An Analysis Of The Readability Of The MD&As Of Small, Medium, & Large Revenue Generating Cities

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Abstract

Studies assessing the annual reports of publicly held corporations have shown mixed results in regard to the readability levels of those reports. Recently, the Governmental Accounting Standards Board adopted GASB 33, 34, and 35 in which specific guidelines are outlined for the reporting of governmental entities. Are the Comprehensive Annual Financial Reports (annual reports) of the governmental entities understandable to the average user?

This study argues that the Management's Discussion and Analysis, the summary portion of the governmental annual report, is not understandable to the average reader. The sample was equally divided among small, medium, and large revenue-generating cities that were early adopters of GASB 34. Readability was determined using the Flesch-Kincaid readability formula from the GRAMMATIK II software. The results show that the Management's Discussion and Analyses are understandable to the average twelfth grade reader. Furthermore, the writer's style and sentence structure remained at a level consistent with the readability level.

1.0 Introduction: Readability

Dale and Chall (1948) defined readability as "the sum total (including the interactions) of all those elements within a given piece of printed material that affect the success a group of readers have with it. The success is the extent to which they understand it, read it at an optimum speed, and find it interesting."

Readability formulas are mathematical models designed to measure the level of understanding and comprehension needed for a selected passage. With the Flesch-Kincaid formula, readability equates to a grade level assigned to the passage based on a comparison of the text to a comparison document. Flesch-Kincaid uses a scale of grade 8 to college senior level.

Sentence complexity, vocabulary complexity, and percent passive voice analyze readability-related components of a text. Both sentence complexity, as well as vocabulary complexity, scores the text using a scale of 0 to 100, with 100 being the most complex. The percent passive voice is a percent of the finite verb phrases in the text. All three components evaluate the difficulty of the text (Flesch, 1948).

Basic counts analyze the writing style of the author. The basic counts report determines if there are too many long words or if paragraphs are too long and complicated for the reader to understand easily. Examples of basic counts include syllables, words, sentences, paragraphs, long sentences, short sentences, simple sentences, and big words (Dorrell and Darsey, 1991). Averages for syllables/word, words/sentences, and sentences/paragraph are also included.

Readers with comments or questions are encouraged to contact the authors via email.

2.0 Background

In June 1999, the Governmental Accounting Standards Board, or GASB, revealed its guidelines for state and local government financial statements reporting. The new rules change the way governmental financial information is communicated to its end users. The major drive behind changing the reporting methods was to create new information and better structure information given in the past to anyone with an interest in how a government is doing financially (GASB, 1999).

One of the major changes in the new standards (also known as GASB 33, GASB 34, and GASB 35) is the requirement of a government to present in narrative form an analysis of the government's financial activities during the year. This is called the Management's Discussion and Analysis (MD&A). GASB's intent is for the first time, those financial managers will give readers an objective and easily readable analysis of the government's financial performance for the year. The analysis should provide users with the information they need to help them assess whether the government's financial position has improved or deteriorated as a result of the year's operations.

Why should anyone care about financial reporting by government? The citizens who rely heavily on the resources of the government have the right to know how the city's money is being spent and who pays those costs. They have the right to know the past, present, and future financial outlook of the government. GASB concludes that the new financial reporting rules should provide anyone who uses government financial statements the necessary means to assist them in finding answers to their questions.

Until now, state and local government annual financial reports focused on "funds" of government which are intended to provide information about various activities or sources of revenue. The problem occurs when a reporting entity has hundreds of funds to report. The multitude of funds makes it harder for an end user to collect all the relevant information and form a conclusive opinion.

The new rules add important new information to the current fund accounting approach and provide financial information from a government-wide perspective versus fund reporting only. These government-wide financial statements are much more useful in developing the "big picture" and the MD&A should paint an even broader picture of an entity. However, to be of value, city officials must write the analysis in a manner understandable to their citizens.

3.0 Purposes and Hypotheses

The purpose of this study is to examine the differences in readability in the MD&A issued in the government's comprehensive annual financial statement (CAFR) of five small, five medium, and five large United States city governments. Definitions of the three groups are given below. Accordingly, the major hypothesis tested was:

H1: No difference exists in the mean readability levels of the three groups of MD&As.

Further information needed to study how the three groups performed on readability-related components of a text are sentence complexity, vocabulary complexity, and percent passive voice. Analyzing these will assist in understanding the reasons for the difference (if any) in readability levels and helps achieve a better understanding of communication styles. Therefore, a hypothesis relating to each component was tested.

H2: No difference exists in the mean passive voice levels of the three groups of MD&As.

H3: No difference exists in the mean sentence complexity levels of the three groups of MD&As.

H4: No difference exists in the mean vocabulary complexity levels of the three groups of MD&As.

GASB 34 and 35 are effective depending on the gross revenues of that government. Governments with total revenues of $100 million or more (large governments) must adopt the statements for fiscal years beginning after June 15, 2001. Governments with total revenues of $10 million but less than $100 million (medium governments) must adopt the statements for fiscal years beginning after June 15, 2002. Finally, governments with total revenues below $10 million (small governments) will apply the statements beginning with fiscal years ending after June 15, 2003 (Engstrom and Copley, 2001). However, because early implementation was encouraged by GASB, some medium and small cities have already instituted the changes in annual reporting. Therefore, all MD&As evaluated were for the fiscal year 2001.

According to the United States Census Bureau, 84% of all adults, 25 years and older, have completed high school and about 26% of all adults have completed a bachelor's degree or more. Despite these levels of educational attainment, research shows that many people read three to five grades lower than their highest level of educational attainment. Thus, it is not unusual for someone with a high school diploma to be reading at a seventh to ninth grade reading level. Putting it another way, more than one-third of the U.S. adults read below the eighth grade level. Because of this gap, literacy experts recommend materials written for the general public should have a junior high reading level.

4.0 Design

This research studied the readability in the MD&As of early implementers of five small, five medium, and five large governments shown in Table 1. The total revenue from the small sample ranged from $88,189 to $3,925,191. Total revenue for the medium sample ranged from $11,976,000 to $80,357,000. The total revenue for the large sample ranged from $127, 353,438 to $41,879,864,000.

TABLE 1

Small	Medium	Large
Aragon, GA	Columbus, OH	Kansas City, MO
Lylerly, GA	Urbana, IL	New York City, NY
Bardstown, KY	Wilsonville, OR	Rochester, NY
Crestview Hills, KY	Oak Park, MI	Boulder, CO
Ponchatoulas, LA	Sebastian, FL	Overland Park, KS

The readability was determined using the Flesch-Kincaid readability formula from the GRAMMATIK II software. Examinations were of the following elements of readability: percent passive voice, sentence complexity, vocabulary complexity, syllables, words, sentences, paragraphs, short sentences, long sentences, simple sentences, big words, syllables per word, words per sentences, and sentences per paragraph.

5.0 Analysis and Results

The shortest MD&A contains 230 words (Aragon); the longest has 12070 words (Rochester). The median number of words is 1698 words. Big words can often lead to confusion and lack of understanding in a text. Again, Aragon has the least amount of big words (68 words) and Rochester had the greatest amount of big words (3674 words). The median number of big words is 500 words. The average number of words in the text is 2586.5 words, and the average number of sentences in the text is 246.2 sentences in an average of 147.67 paragraphs.

6.0 Sentence Structure

The analysis reveals that the average number of short sentences were 172.2 sentences; the average number of long sentences was 7.53 sentences per MD&A. Simple sentences, which can imply ease of understanding, ranged from 9 to 601 sentences per MD&A. The range of number of sentences ranged from 11 to 823 sentences, and the number of paragraphs ranged from nine to 507 paragraphs.

7.0 Sentence Complexity

On a scale from 0 to 100, the average score for sentence complexity is 15.7333, vocabulary complexity is 36.867, and percent passive voice is 18.93%. These indicate that overall, the MD&As were simple in structure and style. There is little confusing finite verb usage and the structure is appropriate for the level of understanding of an average twelfth grade reader.

8.0 Readability Level

The average reading level for the small revenue-generating cities is at the 13.644 reading level. For the medium revenue-generating cities, a reader must have, on average, a 10.712 grade reading ability. Finally, for the large revenue-generating cities, a 12.516 grade reading level is needed.

9.0 Statistical Results

Readability scores ranged from 10.22 to 16. Percent passive voice scores ranged from 14% to 26%. Sentence complexity ranged from a score of 5 to a score of 48. Vocabulary complexity ranged from a score of 14 to score of 69.

ANOVA tests were performed on the samples to determine whether there were any significance differences between readability of the three groups and whether the mean scores for each group differ significantly from the norm of 12 (indicating a twelfth grade reading level). Significant differences were not discovered between small, medium, and large cities, based on readability; thus, the null hypothesis of the first premise (H1) was not rejected. The null hypothesis for the second premise (H2) and the fourth premise (H4) was also not rejected as the three groups were not found to have statistical differences in regard to both percent passive voice and vocabulary complexity. The third premise (H3) was the only premise in which the null hypothesis was rejected, indicating that there were significant statistical differences in regard to sentence complexity between the three groups. Table 2 presents summary descriptive statistics of the cities' performance by revenue class of the city, as well as the results of the statistical analyses.

TABLE 2

Statistical Analysis							
	Small		**Medium**		**Large**		
Measure	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*P**
Readability	13.644	2.505081	10.712	0.453509	12.516	2.384215	.108
% Passive Voice	0.21	0.03	0.176	0.008944	0.182	0.023875	.078
Sentence Complexity	26.8	19.84187	7.8	2.167948	12.6	13.10725	.027*
Vocabulary Complexity	48	23.01087	26.4	8.018728	36.2	19.77878	.210

*Significant at the 95% confidence level

Correlation was used to determine if there is a relationship between readability and sentence complexity, vocabulary complexity, and percent passive voice. As expected, Table 3 shows a positive correlation between readability and sentence complexity, vocabulary complexity, and percent passive voice used. Thus, the higher the readability level, the more complex the sentence structure and vocabulary content, as well as an increased usage of finite verb phrase.

TABLE 3

Correlation Matrix			
Measure	*Readability*	*% Passive Voice*	*Sentence Complexity*
% Passive Voice	0.276242658		
Sentence Complexity	0.899021491	0.433277987	
Vocab. Complexity	0.856768515	0.409141634	0.912603459

10.0 Discussion and Conclusion

The mean readability level of the MD&As was at a twelfth grade reading level indicating that the average person in the United States would not be able to read and comprehend the MD&As.

ANOVA tests indicate there were no statistical differences between the readability, vocabulary complexity and the percent passive voice between the three groups. There was a statistical difference between the sentence complexities of the three groups.   However, care must be taken in the conclusions of this study, as the sample sizes for all three groups were small.   Further research with larger sample size may give a more accurate analysis of readability of the MD&As of city governments' annual reports. The authors suspect that as the sample size increases, the results of the study will validate that the average person cannot read the MD&As of city governments' annual reports.

Furthermore, the Grammatik software is limited only to the word usage of a specific text. Common to many reports, the MD&As displays numerous graphs, charts, tables, etc. that will increase the difficulty of the text, especially to citizens not knowledgeable enough to interpret a graph.   This component of the MD&As was not taken into consideration when evaluating the readability level of the text.

Finally, the writing style of the MD&As is appropriate for the average 12.29 grade reader. The complexity and structure of the text was not incredibly difficult nor was the style of the MD&A difficult to follow. However, it may be too complex for many citizens if the U. S. Census information is correct. Additionally, the subject matter of the MD&As is technical information. Even if the words and sentences are short, managers must remember that many of their readers do not have the background knowledge to comprehend.

11.0 Suggestions for Future Research

It would be interesting to compare the readability results with the reading levels of the specific groups in this study. For example, it is the authors' opinion that most people who reside in small revenue-generating cities would not have the highest level of education; though, that group of MD&As displayed the highest readability level. Further studies are needed in which a user group within the population examines the readability level of the MD&As using the cloze procedure. The cloze procedure is an interactive procedure that tests the ability of readers to infer what message the author is attempting to send. Essentially, implementing the cloze procedure requires deleting every fifth word from at least three randomly selected passages and asking a sample of the intended audience to fill in the blanks. Comparison of the user group study and the mathematical model study would allow for a better understanding of the ability of the city government to communicate its performance to its end users of the financial information. 📖

References

1.   Dale, E. and Chall, J.S. (1948). A formula for predicting readability. *Education Research Bulletin*, 27, p. 13.
2.   Dorrell, J. T., Darsey, N. S. (1991). An analysis of the readability and style of letters to stockholders. *Journal of Technical Writing and Communication*, 21 (1), pp. 73-83.

3.   Engstrom, J. H. and Copley, P. A. (2001). *Essentials of Accounting for Governmental and Not-for-profit Organizations*, McGraw-Hill Companies, Inc., New York, NY.
4.   Flesch, R. (June 1948). A new readability yardstick. *The Journal of Applied Psychology*, 221-233.
5.   Governmental Accounting Standards Board (GASB). 1999. *Statement No. 34 of the Governmental Accounting Standards Board: Basic financial statements and management's discussion and analysis for state and local governments.* No. 171-A. Norwalk, CT: GASB.
6.   http://www.census.gov/population/socdemo/education/p20-536/p20-537.pdf.
7.   Shaffer, R. J., Stevens, K. T. and Stevens W. P. (1993). Assessing the readability of governmental accounting standards: the cloze procedure. *Journal of Technical Writing and Communication*, 23 (3), pp. 259-267.
8.   Subramanian, R., Insley, R. G. and Blackwell, R. D. (1993). Performance and readability: A comparison of annual reports of profitable and unprofitable corporations. *The Journal of Business Communication*, 30, pp. 49-61.

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