

# Citation Indexing : An Overview

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# Outline of the Presentation

- Concept of Citations
- Citation Indexing
- Web of Science databases
- Limitations of WoS Databases
- Indian Citation Index (ICI)
- Why We Need ICI?
- Benefits of ICI
- The Impact Factor
- Tools for measuring Impact Analysis
  - JCR (Journal Citation Report)
  - Other tools for Measuring the Impact analysis
- Example of Google Scholar and Scholarometer

# Concept of Citations

citations symbolize the conceptual association of scientific ideas as recognized by publishing research authors .

By the references they cite in their papers, authors make explicit **linkages** between their current research and prior work in the archive of scientific literature.

# distinction between "citation" and "reference"

- If Paper R contains a bibliographic footnote using and describing Paper C, then
  - R contains a *reference* to C,
  - C has a *citation* from R.
- The number of references a paper has is measured by the number of items in its bibliography as endnotes, footnotes, etc.,
- The number of citations a paper has is found by looking it up [in a] ***citation index*** and seeing how many others papers mention it."

## Paper R

.....To start, it is important to clarify the terminological distinction between "citation"[6] and "reference". In his classic book *Little Science, Big Science*, Derek Price gave a clear definition of both terms. He said: "It seems to me a great pity to waste a good technical term by using the words *citation* and *reference* interchangeably. I therefore propose and adopt the convention that if Paper R contains a bibliographic footnote using and describing Paper C, then R contains...

[6] The concept of citation indexing: A unique and innovative tool for navigating the research literature. *Current Contents*, January 3, 1994.

R contains a ***reference to C***,

## Paper C

Little science, big science...and beyond.

This is my first *Current Contents*® (CC®) essay under the rubric of *Citation Comments*. As discussed in last week's CC, this new monthly feature will focus on the applications of the Institute for Scientific Information's (ISI's) databases. [↑](#) An appropriate topic to launch this new series is perhaps the most rudimentary -- the basic *concept* of citation indexing. To start, it is important to clarify the terminological distinction between "citation" and "reference". In his classic book *Little Science, Big Science*, Derek Price gave a clear definition of both terms. He said: "It seems to me a great pity to waste a good technical term by using the words *citation* and *reference* interchangeably. I therefore propose and adopt the convention that if Paper R contains a bibliographic footnote using and describing Paper C, then R contains a.

C has a ***citation from R***.

# Citation Indexing

- Introduced by Dr. Eugene Garfield of Institute of Scientific Information (Web of Science) in 1950s.
- Citation indexing makes links between books and articles that were written in the past and articles that make reference to ("cite") these older publications. In other words, it is a technique that allows us to trace the use of an idea (an earlier document) **forward** to others who have used ("cited") it.
- The citation indexes were originally designed primarily for information retrieval. Helps for identifying the relevant research papers independent of language, title words, or author keywords


# ISI Web of Science Databases

- Science Citation Index Expanded(SCI)
- Social Science Citation Index (SSCI)
- Arts and Humanities Citation Index (A&HCI)

# WoS Search Interface

WEB OF KNOWLEDGE<sup>SM</sup>

DISCOVERY STARTS HERE

 THOMSON REUTERS

[Go to mobile site](#) | [Signed In](#) | [Marked List \(0\)](#) | [My EndNote Web](#) | [My ResearcherID](#) | [My Citation Alerts](#) | [My Saved Searches](#) | [Log Out](#) | [Help](#)

Web of Science

Additional Resources

[Search](#) | [Author Finder](#) | [Cited Reference Search](#) | [Advanced Search](#) | [Search History](#)

Web of Science<sup>SM</sup>

Search

in 

Topic

*Example: oil spill\* mediterranean*

AND

in 

Author

*Example: O'Brian C\* OR O'Brian C\**  
*Need help finding papers by an author? Use [Author Finder](#).*

AND

in 

Publication Name


*Example: Cancer\* OR Journal of Cancer Research and Clinical Oncology*

[Add Another Field >>](#)

Search

Clear

Searches must be in English

 MORE INFORMATION FOR NEW USERS

Welcome, Library Information Services

Maintenance Alert

*Questions about the new Web of Knowledge?*

Have questions about differences in citation counts between the new Web of Knowledge and the previous version? Notice differences in search capabilities and need more details? See the [Frequently Asked Questions](#) page.

Support, Tools, Tips

Training & Support



# Advantages of Citation Indexing

- SCI, SSCI and A&HCI are multidisciplinary in nature..
- The citation-based associations and connections within the literature are made by authors themselves.
- Helps for identifying the core periodicals in a subject.
- Helps for quantifying or measuring the research productivity of an institution or individual or country or region.

# Limitations of WoS Databases

- Majority of the journals are from US.
- Less presence of journals published from third world countries.
- Only index journals not monographs
- Non-English language journals are not as comprehensively indexed (Mathew, n.d.)

# Indian Citation Index

# Why We Need Indian Citation Index?

## Coverage of Web of Science

Citation Index	No of Journals
Science Citation Index	3772
Social Science Citation Index	2995
Arts & Humanities Citation Index	1656

Total = 8423 Journal  
30.30 of the World Publications  
24000 Peer Reviewed Journals (Sale, 2007)  
Only 268 Indian Journals are indexed in WoS

# Indian Citation Index Web Interface

<http://www.indiancitationindex.com>



The screenshot shows the Indian Citation Index (ICI) web interface in a browser window. The browser's address bar displays the URL <http://www.indiancitationindex.com/ici.aspx>. The page features a navigation bar with links to Home, About Us, Product, About ICI, Benefits & Resources, Training & Support, News & Event, FAQ, Site Map, and Contact Us. Below this, a red banner displays statistics: Publications: 615, Articles: 186,351, and References: 3,156,388. The main search area includes three search forms: a general search, an author search, and a publication name search. Each form has a text input field, a dropdown menu for the search criteria, and a search button. Examples are provided for each search type. On the right side, there is a 'Search History' section and a list of 'ICI Other Products' with checkboxes. The page also includes a 'Register New User' link and a 'Publisher Page' link.

Search for: [Search Tips Help](#)

Example: Plant\* OR Plant genetics

AND  in

Example: Sharma A\* OR Sharma A

To find papers written by an author? Try [Author Search](#)

AND  in

Example: Current Scie..., arrow keys to select then Enter

\*All Years

☒ ICI Other Products\*

- ✓ Indian Science Citation Index (ISCI)
- ✓ Indian Health Science Citation Index (IHSCI)
- ✓ Indian Agriculture Citation Index (IACI)
- ✓ Indian Social Science & Humanities Citation Index (ISSHCI)
- ✓ Indian Journals Citation Report (IJCR)
- ✓ Indian Science & Technology Abstracts (ISTA)
- ✓ Directory of Indian R&D Journals (DoIJ)

\* Will be available shortly

# Benefits of ICI

- A comprehensive research & evaluation tool for Indian literature
- Facilitates comprehensive scientometric and bibliometric studies on Indian literature
- Helps to measure & analyze individual, institutional, regional, and national R&D output for strategic planning
- An authentic tool to generate complete and comprehensive analytic reports on the health of Indian R&D
- ICI can generate national R&D indicators like, Indian Journals Citation Reports, etc.
- Catalyze the image & visibility of Indian knowledge contents and publications
- Helps decision makers to arrive at some conclusive point to decide the superiority of competitor (s), for some awards, fellowships, recruitments etc.
- Provides a boost to Indian publishing industry at global level

# Products of ICI

- Indian Science Citation Index (ISCI)
- Indian Health Science Citation Index (IHSCI)
- Indian Agriculture Citation Index (IACI) India
- Social Science & Humanities Citation Index (ISSHCI)
- Indian Journals Citation Report (IJCR)
- Indian Science & Technology Abstracts (ISTA)
- Directory of Indian R&D Journals (DoIJ)

# Search Interface of ICI

<b>Publications:615</b>	<b>Articles: 186,351</b>	<b>References: 3,156,388</b>	
<a href="#">Cited Reference Search</a>	<a href="#">Advanced Search</a>	<a href="#">Search History</a>	<a href="#">Marked Records</a>

Search for: [Search Tips](#) [Help](#)

*Example:* Plant\* OR Plant genetics

AND

*Example:* Sharma A\* OR Sharma A

To find papers written by an author? Try [Author Search](#)

AND

*Example:* Current Scie..., arrow keys to select then Enter

in

Title	<input type="button" value="v"/>
Title	
Topic	
Author	
Publication Name	
Document Type	
Institution	
City\State\Country	

in

Publication Name	<input type="button" value="v"/>
------------------	----------------------------------

Search

Clear

TimeSpan:All Years



Please login to access Indian Citation Index. New User? Register



# Search Strategies



Indian Citation Index

*Indian Citation Index*



[Register New](#)

Email address   [Forgot](#)

☐ Stay signed in  [Change](#)

[Unsubscribe](#)

[Home](#) [About Us](#) [Product](#) [About ICI](#) [Benefits & Resources](#) [Training & Support](#) [News & Event](#) [FAQ](#) [Site Map](#) [Contact](#)

[<<Back](#)

**Publications: 615**

**Articles: 186,351**

**References: 3,156,388**

[What's new?](#)

## Help with Searching

Down [Main Search Strategies](#)

Searching by [Title](#)

Searching by [Publication](#)

Searching by [Topic](#)

Searching by [Document Type](#)

Searching by [Author \(Special Characters in Author Names\)](#)

Searching by [Institution](#)

Searching by [City\(State\)Country](#)

Down [Stemming](#)

Down [Using "Wildcards"](#)

Down [Boolean Logic](#)

Down [Search Term Highlighting](#)

Down [Search Errors](#)

## Main Search Strategies [Up](#)

What you know	How to find the article(s)
<b>Author(s)</b>	Author names can be entered in any text box field and select "Author" from drop list. The last name is the main identifier; search is only on the last name. Use *(star) operator for a like search. Multiple author names should be separated by a . <a href="#">Boolean operators</a> .
<b>Title</b>	Words in an article's title can be searched by using the "Title" field on the Search page. If you enter the full title, put them within double quotes (" ") so that the exact phrase is searched.
<b>Topic</b>	Topic search is executed on three fields "Title, Abstract and Keywords". If you enter a text and the search field is "Topic" then Indian Citation Index will return all the articles that match in any of the three fields i.e. "Title, Abstract and Keyword". Note: The "Title" search executed only on one title field.
<b>Document Type</b>	Each article is categorized to a document type. There are different "Document Type" is like RESEARCH ARTICLE, PROCEEDINGS PAPER etc. these types are defined for each article. The search on "Document Type" allows the user to select a specific document type from a predefined list. Once a document type is

- **What are the criteria for adding new journals to ICI?**

ICI works with its basic intent to cover all scholarly journals from India irrespective of their discipline (s) subject to content selection criteria

# Indexing Research Materials

- Research articles
- Review articles
- Short or brief communications
- Editorial and letter to editor
- Research notes
- Case studies
- Case reports
- Opinion papers
- Observations

# The Impact Factor

- The impact factor is a measure of the frequency with which the average article in a journal has been cited in a particular year or period.
- JCR (Journal Citation Report) of WoS has been major tool for measuring the Impact factor of journals.

# JCR Impact Factor

- The *JCR* provides quantitative tools for ranking, evaluating, categorizing, and comparing journals (Thomson Reuters, 2011).
- JCR impact factor is a ratio between citations and recent citable items published.
- Thus, the impact factor of a journal is calculated by dividing the number of current year citations to the source items published in that journal during the previous two years

# Calculation for journal impact factor

A= 2010 cites to articles published in 2008 and 2009

B= Number of articles published in 2008 and 2009

C=  $A/B$  = 2010 Impact factor

	A Cites in 2010 to 2008-2009 articles	B Number of articles Published in 2008 and 2009	C Impact Factor (A/B)
Journal of Library and Information Science	150	80	1.875

**Reproductive Systems category of the  
1992 *SCI® Journal Citation Reports® (JCR®)***

<b>Reproduct ive Systems Journals</b>	<b>(A/D) JCR Impact Factor</b>	<b>A Cites in 1992 to 1990-91 Articles</b>	<b>B Self-cites in 1992 to 1990-91 Articles</b>	<b>C (A-B) Minus Self- Cites</b>	<b>D Articles Published 1990-91</b>	<b>E (C/D) Revised Impact Factor</b>
AM J REPROD IMMUNOL	1.931	224	54	170	116	1.466
ANIM REPROD SCI	0.701	110	23	87	157	0.554
BIOL REPROD	3.257	726	265	461	530	2.757

**Table :** Calculation of impact factors without self-citations

# Free Citation Indexing Tool



Cited documents  
7082 For the  
Article "The Large  
Scale.. By  
Hawking S.

# Free Citation Indexing Tool

+Vasanth Web Images Maps News Orkut Gmail More ▾

Vas

Google scholar

Stephen Hawking

Search

[Advanced Scholar Search](#)

Scholar

Articles and patents ▾

anytime ▾

include citations ▾



[Create email alert](#)

Results 1 - 10 of about 22,70

[BOOK] [The large scale structure of space-time](#)

SW **Hawking**... - 1995 - [books.google.com](#)

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[Cited by 7082](#) - [Related articles](#) - [All 16 versions](#)

[Particle creation by black holes](#)

SW **Hawking** - [Communications in mathematical physics](#), 1975 - Springer

Abstract In the classical theory black holes can only absorb and not emit particles. However it is shown that quantum mechanical effects cause black holes to create and emit particles as if they were hot bodies with temperature  $h \kappa / 2 \pi k \approx 10^{-6} \left( M_{\odot} / M \right)^{-1} = K \dots$

[Cited by 6132](#) - [Related articles](#) - [All 15 versions](#)

[\[PDF\] from puc.cl](#)

[CITATION] A brief history of time

SW **Hawking** - 1998 - Bantam

[Cited by 2299](#) - [Related articles](#) - [All 29 versions](#)

[\[PDF\] from cmadras.com](#)

[Black hole explosions?](#)

SW **Hawking** - [Nature](#), 1974 - [nature.com](#)

Quantum gravitational effects are usually ignored in calculations of the formation and evolution of black holes. The justification for this is that the radius of curvature of spacetime outside the event horizon is very large compared to the Planck length the length scale on which ...

[Cited by 2501](#) - [Related articles](#) - [All 5 versions](#)

[Cosmological event horizons, thermodynamics, and particle creation](#)

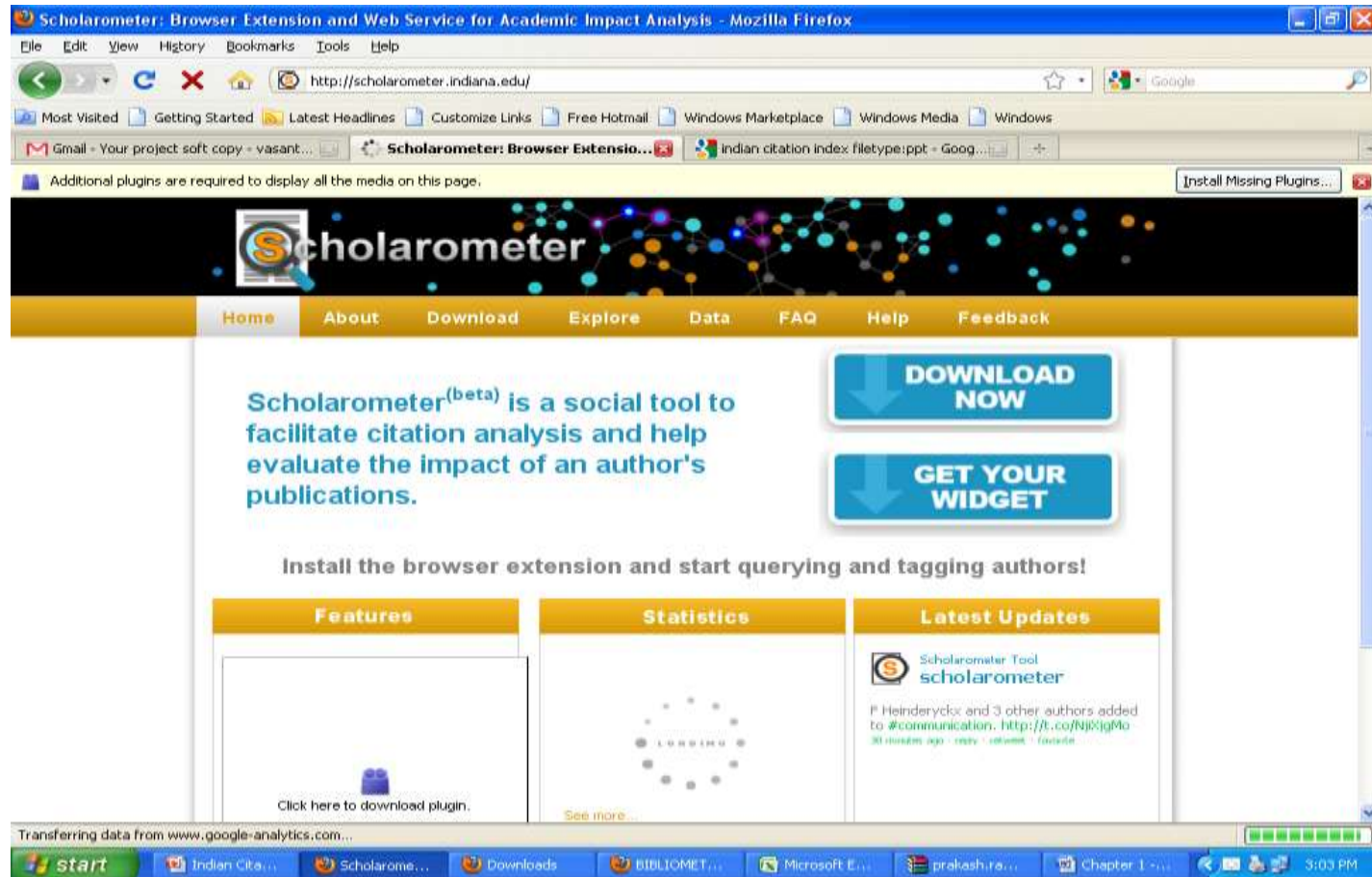
SW **Hawking**, **Moss**, **Page** - [Physical Review D](#), 1982 - APS

# How do we measure Impact Analysis of Individual/ Institutions

Name of the Software	Features	Web address
Bibexcel	<ul style="list-style-type: none"> <li>• Freely available</li> <li>• Uses SCI, SSCI as underlying data</li> <li>• Support for visualization</li> </ul>	<a href="http://www8.umu.se/inforsk/Bibexcel/">http://www8.umu.se/inforsk/Bibexcel/</a>
<a href="http://nwb.cns.iu.edu/index.html">Network Workbench</a>	<ul style="list-style-type: none"> <li>• Freely available</li> <li>• Support of larger scale network analysis (Wikipedia)</li> <li>• Used very much in Biomedical, Social Science and Physics Research</li> </ul>	<a href="http://nwb.cns.iu.edu/index.html">http://nwb.cns.iu.edu/index.html</a>
Pajek	<ul style="list-style-type: none"> <li>• Freely available</li> <li>• Support for larger scale network analysis and visualization</li> </ul>	<a href="http://pajek.imfm.si/doku.php?id=pajek">http://pajek.imfm.si/doku.php?id=pajek</a>
Publish or Perish	<ul style="list-style-type: none"> <li>• Freely available</li> <li>• Uses Google Scholar as underlying data</li> <li>• Support for citation analysis (author impact analysis, journal impact analysis etc)</li> </ul>	<a href="http://www.harzing.com">http://www.harzing.com</a>
Scholarometer	<ul style="list-style-type: none"> <li>• Freely available</li> <li>• A browser add-ons</li> <li>• Uses Google Scholar as underlying data</li> <li>• Support citation analysis (Author impact analysis)</li> </ul>	<a href="http://scholarometer.indiana.edu/">http://scholarometer.indiana.edu/</a>

# Scholarometer

<http://scholarometer.indiana.edu/>



# Results for Stephen Hawking in Scholarometer

Scholarometer

1. Simple search for articles

written by ☐ author ☐ author

"Stephen Hawking"

example: "GC Fox"

2. Tag this query [\(Required. Why?\)](#)

- Use at least one tag marked by ( ? )
- Use as many tags as you like (hit [enter] after each one)

astronomy & astrophysics

Reset

Submit

Home | About | Download | Explore | Data | FAQs | Help | Feedback

WIDGET

EXPORT

REVERT

SHARE

Filter

Compact View

Check All

Uncheck All

View Checked

Checked Items:

Remove

Merge

Impact Analysis

Max Year: 2011

Show 25 entries

Search:

Min Year: 0

Max Cited: 6753

Min Cited: 0

Select Any

▼ Name Variations

sw hawking (161)

Times Cited	Authors	Title/Links	Year
<input type="checkbox"/> 6753	SW Hawking, ...	The large scale structure of space-time	1975
<input type="checkbox"/> 5469	SW Hawking	Particle creation by black holes	1975
<input type="checkbox"/> 3598	SW Hawking	The illustrated a brief history of time	1996
<input type="checkbox"/> 2309	SW Hawking	Black hole explosions	1974
<input type="checkbox"/> 2125	JB Hartle, SW Hawking	Wave function of the universe	1983

Number of Articles: 300

Number of Citations: 44093

h (%ile): 66 (98)

g (%ile): 209 (99)

h<sub>m</sub> (%ile): 49.15 (99)

discipline tagged

astronomy & astrophysics 2

physics, ... 2

# *h*-Index for Stephen Hawking Obtained through Scholarometer

## Impact Analysis

Number of Articles: 300

Number of Citations: 44093

$h$  (%ile): 66 (98)

$g$  (%ile): 209 (99)

$h_m$  (%ile): 49.15 (99)

**Thank You**