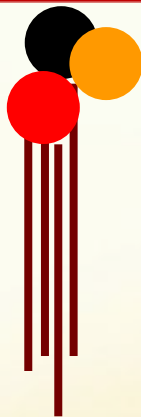
Structured Narrative CV

Ultimately, ensuring that science is judged by its

- Intrinsic truth
- Reproducibility
- Societal value



<https://blogs.lse.ac.uk/impactofsocialsciences/2025/07/23/narrative-cvs-are-rewriting-academic-stories-and-identities/>



Structured Narrative CV

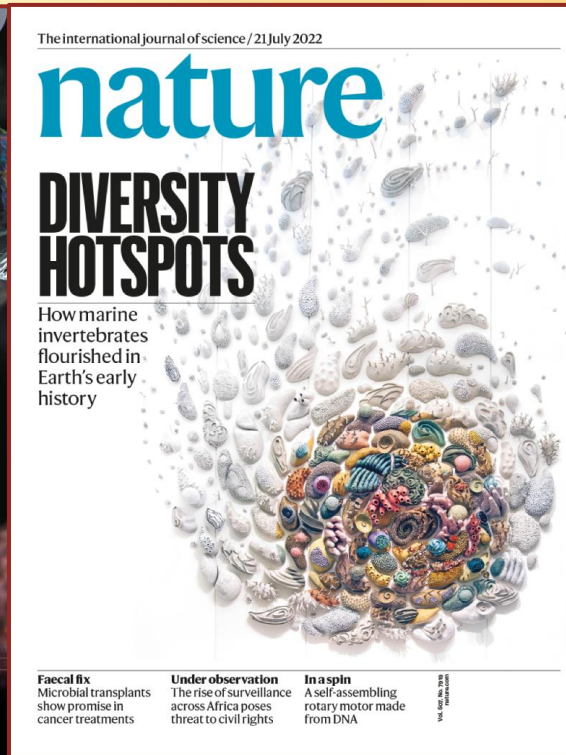
Researchers describe

- Their actual contributions to knowledge
- Open-source tool development
- Real-world societal impact
- In their own words



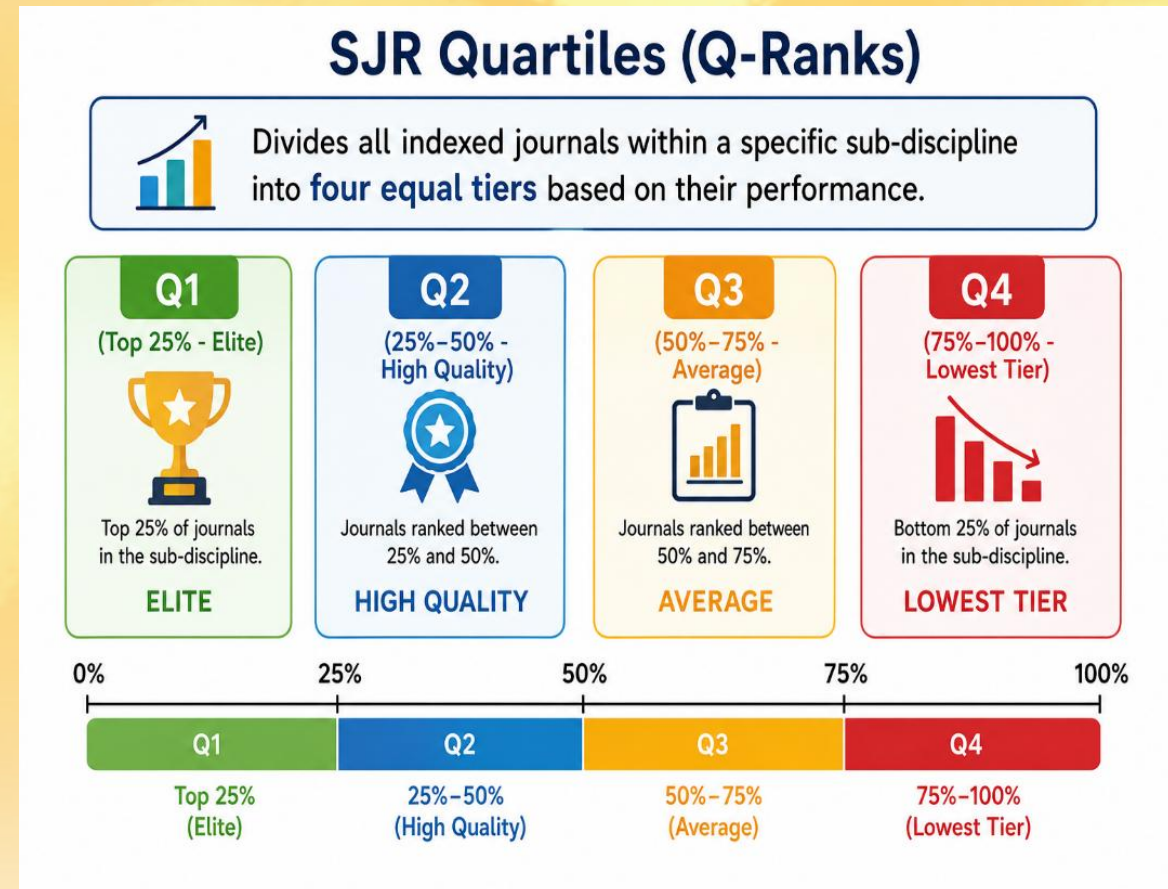


Structured Narrative CV



Rather than **Posting** the cover of the journal
in which it is published

- The SCImago Journal & Country Rank (<https://www.scimagojr.com/>)
- It is a free, public portal that maps **Journal Network Dynamics** rather than individual papers
- Its primary tools include: **SJR Quartiles (Q-Ranks)**

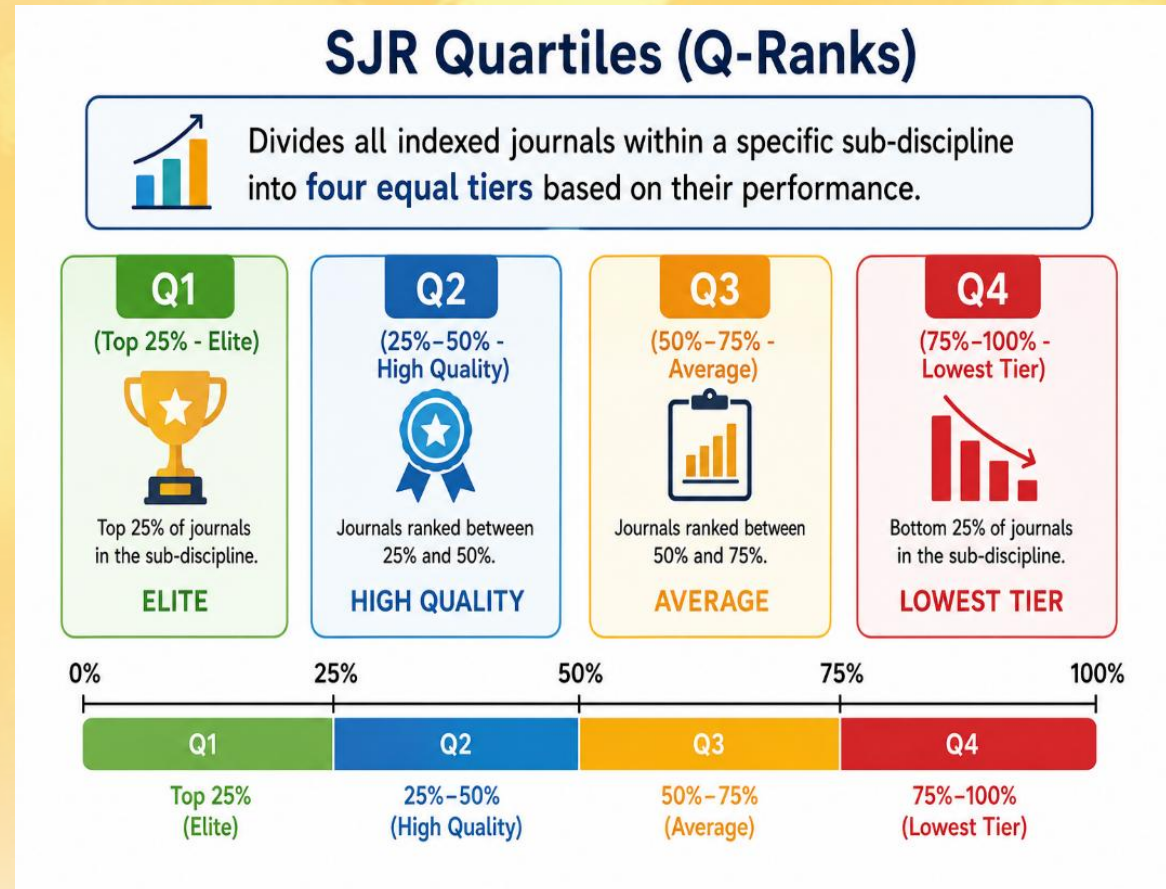




SJR Quartiles

Divides all indexed journals within a specific sub-discipline into four equal tiers based on their performance:

- Q1 (Top 25% - Elite)
- Q2 (25%–50% - High Quality)
- Q3 (50%–75% - Average)
- Q4 (75%–100% - Lowest Tier).





The Mycetoma Research Center
University of Khartoum

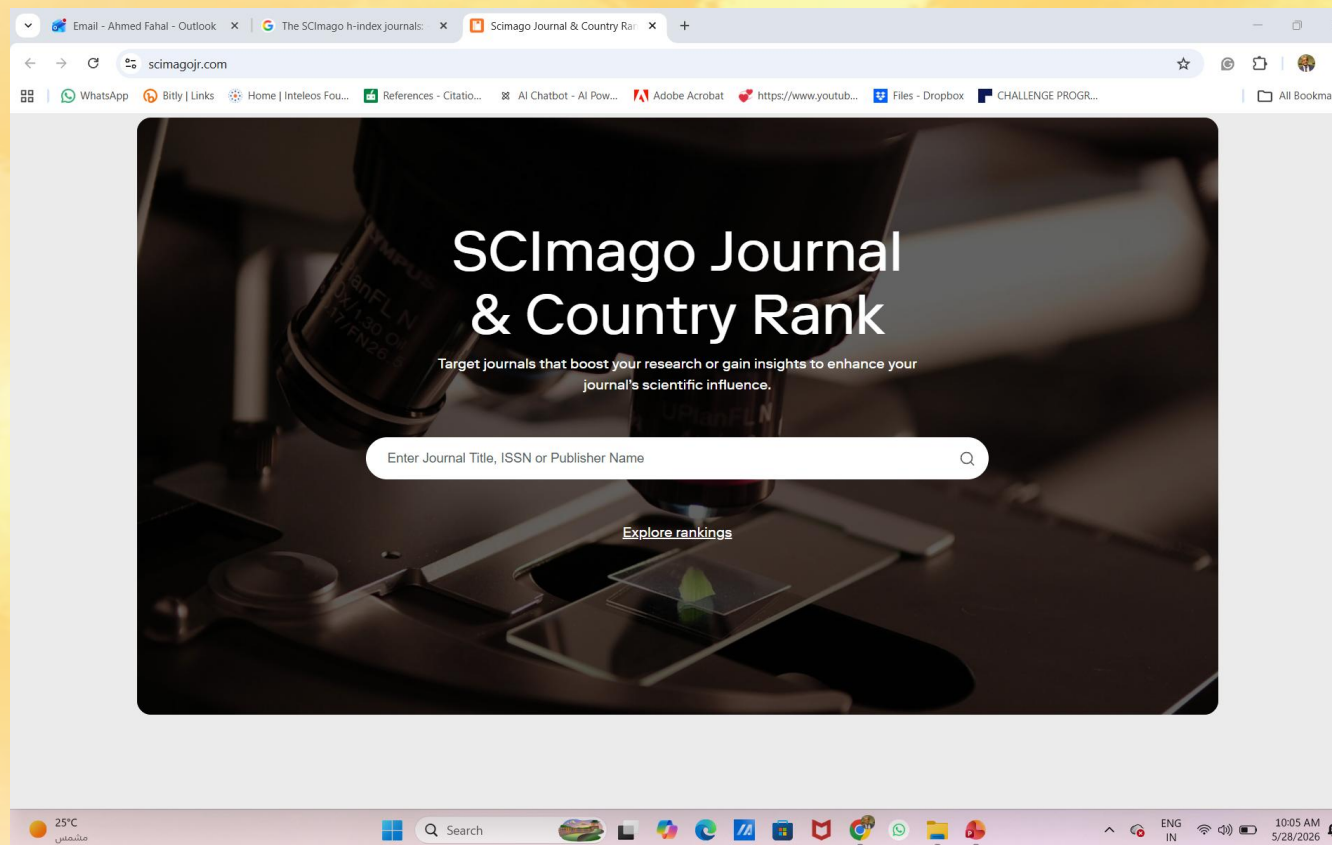
Classification of Research Metrics

The SCImago h-index



It quantifies both journals' scientific output and impact.

Identifying legacy journals with a long history of high-impact publishing.



<https://www.scimagojr.com/>





The Mycetoma Research Center
University of Khartoum

Classification of Research Metrics

The SCImago h-index

Mycetoma



The SCImago h-index measures both the scientific **productivity** and the citation **impact** of a

Journal
Country
University

SCImago calculates this using citation data derived directly from the Scopus database.

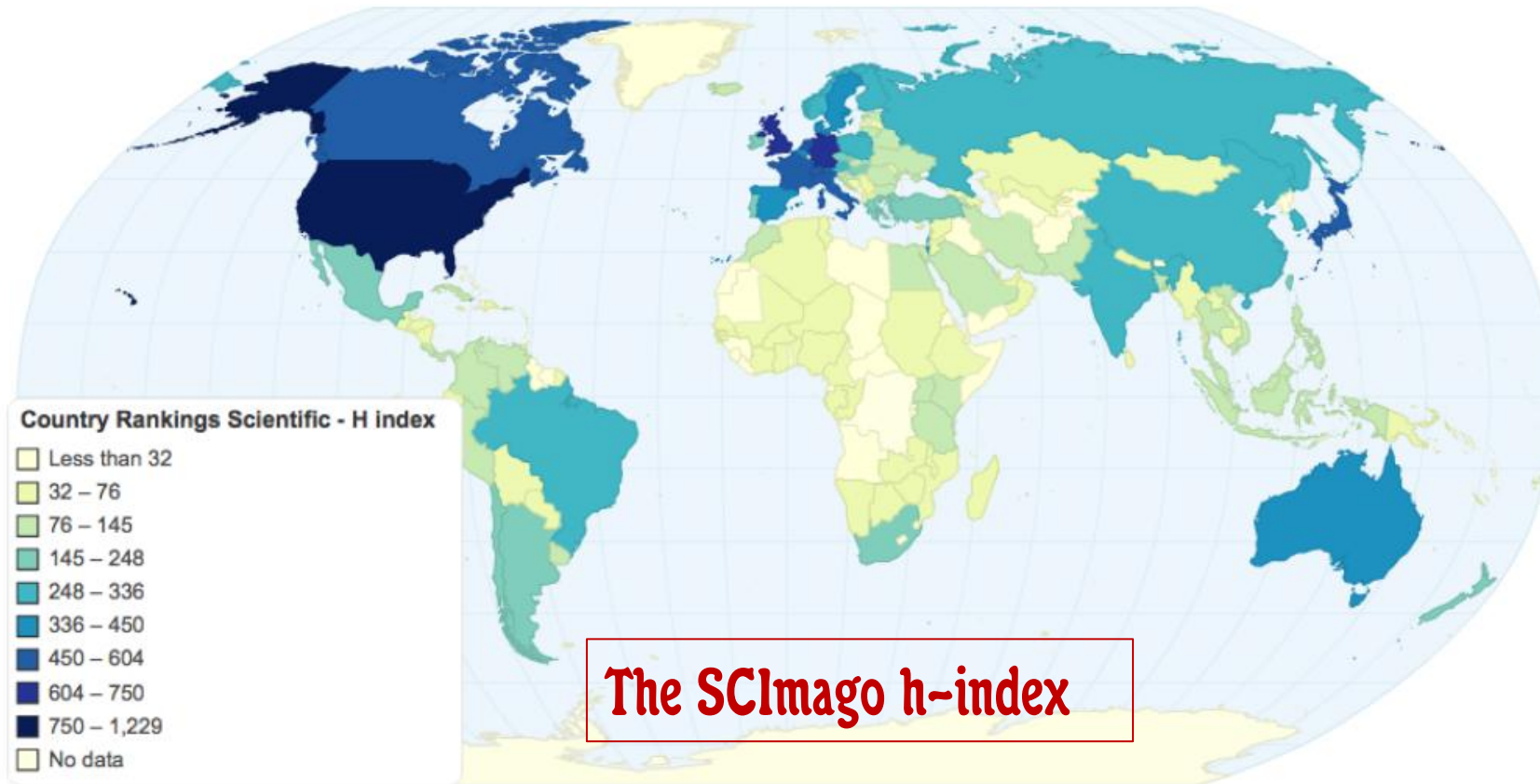


SCImago
Journal & Country
Rank

 [Report an error](#)

Follow us...    

Country Rankings Scientific H-index from 1996 2010

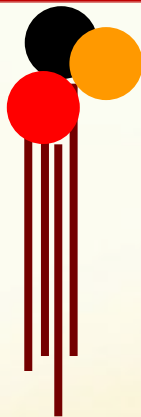


The SCImago h-index

Do you like this chart? Yes No

10,405 views





The Mycetoma Research Center
University of Khartoum

The Loopholes



Mycetoma

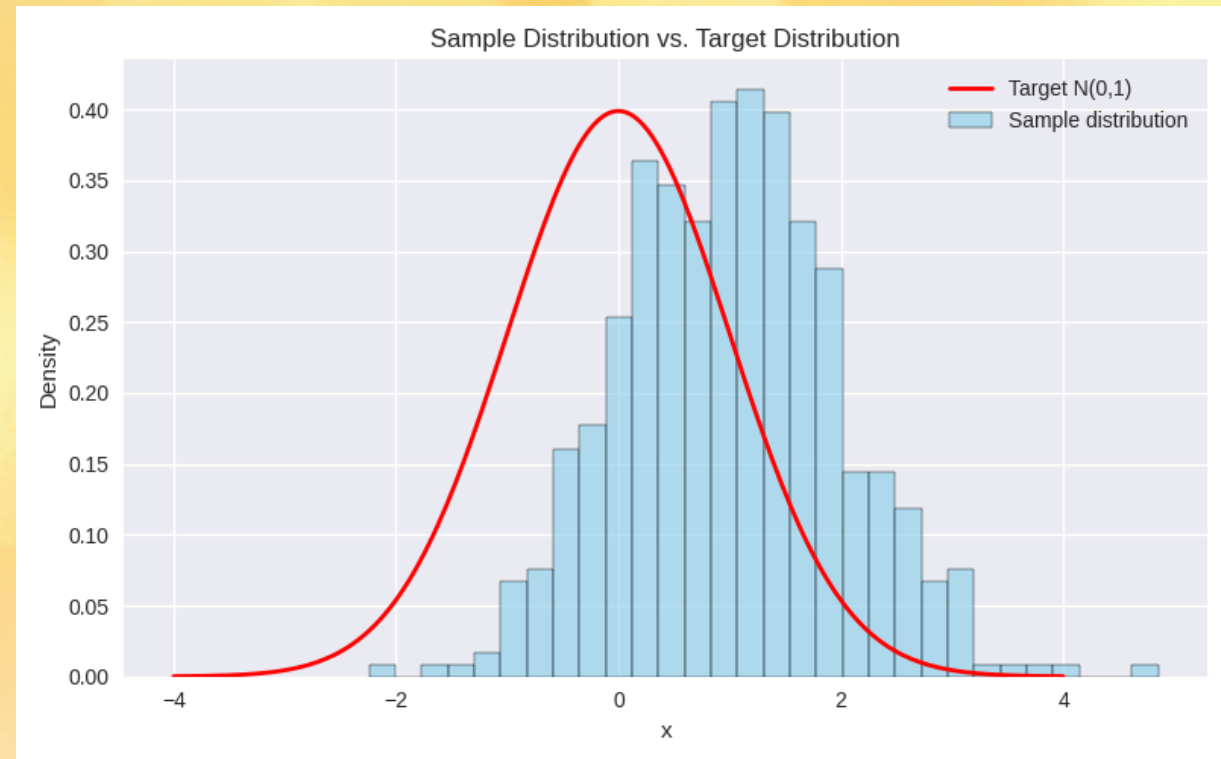




Mathematical Imperfections & Structural Vulnerabilities



- Quantitative metrics offer clean, numerical data.
- They are governed by mathematical distributions that can **Heavily Distort** reality if misapplied.

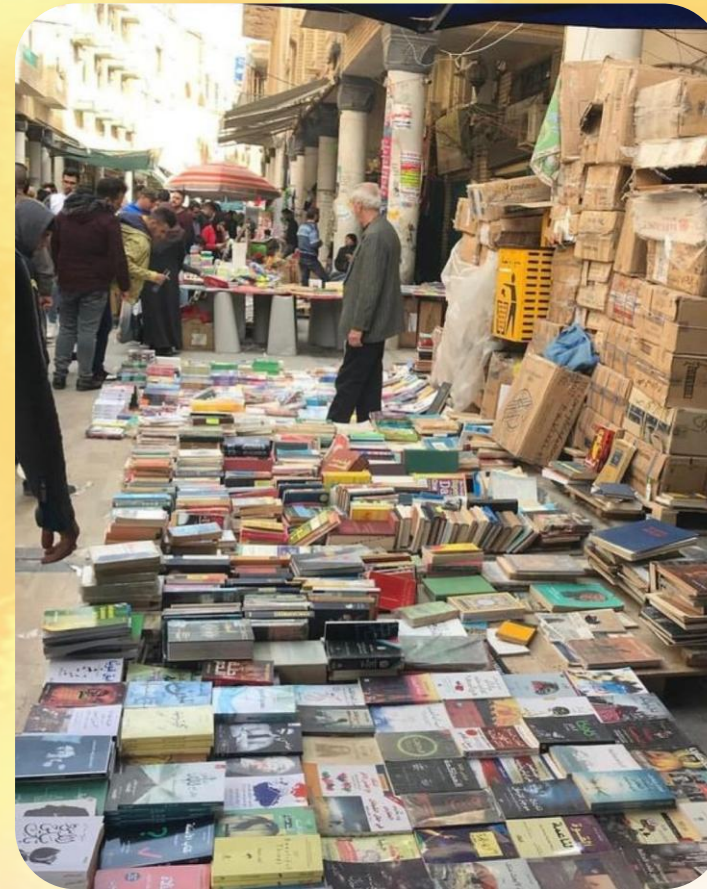




Editors can exploit this loophole by publishing
Large Volumes of non-article commentary,
such as

Editorials, letters to the editor, and book
reviews, that do not increase the denominator but
accumulate citations quickly,

**Artificially inflating the overall
JIF.**



The classic h-index Vulnerabilities

Mycetoma



Career Length Bias

The h-index is a strictly increasing,
cumulative metric.

It naturally disadvantages
brilliant early-career researchers
with a few groundbreaking papers



The classic h-index Vulnerabilities

Career Length Bias

Mycetoma



While favouring **Long-term, average Researchers** who have accumulated citations simply by remaining in academia for decades.



The classic h-index Vulnerabilities



Field Dependency

An h-index of 20 in **Clinical**

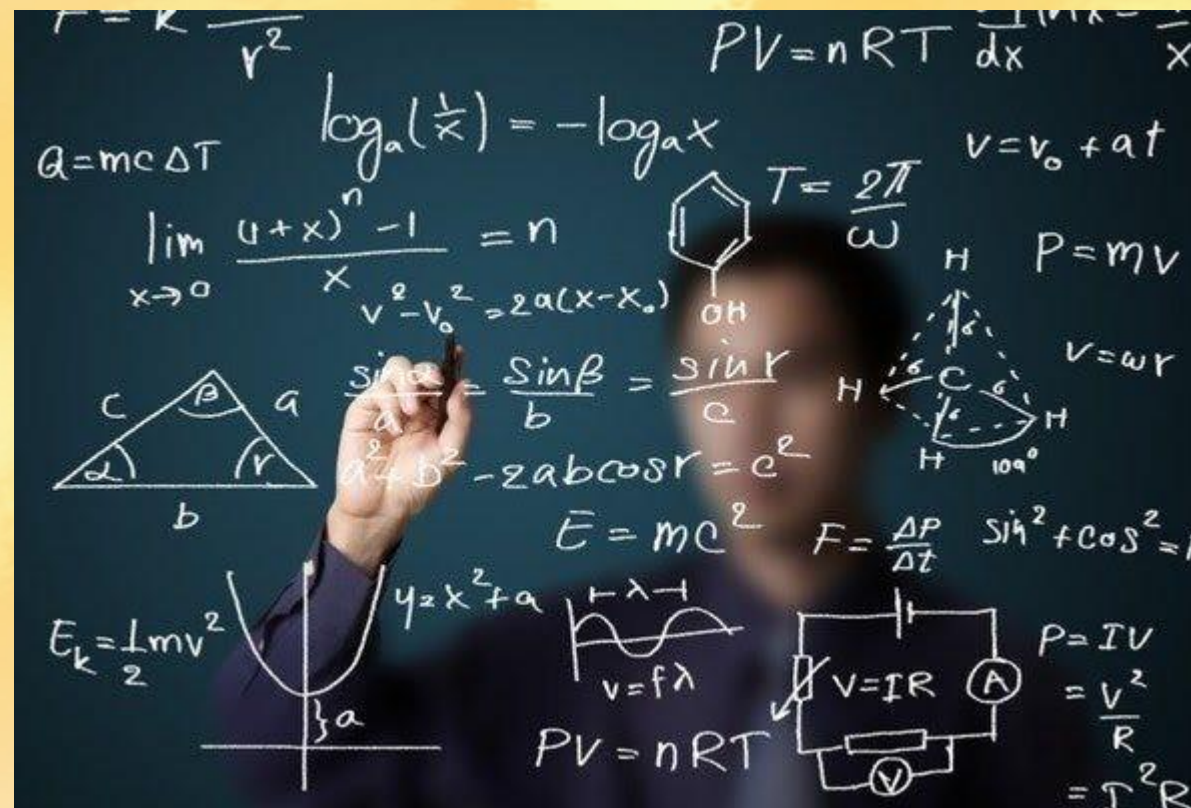
Medicine is average, whereas an h-index

of 20 in **pure Mathematics** or the

Humanities is extraordinarily high due to

smaller author pools and lower reference

densities.

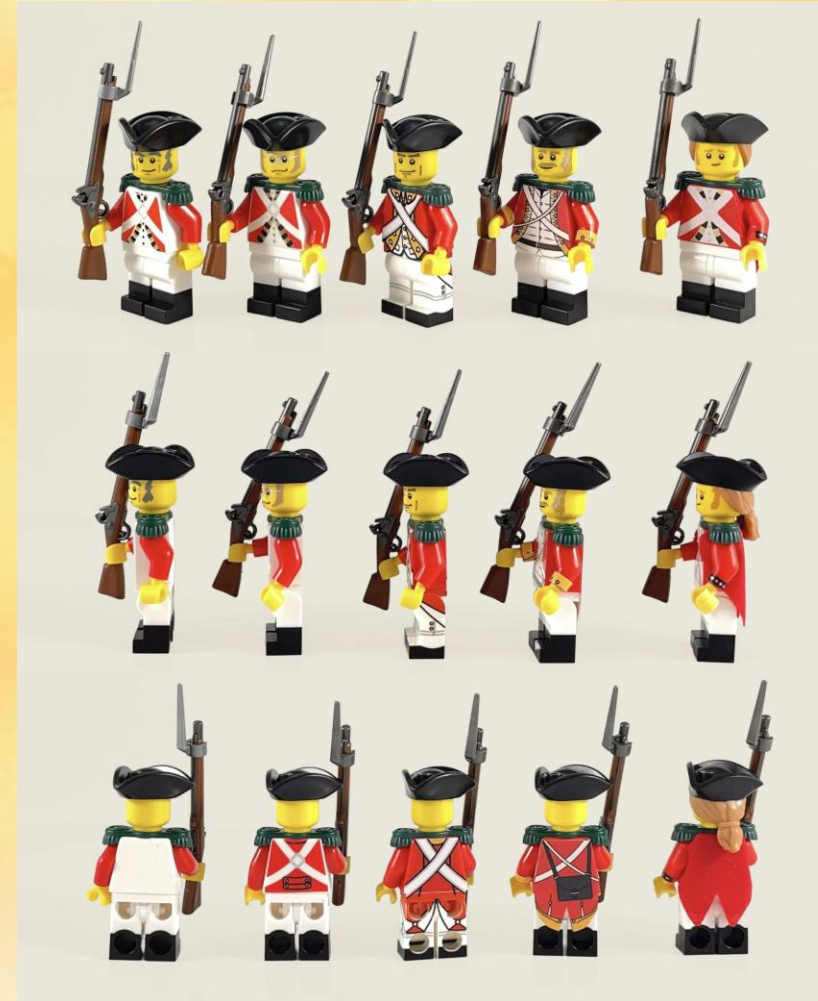


The classic h-index Vulnerabilities



Inability to Capture Co-Authorship

The classic index treats **A Single-authored** paper exactly the same as a paper with **1,000 Co-authors**.





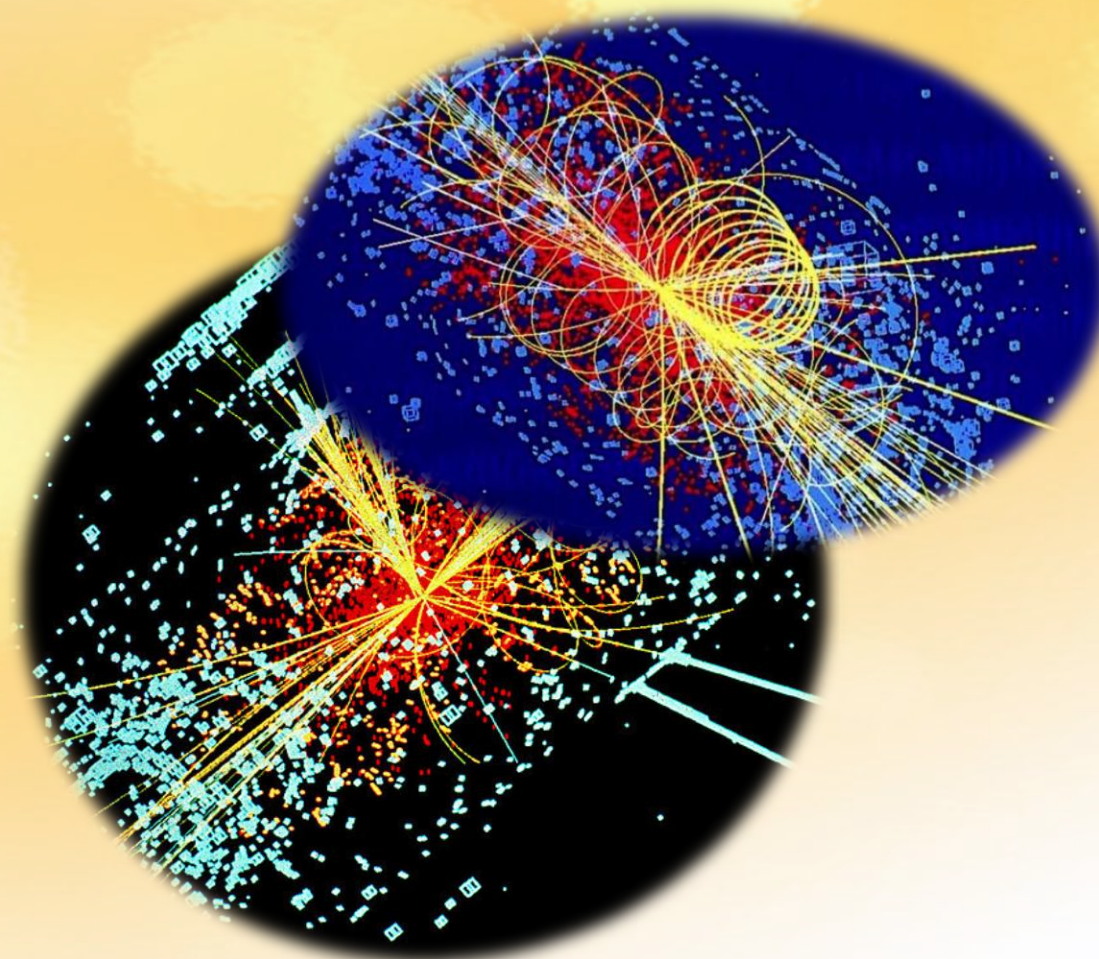
The classic h-index Vulnerabilities

Mycetoma



Advanced Author Metrics

Difficult to isolate an
**Author's True Structural
Accountability**
in the era of
"Big Science,"





The Mycetoma Research Center
University of Khartoum

The classic h-index Vulnerabilities

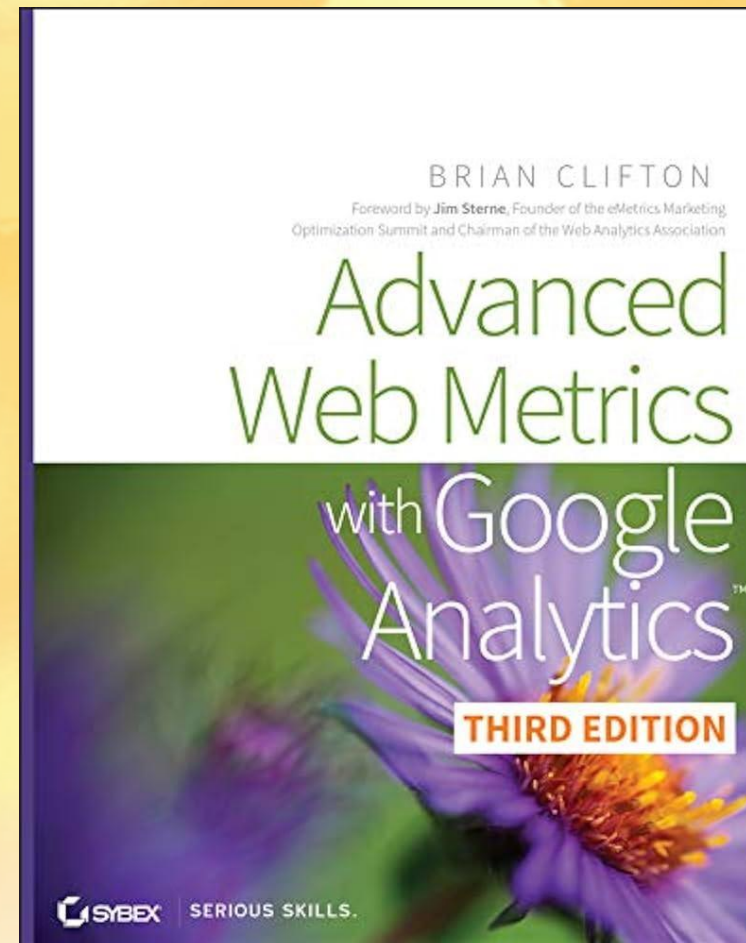
Mycetoma



Advanced Author Metrics

Bibliometricians designed
advanced variations to
correct for

**Collaboration Scale
and Time Decay.**

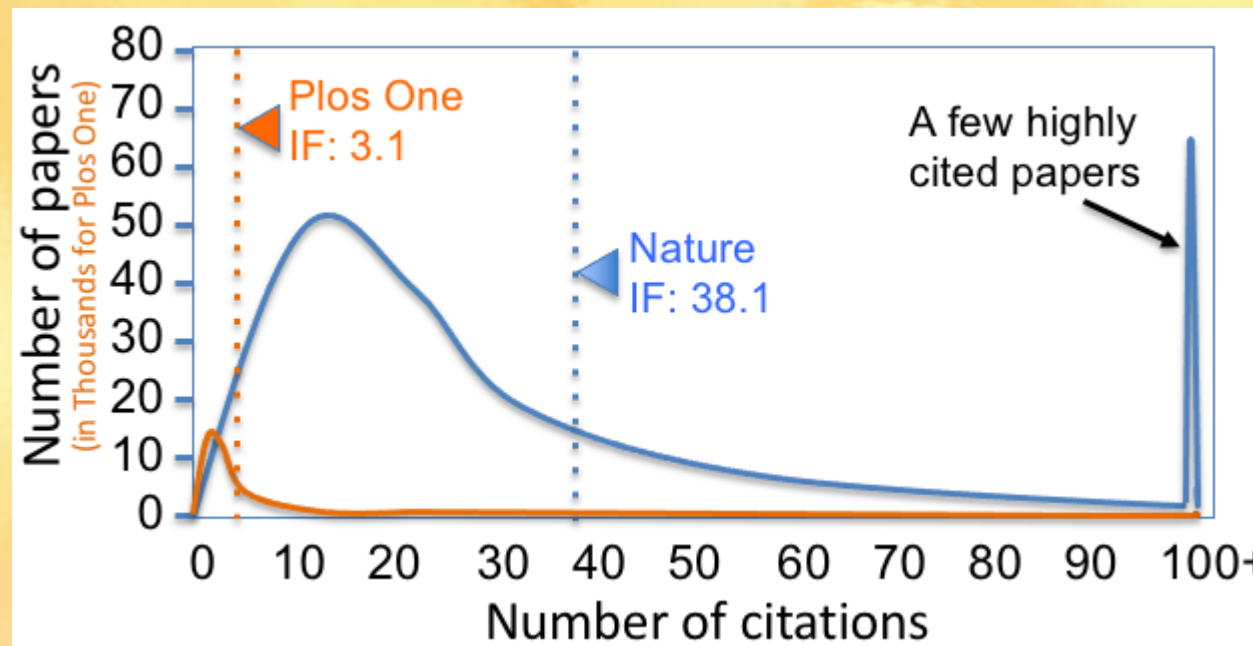




The Journal Impact Factor Skewness



The underlying limitation of the JIF is that it utilises an arithmetic mean to measure a heavily skewed **Power Law (Pareto) Distribution**.



The Journal Impact Factor Skewness



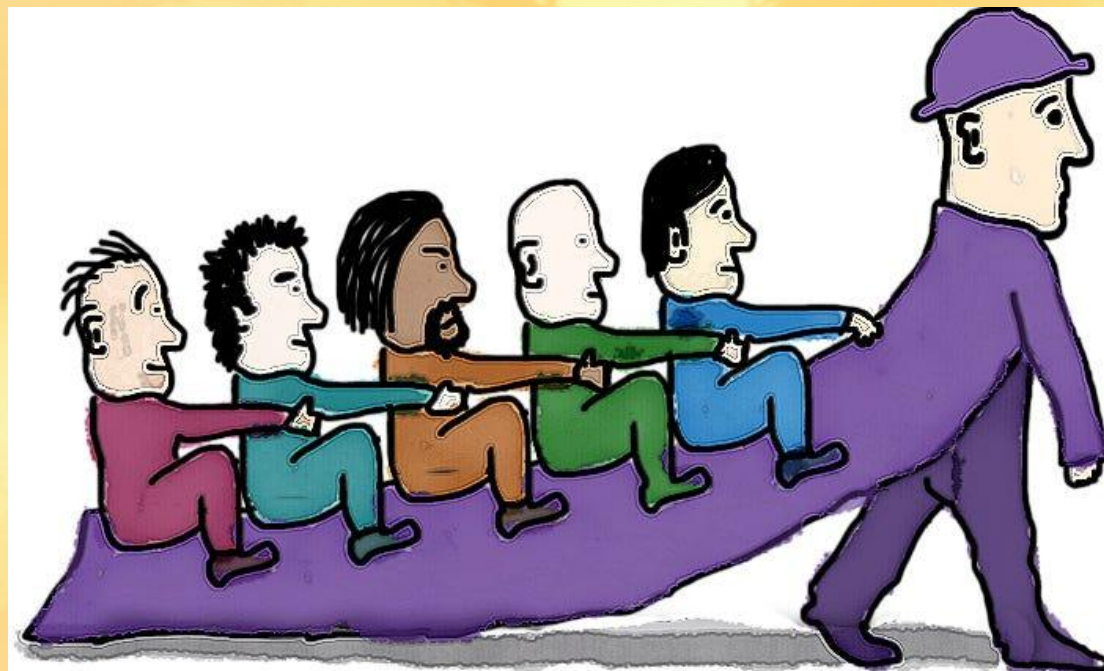
In almost any given journal, a tiny minority of papers (>10%) generate the vast majority (80%) of the citations.

The remaining 90% of the papers might receive very few, or even zero, citations.





Therefore, publishing in a high-JIF journal like **Nature** or **The Lancet** does not guarantee an individual paper's impact



It often means the article is riding on the statistical coat-tails of a few best seller studies



The Problem of Hyper-Authorship

Hyper-authorship is a phenomenon in academic publishing that describes studies with massive co-authorship (often ranging from dozens to thousands of contributors).



The Mycetoma Research Center University of Khartoum

leishmania

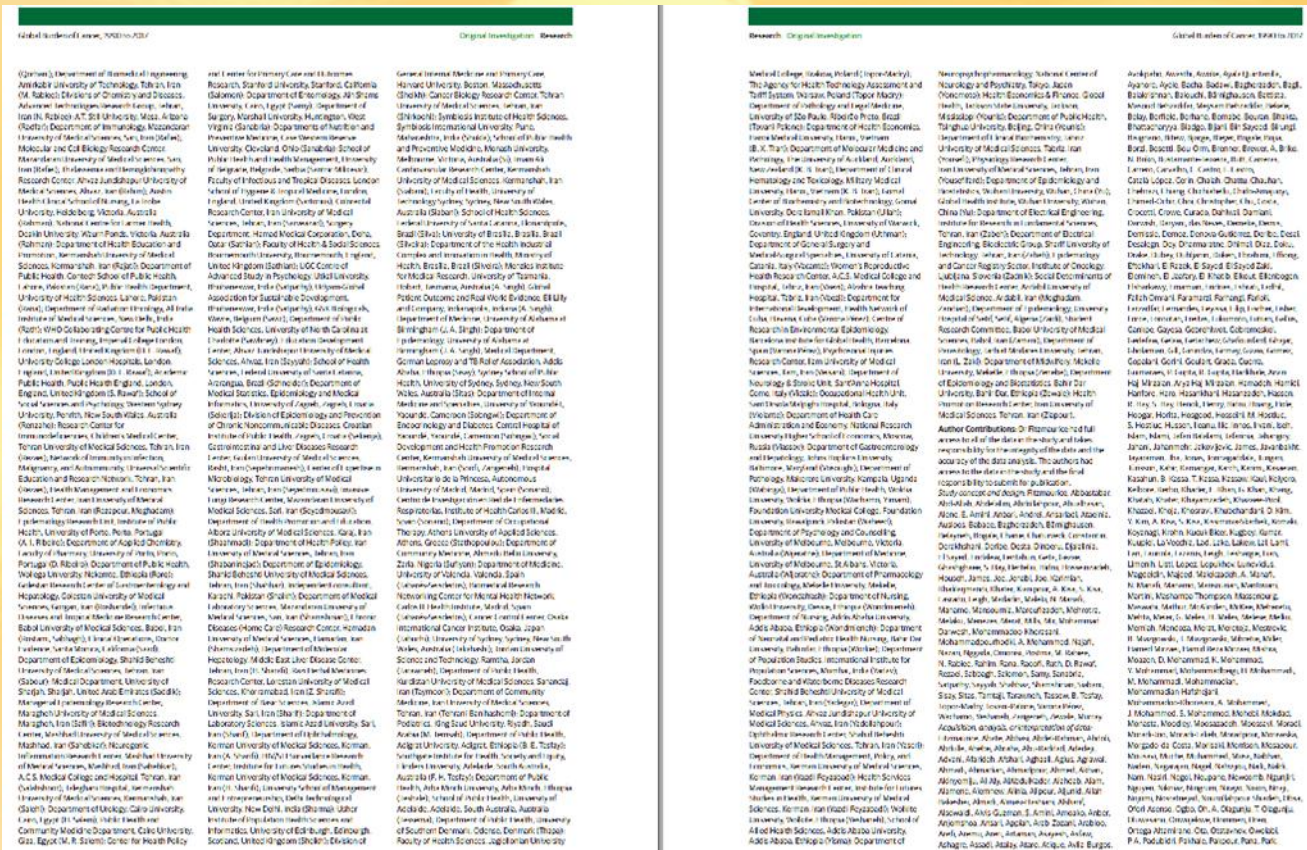
The Problem of Hyper-Authorship

Originally coined by information scientist

Blaise Cronin, it is particularly prevalent in

"Big Team Science" such as

Particle physics, genomics, and
global clinical trials.





The Problem of Hyper-Authorship

Mycetoma



While it reflects extraordinary

- Global collaboration
- Data sharing

Raises significant challenges for
the scientific community



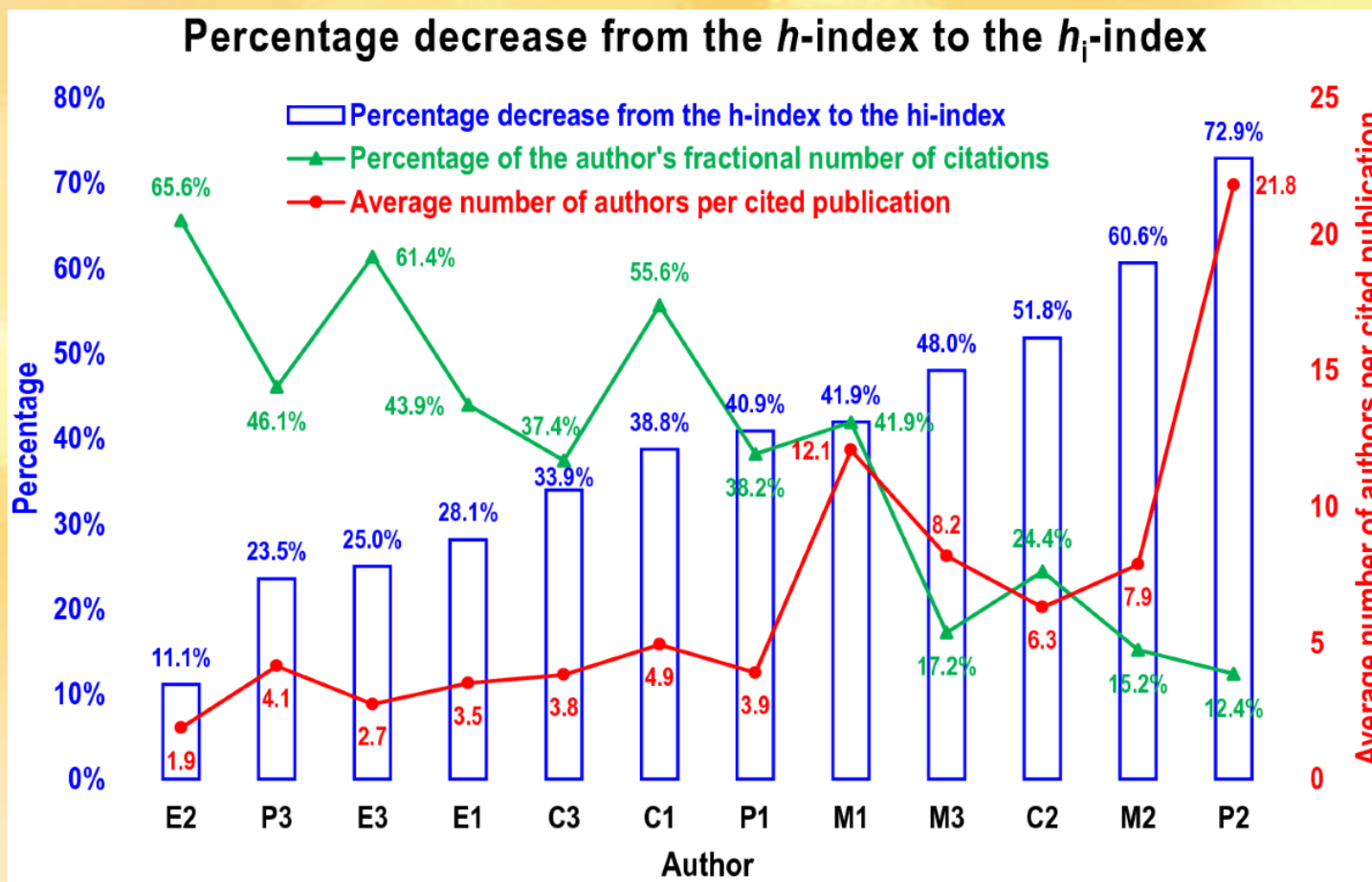


The Problem of Hyper-Authorship



The Fractional h -index ($h-f$)

It addresses Hyper-Authorship by dynamically distributing credit based on the total author count (N).

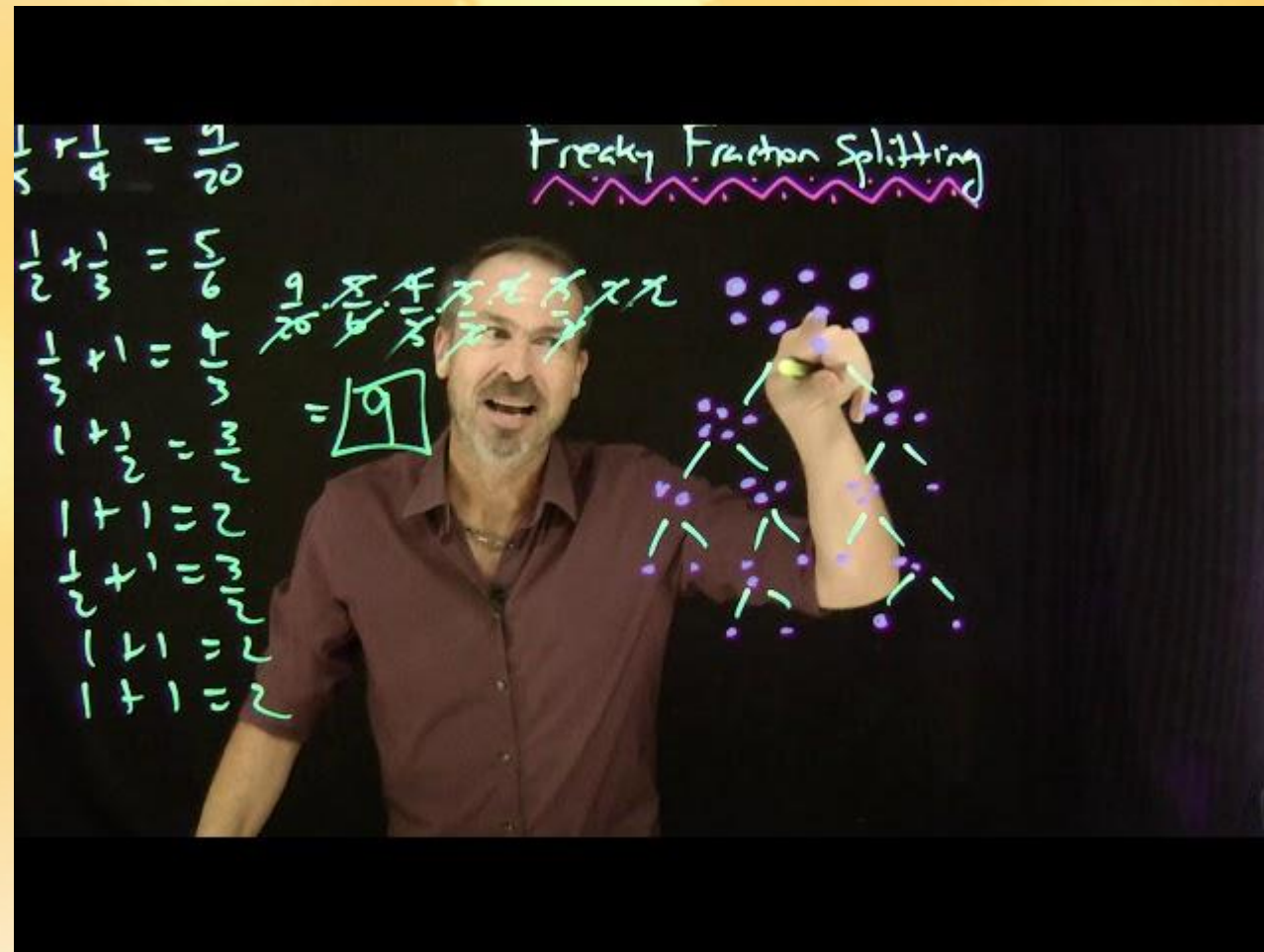




Pure Fractional Splitting (1/N)

- Every author gets an equal, fractional slice of the citation pool.
- For a paper with 500 citations and 1,000 authors, the adjusted citation value for an individual profile is:

Fractional Citations = $500/1,000 = 0.5$ citations

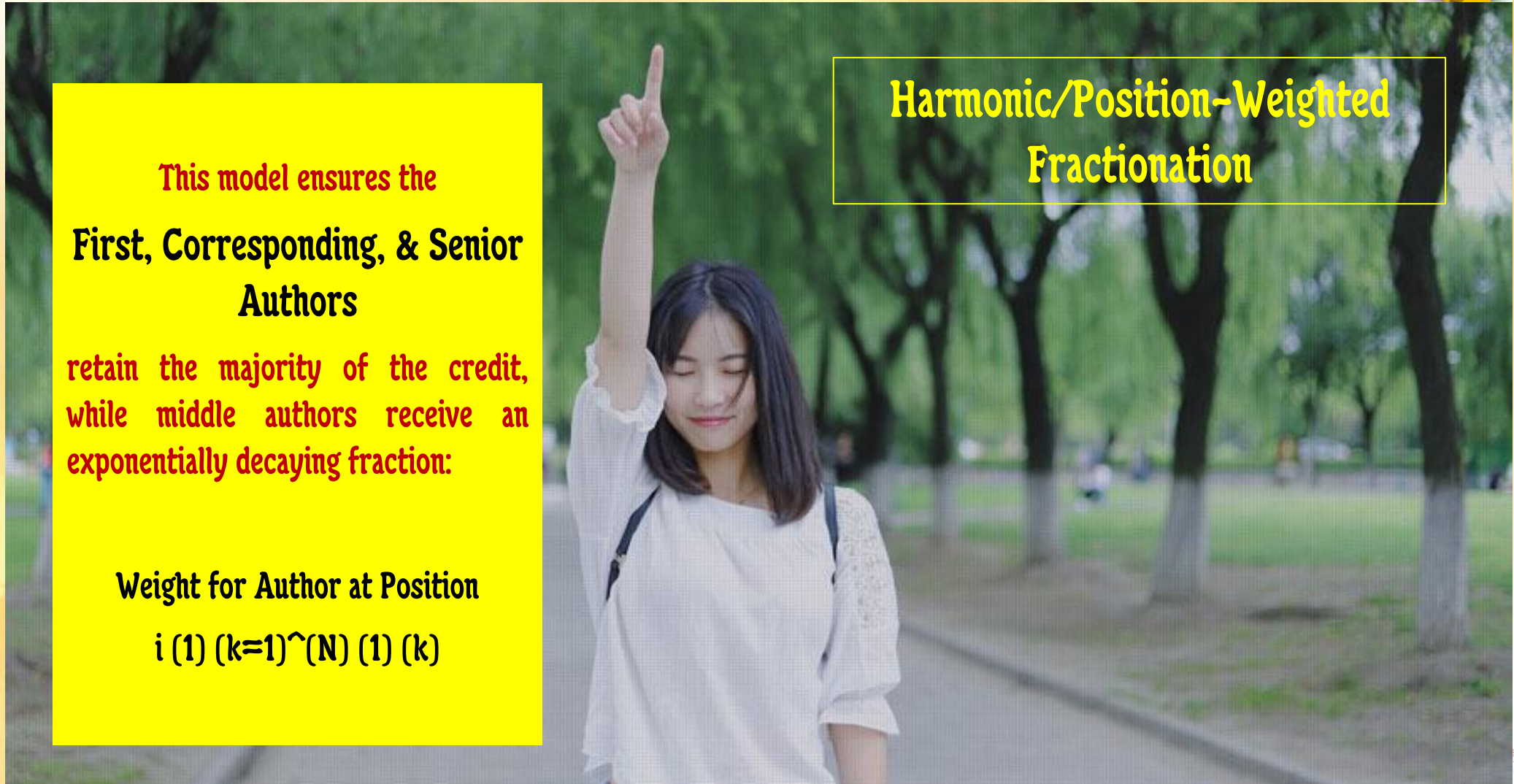




Harmonic/Position-Weighted Fractionation

Because Pure Fractional Splitting penalises the **Lead Authors** who did the bulk of the work, advanced enterprise systems apply **Harmonic Weighting**.





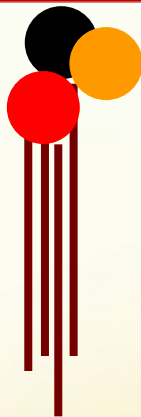
This model ensures the First, Corresponding, & Senior Authors

retain the majority of the credit, while middle authors receive an exponentially decaying fraction:

Weight for Author at Position

$$i (1) (k=1)^{\wedge}(N) (1) (k)$$

Harmonic/Position-Weighted Fractionation



The Problem of Hyper-Authorship



If a paper has 4 authors, the total credit is distributed mathematically rather than split evenly:

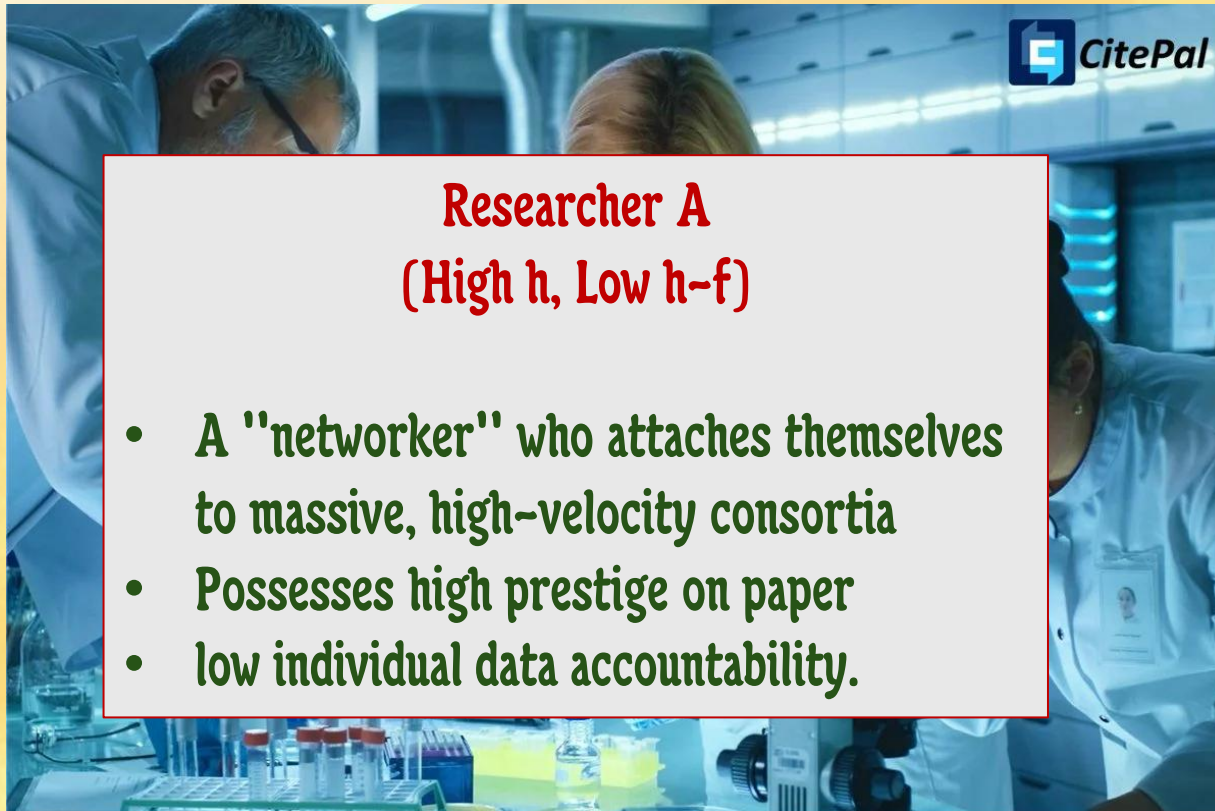
| Author Order | Pure Splitting (Fractional) | Harmonic Weighting | Role Representation |
|--------------|-----------------------------|--------------------|--|
| 1st Author | 25.0% | 48.0% | Lead Researcher / Writer (Gets the lion's share) |
| 2nd Author | 25.0% | 24.0% | Primary Co-Investigator |
| 3rd Author | 25.0% | 16.0% | Supporting Researcher |
| 4th Author | 25.0% | 12.0% | Senior Investigator / Advisor |

The Problem of Hyper-Authorship

Mycetoma

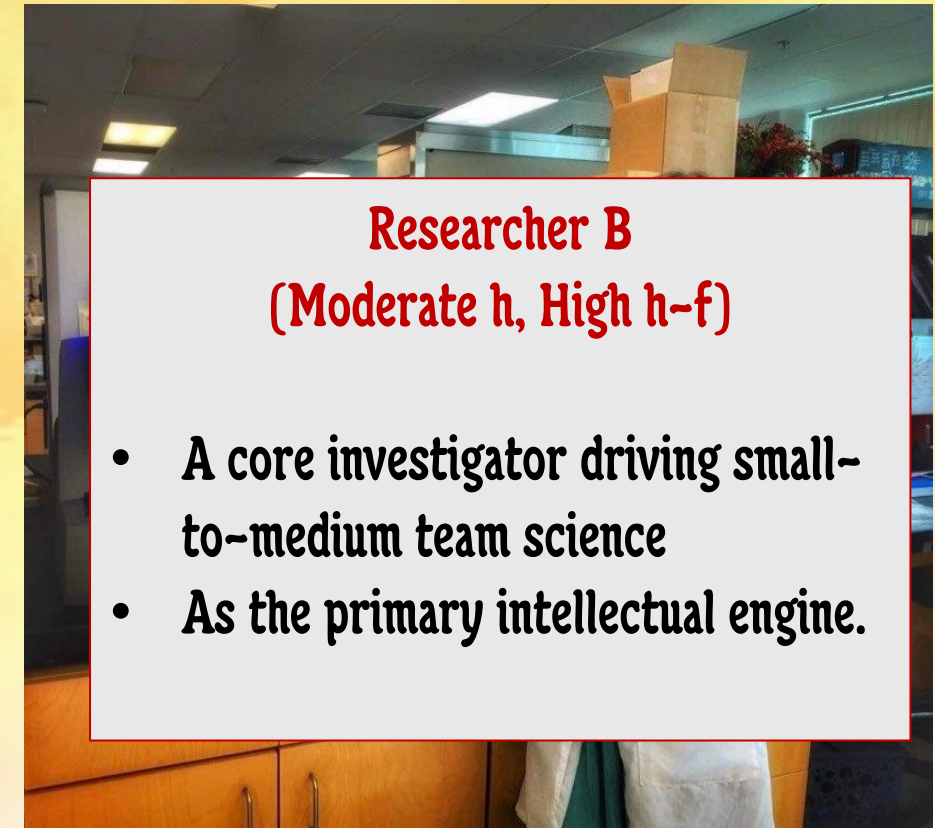


This math differentiates two distinct research profiles:



Researcher A
(High h, Low h-f)

- A "networker" who attaches themselves to massive, high-velocity consortia
- Possesses high prestige on paper
- low individual data accountability.



Researcher B
(Moderate h, High h-f)

- A core investigator driving small-to-medium team science
- As the primary intellectual engine.



The Mycetoma Research Center
University of Khartoum

Mycetoma



PUBLICATION ETHICS





The Mycetoma Research Center
University of Khartoum

Mycetoma



Publications Ethics

https://link.springer.com/chapter/10.1007/978-981-16-5248-6_14





Publications Ethics



https://link.springer.com/chapter/10.1007/978-981-16-5248-6_14



The screenshot shows the top navigation bar of the Science magazine website. The navigation menu includes 'NEWS', 'CAREERS', 'COMMENTARY', and 'JOURNALS'. The word 'Science' is centered in the navigation bar. On the right side, there are icons for search, a shopping cart, and 'LOG IN', along with a red button that says 'BECOME A MEMBER'. Below the navigation bar, the breadcrumb trail reads 'HOME > NEWS > ALL NEWS > WHAT A MASSIVE DATABASE OF RETRACTED PAPERS REVEALS ABOUT SCIENCE PUBLISHING'S 'DEATH PENALTY''. The main heading of the article is 'What a massive database of retracted papers reveals about science publishing's 'death penalty'', with a subtitle 'Better editorial oversight, not more flawed papers, might explain flood of retractions'. The byline is '25 OCT 2018 • BY JEFFREY BRAINARD, JIA YOU'. The main image is an illustration of a diver underwater, looking at a large, submerged iceberg made of papers. The top part of the iceberg, which is above the water line, is made of white papers. The bottom part, which is submerged, is made of grey papers. The diver is holding a flashlight that illuminates the submerged part of the iceberg.



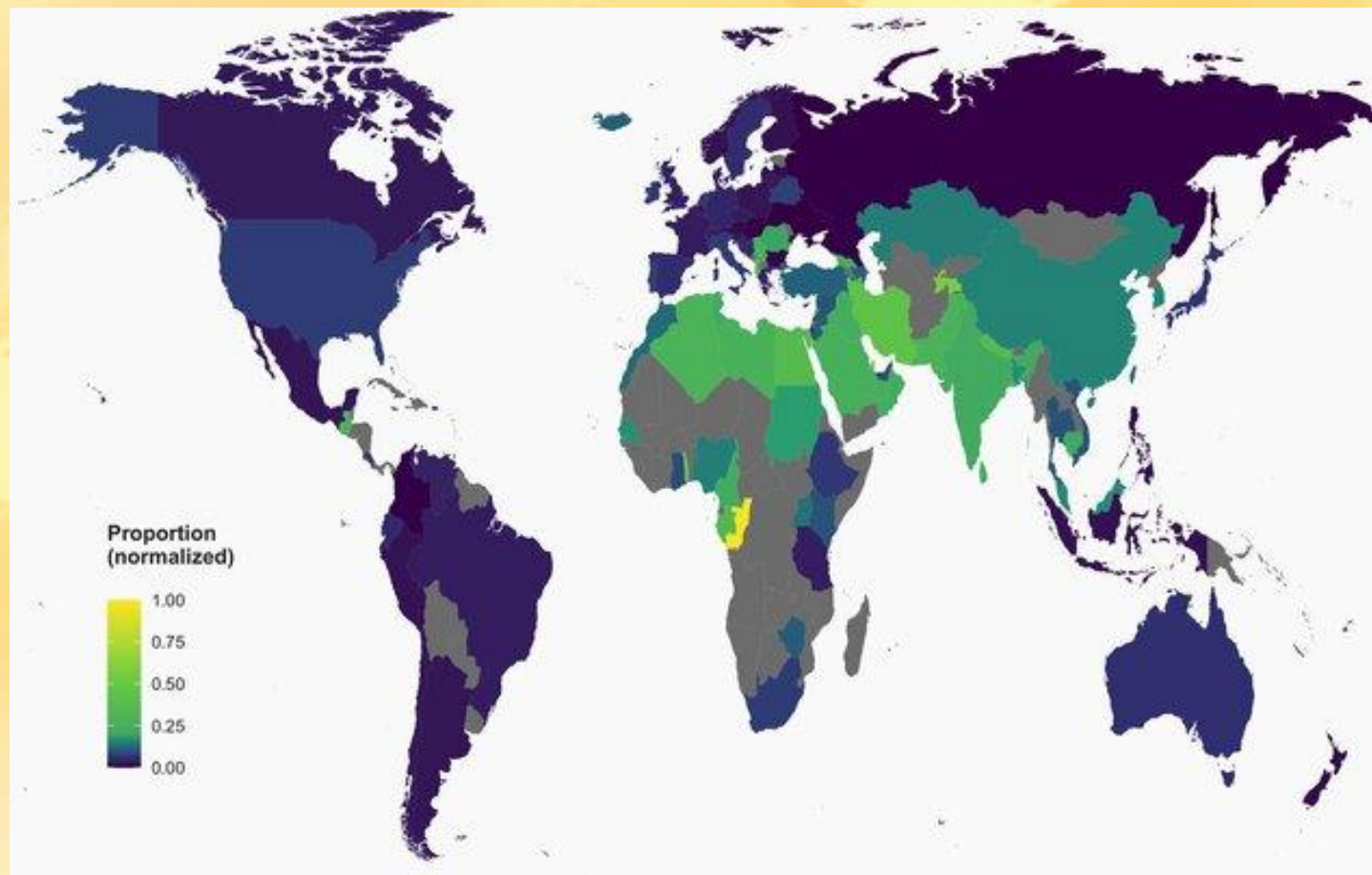
The Mycetoma Research Center
University of Khartoum

Mycetoma



Publications Ethics

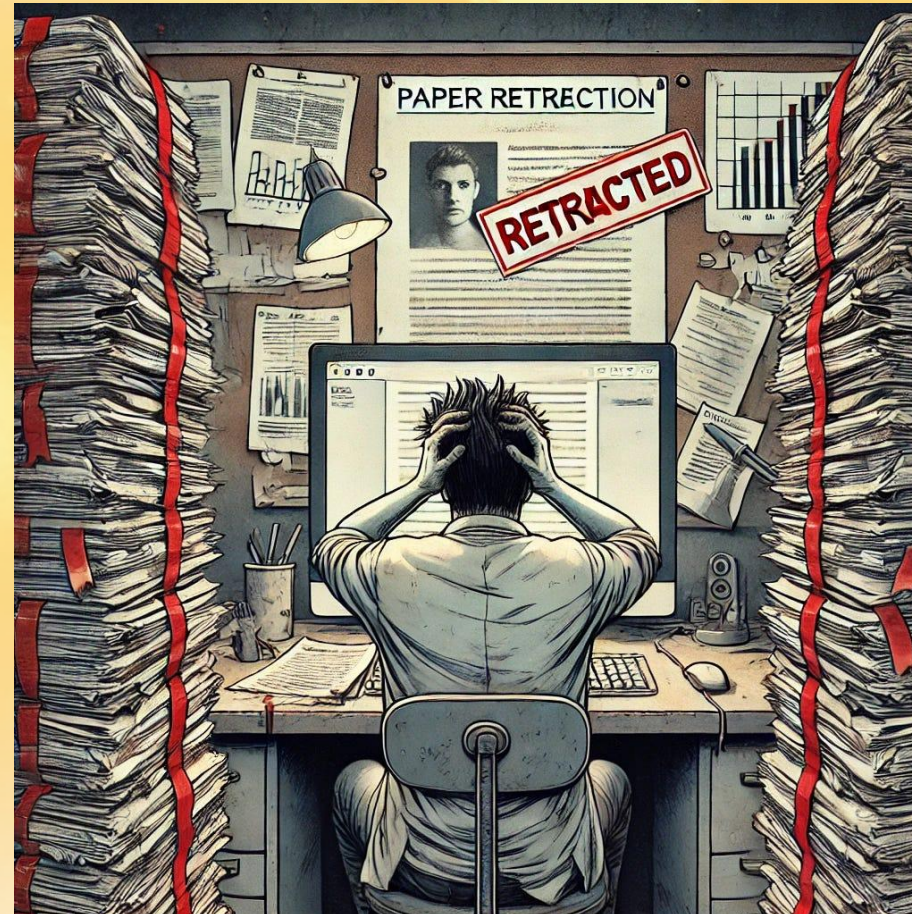
Paper Retraction





Publications Ethics

The historical over-reliance on metrics like the JIF created an unsustainable "Publish or Perish" culture, giving rise to maladaptive academic behaviours





**"Publish or Perish"
Culture**





Publications Ethics

Salami Slicing

Fragmenting a single, cohesive study into multiple microscopic papers to inflate publication counts.



Max Bai/Publish or Perish

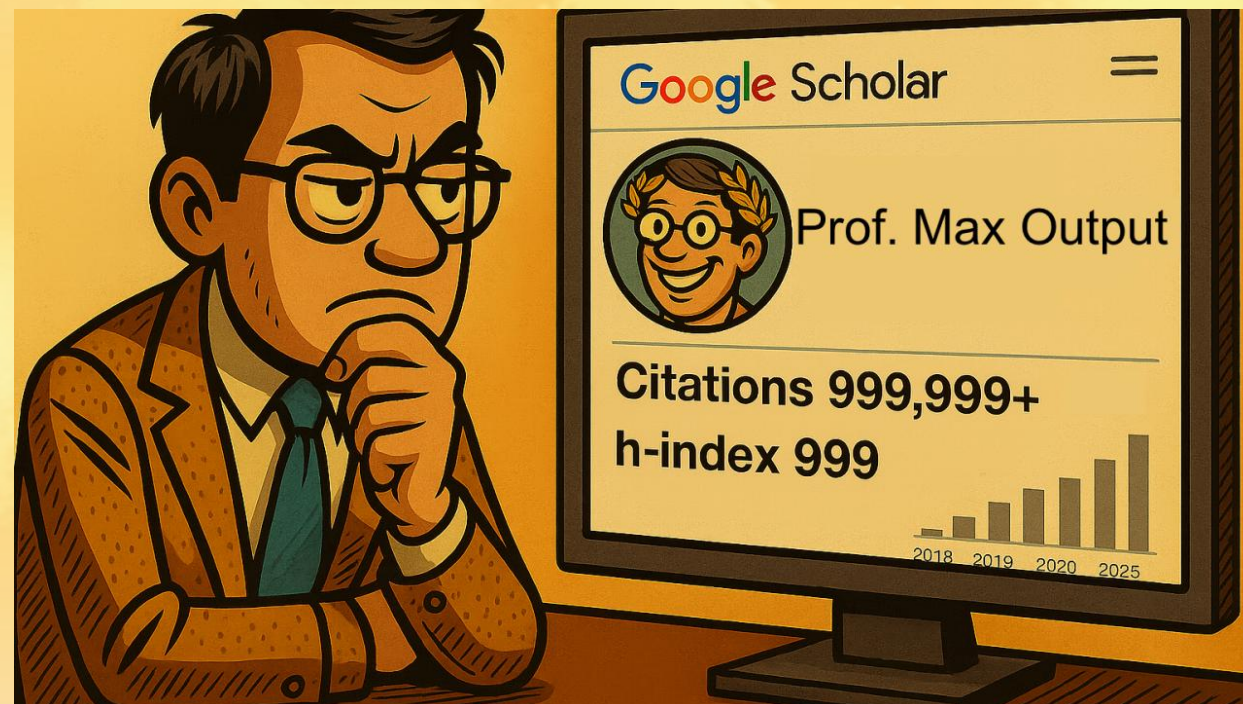


Publications Ethics

Citation Cartels

Networks of researchers who intentionally cite one another to artificially

Pump Up Personal h-indices.

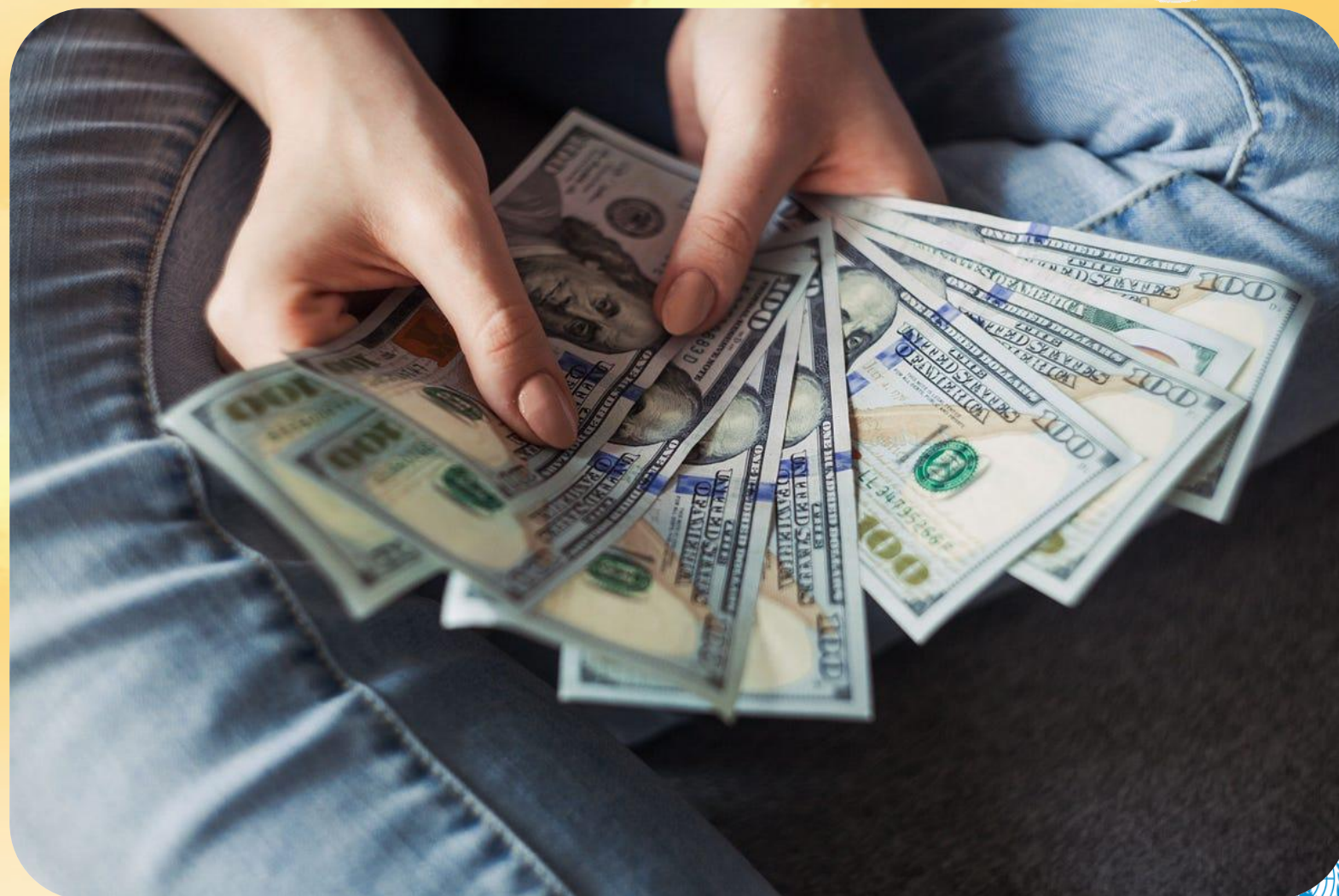


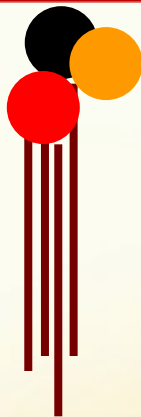


Predatory Publishing

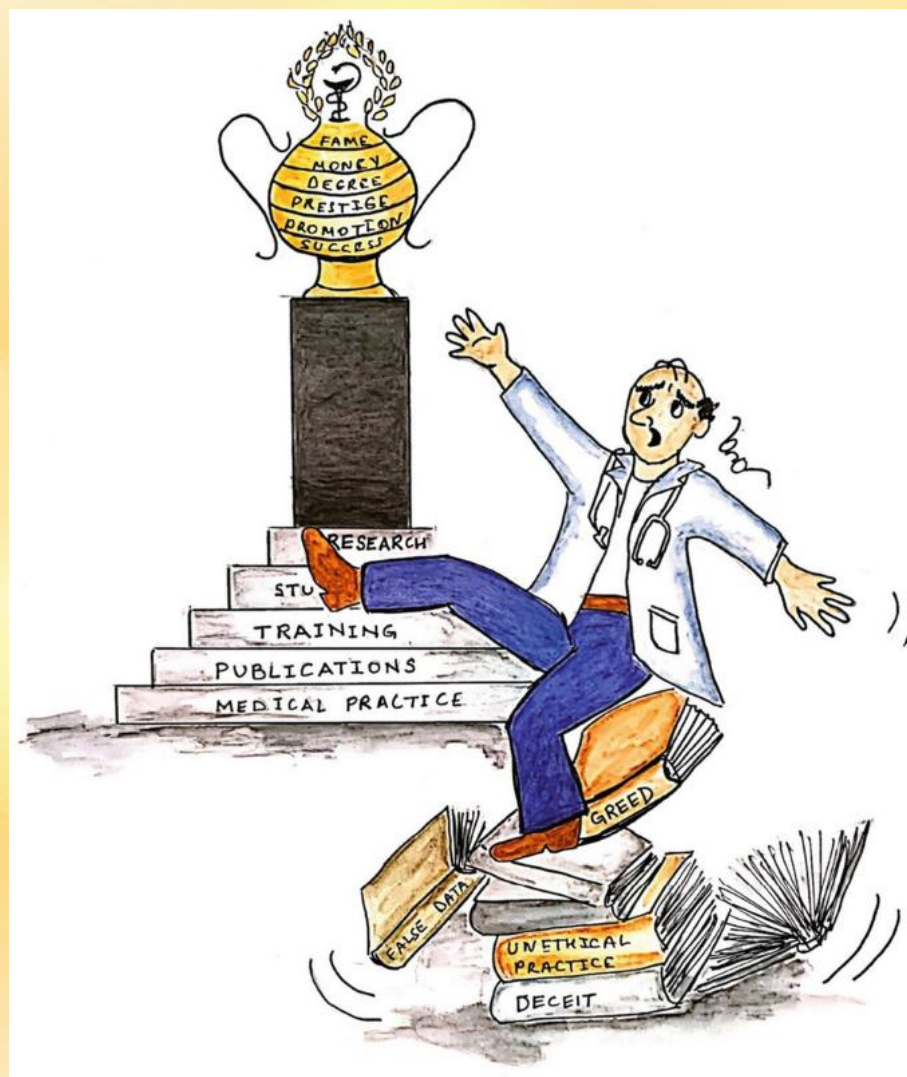
Exploitative journals that
bypass genuine peer review
entirely, publishing unverified
science in exchange for

Author Fees.





Publications Ethics





Take-home Message



“Judging researchers by their track records rather than their future plans is known to create bias.”

Rachel Oliver, professor of materials science, University of Cambridge



The Mycetoma Research Center
University of Khartoum

Take-home Message

While Research uncovers
New Knowledge

Assessment ensures it
Serves Humanity



Mycetoma





Take-home Message

The true measure of
research success is not the
final page of a journal article

But the first step of its
Real-world
Implementation





The Mycetoma Research Center
University of Khartoum

Take-home Message

"We must evaluate research
based on its
Intrinsic Merit
rather than the
Title of the journal
in which it is published."

The San Francisco Declaration
on Research Assessment (DORA)



Mycetoma





Take-home Message

Excellent Research Assessment

separates

The publication volume noise

from the signal of

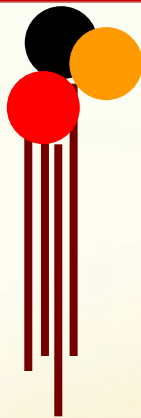
Historical Impact





Thank you very much indeed for your kind attention





The Mycetoma Research Center
University of Khartoum

Contact

Mycetoma



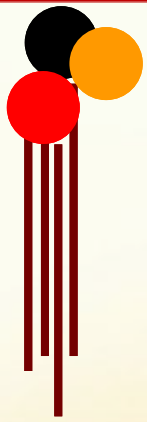
www.mycetoma.edu.sd
www.ahmedfahal.net
ahfahal@mycetoma.edu.sd

Thank You



bitly





The Mycetoma Research Center
University of Khartoum

Mycetoma

