Annual Report Readability: The Case of the Fortune 500

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This study adds to the literature on the readability of annual reports submitted to the SEC by assessing current readability, and contemporizing similar studies conducted between 1950 and 1991. The results show that the sample's 10-Ks are "Very Difficult" to read, and have scores lower than previous research. The study also examines the sample by economic sector, and finds that readability levels are similar among sectors with one exception. These outcomes raise several issues, including the usefulness of the information transfer of 10-Ks, and whether the goals of the SEC are met if 10-Ks are virtually unreadable.

INTRODUCTION

This goal of this paper is to contemporize research undertaken between 1950 and 1991 concerning the readability of annual reports (10-Ks) submitted to the U.S. Securities and Exchange Commission (SEC). Using a similar sample and readability assessment method, this research has two objectives: first, to assess the current readability of annual reports, and second, to compare this readability to previous studies. In addition, the study examines the sample by GIC Economic Sector to determine whether there are significant differences in annual report readability among them.

The importance of this study lies in the informational role of the SEC: "All investors, whether large institutions or private individuals, should have access to certain basic facts about an investment" (What We Do). The major conduit for the transfer of these facts is SEC filings in general, and 10-Ks in particular. Given that more than half of the adults in the United States have invested in the the stock market, the readability of SEC filings is critical (McCarthy, 2016).

The remainder of the paper is organized as follows: the next section reviews the previous literature on the readability of annual reports, and is followed by information on the sample and methodology. Next, the results are presented and discussed. The final section of the paper offers some conclusions, as well as suggestions for future research on the readability of annual reports.

LITERATURE REVIEW

This study defines readability using the definition offered by Loughran and McDonald (2014), who state that readability is the "ability of individual investors and analysts to assimilate valuation relevant information from a financial disclosure."

For comparison purposes, this study uses the Flesch Reading Ease Score method, which measures readability from 0 ("Easy") to 100 ("Very Difficult"). Additional information on the Flesch method may be found in Appendix A.

The earliest research in this area is that of Pashalian and Crissy (1950), who analyzed a sample of the twenty-six annual reports from companies in the 1949 "Corporate Billion Dollar Club" (non-financial companies with assets, sales, or revenue greater than $1 billion). Flesch (1948) recommended that researchers take 100-word samples from every other page, and Pashalian and Crissy (1950) used this method, arriving at a total of 211 samples. The analysis of the sample using the Flesch Reading Ease Scores showed that that the readability scores were between 6 and 58, while the average reading ease was 34.37. Based on the Flesch Reading Ease scale in Appendix A, these scores fall into the "Very Difficult" to "Fairly Difficult" range.

This was followed by the work of Soper and Dolphin (1964), who used Pashalian and Crissy's (1950) sample to evaluate the readability of the companies' 1961 annual reports. They found readability scores between 11 and 43, with a mean of 28.76. These scores classify the annual reports as "Very Difficult" to "Difficult" to read.

Next, Soper and Dolphin (1964) compared their 1961 results to the 1949 results of Pashalian and Crissy (1950) to determine whether the readability of annual reports had increased over time. Their results showed that annual report readability did not improve between 1948 and 1961. Indeed, only three annual reports were more readable in 1961 than they were in 1949 (Soper and Dolphin, 1964).

In their research on the communication function of annual reports, Smith and Smith (1971) studied the 1969 annual reports of the first fifty companies in the 1969 Fortune 500, and compiled four one-hundred word samples for each 2,000 words. Their results showed readability levels between 3.71 (Continental Oil) to 47.83 (Standard Oil of California) with a mean of 23.50. Notably, 73.5% of the companies in the sample had Flesch scores between 0 and 30 (the "Very Difficult" category), while the remainder were in the 31 to 50 category ("Difficult). None of the companies in the sample had scores in the "Fairly Difficult" to "Fairly Easy" categories.

Pasadeos and Yeap (1991) studied annual reports and compared their results to annual reports from the 1960s, 1970s, and 1980s. They looked at the Fortune 500 lists for the previous thirty years and found thirty-one companies that appeared every year. These companies were used as the sample. They then chose six 100-word passages from each annual report and used the Flesch Reading Ease Method for analysis. They concluded that the readability of annual reports did not increase over time, with Flesch scores of 58.7 in the late 1960s, 57.1 in the late 1970s, and 59.0 in the late 1980s, all of which indicate readability in the "Fairly Difficult" category.

There are also studies that focus on specific parts of annual reports. For example, using Smith and Smith's (1971) sample and the sample's 1975 data, Barnett and Leoffler (1979) used Flesch (1948) Reading Ease Scores to examine the readability of the sample's footnotes and auditors' reports. They reported that the 1975 footnotes to the financial statements were less readable than the ones used by Smith and Smith (1971), and that the readability of audit reports was very low (1979).

Hoskins (1984) used the 1980 annual reports of twenty-four of the top twenty-five companies in the Fortune 500 to test their readability. Using 100-word samples from every third page, he found that the "general overview" portions and letters to the shareholders had similar readability scores of between 12 and 52, and 26 and 53, respectively. Both results are classified in the "Very Difficult" to "Fairly Difficult" categories (Hoskins, 1984).

Schroeder and Gibson (1990) also examined particular parts of annual reports, specifically the Management's Discussion and Analysis (MD&A) section, the President's Letter, and the footnotes. Unlike previous studies, they used the entirety of each section to test readability. Using a random sample from the 1986 Fortune 500 and Fortune Service 500, they found that the Flesch Reading Ease scores were 17.66 for the MD&A, 17.88 for the footnotes, and 16.05 for the President's letter. All three results are in the "Very Difficult" to read category.

Heath and Phelps (1984) used a random sample of twenty companies on the 1981 Fortune 500 list and tested 200-word passages of three sections of the companies' annual reports: the president's letter, general text, and notes to the financial statements. Using the Gunning formula to test the readability, they found significant differences between the readability of the notes and the president's letter. They reported that

overall, a large number of shareholders did not have the education needed to comfortably read annual reports (Heath and Phelps, 1984).

It is clear that the readability of 10-Ks is of concern. Indeed, this review of the literature shows that the readability of the 10-Ks of large cap companies varies between "Very Difficult" and "Difficult."

SAMPLE AND METHODOLOGY

The study utilizes a random sample of 100 companies taken from the 2017 Fortune 500. Randomization was assured by assigning each company a random number using the Excel RAND function. The numbers associated with the companies were than sorted from smallest to largest, and the first 100 were chosen as the sample. The firms contained in the sample may be seen in Appendix B.

The next question concerned the issue of whether to use the samples' entire 10-Ks as sources, or portions thereof. Given the increasing length of annual reports (Monga and Chasan, 2015), sourcing the entire 10-K for each company was deemed cumbersome.

Additional research showed that the MD&A was an appropriate focus. For example, the SEC states, "We believe that management's most important responsibilities include communicating with investors in a clear and straightforward manner. MD&A is a critical component of that communication" (Interpretation: Commission Guidance). In their study on the quality of MD&As, Barron et al. (1999) say that, "We focus on MD&A because a growing body of evidence suggests that the SEC and users of financial reports view MD&A as particularly important." Tavcar (1998) reports that, "Management's Discussion and Analysis is arguably the most read and most important component of the financial section" of an annual report.

Next, the issue of the manner of data collection was addressed. As noted above, most of the earlier studies used 100-word passages sourced in a variety of ways. For example, Pashalian and Crissy (1950) took 100-word samples from every other page. Smith and Smith (1971) utilized four one-hundred word samples for each 2,000 words. Pasadeos and Yeap (1991) chose six 100-word passages from each annual report, while Hoskins (1984) used 100-word samples from every third page. Given the length of annual reports, the current study used 100-word samples from every third page.

RESULTS

The Flesch scores for each company may be seen in Table 1. The mean and median scores for the sample are 12.4 and 12.6, respectively, while the range is 0.0 (FirstEnergy and UGI) to 29.5 (Micron Technology). This range is contained in the "Very Difficult" to read category (0 to 30) on the Flesch Reading Ease scale, meaning that none of the 100 Fortune 500 companies in the sample had 10-Ks that were in the categories above the lowest.

TABLE 1
READING EASE SCORES BY COMPANY

AbbVie	1.8	Facebook	10.1	Norfolk Southern	14.3
ABM Industries	16.6	FirstEnergy	0.0	NRG Energy	8.9
AECOM	4.5	GameStop	18.2	Office Depot	16.3
Alcoa	16.6	Genuine Parts	2.1	Oshkosh	2.7
Amazon.com	15.8	Global Partners	7.9	Owens & Minor	16.5
Ameren	4.5	Henry Schein	11.6	Packaging Corp. of America	12.2
Amgen	23.9	Hertz Global Holdings	15.5	Parker-Hannifin	13.5
Amphenol	19.3	Hilton Worldwide Holdings	8.0	PBF Energy	12.6
Avon Products	11.0	HP	14.7	PG&E Corp.	7.7
Ball	12.1	Huntington Ingalls Ind.	15.3	PPG Industries	9.1
Baxter	5.6	International Paper	14.3	PulteGroup	9.3
Big Lots	9.8	J.C. Penney	16.6	Quest Diagnostics	16.7
Boston Scientific	5.9	Jacobs Engineering Group	7.7	Ralph Lauren	2.9
Builders FirstSource	19.5	Johnson & Johnson	1.5	Realogy Holdings	6.5
C.H. Robinson Worldwide	10.0	Kellogg	17.8	Reynolds American	14.3
Calpine	0.7	Kindred Healthcare	0.7	Rite Aid	15.8
Caterpillar	15.1	Kroger	20.6	Ryder System	18.2
CDW	10.8	Lab. Corp. of America	20.0	Simon Property Group	17.4
Centene	10.5	Las Vegas Sands	22.9	Spirit AeroSystems	11.8
Cigna	4.6	Leidos Holdings	11.4	Steel Dynamics	7.8
Coca-Cola	15.1	Lithia Motors	20.0	Sysco	18.3
Core-Mark Holding	5.7	Lockheed Martin	12.9	Target	13.4
CSX	19.9	Marathon Petroleum	22.5	Tech Data	14.4
D.R. Horton	16.1	McDonald's	9.9	Tenet Healthcare	9.2
Danaher	11.5	Merck	8.6	Thermo Fisher Scientific	13.2
Devon Energy	20.9	Micron Technology	29.5	TJX	18.2
Disney	16.2	Mondelez International	6.7	Toll Brothers	13.0
Dollar General	14.1	Mosaic	16.3	Tractor Supply	21.2
DTE Energy	10.1	Motorola Solutions	14.7	Tyson	27.0
Edison International	8.7	Navistar International	11.4	UGI	0.0
Estee Lauder	8.8	Netflix	12.6	United Continental	8.6
Exelon	4.3	NGL Energy Partners	27.6	VF	10.0
Express Scripts Holding	13.3	Nike	23.6	Viacom	1.7
				Whole Foods Market	0.2

Table 2 contains the mean readability scores for the previous studies, with the exception of Heath and Phelps (1984) who used a different readability measure. The reasons for the higher readability levels

found by Pasadeo and Yeap (1991) are unclear because the authors do not report how the passages tested were selected.

TABLE 2
READING EASE MEANS, 1949-2017

Study	Year Studied	Mean
Pashalian and Crissy	1949	34.4
Soper and Dolphin	1961	28.8
Pasadeos and Yeap*	1965	58.7
Smith and Smith	1969	23.5
Barnett and Leoffler	1975	12.9
Pasadeos and Yeap*	1975	57.1
Hoskins	1980	14.8
Pasadeos and Yeap*	1985	59.0
Schroeder and Gibson	1986	17.2
Current study	2017	12.4
*One study covering three decades.		

Table 2 shows that readability has varied over time and by study. Nevertheless, the current mean of 12.4 is lower than the means of any of the previous studies. The table also shows that, with the exceptions of Pasadeos and Yeap (1991) and Pashalian and Crissy (1950), annual reports tend to fall into the "Very Difficult" to read category. The results are troubling given the critical nature of readability.

Descriptives for the sample by GIC may be seen in Table 3. As indicated, GIC 25 Consumer Discretionary had the most companies in the sample, followed by GIC 20 Industrials, and GIC 35 Health Care. Two sectors, GIC 40 Financials and GIC 50 Telecommunications Services, were not represented in the sample. As a result, this study may not be extended to the general population.

TABLE 3
SAMPLE BY GIC ECONOMIC SECTOR

GIC Economic Sector	Companies	Percentage
10 Energy	5	5.0%
15 Materials	7	7.0%
20 Industrials	17	17.0%
25 Consumer Discretionary	24	24.0%
30 Consumer Staples	11	11.0%
35 Health Care	17	17.0%
40 Financials	0	0.0%
45 Information Technology	8	8.0%
50 Telecommunications Services	0	0.0%
55 Utilities	9	9.0%
60 Real Estate	2	2.0%

Table 4 presents information concerning the reading ease scores by GIC Economic Sector. The sectors with the highest reading ease scores are GIC 10 Energy, GIC 30 Consumer Staples, and GIC 45 Information Technology. The lowest scores are found in GIC Economic Sector 55 Utilities.

TABLE 4
READING EASE SCORES BY GIC ECONOMIC SECTOR

	Mean	Median	Min.	Max.
10 Energy	18.3	20.9	7.9	27.6
15 Materials	12.6	12.2	7.8	16.6
20 Industrials	12.8	13.5	2.7	19.9
25 Consumer Discretionary	13.2	13.8	1.7	23.6
30 Consumer Staples	14.1	15.1	0.2	27.0
35 Health Care	10.3	10.5	0.7	23.9
45 Information Technology	15.6	14.6	10.1	29.5
55 Utilities	5.0	4.5	0.0	10.1

The Kruskal-Wallis test was used to determine whether there were significant differences among GIC Economic Sectors. The results ($\chi 2 = 19.46$, $p = 0.007$) indicated that this was indeed the case. Consequently, the Tukey HSD post-hoc test was used to identify sectors significantly different from each other. The results may be seen in Table 5. As indicated, significant differences are seen between GIC 55 Utilities and GICs 10 Energy, 20 Industrials, 25 Consumer Discretionary, 30 Consumer Staples, and 45 Information Technology. Additional research is needed to determine the reasons for the companies in GIC 55 having significantly lower readability results.

TABLE 5
TUKEY HSR POST HOC TESTS LEVELS OF SIGNIFICANCE

	10	15	20	25	30	35	45
10 Energy							
15 Materials	5.67 (0.7418)						
20 Industrials	5.51 (0.6208)	-0.17 (1.0000)					
25 Cons Disc	5.07 (0.6772)	-0.60 (1.0000)	-0.44 (1.0000)				
30 Cons Stps	4.15 (0.9031)	-1.52 (0.9995)	-1.35 (0.9990)	-0.91 (0.9999)			
35 Health Care	8.00 (0.1634)	2.33 (0.9885)	2.49 (0.9268)	2.93 (0.7835)	3.85 (0.7161)		
45 IT	2.69 (0.9935)	-2.98 (0.9788)	-2.82 (0.9565)	-2.38 (0.9775)	-1.47 (0.9995)	-5.31 (0.4469)	
55 Utilities	13.31 (0.0035)*	7.64 (0.1992)	7.81 (0.0439)*	8.24 (0.0154)*	9.16 (0.0222)*	5.31 (0.3951)	10.62 (0.0104)*

* significant at the 0.05 level

CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The purpose of this study was to determine whether the readability of 10-Ks has increased or decreased over time. Clearly, the answer is that readability has decreased. This raises several issues, the most important one being if an annual report is virtually unreadable, then the investor the SEC was created to protect is effectively unprotected. This also raises the issue of the function of the 10-K. If it is very difficult to read, does it serve the purpose for which it was intended? In addition, if annual reports are readable only a certain group of people trained for this purpose, then the issue of fair disclosure arises.

The results of this study also indicate that the quest for more readable SEC filings has faltered. Indeed, the results of this study show that current 10-Ks have lower readability levels than any of the previous studies.

This is a fruitful area for additional research. For example, the impact of the Sarbanes-Oxley Act of 2002, which requires more information in 10-Ks, may also be examined in the context of readability. It would also be interesting to do a before-and-after evaluation of 10-Ks using the SEC's Plain English regulations. Finally, it is clear from this study that GIC 55 Utilities is significantly less readable than other sectors, and research as to the reasons for this is necessary.

REFERENCES

Barnett, A., and Leoffler, K. (1979). Readability of Accounting and Auditing Messages. *Journal of Business Communication,* 16(2), 49-59.

Barron, O., Kile, C., and O'Keefe, T. (1999). MD&A Quality as Measured by the SEC and Analysts' Earnings Forecasts. *Contemporary Accounting Research*, 16, 75–109.

Flesch, R. (1948, June) A New Readability Yardstick. *Journal of Applied Psychology*, 32(2), 221-233.

Heath, R., and Phelps, G. (1984, Summer). Annual Reports II: Readability of Reports Vs. Business Press. *Public Relations Review*, 10(2), 56-62.

Hoskins, R. (1984), Summer. Annual Reports I: Difficult Reading and Getting More So. *Public Relations Review*, 10(2), 49-55.

Interpretation: Commission Guidance Regarding Management's Discussion and Analysis of Financial Condition and Results of Operations, SEC 17 CFR Parts 211, 231 and 241 [Release Nos. 33-8350; 34-48960; FR-72], 2003. (http://www.sec.gov/rules/interp/33-8350.htm).

Loughran, T., and McDonald, B. (2014, August). Measuring Readability in Financial Disclosures. *Journal of Finance*, 69(4), 1643-1671.

McCarthy, J. (20 April 2016). Just Over Half of Americans Own Stocks, Matching Record Lows. Gallup. (http://www.gallup.com). http://www.gallup.com/poll/190883/half-americans-own-stocks-matching-record-low.aspx?g_source=stock+market&g_medium=search&g_campaign=tiles.

Monga, V., and Chasan, E. (2015, June 2). The 109,894-Word Annual Report. *The Wall Street Journal - Eastern Edition*, pp. B1, B10.

Pasadeos, Y. and Yeap, Y. (1991, June-December). Changes in Contents and Readability of Annual Reports. *Communication Research Reports*, 8(1/2), 121-125.

Pashalian, S., and Crissy, W. (1950, August). How Readable Are Corporate Annual Reports? *Journal of Applied Psychology*, 34(4) 244-248.

Schroeder, N., and Gibson, C. (1990, December). Readability of Management's Discussion and Analysis, *Accounting Horizons*, 4(4), 78-87.

Smith, J., and Smith, N. (1971, July). Readability: A Measure of the Performance of the Communication Function of Financial Reporting, *Accounting Review*, 46(3), 552-561.

Soper, F., and Dolphin, R. (1964, April). Readability and Corporate Annual Reports. *Accounting Review*, 39(2), 358-362.

Tavcar, L. (1998, January). Make the MD&A More Readable, *The CPA Journal*, 68(1), 10.

What We Do. (2013, June 10). Retrieved from https://www.sec.gov/Article/whatwedo.html.

Appendix A. The Flesch Reading Ease Score.

Developed in the 1940s, the Flesch Reading Ease Score measures readability from 0 to 100, with the higher numbers indicating increasing readability (Flesch, 1948). The readability score is calculated as follows:

$$Score = 206.835 - 1.015 \times \frac{total\ words}{total\ sentences} - 0.846 \times \frac{total\ syllables}{total\ words}$$

Once readability scores are calculated, their degrees of difficulty are classified using the table below (Flesch, 1948).

Reading Ease Scores.	
Score	Description of style
0 - 30	Very difficult
30 - 50	Difficult
50 - 60	Fairly difficult
60 - 70	Standard
70 - 80	Fairly easy
80 - 90	Easy
90 - 100	Very easy
Source: Flesch (1948)	

Appendix B. Sample Companies.

AbbVie
ABM Industries
AECOM
Alcoa
Amazon.com
Ameren
Amgen
Amphenol
Avon Products
Ball
Baxter
Big Lots
Boston Scientific
Builders FirstSource
C.H. Robinson Worldwide
Calpine
Caterpillar
CDW
Centene
Cigna
Coca-Cola
Core-Mark Holding
CSX
D.R. Horton
Danaher
Devon Energy
Disney
Dollar General
DTE Energy
Edison International
Estee Lauder
Exelon
Express Scripts Holding
Facebook
FirstEnergy
GameStop
Genuine Parts
Global Partners
Henry Schein
Hertz Global Holdings
Hilton Worldwide Holdings
HP
Huntington Ingalls Industries
International Paper
J.C. Penney
Jacobs Engineering Group
Johnson & Johnson
Kellogg
Kindred Healthcare
Kroger
Laboratory Corp. of America
Las Vegas Sands
Leidos Holdings
Lithia Motors
Lockheed Martin
Marathon Petroleum
McDonald's
Merck
Micron Technology
Mondelez International
Mosaic
Motorola Solutions
Navistar International
Netflix
NGL Energy Partners
Nike
Norfolk Southern
NRG Energy
Office Depot
Oshkosh
Owens & Minor
Packaging Corp. of America
Parker-Hannifin
PBF Energy
PG&E Corp.
PPG Industries
PulteGroup
Quest Diagnostics
Ralph Lauren
Realogy Holdings
Reynolds American
Rite Aid
Ryder System
Simon Property Group
Spirit AeroSystems Holdings
Steel Dynamics
Sysco
Target
Tech Data
Tenet Healthcare
Thermo Fisher Scientific
TJX
Toll Brothers
Tractor Supply
Tyson
UGI
United Continental
VF
Viacom
Whole Foods Market