Bibliometrics analysis for selecting the best field of study

Nader Ale Ebrahim

Available at: https://works.bepress.com/aleebrahim/229/
Bibliometrics analysis for selecting the best field of study

Nader Ale Ebrahim, PhD
Visiting Research Fellow
Centre for Research Services
Institute of Management and Research Services
University of Malaya, Kuala Lumpur, Malaysia

aleebrahim@um.edu.my
@aleebrahim
www.researcherid.com/rid/C-2414-2009
http://scholar.google.com/citations

25th October 2017
Abstract: Bibliometrics can be defined as the statistical analysis of publications. Bibliometrics has focused on the quantitative analysis of citations and citation counts which is complex. It is so complex and specialized. The personal knowledge and experience are insufficient tools for understanding trends for making decisions. We need especial tools for analysis of Bibliometrics information for select the best field of study with promising enough attention. This presentation will provide tools to discover the new trends in your field of study in order to select an area for research and publication which promising the highest research impact.

Keywords: H-index, Improve citations, Research tools, Bibliometrics, Research Visibility, Research Impact
<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>23 August 2017</td>
<td>9.00 a.m.—12.00 p.m.</td>
<td>Where to publish? A Journal selection procedure for receiving the highest citation and impact</td>
</tr>
<tr>
<td>6 September 2017</td>
<td>9.00 a.m.—12.00 p.m.</td>
<td>Essential steps to write a Bibliometric paper</td>
</tr>
<tr>
<td>13 September 2017</td>
<td>9.00 a.m.—12.00 p.m.</td>
<td>New systems for measuring research impact</td>
</tr>
<tr>
<td>20 September 2017</td>
<td>9.00 a.m.—12.00 p.m.</td>
<td>Boosting Research Citation and Visibility through Online Profile</td>
</tr>
<tr>
<td>27 September 2017</td>
<td>9.00 a.m.—12.00 p.m.</td>
<td>Reference management tools for Boosting the Research Visibility and Impact</td>
</tr>
<tr>
<td>4 October 2017</td>
<td>9.00 a.m.—12.00 p.m.</td>
<td>Optimize articles for search engine to improve research visibility</td>
</tr>
<tr>
<td>11 October 2017</td>
<td>9.00 a.m.—12.00 p.m.</td>
<td>Academic Social Network for Enhancement of Research Visibility and Impact</td>
</tr>
<tr>
<td>25 October 2017</td>
<td>9.00 a.m.—12.00 p.m.</td>
<td>Analysis of Bibliometrics information for selecting the best field of study</td>
</tr>
<tr>
<td>1 November 2017</td>
<td>9.00 a.m.—12.00 p.m.</td>
<td>How to select a brand name for your research interest?</td>
</tr>
</tbody>
</table>
Registration Link

Research Tools Mind Map

1. Searching the literature
2. Writing a paper
3. Targeting suitable journals
4. Enhancing visibility and impact

Links
h-index
Survey
Keeping up-to-date Alert services

Virtual Teams will become as important as
How Articles Get Noticed

The good news is you’ve published your manuscript! The bad news? With two million other new research articles likely to be published this year, you face steep competition for readers, downloads, citations and media.

Source: http://blogs.plos.org/plos/2015/03/get-paper-noticed-join-current-scientific-conversation
From submission to sharing: the life cycle of an article

• Phase 1: Conception and birth
• Phase 2: Submission
• Phase 3: Reviewers
• Phase 4: Production and publication
• Phase 5: Dissemination and archiving
  – The article is published, but its life cycle isn’t yet complete. In this phase, dissemination can start; sharing the Share Links article helps increase readership and make it more visible.

Source: https://www.elsevier.com/reviewers-update/home/featured-article/from-submission-to-sharing-the-life-cycle-of-an-article

©2017-2018 Nader Ale Ebrahim
Your paper is **worthless** if no one reads, uses, or cites it

A research study is meaningful **only if**…

- it is clearly described, so
- someone else can use it in his/her studies
- it arouses other scientists’ interest and
- allows others to reproduce the results.

By submitting a manuscript you are basically trying to sell your work to your community…

Source: [How To Get Your Article Published: From title to references, From submission to revision](https://www.elsevier.com/books-and-journals) Presented by: Anthony Newman, Elsevier, Amsterdam, Birmingham, Nov. 2010
Subject Bubble Chart - Malaysia

Source: http://www.scimagojr.com/mapgen.php?maptype=bc&country=MY

©2017-2018 Nader Ale Ebrahim
Introduction of bibliometrics

• Bibliometrics can be defined as the quantitative analysis of science and technology performance and the cognitive and organizational structure of science and technology.

• Key concepts in bibliometrics are output and impact, as measured through publications and citations.

Informetrics, scientometrics, bibliometrics, webometrics, cybermetrics and altmetrics

Bibliographies – largely references

Web presence, visibility and impact – links, pages, documents

Whole Internet, cyberspace

Science of Science

Bibliometrics

Cybermetrics

Altmetrics

Scientometrics

Webometrics

Alternative metrics – views, downloads, web citations, etc

<table>
<thead>
<tr>
<th>Term</th>
<th>Short Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bibliometrics</strong></td>
<td>Bibliometrics is a set of methods to quantitatively analyse academic literature and scholarly communications.</td>
</tr>
<tr>
<td><strong>Informetrics</strong></td>
<td>Informetrics is the study of quantitative aspects of information. This includes the production, dissemination, and use of all forms of information, regardless of its form or origin.</td>
</tr>
<tr>
<td><strong>Scientometrics</strong></td>
<td>Scientometrics is the study of quantitative features and characteristics of science, scientific research and scholarly communications.</td>
</tr>
<tr>
<td><strong>Webometrics</strong></td>
<td>Webometrics is the study of quantitative features, characteristics, structure and usage patterns of the world wide web, its hyperlinks and internet resources.</td>
</tr>
<tr>
<td><strong>Cybermetrics</strong></td>
<td>Cybermetrics is an alternative term for Webometrics.</td>
</tr>
<tr>
<td><strong>Librametrics</strong></td>
<td>Librametrics is a set of methods to quantitatively analyse availability of documents in libraries, their usage and impact of library services to its user community.</td>
</tr>
<tr>
<td><strong>Patentometrics</strong></td>
<td>Patentometrics is a set of methods to quantitatively analyse patent databases, patent citations and their usage patterns.</td>
</tr>
<tr>
<td><strong>Altmetrics</strong></td>
<td>Altmetrics is new metrics proposed as an alternative to the widely used journal impact factor and personal citation indices like the h-index. The term altmetrics was proposed in 2010, as a generalization of article level metrics, and has its roots in the twitter #altmetrics hashtag.</td>
</tr>
<tr>
<td><strong>Article Level Metrics (ALM)</strong></td>
<td>Article level metrics is an alternative term for Altmetrics.</td>
</tr>
</tbody>
</table>

Reasons for bibliometric studies

• Understanding of *patterns*
  – discovery of regularities, behavior
  – “order out of documentary chaos” [Bradford, 1948]

• Analysis of *structures & dynamics*
  – discovery of connections, relations, networks
  – search for regularities - possible predictions

• Discovery of *impacts, effects*
  • relation between entities & amounts of their various uses
  – providing support for making of decisions, policies

Source: [https://comminfo.rutgers.edu/~tefko/Courses/e530/Lectures/Lecture09%20Bibliometric%20searching.ppt](https://comminfo.rutgers.edu/~tefko/Courses/e530/Lectures/Lecture09%20Bibliometric%20searching.ppt)
Use of evaluative bibliometrics

• Academic, research & government institutions for:
  – promotion and tenure, hiring, salary raising
  – decisions for support of departments, disciplines
  – grants decision; research policy making
  – visualization of scholarly networks, identifying key contributions & contributors
  – monitoring scholarly developments
  – determining journal citation impact

• Resource allocation:
  – identifying authors most worthy of support;
  – research areas most worthy of funding
  – journals most worthy of support or purchase; etc.

Source: https://comminfo.rutgers.edu/~tefko/Courses/e530/Lectures/Lecture09%20Bibliometric%20searching.ppt
Applications of Scientometrics and Bibliometrics in Research Evaluation

• For Institution/ Collaborative Research Group

• For a scientist:
  – Mapping of collaborations, collaborating institutions, collaborating countries, co-authors, highly cited papers, top publishing journals, percentage of cited vs. uncited papers, percentage of self-citations, author-level indicators such as h-index, i10-index, etc.

• For a country

• For a journal

# Major Citation Databases

<table>
<thead>
<tr>
<th>Name of Citation Database</th>
<th>Launched</th>
<th>Scope</th>
<th>Owned by</th>
<th>Terms of Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science Citation Index (SCI)</td>
<td>1964</td>
<td>Global</td>
<td>Thomson Reuter</td>
<td>Subscription-based with Web of Science</td>
</tr>
<tr>
<td>Social Science Citation Index (SSCI)</td>
<td>1972</td>
<td>Global</td>
<td>Thomson Reuter</td>
<td>Subscription-based with Web of Science</td>
</tr>
<tr>
<td>Arts &amp; Humanities Citation Index (A&amp;HCI)</td>
<td>1978</td>
<td>Global</td>
<td>Thomson Reuter</td>
<td>Subscription-based with Web of Science</td>
</tr>
<tr>
<td>Scopus</td>
<td>2004</td>
<td>Global</td>
<td>Elsevier B.V.</td>
<td>Subscription-based</td>
</tr>
<tr>
<td>Google Scholar Citations</td>
<td>2004</td>
<td>Global</td>
<td>Google Inc.</td>
<td>Freely Available Online</td>
</tr>
<tr>
<td>Microsoft Academic Search</td>
<td>2003</td>
<td>Global</td>
<td>Microsoft Research</td>
<td>Freely Available Online</td>
</tr>
<tr>
<td>CiteSeerX (CiteSeerX.ist.psu.edu)</td>
<td>1997</td>
<td>Global; Subject specific</td>
<td>Pennsylvania State University, USA</td>
<td>Freely Available Online</td>
</tr>
</tbody>
</table>

Thomson Reuters (formerly ISI) has been the authority on citation data for over 50 years.
Scopus (Launched 2004)

- Scopus is the largest abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings. Delivering a comprehensive overview of the world's research output in the fields of science, technology, medicine, social sciences, and arts and humanities, Scopus features smart tools to track, analyze and visualize research.
- As research becomes increasingly global, interdisciplinary and collaborative, you can make sure that critical research from around the world is not missed when you choose Scopus.

Source: http://www.elsevier.com/online-tools/scopus
A Comparison between Two Main Academic Literature Collections: Web of Science and Scopus Databases

SCOPUS - Open innovation

Analyze search results

1592 document results

Choose date range to analyze: 2003 to 2018

Documents by year

©2017-2018 Nader Ale Ebrahim
Keyphrase analysis

Top 50 keyphrases by relevance, based on 2,597 publications | Learn about keyphrase calculations

Open innovation

©2017-2018 Nader Ale Ebrahimi
SciVal - Elsevier Research Intelligence
Virtual Teams

Top 50 keyphrases by relevance, based on 3,178 publications | Learn about keyphrase calculations

Human computer interaction
Information technology
Virtual reality
Societies and institutions
Students
Research
Industry
Sensory perception
Computers
Technology
Robots
Human resource management
Experiments
Education
Curricula
Information systems
Experiments
User interfaces
Management
Personnel training
Competition
Engineering
Social networking (online)
Innovation
Internet
Engineering education
Design
Reviews
Dynamics
Surveys
Software engineering
Applications
Knowledge management
Control
Learning
Teaching
Setting
E-learning
Tools
Models
Setting

AAA relevance of keyphrase | declining | growing (2011-2015)

→ Analyze in more detail

©2017-2018 Nader Ale Ebrahim
Open innovation

Overall research performance

Scholarly Output: 2,597

Field-Weighted Citation Impact: 1.34

International Collaboration: 547

Views Count: 106,976

Citation Count: 10,395

View list of publications
Citation report for 992 results from Web of Science Core Collection between 1980 and 2018.

You searched for: TITLE: ("open innovation")...More

This report reflects citations to source items indexed within Web of Science Core Collection. Perform a Cited Reference Search to include citations to items not indexed within Web of Science Core Collection.

- Total Publications: 992
- h-index: 52
- Sum of Times Cited: 12,197
- Citing articles: 5,454
- Average citations per item: 12.3
- Without self citations: 8,279
- Without self citations: 4,802

©2017-2018 Nader Ale Ebrahim
Web of Science - Open innovation
Author Level Indicators

- H Index
- i10 index
- Articles with Citation Data
- Average Citation per Article
- Total Citations Count
- Cited vs. Uncited Papers Ratio
- Eigenfactor® score
- Impact Points
- RG Score

CHECK YOUR SCORE

• H-Index?
• i10-Index?
• g-Index?
• Citations Count?
• Articles with citation?
• Average citations per article?
• Impact Points?
• RG Score?
Citations as a proxy of scientific impact

Visibility
Relevance
Quality
Reputation
Random factors

Scientific impact

H-index
H-index Example

Source: http://www.slideshare.net/librarian68/overview-of-citation-metrics

©2017-2018 Nader Ale Ebrahim
“Hirsch, who has a $h$-index of 49, says that a "successful scientist" will have an index of 20 after 20 years; an "outstanding scientist" will have an index of 40 after 20 years; and a "truly unique individual" will have an index of 60 after 20 years.”

All three publication lists have a Hirsch Index of 5

<table>
<thead>
<tr>
<th>Author 1</th>
<th>Author 2</th>
<th>Author 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 P1</td>
<td>30 P1</td>
<td>100 P1</td>
</tr>
<tr>
<td>10 P2</td>
<td>10 P2</td>
<td>70 P2</td>
</tr>
<tr>
<td>8 P3</td>
<td>8 P3</td>
<td>8 P3</td>
</tr>
<tr>
<td>6 P4</td>
<td>6 P4</td>
<td>6 P4</td>
</tr>
<tr>
<td>5 P5</td>
<td>5 P5</td>
<td>5 P5</td>
</tr>
<tr>
<td>4 P6</td>
<td>1 P6</td>
<td>4 P6</td>
</tr>
<tr>
<td>4 P7</td>
<td>2 P7</td>
<td>4 P7</td>
</tr>
<tr>
<td>4 P9</td>
<td>4 P8</td>
<td>4 P9</td>
</tr>
</tbody>
</table>

Source: Henk F. Moed, (2011) "New developments in electronic publishing and bibliometrics", CWTS, Leiden University, Netherlands & Elsevier, Amsterdam, Netherlands
Different bibliometric distributions have the same H-Index

Predicting scientific success

H-index prediction


- H-index: 5
- # articles: 12
- Years since first article: 8
- # distinct journals: 5
- # articles in 'top' journals*: 1

Future h-index


# distinct journals: number of different journals where you have published in.

Note: The equations and the calculator model people that are in Neurotree, have an h-index 5 or more, and are between 5 to 12 years after publishing first article.
My recent publications

Qualitative and solar hydrogen gas 2001 to 2014
Mohammad Raza Maghami, Shahriz Ebrahim, Chandima Gamini

Iranian Journal of Public Health

Mediterranean Journal of Social Sciences

The Rise of “Trade Liberalization”: Bibliometric Analysis

Shalini Nagaratnam, Nader Ale Ebrahim, Muzafar Shah Habibullah

ABSTRACT

The purpose of this research is to assess the universal scientific trends and contributions published on trade liberalization over a period of 35 years (1986-2021). The data was obtained from Thomson Reuters Web of Science. The Kruskal-Wallis test was applied to test the null hypothesis that the observed trends are not significantly different. The results show that between the total citations attracted by articles published by author 1 and those published by author 2, there is a significant difference in the field of the study. This is in line with the focus on trade liberalization in the field.
Questions?

E-mail: aleebrahim@um.edu.my

Twitter: @aleebrahim

www.researcherid.com/rid/C-2414-2009
http://scholar.google.com/citations

Nader Ale Ebrahim, PhD

Centre for Research Services
Institute of Management and Research Services
University of Malaya, Kuala Lumpur, Malaysia
www.researcherid.com/rid/C-2414-2009
http://scholar.google.com/citations
References


My recent publication:


My recent presentations:


