A Study on Automated Citation Analysis in the Field of Library and Information Science Literature

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Abstract: The commonly used bibliometric methods are citation analysis and content analysis. Content analysis or textual analysis is methodology used in the library science for studying the content of communication. Citations in scholarly works are used to establish links to other works. It is one of the most widely used methods of bibliography and studies reference to and from documents. Citation analysis reveals interesting information about knowledge producers in terms of their information seeking behavior and usage of various information sources. It can highlight the familiarity, awareness and usage of knowledge producers regarding the online and print formation sources. Citation analysis examines the frequency, patterns and graphs of citations in articles and books (Garfield, 1983). This chapter satisfies the objective set for the study i.e. “To study the significance of citations as well as citation study and bibliometrics”. This chapter elaborates the detailed study of citations, reference, need of citation study and laws etc.

Keywords: Bibliometric, Citation analysis, studied, alphanumeric expression

Introduction:
Citation analysis uses citations in scholarly works to establish links. Many different links can be ascertained, such as links between authors, between scholarly works, between journals, between fields, or even between countries. Citations both from and to a certain document may be studied. One very common use of citation analysis is to determine the impact of a single author on a given field by counting the number of times the author has been cited by others. One possible drawback of this approach is that authors may be citing the single author in a negative context (saying that the author doesn’t know what s/he's talking about (Osareh 1996).

Definition:
Garfield (1983) and Richard (2010) defined citation analysis as “the examination of the frequency, patterns, and graphs of citations in articles and books”. Content analysis uses citations in scholarly works to establish links to other works or other researchers. Citation analysis is one of the most widely used methods of bibliometrics.

Martin (1976), defined citation analysis as, “Analysis of the citations or references both which forms part of the scholarly publication.”

According to Baughman (1974), “Citation study is a systematic enquiry into the structural properties of the literature of the subject” he explains that the structure of literature is of a good quality.

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What is citation: “Citation is a reference to a published or unpublished source (not always the original source). More precisely, a citation is an abbreviated alphanumeric expression (e.g. Newell84) embedded in the body of an intellectual work that denotes an entry in the bibliographic references section of the work for the purpose of acknowledging the relevance of the works of others to the topic of discussion at the spot where the citation appears”.

What is citation analysis: “When one author cites another author, a relationship is established. Citation analysis uses citations in scholarly works to establish links. Many different links can be ascertained, such as links between authors, between scholarly works, between journals, between fields, or even between countries. Citations both from and to a certain document may be studied. One very common use of citation analysis is to determine the impact of a single author on a given field.”
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author on a given field by counting the number of times the author has been cited by others”.

Types of citation analysis:

Bibliographic citation: Bibliographic coupling, like Co-citation, is a similarity measure that uses citation analysis to establish a similarity relationship between documents. Bibliographic coupling occurs when two works reference a common third work in their bibliographies. It is an indication that a probability exists that the two works treat a related subject matter.

Co citation: Co-citation, like Bibliographic Coupling, is a semantic similarity measure for documents that makes use of citation relationships. Co-citation is defined as the frequency with which two documents are cited together by other documents. If at least one other document cites two documents in common these documents are said to be co-cited. The more co-citations two documents receive, the higher their co-citation strength, and the more likely they are semantically related.

Objective of citation analysis:
The specific objectives of the present study are to know

- The distribution of citations in the major branches of library and information science.
- The authorship patterns
- Geographic scattering of cited journals
- Language wise distribution of cited journals.
- The chronological scattering of cited periodicals
- The self citing rate and subject wise breakup of cited journals

Uses of citation analysis study:

- It is increasingly used to measure quality within universities publication.
- It is used by national and international university rankings tables of disciplinary journals.
- It is used in tenure review processes and job/promotion applications
- It is used in assessing grant applications. Where appropriate, grant applicants will be required to provide detailed information relating to their publishing output. This could include: evidence of publishing in top journals; an author’s H index and citations’ counts, where relevant.
- It is used to identify “top” journals in specific disciplines.
- To establish the impact that a particular work has had by identifying which other authors based their work upon it or cited it within their own papers.
- To learn more about a field or a topic by identifying seminal works in that area.
- To determine what impact a particular author has had within his/her own discipline and beyond by looking at his/her total number of citations broken down by discipline and by country.
- For promotion and tenure purposes by looking at the quality of sources where a scholar’s work has been published and cited

Applications of Citation Analysis in online mode:

Back in our day we had to figure out arcane citation formats by poring through dusty old style manuals. This was during that awkward window after people started putting good information on the internet, but before the style manuals told you how to cite web documents. Your students don’t know how lucky they are to have handy pieces of software to do this arduous work for them. Below is Instructify’s list of the five best bibliography and citation applications out there. Pass these on to your students and spare them the agony of building bibliographies the hard way.

Word 2007:

Number five on our list really isn’t an application at all, as it’s part of Microsoft Word 2007. While not everybody has a copy of Word 2007, the folks that do don’t even have to leave their word processor to generate a professional-looking bibliography. If you don’t use Word, check out the next four apps.

OttoBib:
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OttoBib is like Saran Wrap — its best feature is its worst. If you know a book’s ISBN number, that’s all you need for OttoBib to build a citation for you in the format you need. If you don’t, or if you’re citing something that’s not a book, you’ll need to find another application. However, Otto Bib’s simplicity is useful enough for you and your students to bookmark come term-paper time.

Easy Bib:
Easy Bib goes far beyond the usual assortment of sources. It lets you easily cite federal testimony, photographs, emails, patents, paintings, executive orders, and literally dozens more types of documents. Unless you’re trying to cite something scrawled on the back of a napkin at Chili’s, Easybib has you covered. It too lets you search by ISBN. EasyBib loses points, however, for only citing MLA format for free — if you’re writing in APA or Chicago style, you’ll have to pay up nine bucks per year, which isn’t a lot, but you can find other apps to cite those formats for free.

Citation Machine:
Though you can’t search by ISBN, that’s about the only thing Citation Machine doesn’t do. Just enter basic info like the title, author, publisher, type of work, all that stuff, and Citation Machine will give you your citation in whatever format you require. It’s simple, straightforward, free, and as a bonus, its name tells you exactly what it does (something that’s always worth a few points in my book).

Bib Me:
There can be only one number one, and BibMe is it. BibMe is the easiest citation app out there, incorporating many of the best features of its competitors. It lets you search by ISBN, title, or author. You can format your citation for books, journals, newspapers, periodicals, the web, whatever you need. It has an autofill function to save time. BibMe will format your bibliography for MLA, APA, Chicago or Turabian, then export it all to Microsoft Word for easy insertion into a research paper. If there’s a better bibliography application out there, it probably does your taxes or something, too.

Are you an ardent user of one of these? Did we blatantly ignore the best citation app on the web? Make your case
1-EasyBib:
Create accurate MLA, APA, and Chicago style citations in seconds by scanning a book bar code or by typing the name of a book. Build and manage your works cited. Once done, email your citations and then export your citations to EasyBib.com's popular bibliography management service.

2- iSource:
Writing a bibliography can be hard. Keeping track of your resources, quotes and how to format them can be downright daunting. iSource does quick work of formatting bibliography entries and in-text citations for you, saves these formatted entries all in one place and is simple and easy to use. iSource even includes a list of the most common formatting rules for you to use as a reference guide.
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3- **Quick Cite**

Snap a picture of a book's barcode and send a citation for the book to your email. Choose from APA, MLA, Chicago, or IEEE styles.

4- **Mendely**

Mendely is an essential tool for researchers, students, librarians and professionals who rely on easy access to the world's research. Mendely is your personal research library. Carry thousands of PDFs in your pocket. Read and annotate them on the go, search your entire library, and easily sync everythin between your iPhone, iPad, and Mendeleay Desktop (available on Windows, Mac, and Linux).

5- **Endnote:**

Find, store, create and share from anywhere with Endnote® - the most powerful research productivity tool on the market. With flexible tools for searching, organizing and creating research, the EndNote® for iPad app extends your ability to stay on top of cutting edge research and connect with your EndNote®

6- **myBib:**

my Bib is a mobile BibTeX bibliography manager for iOS. Just enter an ISBN (with barcode scanner or manually) and the additional information like...
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title, author, publisher, artworks etc. will be added automatically. Great for academics or for keeping track of what you read. Add and save your own comments. Export your whole bibliography or parts either in text or in BibTeX format for storing it on your Mac / PC or for adding it to your scientific paper.

7- Reference Me:

Scan book and journal barcodes or enter website URLs to create your bibliography/citations in seconds. Reference ME creates references in Harvard, Chicago, Vancouver, MHRA, MLA, Oxford, APA and Turabian. You can request custom styles at the online platform.

Online Tools for Citation Analysis:

There are several tools available for citation analysis, some are subscription-based and others are free. Each tool has its strengths and weaknesses and none of them covers the entire universe of scholarly publications. Therefore, it is important to use more than one tool to get a fuller picture of the scholarly impact of an author or a journal. Below is a table highlighting the characteristics of three major citation analysis tools:

<table>
<thead>
<tr>
<th>Subject Focus</th>
<th>Science, Technology, Social Sciences, Arts &amp; Humanities</th>
<th>Science, Technology, Medical, Social Sciences, Arts &amp; Humanities</th>
<th>Medical, Scientific, Technical, Business, Social Sciences, Arts &amp; Humanities</th>
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<tbody>
<tr>
<td>Components</td>
<td>Composed of 3 citation indexes:</td>
<td></td>
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<tr>
<td></td>
<td>• Science Citation Index Expanded — to 1900</td>
<td></td>
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<td></td>
<td>• Social Sciences Citation Index – to 1956</td>
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<td></td>
<td>• Arts &amp; Humanities Citation Index – to 1975</td>
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<td></td>
<td>• Life Sciences</td>
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<td></td>
<td>• Health Sciences</td>
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<tr>
<td></td>
<td>• Sciences, 800 titles (including 100% coverage of Medline titles)</td>
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<td></td>
<td>• Physical Sciences</td>
<td></td>
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<tr>
<td></td>
<td>• 7,200 titles</td>
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<td></td>
<td>• Social Sciences</td>
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<td></td>
<td>• 5,300 titles</td>
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<table>
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<tr>
<th>Coverage</th>
<th>Over 10,000 journals</th>
<th>16,500 journals</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Span</td>
<td>Some journal files going back to 1900</td>
<td>38 million records, of which:</td>
<td>Theoretically, whatever is available on the Web</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 19 million records include references going back to 1996 (78% include references)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• 19 million pre-1996 records go back as far as 1823</td>
<td></td>
</tr>
<tr>
<td>Updating</td>
<td>Weekly</td>
<td>1-2 times a week</td>
<td>Monthly on average</td>
</tr>
<tr>
<td>Strengths</td>
<td>• Deeper back-files especially for Science Journals</td>
<td>• User friendly search interface</td>
<td>• Provides a more comprehensive picture of scholarly impact as it indexes non-traditional sources not covered by WOS and Scopus.</td>
</tr>
<tr>
<td></td>
<td>• While controversial, its journal citation reports, impact factors, and h-index are most widely used.</td>
<td>• Broader coverage of journals (16,500 versus 10,000 in WOS)</td>
<td>• Includes peer-reviewed papers, theses, books, abstracts, and articles from academic publishers, professional societies, preprint repositories, universities, and other scholarly organizations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Downloadable reference list</td>
<td>• Better coverage of newer materials than both WOS and Scopus</td>
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<table>
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<tr>
<th>Weaknesses</th>
<th>Can lead to low citation counts due to errors in citations provided by authors, and different citation styles used by journals leading to poor indexing</th>
<th>Citation tracking is limited to the relatively narrow time span of 1996+</th>
</tr>
</thead>
</table>

**Challenges of citation analysis study:**
Citation analysis like any other study is not free from criticism. The following are some of the limitations of citation analysis study…

1. The study is confined to the dissertations submitted to dept of library and information science for the fulfillment of library science.
2. The study is confined to only available dissertations in library and in the department.
3. The study is completely confined to the documentary.
4. Citation and co-citation counts are just part of the available experimental data, thus the assigning the relative weight age to citation is objectionable keeping in view the totality of information.
5. Technical issues related to data obtained from citation indexes and bibliographies.
6. Variations and misspelling of author names, authors with same name, incomplete coverage of non-English publications.

**Reference:**
2. http://www.lis.illinois.edu/academics/degrees/cas/cas-projects
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27. shodhganga.inflibnet.ac.in/bitstream/10603/18612/8/08_chapter%203
30. K Kumar, TT Reddy - International Journal of Digital Library Services, 2012 - ijodls.in
31. instructify.com/2009/07/16/top-5-citation-applications
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