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Assessing Reference Management Practices among Research Scholars of Indira Gandhi National Open University

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In the academic world searching and managing references is a tedious task. By communicating with publishing houses scholars have to face difficulties i.e. creation of bibliographies and references in multiple citation styles (i.e. Chicago, MLA, APA, etc.). The development of Reference Management Software (RMS) has solved this problem for scholars. This study aims to explore the awareness of reference management software among the research scholars of Indira Gandhi National Open University (IGNOU). Design/ methodology/ approach: The research scholars were requested to participate in the online survey to seek information regarding their awareness and choices of using RMS. There were 91 respondents in the study who completed the survey. Findings: Results indicate that despite having authored a dissertation or thesis with a master's degree still many don't have expertise in the use of RMS and manually managing their references. Participants are aware of the growing importance of RMS and are willing to adopt it in the future. Mendeley and Zotero RMS are highly used. Participants also expressed the need for the organisation of the training programmes. Originality/ value: Management of reference using the RMS is becoming increasingly popular among the academic and researcher community. The use of RMS facilitates

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numerous advantages to the researchers i.e. search, manage, organise, share, and cite their literature & references. However, various factors affect the use of RMS, i.e. training and support from the library, commercial or open source RMS, and features of RMS.

Keywords: *References, Citations, Reference Management, Reference Management Software's*

1 INTRODUCTION

In the research life cycle a researcher has to undergo various stages. Each stage contributes a significant amount of data and information to academic peers. In the process, the researcher has to examine prior literature to build the theoretical foundation of their work and keep on tracing similar works. As a result, the researchers contribute a significant amount of knowledge in the form of publications. Poorly cited and referenced researches are often deemed sub-standard or plagiarised. This makes authors give prime concern to managing their citations and references. This requires awareness of various writing style manuals so that the due credit to the original author can be acknowledged. Many citation styles exist across the globe. Among these most popular are the American Psychological Association, Chicago Manual of Style, Harvard Referencing Style, Modern Language Association style, Vancouver Style, and IEEE Editorial Style Manual. The publishing industry and learned organisations have realised that application of technology can be the solution to manage references, as a result, various software has been developed in the last decade. These are popularly known as Reference Management Software (RMS). Zotero, Mendeley, Endnote, Refworks, and EasyBib are many RMSs that exist today, both commercial and open source as well. RMS not only manages bibliographic data but also offers numerous advantages integration with web browsers and word processors, data synchronisation, generation of bibliographies in multiple formats, in-text citations, footnotes, searching, saving, and sharing of data. Moreover, RMS offers to save data on the cloud. Hence, modern-day RMS proved to be more worthy of use.

2 LITERATURE REVIEW

Chen Dingquan, L. X. (2009) studied EndNote and NoteExpress to understand their function and features. The study concluded that RMS helps users in knowledge creation, networking, collaboration, and personalisation. Mead, T. L., and Berryman, D. R. (2010) have described that librarians are actively engaged in the training of library users to make use of RMS programmes. Further, there has been the proliferation of Web-based RMS programmes to make use of cloud-based storage. Hence, Librarians face new workflow challenges with these web-based RMS. Stephen, M. H. (2011) aimed

to review the contemporary services and support available for the RMS i.e. EndNote and RefWorks. This study was focused on the review of websites (111) of the Association for Research Libraries (ARL). Most of the libraries are providing support to their users. Butros, A., & Taylor, S. (2011) both examined the reports that during writings how researchers can be helped in the collection and organisation of data from licensed databases. They examined subscription based (EndNote, EndNote Web, and RefWorks) and freely available RMS (Mendeley and Zotero) also. They concluded that spending time and money in the use of these software helps the researcher in managing their bibliographies. Gilmour, R., & Cobus-Kuo, L. (2011) in their study examines the role of LIS professionals in providing the support to use RMS. In the study, they compared various features of CiteULike, RefWorks, Mendeley, and Zotero CiteULike, RefWorks, Mendeley, and Zotero. Among these RefWorks creates the most accurate citations. Lorenzetti, D. L., & Ghali, W. A. (2013) described that RMS helps researchers to easily organize and manage huge amounts of references collected while performing systematic literature reviews. The purpose of their study was to know the upto which level authors using RMS systematic literature reviews. Salem, J., and Fehrmann, P. (2013) focused on the use of RefWorks by undergraduate students of a midwestern university. How they manage their references, as the institution spent a large amount on procuring the resources for the learners. Ram, S., & Paul Anbu K., J. (2014) also had a closer look to determine the awareness level of RMS among the Indian LIS professionals in India. In a research environment, proper citing of references is vital for scholarly communication. To conduct the study they did an online survey. The study stressed the awareness of RMS among Indian LIS professionals. Basak, S. K. (2014). in his study has compared three RMS software namely RefWorks, Mendeley, and EndNote. He did some experiments to conclude and found Mendeley could import data from Google Scholar.

Speare, M. (2018) has surveyed Graduate students of the University of Manitoba to understand the preferences for using RMS. To draw a reasonable conclusion they included both active and nonactive users of RMS. Cuschieri, S., Grech, V., & Calleja, N. (2019) discussed that scholarly communication expressed through journal articles needs to be supported by citations and references whether they are in-text or in the end to establish valid claims. The study revealed that RMS helps research not only save references, eliminating inaccuracies and errors in citation & referencing but also creating a personalised database. Setiani, N., et. al. (2020) investigated various factors that affect the use of RMS by the researchers. They have collected 108 samples in Indonesia for their analysis. They observed that the use of RMS is well accepted among the researchers. Setiani, N., et. al. (2021), mentioned the availability of various academic writing tools with a focus on their awareness, perceptions, and preferences among users. The study focused on 144 academic communities

of HEI in Indonesia. Castillo, A. G. R., (2022) discussed technological evolution and managing references. The RMS helps students while conducting academic research. Thus, they studied the significance RMS using the Bibliometrics research method.

3 OBJECTIVES

The study focused on the following objectives:

1. To explore the scholar's perception towards the Management of References
2. To ascertain the level of awareness of Citation Manuals of Styles
3. To know the preferences of Reference Management Software
4. To find out the level of understanding of Reference Management Software
5. To assess the requirement for Training of Reference Management Software
6. To examine the demography of the respondents

4 METHODOLOGY

Research method: The study is based on the survey research method. A survey was conducted among the doctoral research scholars of Indira Gandhi National Open University (IGNOU), India. These Scholars have been registered for PhD under various Schools of IGNOU.

Sample: Research scholars registered for their doctoral research under various Schools of Studies were selected for the sample participated in the survey and responded to the online questionnaire.

Research tool: An online questionnaire was designed and developed using the online survey platform (www.questionpro.com). A structured closed ended questionnaire was developed based on review of related literature.

Data collection and analysis: Primary data was collected from respondents using an online questionnaire. Related studies were also reviewed. QuestionPro platform (www.questionpro.com) was used to collect, tabulate and analyse the data, and the results of primary data were reflected in various forms of graphics and tables.

5 DATAANALYSIS

For the completion of the study, data was collected using an online questionnaire. The questionnaire was attempted 230 times by the respondents. 139 times respondents dropped the questionnaire incomplete, and only 91 respondents completed and submitted the questionnaire. Thus, the questionnaire completion rate was nearly 40% which took 5 minutes average time to complete the survey.

5.1 Scholar Perception towards Reference Management

Managing References: In the research process it is important to review prior studies related to the research work hence managing references becomes more crucial to avoid any mismanagement of the research work. Mismanaged references often lead to plagiarism, falsification, and sub-standard work. It was one of the main focuses to know are the respondents practiced management of reference. The findings of the survey revealed that at present most of the respondents (71%) are manually managing their references. 16% of respondents are using other ways to manage their references. This means either they are not aware of RMS or finding it difficult to use them for managing the references. Fig 1: Management of References shows preferences for managing references.

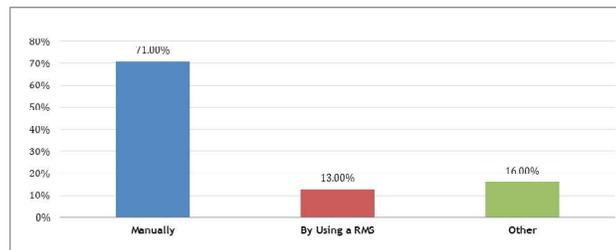


Fig 1: Management of References

Dissertation or Thesis authored: It was a notable finding that half of the participants have authored a dissertation or thesis (52%) and the rest haven't authored any dissertation or thesis yet (48%). However, half of the population hasn't authored any dissertation or thesis but still, many of them are aware of RMS and have a higher possibility to use RMS when they work for their doctoral thesis. Fig. 2 shows the results of the dissertation/thesis authored by the participants. *Level of dissertation or thesis authored:* as the master's degree was the minimum requirement to enroll in a doctoral degree programme in the university most of the respondents have authored a dissertation or thesis at the level of postgraduate (55.22%), followed by the MPhil (21%) and PhD (13.43%) scholars and undergraduate learners (10.45%). Fig. 3 presents the level of dissertation or thesis authored.

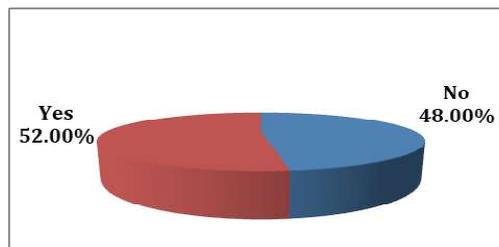


Fig 2: Dissertation/Thesis authored

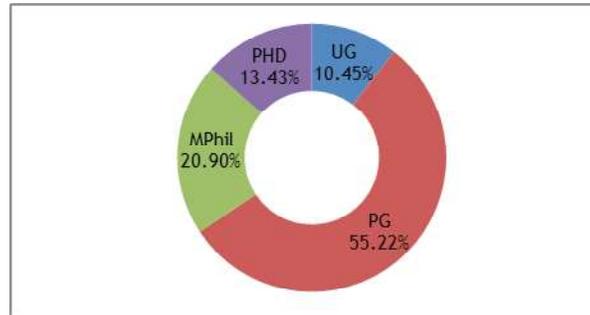


Fig 3: Level of Dissertation/Thesis authored

5.2 AWARENESS OF CITATION MANUALS OF STYLES

Citation manuals of styles serve as guiding principles in academic writing. There has been a long practice in the use of citation styles. Popular citation styles i.e. Chicago manual, Modern Language Association style, American Psychological Association of style, IEEE style, or Vancouver are widely adopted and used across the globe by academic peers. *Familiarity with Citation Manuals of Styles for academic writings*: Thus, today's academic world having the sound knowledge of citation manuals is a prerequisite for scholarly communication. Ignorance of such kind of global practice results in less compliance with academic ethics. In this regard, survey findings revealed that 72% of respondents are aware of the citation manuals of styles used for academic writing. However, 28% of respondents are yet to be made aware of the use of citation manuals of styles. Fig. 4 represents familiarity with citation manuals of styles among respondents. *Preference for manual of style*: There is always a choice available as there are many citation styles that exists. Survey findings also revealed that the American Psychological Association (APA) style is the most popular and widely used by social scientists (57.50%) Modern Language Association (MLA) style is widely exercised and popular (20.00%) in the disciplines of Humanities. Other popular manual styles are (the Chicago Manual of Style, IEEE, Nature, Vancouver, etc.) also used by some of the users. Fig. 5 reflects the preference of citation manuals of styles among the participants.

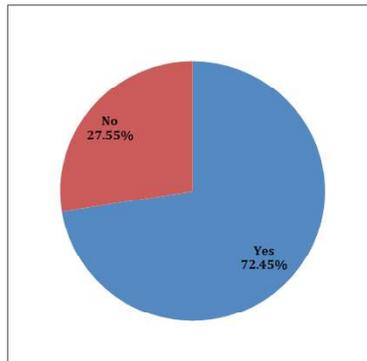


Fig 4: Familiarity of Citation Manuals of Styles

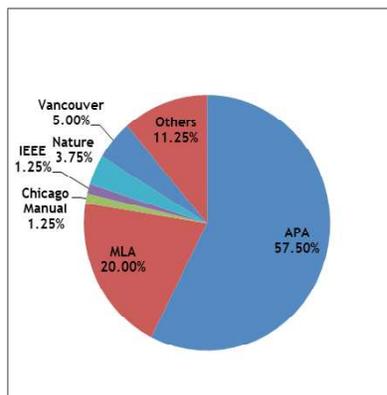


Fig 5: Preference of Citation Manuals of Styles

5.3 REFERENCE MANAGEMENT SOFTWARE PREFERENCES

Manual management of citations and references in earlier decades was very cumbersome work. Therefore, researchers have developed various ICT based tools to manage references. These tools are available under open license or commercial license as well. Zotero is an example of open source RMS software whereas EndNote is one of the examples of commercial RMS. *Awareness of Reference Management Software (RMS):* With the advent of technology a lot of reference management software (RMS) has emerged. The use of these RMS makes it convenient to manage the references and cite them. It was notable that to observe that 64 % of the research scholars are not aware of any reference management software (RMS). However, 36% of users are aware of the RMS. *Aware of databases sync with RMS:* Database sync is a significant of modern days RMS. Data synch helps users to update and manage their references automatically. It was surprising to know that 75% of

the research scholars are not aware of the data sync features of RMS (i.e. citations and abstracts exported to RMS) with e-journal, e-book, or any database. One fourth (25%) of the respondents are aware of data sync features of RMS. Databases allows RMS sync: As expressed by the participants' databases such as EBSCO, Google Scholar, JSTOR, PubMed, ScienceDirect, Scopus, and Web of Science provide data sync with the RMS like Mendeley, and Zotero. *Knowledge of citation databases*: Due to the growing importance of the RMS, many of the citation and bibliographic databases allow sync of bibliographic records with the RMS. To make use of such features scholars need to be aware of the various citation and bibliographic databases. The results showed largest portion of the respondents are aware of the citation databases (57%), however 24% users are not aware of any databases and 19% are not sure about the awareness of such databases. Table 1 shows data about the awareness and knowledge of Reference Management Software and citation databases.

Table 1: Reference Management Software Preferences

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|--|----------------------------------|-----|------------|----|------------|----------|------------|
| S.No. | Level of Awareness | Yes | Percentage | No | Percentage | Not sure | Percentage |
| 1 | Awareness of RMS | 33 | 36.08% | 58 | 63.92% | - | - |
| 2 | Aware of databases sync with RMS | 23 | 24.74% | 68 | 75.26% | - | - |
| 3 | Knowledge of citation databases | 52 | 57.00% | 22 | 24.00% | 17 | 19.00% |

5.4 LEVEL OF UNDERSTANDING OF RMS

Awareness of the RMS: As shown in Fig. 6 and usually expected most of the participant (57.78%) become aware of the RMS, while pursuing their research degrees (PhD) as writing of thesis is the prerequisite for getting the degree. Continuous education programmes in the form of conferences, workshops, and training programmes (14.44%) are the second mode of getting aware of RMS. Internet is always been a mode of learning and about 12 % of participants came to know through the Internet (12%) followed by colleagues and friends (8.89%), Library, and research supervisors respectively 3.33%. *Most popular RMS*: There are many RMS popular in academia. These come in two categories commercial and open sources as well. The results revealed that open source RMS are most popular as compared to the commercial. RMS like Mendeley (28.83%) and Zotero (23.31%) all together is half of the popular RMS among respondents. A significant portion of respondents are not aware of any RMS (14.72%). Other popular RMS are EndNote (14.11%), RefWorks (4.29%), SciRef (3.68%), EndNote Web,(3.07%), CiteuLike (1.84%), Papers (1.23%), JabRef (0.61%). Fig. 7 shows the most popular

RMS.

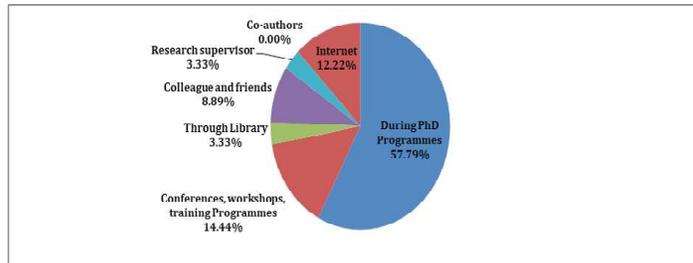


Fig. 6: Awareness of the RMS

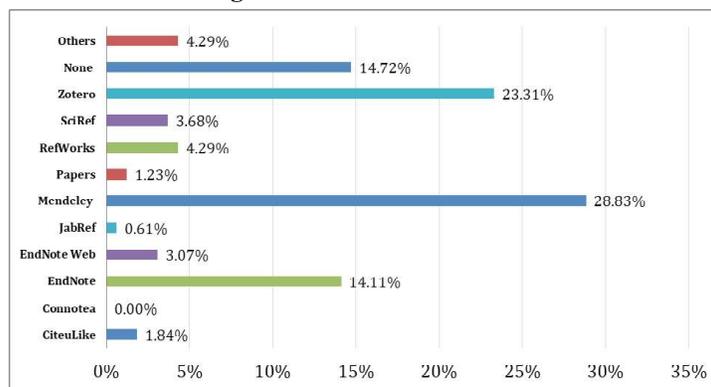


Fig. 7: Most Popular RMS

Working Knowledge or Expertise in using RMS: To make extensive use of use of RMS one should have sound knowledge of database access and searches, different types of citation manuals, references and bibliographic formats, data sync and organisation, various search engines and plug-in, etc. The findings of the study showed that the largest part of the survey population (60%) didn't have the knowledge or expertise in the use of any of the RMS. This means most of the users feel difficulty in the use of RMS. However, being easy to use and convenient Mendeley (22.00%) and Zotero (11.00%) once again emerged as the most popular RMS when it comes to working knowledge and expertise among its users. Fig. 8: Working Knowledge or Expertise in using RMS.

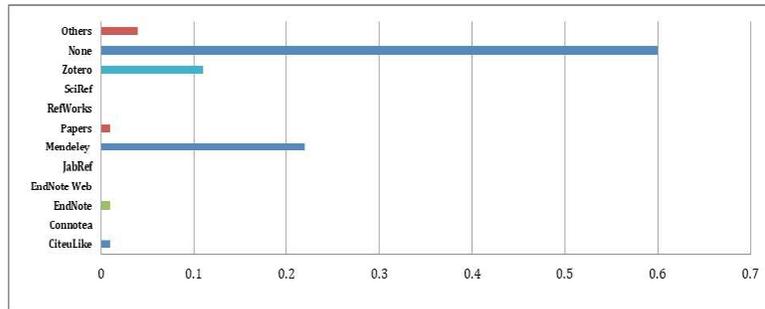


Fig. 8: Working Knowledge or Expertise in using RMS

Experience in the use of RMS: Expertise in the use of RMS comes a time. Most of the users (86.67%) have started use of RMS in less than a year. That shows that a significant portion of the respondents have started using RMS recently. 6.67% of users are using RMS within two years. Less than 7 users have been using RMS for 2- 5 years. Fig. 9 represents experience in the use of RMS. *References saved in your RMS:* The largest populations (93.33%) of the users are not fully utilizing the potential of RMS as an average about 50 references are being saved by the users. This results in the underutilisation of the purpose of RMS. Fig. 10 shows references saved in RMS.

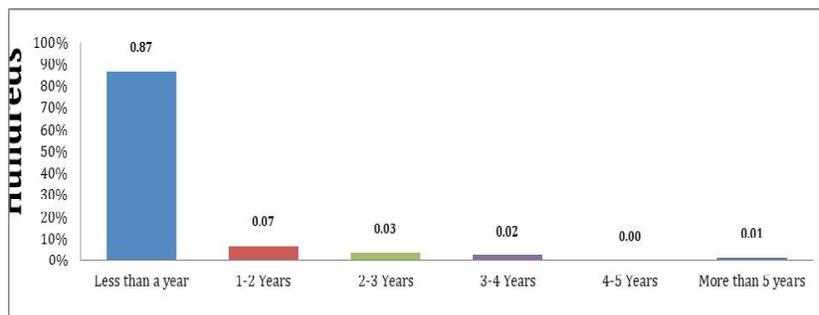


Fig. 9: Experience in use of RMS

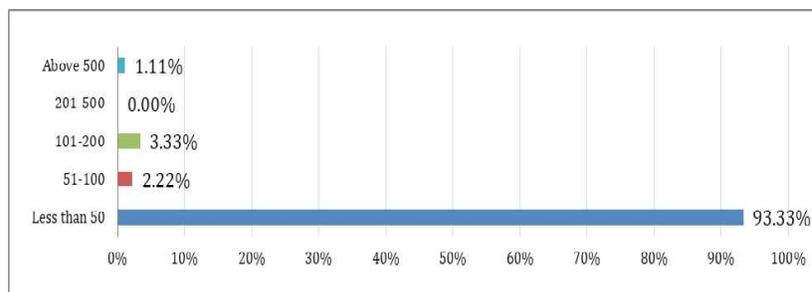


Fig. 10: References saved in RMS

5.5 TO ASSESS THE REQUIREMENT OF TRAINING OF RMS

Training on RMS: There is a need to conduct a training programme for the user as 84.62% of the participants haven't undertaken any training course or a workshop about RMS. Thus, results in underutilization of the RMS. Table 2, presents data about the training received by participants on RMS. *Training programmes to be conducted by IGNOU:* According to Table 2, 97.80% of the research scholars strongly stressed the need that IGNOU should conduct training programmes on the usage of RMS, as many of the users come across the existence of RMS during their research degree programmes only. *Expertise in the use of RMS:* Most of the RMS users have started using it in recent times, hence 99% of users pointed out that achievement of necessary expertise is a must for the proper use of RMS, hence, also stressed the need for training.

Table 2: Reference Management Software Training Requirements

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|--|--|-----|------------|----|------------|
| S.No. | Requirements of Training | Yes | Percentage | No | Percentage |
| 1 | Training on RMS | 14 | 15.38% | 77 | 84.62% |
| 2 | Training programmes to be conducted by IGNOU | 89 | 97.80% | 2 | 02.20% |
| 3 | Expertise in using RMS | 90 | 99.00% | 1 | 01.10% |

5.6 DEMOGRAPHY OF THE PARTICIPANTS

Designation: The population that participated in the survey mostly are research scholars (91%), followed by Assistant Professors (5.49%) and Associate Professors (3.30%). Fig. 11 shows the *Designation of respondents*. *Highest Qualification:* 82.42% of the respondents had having postgraduate degree and 13.19% of the respondents had having M.Phil. degree as a pre-requisite for the doctoral degree programme. Fig. 12 presents the *highest qualification of the participants*. *Participant's age group:* The largest portion of the population was under the age group of 18-30 Years, which is a relatively young age for scholars inclined towards the use of technology. This was followed by the mid career aged users (27.47%) between 31-40 years. Fig. 13 shows the participants age group.

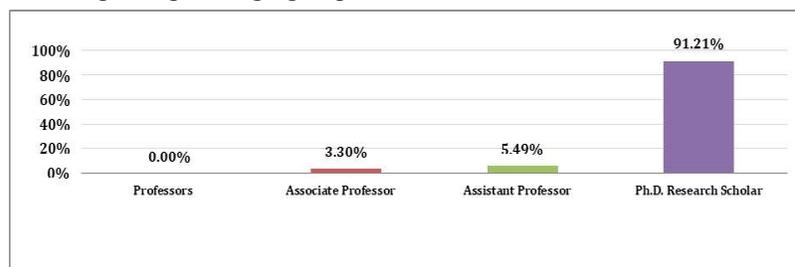


Fig. 11: Designation of Respondents

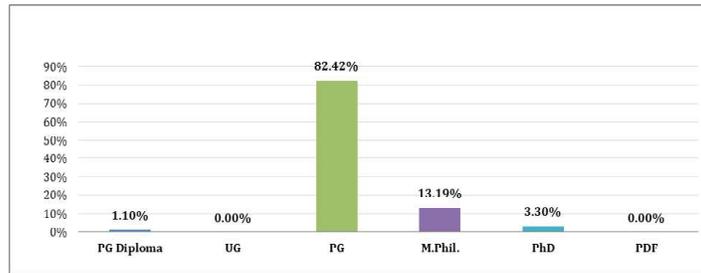


Fig. 12: Highest Qualification of Respondents

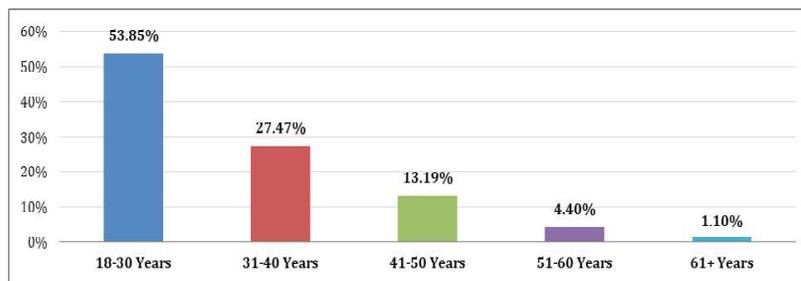


Fig. 13: Age Group of Participants

6 CONCLUSION AND SUGGESTIONS

It was a notable finding that about half of the participants hadn't authored a dissertation or thesis (48%) but was still aware of RMS and had the tendency to for their doctoral thesis, as a significant number of users are manually managing references. Respondents are well aware of popular manuals of styles (i.e. APA style, MLA style). Due to technological advancement, a lot of RMS have emerged and made management of references and citing them a convenient task. Findings revealed that 64 % of the respondents are unaware of RMS. The growing importance of the RMS resulted in the synch of citation and bibliographic databases with the RMS and $\frac{3}{4}$ of the population are unaware of it. As may be predicted, the majority of academics learned about the RMS while pursuing their PhDs. The second way to learn about RMS is through ongoing education initiatives, which come in the form of conferences, workshops, and training courses. The results shows that open source RMS (i.e. Mendeley and Zotero) are most popular among respondents. The largest part of the survey population (60%) didn't have the knowledge or expertise in the use of any of the RMS. This means most of the users feel difficulty in the use of RMS and need proper training or expertise. Most of the users (below 87%) have started using RMS in less than a year. Most of the research scholars stressed the need for IGNOU should conduct training programmes on the usage of RMS, as many of the users pointed out that achievement of necessary

expertise is a must for the proper use of RMS, hence, they also stressed the need for training. The population that participated in the survey is research scholars. The largest section of respondents had a postgraduate degree, however, the Largest portion of the population was under the age group of 18–30 Years, which is a relatively young age for scholars inclined towards the use of technology.

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