

## REFERENCE MANAGEMENT AND GRAPH VISUALIZATION FOR RESEARCHERS

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**Abstract:** - *Information communication technology is an important aspect of reference management in modern society. It can help to improve the better teaching and learning process for the students, teachers and research scholars. Citation styles in one of the core concepts in any research work and this can be classified in different ways like American Psychological Association (APA), Modern Language Association (MLA), Chicago Manual Style and etc. Apart from this it can also manage the bibliography on a particular topic. This paper explores the two important things in research work such as citation styles and graph visualization. Citation styles can be managed by using the Zotero open source reference management software. On the other hand graph visualization is managed through the VisVower in the field of big data environment for a particular journal or database. The methodology is very simple to export all the bibtex or ris format from the popular Journal websites and it will be imported into the Zotero admin interface on Ubuntu operating system.*

**Keywords :** Reference management tool, Citation styles, Zotero, VisVower, and Citation graph

### Introduction:

The research discourse as presented by any research scholar is partly based on his personal intellectual endeavour which is the output of his speculation, observation, experience and experimentation, as well as partly on the public domain of published relevant literature as presented by the research scholars, authors and expert personalities those who paid their attention towards unfolding the similar type of problems

earlier in through their relevant published literature. Hence, any researcher should have to consult the earlier literature relevant to his present topic of interest and thus, a thorough literature review is obvious on the part of the research scholars. As the research scholar has to collect such literature for conducting his study or to get help by collecting the relevant ideas or clues from those literature, he is, thus, morally obligated to mention the previous creation of earlier authors as

cited references in his personal research discourse. Hence, a good methodology regarding these references are to be managed very scientifically and literally to pay homage to the expertness of earlier authors. And, that is why reference management is a good deal of programme for the part of any researcher to make the total relation of publication from transparent point of view. On the otherhand a researcher or an author when is involved in the publication activities for their research work then a greater amount of literature is being published after a long period of time. All these literature have been dispersed in different journal titles, in different countries, in different languages, in different volumes, numbers, years, and even with different peer. Therefore, to bring this total work in controllable form and to manage these dispersed literature over a single canvas for visualization, an active presentable mechanism and technological global citation format is urgently necessary. At present, reference management and graph visualization are both necessary means of research publication over which a researcher must have to pay a greater attention as well as formulation, so as to make his total production an easy access and easy organization. In this paper two important open source tools i.e. Zotero (reference management software) and VisVower (graph visualization) have been used based on the Ubuntu operating system.

### **Review of related works**

Both Mr. Das and Mr. Mandal developed a cloud computing model for any library to get benefit of thy users of the library and also showed how this cloud computing model helped to build an integrated library management and retrieval system (Das & Mandal, 2013). Mr. Mandal in his paper showed a development of domain specific cluster for college libraries affiliated to the Univeresity of Burdwan. He also showed in his paper varous facets of domain specific cluster for college libraries (Mandal, 2017). Mr. Mandal in his article presented a comparative study between various softwares and standards required to develop an integrated library management system (Mandal, 2016). Mr. Mandal showed in his paper an integrated information management and retrieval system for college libraries affiliated to the University of Burdwan (Mandal, 2017). In another paper he also discussed an integrated ISO framework for college libraries and showed how it perfoms effectively(Mandal, 2017). Fernandez in his article published in Library Hi-Tech discussed zotero as an information management software and showed how zotero performs effectively in the environment of Library 2.0.(Fernandez, 2011) . Fourie in his paper commented that librarians can help users to apply personal information management and reference management and to materialise their assigned task against what technology can provide (Fourie, 2011). P, Sandford in his paper evaluated Endnote as reference management software and presented

an idea how this type of software is evaluated (Sandford, 2000). Both Sarrafzadeh & Hazeri studied the information use pattern through reference management software by LIS faculties of Iran and showed the type of software they used is endnote and 35% respondents know the use of reference management softwares through formal education (Sarrafzadeh & Hazeri, 2014). Scheele in his article discussed the different aspects of reference management and its importance in LIS (Scheele, 1983). J. Emanuel in his paper discussed how users use citation management tool and showed EndNote and RefWorks both reference management softwares were used in spite of new tools including Zotero and Mendeley (Emanuel, 2013). S. Lanning in his paper discussed modern citation style and how students respond to citation style and showed that simplified citation style is better than any other style (Lanning, 2016). Park, Mardis, & Ury showed the percentage of Citation reference questions has been increased from the percentage of total number of reference questions answered by librarians (Park, Mardis, & Ury, 2011). Peroni, Dutton, Gray, & Shotton, aimed to discuss the Citation data as a part of the Commons i.e. those works available in an open repository. (Peroni, Dutton, Gray, & Shotton, 2015). Ram, S., & K, J. P. A. in their paper presented a survey how Indian information professionals used bibliographic management softwares effectively and showed the effectiveness of the use of those bibliographic management softwares (Ram, & K, 2014). Tsay, M. in his paper analyses and

presents a comparative study for both citing and cited literature bibliometrically and he observed three subject terms are commonly used in both citing and cited literature. These three terms are -- Digital libraries, electronic media and world wide web (Tsay, 2008). Ullen & Kessler showed the application of basic Android and iOS apps for mobile devices for generating bibliographic citations and evaluated the proper use of it with special reference to APA and MLA style of citations. (Ullen, & Kessler, 2016).

### Objectives

The objectives of this paper are as follows:

1. To manage the references for standard dissemination of information to be presented at the end of research paper.
2. To make the sequential pattern of presenting the references.
3. To organize the total production of literature by a research scholar for single visualization format.
4. To maintain the mechanism for ever research publication.

### Tool for Reference Management

Bibliography presents the list of sources (mainly books) that were used in a research work. In most of the time, the concept of 'bibliography' and 'reference' are simultaneously used as the same concept, but these two concepts are totally different. In the early days, preparation of bibliography and reference was prepared

manually but recently they can be managed through reference management software with the use of different citation styles (ex : APA, MLA, Chicago, Turabian, Harvard Style etc.). In this paper, Zotero, an open source reference management software, has been selected for study, because of the easy installation and upgradation of Zotero. Moreover Zotero has the facility to import and export the citations or references from different sources. The history and features of Zotero are stated below :

**Zotero:** Zotero is a popular open source and reference management software developed by the Center for History and New Media at George Mason University. It supports cross-platform like Windows and Ubuntu operating system. It is possible to integrate in different sectors like browser and suitable word processors Microsoft Word, LibreOffice, OpenOffice Writer, and NeoOffice (<https://www.zotero.org/>).

### **Zotero Interface in Ubuntu**

Single menu is very important of any software because here just click on the icon and open all the information regarding the citations and references. Reference management is an important task in the field of research of any topic in multiple subjects. Bibliography management is essential tasks in any research of multiple topics of different items like Books, Conference proceedings, Journals, Magazines, and others. Zotero is a well known open source bibliography management software. The Figure – 1 is stated that the Zotero interface is appear in a single

menu under the other option in Ubuntu operating system. It can save the time of the researcher for the proper and suitable reference management. This is the attractive interface to the researchers because they can easily open the Zotero and managed the bibliography on the basis of global citation styles like APA, MLA, Chicago Manual Style and etc. for the better management of references in any field. Reference management can easily be prepared by using this tool just click on the Zotero icon. It is also the Web-enabled architecture because users or researcher can easily register in Zotero Website. The essential features of Zotero icon are stated as follows :

- I. It supports the multilingual references.
- II. Sharing the references from one researcher to another.
- III. It can easily access and download the references of multiple disciplines.
- IV. It is possible to manage the global reference styles for a particular topic.
- V. Fully support the many formats in the field of reference management.
- VI. It is more reliable for creation of bibliography.
- VII. Endnote facilities available in the export option.
- VIII. It can annotate the portable document formats (PDFs) by Zotero plugin.
- IX. Cloud computing facilities is also available from this interface.
- X. Export the full reference in a single doc file by Zotero.

XI. Figure – 1 : Zotero icon in Ubuntu operating system

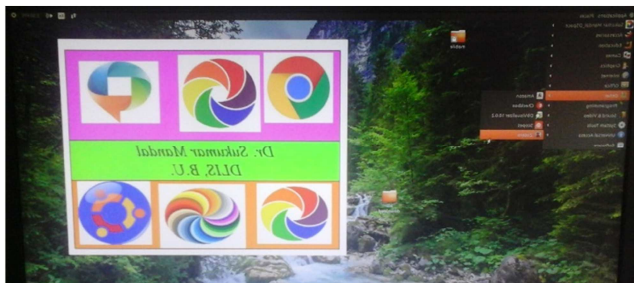


Figure – 1 : Zotero icon in Ubuntu operating system

**Import BibTex Format**

It is a popular reference management format in the domain of research. This is one of the text based independent style format of bibliography which associated of different items articles, books, and theses. Generally the extension of BibTex save as .bib format for the better management of multiple types of resources. It is consists of database file of different entries of said items as follows :

address	: Publisher's address	month	: Publication month
annotation	: Annotated bibliography styles	note	: Other information
author	: Name of the author	number	: Issue and volume number
book	: The organiza	Sponsors	: of

title	: title of the book	conference	
chapter	: Number of chapter	pages	: Number of pages
crossref	: Cross-referenced entry	publisher	: Name of publisher
edition	: Edition of a book	school	: Written place of thesis
editor	: Name of the editor	series	: Series of books
howpublished	: Non standards publishing	title	: Work title
institution	: Name of the institution	type	: Default type of publication
journal	: Name of journal	volume	: Journal volume
key	: Alphabetical order of entries	year	: Year of publication

Emerald is a popular database in the field of social science and also in library and information science. First download the bibtex format from the emerald database and then import these bibtex data into the Zotero (Figure – 2). This is very helpful for each and every researchers of any

institution and in any field. Researchers have easily managed the suitable references by using the Zotero.

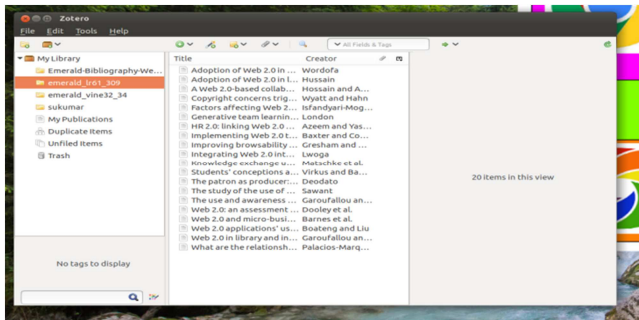


Figure – 2 : Import Bibtext format interface in Zotero

**Global Citation and Reference Styles Interface**

In higher education it is require to manage piece of information of any project or assignment for the management of citation and references. Citation meaning is very simple citing and cited documents. Many researchers have facing problem in the field of reference and citation management. Now, this paper has successfully solved the problem of researcher in the said field. Zotero can easily install and integrate with the libreoffice writer. Finally the researchers have benefitted by using this framework on Ubuntu operating system for easy and efficient reference management. Ciation and reference management is possible by Zotero open source software. All the global ciation and reference styles support in Zotero such as American Anthropological Association, American Psychological Association 6<sup>th</sup> edition, Cell, Chicago Manual Style 17<sup>th</sup> edition (author-date), Chicago Manual Style 17<sup>th</sup>

edition (full note), Chicago Manual Style 17<sup>th</sup> edition (note), Elsevier-Harvard (with titles), IEEE, Modern Humanities Association 3<sup>rd</sup> edition, Modern Language Association 8<sup>th</sup> edition, Nature, and Vancouver. The Figure – 3 is represent the two output mode like citations and bibliography. On the otherhand it can be saved in different output formats including RTF, HTML, copy to clipboard, and print. It can be successfully integrated with the libreoffice writer by Zotero plugin. The important features of this integrated reference management framework are stated as follows :

- i. It is manage different global citation styles.
- ii. Create new collection of each database bibtext format.
- iii. It is support copy clipboard facilities.
- iv. Print the references in real time.
- v. It can be saved in different output formats.

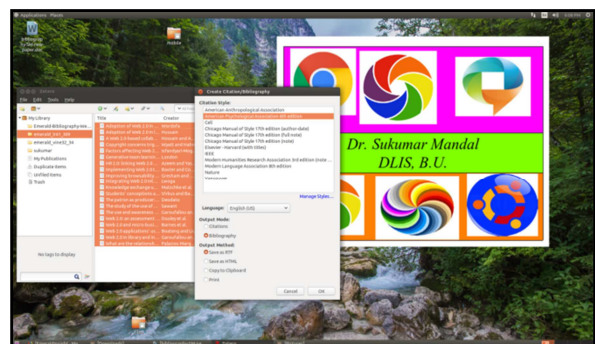


Figure – 3 : Ciation styles interface in Zotero Seeing is believing. Zotero is very strong software in the field of reference management. The Figure – 4 is represents generating the references from the bibtext format in a single libreoffice writer



against in American Psychological Association 6<sup>th</sup> edition. This is very important interface in reference management for the researcher. Obviously it can save the time of the researcher when generating the references in different global standards.

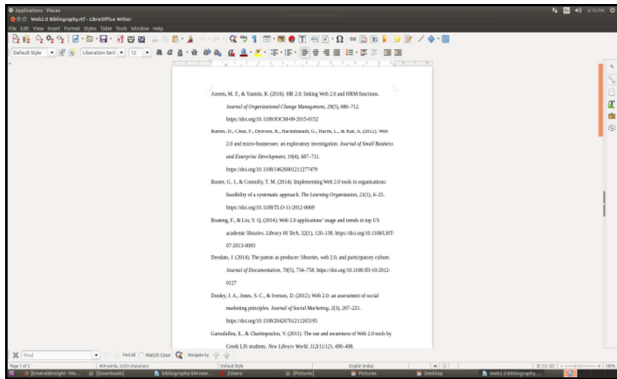


Figure – 4 : APA Citation styles interface in Zotero libre open office writer  
**Citation Visualization Interface**

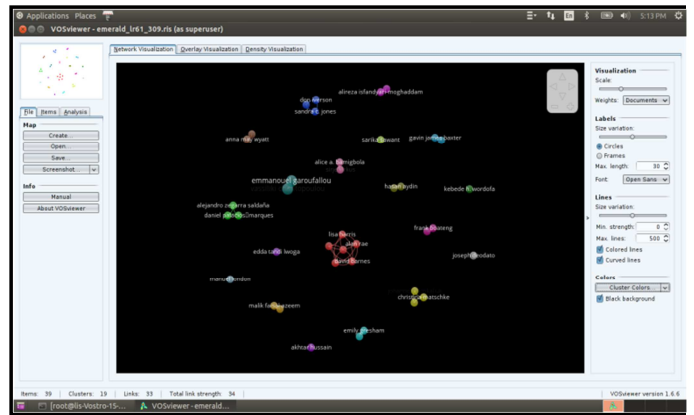
This is the concept of big data in linked open data. Citation consists of two important elements like citing and cited documents i.e source and reference available in different papers. Journals, and articles. It is very important for the measurement of web references and citations with respective authors and co-authors. These can be grouped as follows:

- i. Network Visualization
- ii. Overlay visualization
- iii. Density visualization

**I. Network Visualization**

It is the new innovative technique in modern information communication and technology.

Network visualization is a part of social network analysis. It emphasizes the structure of network of different author against in multiple subjects.



The Figure – 5 is represents the network visualization of author and this can be created from the emerald databases relating to bibtext format. This can be applied in different subjects including computer science, chemistry, physics, history, sociology, biology, information science, political science, social psychology, and etc. It helps to display the data analysis and relevant result.

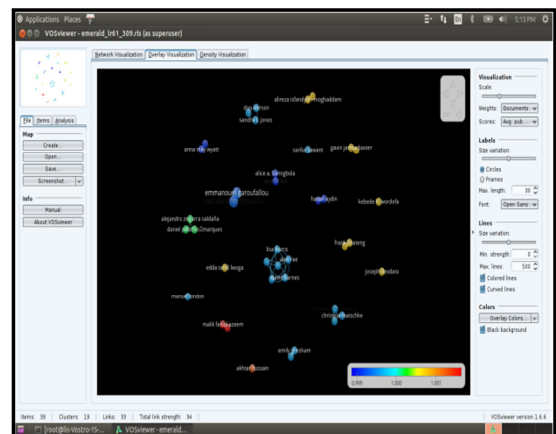


Figure – 6 : Overlay visualization interface of authors

### III. Density Visualization

Reference data can be stated in the form of density graph visualization. The Figure – 7 is represents the density visualization interface of authors those are available in Emerald database.

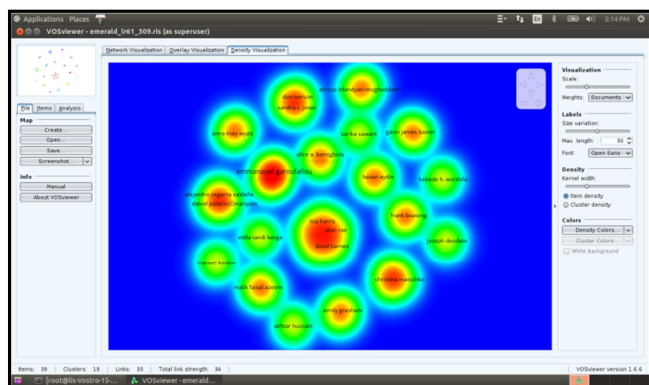


Figure – 7 : Density visualization interface of authors

### Conclusion

This work is very much conducive for the research scholar as well as authors and different experts. Whenever, any of them will open the Zotero and will be able to bring the required citation formats i.e bibtext and RIS (Research Information System) then it would give him an effective and needful opportunity to select a particular international reference management styles and after selecting the particular style of his interest he can manage the references he want to include in his research publication. After that one will able to represent this references in the word format very easily by clicking the import bibliography option. Hence, a better time management and tedious activities can equally be arrested which helps him to manage his reference

efficiently and effectively which is termed as reference management technique. At the same time with the help of VisVower the citation visualization is possible and a total panoramic representation can be visualized for identifying the totality of the work, or to identify the particular work, or to identify the relevant work as presented and published in different areas. Therefore, this sort of reference management technique as visualization of reference management will activate the research work speed up the publication procedure and bring economy and time management in times of reference searching those are very needful and relevant work for researchers to a great extent.

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