Awareness and Use of Reference Management Software among the Research Scholars of School of Information Science and Technology in BBAU, Lucknow : a comparative study

Prof. K. L. Mahawar,
Professor, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Lucknow.

Preeti Tanwar
Research Scholar, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Lucknow.

Unzila Hurum
Research Scholar, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Lucknow.

Abstract :

This paper includes the study of awareness and use of Reference Management Software among the School of Information Science and Technology (SIST), one of Babasaheb Bhimrao Ambedkar University (BBAU), Lucknow. SIST comprises three departments, i.e. Department of Information Technology (DIT), the Department of Computer Science (DCS), and the Department of Library and Information Science (DLIS). In this study, the Google Form of the questionnaire was used and mailed for data collection. This study explains that 92.5% of respondents are from DLIS, 92.3% are from DIT, and 75% are from DCS using RMS tools. At the same time, all three departments are somehow and more aware of all the software covered in this study, but Mendeley is the most popular software among all. This study also highlights that 82.6% of respondents show interest in using Free/Open-source software. This study also covers that 100% of DCS and 88% of respondents of DLIS also have faced the barrier of insufficient training, and 91.7% of DIT have a lack of citation knowledge.

Keywords :

Awareness,BBAU, Commercial software, Free/Open-source software, Mendeley, Reference Management Software

1. Introduction :

Reference Management Software (RMS) helps researchers to enhance their potential to upgrade research quality. The major role of RMS is to cite when you write in order to properly credit an author's work and avoid plagiarism(Setiani, et.al, 2021). Earlier researchers create references manually and are fed up writing one-to-one references own. However, some researchers still create references manually due to not proper awareness or not being familiar with any software. The invention of ICT helps to easily create references with the help of various types of paid or free software such as EndNote, SciRef, Paperpile, Biblioscape, RefWorksZotero, Mendeley, CiteULike, JabRef, BibDesk, etc. These software's are user friendly to those who are familiar with ICT. Giving proper references in any research work and to enhance the authenticity of any work, but their management is too critical and time-consuming. RMS provides an appropriate format to manage and organize references in a standard way. The features of these software's like a store, insert and organize give the advantage to researchers to doing work easily and save their time (Speare, 2018).

2. Review of the related literature :

Melle andUnsworth (2015) examined that most of the respondents were used Endnote software as compare to Mendeley, Zotero, Refworks, etc. Respondents stated that they choose these software because of its only one, I now about, monash supported software, integrated with word, etc. Osmani, Ahmad, and Arif (2016) the study revealed that 92.6 % respondents are well known with Endnote software and second highest Mendeley (47.2%). Most of the respondents use this software because this is available on the institution website and used by the rest of the community. Amrutha, Kumar, andKabir(2018) a study examined that most of the respondents (76%) were using Mendeley software Majority of respondents said that they are facing problems in using this software such as insufficient training, lack of technical support, slow internet bandwidth, lack of citation style knowledge,

etc. Pathak and Johnson (2018) study found that maximum respondents of both colleges were not aware of RMS and also show that most of the respondents were not using RMS. Hendal (2019) to investigate that Endnote software is highly used by the faculty of Kawait University. Faculty stated the main reasons for not using these software such as attended several useless workshops, software are complicated, etc. Khanchandani(2019) examined that 84.21% of the respondents are aware with reference management tools and 81% are using these reference tools. 86% respondents used these tools for research, 60% for literature and 46% for publishing articles. Out of them, 52.65% of the respondents are used Mendeley for creating reference.Adeyemi, Sulaiman, andAkanbi (2020) this paper found that Endnote, Zetero, Mendeley, and Refworks software are mostly used by the faculty members. Faculty members stated the constraints which are most time faced such as internet problems, technical support, difficulties in learning to use, etc.

3. Statement of the problem :

This study is based on the three departments, i.e. DIT, DCS and DLIS. These departments are more aware of Information technology. Library and Information Science discipline are also running step by step in IT area like these two departments. When writing any paper or theses/ dissertation, researchers must create proper references to increase the work's authenticity and avoid plagiarism. Before the emerging of RMS tools, research created their bibliographies or citations manually, but when RMS tools came to know, this task is gone to be very easy, and it saved researchers' time. So, this study has been conducted to investigate the awareness and use of RMS among the research scholars of school of information science and technology in BBAU.

4. Objectives of the study :

- To know the awareness and use of RMS among the research scholars
- To identify the satisfaction level of RMS
- To analyze the most familiar software used in managing bibliographic citations among the research scholars
- To know the barriers in using RMS.

5. Research methodology :

This study is based on a survey method, and the questionnaire was the primary tool for data collection. There are a total of 66 research scholars in all three departments, which are DIT (17), DCS (15) and DLIS (34). In the COVID situation, researchers could not meet with respondents personally. So, the questionnaire was prepared in Google form and mailed/WhatsApp to the research scholars. Fifty-two respondents returned the response out of 66 totals.

6. Data analysis and interpretation :

Table 1: Awareness and use of RMS

Departments↓	Awareness		Use	
	Yes	No	Yes	No
DIT	13 (100%)	0	12 (92.3%)	1 (7.7%)
DCS	12 (100%)	0	9 (75%)	3 (25%)
DLIS	27 (100%)	0	25 (92.6%)	2 (7.4%)
Total	52 (100%)	0	46 (88.5%)	6 (11.5%)

Table 1shows that 100% of respondents of selected departments are aware of RMS, but 92.6% of DLIS, 92.3% of DIT, and 75% of DCS use RMS.

Table 2 : Awareness with different tools of RMS

Departments→ Software↓	DIT		DCS		DLIS	
	Yes	No	Yes	No	Yes	No
EndNote	76.9%	23.1%	50%	50%	81.4%	22.2%
SciRef	69.2%	30.7%	50%	50%	85.1%	25.9%
Paperpile	69.2%	30.7%	16.6%	83.3%	66.6%	37.1%
Biblioscape	61.5%	38.4%	33.3%	66.6%	74.1%	29.6%
RefWorks	69.2%	30.7%	33.3%	66.6%	88.8%	14.8%
Zotero	69.2%	30.7%	25%	75%	100%	0
Mendeley	84.6%	15.3%	83.3%	16.6%	100%	0

CiteULike	61.5%	38.4%	16.6%	83.3%	59.2%	44.4%
JabRef	61.5%	38.4%	16.6%	83.3%	59.2%	44.4%
BibDesk	61.5%	38.4%	25%	75%	74.1%	29.6%
Any other	30.7%	69.2%	8.3%	91.6%	66.6%	37.1%

Table 2 shows that majority of research scholars are aware of Mendeley software. 84.6% of respondents of DIT and 83.3% of respondents of DCS are familiar with Mendeley. 100% of respondents of DLIS are aware of Mendeley and Zotero.

Table 3: Sources of awareness

Sources	DIT	DCS	DLIS
Workshop/seminar	30.8%	33.3%	59.3%
Library professionals	7.7%	0	59.3%
Friends/classmate	23.1%	58.3%	48.1%
Teaching staff	7.7%	0	40.7%
Guidance from the supervisor	30.8%	8.3%	55%
Orientation programme/publishers/ venders/ libraries	15.4%	8.3%	29.6%
Any other	15.4%	16.7%	14.8%

Table 3 indicates that 30.8% of respondents of DIT are aware through workshop/ seminar and guidance from the supervisor. 58.3% of respondents of DCS are aware with the help of friends/classmates, and 59.3% of respondents of DLIS are aware through workshop/seminar and library professionals.

Table 4: Types of software

Departments → Type ↓	DIT	DCS	DLIS	Total (%)
Free/Open	10	7	21	38 (82.6%)
Commercial	0	0	1	1 (2.2%)
Both	2	2	3	7 (15.2%)

Table 4 shows that the maximum respondents (82.6%) use open-source software, while very few percent (2.2%) of respondents use commercial software and 15.2% use both types of software.

Table 5: Frequency of using RMS

Rating	Dept.	EndNote	SciRef	Paperpile	Biblioscape	RefWorks	Zotero	Mendeley	CiteULike	JabRef	BibDesk	Any other
Always	DIT	25%	16.7%	8.3%	16.7%	8.3%	16.7%	25%	16.7%	8.3%	25%	16.7%
	DCS	11.1%	0	0	11.1%	0	11.1%	77.7%	0	0	0	11.1%
	DLIS	20%	0	4%	4%	8%	32%	36%	8%	4%	4%	4%
Often	DIT	16.7%	0	8.3%	8.3%	0	25%	16.7%	8.3%	8.3%	0	0
	DCS	22.2%	11.1%	11.1%	11.1%	11.1%	11.1%	22.2%	11.1%	11.1%	11.1%	11.1%
	DLIS	4%	16%	0	4%	8%	24%	40%	16%	12%	8%	4%
Sometime	DIT	16.7%	16.7%	0	0	25%	0	25%	8.3%	0	8.3%	0
	DCS	0	0	0	0	0	0	0	0	0	0	0
	DLIS	16%	16%	16%	8%	8%	4%	12%	8%	8%	12%	16%

Rarely	DIT	8.3%	8.3%	16.7%	16.7%	8.3%	8.3%	8.3%	16.7%	16.7%	8.3%	8.3%
	DCS	0	0	0	0	0	0	0	0	0	0	0
	DLIS	4%	4%	4%	8%	8%	4%	0	0	0	4%	0
Never	DIT	0	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	0	8.3%
	DCS	33.3%	44.4%	44.4%	44.4%	44.4%	33.3%	11.1%	44.4%	44.4%	44.4%	22.2%
	DLIS	4%	8%	8%	8%	4%	1%	0%	12%	12%	8%	4%

Table 5 indicates the frequency of using RMS. Maximum respondents (25%) of DIT said they always use EndNote, Mendeley and BibDesk, Zotero uses often, RefWorks and Mendeley use sometimes.In DCS, the highest number of the respondents (77.7%) said that they always use Mendeley; 22.2% of respondents often use EndNote and Mendeley.In DLIS, the maximum numbers of respondents (36%) always use Mendeley, followed by Zotero (32%). 40% of respondents often use Mendeley, followed by Zotero (24%).

Table 6 : References stored in RMS

Documents →		Journal Articles	Books- Authored	Edited books	Conference Proceeding Papers	Thesis and Dissertation	Any others'
Rating	**Dept.**						
Less than 100	DIT	41.7%	50%	25%	41.7%	33.3%	16.7%
	DCS	55.6%	66.7%	44.4%	44.4%	55.6%	11.1%
	DLIS	44%	36%	36%	44%	48%	16%
100 to 300	DIT	50%	16.7%	25%	8.3%	25%	8.3%
	DCS	33.3%	0	0	22.2%	0	0
	DLIS	32%	8%	12%	0	4%	0
300 to 500	DIT	0	8.3%	0	8.3%	8.3%	0
	DCS	0	0	0	0	0	0
	DLIS	4%	0	0	4%	0	4%

More than 500	DIT	8.3%	0	0	8.3%	0	0
	DCS	0	0	0	0	0	0
	DLIS	4%	0	0	0	0	0

Table 6 indicates that 50% and 66.7% of research scholars of the DIT and DCS stored references less than 100 during writing in books authored. In comparison, 48% of respondents of DLIS stored references less than 100 during the writing of Thesis and Dissertation. Maximum respondents of DIT (50%), DCS (33.3%) and DLIS (32%) stored references 100 to 300 during writing journals articles.

Table 7: Satisfaction level with the features of RMS

Features Rating	Dept	To insert citations in your work	To save citations for systematically arrangement	To store and manage data	To store and organize pdf file	To help to locate other information resources	To create groups and connect them	To Annotate and tag pdf files, docs, etc.	To Share research	To connect more research scholars and experts	Any others
Highly satisfied	DIT	41.7%	25%	16.7%	25%	16.7%	8.3%	16.7%	16.7%	25%	16.7%
	DCS	55.6%	44.4%	55.6%	33.3%	33.3%	33.3%	33.3%	33.3%	22.2%	11.1%
	DLIS	24%	20%	12%	20%	20%	16%	24%	12%	16%	12%
Satisfied	DIT	41.7%	58.3%	58.3%	58.3%	50%	41.7%	25%	33.3%	25%	16.7%
	DCS	22.2%	22.2%	22.2%	33.3%	55.6%	33.3%	33.3%	33.3%	44.4%	11.1%
	DLIS	52%	44%	40%	40%	20%	16%	16%	12%	12%	8%
Neutral	DIT	8.3%	8.3%	8.3%	8.3%	16.7%	16.7%	33.3%	16.7%	16.7%	8.3%
	DCS	11.1%	11.1%	11.1%	11.1%	0	0	11.1%	0	0	0
	DLIS	4%	4%	4%	0	12%	16%	16%	16%	16%	4%

Dissatis-fied	DIT	0	0	0	0	0	0	0	0	0	0
	DCS	0	0	0	0	0	0	0	0	11.1%	0
	DLIS	0	0	0	4%	4%	0	0	4%	0	0
Highly dissatis-fied	DIT	0	0	0	0	0	0	0	0	0	0
	DCS	0	0	0	0	0	0	0	0	0	0
	DLIS	0	0	0	0	0	0	0	0	0	4%

Table 7 indicates that 41.7% of respondents of DIT are highly satisfied with the features of insert citations in your work, 58.3% of respondents are satisfied with saving citations for systematical arrangement, storing and managing data and storing and organizing pdf files. In DCS, 55.6% of respondents are highly satisfied with inserting citations in their work and storing and managing data, 55.6% of respondents are satisfied with helping to locate other information resources. In DLIS, 24% of respondents are highly satisfied with the features of RMS, such as inserting citations in your work and annotating and tagging pdf files, docs, etc. 52% of respondents are also satisfied with inserting citations in your work.

Table 8: Reasons to choose RMS

Reasons	DIT	DCS	DLIS
It is the only one i know about	33.3%	22.2%	24%
Integrates with word	25%	11.1%	20%
It is easy to use	66.7%	55.6%	68%
My lecturer/supervisor recommended it	16.7%	22.2%	12%
I had used it before	33.3%	11.1%	16%
It is the best performing tool for my needs	33.3%	33.3%	36%
It is purchased or provided by my institution	8.3%	0	8%
Build your Research network	25%	22.2%	44%
Any other	8.3%	11.1%	8%

Table 8 indicates the majority of the respondents of DIT (66.7%), DCS (55.6%) and DLIS (68%) use RMS because it is easy to use.

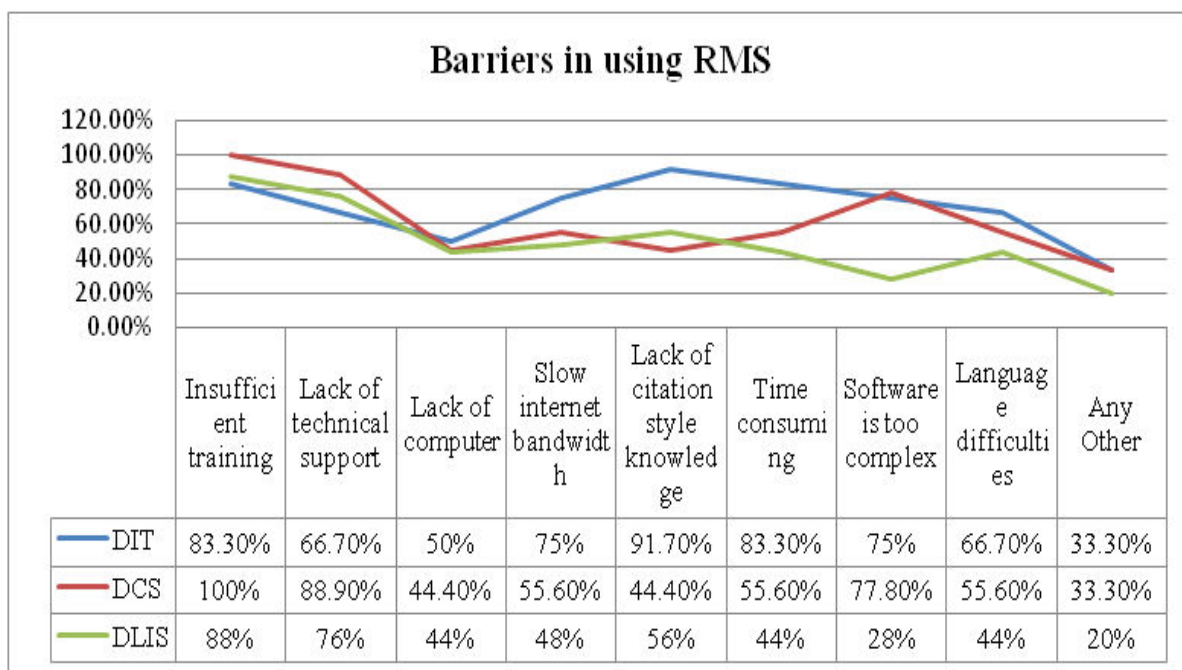**Figure 1: Barriers in using RMS**

Figure 1.

Figure 1 shows that 91.7% of respondents of DIT faced a lack of citation style knowledge followed by insufficient training and time consuming (83.3%). In DCS and DLIS, the maximum number of department research scholars stated that they faced insufficient training, and the second-highest is lack of technical support.

4. Findings :

The findings of this study can be summarized as follows:

1. Maximum numbers (92.5%) of the users are from the DLIS who use RMS, followed by DIT (92.3%) and 82.6% of respondents out of total use open-source software in their research work.

2. Respondents of all three departments are aware more and somehow with all the software. Still, Mendeley software is more aware among the research scholars of these departments, and the second one is Zotero.

3. The majority of respondents of DIT (25%), DCS (77.7%) and DLIS (36%) always use Mendeley during their research works.

4. The majority of respondents of DIT (50%), DCS (33.3%) and DLIS (32%) use RMS software to create and store 100 to 300 references at the time of writing Journals articles.

5. Some respondents have faced problems while using RMS, i.e. insufficient training, Lack of citation style knowledge, Lack of technical support, Time consuming etc.

5. Conclusion and suggestion :

This study concludes that all respondents know RMS, but DLIS and DIT maximum use RMS tool rather than DCS in their research work. Mendeley software is more popular among the research scholars of all three departments. Besides this, DLIS scholars also used Zotero and Mendeley at the time of writing. Like everything has pros and cons, RMS tools also have their cons, like barriers while using software, but overall, research scholars are satisfied with the RMS tool and its features. Based on this study, it is suggested that the library should organize the workshop and training programme from time to time to maximum use of RMS and overcome the barriers and challenges faced by respondents.

References :

Adeyemi, I. O., Sulaiman, K. A., &Akanbi, L. M. (2020). Awareness and usage of reference management software: perspectives of faculty members of University of Ilorin Nigeria. *Insaniyat: Journal of Islam and Humanities*, 4(2), 7588. https://doi.org/10.15408/insaniyat.v4i2.14003

Amrutha, R. V., Kumar, K. S. A., & Kabir, S. H. (2018).Use of reference management software among science research scholars in University of Kerala. I*ndian Journal of Information Sources and Services,* 8(1), 54-57.

Hendal, B.A. (2019) Kuwait University faculty usage and perspectives of reference management software. *Open Access Library Journal,* 6.

Khanchandani, V. (2019).Awareness and use of reference management tools @ Indian Institute of Technology Delhi (IIT Delhi). *Digital Age Strategies in Information Management for Sustainable Librarianship,* 221-229. Delhi.

Melles, A., & Unsworth, K. (2015).Examining the reference management practices of Humanities and Social Science postgraduate students and academics. *Australian Academic & Research Libraries,* 46(4), 250276. https://doi.org/ 10.1080/00048623.2015.110479

Osmani, M., Mza, R., Ahmad, B. A., &Arif, A. S. (2016). Reference management software (RMS) in an academic environment: a survey at a research University in Malaysia. *Journal of Theoretical and Applied Information Technology,* 88(1), 135-144.

Pathak, A., & Johnson, S. (2018). Use and awareness of reference management software among community college students. *Journal of New Librarianship,* 3(2), 229256. https://doi.org/10.21173/newlibs/5/12

Setiani, N., Aditya, B. R., Wijayanto, I., &Wijaya, A. (2021).A study on awareness of bibliographic management software for the academic writing activity in higher education. *Journal of Physics: Conference Series,* 1823(1), 012035. https:/ /doi.org/10.1088/1742-6596/1823/1/012035

Speare, M. (2018). Graduate student use and non-use of reference and pdf management software : an exploratory study. *The Journal of Academic Librarianship.*