**The Readability of Articles in Tourism Journals**

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**Highlights**

* Articles published in tourism journals are very difficult to read.
* Reading difficulty appears to have bottomed out at the very difficult level.
* Readability is not associated with citations.
* Recommendations for improvements are offered.

**Graphical abstract**

**Very difficult Difficult Fairly difficult**



**Harder**

**Easier**

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THE READABILITY OF ARTICLES IN TOURISM JOURNALS

Tourism research has two key aims: to develop knowledge and to derive practical recommendations for tourism industry and policy makers. Those aims can only be achieved if research findings are well communicated.

The term readability refers to “the ease of understanding or comprehension due to the style of writing” (Klare, 1963, p. 1). Readability is typically measured using Flesch’s (1948) reading ease formula. The formula accounts for word and sentence length and was designed to predict children’s grade levels at school. Researchers investigating readability of academic journal articles have raised serious concerns. They find that readability is low and that – much to the detriment of knowledge development – writing readable articles may not be in the interest of academics or journals, pointing to the importance of *how* content is presented. A key study on the effects of *how* content is presented is that by Naftulin, Ware and Donnelly (1973). Naftulin et al. trained an actor to give a nonsensical lecture to a specialist audience in the field. The fictitious name of the lecturer was Dr. Myron L. Fox. The audience did not see through the nonsense and provided positive reviews of Dr. Fox’ lecture. Dr. Fox bluffed the specialist audience with *how* he presented. Similarly – in the context of academic writing – Armstrong (1980) found that unintelligible writing is perceived as more competent. Armstrong named this the *Dr. Fox phenomenon*.

The aim of the present study is to investigate how well knowledge is communicated in tourism journals. Specifically: (1) How easy is it to read articles published in tourism journals? (2) Is reading ease increasing or declining? (3) Does the Dr. Fox phenomenon hold in tourism?

Readability has been studied in many contexts. Educational materials, newspaper reports, government publications, military procedures, legal documents, advertisements and academic journals have been analyzed to ensure and improve reader comprehension. For example, the U.S. Military utilized Flesch’s Formula to improve materials to account for the declining level of reading ability of their personnel (Parker, Teddlie, & Chan, 1988). Legal texts have been analyzed to protect “the rights of citizens to clear information” (DuBay, 2004, p. 53).

Several studies have investigated the readability of academic articles (Bauerly, Johnson, & Singh, 2006; Bottle, Rennie, Russ, & Sardar, 1983; Crosier, 2004; Gazni, 2011; Goodsell, 1978; Hartley, Pennebaker, & Fox, 2003; Hartley, Sotto, & Pennebaker, 2002; Loveland, Whatley, Ray, & Reidy, 1973; Metoyer-Duran, 1993; Oliver, Dallas, & Eckman, 1998; Sawyer, Laran, & Xu, 2008; Shelly & Schuh, 2001; Stremersch, Verniers, & Verhoef, 2007). These studies correlate readability with article performance measures. Performance measures include the number of citations, awards won and readers stated perceptions of the quality of the article. A summary is provided in Table 1.

**Table 1**

Readability of academic articles (Note: some minima and maxima represent an average across a group of articles)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Reference | Formula  a *Farr, Jenkins,  & Paterson’s  1951 adaption  of the Flesch  Reading ease  score.* | Discipline | Number of Articles | Years | Readability scores above 90: very easy 80-90: easy  70-80: fairly easy  60-70: standard  50-60: fairly difficult  30-50: difficult  below 30: very difficult |
| Bauerly et al., 2006 | Flesch | marketing | 70 articles (1 journal) | 1936-2001 | Min: 13 (very difficult)  Max: 41 (difficult) |
| Bottle et al., 1983 | Flescha | chemistry | 100 articles (5 journals) | 1896-1980 | Min for 1980: 23 (very difficult) |
| Crosier, 2004 | Flesch | marketing management | 475 articles (14 journals) | 2003 | Min: 0  Max: 71.9 |
| Gazni, 2011 | Flesch | several  disciplines | 260,000 articles (five most cited institutions) | 2000-2009 | Min: 0 (very difficult)  Max: 95 (very easy) |
| Goodsell, 1978 | Flescha,  SMOG | medicine | 194 articles (4 journals) | 1975 | Min: 15 (very difficult)  Max: 43 (difficult) |
| Hartley et al., 2003 | Flesch | psychology | 80 articles (1 journal) | 1997-2001 | Min: 18 (very difficult)  Max: 22.7 (very difficult) |
| Hartley et al., 2002 | Flesch | psychology | 164 articles | 1935-1990 | Min: 19 (very difficult ) Max: 34 (difficult) |
| Loveland et al., 1973 | Flesch | management | 400 articles (10 journals) | 1967 1971 | Min: 18 (very difficult)  Max: 55 (fairly difficult) |
| Metoyer-Duran, 1993 | Flesch,  SMOG | library  studies | 152 accepted, 119 rejected papers (1 journal) | 1990 1991 | Min: 0 (very difficult) Max: 53 (fairly difficult) |
| Oliver et al., 1998 | Flesch | several  disciplines | 115 articles (23 journals) | 1994-1998 | Min: 18 (very difficult ) Max: 68 (standard) |
| Shelly & Schuh, 2001 | Flesch | education | 17 journals | 1997 1998 | Not provided |
| Sawyer et al., 2008 | Flesch | marketing | 162 articles (4 journals) | 1990-2008 | Non-winners: 33.9 (difficult) Winners: 37 (difficult) |
| Stremersch et al., 2007 | Flesch | marketing | 1825 articles (5 journals) | 1990-2002 | Min: 0 (very difficult)  Max: 58 (very difficult) |

A clear picture emerges: academic articles are very difficult to read. Articles with high readability are the exception. Higher scores are achieved by journals which also cater to industry.

Most studies conclude that readability has decreased over time. Bottle et al. (1983) find that the “readability of scientific papers has decreased dramatically in the past 100 years, but now appears to have bottomed out at the ‘very difficult’ level” (p. 103). The decrease in readability of *Nature* serves as a good example. In 1850 *Nature* was ‘fairly easy’ to read (reading ease of 70). In 1900 *Nature* became more difficult to read (reading ease of 40 to 65). At the end of the 20th century reading *Nature* became very difficult with scores between 25 and 30 (Sardar, 1975). Loveland et al. (1973) find this trend also in management journals. Some authors view the decline in readability as resulting from changes in the publishing business. Journals face more pressures. They want to publish as many articles as possible. Yet, they want to keep printing costs low. This requires imposing limitation on authors’ writing style.

In term of the association of readability and citations, the authors of the present study assumed that articles that are easier to read are cited more. This assumption is not supported by the literature. It appears that articles with lower readability are cited more (Gazni, 2011; Stremersch et al., 2007), more accepted (Shelley & Schuh, 2001) and seen as more prestigious and competent (Armstrong, 1980). Armstrong (1980) hypothesizes that an “unintelligible communication from a legitimate source in the recipient’s area of expertise will increase the recipient’s rating of the author’s competence” (p. 80).

A number of article performance criteria other than citations have also been investigated. Hartley et al. (2002) study influential versus not influential articles. They operationalise “influential” by using citations as well as published listings based on expert assessment of influence such as the Cognitive Science Millenium Project and the book titled “Forty Studies that Changed Psychology” which focuses on practical influence of academic work. Results indicate that influential articles are easier to read (Flesch score of 33/33 versus 22/27 for two studies). Highly cited papers are not easier to read (20/34 versus 19/32 for the two studies, respectively). The authors offer the following explanation: “It is not true to assert that the number of citations a scientist’s work receives is the best single indicator of scholarly recognition. Papers get cited for a variety of reasons, some of which might not relate to their long-lasting significance” (p. 328). Similar results are reported by Stremersch et al. (2007) for articles in marketing journals.

For the present study, the readability of research articles published in generalist tourism journals was investigated. Full-length original research articles published in *Annals of Tourism Research*, *Tourism Management,* and the *Journal of Travel Research* were included. These are the three generalist tourism journals with the highest impact factors. As a consequence, they receive a large number of submissions annually. They are, therefore, in the position to choose the most interesting and the most readable articles. These journals also have the most rigorous reviewing process which is expected to improve manuscript readability.

Because changes over time were of interest, articles published at three points in time were chosen: 20 years ago (1993), ten years ago (2003) and at the time of undertaking the study (2013). The study was limited to these years (493 articles) because readability has to be calculated manually. Ninety-five articles were published in 1993, 143 in 2003 and 257 in 2013. One hundred and nine appeared in *Annals of Tourism Research*, 131 in *Tourism Management* and 58 in the *Journal of Travel Research*. Articles from 2013 were included to capture the current readability level. Articles published in 1993 and 2003 were used to obtain reliable citation data given that citations accumulate over time.

Flesch’s (1948) measure of reading ease was used. This measure is simple, objective and highly correlated with comprehension (Hayes, Jenkins, & Walker, 1950; Klare, 2000; Peterson, 1956; Swanson & Fox, 1953). The formula was designed to predict the average grade level of children who are able to answer 75% of questions asked about a text. As such, the Flesh score is about comprehension of the text. Comprehension is the most important feature of an academic article. The Flesch score measures sentence and word length and usually generates values between 0 and 100. Flesch scores can be negative and the maximum positive value is 120 (Gazni, 2011). Higher values indicate better readability. Table 1 contains verbal readability descriptors for value ranges.

A number of Flesch score calculators are available. The present study used the calculator available at www.readability-score.com. It calculates Flesch’s (1948) formula: Reading Ease = 206.835 – 846\*(average word length) – 1.015\*(average sentence length). Average word length is the number of syllables divided by the number of words. Average sentence length the number of words divided by the number of sentences. It is critical to ensure all of the text is copied accurately into the calculator, with line-break hyphenation as well as full stops in contractions (such as *U.S.* or *e.g.*) or in citations (such as *p. 9*) needing to be removed. The process of checking large amounts of text is time consuming, but not making the corrections outlined above can introduce substantial error.

Flesch scores were also computed for five headline articles of the most widely circulated newspapers in English language (IFABC, 2012): The Sun (UK), The Daily Mail, The Times of India, and the Wall Street Journal (USA). This was done to provide a reference point for interpreting Flesch scores. Newspaper scores range from 45 to 71 (Table 2). The Sun achieves a score of 71, making it very easy to read.

**Table 2**

Flesch scores for headline articles of the most widely circulated English language newspapers

|  |  |  |  |
| --- | --- | --- | --- |
| Newspaper | Mean | Number of articles | Std. Deviation |
| Daily Mail | 62 (standard) | 5 | 13.3 |
| The Sun | 71 (fairly easy) | 5 | 5.7 |
| Times of India | 49 (difficult) | 5 | 9.6 |
| Wall Street Journal | 45 (difficult) | 5 | 7.8 |

Readability of academic articles was calculated using the abstract. The abstract was chosen for three reasons. First, academic articles are difficult to analyze because full stops do not always indicate the end of a sentence. Therefore manual pre-processing is required. Second, the abstract represents an article’s “most important surrogate type of information” (Gazni, 2011, p. 273). Third, Hartley et al. (2003) establish that authors write consistently in terms of style across all article sections. This is supported in the study by Roberts, Fletcher and Fletcher (1994).

To ensure that abstract readability is representative of the manuscript, readability scores were computed for the abstract, the introduction and the conclusions section for articles published in 2003. Results confirm that abstract readability reflects readability of other sections. The correlation is significant at the 99% significance level for abstract and introduction (0.373) and abstract and conclusions (0.421). Citations of articles published in 1993 and 2003 were calculated using Google Scholar. Analyses were conducted in SPSS using frequency counts and correlation analyses.

**The readability of articles published in tourism journals.** Results are presented in Table 3. Average Flesch scores for the three journals are similar, ranging from 17 to 19. Generalist tourism journals are very difficult to read.

**Table 3**

Flesch scores

|  |  |  |  |
| --- | --- | --- | --- |
| Journal | Mean | Number of articles | Std. Deviation |
| Annals of Tourism Research | 17 (very difficult) | 149 | 12.5 |
| Journal of Travel Research | 19 (very difficult) | 130 | 13.2 |
| Tourism Management | 18 (very difficult) | 214 | 12.5 |

Comparing these scores with the newspaper article scores indicates that they are substantially more difficult to read. Newspaper articles have an average readability of 56.7, academic tourism journal articles 18.0. Also, 8% of the articles have a score of below 0. The complete distribution of readability scores is shown in Figure 1. Only three articles (1% of the articles) are fairly easy to read. Seventy-five articles (15%) are difficult and 372 articles (75%) are very difficult to read.

**Very difficult Difficult Fairly difficult**



**Harder**

**Easier**

**Fig. 1.** Distribution of readability scores of articles in the selected tourism journals.

**Readability development over time.** Readability decreased from 21.0 (very difficult, based on 95 articles) in 1993 to 20.6 (very difficult, based on 141 articles) in 2003 and to 15.5 (very difficult, based on 257 articles) in 2013. This reduction is not statistically significant. This could be due to the bottoming out effect at the very difficult level (Bottle et al., 1983).

**The association of readability and citation**. For articles from 1993 and 2003 the correlation between the Flesch score and citations was calculated. Articles from 2013 were to too recent to accumulate citations. The correlation is insignificant (-1.106, p = 0.107). For only the 20% most and the 20% least cited articles the correlation is marginally significant (-0.199, p = 0.048). In line with previous findings the correlation is negative: highly cited articles are more difficult to read.

These findings are not encouraging for knowledge development in tourism. Nor do they indicate potential for successful knowledge transfer to industry. They do, however, reflect research findings in other fields. With one exception: the Dr. Fox phenomenon is not very strong in tourism research. Citations are not associated with readability. In an extreme group comparison this is only marginally the case.

This is not a desirable situation. What can be done to improve readability of high quality tourism research? Currently there is little incentive for authors to improve the readability of their work. Reading ease may play a role in making outstanding research highly influential. But for less influential work, readability does not affect the performance of academic articles.

One recent development in academic publishing has the potential to improve the situation: online supplementary materials. The additional space can be used to supply details about the study. In so doing, pressure is taken off the main article and authors can refocus on readability. Another option is to focus journal marketing activities on articles with high readability. Such an approach would give authors an incentive to improve the readability of their papers in order to increase citations. A more dictatorial approach is to impose a minimum Flesch score on articles to be published, as recommended by Armstrong (1980). The Flesch score can be computed in Word (Review > Spelling and grammar > Options > Proofing > When correcting grammar in Word > Show readability statistics. The Flesch score appears after the Spelling and Grammar Check is completed.). In calculating the Flesch score, it is critical that only the main text of the manuscript is tested. For calculating the score for this article, the core text was copied to a blank document. All full stops in contractions and citations, as well as in tables and figures were removed.

The authors are not suggesting that academic articles can be written in a way that leads to very high Flesch scores. Academic writing is targeted at a specialized audience. Academic writing also requires the use of technical terms, which tend to be long. Yet, readability is important. Only if readers understand the study can they built upon it and cite the study correctly. Incorrect citations are a major problem in academic with estimates of as many as one in four articles being inappropriately cited (Todd, Guest, Lu, & Chou, 2010).

Tourism researchers should aim to increase the readability of their articles. The Flesch score can be a useful tool to achieve this. Flesch scores of above 40 are a realistic aim. To illustrate this: the original draft of this article had a Flesch score of 29.3. The first revision improved to 41.5. The current version has a score of 45.7. It took the authors five hours to improve the Flesch score from 29.3 to 45.7. That is a lot of time. But then again: it took the authors one year to complete the research reported in this article.

“Clear writing is possible, but it is not always easy” (Hartley, 2002, p. 332). It is worth the effort. Good research deserves to be understood.

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