ACCURACY OF REFERENCES IN MALAYSIAN JOURNAL OF LIBRARY AND INFORMATION SCIENCE

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The research was conducted to check the reference accuracy in the research papers published in the Malaysian Journal of Library and Information Science (MJLIS), volume 22, in 2017. One hundred journal references, randomly selected from 20 articles choosing five references from each article, were verified completely splitting them into seven bibliographic components, viz. Author’s name, Article title, Journal title, Year, Volume number, Issue number, and Pages (both first and last page). These elements were verified from the original articles. Findings indicate that 67% (67) references in MJLIS contained no errors, while only 33% (33) references were erroneous. In 33 defective references, a total of 51 inaccuracies were detected, out of which 26 were minor and 25 were major errors. The highest errors (13) were detected in the article title element, while lowest errors (2) were found in the year element. The average number of errors in references was 0.51. A robust mechanism is required to maintain the reference accuracy in accordance with standards as well as quality of the research papers published in the MJLIS.

Keywords: Citation Errors, Reference Accuracy, Reference Lists, Malaysian Journal of Library and Information Science.

INTRODUCTION

Most scientific research, if not all, is motivated by earlier researches. Subsequently, no researcher can claim that his/her study has been completed independently, without referencing to other studies. The key function of references is to link the framework of current research to the earlier works. References allow the readers to authenticate or negate the researcher’s arguments. References are the ideal method of acknowledging credit in science and form an essential component of the culture of scholarly communication (Cronin, 1984). Citation indexing databases, for example Clarivate Analytics’ Web of Science, allow research scholars to measure how often, a scholar, scientific paper or journal has been cited by other authors, and in which subject domains (Lopresti, 2010).

The above functions of references are fulfilled if the references are completely accurate and error-free. When a scientific article has erroneous references, the total quality of the research along with the peer-reviewers and journal editors, which accepts and publishes the article, is questioned. Pandit (1993), in a study entitled “Citation Errors in Library Literature,” indicates that “Errors focus on the citations themselves and exclude the extent to which authors correctly quoted a text or acknowledged an intellectual
debt.” According to Yankauer (1990), citation error is “Errors of commission or omission in the printing of the reference.” Doms’ (1989) definition of a correct or accurate reference is “One in which all included elements are identical to the source.”

Referencing accurately according to a given reference style guide is a main responsibility of researchers, because it protects them from charges of academic theft and plagiarism (Gupta, 2017a) as well as it increases the quality and maintains the credibility of both researchers and articles (Goodrich & Roland, 1977; Gupta, 2017b). At all times, there is space for betterment in all human endeavours. Scientific papers in the all domains of knowledge are no exception. As penned by Asai and Vickers (1995), “Humans are born to make mistakes, but should never give up the attempt to conquer this tendency.”

**REVIEW OF LITERATURE**

In instruction for authors section appended in almost every academic journal, it is recommended that “Authors are responsible for the accuracy of references and must verify them against the original documents.” Unfortunately, this is not adhered to by the researchers completely. Maybe they believe reference list as the least significant attachment to a scientific article. Simkin and Roychowdhury (2003) estimated, based on a stochastic modeling of the citation process, that only about 20% of authors read the original documents.

Adhikari (2010) carried out a study to check the accuracy of 63 randomly selected references appended in papers published in two separate issues of “Indian Journal of Otolaryngology and Head & Neck Surgery” (IJOHNS), published in December 2009, Volume 61 No. 4 and January 2010, Volume 62 No. 1. About 70% references in IJOHNS were accurate, while rests (30%) were inaccurate.

Lee and Lin (2013) study on “Citation errors in the masters’ theses of the library and information science and information engineering,” employed a small sample of references appended in 125 masters’ level dissertations of the Tamkang University’s Department of Computer Science and Information Engineering (DCSIE) and the Department of Information and Library Science (DILS) to compare citation errors in two different subjects. These masters’ dissertations were submitted in the years 2007 and 2011. This study indicated that out of 3564 citations verified, 70.8% (2527) citations were correct while 22.8% (813) were incorrect, and remaining 6.4% (224) citations were not verifiable by any sources.

Gupta (2017c) verified the accuracy of 118 citations appended in two Indian library and information science journals, viz. “Annals of Library and Information Studies” and “DESIDOC Journal of Library and Information Technology.” In this study, the average number of errors was 1.28. Out of 118 article’s citations checked, only 33% (39) were correct while 67% (79) were incorrect. Among 79 inaccurate citations, there were 151 errors detected in which 53% (80) were minor errors and 47% (71) errors were major. Accurate citations enhance the credibility of the authors, manuscripts, and the journal. The bibliographical references are a major element of any scholarly publication. This investigation revealed very low reference accuracy (i.e. 33%) in the two Indian library and information science journals.

MacRoberts and MacRoberts (1986) determined overlooked research by investigating 15 papers on the “History of genetics,” and showed that these 15 papers needed 719 references for sufficient coverage of earlier research; however, only 216 (30%) among these 719 were genuinely cited in their sample. Individual papers cited between zero and 64% of relevant references. Lanning (2016) advocates the necessity for a modern and “Simplified citation style,” which contains innovative technological facets and works beyond the old referencing guidelines. According to him, referencing styles are difficult to follow precisely and flawlessly.
OBJECTIVES OF THE STUDY

The main objectives of the present study are:

1. To evaluate the number of errors in references;
2. To evaluate the major and minor errors in references;
3. To find out the accuracy level of references;
4. To evaluate the errors in citing name of authors;
5. To evaluate the errors in article titles;
6. To evaluate the errors in journal name;
7. To evaluate the errors in year and page number; and
8. To evaluate the errors in volume and issue numbers.

MATERIALS AND METHODS

This study was performed to check the accuracy of references appended in the 20 research articles published in the *Malaysian Journal of Library and Information Science* (MJLIS), volume 22, published in 2017. One hundred journal references, which were randomly selected from 20 articles choosing five references from each article, were examined in details by dividing them into seven elements, viz. Author’s name, Article title, Journal name, Year, Volume number, Issue number, and Pages (both first and last page). These elements were verified from the original articles. Non-journal references, viz. books, conference proceedings, technical reports, theses and dissertations, websites, etc. were excluded from the study since these publications could not be easily available and accessible for checking the reference accuracy.

The editorial policy of the MJLIS and the Chicago Manual of Style were considered in the measuring completeness of the references. Doms’ (1989) method was applied to classify the references as correct and incorrect. Each and every reference was deeply examined for completeness and accuracy from the original articles. Referenced journal articles were obtained from the Central Libraries of Rajasthan University and Banasthali University. Many articles were downloaded in PDF, html and other formats from the journal websites, online databases, and other aggregators’ websites.

Journal citations which included a single error or more errors in one bibliographic element were treated as having one error; those which had errors in more than one bibliographic element were considered to have more than one error. For each reference, only one error was considered per element. For instance, if a reference misspelled an author’s name, left out second one and omitted the initial of a third author, than this all was considered as a single author name error, and counted under the most serious error among author element. An error in the article title was present if the article title contained errors such as additional, omitted, misspelled words including punctuation marks. Punctuation errors were deemed as minor errors and included in the analysis of the citation errors.

The major errors contained the missing author(s) name, wrong/missing article title, wrong/missing journal name, wrong/missing volume number and issue number, and wrong/missing first page. The minor errors included errors in author name’s initials, minor spelling errors in article title, minor errors in journal name, wrong/missing last page, and errors in punctuations.

Major error “prevented immediate identification of the source of the reference” (De Lacey, Record, & Wade, 1985). For example, an inaccurate journal title, or completely wrong pagination, or omission of both volume and issue. Year error was considered as major error. Both first and last page numbers were examined for the accuracy. Their errors were considered as major for first page error and minor for last page error.

RESULTS

Simple percentage analysis was applied by using percentage and frequency. One hundred article
references were verified for completeness and accuracy. As presented in Table 1, a total of 51 inaccuracies were detected in 100 article references. It reveals that average number of errors in references is 0.51.

Table 2 shows that among these 51 inaccuracies, 26 were minor while 25 were major inaccuracies.

As shown in Table 3, accuracy level of references is 67%, while average number of errors in references is 0.51. Out of 100 references examined, 67% (67) references were accurate while 33% (33) references in MJLIS were erroneous, which consisted of a total of 51 inaccuracies.

Table 4 and Figure 1 indicate the frequency of errors in the references. Major citation errors are unfriendly to readers, and due to such errors sometimes cited information sources become irretrievable, inaccessible and inoperable. Highest errors were found in article title 25.49% (13), followed by author’s name 21.57% (11). Issue number was found wrong and missing in 17.64% (9) references. Journal titles were found to be incorrect in 13.72% (7) references. References with wrong/missing pages and wrong/missing volume were accounted 11.76% (6), and 5.89% (3) respectively.

Least common errors in references were traced in year 3.92% (2).

Errors in numerical elements are more serious than text errors. Broadus (1983) claimed that an error in year or date of publication is very critical since it can create misconception about how historic or current a specific research is. Eugene Garfield (1969), in this connection, indicated that volume and page numbers, since both are the key elements of bibliographic information, most frequently omitted. He further wrote: “The volume number is an added degree of redundancy which reduces the possibility of error or offsets the effect of errors, which are especially frequent in the cited year.”

A list of all 33 inaccurate references, for example are given in Table 6 at the end of the paper.

**DISCUSSION**

An ideal reference list is an inevitable and essential component of a scholarly communication, and is a compilation of reliable and authentic references which are consulted and referred to during the research study. In a scientific paper, references appear in two places; first in the form of quotation occurring in the text; and second in citation
Table 4: Frequency of errors in references in MJLIS

<table>
<thead>
<tr>
<th>Reference elements</th>
<th>Type of errors</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s) name</td>
<td>Wrong or Missing author(s)/initials</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extra author(s)/initials</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spelling errors</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wrong initial</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Punctuation errors</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total references with author errors</td>
<td>11</td>
<td>21.57%</td>
</tr>
<tr>
<td>Article title</td>
<td>Word(s) addition/missing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spelling errors</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Punctuation errors</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total references with title errors</td>
<td>13</td>
<td>25.49%</td>
</tr>
<tr>
<td>Journal title</td>
<td>Missing title</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incomplete title</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wrong title</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spelling errors</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Punctuation errors</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total references with journal errors</td>
<td>7</td>
<td>13.72%</td>
</tr>
<tr>
<td>Volume number</td>
<td>Missing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wrong</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total references with volume errors</td>
<td>3</td>
<td>5.89%</td>
</tr>
<tr>
<td>Issue number</td>
<td>Missing</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wrong</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total references with issue errors</td>
<td>9</td>
<td>17.64%</td>
</tr>
<tr>
<td>Year</td>
<td>Missing</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wrong</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total references with year errors</td>
<td>2</td>
<td>3.92%</td>
</tr>
<tr>
<td>Page</td>
<td>First page- wrong</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>First page- missing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Last page- wrong</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Last page- missing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total references with page errors</td>
<td>6</td>
<td>11.76%</td>
</tr>
<tr>
<td></td>
<td>Total errors</td>
<td>51</td>
<td>100%</td>
</tr>
</tbody>
</table>

Average number of errors in references is \( \frac{51}{100} = 0.51 \)
appearing at the end of the paper. The primary cause behind errors in bibliographical references is that researchers do not completely adhere to referencing standards and guidelines provided by journal publishers. If such referencing standards and guidelines are not attentively followed by researchers, then inaccuracies in bibliographical references are bound to appear. In addition, these inaccuracies produce hard conditions in retrieving references when required by readers. The real problem, the inability to detect and correct reference inaccuracies is due to a dispersed responsibility in the publication process of scientific journals. Notwithstanding, most journal publishers state that: “It is the responsibility of the author to check the accuracy of all references.”

Accuracy of references is necessary to the proper development of scholarly communication. Various sub-fields of LIS and services of library and information centres such as citation analysis and bibliometrics studies, interlibrary loan (ILL), evaluation of a scholar’s work, document delivery services (DDS), database management, etc. may be negatively affected by reference errors (Pandit, 1993). Accurate references make easier all of these activities. Errors in references squarely influence the results of citation analysis and bibliometric research studies.

So, adequate consideration and care of authors, editors, and peer-reviewers are required while writing, editing and reviewing them for publication, respectively. Reference errors committed by the researchers in their research papers may be either pointed out or rectified by the peer-reviewers and/or editors. The large number of major errors in a bibliographic reference isolates that cited information sources from the reader. Table 5 shows the reference error rate in various subjects.

CONCLUSION

Various references appended in articles in MJLIS contain inaccuracies. Inaccurate references frustrate the readers and could affect negatively on the LIS domain. Authors should attentively compile the reference list and verify the each and every reference from the original sources. They may use reference management tools and software to minimize the quantity of errors in their article.

The authors may send a cover letter along with the article manuscript assuring that all the references have been checked completely and verified with the original sources. The references should also be verified by the peer reviewers. The editors as well as the peer reviewers should not be treated reference errors lightly since they may push the reader to doubt the overall quality of research. All sides should have vested interests in assuring
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Subject/Journal</th>
<th>Reference Error Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al-Benna et al.</td>
<td>2009</td>
<td>Burns</td>
<td>13.7%</td>
</tr>
<tr>
<td>Aronsky et al.</td>
<td>2005</td>
<td>Biomedical Informatics Journals</td>
<td>34.3%</td>
</tr>
<tr>
<td>Awrey et al.</td>
<td>2011</td>
<td>General Surgery Journals</td>
<td>35.4%</td>
</tr>
<tr>
<td>Azadeh &amp; Vaez</td>
<td>2013</td>
<td>Medical Science Theses</td>
<td>53% &amp; 62%</td>
</tr>
<tr>
<td>Boya et al.</td>
<td>2008</td>
<td>Hand Surgery Journals</td>
<td>14.6%</td>
</tr>
<tr>
<td>Boyce &amp; Banning</td>
<td>1979</td>
<td>JASIS &amp; Personnel and Guidance Journal</td>
<td>13.6% &amp; 10.7%</td>
</tr>
<tr>
<td>Davids et al.</td>
<td>2010</td>
<td>Pediatric Orthopaedic Journals</td>
<td>26%</td>
</tr>
<tr>
<td>Davies</td>
<td>2012</td>
<td>Library and Information Science Journals</td>
<td>45.3%</td>
</tr>
<tr>
<td>De Lacey et al.</td>
<td>1985</td>
<td>Medical Journals</td>
<td>24%</td>
</tr>
<tr>
<td>Faunce &amp; Job</td>
<td>2001</td>
<td>Experimental Psychology Journals</td>
<td>31.5%</td>
</tr>
<tr>
<td>Fenton et al.</td>
<td>2000</td>
<td>Otolaryngology/ Head and Neck Surgery</td>
<td>37.5%</td>
</tr>
<tr>
<td>Ghane</td>
<td>2016</td>
<td>Iranian Journals</td>
<td>36.6%</td>
</tr>
<tr>
<td>Goodrich &amp; Roland</td>
<td>1977</td>
<td>US Medical Journals</td>
<td>29%</td>
</tr>
<tr>
<td>Gupta</td>
<td>2018</td>
<td>Libres: Library and Information Science Research e-Journal</td>
<td>63%</td>
</tr>
<tr>
<td>Harinarayana &amp; Manjunatha</td>
<td>2016</td>
<td>Psychology Theses</td>
<td>54.91%</td>
</tr>
<tr>
<td>Haussmann et al.</td>
<td>2013</td>
<td>Physical Geography Journals</td>
<td>19%</td>
</tr>
<tr>
<td>Lok et al.</td>
<td>2001</td>
<td>Nursing Journals</td>
<td>43 %</td>
</tr>
<tr>
<td>Lukic et al.</td>
<td>2004</td>
<td>Anatomy Journals</td>
<td>27.5%</td>
</tr>
<tr>
<td>Luo et al.</td>
<td>2013</td>
<td>Foot and Ankle Surgery Journals</td>
<td>41%</td>
</tr>
<tr>
<td>Mitchell-Williams et al.</td>
<td>2017</td>
<td>Social Work Journals- follow up study</td>
<td>32.6%</td>
</tr>
<tr>
<td>Narin et al.</td>
<td>2010</td>
<td>Respiratory Medical Journals</td>
<td>25.8%</td>
</tr>
<tr>
<td>O'Connor &amp; Kristof</td>
<td>2001</td>
<td>Business and Economics Journals</td>
<td>41.7%</td>
</tr>
<tr>
<td>Pope</td>
<td>1992</td>
<td>Library Science Journals</td>
<td>30%</td>
</tr>
<tr>
<td>Raja &amp; Cooper</td>
<td>2006</td>
<td>Emergency Medical Journal</td>
<td>19%</td>
</tr>
<tr>
<td>Reddy et al.</td>
<td>2008</td>
<td>General Surgery Journal</td>
<td>11.1%</td>
</tr>
<tr>
<td>Siebers</td>
<td>2001</td>
<td>Clinical Chemistry Journal</td>
<td>25.3%</td>
</tr>
<tr>
<td>Spivey &amp; Wilks</td>
<td>2004</td>
<td>Social Work Journals</td>
<td>41.2%</td>
</tr>
<tr>
<td>Todd et al.</td>
<td>2010</td>
<td>Marine Biology Journals</td>
<td>25%</td>
</tr>
<tr>
<td>Wilks et al.</td>
<td>2016</td>
<td>Research on Social Work Practice Journal</td>
<td>27%</td>
</tr>
</tbody>
</table>
Table 6: List of all 33 erroneous references in MJLIS

Punctuation error

Issue number and punctuation error

Year and issue number error

Punctuation and volume number error

Author’s name initial and punctuation error

Issue number error

Article title error (sub-title missing)

Author’s name initial error

Article title error (spelling error)
Journal title error

Year error

Journal title error

Volume, issue, pages and punctuation error

Issue number error

Authors name and article title error

Author’s name initial error

Journal title and pages error

Journal title and issue number error

**Author’s name initial and title error**


**Article title and punctuation error**


**Article title error**


**Punctuation error**


**Issue number error**


**Author name and punctuation error**


**Punctuation error**


**Author name and issue error**

Author’s name initial and issue error

Page error

Volume number error

Journal name error

Punctuation error

Page error

Journal title error

The corrected element is underlined [1- uncorrected element, and 2- corrected element]
maximal reference accuracy. A healthy mechanism is needed to maintain the reference accuracy as well as quality of the scholarly articles published in the MJLIS.

ACKNOWLEDGEMENT

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REFERENCES


