Revisiting the readability of management information systems journals again

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ABSTRACT

Those that teach and those that practice in the information systems (IS) environment use the IS publications to gather information about the latest developments in their field. Some of the publications are easy to understand, and some other publications are hard to understand based upon how easy or hard it is to read the articles. For an article to be effective it should be fully comprehensible; others may not be effective because they are too hard to comprehend. Therefore, the readability of journals in the IS field is very important. This paper presents results of a survey conducted to determine the readability of information systems journals based upon a couple of criteria including the Flesch-Kincaid (Kincaid, 1975) Formula. The results of this survey are then compared to similar surveys performed in 1991 and 1999.

Key Words: information systems, readability, journals, Flesch-Kincaid Index

INTRODUCTION

People will not read what they can't understand. Information in articles that relates to the area of information systems can sometimes be very technical or very hard to understand. In most cases the difference between a less than average writing and an extraordinary writing is that one is read and understood and the other is not. (Sawyer, Laran, and Xu, 2008) as speculated by Baurely, Johnson, and Singh (2005). Because of this, a high level of readability should be required of all papers submitted for publication in journals in information systems.

The authors of these articles should keep in mind that this high level of readability does not mean the author can skip the thorough investigation needed to write an article or the technical aspects that in some cases have to be included with the writing. In the vast majority of cases, the use of rare words, graphics (Griffin and Wright, 2008), or technical terminology can make text difficult (Pitler, and Nenkova, 2008) to read for certain audience types (Collins- Thompson and Callan, 2004; Schwarm and Ostendorf, 2005; Elhadad and Sutaria, 2007). The goal of this paper is to present the results of a survey that examined the readability and comprehension of 9 information systems journals. Our findings are also compared with two earlier studies.

SURVEY METHODOLOGY

The authors selected a group of nine popular journals in the area of information systems. The Flesch-Kincaid Formula was applied to the journals to measure their readability. The journals were then ranked according to the readability index and conclusions on their readability were drawn based on the ranking results.

Twenty articles were randomly selected from each of the nine journals for the year 2010. A minimum of 100 words were sampled from each article. Quoted material was not used.

The following nine journals for selected and sampled:

Communications of the ACM
Decision Sciences
IEEE Transactions on Computers
Information Systems Management
Interfaces
Journal of Management Information Systems
Management Science
Management Information Systems Quarterly
Sloan Management Review

READABILITY INDEX

For the purpose of this paper, readability is defined as the ease of understanding, or comprehension, based upon the statistics derived from the writings. We are not trying to measure the ease of reading due to the pleasantness of the writing or the legibility of the print (typography) (Loveland, et al., 1973). Experts have developed methods for measuring how easy, or difficult, the text of a writing is to read. One of the best known is the Flesch-Kincaid Index, which is used to measure the readability of articles. This index is the United States Government Department of Defense standard and the government has mandated its use by contractors when writing manuals for the armed services. Penrose (1986) indicates that this index is based on the sentence length and number of syllables per word. In the two previous studies we used WordPerfect to determine the readability indexes. In this

report, we used Microsoft Word to measure the readability index based upon the Flesch-Kincaid Formula.

The Flesch-Kincaid readability test is designed to indicate the difficulty of comprehending in contemporary academic English. The numbers provided indicate the number of years of education generally needed to understand the text. The result corresponds with the grade level. For example, a score of 7.2 would indicate that the text can be easily understood by an average student in the seventh grade; a score of 11.2 would indicate that the text can be easily understood by an average student in the 11th grade. The Flesch-Kincaid index is a numeric value between 6 and 20, measuring between the 6th grade and the 20th grade (advanced degree). The more difficult the reading of the text, the higher the index number is. The procedure is designed to assess the grade level of education needed to read and understand the material. Guffey (1998) reports that magazines and newspapers that aim for a wide readership keep their readability index values between 8 and 12. For example, *USA Today* is rated at 10.6, *The New York Times* is rated at 12.6, and *People* magazine ranges between 8.4 and 11.2. The formula to calculate the Flesch-Kincaid Reading level is:

$$0.39 \left(\frac{\text{total words}}{\text{total sentences}} \right) + 11.8 \left(\frac{\text{total syllables}}{\text{total words}} \right) - 15.59$$

For example – the sentences: *The tricky brown fox ran up the enormous hill two times. He was very tired.* Theses sentences have the following statistics: 2 sentences, 15 words, and 20 syllables, resulting in the following Flesch Kincaid grade level = .39(15/2)+11.8(20/15)-15.59 = 2.925+15.73-15.59 = 3.065 = grade level 3 is necessary to understand this text.

Another example - the sentences: *People will not read what they can't understand. Information in articles that relates to the area of information systems can sometimes be very technical or very hard to understand.* These sentences have the following statistics: 2 sentences, 29 words, and 52 syllables, resulting in the following Flesch Kincaid grade level = .39(29/2)+11.8(52/29)-15.59 = 5.655+21.16-15.59 = 11.225 = grade level 11 is necessary to understand this text.

These two examples indicate that long, complex sentences with many words and syllables are harder to understand than simple sentences with fewer words and syllables.

SURVEY RESULTS

According to the results of the survey, the journal's differed significantly in their readability. Table 1 presents the relative ranking of the journal's according to their Flesch-Kincaid Index as determined by Microsoft Word. Table 2 shows the average number of words and sentence length for the different articles. Table 3 compares the current relative rankings of the articles from similar studies conducted in 1991 and 1999. Two of the journals in the previous study of 1991, *Journal of Systems Management* and *Data Management*, were no longer available; in order to have the same number of journals in all three studies, those two were replaced by the following journals: *Information Systems Management* and *Journal of Management Information Systems*. The same nine journals appeared in both the 1999 study and the current study.

It is interesting to note that *Communications of the ACM* has been the easiest journal to read in the past two studies, moving up from number four in the first study. The *IEEE Transactions on Computers* is ranked number two, moving up from number three in the previous two surveys. *Interfaces* moved up from number five in the previous survey to number three in this survey. *Sloan Management Review* moved up to number four after finishing last in the previous two surveys. The

M*anagement Information Systems Quarterly* moved all the way up to number five from number eight in the previous two surveys. *Information Systems Management* moved down to number six from number four in the previous survey. *Decision Sciences* moved down to number seven from number two in the previous survey. The *Journal of Management Information Systems* moved down to number eight from number six and *Management Science* moved down to number nine from number seven in the previous survey.

CONCLUSION

A primary objective of this research was to strengthen the peer-review process. Providing explanation of the changes of ranking for various journals cannot be made precisely .One possible explanation could be that as the journals mature the expectation of journal editors' changes and they will attract a more diverse group of articles. According to Burman (1991) and Partow-Navid and Beheshtian (1991), as far as the articles readability, there are some specific ways to improve that ease of reading of a document. They are:

Delete unnecessary words and phrases.
Replace a passive voice with an active voice.
Change a complex sentence into multiple, simple sentences.
Visual perception thinking is effective and efficient. Whenever possible, use figures and illustrations of all kinds to clarify.
Graphs are generally better than tables and numbers.
Make sure the reader is well oriented to what is being discussed and why.
Use appendices for providing detailed algorithms and proofs.

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APPENDIX

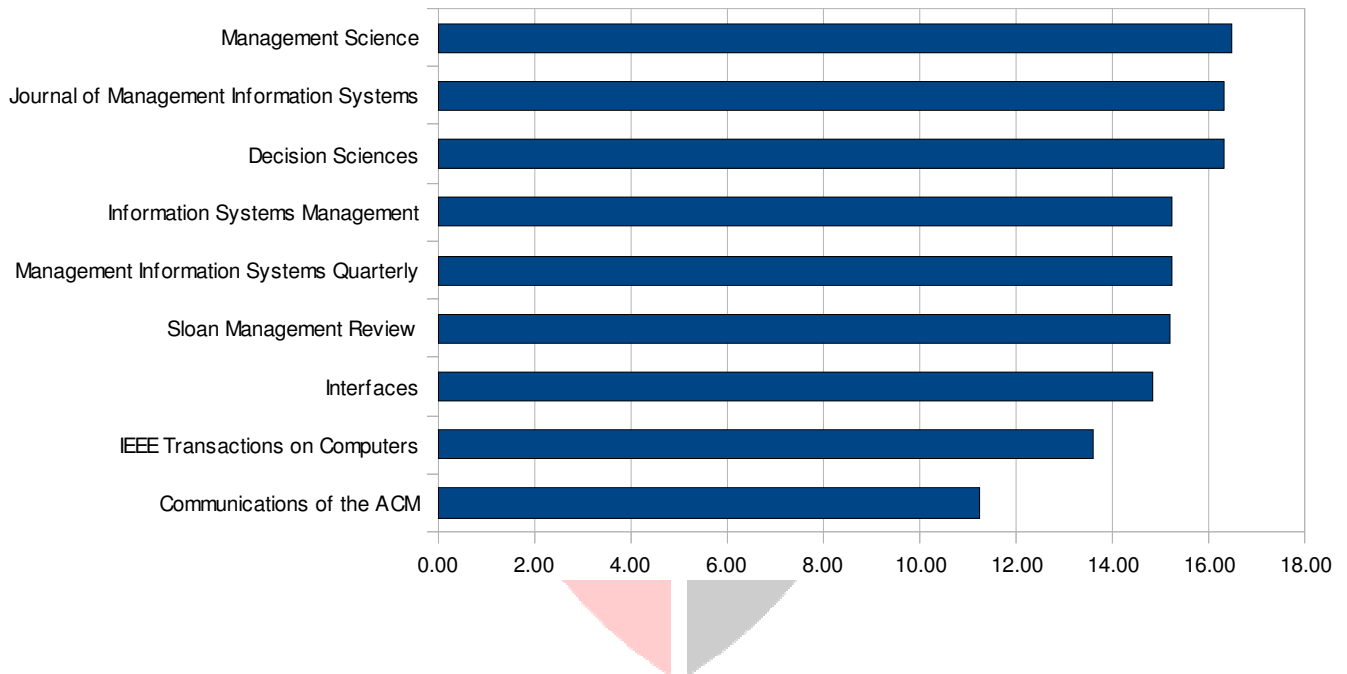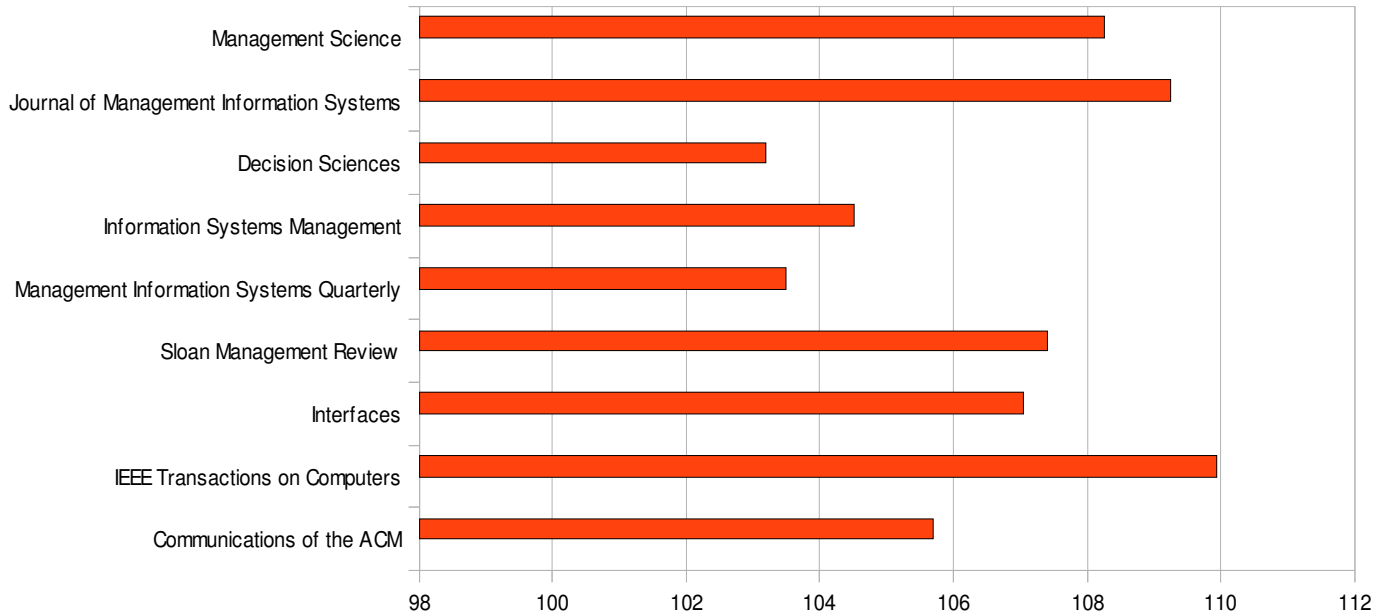Table 1. Readability of Articles – Flesch-Kincaid Index

Table 2. Average Number of Words and Average Words Per Sentence

Average Number of Words
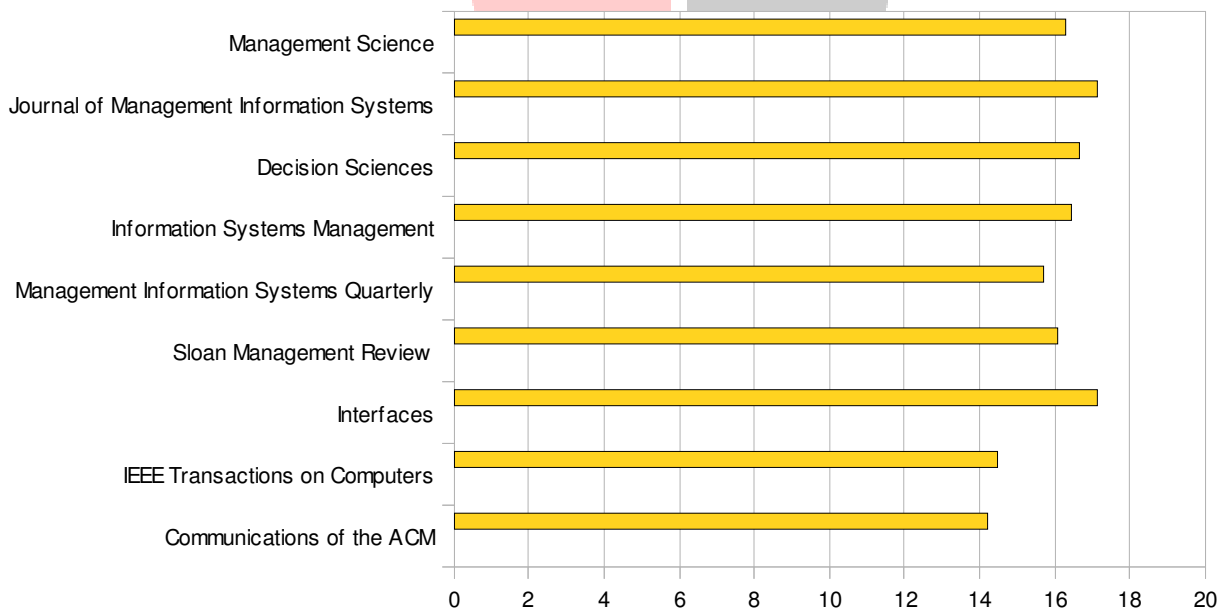

Average Number of Words Per Sentence

Table 3. Comparative Ranking of Journals for 2010, 1999 and 1991

Name of Journal	2010 Ranking	1999 Ranking	1991 Ranking
Communications of the ACM	1	1	4
IEEE Transactions on Computers	2	3	3
Interfaces	*3*	*5*	*1*
Sloan Management Review	*4*	*9*	*9*
Management Information Systems Quarterly	5	8	8
Information Systems Management	6	4	N/A
Decision Sciences	7	2	6
Journal of Management Information Systems	8	6	N/A
Management Science	9	7	2