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AWARENESS AND USE OF REFERENCE MANAGEMENT SOFTWARE AMONG LIBRARIANS IN UNIVERSITIES IN OGUN STATE

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Abstract

Referencing is an important aspect in writing academic papers which can be done manually or with the use of Reference Management Software (RMS). Therefore, this study investigated the awareness and use of RMS among librarians in public institutions in Ogun State. The research design employed was descriptive survey research design. The population of the study is 111 librarians with sample size of 92 librarians. The simple random sampling technique was adopted to give every member of the population equal opportunity to be selected. The instrument "AURMSQ" was used to elicit information from the respondents. Validation of the instrument was done by experts in the field of study. The test re-test method was used in this study and 0.74 obtained. A total of 92(82.9%) copies of questionnaires were returned and analyzed using frequency count, percentage, mean, standard deviation. The findings of the study revealed that the RMS type that the librarians were mostly aware of is Mendeley ($\bar{x} = 3.11$; $SD = .79$); the most frequently used RMS was Mendeley ($\bar{x} = 3.67$; $SD = .92$); level of awareness of RMS was slightly aware while level of use was rarely use. There was no significant relationship between awareness and use of RMS among librarians ($r = -.887$; $p > .001$; $N = 92$). It is concluded that librarians in university libraries in Ogun State had limited awareness of RMS, which accounted for their low level of use of the tool. The study recommends among others that university libraries should organize regular awareness programs on RMS for librarians.

Keywords: Awareness, Use, Reference, Management, Software, Librarians, Universities

Introduction

Referencing is the practice of acknowledging sources used in research, writing, and academic work. It involves citing books, journal articles, websites, and other sources following a specific citation style (e.g., APA, MLA, Chicago, Harvard). Referencing can be defined as a method of giving credit and recognizing someone for his or her innovative work that individuals use in their research to back and support their idea. A reference usually includes the name of the author, date of publication, name and location of the publishing company, title of the journal or title of the book, title of the research or chapter's name, and DOI (Digital Object Identifier). Referencing can be used for the following in research: to combat plagiarism, to locate particular sources, to enhance credibility, support academic integrity, to organize research efficiently, and facilitate knowledge building. Referencing can be done manually or with the use of referencing software called Reference Management Software (RMS). Manual referencing of sources can be time-consuming and prone to errors, making it a less efficient approach compared to using RMS.

Reference management software can interchangeably be called citation management software, company reference software, or personal bibliographic management software. These are software for scholars and writers to record and use bibliographic citations or references, and manage research references as individuals. The development of citation management packages has been driven by the rapid expansion of scientific literature. Reference management software can be described as application software that aids in collecting, organizing, storing, annotating, and sharing bibliographic citations adhering to a particular referencing style (Adeyemi, Sulaimon, Akanbi, 2020).

Reference management software is a software that simplifies the process of reference management by allowing the user to collect, store, and organize references, insert citations at the appropriate place in the body of the manuscript, and generate a list of references in a properly formatted bibliographic style. RMS is a typically desktop applications with an associated web-based interface that allow writers to remotely access their individual libraries (i.e., self-compiled, self-structured, and annotated collections of source material). Furthermore, these reference management systems often include browser plug-ins, which facilitate the simultaneous import of citation information and the corresponding full text from scientific databases, journal web pages, or other online sources. Most reference management systems also provide mobile apps that allow writers to add, read, and annotate sources from smartphones or tablets. The reference management software enables librarians to perform several critical functions, the key functions in the library context includes;

Collection management: Librarians use reference management software to capture, organize and maintain bibliographic information for their institutions' collections, thereby supporting accurate bibliographic control, streamlined cataloguing workflow, and long-term record keeping (Panda, 2023).

Research support: RMS tools function as core research support services, it integrates with word processor and generate formatted in-text citations and bibliographies across multiple styles enabling librarians to assist patrons with citation formatting, bibliography creation, and literature organization across multiple citation styles and formats (Panda, 2023).

Collaboration: RMS have frequently included group libraries, shared folders, cloud syncing, and annotation features that permit librarians to create and manage share bibliographies making them valuable for interdisciplinary work and patron instruction (Zotero Documentation, 2024).

The shift to open science and online scholarship highlights librarians' need to be proficient with tools that facilitate transparency, collaboration, and reproducibility in scholarship. RMS are important in the academic environment through facilitating the ability of researchers to manage citations in a structured manner, collaborating with co-authors, and ensuring compliance with citation guidelines.

Statement of the problem.

Despite the growing availability and importance of Reference Management Software (RMS) in supporting scholarly communication, citation accuracy, and research productivity. There seems to be a limited understanding of the extent to which librarians in universities are aware of, and effectively use these tools in their professional practice. Observations suggest that while some librarians demonstrate high proficiency and integrate RMS into their services and personal workflows, others appear exhibiting low levels of awareness, potentially hindering their ability to assist researchers and students optimally. This uneven adoption raises concerns about gaps in training, institutional support, and perceptions of relevance, which may affect the quality of reference services, information literacy instruction, and overall research support provided by academic libraries. Therefore, it is imperative to investigate the levels of awareness and use of RMS among university librarians, as well as the factors influencing their adoption and competencies in these tools.

Aim and objectives of the study

The aim of this study is to investigate the awareness and use of Reference Management Software (RMS) among librarians in universities in Ogun-State. The specific objectives are to;

- 1 examine the level of awareness of RMS among librarians in universities in Ogun State;
- 2.determined the frequency of use of RMS among librarians in universities in Ogun State;
3. ascertain the relationship between awareness and use of RMS among librarians in universities in Ogun State.

Research questions.

1. What is the level of awareness of RMS among librarians in universities in Ogun State?
2. What is the frequency of use of RMS among librarians in universities in Ogun State?

3. What is the relationship between awareness and use of RMS among librarians in universities in Ogun-State.

Literature review

Awareness of RMS among librarians.

Williams (2024) carried out a study on Reference Management practices of students, researchers and academic staff and it was found that awareness of reference managers is widespread among students and academic staff, yet the depth of users' skills and the degree of library-provided support vary widely between departments and institutions

Madhuri and Harilakshmi (2021) also carried out a study on use and awareness of Reference Management Software Tools by Research Scholars of Library and Information Science in India. It was established that awareness of RMS was also high as (81.8%) of the respondent are aware of the reference management software and 18.2% of the respondents are not aware of the reference management software.

In a study carried out by (Mvula 2023) it was reported that most participants (56.3%) were aware of the existence of RMS, despite the awareness, the majority (63.4%) did not use any RMS for referencing or citations. In another study carried out by Singh (2021) it was established that research scholars indicate moderate to high awareness of RMS with mendely and zotero the most commonly known package among respondents

Use of RMS among librarians

Jegan and Balasubramanian (2024) examined the perception and usage of reference management tools and referencing styles among faculty members and research scholars in universities across Tamil Nadu, India. The research revealed high adoption (70%) of RMS, with Mendeley emerging as the most popular tool (36%). The study also found that factors influencing tool choice included user interface (84% agreement) and available features (88% agreement). While 72% of respondents reported positive impacts on research productivity, challenges such as compatibility issues (30%) and lack of institutional support (24%) were identified.

Okpala and Umeji (2019) carried out a study titled awareness and use of reference management software by librarians in federal universities in South-East Nigeria. It was found out that **only 41.1% of librarians actively used RMS tools** in their daily work. While it was generally established that librarians have moderate use of RMS, largely limited to basic citation and bibliography functions.

O'Hanlon (2022) also carried out a study on teaching reference management tools during the pandemic: Lessons learned from virtual instruction. It was found out that the COVID-19 pandemic **greatly increased librarians' personal use of RMS tools** due to remote work and online teaching, many librarians shifted from occasional to **frequent RMS use** for document sharing, citation management, and virtual instruction. It was concluded that RMS use rose significantly among librarians under pandemic conditions.

In a study carried out by Adeyemi Sulaimon and Akanbi (2020), it was found that while awareness of software was good especially endnote and mendeley, actual use was low and the authors conclude that awareness alone does not determine the regular usage of the software without targeted training and institutional support.

Methodology

The research design adopted in this study was a descriptive survey design. This design is considered appropriate because the study seeks to determine the current level of awareness and extent of use of reference management software among librarians in universities in Ogun State. The population of the study is 111 librarians in universities in Ogun State. The design also allows for the collection of quantitative data from a representative sample of 92 librarians. The simple random sampling technique was used to give every member of the population equal chances to be selected. The instrument titled "Awareness and Use of Reference Management Software Questionnaire" (AURMSQ) was used to elicit information from the respondents. Validation of the instrument was done by experts in the field of study. Reliability was by test re-test method which yielded reliability index of 0.74, showing that the instrument is reliable, consistent and good for the study. 111 copies of the instrument was distributed to the respondents by the researcher and three (3) trained research assistants. At the end, 92 copies of the instrument was retrieved representing 82.9% return rate. Analysis of data was done using the mean and standard deviation.

Results and Discussion

Questionnaire administration and return rate

92 copies were returned and found useful for analysis giving a response rate of 82.88%.

Table 1: Librarians in universities in Ogun State

Universities	Administered	Returned
Christopher University	1	1(100%)
Gerrar University of Medical Science	1	1(100%)
Chrisland University	2	2(100%)
Mcperson University	2	2(100%)
Mountaintop University	5	5(100%)

Crescent University	7	7(100%)
Bells University	8	7(87.5%)
Crawford University	8	8(100%)
Tai Solarin University of Education	9	8(88.89%)
Covenant University	10	9(90%)
Babcock University	13	11(84.62%)
Olabisi Onabanjo University, Ago-Iwoye	14	12(84.71%)
Federal university of Agriculture, Abeokuta	23	19(82.61%)
Total	111	92(82.88%)

Table 2a: Demographic characteristics of respondents

Universities	Frequency	Percentage
Christopher University	1	1.09%
Gerrar University of Medical Science	1	1.09%
Chrisland University	2	2.17%
Mcpherson University	2	2.17%
Mountaintop University	5	5.43%
Crescent University	7	7.61%
Bells University	7	7.61%
Crawford University	8	8.70%
Tai Solarin University of Education	8	8.70%
Covenant University	9	9.78%
Babcock University	11	11.96%
Olabisi Onabanjo University, Ago-Iwoye	12	13.04%
Federal university of Agriculture, Abeokuta	19	20.65%
Total	92	100%

Table 2a showed results for the demographic characteristics of respondents in universities in Ogun State. It was revealed that majority of the librarians are from Federal University of Agriculture Abeokuta which accounts for 19(20.65%) of the population while the least represented in this study are Christopher University, and Gerar University of Medical Sciences accounting for 1(1.09%) each.

Table 2b: Demographic characteristics of respondents

Demographic characteristics	Frequency	Percentage
Gender		
Male	48	52.2%
Female	44	47.8%

Section

Readers Section	20	21.7%
Technical Section	34	37%
Acquisition Section	32	34.8%
Serials Section	6	6.5%
E- Library	-	-

Highest Educational Qualification

Bachelor's degree	-	-
MLIS	38	41.3%
MPhil	20	21.7%
PhD	34	37%

Designation

Assistant Librarian	-	-
Librarian 2	30	32.6%
Librarian 1	18	19.6%
Senior Librarian	38	41.3%
Principal Librarian	6	6.5%
Deputy University Librarian	-	-
Total	92	100%

Table 2b: Demographic characteristics of respondents. For the gender, it was revealed that 48(52.2%) accounted for the dominant gender among the librarians in university in Ogun State . Also, for the section where the librarians worked, results imply that majority of them are professionals in the technical section of the library which covers Cataloguing & Classification which is accounted for by 34(37%) of librarians. In addition, the results implies that librarians in universities in Ogun State possess the highest possible academic qualification known as the PhD. Similarly, from the results on the designation of the librarians, it was revealed that majority of the respondents are senior librarians.

Table 3: Awareness of the following Reference Management Software among librarians in universities in Ogun State.

Types of Software	Not at all aware	Slightly aware	Moderately aware	Extremely aware	\bar{x}	Std Dev.
Reference Management Software	26 (28.3%)	48 (52.2%)	12 (13%)	6 (6.5%)	1.98	.83
Zotero						

Mendeley	2 (2.2%)	16 (17.4%)	46 (50%)	28 (30.5%)	3.09	.75
EndNote	20 (21.7%)	34 (37%)	32 (34.8%)	6 (6.5%)	2.26	.88
RefWorks	16 (17.4%)	68 (73.8%)	8 (8.7%)	-	1.91	.51
Citavi	50 (54.3%)	10 (10.9%)	12 (13%)	18 (21.8%)	2.02	1.25
PaperPile	40 (43.5%)	50 (54.3%)	2 (2.2%)	-	1.59	.54
JabRef	36 (39.1%)	44 (47.8%)	8 (8.7%)	4 (4.3%)	1.78	.78
Papers	74 (80.4%)	18 (19.6%)	-	-	1.20	.40
Docear	34 (37%)	42 (45.7%)	14 (15.2%)	2 (2.2%)	1.83	.76
Bookends	70 (76.1%)	12 (13%)	8 (8.7%)	2 (2.2%)	1.37	.74
Bibdesk	46 (50%)	42 (45.7%)	4 (4.3%)	-	1.54	.58
Bibtex	42 (45.7%)	40 (43.5%)	10 (10.9%)	-	1.65	.67
CiteULike	56 (60.9%)	14 (15.2%)	14 (15.2%)	6 (8.7%)	1.72	1.02
Weighted mean					1.84	.75

Decision rule: 1-1.74 = Not Aware, 1.75-2.50 = Slightly Aware, 2.51-3.26 = Moderately Aware, while 3.27 - 4 = Extremely Aware

Table 3 presents result on the awareness of Reference Management Software among librarians in universities in Ogun State. It was discovered that Reference Management Software that the librarians are mostly aware of is Mendeley ($\bar{x} = 3.09$ Std Dev. = .75); while majority of them have no idea about papers ($\bar{x} = 1.20$ Std Dev. = .40). This implies that Mendeley is the most sought after, and popular Reference Management Software for the librarians in university libraries in Ogun State.

To establish the level of awareness of Reference Management Software by librarians in universities in Ogun State, the decision rule of $1-1.74 = \text{Never}$, $1.75-2.50 = \text{Rarely}$, $2.51-3.26 = \text{Sometimes}$; while $3.27 - 4 = \text{Always}$ was applied against the weighted mean of 1.84. It can therefore be concluded that librarians in university libraries in Ogun State are slightly aware of Reference Management Software.

Table 4: Frequency of use of Reference Management Software among librarians in university libraries in Ogun State.

Types of Reference Management Software	Always	Sometimes	Rarely	Never	\bar{x}	Std Dev.
Zotero	10 (10.9%)	16 (17.4%)	14 (15.2%)	52 (56.5%)	1.83	1.08
Mendeley	54 (58.7%)	28 (30.4%)	10 (10.9%)	-	3.48	.69
EndNote	18 (19.6%)	24 (26.1%)	42 (45.7%)	8 (8.7%)	2.57	.91
RefWorks	- (10.9%)	10 (23.9%)	22 (65.2%)	60	1.46	.68
Citavi	- (2.2%)	2 (45.7%)	42 (52.2%)	48	1.50	.54
PaperPile	- (4.3%)	4 (50%)	46 (45.7%)	42	1.59	.58
JabRef	- (6.5%)	6 (47.8%)	44 (45.8%)	42	1.61	.61
Papers	- (43.5%)	- (56.5%)	40	52	1.43	.50
Docear	- (4.3%)	4 (39.1%)	36 (56.5%)	52	1.48	.58
Bookends	- (56.5%)	- (43.5%)	52	40	1.57	.50
Bibdesk	- (2.2%)	2 (43.5%)	40 (54.3%)	50	1.48	.54
Bibtex	- (2.2%)	- (43.5%)	44	48	1.48	.50

			(47.8%)	(52.2%)		
CiteULike	-	-	46	46	1.50	.50
			(50%)	(50%)		
Weighted mean				1.77		.63

Decision rule: 1-1.74 = Never, 1.75-2.50 = Rarely, 2.51-3.26 = Sometimes; while 3.27 - 4 = Always

Table 5 presents the results on the frequency of use of Reference Management Software among librarians in university libraries in Ogun State. It was revealed that the most frequently used Reference Management Software is Mendeley ($\bar{x} = 3.48$; Std Dev. = .69); while the least used Reference Management Software is Papers ($\bar{x} = 1.43$; Std Dev. = .50). This implies that librarians in university libraries in Ogun mostly use Mendeley.

To establish the level of use of Reference Management Software by librarians in university libraries in Ogun State, the decision rule of 1-1.74 = Never, 1.75-2.50 = Rarely, 2.51-3.26 = Sometimes, while 3.27 - 4 = Always was applied against the weighted mean = 1.77. It can therefore be concluded that librarians in university libraries in Ogun State rarely use Reference Management Software.

Presentation of results for research hypotheses

Table 6: Relationship between awareness and use of reference management software among librarians in university libraries in Ogun State.

Variables	N	Mean	St.Dev	Df	R	P	Sig
Use of Reference Management Software	92	22.96	7.47				
Awareness	92	23.93	8.67	92	-.887	.001	S

Table 6 shows the relationship between awareness and use of reference management software among librarians in university libraries in Ogun State. The table showed that awareness ($r = -.887$; $p > .001$; $N = 92$) have a negative linear significant relationship with use of reference management software among librarians in university libraries in Ogun State. This implies that an increase in awareness will lead to a reduction in the use of reference management software among librarians in university libraries in Ogun State. However, this occurs 88.7% of the time represents a major cause for concern. Thus, the null hypothesis stating that there is no significant relationship between awareness and use of reference management software among librarians in university libraries in Ogun State is hereby accepted.

Discussion of findings

The finding that librarians in university libraries in Ogun State demonstrate only a slight level of awareness of Reference Management Software (RMS), yet Mendeley emerges as the standout tool, aligns with previous research in Nigeria and elsewhere that shows a similar pattern of selective awareness of reference-

management tools. For instance, Oshiname and Ajuwon (2020) found that although 92.9 % of Nigerian resident doctors were aware of RMS, only about half actively used them, with Mendeley being the most popular choice ([Oshiname & Ajuwon, 2020](#)). Similarly, Adeyemi, Sulaiman, and Akanbi (2020) reported that faculty members at the University of Ilorin exhibited moderate awareness of RMS, with EndNote and Mendeley the most recognised and used tools ([Adeyemi et al., 2020](#)). However, compared to these findings, Ogun State librarians' slight awareness level may reflect contextual limitations such as restricted ICT training or limited institutional promotion of RMS tools. This implies that while awareness exists, it is yet to translate into substantial competence or routine application within these libraries.

The finding that RMS tools are rarely used by librarians in Ogun State, despite the relative popularity of Mendeley, is consistent with broader patterns in developing academic contexts. Adeyemi et al. (2020) observed a similar gap between awareness and use among faculty in Nigeria, suggesting that awareness alone does not lead to regular use. The pattern also aligns with the study by Oshiname and Ajuwon (2020), which showed that despite near-universal awareness, practical adoption of RMS remained low, with users relying primarily on Mendeley for convenience and free accessibility. In addition, Jegan and Balasubramanian (2024) examined the perception and usage of reference management tools and referencing styles among faculty members and research scholars in universities across Tamil Nadu, India. The research revealed high adoption (70%) of RMS, with Mendeley emerging as the most popular tool (36%). Nevertheless, this finding contrasts with trends in more technologically advanced settings, where higher use often accompanies higher awareness levels. The rarity of use among Ogun librarians, therefore, highlights institutional and infrastructural constraints that inhibit adoption despite the perceived utility of Mendeley.

The discovery of a negative relationship between awareness and use of RMS among librarians in Ogun State stands in contrast to the positive associations reported in much of the literature. Adeyemi et al. (2020) established a positive and significant relationship between awareness and use of RMS among faculty members, indicating that greater awareness typically predicts higher use. Similarly, Oshiname and Ajuwon (2020) suggested that awareness is a necessary precursor to adoption. However, the inverse relationship found in this study suggests that while Ogun State librarians may know about RMS, this knowledge may be superficial or accompanied by discouraging experiences, such as a lack of institutional support, limited ICT competence, or the perception that RMS use is unnecessary for their roles.

Conclusion

The study concludes that while Mendeley enjoys prominence among librarians in Ogun State, overall awareness and use of Reference Management Software remain limited, with an unexpected inverse relationship between the two. This indicates that awareness alone does not guarantee engagement and that

structural, educational, and institutional factors critically mediate RMS use. Sustainable progress, therefore, depends on translating awareness into competence through deliberate organizational support and practical empowerment.

Recommendations

The following recommendations were provided in line with the outcome of this study:

1. University libraries should organize regular awareness programs and workshops on RMS for librarians to increase visibility and understanding of these tools. These could include webinars, training sessions, and informational materials outlining RMS benefits and practical applications.
2. Librarians should be encouraged on the collaborative use RMS by establishing library-specific RMS accounts and integrating these into library services. Additionally, ongoing support and refresher sessions could promote sustained usage, making RMS a more regular part of library processes.
3. Promote a culture of digital scholarship by embedding RMS use into research support services, fostering collaboration between librarians, academics, and IT departments to normalise RMS in scholarly workflows.

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