



United Nations  
Educational, Scientific and  
Cultural Organization

# Research Evaluation Metrics

## Module

# 4

## Research Evaluation Metrics

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# MODULE INTRODUCTION

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At present, research is going on all over the world practically in all subjects and generating millions of research articles and other documents. In some cases, the research works are generating very good results, in most cases mediocre, and in some cases negative results. Basing research results, awards, fellowships, promotion, selection for a job, etc are decided. For all these, evaluation of research output becomes sine qua non.

Centuries ago when the number of researchers were less, peers used to evaluate research. With the passage of time, the number of researchers increased, research areas proliferated, research output multiplied. The trend continued and after World War II the research workers and their outputs started growing exponentially. Today even on a moderate estimate there are around or more than one million researchers and they produce more than two million research papers and other documents per year.

In such a mind-boggling situation, research evaluation is continuously proving to be a tough job. For any award and fellowship there may be scores or hundreds of nominees. From among these, how to select the best candidate has turned out to be a big question. Peer reviews in many cases are proving to be subjective. As a result decisions are getting biased.

In 1963 *Science Citation Index (SCI)* appeared on the scene covering the literature of 1961. A few years hence, Eugene Garfield, the founder of *SCI*, prepared a list of 50 most cited scientists basing first author citation of 1967 *SCI*. The paper titled ‘Can Nobel Prize Winners be Predicted?’ was presented in 1968 (Garfield & Malin, 1968). In the very next year i.e. 1969, two scientists figuring in the list, e.g. Derek H R Barton and Murray Gell-Mann received the coveted Prize. This vindicated the usefulness of citation analysis. Every year several scientists belonging to the field of Physics, Chemistry, Physiology & Medicine receive the Nobel Prize. If out of a list of 50, two get the award it is no mean achievement for a prediction.

This prediction opened the floodgate of citation analysis as it was free from subjectivity. Even for peers, citation analysis became a useful tool. However, citation analysis was not free from faults. Even Garfield remarked – ‘Using citation analysis for evaluation papers is a tricky business. It is fraught with opportunities for error’ (Garfield, 1983).

For research evaluation, some other indicators were needed. Citation analysis along with peer review ensured better judgment in innumerable cases. Something more was needed to make the judgment foolproof to a great extent. The advent of World Wide Web (WWW) provided the opportunity. Quite a number of indicators have come up based on the data available in WWW.

This module dwells on a number of methods (including old and new) available for research evaluation. The module comprises the following four units:

- Unit 1. Introduction to Research Evaluation Metrics and Related Indicators.
- Unit 2. Innovations in Measuring Science and Scholarship: Analytical Tools and Indicators in Evaluation Scholarship Communications.
- Unit 3. Article and Author Level Measurements, and
- Unit 4. Online Citation and Reference Management Tools.

Brief overviews of the units are presented below.

**Unit 1** encompassed and discussed citation analysis, use of citation-based indicators for research evaluation, common bibliometric indicators, classical bibliometric laws, author level indicators using authors' public profiles, article level metrics using altmetric tools. It is to be noted that author level indicators and article level metrics are new tools for research evaluation. Author level indicators encompasses h index, citations count, i10 index, g index, articles with citation, average citations per article, Eigenfactor® score, impact points, and RG score. Article level metrics or altmetrics are based on Twitter, Facebook, Mendeley, CiteULike, and Delicious which have been discussed. All technical terms used in the Unit have been defined.

**Unit 2** deals with analytical tools and indicators used in evaluating scholarly communications. The tools covered are The Web of Science, *Scopus*, *Indian Citation Index (ICI)*, CiteSeerX, Google Scholar and Google Scholar Citations. Among these all the tools except *Indian Citation Index (ICI)* are international in scope. *ICI* is not very much known outside India. It is a powerful tool as far Indian scholarly literature is concerned. As Indian journals publish a sizable amount of foreign literature, the tool will be useful for foreign countries as well. The analytical products with journal performance metrics *Journal Citation Reports (JCR®)* has also been described. In the chapter titled New Platforms for Evaluating Scholarly Communications three websites i.e. SCImago Journal & Country Rank (SJR) [ScimagoJR.com], eigenFACTOR.org, JournalMetrics.com and one software called Publish or Perish (POP) Software have been discussed.

Article and author level measurements have been discussed in **Unit 3**. Author and researcher identifiers are absolutely essential for searching databases in the WWW because a name like D Singh can harbour a number of names such as Dan Singh, Dhan Singh, Dhyan Singh, Darbara Singh, Daulat Singh, Durlabh Singh and more. The ResearcherID.com, launched by Thomson Reuters, is a web-based global registry of authors and researchers that individualises each and every name. Open Researcher and Contributor ID (ORCID) is also a registry that uniquely identifies an author or researcher. Both have been discussed in this Unit. Article Level Metrics (Altmetrics) has been treated in this Unit with the discussion as to how altmetrics can be measured with Altmetric.com and ImpactStory.org. Altmetrics for Online Journals has also been touched. There are a number of academic social networks of which ResearchGate.net, Academia.edu, GetCited.org, etc. have been discussed. Regional journal networks with bibliometric indicators are also in existence. Two networks of this type such as SciELO – Scientific Electronic Library Online, and Redalyc have been dealt with.

The last unit (**Unit 4**) is on online citation and reference management tools. The tools discussed are Mendeley, CiteULike, Zotero, Google Scholar Library, and EndNote Basic. The features of all the management tools have been discussed with figures, tables, and text boxes.

*Written by B K Sen*

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## UNIT 4 ONLINE CITATION AND REFERENCE MANAGEMENT TOOLS

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### Structure

- 4.0 Introduction
- 4.1 Learning Outcomes
- 4.2 Online Citation and Reference Management Tools
  - 4.2.1 Mendeley
  - 4.2.2 CiteULike
  - 4.2.3 Zotero
  - 4.2.4 Google Scholar Library
  - 4.2.5 EndNote Basic
- 4.3 Let Us Sum Up
- 4.4 Check Your Progress

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### 4.0 INTRODUCTION

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The article level metrics, as discussed in Unit 3 of this Module, emphasises saving of a bibliographic record of a paper in online reference management tools freely available to researchers across the world. The article metrics tools Altmetric.com and ImpactStory.org specifically count ‘saving’ or social bookmarking of a particular reference in online reference managers at CiteULike.org<sup>50</sup> and Mendeley<sup>51</sup>.com. This ‘saving’ can occur in an individual researcher’s online library or a group’s online library.

You may recall an Altmetric Badge that mentions “52 readers on Mendeley, 33 readers on CiteULike”. This indicates the number of times a particular article is saved or social bookmarked by different users or e-groups in the respective websites.

This Unit highlights five freely available online reference managers, namely, Mendeley, CiteULike, Zotero<sup>52</sup>, Google Scholar Library and EndNote Basic. Of these five online reference managers, two have launched freely available desktop reference management software which can connect to their respective online databases and pull matching records to desktop system. The desktop version of reference managers freely available to researchers are: Mendeley and Zotero.

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<sup>50</sup> <http://www.citeulike.org/>

<sup>51</sup> <http://www.mendeley.com/en/2/1/>

<sup>52</sup> <https://www.zotero.org/>

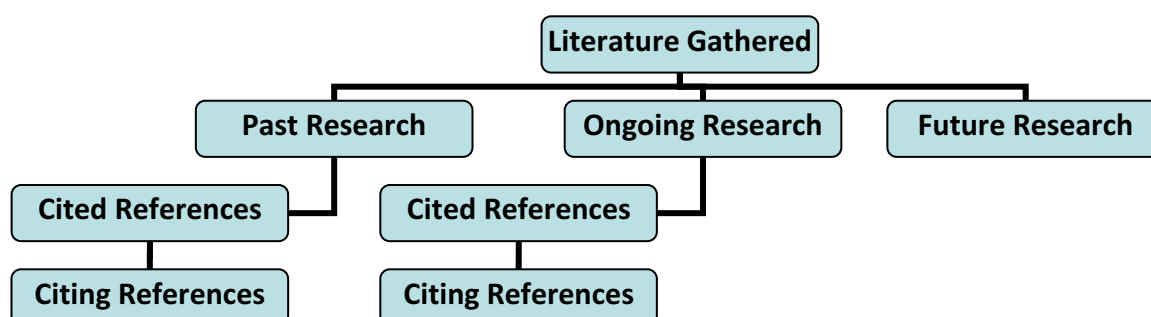
## 4.1 LEARNING OUTCOMES

*At the end of this unit, you are expected to be able to*

- Use online and desktop versions of reference managers for organizing your references, list of publications, reading lists and citations; and
- Use collaboration features of online reference managers for discussing professional or scholarly matters.

## 4.2 ONLINE CITATION AND REFERENCE MANAGEMENT TOOLS

Literature search is a continuous process in a researcher's life. Quantum of literature is available to a senior researcher is very high. Keeping all gathered literature systematically in a single place for easy retrieval and citation is a very laborious and time-consuming task. In the collection of a senior researcher with a significant number of publications, there will be enough materials that are related to his past research works, ongoing research works and forthcoming research works. Many of his past research works also got published and received a number of cited references. On the other hand, his published papers have also citing references figuring in his own papers. So, this senior researcher now has a large collection of literature from past, ongoing and forthcoming research works plus cited references. Figure 56 depicts quantum of research literatures available with a senior researcher.



**Figure 56: Research Literature and References Available to a Senior Researcher**

Now, the major task for a researcher is to systematically arrange and keep all these gathered literatures in a single place. In early years of a researcher's professional life, these papers were made available in computer folders or tagged printed folders, based on the format of each paper. There is always a possibility of getting lost full-text contents of some important papers in paper-based filing system. Hence, a number of reference management software (both proprietary and open source) has come up to aid researchers. Since the beginning of the twenty-first century, a number of web-based solutions related to online reference management have become available to the communities of researchers. The best part of these web-based solutions is that these websites are freely available to global researchers engaged in collaborative research projects. One researcher can save bibliographic information of a collection of research papers and then can share this collection to his collaborative research

partners or co-authors. Some web-based services also help a researcher in saving bibliographic information of all his published papers, cited references and citing references, so that he/she can easily retrieve, view, read or share a relevant paper.

Table 22 shows commonly used online reference managers freely available to the researchers around the world. These web-based platforms help researchers collect, save, retrieve and share references for future works as well as enrichment with social bookmarking of bibliographic information. Some of the platforms offer functionality of creation and participation in social groups, where research collaborators can participate in interactive group for collaborative knowledge creation. These platforms also help researchers to connect to online bibliographic and citation databases and collect bibliographic records from these databases. The online reference managers mentioned in Table 22 are Mendeley, CiteULike, Zotero, EndNoteBasic and Google Scholar Library. As indicated in Table 22, some of them have their respective Bookmarklet to gather bibliographic information from an article's webpage of an online journal, and save this bibliographic record in signed-in library of the user. These five online platforms are discussed in detail in the following Sections. Some online reference managers also have desktop applications to help a researcher in maintaining a library of bibliographic records in researcher's personal computer or local disks. Desktop applications from Mendeley and Zotero are freely available, whereas EndNote has a priced software application.

Table 23 shows an indicative list of related products available to the researchers' communities. Two desktop reference managers, namely BibExcel and Publish or Perish (PoP) Software – both are available freely, but have somewhat different functionalities. PoP software is discussed in Unit 23 of this Module. RefWorks is another useful online reference manager only available to its customers through subscription or an annual fee.

**Table 22: Freely Available Common Online Reference Managers**

	<b>Mendeley</b>	<b>CiteULike</b>	<b>Zotero</b>	<b>EndNoteBasic</b>	<b>Google Scholar Library</b>
<b>Target Group</b>	Academics: researchers, students	Academics: researchers, students	Academics: researchers, students	Academics: researchers, students	Academics: researchers, students
<b>Founded/ Launched</b>	2007	2004	2006	2013	2013
<b>Mission</b>	Making science more open and collaborative.	To help you to store, organise and share the scholarly papers you are reading.	To help you collect, organize, and analyze research papers and share them in a variety of ways.	To support the advancement of science and research community with tools needed to accomplish individual, institutional and societal goals.	Your personal collection of articles in Scholar.

Owner Company/ Developer	Elsevier	Oversity Limited	Center for History and New Media at GMU, USA	Thomson Reuters	Google Inc.
Desktop Version	Yes (Free)	No	Yes (Open Source)	Yes (Priced)	No
Website	Mendeley.com	CiteULike.org	Zotero.org	Myendnoteweb.com	Scholar.google.com
Add to Altmetric Score	Yes	Yes	No	No	No
Create Social Groups	Yes	Yes	Yes	No	No
Bookmarklet	Yes	Yes	Yes	Yes	No

**Table 23: Similar Products (Reference Managers) Available to Researchers**

Name	Website	Owner Company/ Developer	Desktop Version	Type
BibExcel	www8.umu.se/inforsk/Bibexcel/	Olle Persson, Inforsk, Umeå Univ, Sweden	Yes	Open Source
Publish or Perish (PoP) Software	www.harzing.com/pop.htm	Anne-Wil Harzing	Yes	Proprietary, Free
RefWorks	www.refworks-cos.com/refworks/	ProQuest	No	Online

#### 4.2.1 Mendeley

The Mendeley is one of the most preferred online reference managers freely available to researchers across the world. Launched in 2007, it was later acquired by Elsevier B.V. – the owner company of online products – *Scopus* and *ScienceDirect*. Mendeley became leading online reference manager and PDF organizer, in terms of its popularity amongst researchers and academics. Any researcher can create a free online account in Mendeley platform, store bibliographic records as well as full-text documents in PDF or other formats and later retrieve those saved documents as per their research requirements. A personal library of a user can store all downloaded or collected literature one uses in ongoing, past or forthcoming research projects. Mendeley offers 2GB (gigabytes) personal storage space, where you can store full-text documents up to that cumulative file size limit, and 100MB (megabytes) shared storage space, where you can share full-text documents up to that cumulative file size limit. However, beyond this limit you have options to upgrade to their value-added services with a monthly or an annual price plan, namely, Mendeley Premium Packages and Mendeley Institutional Edition.

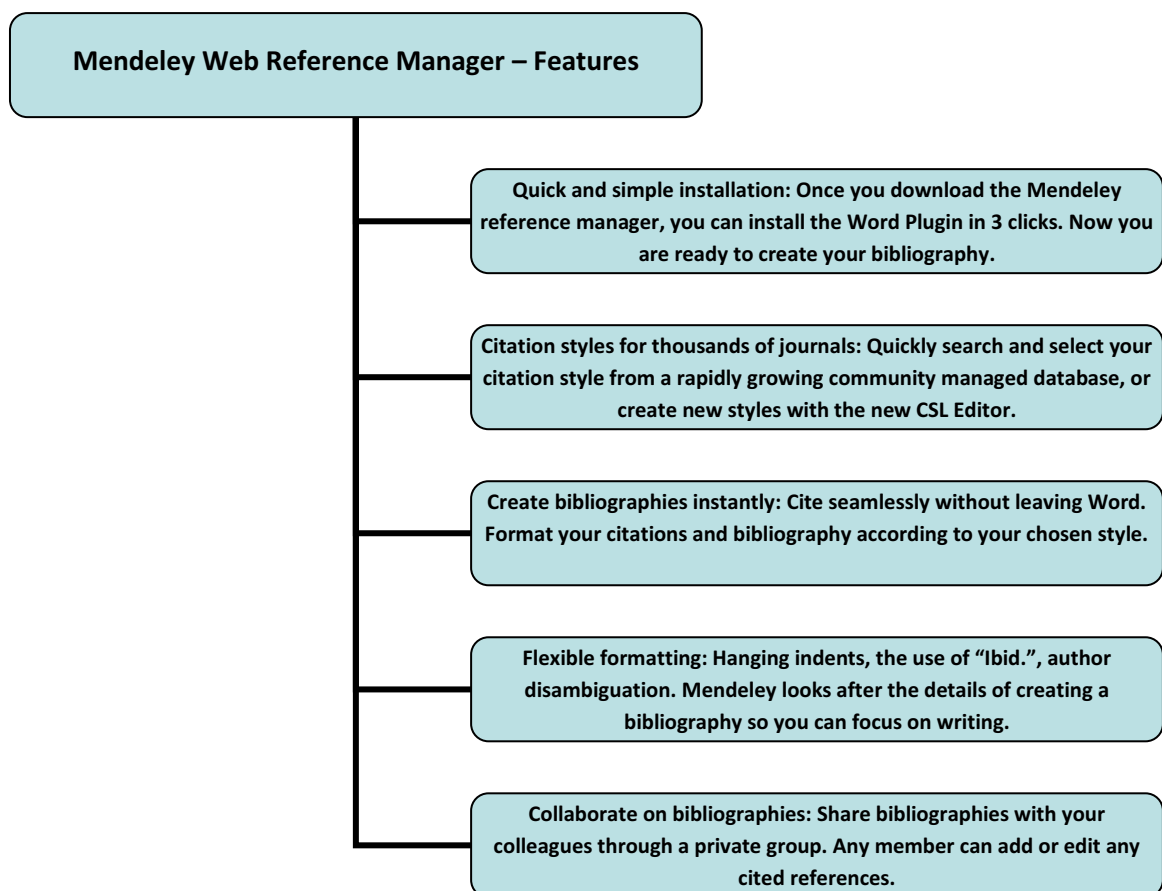
Figure 57 shows basic features of Mendeley web reference managers. Mendeley desktop application and a plug-in application for MS-Word and MS Internet Explorer can be freely downloaded. After installation in your computer of these two applications, you can synchronize your online collection



or personal library with your desktop collection. The software helps in creating bibliographies in any popular referencing or citation style, such as APA 6<sup>th</sup> Edition, MLA Style or Chicago Style. Mendeley web also helps in creating collaborative bibliographies with references shared by different members of an e-group.

Figure 58 shows basic features of Mendeley desktop application. Mendeley desktop is one of the most downloaded reference management software, where a user can organize his/her PDF collections and add annotated notes in each document file. It also has full-text search facility so that a user can easily retrieve a particular document having matching texts. Mendeley desktop facilitates web-searching of references from online databases and search engines, and retrieves search result in the application window. Figure 59 shows a screenshot of a literature search session using Mendeley desktop. This search result also helps a user to download full-text documents from online resources.

Figure 60 shows how Mendeley bookmarklet is used to import a citation from a publisher's article page and save it to a user account in Mendeley web. Figure 61 shows a popular online group Altmetrics that facilitates social sharing or social bookmarking of scholarly works on article metrics and other related concepts. An e-group also facilitates its members in online discussions, group work and research collaboration. An e-group can be created in Mendeley as an open group with open participation from anybody registered in Mendeley web, or a close group with participation by invitation only.



**Figure 57: Basic Features of Mendeley Web Reference Manager**

## Mendley Desktop – Features

Search hundreds of online resources for

Open, annotate and search PDF files.

Create bibliographies in over 5,000 styles.

Share references with colleagues.

Access and manage your research from

Figure 58: Basic Features of Mendeley Desktop Reference Manager

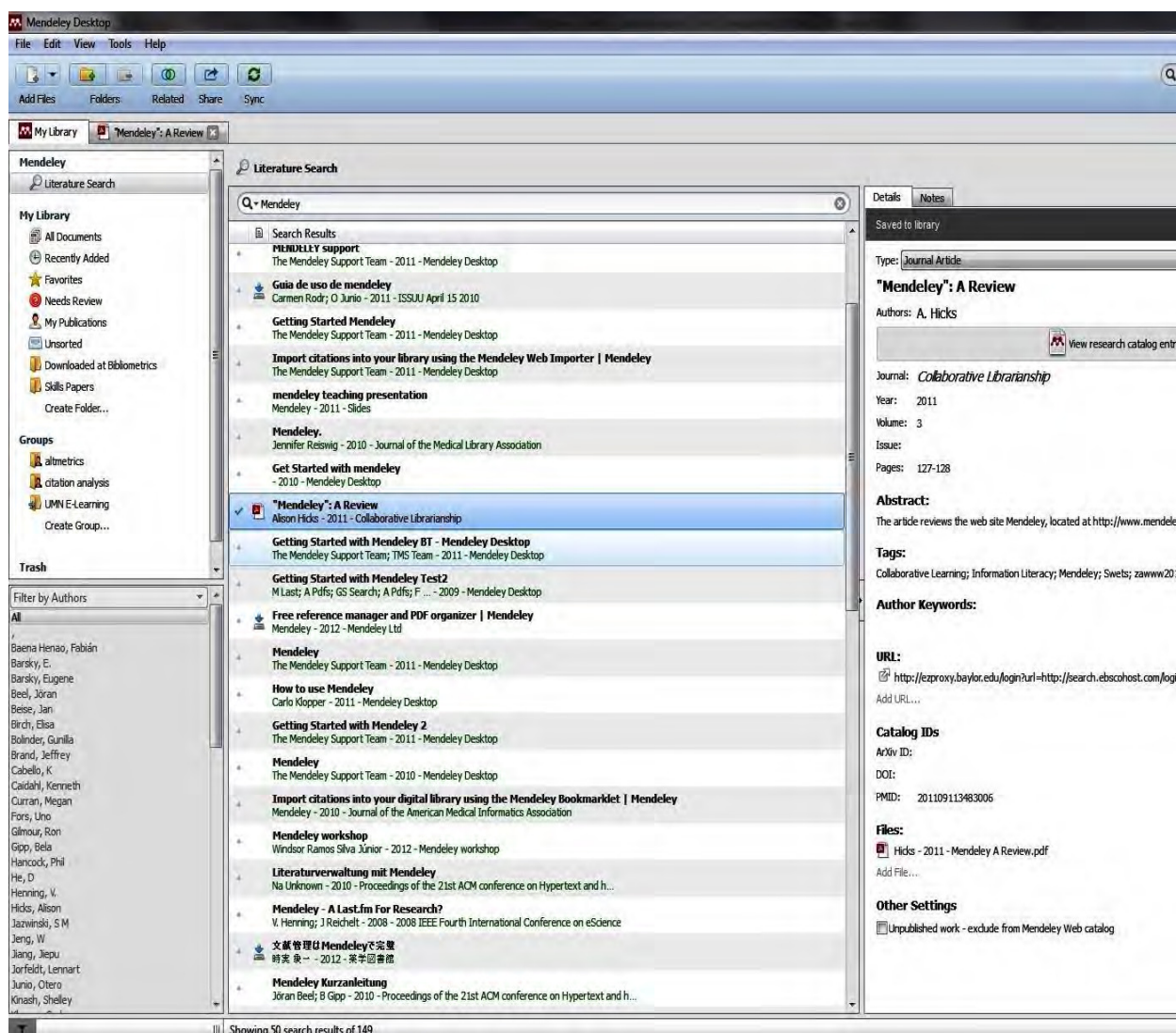


Figure 59: Literature Search using Mendeley Desktop

## Research Evaluation Metrics

The screenshot shows a web browser window with the Library Hi Tech News website. The website has a navigation bar with links: Home, Text View, Mobile, Contact Us, Site Map, Support, and Register. The main content area displays the Library Hi Tech News logo, ISSN: 0741-9058, and a search bar. Below the logo, there is a section titled "Indian Citation Index: a new web platform for measuring performance of Indian research periodicals" with a document information table. The table lists the title, author(s) (Rabishankar Giri, Anup Kumar Das), and citation (Rabishankar Giri, Anup Kumar Das, (2011) "Indian Citation Index: a new web platform for measuring performance of Indian research periodicals", Library Hi Tech News vol. 28 (3) p. 33-35). A Mendeley bookmarklet overlay is visible on the right side of the browser window, showing a "1 article found" message and a "Save" button. The bookmarklet also includes a "Download PDFs if available" checkbox and a "Learn more" link.

Document Information:	
<b>Title:</b>	Indian Citation Index: a new web platform for measuring performance of Indian research periodicals
<b>Author(s):</b>	Rabishankar Giri, Anup Kumar Das
<b>Citation:</b>	Rabishankar Giri, Anup Kumar Das, (2011) "Indian Citation Index: a new web platform for measuring performance of Indian research periodicals", Library Hi Tech News vol. 28 (3) p. 33-35

Figure 60: Use of Mendeley Bookmarklet to Import Citation to a User Account

The screenshot shows the Mendeley website interface. The top navigation bar includes the Mendeley logo, a welcome message for "anup kumar das", and links for "My Account" and "Upgrade". Below the navigation bar, there is a section for the "altmetrics" group, which has 305 papers and 486 members. The group is described as "Mendeley Computer and Information Science". The "Overview" tab is selected, showing a list of papers and members. The "Group activity" section displays a post by Bernd Markscheffel, who is inviting researchers to a conference on Webometrics, Informetrics and Scientometrics (10th WIS) in Ilmenau (Germany). The "About this group" section provides information about the group's aim and ownership by Dario Taraborelli, a researcher at a non-academic institution. The group's website is listed as altmetrics.org, and it has 593 members.

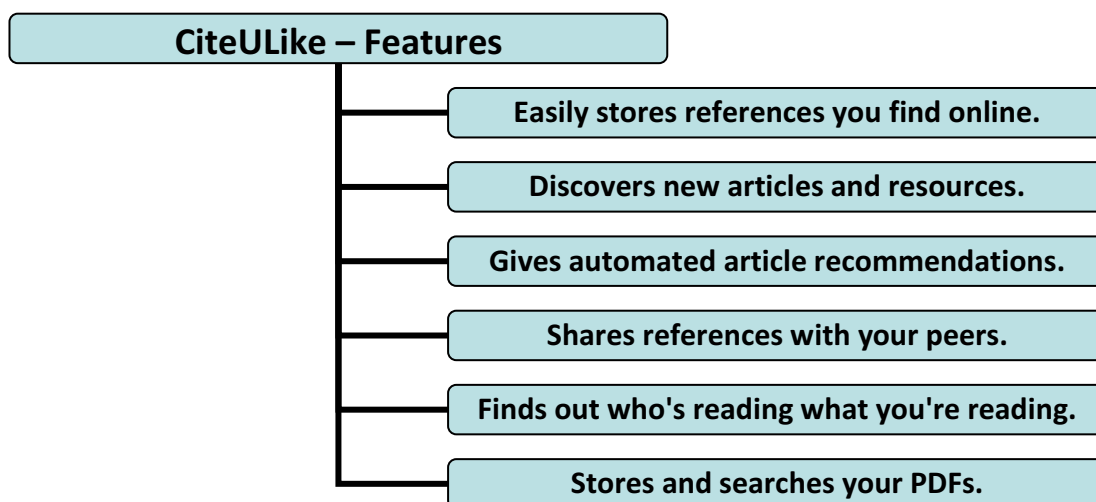
Figure 61: A Mendeley Group – Altmetrics

### 4.2.2 CiteULike

The CiteULike is another most preferred online reference manager freely available to researchers across the world. Launched in 2004, CiteULike became pioneer in offering services of online reference manager and PDF organizer. It became very popular since its inception amongst researchers and academics. Any researcher can create a free online account in CiteULike platform, store bibliographic records as well as full-text documents in PDF or other formats and later retrieve those saved documents as per their research requirements. MyCiteULike, the personalized profile of a registered user in CiteULike website, provides the following information:

- Latest News (latest forum message)
- Recommendations
- Library
  - Most recent entry
- Activity (most recent entry in each of your groups and connections)
  - Connections
  - Groups
- Watchlist, and
- CiteGeist (Most frequently posted articles during the past week).

It has many functionalities similar to Mendeley web. Figure 62 highlights basic features of CiteULike web reference manager. A CiteULike bookmarklet is also available to CiteULike users to import a citation from a publisher's article page and save it to a user account in CiteULike web. Figure 64 shows an online group that facilitates social sharing or social bookmarking of scholarly papers in a subject area related to that group. A user can search and join an existing e-group based on his/her research interests. A user can also create a new e-group and send invitations to registered CiteULike members with similar research interests for collaborative creation of online bibliographies. As seen in Figure 64, CiteULike accepts online advertisements for its sustainability offers free services to its registered users.



**Figure 62: Basic Features of CiteULike Web Reference Manager**



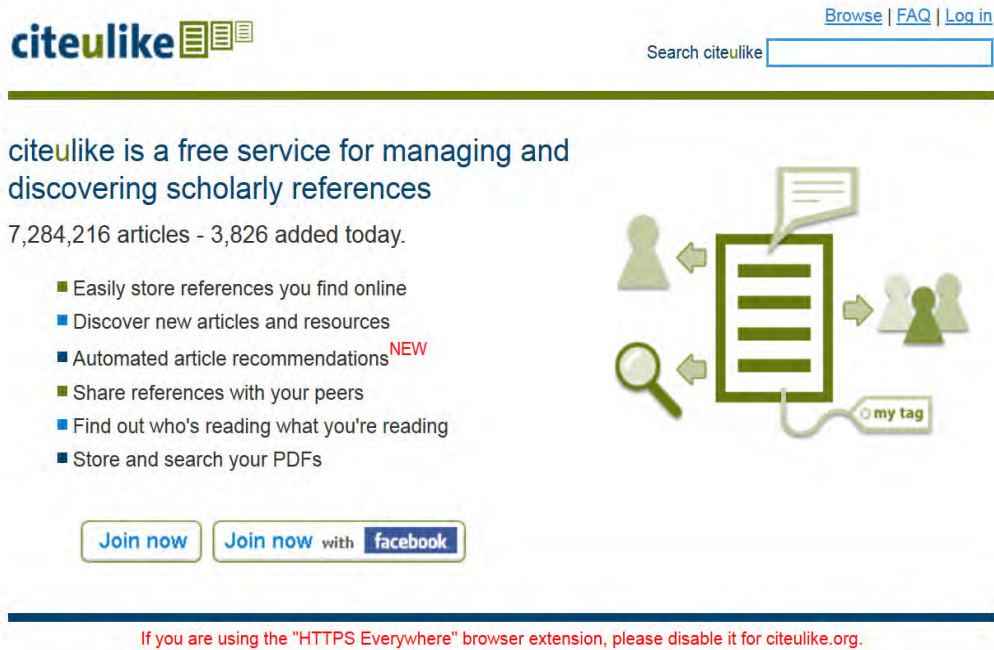


Figure 63: Homepage of CiteULike Website, Linking to User Joining Page

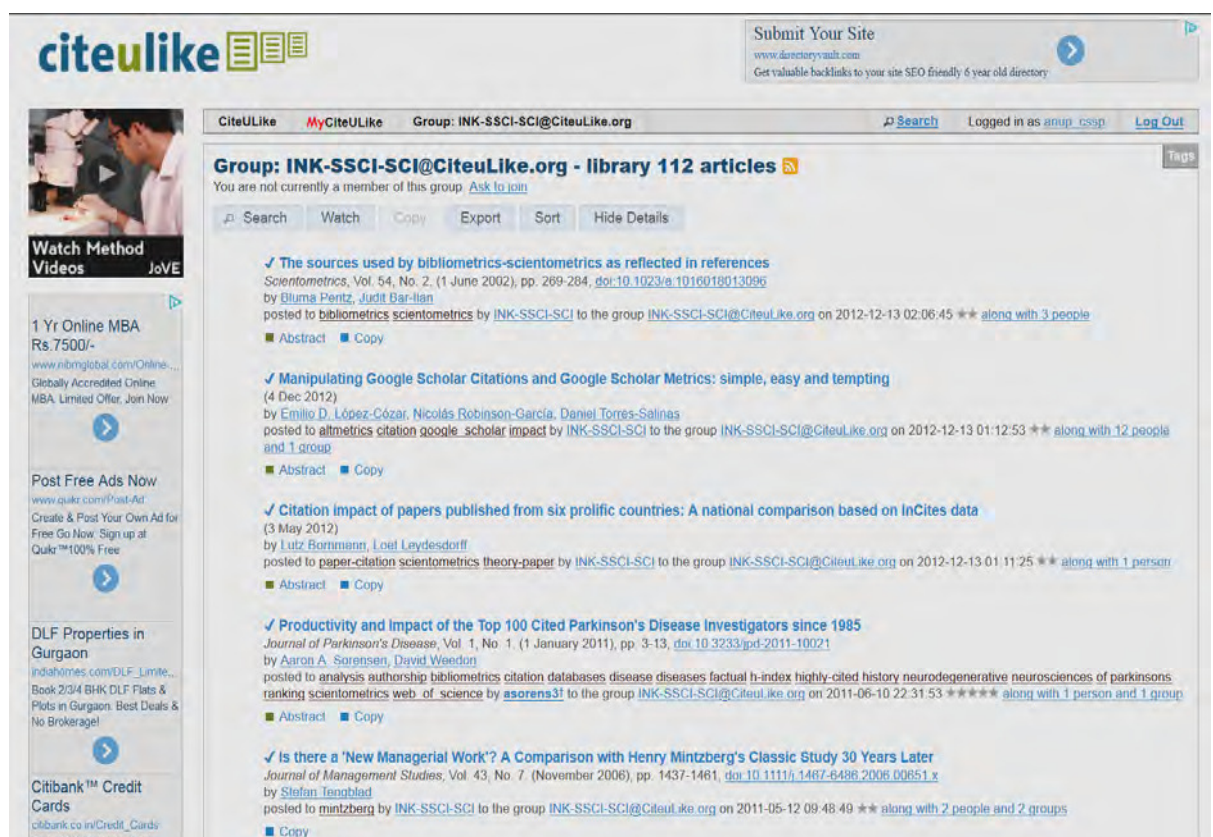


Figure 64: Articles Saved by a CiteULike Group

### 4.2.3 Zotero

The Zotero is another online reference manager freely available to researchers across the world. It was launched in 2006 as a project of the Roy Rosenzweig Center for History and New Media in George Mason University in the United States, with its web-based solution as well as desktop open source application for reference management and PDF organizer. It has become popular amongst researchers and academics in many countries. Any researcher can create a free online account in Zotero platform, store bibliographic records as well as full-text documents in PDF or other formats and later retrieve those saved documents as per their research requirements. Any researcher can freely download Zotero desktop application for reference management and organizing full-text documents in a desktop environment. Zotero bookmarklet is also available to Zotero users to import a citation from a publisher's article page and save it to a user account in Zotero web. Zotero website helps a registered user to maintain a personalized library with a collection of scholarly works he collected from different online databases and online journals. A registered user then can organize, analyse and share papers from his collection in variety of ways, such as sharing in online groups. Text Box 7 elaborates basic functions of Zotero web platform. It helps a registered user to collect, organize, cite, and synchronize references of scholarly works and collaborate with research groups and online forums for knowledge enrichment.

Figure 65 shows homepage of Zotero website, indicating different functionalities and collaborative tools available to a registered user. This page also links to My Library and Groups available to a user. Figure 66 shows a searchable collection of papers in My Library using Zotero desktop application. Similar to Mendeley, Zotero desktop also imports references saved in its online collection at My Library of Zotero web platform.

#### Text Box 7: Basic Functions of Zotero

##### **COLLECT – Grab your research with a single click.**

**A personal research assistant.** Zotero is the only research tool that automatically senses content in your web browser, allowing you to add it to your personal library with a single click. Whether you're searching for a preprint on arXiv.org, a journal article from JSTOR, a news story from the *New York Times*, or a book from your university library catalogue, Zotero has covered with support for thousands of sites.

**Store anything.** Zotero collects all your research in a single, searchable interface. You can add PDFs, images, audio and video files, snapshots of web pages, and really anything else. Zotero automatically indexes the full-text content of your library, enabling you to find exactly what you're looking for with just a few keystrokes.

##### **ORGANIZE – It has never been easier to sort your research.**

**Say goodbye to folders.** Zotero organizes your research into collections that act like iTunes playlists. Research items can be added to any number of named collections and sub-collections, which in turn can be organized in whatever way you like. With saved searches, you can create smart collections that automatically fill with relevant materials as you add them to your library.

**Tag it.** Assign tags to your library items to organize your research using your own keywords. The tag selector enables you to filter your library instantly to view matching items. Zotero can even use database and library data to tag items automatically as you add them.

**CITE – You're never more than a click away from a bibliography.**

**Cite perfectly.** Whether you need to create footnotes, endnotes, in-text citations, or bibliographies, Zotero will do all the dirty work for you, leaving you free to focus on your writing. Create citations in Word and OpenOffice without ever leaving your word processor and add references to an email, a Google Doc, or some other editor simply by dragging one or more references out of Zotero.

**Always in style.** Ready to submit your manuscript to Tropical Doctor or French Historical Studies? We've got you covered: with native integration of the powerful and flexible Citation Style Language (CSL). Zotero supports thousands of publication formats with more styles added daily.

**SYNC – Your data is always where you need it.**

**Research everywhere.** Zotero automatically synchronizes your data across as many devices as you choose. Add data to your research library on your work PC, and organize your collections of data on your home laptop. All of your notes, files, and bibliographic data remain seamlessly and silently up-to-date. Returning from field work? Your data will be waiting for you when you get home.

**Painless data transfer.** Upgrading to a new computer? Zotero will automatically pull down a complete copy of your research library from our server network. Even if you don't yet have Zotero installed, you can always access your research from any web browser in the world.

**COLLABORATE – Work together and share with the world.**

**Works well with others.** Create and join research groups to focus on any topic you choose. Each group can share its own research library, complete with files, bibliographic data, notes, and discussion threads. Tag and analyze your research together with others. Work with a single colleague or an entire class: Zotero groups can include as many members as you please.

**Share with the world. Or not.** Zotero groups can be private or public, open or closed. You decide. For example, you and a few colleagues might initially work on a research project in private. After publication, why not share your research notes and library with the world?

*Source: [www.zotero.org](http://www.zotero.org)*

A personal library of a user in Zotero web platform can store all downloaded or collected literatures as required in his ongoing, past or forthcoming research projects. Zotero offers 300 MB personal free storage space to every user, where you can store full-text contents up to that cumulative file size limit. Beyond this limit you have option to upgrade your storage with a monthly or an annual price plan.



Figure 65: Homepage of Zotero Website

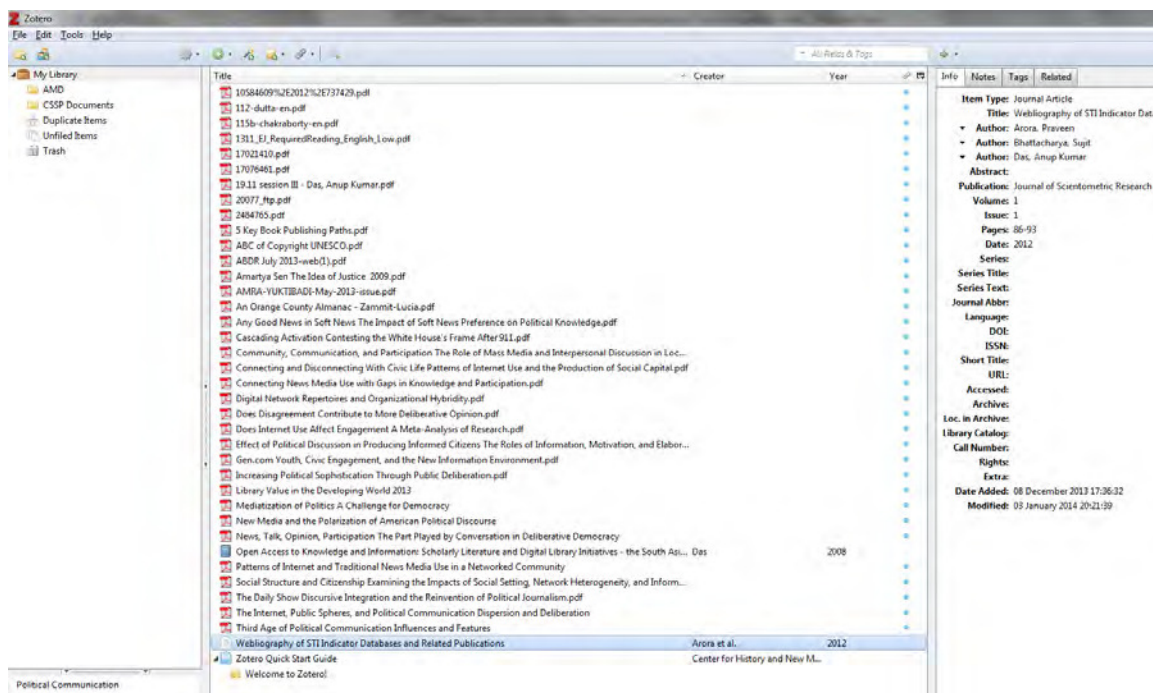


Figure 66: Searchable Collection of Papers in My Library using  
Zotero Desktop



#### 4.2.4 Google Scholar Library

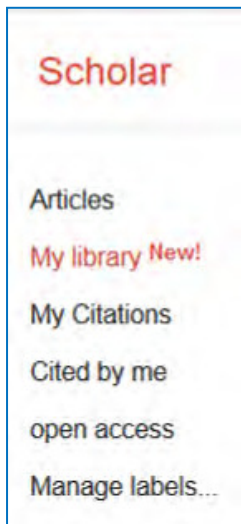
Launched on 19<sup>th</sup> November 2013, Google Scholar Library is a web-based reference management service linked to Google Scholar and Google Scholar Citations web services freely available to researchers and academics across the world. A registered user of Google or Gmail account can maintain a Google Scholar Library (GSL). It is a freely available service with functionalities of an online reference manager. However, GSL does not have functionalities of a PDF organizer, as available with Mendeley, CiteULike or Zotero.

While you search for documents through Google Scholar search engine, you will get many documents matching your search criteria. Click “Save” below a retrieved document in a search result to save it to your library named as “My library”. Click “My library” to see all saved articles in your library, and then you will be able to search further from this collection. You can also use labels to organize your articles. If you are a registered user having a profile in Google Scholar Citations, then you will have some more personalized collection of bibliographic references. You have now, three labels, namely,

- My library:** It contains articles you’ve saved or cited. You can see all the articles in your library and search their full text. You can also use labels to organize your articles.
- My Citations:** It contains your profile articles.
- Cited by me:** It contains articles you’ve cited.

Figure 67 displays a Google Scholar Library of a registered user, showing all saved articles. If you want to know further bibliographic details of a saved paper, you can click on the title of the paper and then get a new page as shown in Figure 68 showing bibliographic details of a record in GSL.

The Google Scholar Library is expected to become very popular amongst researchers, academics and students communities and is also expected gain immense popularity similar to Google Scholar and Google Scholar Citations.



<p><a href="#">The effect of open access and downloads ('hits') on citation impact: a bibliography of studies</a> <a href="#">S Hitchcock - 2013 - eprints.soton.ac.uk</a> Since 1998 studies have shown that <b>open access</b> increases impact as measured by the number of citations. This chronological and comprehensive bibliography of those reports provides a way of investigating the meaning of that statement, to understand its effect, to ... <a href="#">Cited by 85</a> <a href="#">Cite</a> <a href="#">Saved</a> <a href="#">More</a></p>
<p>Find the article you want to add in Google Scholar and click the “Save” link under the search result. Then you get My Library similar to Figure 67.</p>

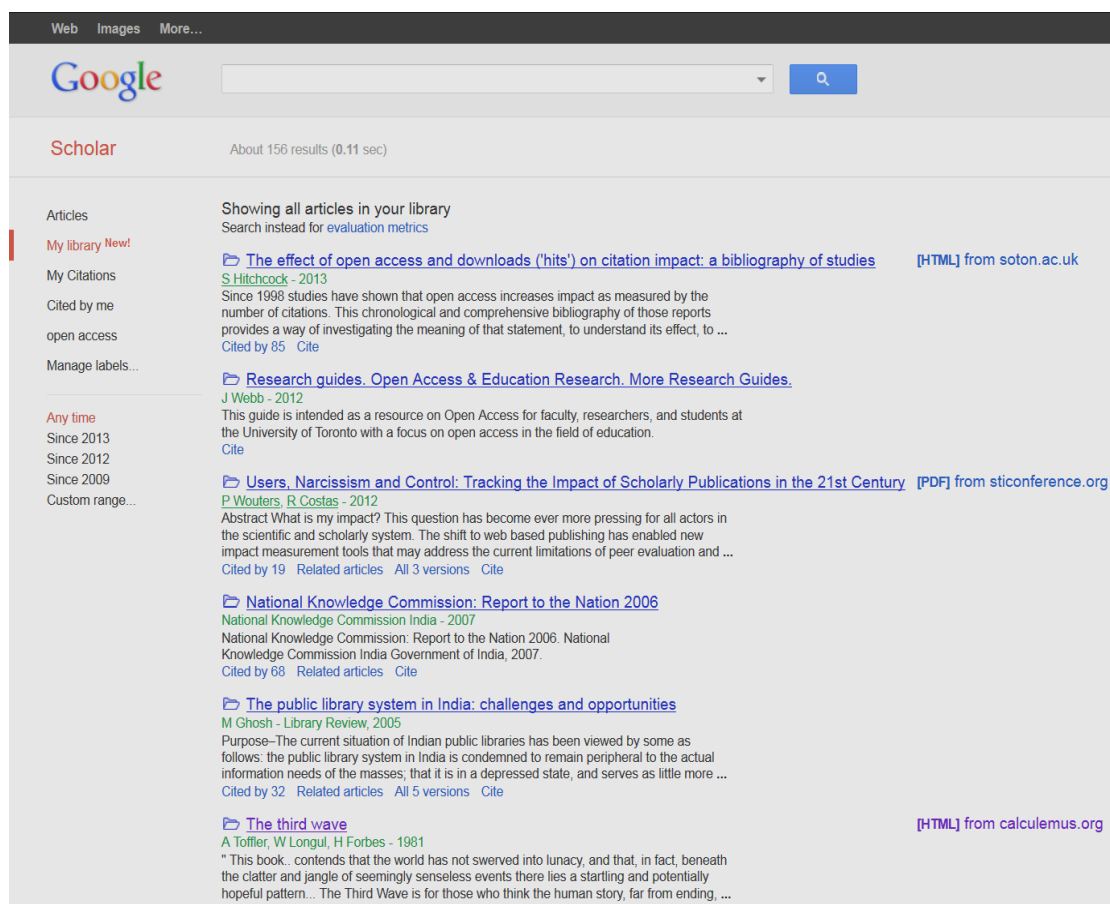


Figure 67: Showing All Saved Articles in Google Scholar Library

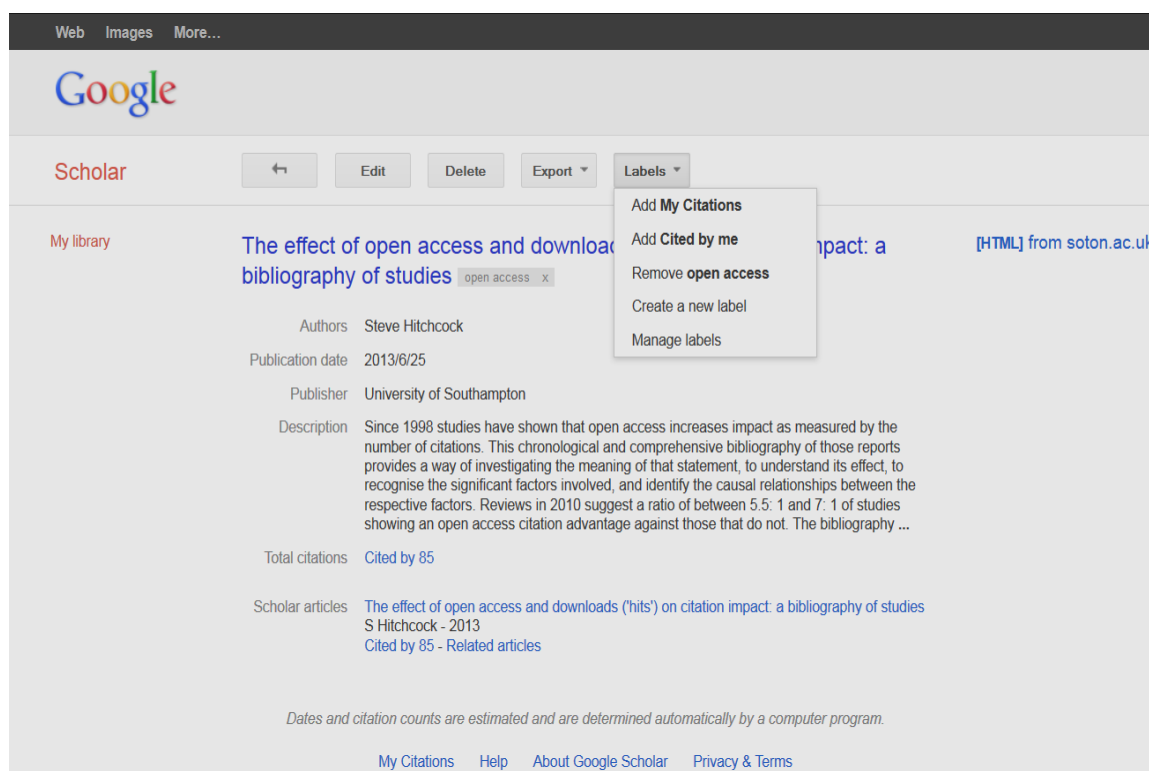


Figure 68: Showing Bibliographic Details of A Record in Google Scholar Library

#### 4.2.5 EndNote Basic

The EndNote is well-known proprietary reference management software widely used by researchers across the world. In December 2006 the brand owner and developer Thomson Reuters launched a web-based version of EndNote, called EndNote Web. In April 2013 Thomson Reuters launched a free version of EndNote Web, called EndNote Basic – available to researchers across the world without any annual or monthly subscription charges. However, EndNote Basic has some limited functionalities as compared to its full-version. Similar to Mendeley and Zotero, EndNote Basic has less storage space to store full-text contents of references in a user's library collection. Table 24 shows different functionalities available to EndNote Basic vis-à-vis full-version. However, functionalities available with EndNote Basic are comparable with free versions of Mendeley and Zotero, in terms of storage space available to a free account.

EndNote Basic can gather bibliographic information using EndNote Bookmarklet from an article page of electronic journals and store this bibliographic record in your personal library available with your user account. EndNote Basic offers you a *Cite While You Write*<sup>TM</sup> plug-in for MS-Word. You can use the EndNote plug-in to insert references, and format citations and bibliographies automatically while you write your papers in Word. This plug-in also allows you to save online references to your library in Internet Explorer for Windows. Table 25 indicates basic functions of EndNote Basic, which include collection of references, organization of references, formatting a citation for preparation of a bibliography or citing in your paper based on standard citation styles.

Figure 69 shows the EndNote Basic sign-up page for creating a new free account at [www.endnote.com/basic](http://www.endnote.com/basic). This page also indicates functionalities available with a free account. Figure 70 indicates that a signed-in user account has two-type collections of bibliographic references, namely, (i) My References and (ii) My Publications. My References can host different collections with different tags or collection names. My Publications can give you full bibliographic information of your published works, usually gathered from your ResearcherID profile. You can upload full-text content in PDF and Figure, and attach them along with any stored reference in your library. Figure 71 indicates functioning of EndNote BookMarklet to capture a new reference from an article's web-page and store this bibliographic reference in your EndNote Basic account.

**Table 24: Comparison between Features of EndNote Basic and EndNote Full version**

EndNote Basic	EndNote Full-version
Free	Priced
Store up to 50,000 references.	Unlimited reference storage.
20 most popular bibliographic styles.	More than 5,000 bibliographic styles.
2GB of files storage.	5GB of file storage.
Online search of the 5 most popular databases.	Online search of several hundred databases.
Webpage reference capture.	Webpage reference capture.
These features are not available.	<ul style="list-style-type: none"> <li>♦ Automatic reference updating.</li> <li>♦ Annotate, and search PDF text, notes, and annotations.</li> <li>♦ Complex bibliography handling tools.</li> <li>♦ Multiple bibliographies capability.</li> <li>♦ Composite references.</li> <li>♦ Journal abbreviations recognition and standardization.</li> </ul>

**Table 25: Basic Features Available in EndNote Basic**

COLLECT	ORGANIZE	FORMAT
<p><i>Collects references from electronic and traditional sources.</i></p> <ul style="list-style-type: none"> <li>• Searches online database</li> <li>• Creates a reference manually</li> <li>• Imports references</li> </ul>	<p><i>Organizes your references for your research topics and papers.</i></p> <ul style="list-style-type: none"> <li>• Creates a new group</li> <li>• Shares a group</li> <li>• Finds duplicate references</li> </ul>	<p><i>Creates a formatted bibliography for your paper or cites references while you write.</i></p> <ul style="list-style-type: none"> <li>• Creates a formatted bibliography</li> <li>• <i>Cite While You Write</i>™ Plug-in</li> <li>• Formats a paper</li> </ul>

The screenshot shows the EndNote Basic sign-up page. At the top, there's a navigation bar with the EndNote logo. Below it, there are two main sections: 'ENDNOTE BASIC' and 'ENDNOTE'. The 'ENDNOTE BASIC' section has a 'Create your free account' button. The 'ENDNOTE' section has a 'DOWNLOAD the FREE 30-day trial' button. Below these, there are two columns of features. The left column is titled 'AVAILABLE ONLINE, ANYTIME.' and lists features like 'Store up to 50,000 references', '20 most popular bibliographic styles', '2GB of files storage', 'Online search of the 5 most popular databases', and 'Webpage reference capture'. The right column is titled 'ACCESS ANYWHERE. ON YOUR DESKTOP, ONLINE, OR ON YOUR IPAD.' and lists features like 'Unlimited reference storage', 'More than 5,000 bibliographic styles', '5GB of file storage', 'Online search of several hundred databases', 'Webpage reference capture', 'One-click Find Full Text', 'Automatic reference updating', 'Annotate, and search PDF text, notes, and annotations', 'Complex bibliography handling tools', 'Multiple bibliographies capability', 'Composite references', 'Journal abbreviations recognition and standardization', and 'And so much more!'. At the bottom, there's a 'FREE' label and a 'SHARE REFERENCES AND GROUPS WITH COLLEAGUES' button. On the right, there's a price tag for '\$249.95' with an upgrade option for '\$99.95' and a student discount for '\$115.95'.

**Figure 69: EndNote Basic Sign-Up Page (at [www.endnote.com/basic](http://www.endnote.com/basic))**



## Research Evaluation Metrics

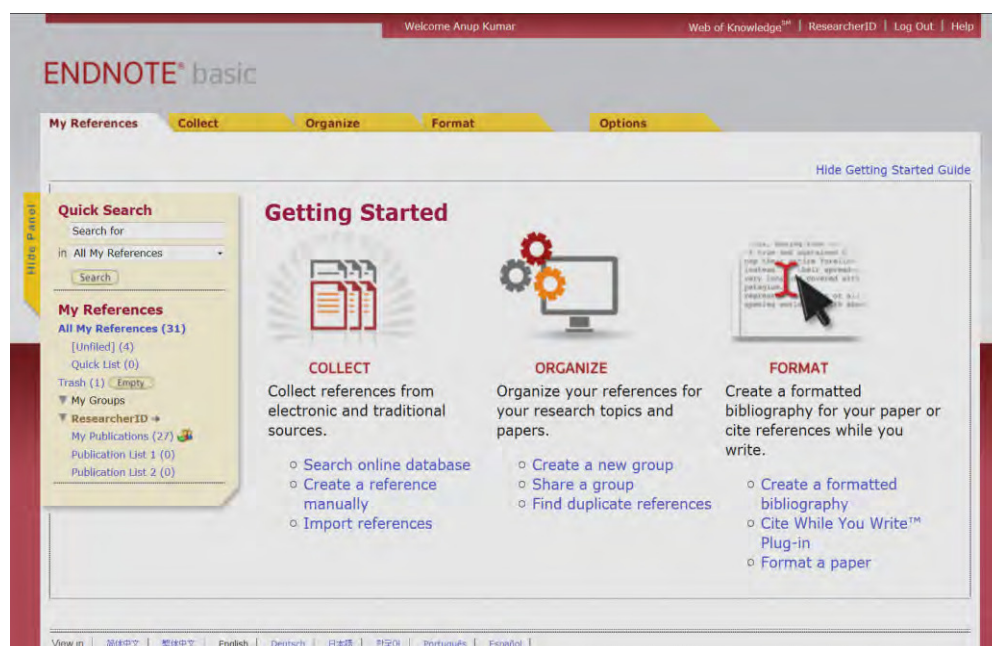


Figure 70: Homepage of EndNote Basic after Sign-In

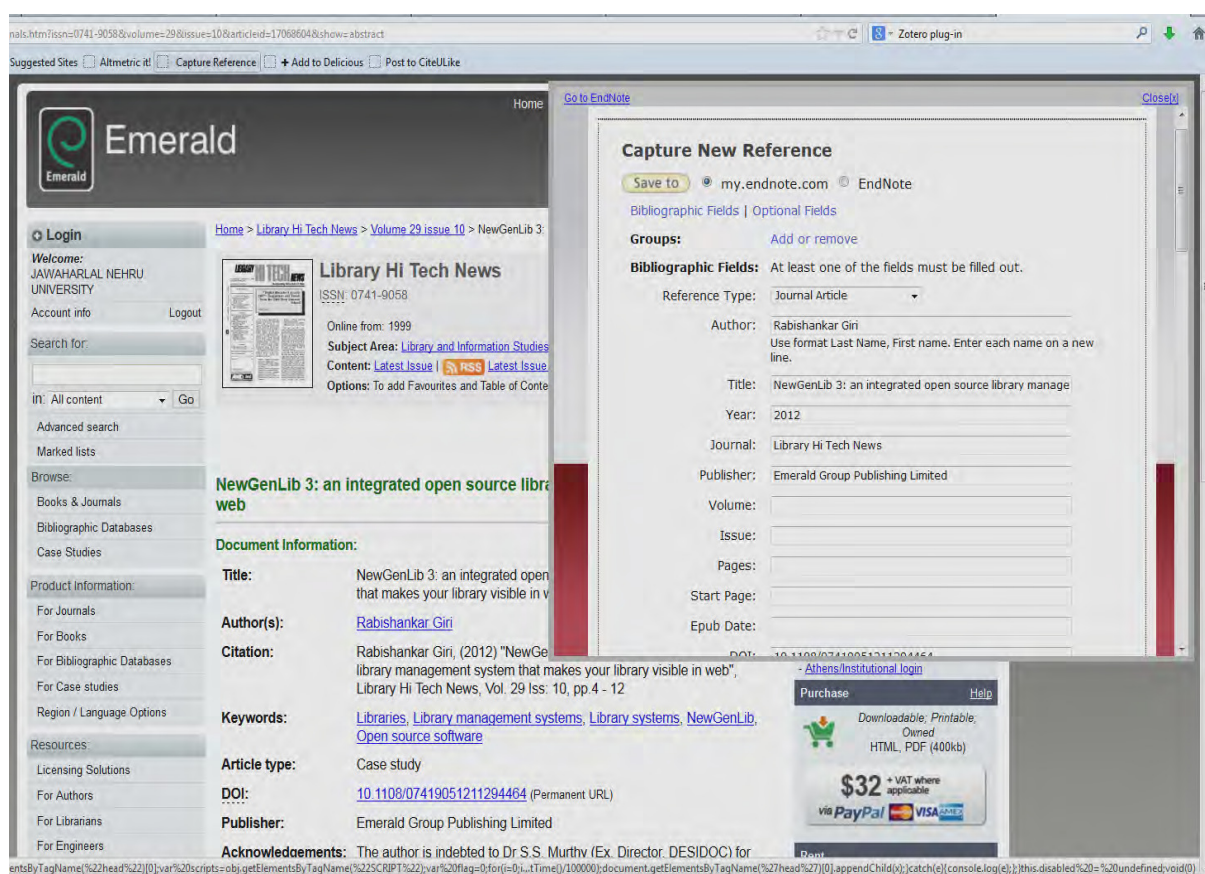


Figure 71: Capture New Reference using EndNote BookMarklet

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## 4.3 LET US SUM UP

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In this Unit, you have learned use of different online reference managers and PDF organizers for storing and managing bibliographic references in your online profile or online account. These online reference managers have options of creating free online account with certain free storage limit, similar to any other web-service giving free storage facilities with certain limit. You also have options to subscribe to an extra storage space and some other value-added services for a fee.

Some of these online reference managers also have free or open source desktop applications for maintaining references offline in your desktop computers. These desktop applications are very easy to download, use and sometimes easy to synchronize with your online collections or libraries linked to your user account.

In the Units 1-4 of this Module you have learned creation of personalized profiles or user account in the following websites as shown in Table 26 for different scholarly or academic purposes. You are now free to open your public profile online, let your list of publications and your research contributions globally visible, and collaborate with researchers across the world.

**Table 26: Personalized Public Profile of Researchers in Academic Websites**

Website	Main Purpose	Global Visibility of Your Public Profile
ResearchGate	Academic Social Networking	Yes
Getcited.org	Academic Social Networking	Yes
Acadmica.Edu	Academic Social Networking	Yes
ImpactStory	Citations Tracking; Article Level Metrics of Your Publications	Yes
Google Scholar Citations	Citations Tracking; Online Reference Manager	Yes
ORCID.org	Authors' Registry with Unique Identifiers	Yes
ResearcherID	Authors' Registry with Unique Identifiers	Yes
EndNote Basic	Online Reference Manager	No
CiteULike.org	Online Reference Manager	Yes
Mendeley	Online Reference Manager; Academic Social Networking	Yes
Zotero	Online Reference Manager; Academic Social Networking	Yes

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## 4.4 CHECK YOUR PROGRESS

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- 1) How much free storage space is available to a user in *Mendeley* web?
  - i) 2 GB
  - ii) 3 GB
  - iii) 300 MB
  - iv) 200 MB
- 2) Which company does presently own Mendeley?
  - i) Institute for Scientific Information
  - ii) Thomson Reuters
  - iii) Elsevier
  - iv) Springer
- 3) Which company did introduce EndNote Basic?
  - i) Institute for Scientific Information
  - ii) Thomson Reuters
  - iii) Elsevier
  - iv) Springer
- 4) How much free storage space is available to a user in EndNote Basic?
  - i) 2 GB
  - ii) 3 GB
  - iii) 4 GB
  - v) 8 GB
- 5) How much free storage space is available to a user in Zotero web?
  - i) 2 GB
  - ii) 3 GB
  - iii) 300 MB
  - iv) 200 MB

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## ONLINE VIDEO TUTORIALS

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There are a number of video tutorials available on topics discussed in this Unit. Some of the tutorials were developed by the organizations responsible for the respective products or services, while some others were developed by reputed individuals and libraries. Now, you learn more about how these products can be used for measurement of scholarly communications and for evaluating research or researchers.

- *A tour of CiteULike* **Video**<sup>53</sup>
- *EndNote Basic (formerly EndNote Web) Express Training* **Video**<sup>54</sup>
- *Getting Started with Zotero: Using Zotero Standalone* **Video**<sup>55</sup>
- *Google Scholar "My Citations" Tutorial* **Video**<sup>56</sup>
- *Mendeley Reference Manager Tutorial* **Video**<sup>57</sup>
- *Zotero Screencast Tutorial* **Video**<sup>58</sup>

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<sup>53</sup> <http://www.youtube.com/watch?v=LkNeEUV4sPs>

<sup>54</sup> <http://vimeo.com/68250018>

<sup>55</sup> <http://www.youtube.com/watch?v=H8UTehdF92s>

<sup>56</sup> <http://www.youtube.com/watch?v=cV4N6pl1FgU>

<sup>57</sup> <http://www.youtube.com/watch?v=K9J6mVyWIVY>

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## ANSWERS TO CHECK YOUR PROGRESS

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### UNIT 1

- 6-(a) i,
- 6-(b) i,
- 6-(c) ii,
- 6-(d) iii,
- 6-(2) iv.

### UNIT 2

- 6-(a) ii,
- 6-(b) i,
- 6-(c) i,
- 6-(d) iii,
- 6-(ej) ii.

### UNIT 3

- (1) iv,
- (2) iii,
- (3) ii,
- (4) ii,
- (5) iv.

### UNIT 4

- (1) i,
- (2) iii,
- (3) ii,
- (4) i,
- (5) iii.

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## GLOSSARY OF TERMS

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Term	Definition
Altmetrics	Altmetrics is a new metrics proposed as an alternative to the widely used journal impact factor and personal citation indices such as 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.
Article Influence Score (AI)	It determines the average influence of a journal's articles over the first five years after publication. It is calculated by dividing a journal's Eigenfactor score by the number of articles in the journal, normalized as a fraction of all articles in all publications. The mean AI is 1.00. A score greater than 1.00 indicates that each article in the journal has above-average influence. A score less than 1.00 indicates that each article in the

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<sup>58</sup> <http://vimeo.com/49328590>



## Research Evaluation Metrics

	journal has below-average influence. (Source: Thomsonreuters.com)
arXiv	It is an e-print service in the fields of physics, mathematics, computer science, quantitative biology, quantitative finance and statistics.
Author Self-citation	Author self-citation occurs when an author cites his own work published earlier or going to be published in future.
Bibliographic coupling	It is a measure that uses citation analysis to establish a similarity relationship between documents. It links two papers that cite the same article, so that if papers A and B both cite paper C, they may be said to be related, even though they don't directly cite each other. The more papers they both cite, the stronger their relationship is.
Book Citation Index	It allows users to search seamlessly across books, journals and conference proceedings to find the information most relevant to their work within one platform. It details the citations received by a book. (Source: Thomsonreuters.com)
Bookmarklet	It is a small software application stored as a bookmark in a web browser, which typically allows a user to interact with the currently loaded web page in some way.
Chinese Science Citation Database	It contains important research and citation data from China, including research trends, top authors, institutions, journals, and more. (Source: Thomsonreuters.com)
Citation	It is a reference to a text or part of a text identifying the document in which it may be found.
Citation Index	It is a bibliographic tool in print or electronic format that lists all referenced or cited source items published in a given time span.
Citation Network	It is a one-way or two-way network analysing relationship between citing and cited references or authors.
Citations Count	It is a simple method of counting total citations received by an earlier published article, with data obtained from a citation database.
Cited Half Life	It is the number of years, going back from the current year, that account for 50% of the total citations received by the cited journal in the current year.
Cited Half-Life (of a journal)	It is the number of years, going back from the current year, that account for 50% of the total citations received by the cited journal in the current year. ISI developed this calculation to provide an indicator as to the long-term value of source items in a single journal publication. It may be noted that the cited half life of

	the literature of a speciality is different from the cited half life of a journal. (Source: Thomsonreuters.com)
Cites per Document (2 years)	Average citations per document in a 2 year period. It is computed considering the number of citations received by a journal in the current year to the documents published in the two previous years, i.e., citations received in year X to documents published in years X-1 and X-2. (Source: Scimagojr.com)
CiteULike	It is a free service to help you to store, organise and share the scholarly papers you are reading.
CiteULike	It is a free service to help you to store, organise and share the scholarly papers you are reading.
Citing Half-Life	It is the number of journal publication years , going back from the current year that account for 50% of the total citations given by the citing journal in the current year.
Citing Half-Life of a Journal	The number of journal publication years, going back from the current year, that account for 50% of the total citations given by the citing journal in the current year. ISI developed this calculation to provide an indicator of the subtle changes in scope of a publication over the course of time. (Source: Thomsonreuters.com)
Co-citation coupling	It is a method used to establish a subject similarity between two documents. If papers A and B are both cited by paper C, they may be said to be related to one another, even though they don't directly cite each other. The more papers cite A and B, the stronger their relationship is.
Co-citation network	It is a network analysing instances of co-citation coupling.
Conference Proceedings Citation Index	It helps researchers access the published literature from the most significant conferences, symposia, seminars, and more. (Source: Thomsonreuters.com)
Crossref	It is an official Digital Object Identifier (DOI) Registration Agency of the International DOI Foundation.
Data Citation Index (DCI)	It provides digital research that is discoverable, citable and linked to primary research literature. You can discover datasets from multiple repositories in one place. (Source: Thomsonreuters.com)
Delicious	It is an online social bookmarking service. Its website address is Delicious.com.
Desktop application	It is an application software that runs stand alone in a desktop or laptop computer.
Dryad	It is an international repository of data underlying peer-reviewed articles in the basic and applied biology. Its website address is <a href="http://datadryad.org">http://datadryad.org</a> .
Eigenfactor Score	Its calculation is based on the number of times articles

Research Evaluation Metrics	(EF)	from the journal published in the past five years have been cited in the <i>JCR</i> year, but it also considers which journals have contributed these citations so that highly cited journals will influence the network more than lesser cited journals. References from one article in a journal to another article from the same journal are removed, so that Eigenfactor scores are not influenced by journal self-citation. (Source: Thomsonreuters.com)
	Free software	It is a computer software that is available free of charge, however, its source code may or may not be made available.
	g-index	An index to quantify an individual's scientific research output, proposed by Leo Egghe. (Source: Harzing.com/pop.htm)
	Github	It is a social, online repository for open source software.
	h5-index	h5-index is the h-index for articles published in the last 5 complete years. It is the largest number h such that h articles published in 2008-2012 have at least h citations each. (Source: Scholar.google.com)
	h5-median	h5-median for a publication is the median number of citations for the articles that make up its h5-index. (Source: Scholar.google.com)
	hc-index	Contemporary h-index or hc-index adds an age-related weighting to each cited article, giving (by default; this depends on the parametrization) less weight to older articles. (Source: Harzing.com/pophelp/metrics.htm)
	h-index	h-index, proposed by J.E. Hirsch, is the largest number h such that h publications have at least h citations. The second column has the "recent" version of this metric which is the largest number h such that h publications have at least h new citations in the last 5 years. (Source: Scholar.google.com)
	i10-index	i10-index is the number of publications with at least 10 citations. The second column has the "recent" version of this metric which is the number of publications that have received at least 10 new citations in the last 5 years. (Source: Scholar.google.com)
	Immediacy Index (JII)	The average number of times that an article published in a specific year within a specific journal is cited over the course of that same year. This index, published in the <i>Journal Citation Reports</i> , is one developed by ISI as an indicator of the speed with which citations to a specific journal appear in the published literature. Such information is useful in determining which journals are publishing in emerging areas of research. (Source: Thomsonreuters.com)
	International	Document ratio (in percent) whose affiliation includes

Collaboration (%)	more than one country address. (Source: Scimagojr.com)
Journal Citation Reports ( <i>JCR</i> )	<i>JCR</i> offers a systematic, objective means to critically evaluate the world's leading journals, with quantifiable, statistical information based on citation data. (Source: Thomsonreuters.com)
Journal Immediacy Index	It is the average number of times articles published in a journal in a specific year are cited within the same year.
Journal Impact Factor (JIF)	The number of current citations to articles published in a specific journal in a two year period divided by the total number of articles published in the same journal in the corresponding two year period. ISI stresses that a journal's impact factor is a meaningful indicator only when considered in the context of similar journals covering a single field of investigation or subject discipline. (Source: Thomsonreuters.com)
Journal self-citation	It is an instance in which an article published in a journal has cited a previously published article in that same journal.
Mendeley	It is a research management tool for desktop and web.
Open source software	It is computer software with its source code made available and licensed with the permissions or rights to study, change and distribute the software to anyone and for any purpose.
Plug-in	It is a software component that adds a specific feature to an existing software application.
PubMed	It comprises more than 21 million citations of biomedical literature.
RG Score	The RG Score is a metric that measures scientific reputation based on how all of your research is received by your peers.
RIS File	The RIS file format is a tagged format for expressing bibliographic citations. RIS File is a plain text file that can contain multiple references. RIS files can be exported from reference software such as EndNote and Reference Manager. Each reference is composed of a variable number of fields; and each field is preceded by a six-character label or "tag." Some tags are specific only to certain reference types. Each tag must be in a specific format, and certain other rules apply to all tags.
SciELO Citation Index	It lets researchers around the world discover new insights from research emanating from Latin America, Spain, Portugal, the Caribbean and South Africa while making connections to the broader research landscape for a more complete global picture. (Source: Thomsonreuters.com)

## Research Evaluation Metrics

Scienceseeker.org	It refers to science news from science newsmakers. It offers science news aggregation service.
SCImago Journal Rank (SJR)	SJR is a prestige metric based on the idea that 'all citations are not created equal'. (Source: JournalMetrics.com)
Scopus	It is the world's largest abstract and citation database of peer-reviewed literature.
Self-citation	It can be an instance in which an article published in a journal has cited a previously published article in that same journal, or it can be an instance in which an author cites his own work published earlier or forthcoming.
SJR (SCImago Journal Rank) indicator	It expresses the average number of weighted citations received in the selected year by the documents published in the selected journal in the three previous years, i.e., weighted citations received in year X to documents published in the journal in years X-1, X-2 and X-3. (Source: Scimagojr.com)
Source Normalized Impact per Paper (SNIP)	SNIP measures contextual citation impact by weighting citations based on the total number of citations in a subject field. (Source: JournalMetrics.com)
Web of Science® (WoS)	WoS provides quick, powerful access to authoritative content from the highest impact journals worldwide, including Open Access journals, in the sciences, social sciences, arts and humanities. (Source: Thomsonreuters.com)

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## LIST OF ABBREVIATIONS

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A&HCI	Arts & Humanities Citation Index
AI	Article Influence score
ALM	Article Level Metrics
API	Application Programming Interface
CE	Cost Effectiveness score
DOI	Digital Object Identifier
DORA	San Francisco Declaration on Research Assessment
EF	Eigenfactor score
GB	Gigabytes
HC-Index	Contemporary H-Index
H-Index	Hirsch Index
HSS	Humanities and Social Sciences
HTML	Hypertext Markup Language
ICI	Indian Citation Index

ISI	Institute for Scientific Information
JCI	Journal Current Index
JCR	Journal Citation Reports
JIF	Journal Impact Factor
JII	Journal Immediacy Index
MB	Megabytes
OA	Open Access
ORCID	Open Researcher and Contributor ID
PDF	Portable Document Format
PLOS	Public Library of Science
PLOS ALM	PLOS Article Level Metrics.
PMC	PubMed Central
RII	Journal Research Impact Indicator
RIS	Research Information Systems, Inc.
SCI	Science Citation Index
SciELO	Scientific Electronic Library Online
SJR	SCImago Journal Rank
SNIP	Source Normalized Impact per Paper
SSCI	Social Science Citation Index
SSRN	Social Science Research Network
STM	Science, Technology and Medicine
WoK	Web of Knowledge
WoS	Web of Science
XML	Extensible Markup Language

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## REFERENCES AND FURTHER READINGS

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- Adie, E., & Roe, W. (2013). Altmetric: Enriching Scholarly Content with Article-Level Discussion and Metrics. *Learned Publishing*, 26(1), 11-17.
- Bailón-Moreno, R., Jurado-Alameda, E., Ruiz-Baños, R., & Courtial, J. P. (2005). Bibliometric laws: Empirical flaws of fit. *Scientometrics*, 63(2), 209-229. Retrieved from [http://eprints.rclis.org/12847/1/Bailon-Moreno,\\_R\\_.pdf](http://eprints.rclis.org/12847/1/Bailon-Moreno,_R_.pdf).
- Bogers, T., & Van den Bosch, A. (2008). Recommending Scientific Articles Using Citeulike. In *Proceedings of the 2008 ACM Conference on Recommender Systems* (pp. 287-290).
- Campanario, J.M. (2003). Citation Analysis. In: *International Encyclopaedia of Information and Library Science*, 2nd edition. London: Routledge.

- Colledge, Lisa et. al. (2010). SJR and SNIP: two new journal metrics in Elsevier's *Scopus*. *Serials*, 23(3), 215-221. Retrieved from <http://uksg.metapress.com/content/31814565236758v6/fulltext.pdf>
- Das, A.K., Arora, P. & Bhattacharya, S (2012). Webliography of STI Indicator Databases and Related Publications. *Journal of Scientometric Research*, 1(1), 86-93.
- DORA (2012). *The San Francisco Declaration on Research Assessment (DORA)*. USA: American Society for Cell Biology (ASCB). Retrieved from <http://www.ascb.org/dora/files/SFDeclarationFINAL.pdf>
- Drott, M. C. (1981). Bradford's Law: Theory, Empiricism and the Gaps Between. *Library Trends*, 30(1), 41-52. Retrieved from [www.ideals.illinois.edu/bitstream/handle/2142/7189/librarytrendsv30i1\\_opt.pdf](http://www.ideals.illinois.edu/bitstream/handle/2142/7189/librarytrendsv30i1_opt.pdf).
- Egghe, L. (2006). Theory and practise of the g-index. *Scientometrics*, 69(1), 131-152.
- Garfield, Eugene (1994). Expected Citation Rates, Half-Life, and Impact Ratios: Comparing Apples to Apples in Evaluation Research. *Current Contents*, Retrieved from <http://wokinfo.com/essays/expected-citation-rates/>.
- Garfield, Eugene (1994). The Concept of Citation Indexing: A Unique and Innovative Tool for Navigating the Research Literature. *Current Contents*, Retrieved from <http://wokinfo.com/essays/concept-of-citation-indexing/>.
- Garfield, Eugene (2010). The Evolution of the *Science Citation Index*. *International Microbiology*, 10(1): 65-69. doi:10.2436/20.1501.01.10. Retrieved from: <http://garfield.library.upenn.edu/papers/barcelona2007a.pdf>.
- Gilmour, Ron & Cobus-Kuo, Laura (2011). Reference Management Software: a Comparative Analysis of Four Products. *Issues in Science and Technology Librarianship*. Retrieved from <http://www.istl.org/11-summer/refereed2.html>.
- Giri, R.S. & Das, A.K. (2011). *Indian Citation Index: A New Web Platform for Measuring Performance of Indian Research Periodicals*. *Library Hi Tech News*, 28(3), 33-35.
- Harzing, Anne-Wil (2010). *The Publish or Perish Book: Your Guide to Effective and Responsible Citation Analysis*. Melbourne, Australia: Tarma Software Research.
- Hirsch, J. E. (2005). An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences of the United States of America*, 102(46), 16569. Retrieved from <http://arxiv.org/abs/physics/0508025>
- Iribarren-Maestro, I.; Lascurain-Sánchez, M.L. & Sanz-Casado, E. (2009). The Use of Bibliometric Techniques in Evaluating Social Sciences and

- Humanities. In: *Celebrating Scholarly Communication Studies: A Festschrift for Olle Persson at his 60th Birthday*. Retrieved from <http://www8.umu.se/inforsk/Bibexcel/ollepersson60.pdf>.
- Katz, J. Sylvan (1999). *Bibliometric Indicators and the Social Sciences*. UK: ESRC/ SPRU, University of Sussex. Retrieved from <http://www.sussex.ac.uk/Users/sylvank/pubs/ESRC.pdf>.
- Li, X., Thelwall, M., & Giustini, D. (2012). Validating Online Reference Managers for Scholarly Impact Measurement. *Scientometrics*, 91(2), 461-471.
- LSE Public Policy Group (2011). *Maximizing the Impacts of Your Research: A Handbook for Social Scientists*. London: London School of Economics. Retrieved from [http://www.lse.ac.uk/government/research/resgroups/LSEPublicPolicy/Documents/LSE\\_Impact\\_Handbook\\_April\\_2011.pdf](http://www.lse.ac.uk/government/research/resgroups/LSEPublicPolicy/Documents/LSE_Impact_Handbook_April_2011.pdf).
- Moed, Henk F. (2005). *Citation Analysis in Research Evaluation*. Dordrecht, The Netherlands: Springer.
- Pendlebury, David A. (2008). *Using Bibliometrics in Evaluating Research*. Retrieved from [http://wokinfo.com/media/mtrp/UsingBibliometricsinEval\\_WP.pdf](http://wokinfo.com/media/mtrp/UsingBibliometricsinEval_WP.pdf).
- Persson, O.; Danell, R. & Schneider, J.W. (2009). How to use Bibexcel for various types of bibliometric analysis. In: *Celebrating Scholarly Communication Studies: A Festschrift for Olle Persson at his 60th Birthday*. Retrieved from <http://www8.umu.se/inforsk/Bibexcel/ollepersson60.pdf>.
- Piwowar, Heather (2013). Altmetrics: Value all research products. *Nature*, 493(7431), 159-159.
- Piwowar, Heather (2013). Introduction to altmetrics: What, why and where? *Bulletin of the American Society for Information Science and Technology*, 39(4), 8-9.
- Poiter, W. G. (1981). Lotka's law revisited. *Library Trends*, 30(1), 21-39. Retrieved from [www.ideals.illinois.edu/bitstream/handle/2142/7189/librarytrendsv30i1\\_opt.pdf](http://www.ideals.illinois.edu/bitstream/handle/2142/7189/librarytrendsv30i1_opt.pdf).
- Priem, J., Piwowar, H. A., & Hemminger, B. M. (2012). Altmetrics in the wild: Using social media to explore scholarly impact. *arXiv preprint*, arXiv:1203.4745. Retrieved from Web. 2014.
- Priem, J., Taraborelli, D., Groth, P., & Neylon, C. (2010). *Altmetrics: A Manifesto*. Retrieved from <http://altmetrics.org/manifesto/>
- Prytherch, R.J. (2005). *Harrod's Librarians' Glossary and Reference Book: A Dictionary of Over 10,200 Terms, Organizations, Projects and Acronyms in the Areas of Information Management, Library Science, Publishing and Archive Management*. 10th ed. Hampshire, England: Ashgate Publishing.



- Reitz, Joan M. (2013). *Online Dictionary for Library and Information Science*. Retrieved from <http://www.abc-clio.com/ODLIS/searchODLIS.aspx>
- Smith, L.C. (1981). Citation Analysis. *Library Trends*, 30(1), 83-106. Retrieved from [www.ideals.illinois.edu/bitstream/handle/2142/7189/librarytrendsv30i1\\_opt.pdf](http://www.ideals.illinois.edu/bitstream/handle/2142/7189/librarytrendsv30i1_opt.pdf).
- Tananbaum, Greg (2013). *Article Level Metrics: A SPARC Primer*. Retrieved from <http://sparc.arl.org/sites/default/files/sparc-alm-primer.pdf>
- Testa, James (2011). *The Globalization of Web of Science<sup>SM</sup>: 2005-2010*. Retrieved from <http://wokinfo.com/media/pdf/globalWoS-essay.pdf>
- Thelwall, Mike (2013). *Webometrics and Social Web Research Methods*. UK: University of Wolverhampton. Retrieved from <http://www.scit.wlv.ac.uk/~cm1993/papers/IntroductionToWebometricsAndSocialWebAnalysis.pdf>.
- Thomson Reuters (2013). *Glossary of Thomson Scientific Terminology*. Retrieved from <http://ip-science.thomsonreuters.com/support/patents/patinf/terms/>.
- Wouters, P., & Costas, R. (2012). *Users, Narcissism and Control: Tracking the Impact of Scholarly Publications in the 21st Century*. Utrecht, Netherlands: SURF Foundation. Retrieved from [www.surf.nl/binaries/content/assets/surf/en/knowledgebase/2011/Users+narcissism+and+control.pdf](http://www.surf.nl/binaries/content/assets/surf/en/knowledgebase/2011/Users+narcissism+and+control.pdf).
- Wylls, R.E. (1981). Empirical and Theoretical Bases of Zipf's Law. *Library Trends*, 30(1), 53-64. Retrieved from [www.ideals.illinois.edu/bitstream/handle/2142/7189/librarytrendsv30i1\\_opt.pdf](http://www.ideals.illinois.edu/bitstream/handle/2142/7189/librarytrendsv30i1_opt.pdf).



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