Automated Reference Management: A Solution for Scholarly Communication

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Abstract - *Scholarly writing is an essential component of research. In recent years, the pace of communication of research has been grown exponentially. The research output is mainly communicated through peer reviewed journal articles, book chapters, books, thesis, and conference proceedings etc. Reference management software is an essential research tool for scientific research work since 1980s. It has been used by scholars and authors for recording, storage and utilizing bibliographic citations. It maintains a database to references and creates bibliographies and the reference lists for the written academic works. These tools are available in the form of open source as well as commercial to help the researchers to manage citations. The commercial software's are sometimes provided by the library through licensing to the researchers. This paper analyses the importance of reference management and the solutions available for the academicians to effectively make use of these tools in their dissertations and future researches.*

Keywords: Reference management software, citation, bibliography, reference management, reference tools

Background

Discovering, annotating, comparing, referring, sampling, illustrating, representing are the important elements of every research process (Unsworth , 2000). These tasks are undertaken by the researcher with the help of citation and bibliography management or reference management software. These tools are utilized by the researcher since 1980s. It has turned into a helpful instrument for the researchers and academicians in publishing their scholarly work.

Introduction

Scholarly writing is an essential component of research. In recent years, the pace of communication of research has been grown exponentially. The research output is mainly communicated through peer reviewed journal articles, book chapters, books, thesis, and conference proceedings etc. The research output is considered to be an indicator of academic achievement as well as it also acts as a basis for faculty appraisal and evaluation for research scholars. With the rapid growth of literature, the numbers of academic writings are also increasing over the years. There is a considerable amount of variation in formatting in

different citation styles. The manual method of organizing different methods of style is a very cumbersome process and which is also sometimes not accurate. It is very challenging to maintain accuracy in manual methods of organization. However, with the introduction of different reference management tools, the complexion of referencing has been decreased to a great extent. Therefore, it is imperative for the scholars to understand various referencing styles/systems and take the benefit of these tools in their academic writings. Basically, reference management tools are software's that allows scientific authors to collect, organize, and use bibliographic references or citations. The terms citation manager or bibliographic management software are sometimes used interchangeably.

Reference Management Software

Reference management tools are nothing but software which is used by scholars and authors for recording, storage and utilizing bibliographic citations. It maintains a database to references and creates bibliographies and the reference lists for the written academic works. It records the elements for the reference comprises such as the author's name, year of publication, and the title of an article, etc. (Reiss & Reiss, 2002). According to Telstar's definition, reference management software enables an author to build library of references by entering the details of each reference in a systematic and structured format. They help in organizing sets of references by tagging or use of folders and will generate references, citations or bibliographies in a range of referencing styles. Reference management software reduces the workload for the researchers to edit, proofread, and avoid formatting errors (Aronsky et al., 2005). According to Jose & Jayakanth (2008), the reference management software maintains a back-end database of the reference details and provides the user interface which can facilitate in searching and rendering of references according to the desired styles. Some packages also additionally import records from library inventories and other bibliographic information sources in order to facilitate generation of resources. What's more, these packages additionally offer modules or additional items for word processing software which empowers researchers or writers to embed references from the library specifically into the archive as they are composed. The fundamental elements of the reference management software incorporate import references from the assortment of sources, for instance, bibliographic databases; seek, alter, sort, and the share references; render the references in the assortment of arrangements; select the reference to consolidate in the word-handled archive and the configuration naturally. Lastly, it stores the connections for the records or duplicates inside the database.

Reference Management Software performs several functions which are described below.
1. It aides in bringing in references from bibliographic databases and sites.
2. It aides in gathering metadata from PDF documents.
3. It configurations catalogs and references when composing papers.
4. It forms database of reference to follow along and sort out records valuable for one's research
5. It likewise permits to share, talk about, remark, recommend references inside individuals from the same academic group.

Types of Reference Management Software

A) Commercial Software: These software or programs are designed and developed for licensing or sale to end users and that serves commercial purpose. Some of the commercial reference management software are:

Bookend: This software package is designed for Mac OSX operating system that is used to manage bibliographies and references while writing. It is used by students, academic and professionals. It is made by Sonny Software and its developer is John Ashwell. It works on the iPhone, iPod touch, and iPad. It is a general application, implying that despite the fact that it functions admirably on small screens, it takes advantage of the larger viewing area of the iPad for a richer experience. It incorporates with the Bookends reference manage application on the Mac, giving consistent exchange of references and PDFs between your Mac and iOS gadgets. This implies you can discover references when you are in a hurry and import them, with pdfs, into Bookends when you are at your work area (and the other way around).

EndNote: EndNote reference management software is produced by Clarivate Analytics previously known as Thomson Reuters. It is product of Clarivate Analytics, formerly the IP & Science business of Thomson Reuters. EndNote X8 is the latest version of EndNote and the license can be purchased for institutional or personal use. EndNote can run on Windows, Macintosh, iPad App and its web version is also available. Endnote Basic is freely available with limited functionalities. User have to create an account to access its web version. EndNote academic version can be used on three computers per license (any combination of Windows and Mac) but not for use on shared workstations.

RefWorks: RefWorks is produced by RefWorks.COS a business unit of ProQuest LLC. It allows users to create personal databases which can be used for a variety of research activities. References can be quickly and easily imported from text files or online databases. The databases can then be utilized to oversee, store, and share the data. Clients can naturally embed references from their database into their papers and produce formatted bibliographies and manuscripts in seconds.

B) Free Software: This software allows the users to run the software for any purpose. Further it allows the user to distribute the software and nay adapted versions. It provides users "access to source code"- the right to study and modify software entails availability of the software source code to its users. Some of the free Reference Management Software are:

Mendely: It is a brand-new research management tool for desktop and web produced by ELsevier that helps to organize research, collaborate with others online, and discover the latest research. It combines Mendely Desktop, a PDF and reference management application (that are available for Windows, MaCos and Linux) and Mendely for Android and iOS with Mendely Web, an online social network for researchers.

CiteUlike: it is a webs service allowing user to save and share citations to academic papers. It was developed by Richard Camerun in 2004.

Zotero: It is the only research tool that automatically senses content in web browser, allowing to add it to the one's personal library with a single click. It is a fully featured citation software suite for the Firefox Web Browser; that interfaces with End Note and RefWorks via its export features,

Table showing comparison between Reference Management Software

Content	RefWorks	EndNote	Zotero	Mendely	Bookend	CiteULike
Developer	ProQuest	Clarivate Analytics	Centre For History & new media at George Mason University	Mendley ltd.	Sonny Software	Oversity Ltd.
Web Browser Compatibiliy	Internet Explorer, Firefox, Safari	N/A	Firefox, Chrome Safari	Internet Explorer, Firefox, Safari, Chrome	Firefox, Safari, Chrome	Internet Explorer, Firefox, Safari, Chrome
Word Process Compatibility	Ms Word for Windows/Mac Open Office, Rich Text Files	Ms Word for Windows/Mac Mac, Open Office	Ms Word for Windows. OpenOffice, Libre Office	Ms Word for windows. OpenOffice, Libre Office	Microsoft Word, Apple Pages, Mellel, Openoffice.org	N/A
Free access	No	No	Yes	Yes (free versions only)	No	Yes
Export from online databases	Yes	Yes	Yes	Yes	Yes	Yes
Import from RSS feeds	Yes	No	Yes	No	N/A	Yes
Search online catalogs& database	Yes	Yes	No	No	Yes	Yes
Share references online	Yes	Yes	Yes	Yes	Yes	Yes
Mobile Web Version	Yes	No	No	No	Yes (only for iOS)	Yes
Customized for subscribing organization	Yes	No	No	Only into institutional edition	No	No
Maximum Number of Records	Unlimited	Unlimited	Unlimited	Unlimited	Limited	Limited
Online storage space limits	5 GB per account	5 GB through EndNote Web	100 MB free storage. Additional space available on purchase	1 GB personal and 500 MB shared for free. Additional space available on purchase	Online storage free up to 3 GB / Additional storage space available	Free

Conclusion

The advancement of technology in the age of internet has opened new avenues to manage references effectively. Referencing softwares also comes with new features to support exporting, importing, capturing references, file attachment, database search and capturing references directly from the webpage or PDF files. Several online and offline referencing tools have been developed to address the issues of automated management of citations. The ideal referencing tools should support all referencing style sheets and support all the major operating systems.

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