

# Resources, Reference management and Research metrics

S.M. Pujar, PhD  
Chief Librarian  
IGIDR, Mumbai

E-mail: [pujar@igidr.ac.in](mailto:pujar@igidr.ac.in)



# Agenda

- Resources used in scholarly research
- References, styles and reference management
- Channels of scholarly communication
- How to choose a journal?
- What are scholarly metrics?
- Why scholarly metrics?
- Computation of scholarly metrics
- Where to look for metrics?
- Limitations of metrics

# Types of Sources of Information

Information Sources	Primary	Secondary	Tertiary
<b>Examples</b>	<ul style="list-style-type: none"> <li>•Scholarly journals</li> <li>•Government organizations</li> <li>•Reputable organizations</li> <li>•Universities</li> <li>•Experts</li> </ul>	<ul style="list-style-type: none"> <li>•Newspapers*</li> <li>•Magazines*</li> <li>•Website postings</li> </ul> <b>Abstracting and Indexing Databases</b>	<ul style="list-style-type: none"> <li>•Encyclopedias</li> <li>•Guidebooks</li> <li>•Textbooks</li> </ul> <b>Search Engines</b>
<b>Defining Characteristic/s</b>	Where information (e.g., statistics, research results) originally come from	Reports or interprets information from primary sources	<ul style="list-style-type: none"> <li>•Collects information from both primary and secondary sources</li> <li>•Offers a condensed description of a topic</li> </ul>
<b>Usefulness for Academic Essays</b>	Best source , especially when facts, statistics, and research results are required	Can be useful, especially when another person's interpretation is required	<ul style="list-style-type: none"> <li>•Only for providing background information on topics</li> <li>•Provides a reference list of primary and secondary sources</li> </ul>

# Resources @ IGIDR Library

## ➤ Bibliographic Databases ( Index with or without Abstract)

- ✓ Library Catalogue [<http://opac.igidr.ac.in>]
- ✓ EBSCO Econlit (1886 onwards) [<http://search.ebscohost.com>]
- ✓ ISID Index to Indian Social Science Journals [<http://isid.org.in>] - Free
- ✓ Open Index Initiative [<http://oii.igidr.ac.in>] - Free

## ➤ Full Text Databases:

- ✓ JSTOR [<http://www.jstor.org> ]
- ✓ Science Direct [<http://www.sciencedirect.com>] – Economics Titles
- ✓ Oxford University Press [Economics Titles]
- ✓ Sage Journals [<http://online.sagepub.com>] – Selected Titles
- ✓ Springer [<http://link.springer.com>] – Selected Titles
- ✓ Taylor and Francis [<http://www.tandfonline.com>] - Selected Titles
- ✓ Wiley Online Library [<http://onlinelibrary.wiley.com>] – Selected Titles

# Resources @ IGIDR Library

## ➤ Statistical Databases:

- ✓ COMTRADE [<http://comtrade.un.org/db/default.aspx>]
- ✓ IMF Statistics [<http://elibrary-data.imf.org>] - Free
- ✓ World Bank Data [<http://data.worldbank.org>] - Free
- ✓ EPWRF Databases [ <http://www.epwrfits.in> ]
- ✓ Indiatat.com [ <http://www.indiastat.com> ]
- ✓ RBI – Banking Statistics [<http://dbie.rbi.org.in>] - Free
- ✓ UNIDO Statistics [<https://stat.unido.org/home> ]

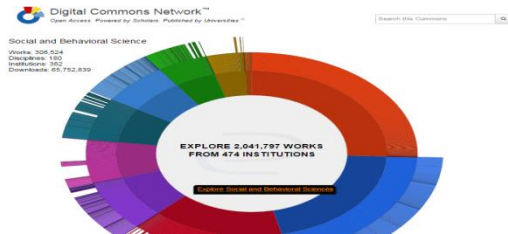
# Resources on Internet

## ➤ Academic Search Engines:

- ✓ BASE [<http://www.base-search.net>]
- ✓ Get the Research [<http://www.gettheresearch.org>] – AI Based
- ✓ Google Scholar [<http://scholar.google.com>]
- ✓ Lens.org [<http://lens.org>]
- ✓ Microsoft Academic [<http://academic.microsoft.com>] – AI Based
- ✓ Open Knowledge Maps [<http://openknowledgemaps.org>] - Visual
- ✓ Semantic Scholar [<http://semanticscholar.org>] – AI Based

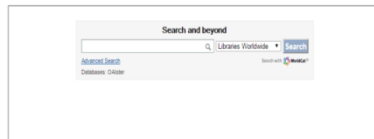


# Digital Repository and Harvested Search engines



<http://network.bepress.com>

OAister  
Find the posts



<http://oaister.worldcat.org>



<https://ndl.iitkgp.ac.in>

# Open Distributed Catalogues/Repositories



<http://repec.org>



<http://www.esocialsciences.org>



<http://papers.ssrn.com>



<https://osf.io/view/socarxiv/>

**Sources for Preprints / Working papers**

# Open Data Sources

- ✓ [Census of India](#)
- ✓ [DRYAD](#) [Data Repository]
- ✓ [Figshare](#) [Data Repository]
- ✓ [ICSSR Data Portal](#)
- ✓ [India Data Portal](#)
- ✓ [International Monetary Fund](#) [IMF]
- ✓ [United Nations Data portal](#)
- ✓ [World Bank Data portal](#)

[Google Data Search Tool](#)



# Open Access Resources

- ✓ [Directory of Open Access Journals](#) [DOAJ]
- ✓ [Directory of Open Access Books](#) [DOAB]
- ✓ [Open Access Theses and Dissertations](#) [OATD]
- ✓ [Open Dissertations](#)
- ✓ [Shodhganga](#) [Indian theses]



## Tools for Search (Browser plugins or extensions):

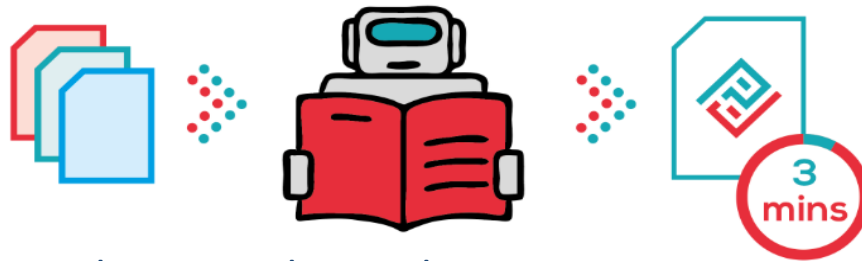
- ✓ [Google Scholar Button](#) [For finding papers] - Free
- ✓ [Lazy Scholar](#) [For finding papers, metrics and citations] - Free
- ✓ [Kopernio](#) [For finding free/open access papers] - Freemium
- ✓ [Unpaywall](#) [For finding free/open access papers] – Free
- ✓ [Scholarcy](#) [For analyzing the papers ] – Free [Chrome Browser]

# Summarizing Papers – AI Based

<https://www.paper-digest.com>

**Artificial Intelligence** summarizes  
academic articles for you

Reducing reading time to **3 minutes!**



Should we use AI to make us quicker and more efficient researchers?

*Paper Digest* is a solution for researchers to quickly grasp the core ideas of a paper

Example: <http://www.accessecon.com/Pubs/EB/2019/Volume39/EB-19-V39-I4-P233.pdf>

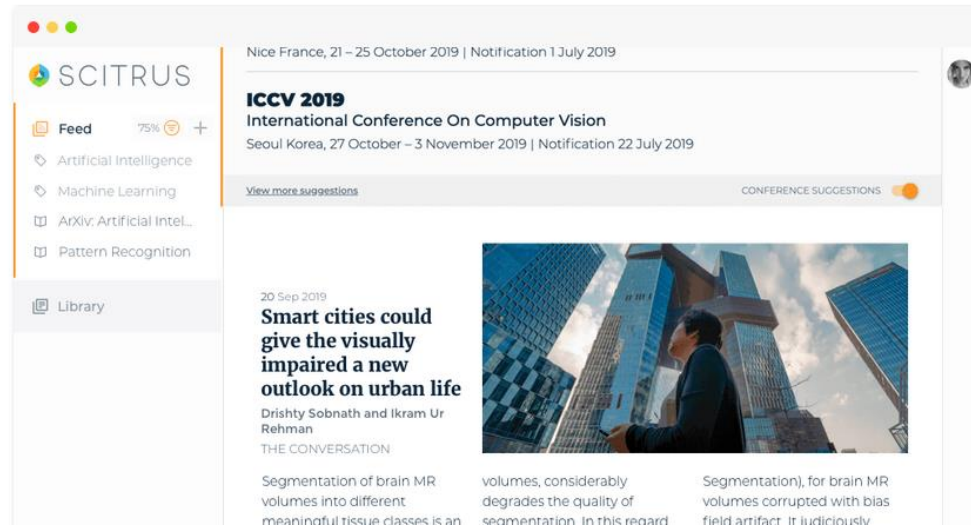
# Feeds - Follow topics, journals, authors and more – AI Based

<https://www.scitrus.com>

Feed your mind  
Shape your research

Follow topics, journals, authors and more to create a  
research feed that adapts to your interests.

CREATE MY FEED



# Citing and Referencing

‘Citing and Referencing’ refers to indicating in your written work, where from evidence, ideas, theories, facts, or any other information, were found by providing a description of the sources

In simple words: Acknowledging the original source (to avoid Plagiarism)

A reference could be a journal article, working paper, conference paper, thesis, source of statistics, blog post, etc.

# Citation styles

## Popular Citation Styles

And Who Uses Them!



**MLA**

English Literature  
Foreign Language  
Communications  
Religious Studies



**APA**

Psychology  
Education  
Business/Economics  
Nursing  
Linguistic Studies



**Chicago**

History  
Art History  
Fine Arts  
Anthropology  
Philosophy



**IEEE**

Engineering  
Computer Science  
Information Science



**CSE**

Biology  
Physics  
Chemistry  
Geology

**Always check with your instructor about what style to use!**

### APA, MLA and Chicago.

#### For a book:

- APA** Posner, R. (2004). *Catastrophe: Risk and response*. Oxford: Oxford University Press.
- MLA** Posner, Richard. *Catastrophe: Risk and Response*. Oxford: Oxford U P, 2004.
- Chicago** Posner, Richard. *Catastrophe: Risk and Response*. Oxford: Oxford University Press, 2004.

#### For an article in a periodical: (fulltext article from EBSCO)

- APA** Heider, K. (2009). Information literacy: The missing link in early childhood education. *Early Childhood Education Journal*, 36, 513-18. doi:10.1007/s10643-009-0313-4
- MLA** Heider, Kelly. "Information Literacy: The Missing Link in Early Childhood Education." *Early Childhood Education Journal* 36.6 (2009): 513-18. *Academic Search Premier*.Web. 22 Sept. 2010.
- Chicago** Heider, Kelly. "Information Literacy: The Missing Link in Early Childhood Education." *Early Childhood Education Journal* 36, (2009): 513-18. Accessed September 22, 2010. doi:10.1007/s10643-009-0313-4.

#### For web sources:

- APA** Sargent, J. (n.d.). *Anorexia nervosa: Judy's story*. Retrieved May 24, 2002 from <http://www.angelfire.com/ms/anorexianervosa/>
- MLA** Sargent, Judy. *Anorexia Nervosa: Judy's Story*. 24 May 2002. <http://www.angelfire.com/ms/anorexianervosa/>.
- Chicago** Sargent, Judy. "Anorexia Nervosa: Judy's Story." <http://www.angelfire.com/ms/anorexianervosa/>.

Sources: <https://usu.instructure.com/courses/449395/pages/types-of-citation-styles>  
<http://test.library.wvu.edu/lit/documenting-citing/citations/styles>

ARTICLE



## Financial development and governance relationships

Özlem Sayılır<sup>a</sup>, Murat Doğan<sup>b</sup> and Nahifa Said Soud<sup>c</sup>

<sup>a</sup>Faculty of Business Administration, Anadolu University, Eskişehir, Türkiye; <sup>b</sup>Faculty of Science and Letters, Eskişehir Osmangazi University, Eskişehir, Türkiye; <sup>c</sup>Graduate School of Social Sciences, Anadolu University, Eskişehir, Türkiye

### IV. Findings

For the first time in SEM, each observed variable of latent variables should be larger than the standard factor load of 0.5 and be statistically significant (Fornell and Larcker 1981). As a result of the

In text citation

Bibliography

We attempted to model the relationships between various pillars of financial development and dimensions of governance by SEM methodology. The study utilized the data from the World Economic Forum presented in the financial development

### References

Çelik, H. E., and Yılmaz, V. 2013. Lisrel 9.1 ile Yapısal Eşitlik Modellemesi: Temel Kavramlar-Uygulamalar-Programlama (Yenilenmiş 2. Baskı). Ankara: Anı Yayıncılık.

Chinn, M. D., and H. Ito. 2007. "Current Account Balances, Financial Development and Institutions: Assaying the World "Saving Glut". *Journal of International Money and Finance* 26 (4): 546–569. doi:10.1016/j.jimonfin.2007.03.006.

Feng, Y. 2003. *Democracy, Governance and Economic Performance: Theory and Evidence*. Cambridge, MA: MIT Press.

Governance Indicators for 1996– 2007." World Bank Policy Research Paper No. 4654.

Kaufmann, D., A. Kraay, and M. Mastruzzi. 2010. "The Worldwide Governance Indicators: A Summary of Methodology, Data and Analytical Issues". World Bank Policy Research Working Paper No. 5430. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1682130](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1682130)

# Zotero – Reference management tool

zotero

Groups

Documentation

Forums

Get Involved

Log In

Upgrade Storage

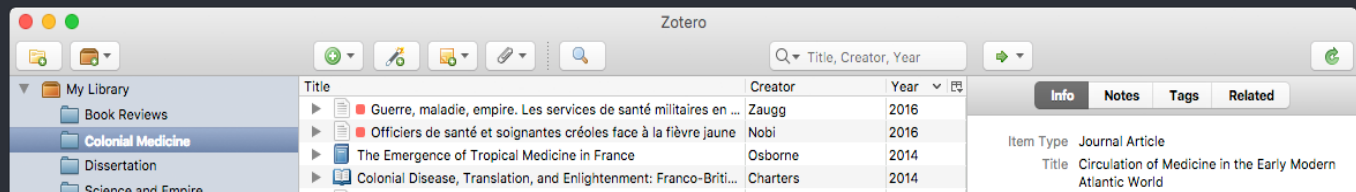
Your personal  
research assistant

Zotero is a free, easy-to-use tool to help you  
collect, organize, cite, and share research.

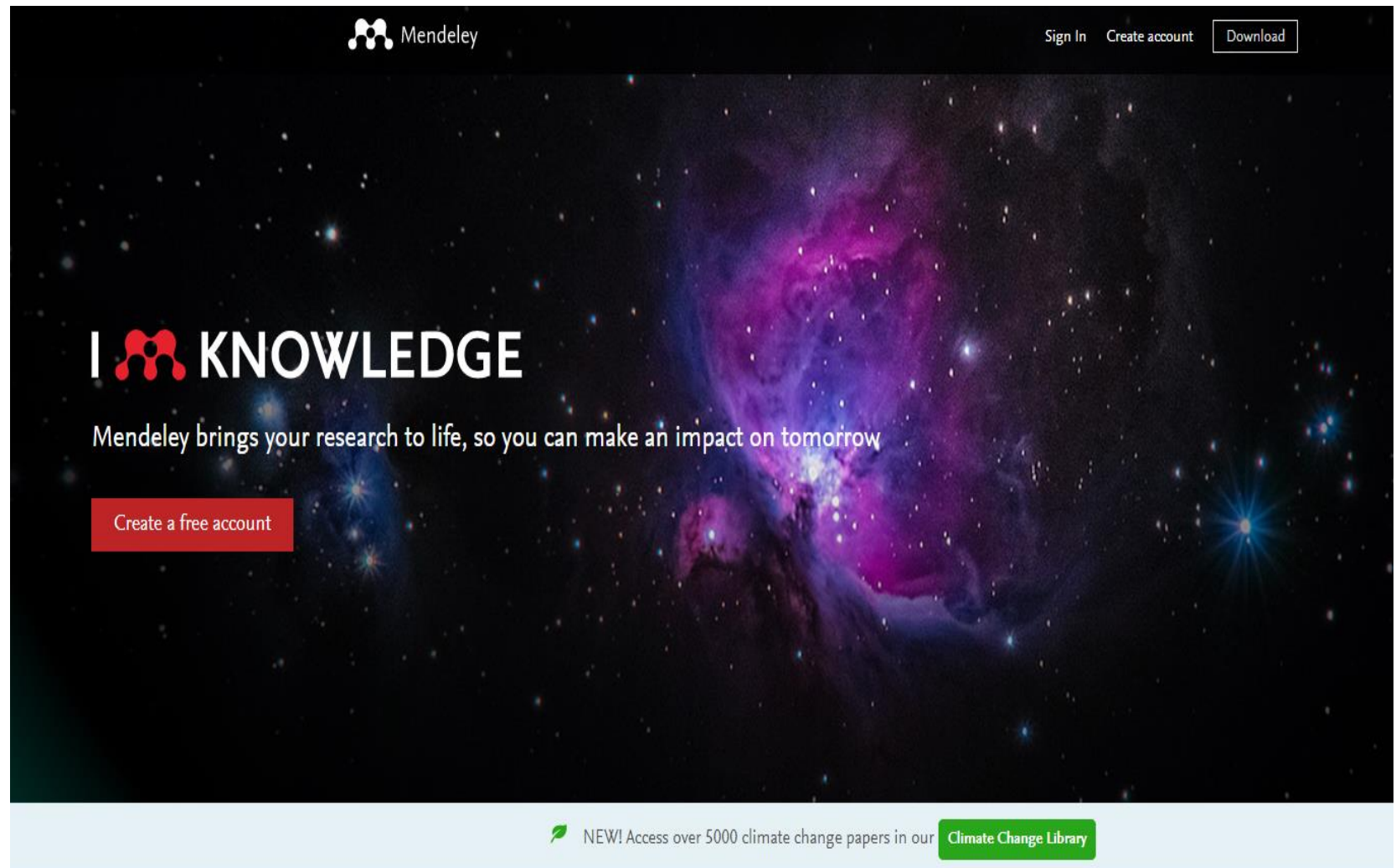
Download

Available for Mac, Windows, and Linux

New: Just need to create a quick bibliography? Try [ZoteroBib](#).



# Mendeley – Reference management tool

The banner features a dark, starry cosmic background with a prominent purple and blue nebula in the center. The Mendeley logo, consisting of three red circles connected by lines, is positioned in the top left corner. The text 'I KNOWLEDGE' is displayed in large, bold, white letters, with the Mendeley logo replacing the word 'I'. Below this, a tagline in white text reads 'Mendeley brings your research to life, so you can make an impact on tomorrow'. A red button with white text 'Create a free account' is located on the left side. In the top right corner, there are links for 'Sign In', 'Create account', and a 'Download' button. At the bottom, a light blue banner contains a green leaf icon, the text 'NEW! Access over 5000 climate change papers in our', and a green button with white text 'Climate Change Library'.

Mendeley

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I  KNOWLEDGE

Mendeley brings your research to life, so you can make an impact on tomorrow

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NEW! Access over 5000 climate change papers in our

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# Channels of Scholarly Communication

- ✓ Conference papers
- ✓ Working or Discussion Papers
- ✓ Preprints / Post Prints
- ✓ Journal articles
- ✓ Newspaper/Magazine/Newsletter Articles
- ✓ Book chapters and Books
- ✓ Blog posts / Web Articles
- ✓ Policy briefs
- ✓ Opinion pieces
- ✓ Short communications
- ✓ Review articles and many more.....

# 9 differences between a thesis and a journal article



		Thesis	Journal Article
<b>Purpose</b> 	1	<b>Education -</b> To demonstrate how much you know	<b>Advancement -</b> To establish credibility in and contribute to your field
<b>Potential Audience</b> 	2	<b>Educational committee or professors -</b> Individuals who evaluate whether you are worthy of a degree	<b>Busy scientists or researchers -</b> Individuals looking for practical ideas backed with evidence
<b>Length</b> 	3	<b>Longer -</b> Can run up to around 50 pages and contain around 20,000 words	<b>Shorter -</b> Can range between 3 to 6,000 words depending on the field & journal Tip: Avoid copying, rewrite or paraphrase
<b>Abstract</b> 	4	<b>Relatively longer -</b> Around 350 words	<b>Relatively shorter -</b> Around 150 to 250 words
<b>Introduction</b> 	5	<b>More detailed -</b> Should demonstrate familiarity with existing literature and develop background more extensively	<b>More concise -</b> Should only include information that is absolutely required to understand the gap in research that led to the study
<b>Materials &amp; Methods</b> 	6	<b>Extensive presentation -</b> Thoroughly describes and present each research approach and methodology	<b>Controlled presentation -</b> Describes details only of specific methodology used and experiments conducted
<b>Discussion</b> 	7	<b>Detailed interpretation of results -</b> Demonstrate complete understanding of the obtained data, and indicate interest in future directions for research	<b>Clear and concise interpretation of results -</b> Discuss only the main findings and directly address research objectives
<b>References</b> 	8	<b>Exhaustive list -</b> Some include a bibliography, and some might even include a 'definitions' section	<b>Selective list -</b> Includes only works that have been cited within the article (some journals specify maximum limit)
<b>Appendices</b> 	9	<b>Inclusion mandatory -</b> Due to the need for complete documentation	<b>Inclusion optional -</b> Space & content requirements may limit the use of these

Image credit: Icons made by Freepik from [www.flaticon.com](http://www.flaticon.com)

For more useful advice and tips on academic writing and publishing, visit [www.editage.com/insights](http://www.editage.com/insights)

**editage** Insights™



[www.facebook.com/editage](http://www.facebook.com/editage)

[www.linkedin.com/company/editage](http://www.linkedin.com/company/editage)

[www.twitter.com/editage](http://www.twitter.com/editage)

# How to Choose a Journal?


<https://thinkchecksubmit.org>



<https://vimeo.com/151882443>

# How to Choose a Journal?

- ✓ Refer to [UGC-CARE List of Journals](#)
- ✓ Journals indexed in 'Scopus' and 'Web of Science' (Group-A)
- ✓ Journals approved by CARE (Group B to D)



*If published in other than these journals, then such publications will not be considered for academic accreditation or API in India*

# How to Choose a Journal? – Journal Metrics

- ✓ [ABDC Journal Rankings](#)
- ✓ [Eigenfactor](#)
- ✓ [Google Scholar Metrics](#)
- ✓ [Journal Citation Reports](#) (Impact Factor) – Subscription based
- ✓ [Scimago Journal Rankings](#)

# How to choose a journal?



SUPPORT DOAJ

DOAJ

Search

Browse Subjects

Apply

News

About

For Publishers

API

Login

Search DOAJ



☒ journals ☒ articles

[\[Advanced Search\]](#)

13,884 Journals  
10,965 searchable at Article level  
130 Countries  
4,384,163 Articles

## DOAJ (Directory of Open Access Journals)

DOAJ is a community-curated online directory that indexes and provides access to high quality, open access, peer-reviewed journals. DOAJ is independent. All funding is via donations, 40% of which comes from [sponsors](#) and 60% from [members and publisher members](#). All DOAJ services are free of charge including being indexed in DOAJ. All data is freely available.

DOAJ operates an education and outreach program across the globe, focussing on improving the quality of applications submitted.

[Why index your journal in DOAJ?](#)

Select Language ▼

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[OAI-PMH, XML, Widgets](#)

[Open Access Resources](#)

[Transparency & Best Practice](#)

[Download metadata](#)

[Journals Added/Removed](#)

[New Journals Feed](#)

**What is open access?** <https://youtu.be/o2HMouOV-Lg>

# How to avoid predatory journals?

- ✓ Mostly these are online open access journals
- ✓ Invite you to publish papers by sending email invitations
- ✓ Indicate fake Impact Factor
- ✓ No editorial process or peer review of submitted papers
- ✓ Use General email address
- ✓ No contact person/s name
- ✓ Add Eminent names in editorial board without their consent
- ✓ Charge for publication (APC)

# How to avoid predatory journals?

## BEALL'S LIST OF PREDATORY JOURNALS AND PUBLISHERS

<https://beallslist.weebly.com>

[PUBLISHERS](#)

[STANDALONE JOURNALS](#)

[VANITY PRESS](#)

[CONTACT](#)

[OTHER](#)

 Search for publishers (name or URL)

### Potential predatory scholarly open-access publishers

**Instructions:** first, find the journal's publisher – it is usually written at the bottom of journal's webpage or in the "About" section. Then simply enter the publisher's name or its URL in the search box above. If the journal does not have a publisher use the [Standalone Journals](#) list.

All journals published by a predatory publisher are predatory, unless stated otherwise.

### Original list

[GO TO UPDATE](#)

This is an archived version of the Beall's list – a list of potential predatory publishers created by a librarian Jeffrey Beall. We will only update links and add notes to this list.

- [1088 Email Press](#)
- [2425 Publishers](#)
- [The 5th Publisher](#)
- [ABC Journals](#)
- [A M Publishers](#)
- [Abhinav](#)
- [Academe Research Journals](#)
- [Academia Publishing](#)
- [Academia Research](#)
- [Academia Scholarly Journals \(ASJ\)](#)

### Useful pages

[List of journals falsely claiming to be indexed by DOAJ](#)

[DOAJ: Journals added and removed](#)

[Nonrecommended medical periodicals](#)

[Retraction Watch](#)

[Flaky Academic Journals Blog](#)

[List of scholarly publishing stings](#)

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### Conferences

[Questionable conferences](#)

[How to avoid predatory conferences](#)

[Flaky Academic Conferences Blog](#)

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# Things to take care before publication?

- ✓ Give appropriate title to your paper
- ✓ Maintain consistency in rendering your name and affiliation, also include e-mail address
- ✓ Assign Keywords and JEL Codes using '[JEL Classification](#)'
- ✓ Write Abstract
- ✓ Cite and give references to the literature and data referred by you in your paper as per author guidelines
- ✓ Register for [ORCID](#) ID to distinguish yourself from other researchers



ORCID

Connecting Research  
and Researchers

# After Publication What?



# Promote your research publication

- ✓ Let other researchers/peers in your field know about your paper
- ✓ Disseminate over social media – Facebook, Twitter, WhatsApp, etc.
- ✓ Create a your Profile on academic networking sites such as 'Researchgate' and add details of your publications and if you have a copyright upload the paper/s
  - ✓ It depends on publishers policy
  - ✓ Open access papers are allowed to host ([Creative Commons License](#))
  - ✓ Some publishers do not allow hosting
  - ✓ In some cases you are not allowed to host the publishers version
  - ✓ Sometime, there could be embargo to host the full-text

To know about publishers policy regarding hosting, you may check at:

<http://sherpa.ac.uk/romeo/index.php>

- ✓ Create a Google Scholar Profile

# Queries, which haunt the minds of Professors, Students and Scholars !

- ✓ Who have cited my paper?
- ✓ How many citations I have received for this paper?
- ✓ To which journal, I should submit my paper for high readability?
- ✓ Which are the best journals available in my discipline!
- ✓ What is 'Impact Factor'?
- ✓ Who are the others working in this area?
- ✓ What is 'h-index' he was mentioning?



# What are scholarly metrics?

- ✓ These are the 'Indicators' used to measure research and its impact
- ✓ It's a quantitative study of quality of research
- ✓ Analyses the structure and dynamics of a discipline
- ✓ Provides fair understanding of subject patterns



Source: Nature.com

# Why Scholarly Metrics?

- ✓ To undertake research assessment of graduate and post graduate schools/universities
- ✓ Measure impact of individual's research – who's work is getting more attention
- ✓ Evaluate promotion, grant and job applications
- ✓ To assess the quality of scholarly journals
- ✓ Identify seminal research for building possible collaborations

# Types of scholarly metrics

## **Article Metrics**

Citation counts, citation maps, uses-page views, downloads and reviews offer ways to evaluate individual articles

## **Author Metrics**

Focus on an author and can sometimes be expanded to treat a group as an author

## **Book Metrics**

Citation counts and reviews for chapters and books

## **Journal Metrics**

Impact, use, and rankings to measure journal quality and reputation

## **Altmetrics (New)**

Attempts to use social media and Open Access sites to gauge interest in and importance of articles and authors

# Key terms and definitions

- ✓ **Citation** - Is a reference to a published or unpublished source
- ✓ **Self citation** – Is a reference to authors own works
- ✓ **Citation Index** - Is a kind of bibliographic database , an index of citations between publications, allowing the user to identify which later/newer documents cite which earlier documents in a specified period.
- ✓ **Impact factor** – It is a measure of the frequency with which the "average article" in a journal has been cited in a particular year or period
- ✓ **h-index** - an estimate of the importance, significance, and broad impact of a scientist's cumulative research contributions
- ✓ **CiteScore** – Measure to find out the frequency with which the 'average article' in a journal has been cited in a particular year or period
- ✓ **Altmetrics** – Measure to find out the frequency with which articles are discussed/mentioned in social media

# Computation of scholarly metrics

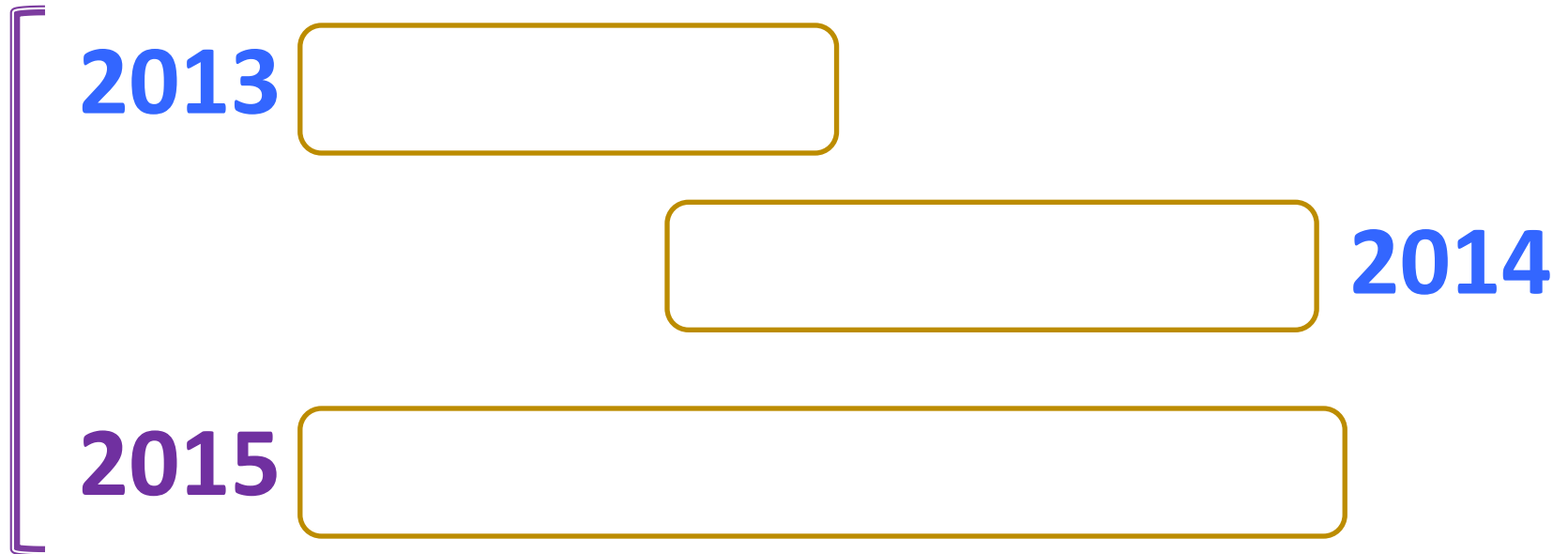


## ● Impact factor (IF)

- Invented by Eugene Garfield in 1955
- It is a measure of the frequency with which the "average article" in a journal has been cited in a particular year or period
- Helps to measure the impact of journals
- Helps in devising library collection development policy
- Assist authors to identify high impact journals in their area of research to publish articles
- Impact factor for a journal is calculated based on (It is 3 years window):
  - **A**= total cites in **2015**
  - **B**= **2016** cites to articles published in **2013-2014** (this is a subset of A)
  - **C**= number of articles published in **2013-14**
  - **D**=  $B/C$  = **2015** impact factor

Continued.....

## IF - Imagine block of 3 years



2013



Journal **A** publishes 5 papers

2014

2015



2013



Journal **A** publishes 5 papers

Journal **A** publishes 6 papers



2014

2015



2013



Journal **A** publishes 5 papers

Journal **A** publishes 6 papers



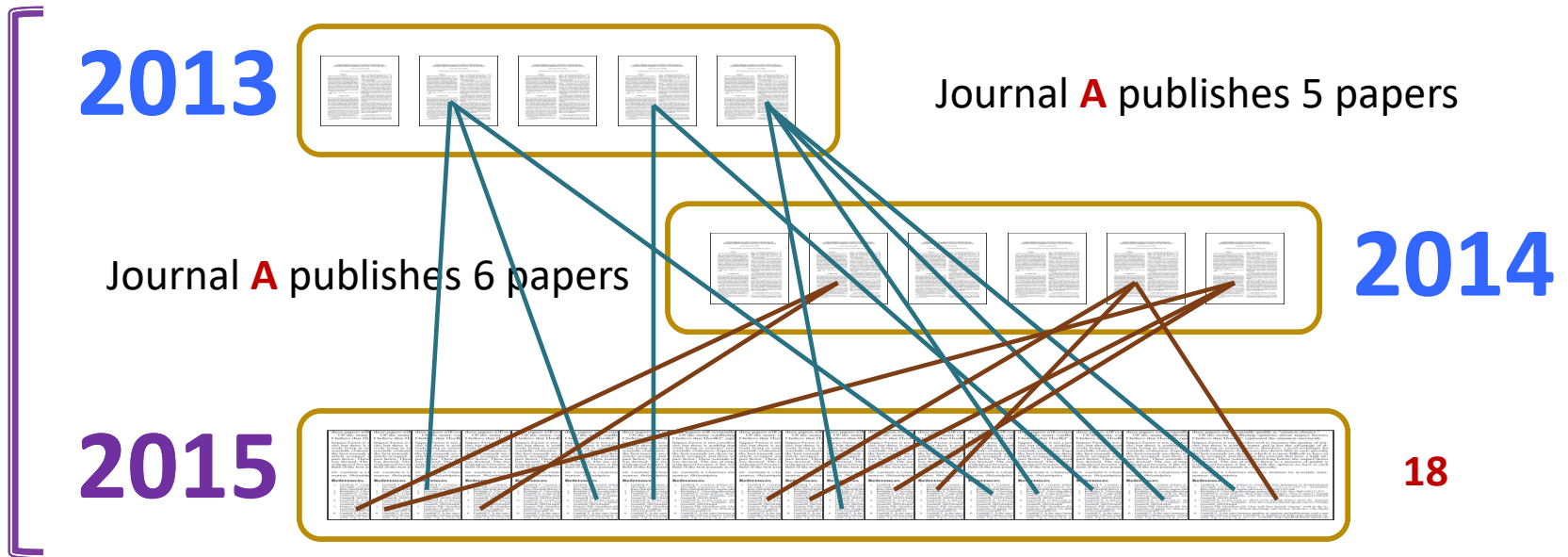
2014

2015

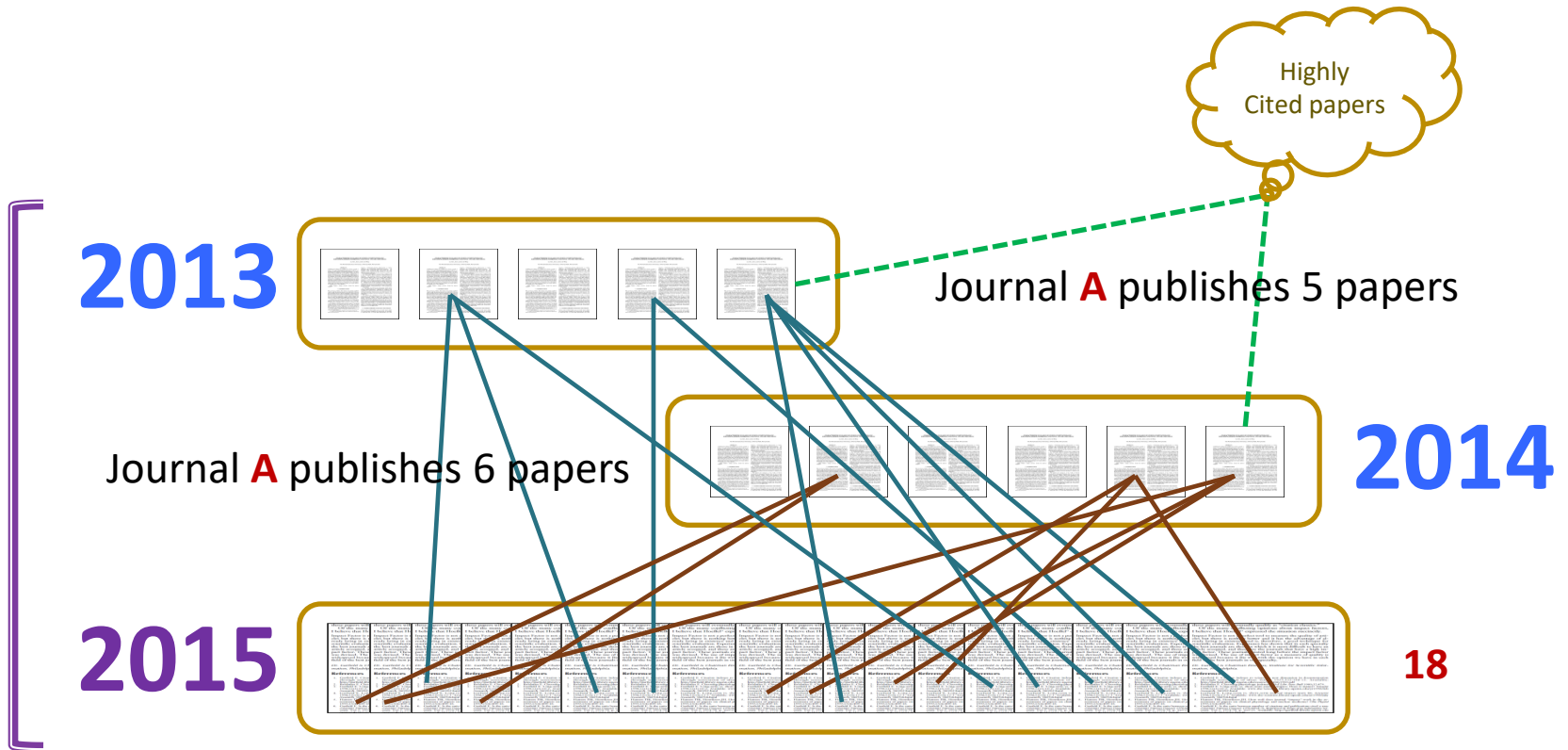


18

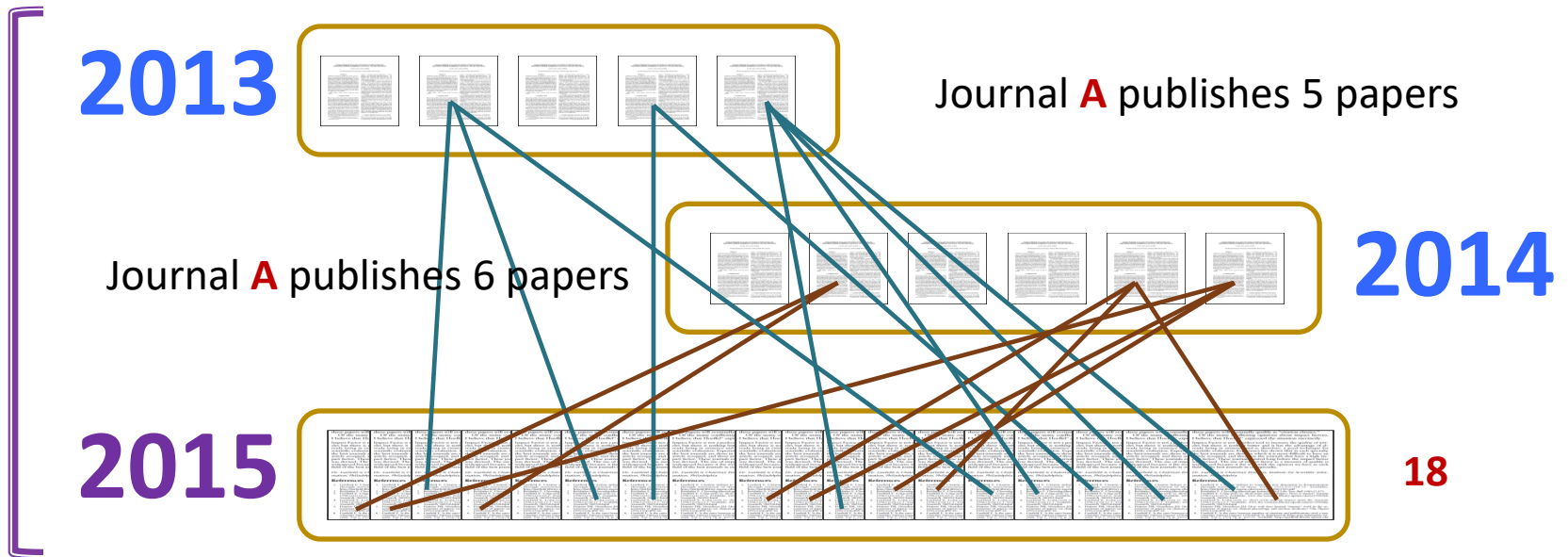
Few papers in different disciplines cite (**18**) papers of A 2013 and A 2014



Few papers in different disciplines cite (**18**) papers of A 2013 and A 2014



Few papers in different disciplines cite (**18**) papers of A 2013 and A 2014



### Impact Factor of Journal A

$$\frac{\text{Total citations in 2015 for papers published in 2013 and 2014}}{\text{Total citable papers published in 2013 and 2014}} = \frac{18}{11} = 1.636$$

## ● Impact factor (IF)

- ✓ Since **IF** is retrospect, the **IF** for 2015 will only be available in 2016 (after all the citations for 2015 have been made)
- ✓ IFs are available in Journal Citation Reports (published by [Clarivate Analytics](#)) once a year
- ✓ **IF** is usually mentioned in print copy of a journal or on journal's homepages
- ✓ New journals do not have **IF** owing to 3 years data required to calculate
- ✓ **IF** varies between disciplines or within the same academic discipline (time span, citation frequency etc)
- ✓ **IF** of a journal does not reflect the quality of papers published by a particular author



ISSN: 0305-750X

# World Development

The Multi-Disciplinary International Journal Devoted to the Study and Promotion of World Development

Editor-in-Chief: [Arun Agrawal](#)

> [View Editorial Board](#)

## Journal Metrics

> CiteScore: **3.92** ①

Impact Factor: **3.166** ①

5-Year Impact Factor: **3.940** ①

Source Normalized Impact per Paper (SNIP): **2.542** ①

SCImago Journal Rank (SJR): **2.122** ①

> [View More on Journal Insights](#)

# Computation of scholarly metrics

## ● CiteScore [<https://www.scopus.com/sources>]

- ✓ Introduced in 'Scopus' database from 2016, as of now available FREE
- ✓ It is a measure of the frequency with which the "average article" in a journal has been cited in a particular year or period
- ✓ Helps to measure the impact of journals
- ✓ Helps in devising library collection development policy
- ✓ Assist authors to identify high impact journals in their area of research to publish articles
- ✓ Cite Score for a journal is calculated based on (**It is 4 years window**):



# Computation of scholarly metrics



- **h-index**

- ✓ Devised by J.E. Hirsch in 2005 (Author metrics)
- ✓ Quantifies scientific output of individual researcher as single number (e.g. h-index 20 means researcher has published 20 papers those have at least 20 or more citations)
- ✓ It never decreases, always increases as and when new papers of a researcher gets cited or existing papers receive more citations, even if author is inactive
- ✓ It tries to find balance between productivity and citation impact
- ✓ Applicable to authors and institutions
- ✓ Found in certain databases such as Web of Science, SCOPUS, Google Scholar, RePEc etc

# How to find h-index ?

- ✓ List the publications of an individual / Institute
- ✓ List citations received against each publication
- ✓ Rearrange the list in descending order of citations (i.e. highly cited paper in first place)
- ✓ Draw a line that matches the serial number and citations received. That's the **h-index !!!**

## Hirsch's threshold values

- ▶ Successful scientist:  $h=20$  after 20 years
- ▶ Outstanding scientist:  $h=40$  after 20 years
- ▶ Truly unique individual:  $h=60$  after 20 years, or 90 after 30 years

Source: <http://www.slideshare.net/hsls/what-do-we-know-about-the-h-index-4858000>

# Computation of scholarly metrics

## Calculating h-index

<https://scholar.google.co.in/citations?user=ceUD3IIAAAAJ&hl=en>



Sudha Narayanan

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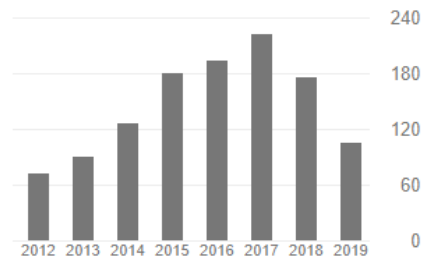
Agricultural economics   Development economics   Agricultural trade   Food and nutrition policy  
Human development

Cited by

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All   Since 2014

Citations	1694	1014
<b>h-index</b>	<b>16</b>	13
i10-index	25	18



Co-authors

	Christopher B. Barrett SB&JG Ashley Prof. of Applied E...	<a href="#">➤</a>
	Upasak Das University of Pennsylvania	<a href="#">➤</a>

TITLE	CITED BY	YEAR
Smallholder Participation in Contract Farming: Comparative Evidence from Five Countries CB Barrett, ME Bachke, MF Bellemare, HC Michelson, S Narayanan, ... World Development	447	2011
The Subsidy Syndrome in Indian Agriculture G Ashok, S Narayanan Oxford University Press, New Delhi	342 *	2003
Globalization and the smallholders S Narayanan, A Gulati MTID discussion papers	160 *	2002
Employment guarantee, women's work and childcare S Narayanan Economic and political weekly, 10-13	98	2008
Profits from participation in high value agriculture: Evidence of heterogeneous benefits in contract farming schemes in Southern India S Narayanan Food Policy 44, 142-157	79	2014
Rice trade liberalisation and poverty A Gulati, S Narayanan Economic and Political Weekly, 45-51	79	2003

# Computation of scholarly metrics

## • **Altmetrics**

- ✓ **Altmetrics** is the creation and study of new metrics based on the Social Web for analyzing, and informing scholarship (Breakaway from traditional metrics)
- ✓ It is often referred as 'Alternative to Metrics'
- ✓ Here references made to articles in blogs, Twitter, policy documents, media and online reference management tools by anyone are taken in to consideration for measuring the impact of research
- ✓ Altmetrics will be essential to sift these new forms, since they're outside the scope of traditional metrics
- ✓ Altmetrics is still evolving and there are many questions need to be answered and standards need to be formed
- ✓ However, one can explore this new form of metrics using the available tools

(For more information about altmetrics and tools, please go through:  
<http://altmetrics.org/manifesto/>)

# Where to look for metrics?

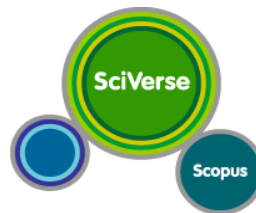


## Article/Author Metrics:

- ✓ [Web of Science](#) (Old and Established)
- ✓ [Scopus](#) (Elsevier)
- ✓ [Indian Citation Index](#)
- ✓ [Google Scholar](#) and [Publish or Perish](#)
- ✓ [Microsoft Academic](#)
- ✓ [ResearchID](#) (On Registered researchers)
- ✓ [RePEc](#) (Economics)
- ✓ [Dimensions](#) [New]

[Scite](#)

Microsoft Academic




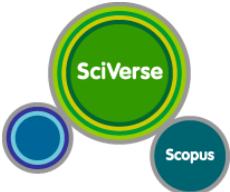

# Where to look for metrics?

## Journal Metrics:

- ✓ [Journal Citation Reports](#) [JCR – Thomson Reuters]
- ✓ [SJR/SciMago](#)(Including Country metrics)
- ✓ [Eigenfactor](#)
- ✓ [Google Scholar Metrics](#)

## Which tool one should use?

The answer to this question is to never rely on **one tool** alone. The number of citations retrieved for a particular individual or group of individuals or institution will vary depending on the tool used. The content (sources) covered by each tool varies as does the depth of coverage and discipline coverage [MyRI].

	Strengths	Weaknesses
<b>Web of Science</b> <b>(part of the Web of Knowledge, WoK, suite of resources)</b> 	<ul style="list-style-type: none"> <li>-Advanced citation searching and analysis features</li> <li>-Citation data available from 1900 to date</li> <li>-Broad coverage of high impact journals</li> <li>-Additional citation data is available in WoK by searching <b>All Databases</b></li> </ul>	<ul style="list-style-type: none"> <li>-Conference papers, books, book chapters, dissertations excluded*</li> <li>-Limited coverage of non-English language titles</li> </ul> <p><i>*conference proceedings are available but may not currently be part of your library's subscription</i></p>
<b>Scopus</b> 	<ul style="list-style-type: none"> <li>-Advanced citation searching and analysis features</li> <li>-Better coverage of Social Science titles</li> <li>-Includes conference proceedings</li> </ul>	<ul style="list-style-type: none"> <li>-Books, book chapters, dissertations excluded</li> <li>-Citation data for papers published from 1996 onwards only</li> </ul>
<b>Google Scholar</b> <b>(Publish or Perish)</b> 	<ul style="list-style-type: none"> <li>-Free</li> <li>-Covers non-English language titles</li> <li>-Covers all types of publications including books and conference papers</li> </ul>	<ul style="list-style-type: none"> <li>-No quality control, lots of errors in data</li> <li>-Does not cover all journals</li> <li>-Covers non-scholarly content</li> <li>-Coverage un-even across disciplines</li> <li>-Difficult to deal with name variants</li> </ul>

# Scopus – Author Search

Scopus Preview

Author search

Sources

Help ▾

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## Search for an author profile



Scopus is the world's largest abstract and citation database of peer-reviewed research literature. With over 22,000 titles from more than 5,000 international publishers.

You can use this free author lookup to search for any author; or, use the [Author Feedback Wizard](#) to verify your Scopus Author Profile.

Register for your unique ORCID and use Scopus to [import your records](#).



Author last name

*e.g. Smith*

Author first name

*e.g. J.L.*

Affiliation

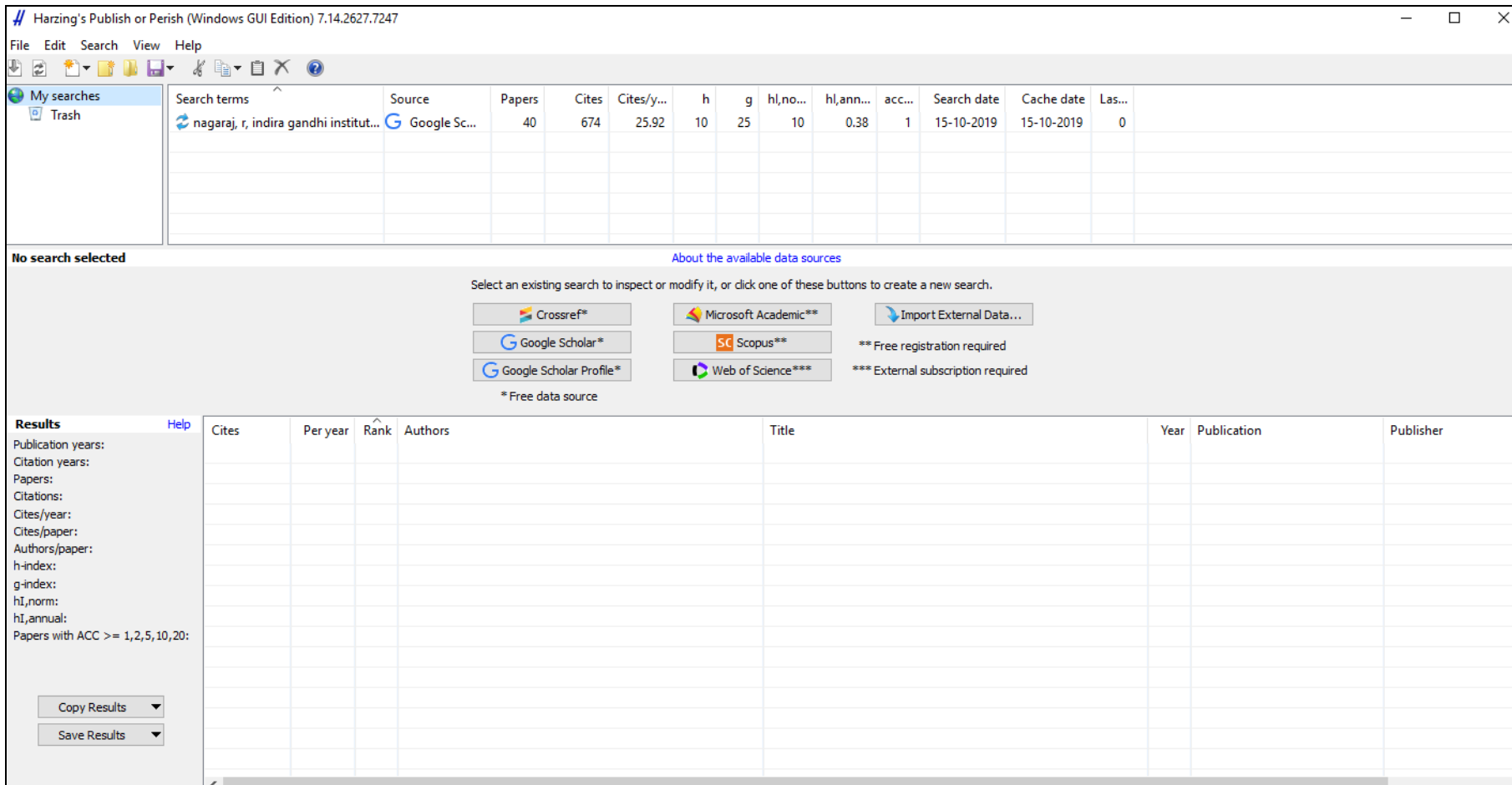
*e.g. University of Toronto*

☐ Show exact matches only

Search Q

<https://www.scopus.com/freelookup/form/author.uri>

# Publish or Perish Software



<https://harzing.com/resources/publish-or-perish>

Harzing's Publish or Perish (Windows GUI Edition) 7.14.2627.7247

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My searches

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Search terms	Source	Papers	Cites	Cites/y...	h	g	h <sub>i</sub> ,no...	h <sub>i</sub> ,ann...	acc...	Search date	Cache date	Las...
nagaraj, r, indira gandhi institut...	Google Sc...	40	674	25.92	10	25	10	0.38	1	15-10-2019	15-10-2019	0

Google Scholar search

How to search with Google Scholar

Authors:

nagaraj, r

Years: 0 - 0

Search

Publication name:

ISSN:

Search Direct

Title words:

Clear All

Keywords:

indira gandhi institute of development research

Revert

New

Results

Help

Publication years:

1993-2019

Citation years:

26 (1993-2019)

Papers:

40

Citations:

674

Cites/year:

25.92

Cites/paper:

16.85

Authors/paper:

1.60

h-index:

10

g-index:

25

h<sub>i</sub>,norm:

10

h<sub>i</sub>,annual:

0.38

Papers with ACC >= 1,2,5,10,20:

18, 11, 4, 1, 0

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Cites	Per year	Rank	Authors	Title	Year	Publication	Publisher
<input checked="" type="checkbox"/> h 14	2.00	1	R Nagaraj	Growth, Inequality and Social Development in India: Is Inclusive ...	2012		books.google.com
<input checked="" type="checkbox"/> 4	2.00	2	R Nagaraj, S Motiram	Political economy of contemporary India	2017		books.google.com
<input checked="" type="checkbox"/> h 276	14.53	3	R Nagaraj, A Varoudakis, ...	Long-run growth trends and convergence across Indian States	2000	... Development: The ...	Wiley Online Library
<input checked="" type="checkbox"/> 6	0.23	4	R Nagaraj	Employment and Wages in Manufacturing Industries in India: Tr...	1993		... Institute of Develo
<input checked="" type="checkbox"/> 10	0.83	5	R Nagaraj	Labour market in India: current concerns and policy responses	2007	... : Indira Gandhi Institute of ...	
<input checked="" type="checkbox"/> h 23	2.88	6	R Nagaraj	Growth in organised manufacturing employment: A comment	2011	Economic and political weekly	JSTOR
<input checked="" type="checkbox"/> h 17	1.89	7	R Nagaraj, A Rahman	Booming Bihar: Fact or Fiction?	2010	Economic and Political Weekly	JSTOR
<input checked="" type="checkbox"/> h 119	9.15	8	TCA Anant, R Hasan, P Mohapatra, R Nagaraj, ...	Labor markets in India: issues and perspectives	2006	Labor Markets in ...	Springer
<input checked="" type="checkbox"/> h 58	9.67	9	R Nagaraj	India's dream run, 2003-08: Understanding the boom and its aft...	2013	Economic and Political Weekly	JSTOR
<input checked="" type="checkbox"/> h 31	3.10	10	R Nagaraj	Is services sector output overestimated? An inquiry	2009	Economic and political weekly	igidr.ac.in
<input checked="" type="checkbox"/> 2	0.08	11	R Nagaraj	Employment and Wages in Manufacturing Industries in India	1993		... Institute of Develo
<input checked="" type="checkbox"/> 2	0.08	12	R Nagaraj	Employment and Wages in Manufacturing Industries in India: Tr...	1993	... ', Indira Gandhi Institute of ...	
<input checked="" type="checkbox"/> h 16	2.00	13	R Nagaraj	Industrial Performance, 1991-2008: A Review	2011	India development report	igidr.ac.in
<input checked="" type="checkbox"/> 3	0.60	14	R Nagaraj	Public Sector Employment: What has Changed?	2014	... India, Indira Gandhi Institut...	
<input checked="" type="checkbox"/> h 12	6.00	15	R Nagaraj	Economic Reforms and Manufacturing Sector Growth	2017	Economic & Political Weekly	igidr.ac.in
<input checked="" type="checkbox"/> h 28	2.15	16	R Nagaraj	Aspects of India's economic growth and reforms	2006		books.google.com



Showing 25,142,922 research outputs from the results of your search query. Of those, 13,104,604 have been mentioned.

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Few-Shot Adversarial Learning of Realistic Neural Talking Head Models  
Article, May 2019



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News story in *Nature*, March 2019



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Article in *Scientific American*, September 2014



Republican lawmaker: Rocks tumbling into ocean causing sea level rise  
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Mortality in Puerto Rico after Hurricane Maria  
Article in *New England Journal of Medicine*, July 2018



The spread of true and false news online  
Article in *Science*, March 2018



Measles, Mumps, Rubella Vaccination and Autism  
Article in *Annals of Internal Medicine*, March 2019



Trump White House quietly cancels NASA research verifying greenhouse gas cuts  
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World Scientists' Warning to Humanity: A Second Notice  
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Sex redefined  
News story in *Nature*, February 2015



Earth's magnetic field is acting up and geologists don't know why  
News story in *Nature*, January 2019



United States Health Care Reform  
Article in *JAMA: Journal of the American Medical Association*, August 2016



The Russian "Firehose of Falsehood" Propaganda Model  
Book in *www.rand.org*, July 2016



Alcohol use and burden for 195 countries and territories, 1990–2016:  
a...  
Article in *The Lancet*, September 2018



When Facts Backfire  
Article in *Scientific American*, December 2016



Associations of fats and carbohydrate intake with cardiovascular disease and...  
Article in *The Lancet*, November 2017



A Style-Based Generator Architecture for Generative Adversarial Networks  
Article, December 2018



The irreversible momentum of clean energy  
Article in *Science*, January 2017

# Research metrics guide

Metrics illuminate the impact of your research outputs. Promotion and tenure committees, funders, advisors, research team leaders and potential collaborators are all interested in information about impact.

## But where to start?

Your library can advise you on metrics that can help you to:

### Decide where to publish

- CiteScore
- SJR: SCImago Journal Rank
- SNIP: Source Normalized Impact per Paper
- Journal Impact Factor

### Add to online profile

- h-index
- Percentile benchmark
- Usage
- Captures
- Mentions
- Social Media

### Enrich promotion & tenure portfolio

- h-Index
- Percentile benchmark
- Usage
- Captures
- Mentions
- Social Media
- Citations

### Apply/Report to Funders<sup>1</sup>

- Percentile benchmark
- Journal metrics (e.g., CiteScore)
- Usage
- Captures
- Mentions
- Social Media
- Citations

### Benchmark a collection of research outputs *(for team leaders)*

- Percentile benchmark
- Field-Weighted Citation Impact
- h-Index (if in the same field)
- Field-Weighted Download Impact<sup>2</sup>



Document\*



Author



Journal



Snowball Metrics\*\*



PlumX metrics

Source: [https://www.elsevier.com/data/assets/pdf\\_file/0004/880357/ACAD\\_LIB\\_POS\\_ResearchMetricsCards\\_WEB.pdf](https://www.elsevier.com/data/assets/pdf_file/0004/880357/ACAD_LIB_POS_ResearchMetricsCards_WEB.pdf)

# Limitations of Research Metrics

- ✓ No one database is comprehensive
- ✓ No one database covers all journals
- ✓ No one database includes all publication formats
- ✓ Publication dates affect your results.
- ✓ Results can be misleading
- ✓ All impact measures are controversial!

[Source: <http://researchguides.library.wisc.edu/content.php?pid=103674&sid=779716>]

‘There is no single “best” indicator that could accommodate all facets of the new reality of scholarly metrics’

# Resources to follow..

- ✓ [EconBuzz](#) Newsletter (IGIDR Library)
- ✓ [EPW Engage](#)
- ✓ [Ideas for India](#)
- ✓ [IGIDR Library](#) on Twitter @igidrlib
- ✓ [LSE Impact Blog](#) (Social Sciences)
- ✓ [Richard Poynder](#) on Twitter @RickyPo
- ✓ [Scholarly Kitchen](#)
- ✓ [The India Forum](#)

# References

- Metrics. <http://www.nature.com/news/specials/metrics/index.html>

THANK  
Thank YOU thank  
YOU Thanks

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