

# Usefulness of EndNote Software for Writing Scientific Manuscripts: A Comparative Study

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## Abstract

Referring from the text to the sources used and creating a bibliographic description (a reference) of each source used in an accurate and consistent way, are a fundamental part of scientific publications. This study was conducted to compare writing references and citation for scientific manuscript manually and by using EndNote software. Using a common referencing style formats (Vancouver and Harvard) we compared the time lapse and consumed that required for insertion of 20 references in a predesigned manuscript manually versus using EndNote software. In addition, the format of references was changed in different manners to find out the time required for making these changes. Time required for changing the order of citation, deletion and adding of one reference manually and by using EndNote software was calculated. The obtained data were managed statistically. Time spent for inserting one reference or all references in both formats Vancouver and Harvard manually and using EndNote software showed significant difference ( $P < 0.05$ ). Accurate reference style when using manual referencing Harvard versus Vancouver, it was 65% and 55% respectively, whereas it was 100% in both styles when using EndNote software ( $p < 0.05$ ). In conclusion; Citation using Endnote referencing software for writing manuscript significantly reduces time and improves the quality of the manuscript.

## Keywords

Academic Manuscripts, References, Citations, Manual Citation, EndNote Software, Plagiarism

## 1. Introduction

Publishing research result is an integral part of a researcher's professional life. However, writing is not every researcher's favorite activity [1]. In the academic promotion, publications are imperative for career advancement [2]. Career promotions are influenced by the number of publications that led in developing world to a tense competition for more publications in international journals [3]. In medical research, considerable number of presentations remain unpublished [4, 5]. This is because

writing paper is by itself very tedious and time-consuming process [1, 6], complex task, and requires both creative energy and quiet reflection [2, 6].

Scientific knowledge is a key input for prosperity and evolves thanks to the complementary contributions of different scientists [7].

There are two steps to acknowledging your sources: cite your references in the text, to show where you have drawn upon other people's work, and then list them at the end of your work under the heading 'References' or 'Bibliography'. [1].

Accurate references to the previously published relevant work are necessary in scientific communication. It helps the

readers, reviewers and editors to easily locate the publications cited by authors [8].

Citations should be one of the essential components in the process of writing a paper in order for it to be constituted as “an appropriate text”. The use of citations is seen as an “important skill” that is compulsory for scientists to acquire in order to write their academic papers [9].

Every reference should be given a citation in the text. If we have looked at a source but not mentioned or cited it in the text, then we do not include it as a reference. In creating this knowledge, researchers must cite their sources accurately for many reasons; ideas are the currency of academia, failing to cite violates the rights of the person who originated the idea, academics need to be able to trace the sequence of ideas [6, 10], and to establish a verifiable context for the new idea. Providing relevant references in the paper will also inform the reader about ideas that back the new proposal and those that highlight the limitations of the previous work [11]. When writing a journal article, it is need to cite only the most valid, most important, and most recent literature [12].

Taking someone else's words or ideas and presenting them as your own without citing sources in an appropriate form called plagiarism, which is prohibited [6].

Technically correct and thoroughly validated citations add to the quality of reference lists and allow stakeholders of science communication to judge manuscripts and published articles fairly.

Scientific authors are primary users of published items and ultimately responsible for selecting relevant and ethical citations [13]. Many studies have evaluated the accuracy of references in the published medical journals, and reported error rates ranging from 3% to 75.7% [10, 14-21].

Different publishers require different formats or styles for citing a paper in the text and for listing references [1]. There are several systems of citation and referencing, while the most commonly used systems are “author and year of publication” (such as the Harvard University's Convention citations system and others) and numerical systems (such as Vancouver Convention's rules for citing literature and others). Often, the preferred system of citation is depended on the scientific discipline in which the author writes [6, 22]. Most of the medical journals follow the Vancouver style of references [8]. Use of a recognized style guide will help ensure consistency, and will also ensure that all required elements are included [1, 10].

Every researcher wants to fasten the process of different tasks related to scientific research including paper writing. This task is usually fulfilled manually [23]. By reducing the time it takes from first draft to final product, good writing skills are a passport to both academic success and personal fulfillment [12]. The large and rapidly increasing amount of scientific literature has led to development of information retrieval systems that are suitable to support researchers in managing information overload [24].

There is a wide variety of bibliographical referencing software available nowadays online, like Mendeley, RefWorks, EndNote and so on. These are programs that have

several facilities in common. They store bibliographical references with or without source files. They are able to generate bibliographical references in most of the accepted formats [25, 26].

This article is the result of a study aimed to evaluate usefulness of manuscript citation and referencing using computer based software program.

## 2. Materials and Methods

Herein we have adopted this study at a scientific paper in the content of 20 reference had been prepared in advance. All references used in citation had been collected and kept in specified file, and on other hand the same references were included in a specific file in the EndNote X7.

As known, most of the scientific journals follow either Vancouver or Harvard style in arranging their references, we analyzed these different formats. Vancouver style is a numeric system. The author list must have surnames followed by initials with no full stops and separated by commas. When citing a reference, the first six authors are listed followed by *et al.* The author list is followed by one space and then the title. The title is followed by a full stop, one space, the journal name abbreviated, one space, the year of publication, a semicolon, the volume, a colon and then the page numbers followed by a full stop. Each reference is given a number as it first appears in the text. The number given becomes the unique identifier for that reference, and so if it is cited again later in the text, it will still have the same number. The first reference cited will always be number 1 and numbers are allocated sequentially. In case of citation of several ideas of work in the same sentence, then include the citation number for each piece of work. A hyphen should be used to link numbers which are inclusive, and a comma used where numbers are not consecutive.

Whereas in Harvard's style references are cited by author name in the text, usually followed by the date, enclosed in brackets. The list of references at the end of the text, where the full work is cited, is in alphabetical order. The author list must have surnames followed by comma, initials with no full stops and separated by commas. When citing a reference, the first three authors are listed followed by *et al.* The author list is followed by full stop, then one space and then the year of publication between brackets followed by full stop and space then the title. The title is followed by a full stop, one space, the journal name abbreviated, a comma, the volume, a comma and then the page numbers followed by a full stop.

In order to simplify management of the references, one may use the Harvard system initially and then change it to the Vancouver system, which is more popular. A question that should be addressed is that "to what extent does the editor have the right to ask for changes?"

To give the type of the real spirit to the structure of this research, we assumed that this paper submitted to journal that adopt Harvard referencing style and subsequently rejected because it was not appropriate with the journal's scope, then it necessitate re-submission into appropriate journal that

adopt Vancouver referencing style, it can be performed vice versa. A questionnaire was developed. Its validity was achieved by consulting experts in research methodology and scientific writing.

Analysis included recording the time required for entering one reference, and overall entering the whole references in each paper both manually and using EndNote separately. Thereafter, changing from Harvard to Vancouver, from Vancouver to Harvard, and deleting or adding one reference to Vancouver format. Deletion or adding references will not affect Harvard style because the references are arranged alphabetically. Finally the degree of accurate reference writing was calculated.

The statistical analysis was performed using SPSS version 21.0 for Windows (SPSS Inc., Chicago, IL, USA). Comparisons between the two groups were carried out using Student's *t* test and Mann Whitney *u* test. A *p*-value <0.05 was considered statistically significant.

### 3. Results

Writing one reference manually took  $4.49 \pm 1.9$  minutes as compared to  $0.47 \pm 0.19$  minute by using Endnote software [ $p < 0.001$ ]. The results showed that much more time was required for writing the whole references manually 86.22 minutes compared to only 9 minutes when using EndNote software and this difference was statistically significant ( $P < 0.001$ ). The column chart of values for manual Vancouver style referencing was shown in figure 1.

When changing from Harvard to Vancouver or Vancouver to Harvard the results showed that much more time was required for manually performance than using EndNote software and this difference was statistically significant ( $P < 0.001$ ). The column chart of values for manual changing from Harvard style to Vancouver style referencing was

shown in figure 2.

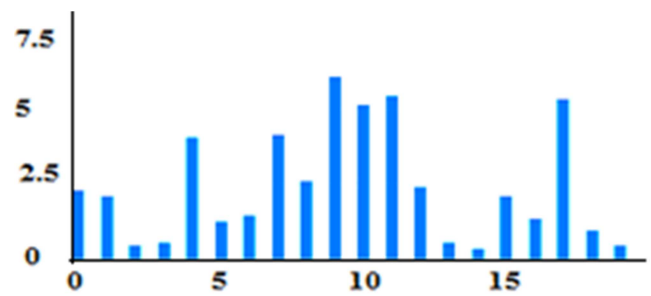


Figure 1. Column chart of values manual Vancouver referencing.

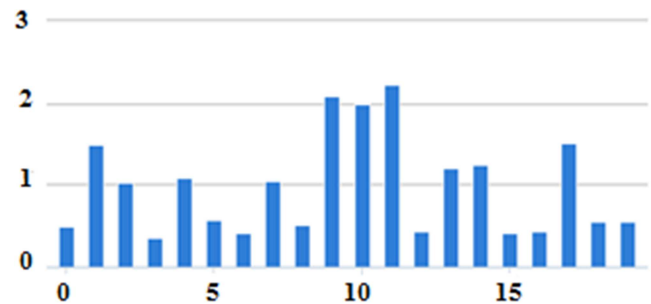


Figure 2. Column chart of values for manual changing from Harvard style to Vancouver style of referencing.

Table 1 below shows the time spent for writing one or all the references, changing from one referencing style to another, deleting and changing the citation order in both the formats manually or by using EndNote Software.

The Z score is 2.3. The *p*-value is 0.010. The result is significant at  $p \leq 0.05$ . The U-value is 6. The critical value of U at  $p \leq 0.05$  is 11. Therefore, the result is significant at  $p \leq 0.05$ . The *t*-value is 1.3658. The *p*-value is .002. The result is significant at  $p < 0.05$ .

Table 1. Time spent for referencing.

| Referencing                        | Manual (Time / min.) |                           | EndNote (Time / min.) |                 |
|------------------------------------|----------------------|---------------------------|-----------------------|-----------------|
|                                    | Range                | Mean $\pm$ SD/ total      | Range                 | Mean $\pm$ SD   |
| Referencing                        |                      |                           |                       |                 |
| One reference                      | 0.6 – 6.2            | $4.49 \pm 1.9$            | 0.24 – 0.8            | $0.47 \pm 0.19$ |
| All references                     | —                    | 86.22                     | —                     | 9               |
| Inserting citation into text       |                      |                           |                       |                 |
| Vancouver                          | 0.06- 1.03           | $0.73 \pm 0.31 / (5.17)$  | 0.21 – 0.7            | $0.46 \pm 0.13$ |
| Harvard                            | 0.43- 2.48           | $1.24 \pm 0.46 / (38.46)$ | 0.25 – 0.8            | $0.49 \pm 0.16$ |
| Arranging reference at the end     |                      |                           |                       |                 |
| Vancouver (Numerical)              | —                    | 3.2                       | —                     | —               |
| Harvard (Alphabetical)             | —                    | 5.46                      | —                     | —               |
| Changing position of one reference | —                    | —                         | 0.06                  | —               |
| Changing from Vancouver to Harvard |                      |                           |                       |                 |
| One reference                      | 1.45 – 3.1           | $2.14 \pm 1.41$           | —                     | —               |
| All references                     | —                    | 50.2                      | —                     | 0.07            |
| Changing from Harvard to Vancouver |                      |                           |                       |                 |
| One reference                      | 1.51 – 3.8           | $2.51 \pm 1.46$           | —                     | —               |
| All references                     | —                    | 30.3                      | —                     | 0.08            |

Accurate reference style when using manual referencing Harvard versus Vancouver, it was 65% and 55% respectively,

whereas, it was 100% in both styles when using EndNote software. The difference was statistically significant

( $p < 0.05$ ).

## 4. Discussion

Citation of previous work is one such norm and a major means of documenting the collective and cumulative nature of knowledge production [7].

Evaluation of bio-resource use and impact in research requires accurate citation of such resources in publications. Editors as gatekeepers of scientific information, and authors as providers of such information, must be proactive in applying standard citation scheme for bio-resources [4].

When a scientific fact is taken from an original article, it should be written in the author's own words, not an exact copy of the paragraph from the source. This is called "paraphrasing" and does not change scientific facts. Even after paraphrasing another author's writings, the source should be credited [27].

Accurate references are very important for researchers. The high inaccuracy references in the medical literature remains a significant problem [25]. Fortunately, helpful software resources are available to authors for addressing each of those problems [28].

Unfortunately, most of authors are not using electronic software's like EndNote or Reference Manager. However, if they can use these facilities, it can be extremely helpful and improve the quality of their manuscripts and they will not have to resort to plagiarism [29].

Organized author will have references stored in an electronic database such as Endnote or Reference Manager. This will allow formatting a bibliography in a fraction of the time that it takes to do it manually [12]. This is confirmed in the current study as the difference in the time lapse was comparable. Reference management software maintains a database to references and creates bibliographies and the reference lists for the written works. It makes easy to read and to record the elements for the reference [25]

Deletion or adding references in Vancouver referencing style is very complex when working with manual citation. The more are the references in front of the text, the longer time it may take. In the current study the time calculated by changing the order of only one reference and then the total time required was worked out for twenty references. As such If more references have to be re-ordered, inserted or deleted in the text, it will certainly require more time. Whereas but this process if done using electronic software like EndNote, it will be much quicker.

## 5. Conclusion

It therefore appears that using EndNote referencing is a time saving. One suggestion in this regard using computer program referencing may bring some positive change in the attitudes of an individual.

In order to simplify management of the references, the author may use the Harvard system initially and then change it to the more popular Vancouver system, using reference manager software.

The use of an electronic reference management database is an essential tool for any writer. Because most reference manager programs will readily produce reference lists in a variety of styles and formats. It is prudent to invest in using this type of software. In this way, the reference needs only to be entered once, perhaps by downloading from a bibliographic database such as MEDLINE or PubMed. You can then add and delete references or re-organize the text in your paper in the knowledge that your software will re-number your references correctly in the final version.

Reference management software can make more accurate referencing and citation than manual systems among researchers because the quality of systematic review usually enhances the reference management tool usage.

## Competing Interests

The authors declare that there are no competing interests.

## Author Contributions

*Saadeldin Ahmed Idris* conceived and designed the study, collected the data, contributed on data analysis, and wrote the main frame of the paper.

*Abdul Ghani Qureshi* contributed on data collection, literature review, and writing the manuscript

*Ibrahim Salih Elkhair* contributed on data collection, literature review, and writing the manuscript

*Tomadir Ahmed Idris* made the data analysis.

*Ahmed Mohammed Adam* revised a manuscript and gave a pearls of suggestion towards improvement

*Nadir Khogali Mohammed* contributed on writing and revision of a manuscript

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