



SciVal

Key Scival Metrics

Scival | Metrics

April, 2026
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Housekeeping

- Please add your questions to the Q&A throughout the session
- We will review and address questions during the discussion section
- Recording and presentation will be sent to attendees after our session
- Thank you for your engagement!



ขอเชิญร่วมรับฟังสัมมนาออนไลน์

SciVal Webinar Series For Thailand



LIVE

**Dr Yootapong
Klinthongchai (Elsevier)**
Speaker



LIVE

**Lucia Schoombée, Senior
Customer Success
Consultant (SME), Elsevier**



SciVal Foundations
บรรยายภาษาไทย 🇹🇭

📅 วันที่ 30 มี.ค. 2569
🕒 เวลา 10.00 - 12.00 น.

ทำความเข้าใจพื้นฐานของ SciVal ครอบคลุมแหล่งข้อมูล ความแตกต่างของเขตเวลา และวิธีการใช้งานแพลตฟอร์มข้อมูล ประสิทธิภาพ (ตัวชี้วัด) ใน (ตัวชี้วัด) (ตัวชี้วัด) และขั้นตอนการรวมความเชื่อมโยง

Reporting Module & My SciVal
บรรยายภาษาไทย 🇹🇭

📅 วันที่ 19 มิ.ย. 2569
🕒 เวลา 10.00 - 12.00 น.

เรียนรู้การใช้งานฟังก์ชันการรายงาน ซึ่งเป็นการรายงานแบบ ทัศนคติของ การใช้งานแพลตฟอร์ม ตลอดจนเครื่องมือการรวม หน่วยงาน (entities) ฐานประสิทธิภาพ

Key SciVal Metrics
บรรยายภาษาไทย 🇹🇭

📅 วันที่ 22 เม.ย. 2569
🕒 เวลา 10.00 - 12.00 น.

เรียนรู้ความหมายและการตีความตัวชี้วัดที่สำคัญ SciVal โดยเน้นตัวชี้วัดอันดับ เช่น FWCI, H-index, Top Citation Percentiles และ Journal Quartiles เพื่อใช้ในการนำไปใช้วิเคราะห์ผลงานวิจัยได้อย่างถูกต้อง

Rankings in SciVal
บรรยายภาษาอังกฤษ 🇺🇸

📅 วันที่ 13 ก.ค. 2569
🕒 เวลา 15.00 - 17.00 น.

เจาะลึกการใช้งานกับ Rankings วัตถุประสงค์: เปรียบเทียบผลงานทาง วิชาการที่ได้ ทำในเชิงวิถิต่างกันของผลงาน และสามารถเรียนรู้ วัตถุประสงค์การวิเคราะห์อันดับและการเปรียบเทียบ (benchmarking)

SciVal Topics of Prominence
บรรยายภาษาไทย 🇹🇭

📅 วันที่ 20 พ.ค. 2569
🕒 เวลา 10.00 - 12.00 น.

ทำความเข้าใจวิธีการค้นหา Topics of Prominence และการนำไป ใช้เพื่อทำความเข้าใจงานด้านการวิจัย ขยายความรู้เชิงลึกทาง วิชาการ ระบุความสัมพันธ์ และสนับสนุนการติดตามงานของชุมชน

Sustainable Development Goals in SciVal
บรรยายภาษาอังกฤษ 🇺🇸

📅 วันที่ 24 ส.ค. 2569
🕒 เวลา 15.00 - 17.00 น.

สำรวจวิธีการคำนวณการมีส่วนร่วมด้าน SDGs และค้นหาพื้นที่สามารถ ค้นหาข้อมูล SciVal พร้อมเครื่องมือวิธีการวิเคราะห์และเปรียบเทียบ ผลงานวิจัยที่เกี่ยวข้องกับเป้าหมายการพัฒนาที่ยั่งยืน

Agenda

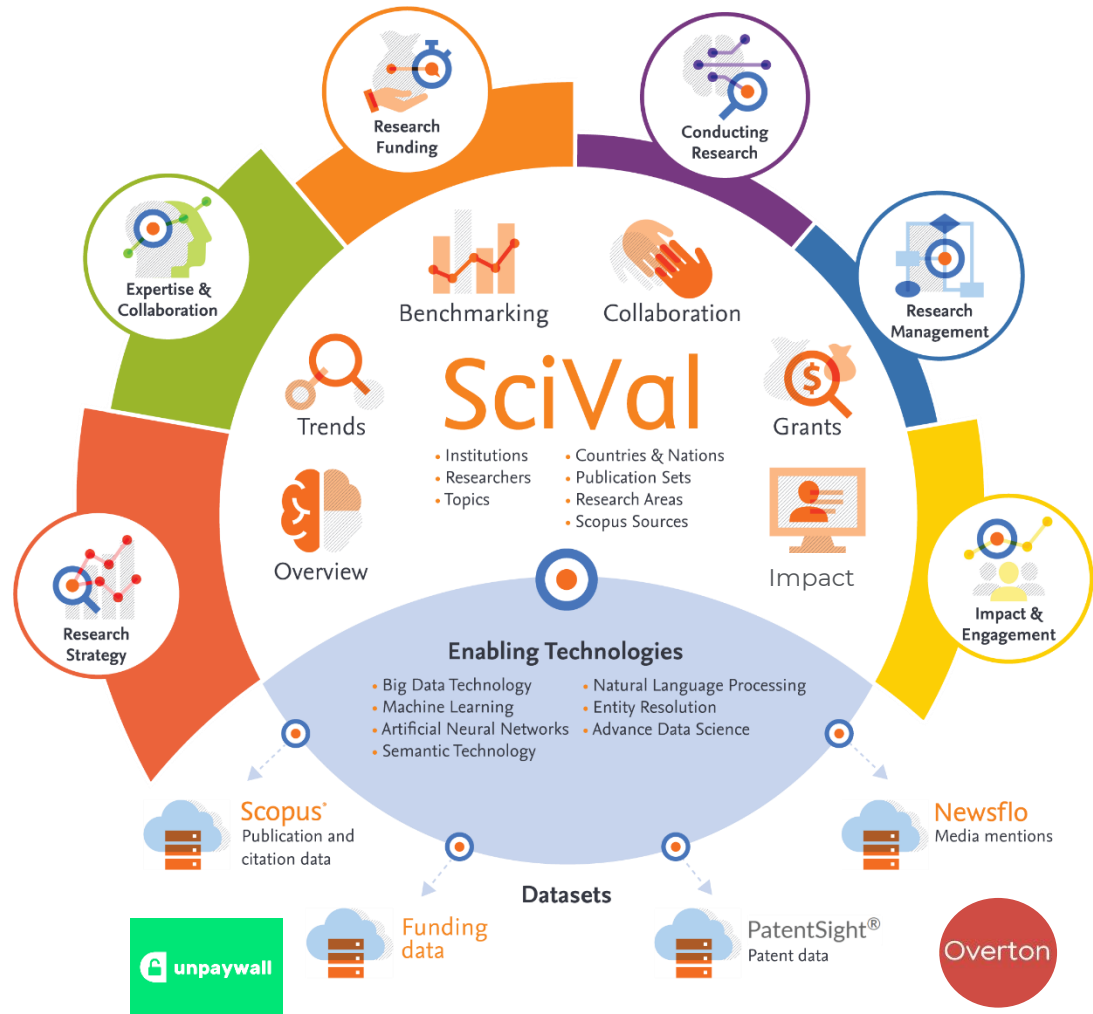
- Array of metrics
 - Purpose of Metrics?
 - Field-weighted Citation Impact
 - H-index and variants
 - CiteScore (percentiles and quartiles)
 - Outputs in Top Citation Percentiles
 - Outputs in Top Journal Percentiles
 - Responsible use of Metrics
 - Where to find help
 - Q&A
-



Re-cap SciVal

SciVal is an analytical tool designed to support research performance measurement relative to other entities















Over 300 trillion metric values
Data *updated bi-weekly*



An array of metrics

SciVal provides over 80 metrics to facilitate performance analysis across different themes such as output, impact, engagement, and funding.

The information icon leads to metrics definitions and guidance

Metric theme	Metric sub-theme	Metrics in SciVal		
F. Qualitative input	A. Funding	Awards	<ul style="list-style-type: none"> Awards Volume and Count 	
	B. Outputs	Productivity of research outputs	<ul style="list-style-type: none"> Scholarly Output  Number, Type and Growth Subject Area Count 	
		Visibility of communication channels	<ul style="list-style-type: none"> Publications in Top Journal Percentiles  	
	C. Research Impact	Research influence	<ul style="list-style-type: none"> Citations Count  Field-Weighted Citation Impact  Outputs in Top Citations Percentiles  Citations per publication  Cited publications <i>h</i>-indices  	<ul style="list-style-type: none"> Number of citing countries Views Count Outputs in Top Views Percentiles Views per Publication Field-Weighted Views Impact
		Knowledge transfer	<ul style="list-style-type: none"> Academic-Corporate Collaboration  Citing-Patents Count Patent-Cited Count 	
D. Engagement	Academic network	<ul style="list-style-type: none"> Collaboration  Collaboration Impact  		
	Non-academic network	<ul style="list-style-type: none"> Academic-Corporate Collaboration  Academic-Corporate Collaboration Impact  		
	Expertise transfer	<ul style="list-style-type: none"> Academic-Corporate Collaboration  Citing-Patents Count Patent-Cited Count 		
E. Societal Impact	"Societal Impact"	<ul style="list-style-type: none"> Policy cited output Citing policy output 	<ul style="list-style-type: none"> Mass Media Media Exposure  Field-Weighted Mass Media 	



The Metrics Guidebook and the Usage Guidebook discuss each SciVal metric in detail. The guidebooks also offer suggestions on how and when to apply each metric.

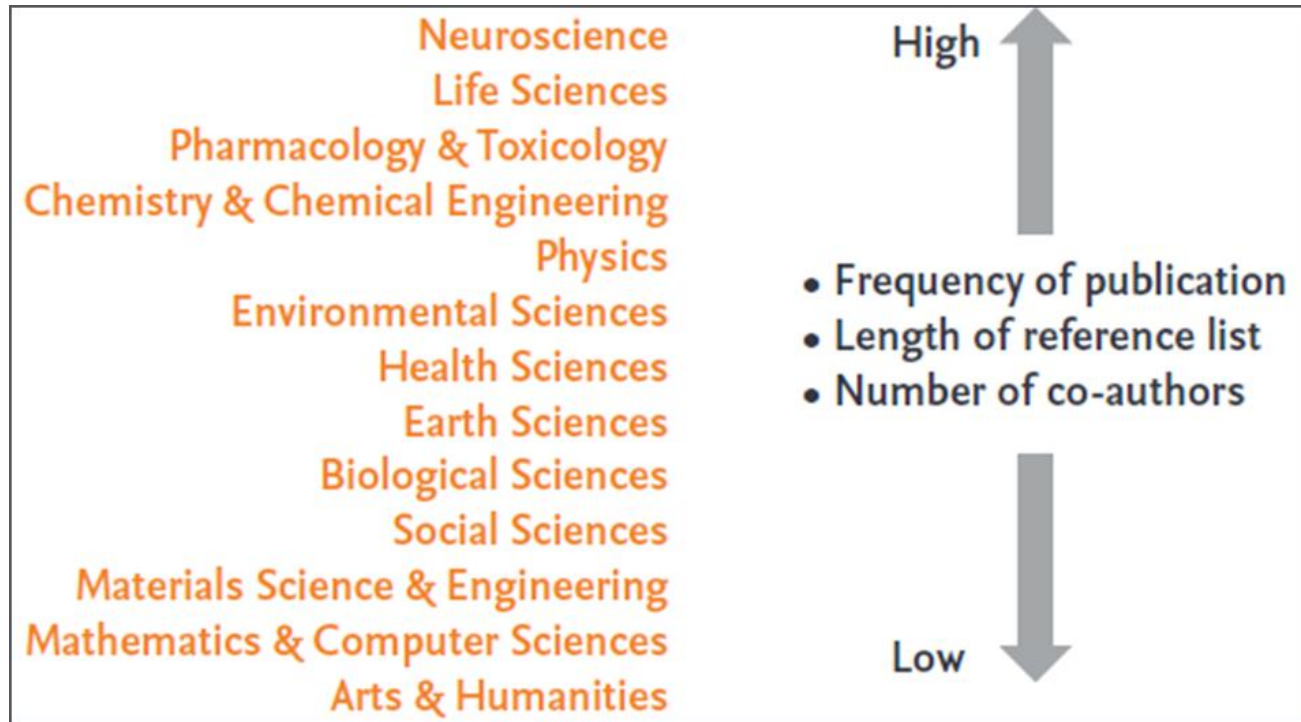
What are the main purposes of Metrics?

- **Evaluating research performance** is typically carried out by those in a position of authority relative to those being evaluated.
 - a funding body or university administration allocating funds,
 - a dean or department head deciding which researcher to recruit or award tenure to
- **Showcasing performance** is generally conducted by those who are competing for limited resources.
 - researchers look for ways to demonstrate that they should receive funding
 - a research group leader may showcase their past performance to help to secure additional time on the Large Hadron Collider,
 - university administration may highlight areas of outstanding performance to help to attract overseas students to their institution.
- **Scenario modelling of potential outcomes**, sometimes referred to as “fantasy football”
 - a research group leader wondering how recruiting Dr A rather than Dr B would impact their team’s performance,
 - a dean considering the financial implications of combining linguistics and language,
 - or university administration considering how to restructure the physics and chemistry schools.
- **Ranking from high to low.** A parent supporting their child in university applications may want to know which university is the best, and a researcher might ask where they can find the leading research group in the area of photonics, for example.



Factors that influence metrics

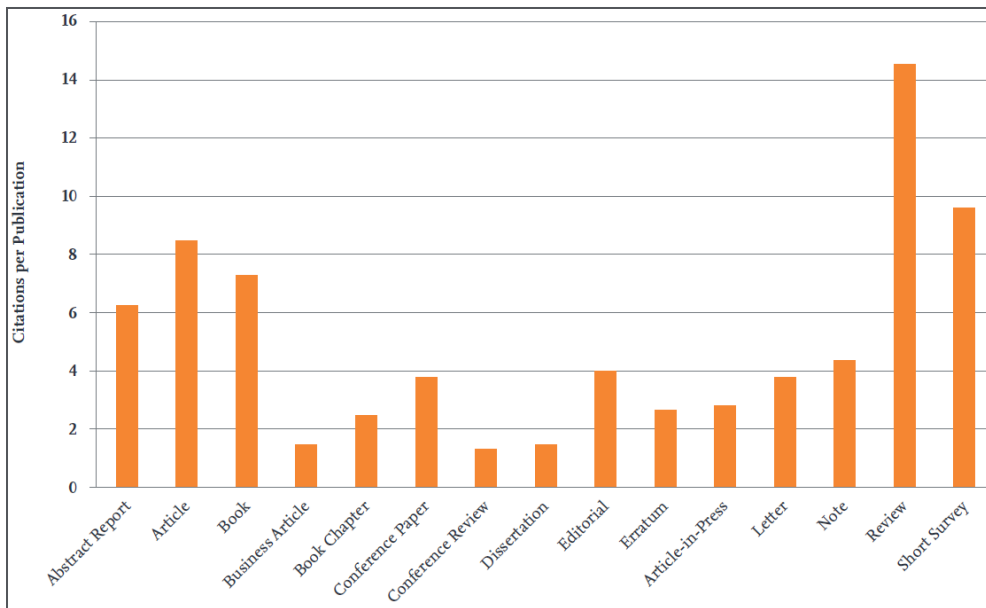
Discipline characteristics that influence metrics



The characteristic behavior of academics differs between disciplines

More factors that influence metrics

- Variety in the **size** of entities within the data set
- Multiple **publication types** within the data set
- **Coverage** of data source, by geography and/or discipline



Citation rates for different publication-types as classified in Scopus. This chart displays citations received up to August 2013 per item published during the period 2008-2012.

Two Golden Rules of using research metrics

Always use both qualitative
and quantitative input into
your decisions

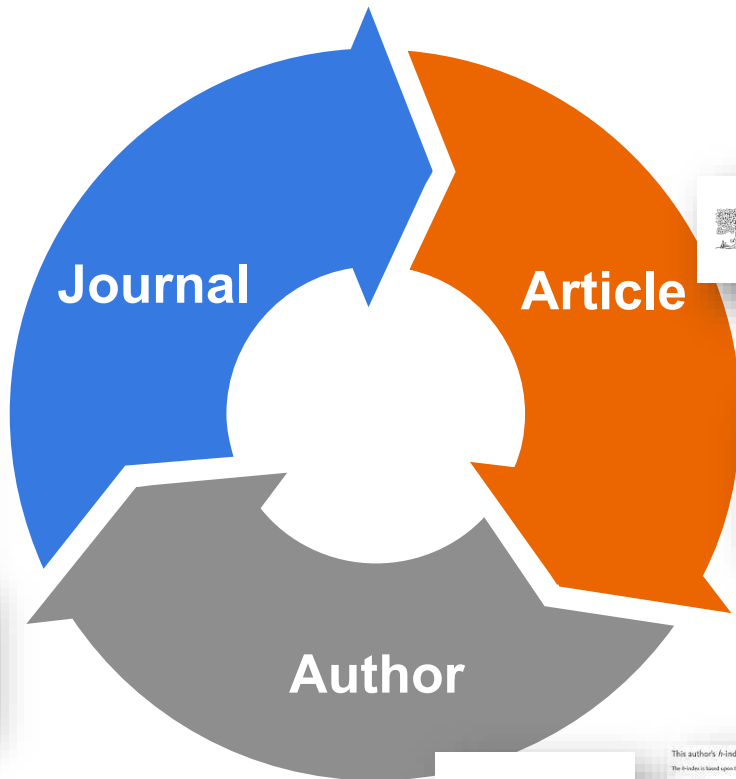
Always use more than one
research metric as the
quantitative input

- Metrics should be used together with **peer review and expert opinion**
- When metrics and peer review or expert opinion give **different answers**, **probe further**
- “Metrics” does not only mean bibliometrics
- **Multiple metrics used together give the richest perspective**

Type of research metrics

Journal-Level Metrics

CiteScore, SNIP, and SJR



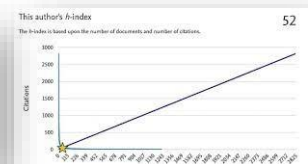
Article-Level Metrics

PlumX



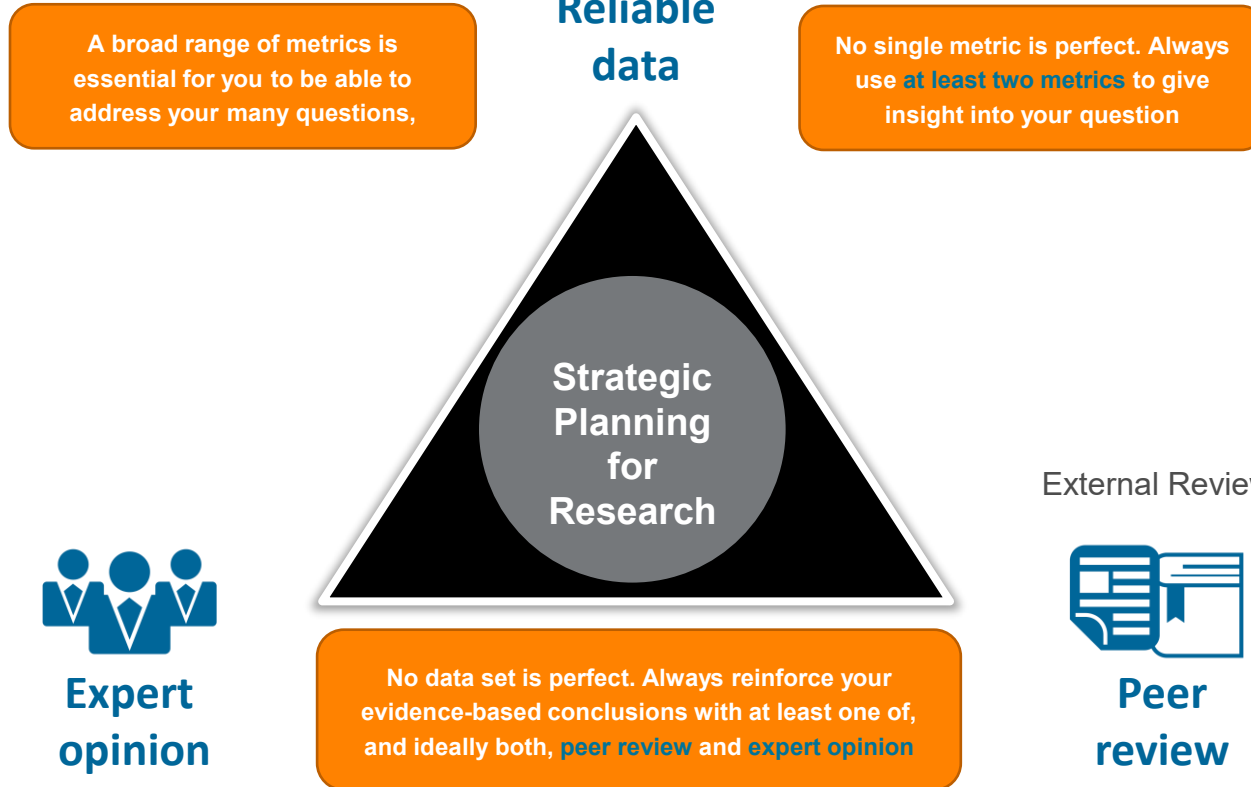
Author Metrics

H-Index



The importance of triangulation

Elsevier Research Intelligence





Article-Level Metrics

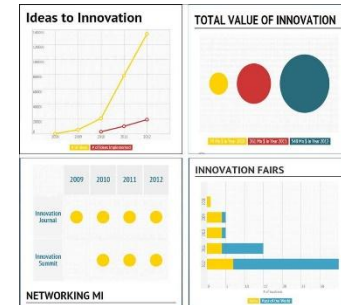
Citation, FWCI, and PlumX

Understanding Article-level Metrics

Article-level metrics (ALMs) quantify the reach and impact of published research.

ALMs seek to incorporate data from new sources (such as social media mentions) along with traditional measures (such as citations) to present a richer picture of how an individual article is being discussed, shared, and used.

- Citation
- Field-Weighted Citation Impact (FWCI)
- PlumX Metrics



Citation and Field-Weighted Citation Impact

Citations

- Citation counts how many time the particular article is used as reference.
- The more citations received, the more published article referred to your article and made use of knowledge you built.

Citation count

of citations accrued since publication

A simple measure of attention for an article, journal or researcher. As with all citation-based measures, it is important to be aware of citation practices. Citation counts can include measures of societal impact, such as patent, policy and clinical citations. "Effective Strategies for Increasing Citation Frequency"³ lists 33 different ways to increase citations.

Field-Weighted Citation Impact (FWCI)

- Field-Weighted Citation Impact shows how well cited this document is when compared to similar documents.
- The FWCI is the ratio. **A value greater than 1.00 means the document is more cited than expected according to the average.**

It takes into account:

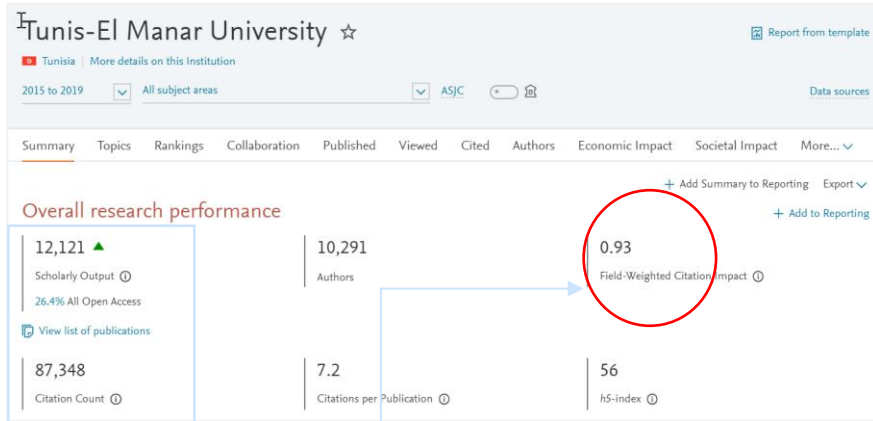
- The year of publication - three-year window
- Document type, and
- The disciplines associated with its source.

Field-Weighted Citation Impact (FWCI)

of citations received by a document
expected # of citations for similar documents

Similar documents are ones in the same discipline, of the same type (e.g., article, letter, review) and of the same age. An FWCI of 1 means that the output performs just as expected against the global average. More than 1 means that the output is more cited than expected according to the global average; for example, 1.48 means 48% more cited than expected.

FWCI – institutional level



Normalise for publication type, date of publication and subject

Field-Weighted Citation Impact is the ratio of citations received relative to the expected world average for the subject field, publication type and publication year. The world average FWCI is 1.00.

I.e., The global average of citations to articles if normalised for subject, date and type of publication is 1.0

So, if an institution has a FWCI of 0.93 it means on average publications are cited 7% below the global average.

Note: for entities with a small scholarly output, please beware of highly cited publications which may skew the FWCI

Example 5: Field-Weighted Citation Impact



Scenario: The user would like to calculate the Field-Weighted Citation Impact of an entity that consists of 3 publications. They have not selected any viewing or calculation options.

FWCI – step by step

- Example of 3 publications
- Five steps

1. Number of citations in each year
2. **Expected** nr. of citations for each year & average
3. Combined average if more than one subject category
4. Ratio of actual citations to expected citations
5. Arithmetic mean of step 4

Entity with 3 Publications				
Publication Identity	Publication 1	Publication 2	Publication 3	
Publication Year (pub year)	2009	2010	2013	
Publication Type	Article	Review	Erratum	
Journal category(ies)	Immunology	Immunology	Parasitology	Parasitology
Step 1	- Compute number of citations received by publications in the entity. - Actual citations received in pub year - Actual citations received in 1st year after pub year - Actual citations received in 2nd year after pub year - Actual citations received in 3rd year after pub year - Actual citations received by the individual publication in pub year plus following 3 years			
	2 3 13 23 2+3+13+23 41	12 23 28 45 12+23+28+45 108	0 N/A (example prepared in 2013) N/A (example prepared in 2013) N/A (example prepared in 2013) 0	
Step 2	- Compute expected number of citations received by similar publications. - Number of publications in database published in same year, of same type, and within same discipline as Publication 1, 2, or 3 - Total citations received in pub year plus 3 years by all publications in database published in same year, of same type, and within same journal category(ies) as Publication 1, 2, or 3 - Average citations per publication for all publications in database published in same year, of same type, and within same subject category as Publication 1, 2, or 3			
	7829.6 141,665.2 141,665.2 / 7,829.6 18.09	1,349.8 35,770.8 35,770.8 / 1,349.8 26.50	161.9 2,161.5 2,161.5 / 161.9 13.35	8.3 0.0 0.0 / 8.3 0.00
Step 3	- Use harmonic mean to compute expected number of citations for publications covered in multiple categories. - Combined average citations per publication for publications indexed in multiple journal categories			
	2/(1/26.5 + 1/13.4) 17.76			
Step 4	Compute ratio of actual (result of step 1) to expected (result of step 2 or 3) citations for each of Publications 1, 2 and 3.			
	41/18.1 2.27	108/17.76 6.08	No citations received or expected => 0 0.00	
Step 5	Take arithmetic mean of the results of step 4 to calculate Field-Weighted Citation Impact for this entity			
	Arithmetic Mean (2.27 + 6.08 + 0.00) / 3 Field-Weighted Citation Impact = 2.78			

$$\text{Expected Average} = \frac{\text{Expected citation in 4 years}}{\text{Expected publication in 4 years}}$$


$$\text{FWCI} = \frac{\text{Step 1 (Real citation)}}{\text{Step 2 (Expected Citation)}}$$

FWCI – article level

European Journal of Social Psychology • Volume 49, Issue 7, Pages 1401 - 1420 • 1 December 2019

What is threatening about refugees? Identifying different types of threat and their association with emotional responses and attitudes towards refugee migration

Landmann, Helen^a  ; Gaschler, Robert^b; Rohmann, Anette^a


 [Save all to author list](#)

^a Department of Psychology, Community Psychology, FernUniversität in Hagen, Hagen, Germany

^b Department of Psychology, Experimental Psychology—Learning, Motivation, Emotion, FernUniversität in Hagen, Hagen, Germany

25th percentile
Citations in Scopus

3.81
FWCI 

50
Views count  ↗

[View all metrics >](#)

FWCI

Field-Weighted Citation Impact shows how well cited this document is when compared to similar documents. A value greater than 1.00 means the document is more cited than expected according to the average. It takes into account:

- The year of publication
- Document type, and
- Disciplines associated with its source.

The FWCI is the ratio of the document's citations to the average number of citations received by all similar documents over a three-year window. Each discipline makes an equal contribution to the metric, which eliminates differences in researcher citation behavior.



Metrics displaying this icon are compiled according to [Snowball Metrics](#) ↗, a collaboration between industry and academia. Learn more about Article metrics in Scopus.

FWCI – author level



Musk, Elon R. ☆

Space Exploration Technologies Corporation ... Show all affiliations | View in Scopus > | Is this you?

2019 to 2021 All subject areas ASJC

Summary Topics Collaboration Published Viewed Cited Patent Impact

Overall research performance



Title	Citations	Year	Publication	Subject	FWCI
An integrated brain-machin	302	2019	Article	Health Informatics	19,43
Discrete SARS-CoV-2 antibo	52	2021	Article	General Biochemistry, Ge	6,52
Early cross-coronavirus reac	31	2021	Article	Immunology Immunolo	4,29
Epidemiological and immun	6	2021	Article	Virology Infectious Dise	0,92
Adapting Disease Preventio	2	2021	Article	Medicine (miscellaneous	0,43
Aufbruch in Lateinamerika.	0	2021	Review	Philosophy General Soc	0
					5,27

Check quality of articles

Article-level metrics in ScienceDirect and Scopus



Scopus



Article-level metrics (ALMs) quantify the reach and impact of published research.

ALMs seek to incorporate data from new sources (such as social media mentions) along with traditional measures (such as citations) to present a richer picture of how an individual article is being discussed, shared, and used.

PLUMX

PlumXMetrics are comprehensive, item-level metrics that provide insights into the ways people interact with **individual pieces** of research output:

- Visualizes scholarly engagement
- Includes 5 categories of metrics
- Designed to communicate engagement without a score



PLUMX

Metrics
Categories



USAGE
(clicks, downloads, views, library holdings, video plays)



CAPTURES
(bookmarks, code forks, favorites, readers, watchers)



MENTIONS
(blog posts, comments, reviews, Wikipedia links)



SOCIAL MEDIA
(+1s, likes, shares, tweets)



CITATIONS
(citation indexes, patent citations, clinical citations)



Journal-Level Metrics

CiteScore, Snip, or SJR

Check quality of journals and books

Journal-level metrics in ScienceDirect/Scopus

Each metric may offer a different emphasis based on its underlying data source, method of calculation, or context of use. For this reason, Elsevier promotes the responsible use of research metrics encapsulated in two “golden rules”.

Those are:

- Always use both *qualitative* and *quantitative* input for decisions (i.e. expert opinion alongside metrics),
- Always use more than one research metric as the quantitative input.

Focus on CiteScore for percentile calculations



Citations in a year to documents published in 4 years

of documents in 4 years



Citations in a year to documents published in 4 years

of documents in 4 years

CiteScore

- CiteScore itself is an **average** of the sum of the citations received in a given year to publications published in **4 years** divided by the sum of publications in the same 4 years.
- Takes **4 years** (including current year) into account.



Universiteit Leiden

Journal's citation count per paper

Citation potential in its subject field

SNIP

- SNIP = Sourced Normalized Impact per Paper
- SNIP accounts for **field-specific differences** in citation practices.
- measures contextual citation impact and enables direct comparison of journals in different subject fields
- Outlier scores are closer to average
- Takes **3 years** into account.



Scimago Lab

Average # of weighted citations received in a year

of documents published in previous 3 years

SJR

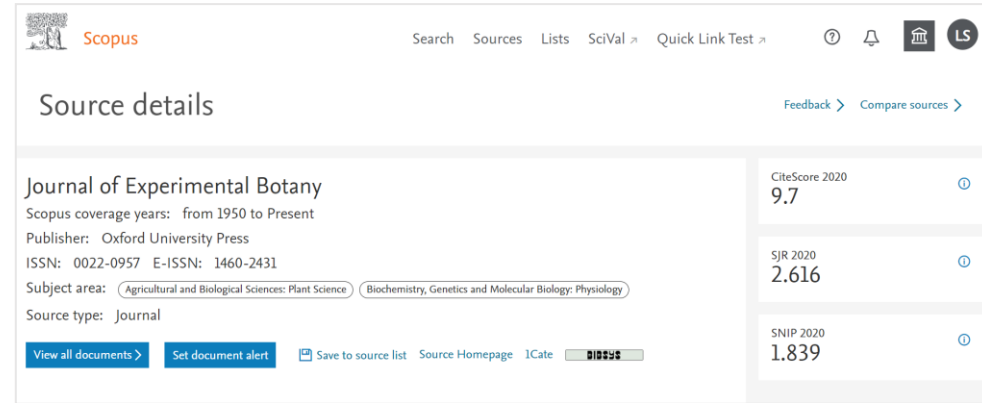
- SJR = SCImago Journal Rank
- SJR is a measure of the scientific influence of scholarly journals that accounts for both the **number of citations received** by a journal and the **importance or prestige of the journals where the citations come from**.
- SJR weights each incoming citation to a journal by the SJR of the citing journal, with a citation from a high-SJR source counting for more than a citation from a low-SJR source.
- Takes **3 years** into account.

CiteScore

- CiteScore itself is an **average** of the sum of the citations received in a given year to publications published in **4 years** divided by the sum of publications in the same 4 years.
- Takes **4 years** (including current year) into account.

CiteScore

- **CiteScore** is the number of citations to documents (articles, reviews, conference papers, book chapters, and data papers) by a journal over four years, divided by the number of the same document types indexed in Scopus and published in those same four years.
- **CiteScore Percentile** indicates the relative standing of a serial title in its subject field based on the CiteScore metric. The Percentile and Ranking are relative to a specific Subject Area. The Source table only displays the Subject Area where the source performs the best.
- **Source normalised impact per paper (SNIP)** divides the journal's citation count per paper by the expected citation count in its subject field (Calculated by CWTS)
- **SciMago Journal Rank (SJR)** - Citations are weighted depending on the quality and the subject field of the source journal (Calculated by SciMago)



The screenshot shows the Scopus interface for the 'Journal of Experimental Botany'. The page title is 'Source details'. On the right, there are three metrics: CiteScore 2020 (9.7), SJR 2020 (2.616), and SNIP 2020 (1.839). The main content area includes the journal name, Scopus coverage years (from 1950 to Present), Publisher (Oxford University Press), ISSN (0022-0957), and E-ISSN (1460-2431). The subject area is listed as 'Agricultural and Biological Sciences: Plant Science' and 'Biochemistry, Genetics and Molecular Biology: Physiology'. At the bottom, there are buttons for 'View all documents', 'Set document alert', 'Save to source list', 'Source Homepage', 'ICate', and a 'BIOSIS' logo.

CiteScore rank 2020

Category	Rank	Percentile	
Agricultural and Biological Sciences	#11/445	97th	In top 3% of journals in the subject
└ Plant Science			
Biochemistry, Genetics and Molecular Biology	#18/169	89th	In top 11% of journals in the subject
└ Physiology			

CiteScore in SciVal

Quartiles indicate where a journal's ranking lies within a particular subject category or overall. These quartiles rank the journals from highest to lowest based on their **CiteScore Percentiles**, SNIP or SJR.

There are four quartiles: Q1, Q2, Q3 and Q4.

Quartiles are bands of serial titles that have been grouped together because they occupy a similar position within their subject categories. The quartiles are:

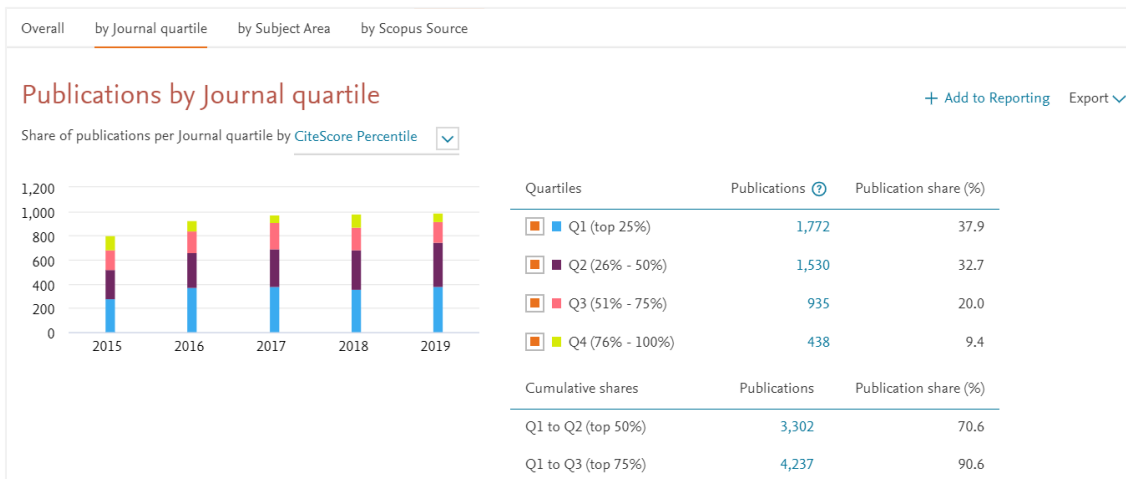
Quartile 1: serial titles in 99-75th percentiles

Quartile 2: serial titles in 74-50th percentiles

Quartile 3: serial titles in 49-25th percentiles

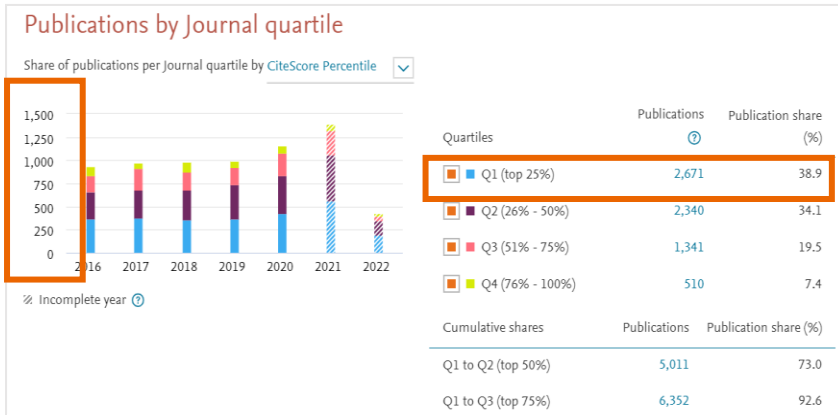
Quartile 4: serial titles in 24-0 percentiles

The most prestigious journals within a subject area are those occupying the first quartile, Q1.

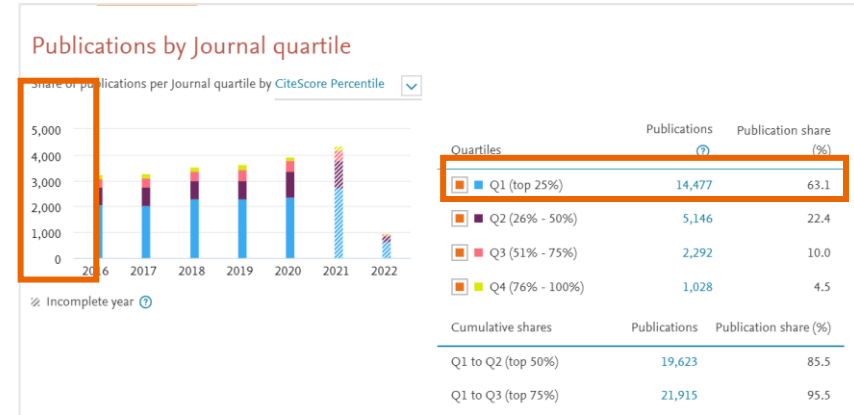


Quartiles in SciVal

THE WUR #1201+



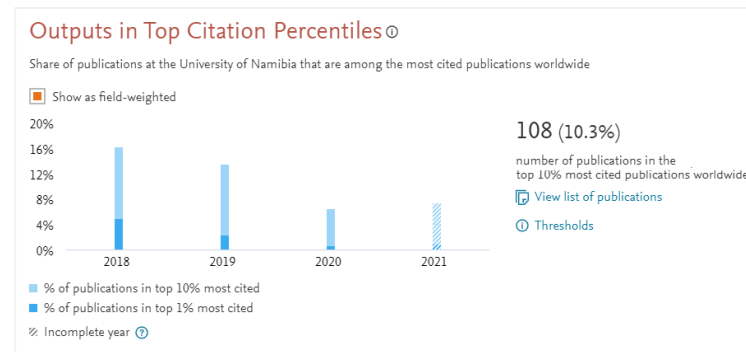
THE WUR #183



Outputs in Top Citation Percentiles



- Definition:** Outputs in Top Citation Percentiles in SciVal indicates the extent to which an entity's publications are present in the most-cited percentiles of a data universe: how many publications are in the top 1%, 5%, 10% or 25% of the most-cited publications?
- How is it calculated?** For each year, the global publications are extracted from Scopus and ordered from highest to lowest citation. The publications are then split into 100 even percentiles and the citation thresholds are noted.
- Available as **percentage** or **absolute** numbers
- Field-weighted:** When field weighting is selected, (FWCI) is used for each publication to calculate the percentile thresholds, instead of the publication's citations.
- Available for **all entities**



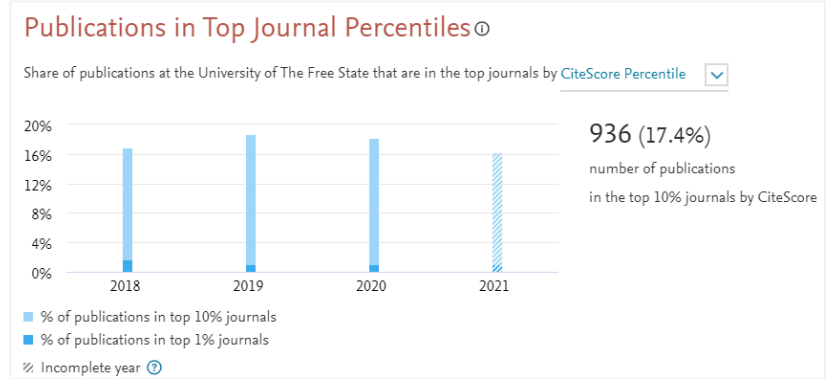
Overview Module > Published

Entity ↑	Output in Top 1% Citation Percentiles ↓	Output in Top 5% Citation Percentiles ↓	Output in Top 10% Citation Percentiles ↓	Output in Top 25% Citation Percentiles ↓
🏛️ University of Namibia	36	99	166	395
Entity ↑	Output in Top 1% Citation Percentiles (field-weighted) ↓	Output in Top 5% Citation Percentiles (field-weighted) ↓	Output in Top 10% Citation Percentiles (field-weighted) ↓	Output in Top 25% Citation Percentiles (field-weighted) ↓
🏛️ University of Namibia	33	99	160	377

Benchmarking Module

Outputs in Top Journal Percentiles

- Definition:** Outputs in Top Journal Percentiles in SciVal indicates the extent to which an entity's publications are present in the most-cited journals in the data universe: how many publications are in the top 1%, 5%, 10% or 25% of the most-cited journals indexed by Scopus?
- How is it calculated?** Using the Citescore, SNIP, SJR values to split publications into 100 even percentiles
- Available as **percentage** or **absolute** numbers
- Citescore:** For CiteScore, the percentage thresholds are taken directly from the CiteScore Percentile values that are calculated by Scopus. A journal receives a CiteScore Percentile for each ASJC in which it's categorized. SciVal always uses the highest relevant CiteScore Percentile, which is dictated by the subject area filter
- Available for **all entities**



Overview Module > Published

Entity [↑]	Publications in Top 1% Journal Percentiles by CiteScore Percentile [Ⓞ]	Publications in Top 5% Journal Percentiles by CiteScore Percentile [Ⓞ]	Publications in Top 10% Journal Percentiles by CiteScore Percentile [Ⓞ]	Publications in Top 25% Journal Percentiles by CiteScore Percentile [Ⓞ]
University of The Free State	86	595	243	2,969

Benchmarking Module (select CiteScore, SJR or SNIP)



Author Metric

H-Index

H-index in Author Profile

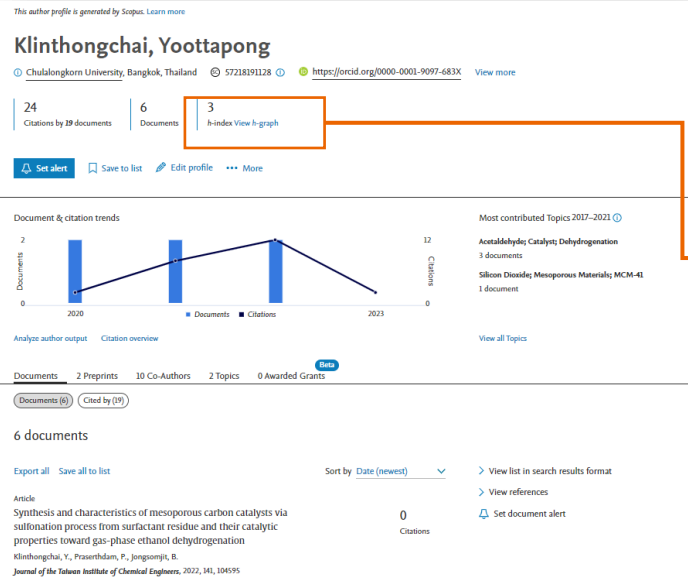
***h*-index and *h*-graph:** View a researcher's performance based on career publications, as measured by the lifetime number of citations that each published article receives; *h*-indices indicate a balance between productivity (scholarly output) and citation influence (citation count).



h-index

of articles in the collection (*h*) that have received at least (*h*) citations over the whole period

For example, an *h*-index of 8 means that 8 of the collection's articles have each received at least 8 citations. *h*-index is not skewed by a single highly cited paper, nor by a large number of poorly cited documents. This flexible measure can be applied to any collection of citable documents. Related *h*-type indices emphasize other factors, such as newness or citing outputs' own citation counts.⁴



Klinthongchai, Yoottapong

Chulalongkorn University, Bangkok, Thailand
Author ID:57218191128

Analyze documents published between: 2020 to 2023
 Exclude self citations Exclude citations from books [Update Graph](#)

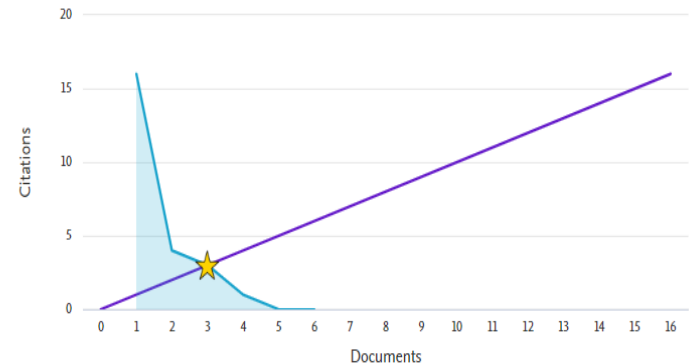
Documents ↓ Citations ↓ Title ↓

1	16	Synthesis, character...
2	4	Effect of TMB/P123 ra...
3	3	Study of deactivation ...
4	1	Characterization of m...
5	0	Synthesis and charact...
6	0	Screen-Printed Micro...

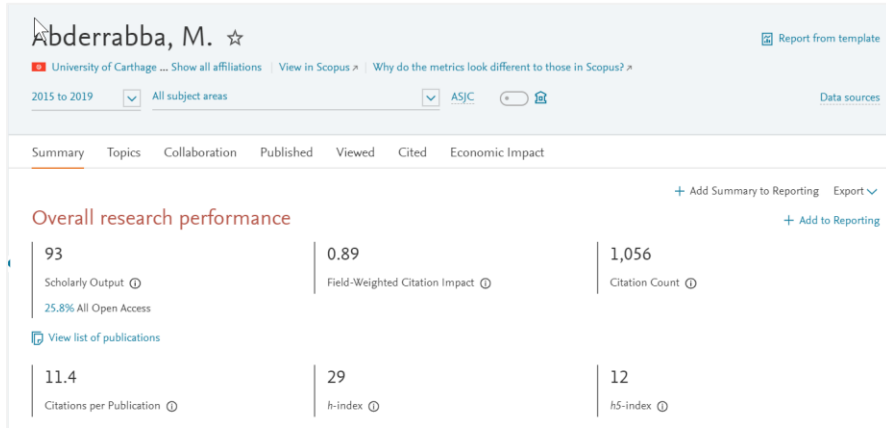
This author's *h*-index

3

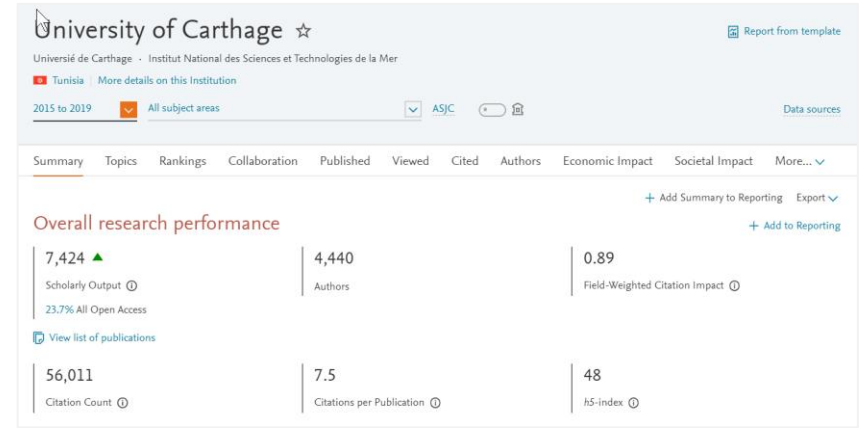
The *h*-index is based upon the number of documents and number of citations.



H-index & H5-index in SciVal

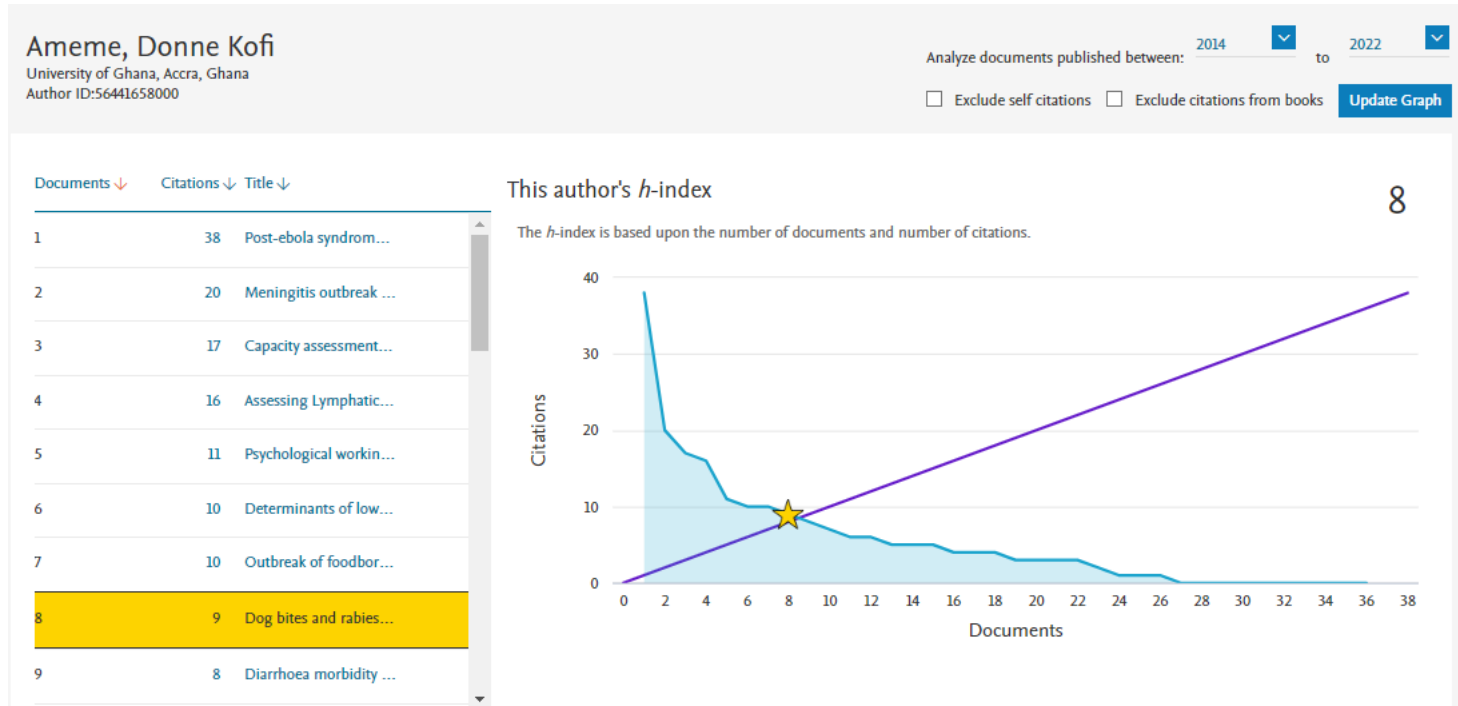


h-index is a measure of both the productivity and citation impact of a Researcher, based on the number of publications as well as the number of citations they have received. It's based upon data from 1996 to current date and can be filtered by subject areas



The h5-index uses a 5-year publication and citation window on the standard h-index calculation (Advantage: equal year range)

How is h-index calculated?



Definition: The highest number of publications of a scientist that received h or more citations each while the other publications have not more than h citations each

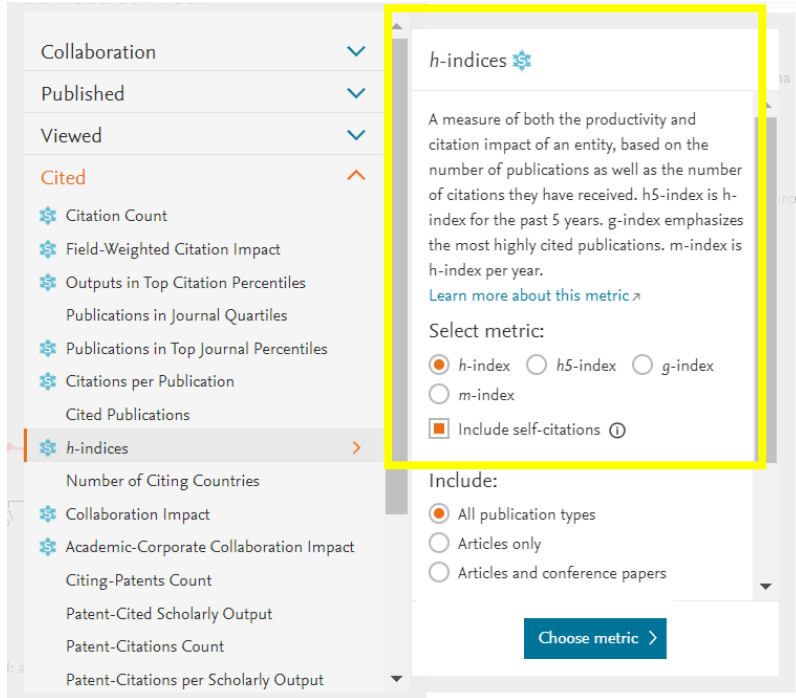
Advantages of h-index

- Combines quantity (publications) and impact (citations).
- Objective measure of performance
- Insensitive to low cited papers
- Better than other single-number criteria:
 - Impact factor, total number of documents, total number of citations, citation per paper rate and number of highly cited papers
- Easy to obtain
- Easy to understand

Limitations of h-index

- Publication and citation patterns vary between disciplines
- Not time sensitive
- Highly cited papers are not reflected in the h-index
- Easy to obtain, risk of indiscriminate use and over-reliance
- May change behaviour of scientists (self-citations)
- There are also technical limitations:
 - Difficulty to obtain the complete output of scientists
 - Deciding whether self-citations should be removed or not

Variants of h-index (in SciVal)



h-indices ⚙️

A measure of both the productivity and citation impact of an entity, based on the number of publications as well as the number of citations they have received. h5-index is h-index for the past 5 years. g-index emphasizes the most highly cited publications. m-index is h-index per year. [Learn more about this metric](#) ↗

Select metric:

h-index h5-index g-index
 m-index

Include self-citations ⓘ

Include:

All publication types
 Articles only
 Articles and conference papers

[Choose metric](#) >

g-index is a variant of the h-index that emphasizes the most highly cited papers in a data set. The h-index does not give extra weighting to the most-cited publications of a data set that are likely the ones that are responsible for an entity's prestige; **g-index can be used if this feature of the h-index is seen as a weakness.** The g-index is always the same as or higher than the h-index

The *m*-index is defined as ***h* divided by *n***, where *n* is the number of years since the first published paper of the scientist

g-index calculation



Leo Egghe

Table 1. Example of calculation of h- and g-index

Rank doc	No. citations	h-index	Rank ²	Sum citations	g-index
1	15		1	15	
2	10		4	25	
3	7		9	32	
4	4	X	16	36	
5	0		25	36	
6	0		36	36	X
7	0		49	36	

Method/calculation: Rank by decreasing order the citations of all the documents of the unit. The position where the **square of the rank position is equal to the accumulated number of citations corresponds to the g-index**


Source: Costas, R., & Bordons, M. (2008). Is g-index better than h-index? An exploratory study at the individual level. *Scientometrics*, 77(2), 267-288.

m-index calculation

- The h-index depends on the duration of each scientist's career because the pool of publications and citations increases over time.
- In order **to compare scientists at different stages of their career**, Hirsch presented the “m parameter”, which is the result of dividing h by the scientific age of a scientist (number of years since the author's first publication)
- The *m*-index is defined as h/n , where *n* is the number of years since the first published paper of the scientist.

Example using all h-index variants in Compare



Entity ↑	h-index ↓	h5-index ↓	g-index ↓	m-index ↓
 Ameme, Donne Kofi	8	5	12	1.0

Year range 1996-2022

Recent 5 years

Reflects highly cited papers

Reflects publishing years

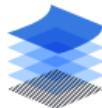
Summary of all metrics



Citation count

of citations accrued since publication

A simple measure of attention for an article, journal or researcher. As with all citation-based measures, it is important to be aware of citation practices. Citation counts can include measures of societal impact, such as patent, policy and clinical citations. "Effective Strategies for Increasing Citation Frequency"³ lists 33 different ways to increase citations.



Document count

of items published by an individual or group of individuals

A researcher using document count should also provide a list of document titles with links. If authors use an ORCID iD—a persistent scholarly identifier—they can draw on numerous sources for document count including Scopus, ResearcherID, CrossRef and PubMed.

Register for an ORCID iD at orcid.org



Field-Weighted Citation Impact (FWCI)

of citations received by a document
expected # of citations for similar documents

Similar documents are ones in the same discipline, of the same type (e.g., article, letter, review) and of the same age. An FWCI of 1 means that the output performs just as expected against the global average. More than 1 means that the output is more cited than expected according to the global average; for example, 1.48 means 48% more cited than expected.



h-index

of articles in the collection (h) that have received at least (h) citations over the whole period

For example, an h-index of 8 means that 8 of the collection's articles have each received at least 8 citations. h-index is not skewed by a single highly cited paper, nor by a large number of poorly cited documents. This flexible measure can be applied to any collection of citable documents. Related h-type indices emphasize other factors, such as newness or citing outputs' own citation counts.⁴



Citescore

citations to documents published in 4-year period
of documents in same 4-year period

This comprehensive, current and open metric for journal citation impact is available in a free layer of Scopus.com. It includes a yearly release and monthly CiteScore Tracker updates.

CiteScore calculations include citations from articles, reviews, conference papers, book chapters and data papers. See www.scopus.com/sources



SCIImago Journal Rank (SJR)

average # of weighted citations received in a year
of documents published in previous 3 years

Citations are weighted—worth more or less—depending on the source they come from. The subject field, quality and reputation of the journal have a direct effect on the value of a citation. Can be applied to journals, book series and conference proceedings.

Calculated by SCIImago Lab (www.scimagojr.com) based on Scopus data.



Summary of all metrics



Source Normalized Impact Per Paper (SNIP)

journal's citation count per paper
citation potential in its subject field

The impact of a single citation will have a higher value in subject areas where citations are less likely, and vice versa. Stability intervals indicate the reliability of the score. Smaller journals tend to have wider stability intervals than larger journals.

Calculated by CWTS (www.journalindicators.com) based on Scopus data.



Journal Impact Factor

citations in a year to documents published in previous 2 years
of citable items in previous 2 years

Based on Web of Science data, this metric is updated once a year and traditionally released in June following the year of coverage as part of the Journal Citation Reports®. JCR also includes a Five-year Impact Factor.



Percentile benchmark (articles)

compares items of same age, subject area & document type over an 18-month window

The higher the percentile benchmark, the better. This is available in Scopus for citations, and also for Mendeley readership and tweets. Particularly useful for authors as a way to contextualize citation counts for journal articles as an indicator of academic impact.



Outputs in top percentiles

extent to which a research entity's documents are present in the most-cited percentiles of a data universe

Found within SciVal, outputs in top percentiles can be field weighted. It indicates how many articles are in the top 1%, 5%, 10% or 25% of the most cited documents. Quick way to benchmark groups of researchers.



Usage

of downloads, clicks, views, library holdings, video plays

Signals if anyone is reading the documents or otherwise using the research. See plumanalytics.com/learn/about-metrics/usage-metrics/



Captures

of bookmarks, code forks, favorites, readers, watchers

Indicates that someone wants to come back to the work. Captures can be a leading indicator of future citations. See plumanalytics.com/learn/about-metrics/capture-metrics/



Mentions

of blog posts, comments, reviews, Wikipedia references, news media

Show how people are interacting with the research, and whether the research is gaining attention both within academic networks and in broader forums. See plumanalytics.com/learn/about-metrics/capture-metrics/



Social media

of shares, likes, comments, tweets, ratings

Social media can help measure "buzz" and attention. Social media can also be a good measure of how well a particular piece of research has been promoted. See plumanalytics.com/learn/about-metrics/capture-metrics/

*"Document" in the definitions refers to primary document types such as journal articles, books and conference papers.

1. Metrics selected will depend on the funders' interests and project strengths.
2. Plume, A. & Kamalski, J. (March 2014). "Article downloads: An alternative indicator of national research impact and cross-sector knowledge exchange," *Research Trends*, www.researchtrends.com/issue-36-march-2014/article-downloads/
3. papers.ssrn.com/sol3/papers.cfm?abstract_id=2344585
4. See a good explanation at www.harzing.com/pop_index.htm

How should the array of metrics be used?

1. **Define the question clearly**, so that you can
2. **Select appropriate metrics** for the particular situation, and
3. **Calculate metrics** for the entities you are investigating, and
4. **For suitable peers** so you can benchmark performance



Responsible use of Metrics

20.04.2026

Elsevier's principles and recommendations



We must offer:

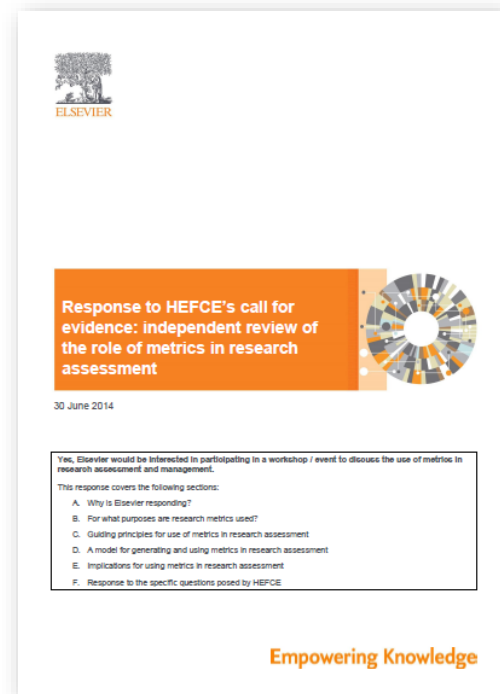
- A basket of metrics
- For all peers
- Generated in an automated and scalable way

When implementing / using metrics:

- Always use judgment with metrics
- There is no perfect or leading metric – always use at least 2
- Selection differs depending on the question
- Take variables into account
- We can't prevent stupidity or irresponsibility

Best practice

- Research community who judge and are judged should ideally define metrics
- No methodological black boxes – no exceptions
- Independent of business and access models
- No aggregate / composite metrics (should be avoided where possible)



Community guidelines

COMMENT

SCIENCE Data needed to drive UN development goals [4/18](#) | **ENVIRONMENT** Economics and environmental sustainability [4/18](#) | **HEALTH** Questions raised over proposed antibiotic use [4/18](#) | **ENERGY** Metrics required to address coal's role in the transition [4/18](#)



The Leiden Manifesto for research metrics

Use these ten principles to guide research evaluation, urge Diana Hicks, Paul Wouters and colleagues.

Data are increasingly used to generate science. Research evaluations that were once subjective and performed by experts are now routine and subject to metrics. The problem is that evaluation is done on the data rather than by judgement. Metrics have proliferated, usually with minimal, or no, theory and rationale. We are developing the metrics with the very tools designed to improve evaluation. Increasingly implemented by organisations without knowledge of or

advice on good practice and interpretation. Before 2010, there was the Science Citation Index and the Institute for Scientific Information (ISI), used by experts for specific studies. In 2002, Thomson Reuters had to engage with academics, resulting in a Science database widely accepted. Comparing articles and journals created Elsevier's open database in 2010, and Google Scholar. Both versions released in 2010. Both have made broadly accepted institutional research productivity and impact

more transparent, such as Scopus (using the field of Science of Science (SoSci) to help), as well as software to analyse individual characteristics using Google Scholar (published in 2017).

In 2009, Jorge Hirsch, physicist at the University of California, San Diego proposed the number of publications citation counting for individual researchers. He set out the journal-cited factor (now usually called h-index) in Science (October 2005). Lastly, there is related to social usage. P

© 2015 Nature Publishing Group. All rights reserved. 17 APRIL 2015 | VOL 529 | NATURE | 149



Leiden University | CWTS B.V. | Other CWTS sites

Home | News | **Blog** | People | Research | Training & Education

Blog » Responsible metrics: One size doesn't fit all

Responsible metrics: One size doesn't fit all

Ludo Waltman

March 29th, 2018 | No comments

responsible metrics, scientometrics, indicators, research evaluation, micro level, mac...

Responsible use of scientometrics in research evaluations is heavily debated. In recent years, a number of high-profile statements on 'responsible metrics' were published, most notably the [San Francisco Declaration on Research Assessment \(DORA\)](#), the [Leiden Manifesto](#) (of which I am one



Leiden Manifesto (2015) http://www.nature.com/polopoly_fs/1.17351!/menu/main/topColumns/topLeftColumn/pdf/520429a.pdf

CWTS (2018) <https://www.cwts.nl/blog?article=n-r2s294&title=responsible-metrics-one-size-doesnt-fit-all>

Dora declaration: <https://sfedora.org/>

Responsible Metrics



The screenshot shows the CWTS website with a dark blue header. The CWTS logo is on the left, and navigation links for Leiden University, CWTS B.V., and Other CWTS sites are on the right. A secondary navigation bar contains Home, News, Blog (highlighted), People, Research, and Training & Education. The main content area shows a blog post titled "Responsible metrics: One size doesn't fit all" by Ludo Waltman, dated March 29th, 2018, with no comments. The post content begins with "Responsible use of scientometrics in research evaluations is heavily debated. In recent years, a number of high-profile statements on 'responsible metrics' were published, most notably the [San Francisco Declaration on Research Assessment \(DORA\)](#), the [Leiden Manifesto](#) (of which I am one

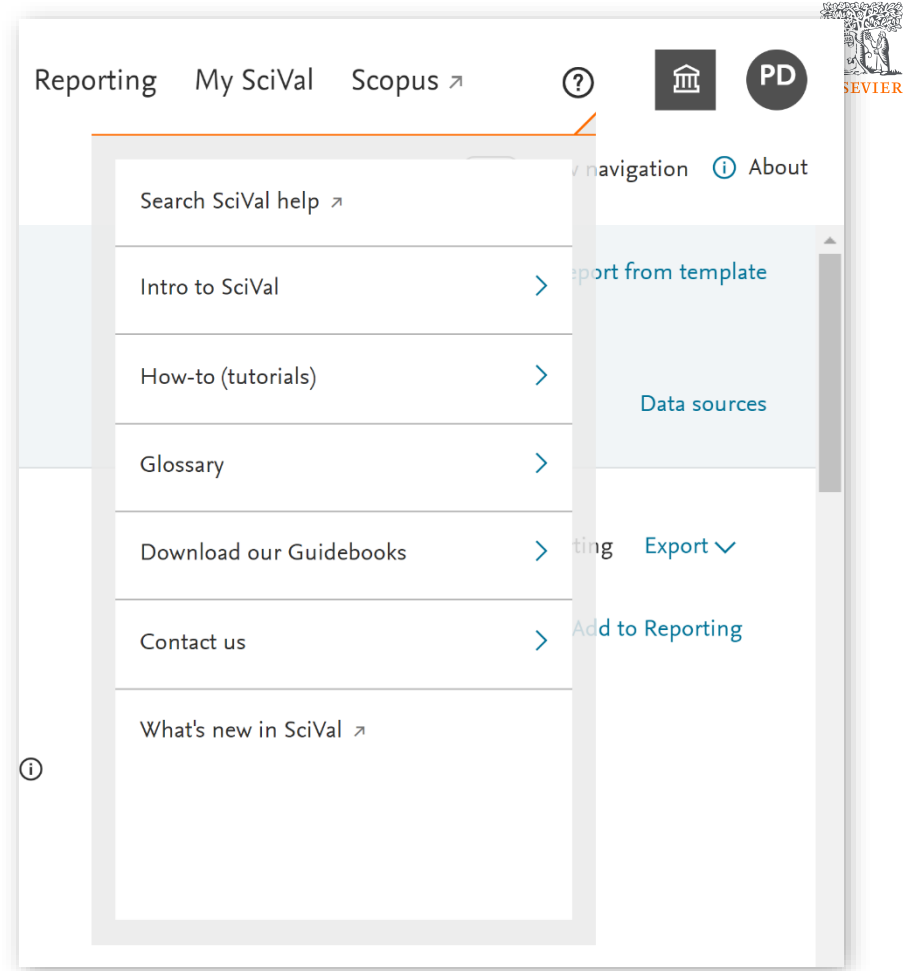
Getting help

The spine menu will provide a line to help documentation

<https://service.elsevier.com/app/home/supporthub/scival/>

- Contact me if you have any problems and I will answer the question or find someone who can help you.

Dr. Win (y.Klinthongchai@elsevier.com)



The screenshot displays the top navigation bar of the Elsevier SciVal reporting interface. The navigation bar includes links for "Reporting", "My SciVal", and "Scopus". On the right side of the navigation bar, there is a help icon (a question mark in a circle), a logo for Elsevier, and a "PD" icon. Below the navigation bar, a help menu is open, listing several options: "Search SciVal help", "Intro to SciVal", "How-to (tutorials)", "Glossary", "Download our Guidebooks", "Contact us", and "What's new in SciVal". To the right of the help menu, there are additional navigation options: "Navigation", "About", "Report from template", "Data sources", "Export", and "Add to Reporting". The Elsevier logo is visible in the top right corner of the interface.



ELSEVIER

Q&A



ขอเชิญร่วมรับฟังสัมมนาออนไลน์

SciVal Webinar Series For Thailand



LIVE

**Dr Yootapong
Klinthongchai (Elsevier)**
Speaker



LIVE

**Lucia Schoombée, Senior
Customer Success
Consultant (SME), Elsevier**



SciVal Foundations
บรรยายภาษาไทย 🇹🇭

📅 วันที่ 30 มี.ค. 2569
🕒 เวลา 10.00 - 12.00 น.

ทำความเข้าใจพื้นฐานของ SciVal ครอบคลุมแหล่งข้อมูลของข้อมูล ความแตกต่างของแต่ละโลก และวิธีการใช้งานแพลตฟอร์มอย่างมีประสิทธิภาพ รวมถึงการกำหนดหน่วยงาน (เช่น คณะหรือภาควิชา) และจัดการการยอมรับความช่วยเหลือ

Key SciVal Metrics
บรรยายภาษาไทย 🇹🇭

📅 วันที่ 22 เม.ย. 2569
🕒 เวลา 10.00 - 12.00 น.

เรียนรู้ความหมายและการตีความเชิงวิวัตน์ที่สำคัญใน SciVal โดยเน้นหน่วยวัดอันดับ เช่น FWCI, H-index, Top Citation Percentiles และ Journal Quartiles เพื่อใช้สนับสนุนนำไปใช้วิเคราะห์ผลงานวิจัยได้อย่างถูกต้อง

SciVal Topics of Prominence
บรรยายภาษาไทย 🇹🇭

📅 วันที่ 20 พ.ค. 2569
🕒 เวลา 10.00 - 12.00 น.

ทำความเข้าใจวิธีการค้นหา Topics of Prominence และการนำไปใช้เพื่อทำความเข้าใจข้อมูลด้านการวิจัย ขยายความรู้เชิงลึกจากวิธีการ ระบุความสัมพันธ์ และสนับสนุนการตัดสินใจของหน่วยงาน

Reporting Module & My SciVal
บรรยายภาษาไทย 🇹🇭

📅 วันที่ 19 มิ.ย. 2569
🕒 เวลา 10.00 - 12.00 น.

เรียนรู้การใช้งานฟังก์ชันด้านการรายงาน ซึ่งเป็นการรายงานแบบกำหนดเอง การใช้งานแพลตฟอร์ม ตลอดจนการเชื่อมโยงในกรณีของหน่วยงาน (entities) อย่างมีประสิทธิภาพ

Rankings in SciVal
บรรยายภาษาอังกฤษ 🇺🇸

📅 วันที่ 13 ก.ค. 2569
🕒 เวลา 15.00 - 17.00 น.

เจาะลึกการใช้งานกับ Rankings ทั่วโลก-ไรท์เอาท์ตามบริบทสามารถเข้าถึงได้ ทำในเชิงวิวัตน์จากมุมมองของบุคคล และสามารถเปรียบเทียบวิธีใช้วิธีการวิเคราะห์อันดับและการเปรียบเทียบ (benchmarking)

Sustainable Development Goals in SciVal
บรรยายภาษาอังกฤษ 🇺🇸

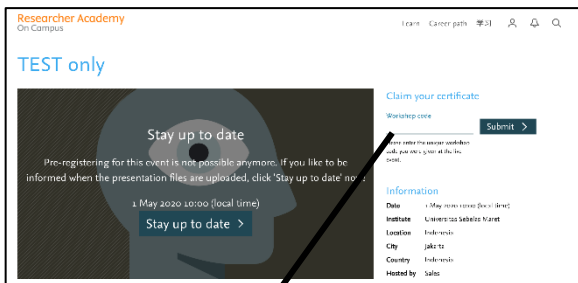
📅 วันที่ 24 ส.ค. 2569
🕒 เวลา 15.00 - 17.00 น.

สำรวจวิธีการคำนวณการมีส่วนร่วมด้าน SDGs และดำเนินการที่สามารถค้นหาข้อมูลใน SciVal พร้อมทั้งเรียนรู้วิธีการวิเคราะห์และเปรียบเทียบผลงานวิจัยที่เกี่ยวข้องกับเป้าหมายการพัฒนาที่ยั่งยืน

Post Event Survey and Claim your certificate!

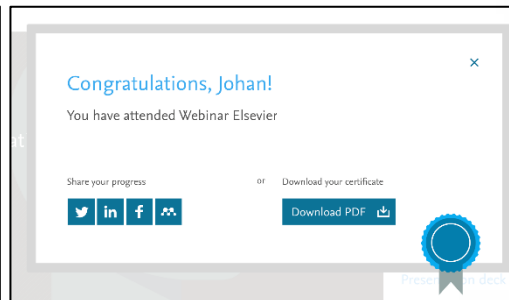
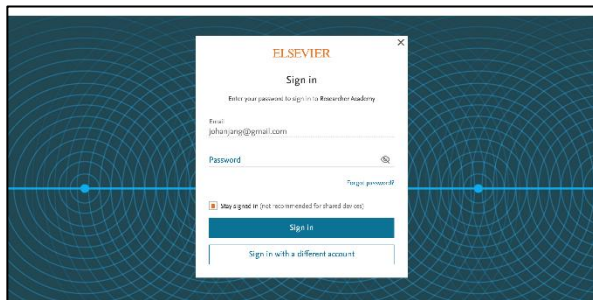
1. Use this link/QR code to claim your certificate:

https://bit.ly/Thailand_2ndScival2026




2. Once you fill in the survey, use the following code to claim your certificate

TLKRSI



Note:
If you have not registered with Elsevier ID, you will be prompted to do so. Please do register yourself using institutional/personal email address.

 Your rating of our performance (the first question) is important to us



ELSEVIER

Thank you

Dr Yootapong Klinthongchai (Dr Win)

Customer Success Manager

Elsevier South East Asia

y.klinthongchai@elsevier.com

