

## DETERMINANTS OF READABILITY OF FINANCIAL STATEMENTS IN KENYA

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Received date: 31/ 01/2022, Accepted date: 12/ 05/2022, online publication date: 30/ 06/2022

### ABSTRACT

*The current study set out to investigate the determinants of readability of financial statements of Kenyan-listed firms. A deductive approach was employed and data was collected from a sample of 59 companies listed in the NSE in a census study over 5 years between years 2014 to 2018. Prais Winsten regression model was employed and the findings indicated that file size had a significant and negative effect on the readability of financial statements in Kenyan listed firms. The implication is that large-size financial statements are more difficult to read than smaller ones. This finding is consistent with reality since it will take less time to read small-sized financial statements than larger ones. Preparers of financial statements who are the firm managers should thus be careful about this finding. Regulatory authorities should develop policies that encourage the production of smaller volume financial statements to enhance their readability by the end-users. The current study is the first in East Africa since there has been no study on the readability of financial statements that have employed readability indices and that has regressed determinants against the readability of financial statements in this region.*

**Keyword:** Readability; Financial Statements; Firm Characteristics

**JEL Code:** M40, M41

## 1. INTRODUCTION

An imbalance of information can arise between preparers and readers of financial statements. The information possessed by the preparers of financial statements who happen to be the management of firms is much more than the information possessed by the readers. This imbalance or information asymmetry has the potential of exploitation by the preparers at the expense of the readers through obfuscation techniques for financial statements to reflect the desires of the preparers (Stigliz, 2000). Obfuscation techniques may include deliberately making the financial statements very verbose, full of jargon, and complex to read and comprehend easily if

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the financial performance reported in the financial statements is poor (Richard et al, 2015; Xu et al., 2018).

The management of a firm that is experiencing financial distress or similar challenges may deliberately obfuscate financial statements to hide the financial problems from financial statement readers. If the contents of the financial statements are positive, management may make the readability easy and vice versa (Hassan et al., 2018). The manipulation of the readability of financial statements by the end-users to suit the financial performance being reported was proposed by Bloomfield (2002) in the incomplete revelation or obfuscation theory. The misinterpretation of financial statement text by readers can lead to wrong and costly decisions, some arising from wrong investment decisions. It is thus imperative for preparers of financial statements to effectively communicate the truth in a complete and timely manner to assist investors and other readers of financial statements make the appropriate decisions (Satwinder et al., 2017). Even without the intention to manipulate the readability of financial statements, less readable financial statements cause increased processing difficulty by readers and may cause the readers to rely on heuristic shortcuts like sentiment (Tan et al., 2014).

A text is deemed to be readable if a reader understands the intended message of a text upon reading it (Efretuei, 2013). The readability level of a text is an indicator of the textual difficulty and it is also an indicator of the suitability of the text to the characteristics of readers in terms of experience and academic and professional qualifications. Readability is fixed for a given text and is not varied by reader characteristics (Xu et al., 2018). Understandability or comprehensibility of the text or financial statements on the other hand refers to a reader's ability to make meaning of the financial statements and is thus affected by the reader's characteristics such as interests, background, prior knowledge, and reading ability. Legibility which is different from readability refers to the actual ease with which a text can be read (Loughran and McDonald, 2014).

There is also a contextual gap whereby the concept of readability has been studied widely in developed countries but not in underdeveloped countries in sub-Saharan Africa like Kenya. Zurel (2014) studied the readability of annual reports and compared American and French annual reports. Badawy and Ibrahim (2018) studied the effect of readability and complexity on naïve investor decisions by carrying out experiments in Egypt. Cheung (2014) studied the readability of financial reports and IFRS adoption in Australia. Wissing et al. (2016) studied readability, comprehensibility, and lexical coverage in the evaluation of an introductory accountancy textbook in South Africa. Loughran and McDonald (2014) studied measuring readability in financial disclosures in the US and studied 10-K 66,707 firm-year observations from 1994-2014. Boritz, Hayes, and Timoshenko (2016) also studied the determinants of readability of SOX 404 reports in the USA and found that management reports were more readable than audit reports and that longer reports were more readable and that reports of big 6 firms were more readable than reports of non-big 6 firms. Mohammadi and Naghsbandi (2019) studied the effect of audit committee attributes on the readability of financial footnotes in Iran. Cheung (2014) studied the readability of financial reports and IFRS adoption in Australia.

Methodological research gaps arose in relevant past studies. Xu et al. (2018) studied executive age and readability of financial reports in the US and employed logistic regression analysis. While Ginesti et al. (2018) studied female board participation and annual report readability in firms with boardroom connections in Italy, they employed logistic regression analysis, while the current study is in Kenya and employs panel data regression analysis. Since the readability of financial statements is a continuous variable, it is best measured using interval and ratio scales as opposed to using a nominal scale which is ideal for categorical variables and analyzed using logistic regression analysis. Hassan et al. (2019) studied readability, governance, and performance in Qatar and employed readability as an independent variable and firm performance metrics as a dependent variable. Similarly, Luo and Chen (2018) studied readability and corporate agency costs in China and employed agency cost as the dependent variable, unlike the current study which employed readability as the dependent variable. Saadaby and Mohamed (2019) studied the readability and understanding of financial reports in Sudan and compared of readability of financial reports by users and auditors using descriptive and Chi-square and Mann-Whitney U tests, unlike the current study which employed panel data regression analysis. The current study has employed the readability of financial statements as the dependent variable and file size and firm characteristics as the independent variables. The purpose of the current study is to investigate the determinants of the readability of financial statements in Kenyan-listed firms. The readability of financial statements as the dependent variable was regressed against the return on assets, leverage ratio, price to book ratio, firm age, and file age as the determinants. The economic sector in which a firm belonged acted as a control variable. Prais Winsten panel regression analysis technique was employed unlike the regression methods employed in the past related studies. The findings indicated that file size had a significant and negative effect on the readability of financial statements in Kenyan-listed firms. The current study contributes to knowledge by being the first to study the readability of financial statements concerning file size and firm characteristics in East Africa. The rest of the study is organized as follows: chapter 2 comprises of literature review, chapter 3 comprises the research methodology, chapter 4 presents the findings while chapter 5 has the discussions, conclusion, and recommendations.

## 2. LITERATURE REVIEW

The current study is anchored on 3 theories including the incomplete revelation theory, information asymmetry theory, and Zipf's Law. According to the incomplete revelation or obfuscation theory as proposed by Bloomfield (2002), managers are more satisfied when presenting reports displaying good performance than when presenting reports indicating bad performance and hence have an incentive to manipulate financial statements to deceive readers. Bloomfield (2002) also observed that the high cost of extracting important information from public data can prevent such information from being incorporated immediately into stock prices. The delay in incorporation of information in stock prices then interferes with market efficiency as per the efficient market hypothesis by Eugene Fama (1968). The obfuscation theory supports the readability of financial statements variable in the current research.

According to Stiglitz (2000); Connelly et al. (2011) and Spence (1973) if there is an imbalance in information possessed by two parties in a transaction, the party with more information is likely to exploit such excess information to the disadvantage of the counterparty in the transaction. In the current study, if there is an imbalance

between information possessed by management who are the preparers of financial statements, and the information possessed by readers, the management can easily take advantage of the excess information and manipulate the financial statements, especially during periods of poor performance. The information asymmetry theory also supports the readability of financial statements' dependent variable in the current study.

Zipf's law which was proposed by Zipf in 1935 to 1950 opined that a small number of words tend to dominate the frequency of words used in reports and that the most frequently used word in a report will occur twice as many times as the second most used word and three times as much as the third most frequently used. The law further opined that if one of these words is misclassified then the readability of the financial reports may be distorted. Financial statements tend to use certain common words that may be deemed as complex by readability indices for containing 2 or more syllables even though readers of financial statements are used to such industry-specific words (Loughran and Mc Donald, 2016; Thurner et al., 2015).

Some past related studies have tested firm characteristics as determinants of the readability of financial statements and the results have been inconclusive. Cheung (2014); Efretuei (2013) and Checon et al. (2018) found that firm size has a significant and negative effect. However, Xu et al. (2018); Telles (2018); Alvaro et al. (2021), and Ifantt and Dyah (2019) found that firm size had no significant effect on the readability of financial statements. On the contrary, Loughran and Mc Donald (2014); Muneeb and Zhou (2019) found that firm size had a significant and positive effect on the readability of financial statements.

Some scholars believe that more leveraged firms tend to disclose more information than the less leveraged and they do so in an attempt to reduce on costs of debt and to signal positive prospects to the market about the leveraged firm while others did not find leverage having a significant effect on corporate disclosures (Nandi and Ghosh, 2012). Telles (2018) found that leverage had no significant influence on the readability of financial statements. Alvaro et al. (2021) found that leverage had a significant and negative effect on the readability of financial statements. Muneeb and Zhou (2019) and Nandi and Ghosh (2012) found that leverage had a significant and positive effect on the readability of financial statements.

The relationship between firm age and the readability of financial statements has been unclear. Efretuei (2013); Xu et al. (2018); Cheung (2014) and Siano and Wysocki (2019) found firm age was found a significant and negative effect of firm age on the readability of financial statements. On the contrary, Alvaro (2021) and Mohammadi, and Naghsbandi, (2019) found that firm age had no significant effect on the readability of financial statements.

From past studies, the effect of profitability and the readability of financial statements has been unclear. Muneeb and Zhou (2019) and Mohammadi, and Naghsbandi, (2019) found that profitability had a significant and negative effect on the readability of financial statements. However, Telles (2018), Efretuei (2013), Xu et al. (2018), Alvaro (2021) and Cheung (2014) disagreed and found that profitability had no significant effect on the readability of financial statements.

The past empirical literature has been inconclusive concerning the relationship between the readability of financial statements and firm value as measured by book to market ratio. Loughran and McDonald (2014) and Mohammadi, and Naghsbandi, (2019) found a significant and positive effect. On the contrary, Cheung (2014); Telles (2018) found that book to market ratio had a significant and

negative effect on the readability of financial statements. Xu et al. (2018) disagreed with the past studies and found that book to market ratio had no significant effect on the readability of financial statements. From the above inconclusive past research findings the following hypothesis was developed:

H1: Firm characteristics have a positive effect on the readability of financial statements

Loughran and McDonald (2014) critiqued the current measures of readability of financial statements like the FOG index for advocating that complex words contain 2 syllables or more yet in reality many business words contain more than 2 syllables and are understood by readers of financial reports. Loughran and McDonald (2014) proposed the use of file size even though not perfect as a proxy measure of the readability of financial reports. Loughran and McDonald (2014) and Boritz et al. (2016) found that file size has a significant and positive effect on the readability of financial statements. However, Alvaro et al. (2021) found that text quantity had a significant and negative effect on the readability of financial statements. As a result of the inconclusiveness in the past research findings the following hypothesis was developed:

H2: File size has a positive effect on the readability of financial statements in Kenya

### 3. DATA & METHODOLOGY

#### 3.1 Population and sampling

During the period 2014 – 2018 being studied, the Nairobi securities exchange (NSE) had 64 listed firms distributed into 10 sectors of the economy including agricultural, automobile, banking, commercial and services, construction, energy and petroleum, insurance, investment, manufacturing and telecommunication sectors. The Taro Yamane (1967) formula was employed to derive the sample size as follows:

$$n = N / 1 + N (e^2) = 64 / 1 + 64 (0.05^2) = 55 \text{ firms} \dots \dots \dots (1)$$

Where: n = sample size and N = population size

The current research had a sample size comprising 59 firms from all 10 sectors of the NSE for the 5-year period between years 2014 to 2018 and hence 295 firm years.

#### 3.2 Data Collection

The study was based on secondary data from audited annual financial reports of the 59 NSE listed companies over the 5 year study period from the year 2014 to the year 2018.

#### 3.3 Data Analysis

##### 3.3.1 Flesch Reading Ease Measurement

Readability assessment research has developed several methods for measuring readability. Some of the most popular methods for assessing readability include Cloze procedure, Gunning's Fox Index, Flesch-Kincaid Grade Level, and Flesch Reading Ease (FRE) formula which suggests that writing style can be diagnosed as difficult or easy based on the average sentence length and the average syllable density given the number of syllables per 100 words. The Flesch score considers any word with more than two syllables as a complex word. Critics of the Cloze procedure argue that it better assesses the reader's ability rather than the readability of the passage. The Flesch-Kincaid Grade Level, and the Flesch Reading Ease (FRE) formula all examine the syntactical complexity of the text which allows the researcher to determine the readability of text independent of reader intelligence (Kumar, 2014). Measurement of the readability of financial statements and reports using indices has been criticized for inaccuracy since financial information is likely to contain common complex words

that readers are already familiar with. Complex words are those containing more than 2 syllables. For financial information and reports, file size in terms of bytes was thus been proposed as an alternative measure to readability indices (Loughran and McDonald, 2014; Thomas et al., 2016). The current study chose Flesch ease readability technique due to its popularity as a metric of readability (Kumar 2014; Xu, Fernando and Tam 2018). The readability ease score ranges from 0-100% the greater the percentage the easier the readability. While the lower the percentage the more difficult it's to read. The interpretation of the Flesch ease readability scores is as follows (Hassan et al., 2018):

*Flesch Reading Ease Scores Interpretation*

- 90 – 100 Very easy (Grade 5) such as comics
- 80 – 89 Easy (Grade 6) such as pulp fiction
- 70 – 79 Fairly easy (Grade 7) such as slick fiction
- 60 – 69 Standard (Grades 8 and 9) such as digests
- 50 – 59 Fairly difficult (Grades 10 to 12) such as quality materials
- 30 – 49 Difficult (Undergraduate) such as academic materials
- 0 – 29 Very difficult (Postgraduate) such as scientific materials

The economic sector in which a firm belonged was chosen to act as a control variable based on the fact that firms in the financial sector like commercial banks and insurance companies have more rigorous financial reporting requirements when compared to firms in non-financial sectors of the economy including legal statutes that have financial reporting regulations like the Banking Act and Insurance Act in Kenya.

**Table 1:** Measurement of Variables

Variable	Symbol	Measure
Flesch Reading Ease score	FRE	$FRE = 206.835 - ((1.015 * ASL) - (84.6 * ASW))$ $FRE = 206.835 - ((1.015 * \frac{NW}{NS}) - (84.6 * \frac{NSPW}{NW}))$ <p><b>Where:</b>                      FRE = Flesch Readability Ease score                      ASL = Average Sentence Length = number of words / the number of sentences                      ASW = Average number of syllables per word = the number of syllables/number of words                      NSPW = number of syllables per word                      NS = number of sentences                      NW = number of words</p>
Return of assets ratio	ROA	Profit after tax / total assets
Leverage ratio	LEV	Debt / equity ratio
Price-to-book ratio	P_B	Market price per share/book value per share
Firm age	LNFAge	Natural log of the number of years of operation

		of a firm
File size	LNFSZ	natural log of the bytes in a firm's published financial report
Economic sector	SEC	Dummy variable 1 = financial sector and 0 = non-financial sector (control variable)

**Source:** the current study

### 3.2 Panel data regression model

The current research employed the panel data regression model which is a method that can analyze data comprised data from 59 listed firms for the 5 years from the year 2014 to the year 2018. The following panel data regression model was estimated (Hair, 2019):

$$RS_{it} = \beta_0 + \beta_1ROA_{it} + \beta_3LEV_{it} + \beta_4P\_B_{it} + \beta_5FAge_{it} + \beta_6FSZ_{it} + \beta_2SEC\_Control_{it} + \varepsilon_{it} \dots (4)$$

Where:

RS = readability scores as measured by Flesch readability index

ROA = return of assets ratio of a firm

LEV = leverage ratio of a firm

P\_B ratio = price to book ratio of a firm

FAge = firm age

FSZ = file size of a firm's financial statements

SEC = sector of the economy (control variable)

$_{it}$  = firm  $i$  at time  $t$

$\varepsilon$  = error term

## 4. FINDINGS & DISCUSSION

### 4.1 Findings on descriptive statistics

The descriptive statistics findings in Table 2 indicated that the average Flesch readability ease score in Kenyan-listed firms was 32.67% (Richards et al., 2015). The descriptive statistics findings also indicated that the return on assets ratio as per the findings of the descriptive statistics was on average 0.009 which indicated that Kenyan listed firms were only breaking even during the study period years 2014 to 2018. The firm age of Kenyan-listed firms was 49.5 years on average and on average most Kenyan-listed firms.

**Table 2:** Descriptive statistics findings

source

```
. summarize Rscore roa LNFAge sector P_B_RATIO lev lnfsz
```

Variable	Obs	Mean	Std. Dev.	Min	Max
Rscore	277	32.67238	10.04309	6.4	58.9
roa	277	.0093957	.3106054	-2.77	.57
LNFAge	277	3.898538	.0912337	3.637586	4.127134
sector	277	.7292419	.4451557	0	1
P_B_RATIO	277	1.843939	5.295221	0	67.68
lev	277	.8885061	1.96546	0	16.2
lnfsz	277	5.391017	.407401	4.652912	6.2186

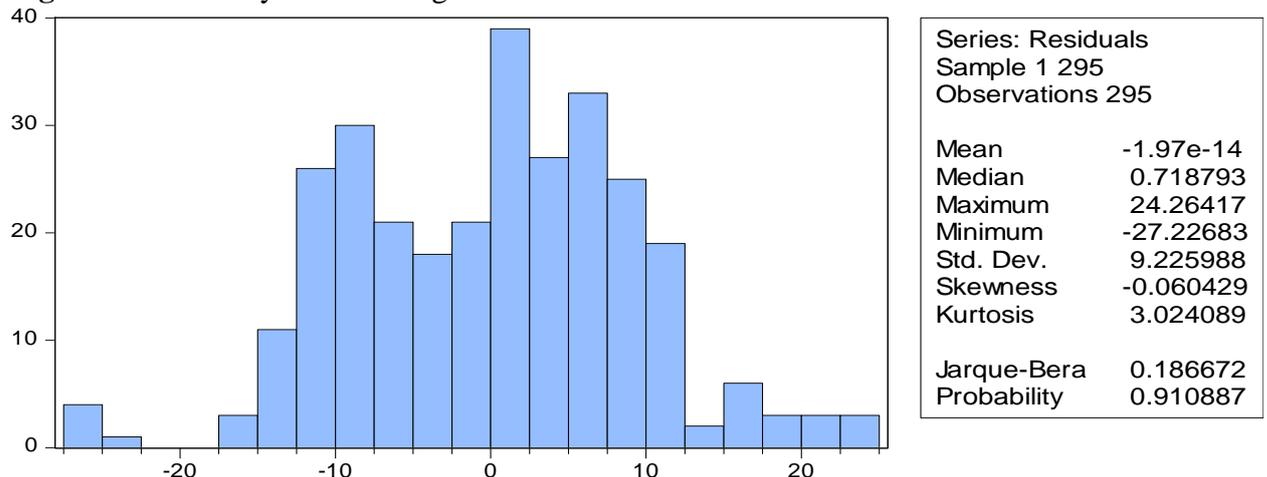
**Source:** current study data

The average firm age was 41 years since listing in the NSE while in Qatar the average age was 1.29 years since incorporation in the stock market which implied newly listed firms (Hassan et al., 2019).

**4.2 Normality test**

The data were tested for normality and the findings indicated only female directors and board size had normally distributed data with p-values being 0.469 and 0.329 respectively which was greater than the 0.05 level of significance as indicated in Figure 1. The other variables with data that was not normally distributed had the data normalized through the use of logs (Hair, 2019).

**Figure 1:** Normality Test Findings



**Source:** current study data

**4.3 Serial correlation test findings**

The data were tested for the existence of a serial correlation problem and the findings as per Table 3 indicated that there was the presence of serial correlation in the data with the p-value of the Breusch-Godfrey Serial Correlation LM Test being 0.000

which was lower than the 0.05 level of significance (Hair, 2019). The serial correlation problem was resolved by the use of the Prais Winsten panel data analysis model (Reyna and Brainerd, 2007).

**Table 3:** Findings on Breusch-Godfrey serial correlation lm test findings

F-statistic	394.371	Prob. F(1,286)	0.000
Obs*R-squared	170.994	Prob. Chi-Square(1)	0.000

**Source:** current study data

#### 4.4 Heteroscedasticity test findings

The data were tested for the presence of a heteroscedasticity problem and the findings indicated that the data was homoscedastic with a p-value of 0.1209 greater than the 0.05 level of significance as per Table 4 (Hair, 2019).

**Table 4:** Findings on Breusch-Pagan heteroscedasticity test findings

F-statistic	1.289	Prob. F(7,287)	0.255
Obs*R-squared	8.998	Prob. Chi-Square(7)	0.253
Scaled explained SS	8.619	Prob. Chi-Square(7)	0.281

**Source:** current study data

#### 4.5 Unit Root Test Findings

The unit root stationarity tests findings indicated in Table 5 showed that the data was stationary with p-values being less than 0.05 level of significance and hence the data was suitable for panel data regression analysis (Hair, 2019).

**Table 5:** Unit root test findings

Method		Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)					
Rscore	Levin, Lin & Chu t*	-37.095	0.000	24	48
roa	Levin, Lin & Chu t*	-62.869	0.000	13	26
Fage	Levin, Lin & Chu t*	-5.513	0.000	37	74
P_B ratio	Levin, Lin & Chu t*	-8.843	0.000	4	8
sector	Levin, Lin & Chu t*	-16.654	0.000	26	52
lev	Levin, Lin & Chu t*	-2.282	0.011	27	54
File size	Levin, Lin & Chu t*	-25.963	0.000	3	6

**Source:** current study data

#### 4.6 Correlation Matrix Findings

Pearce correlation was carried out to establish the level of association within the variables and to detect the problem of multicollinearity in the variables and the findings are as per Table 6 which indicated multicollinearity problem did not exist in the data as the correlation coefficients were above 0.8 (Hair et al., 2019). The correlation matrix findings further indicate a negative association between the

readability of financial statements and text file size and firm age and file size. ROA, sector, P/B ratio, and leverage were positively associated with the readability score.

**Table 6: Correlation matrix findings**

```
. corr Rscore roa LNFAge sector P_B_RATIO lev lnfsz
(obs=277)
```

	Rscore	roa	LNFAge	sector	P_B_RATIO	lev	lnfsz
Rscore	1.0000						
roa	0.0749	1.0000					
LNFAge	-0.0210	-0.0514	1.0000				
sector	0.1153	-0.0408	-0.2011	1.0000			
P_B_RATIO	0.1078	0.0536	-0.1468	0.0632	1.0000		
lev	0.0675	-0.1663	0.0198	0.0307	-0.0572	1.0000	
lnfsz	-0.3184	0.0842	0.0811	-0.0608	-0.0539	0.1197	1.0000

**Source:** current study data

*4.7: Findings on panel data regression analysis findings*

As per the regression analysis findings in Table 7, file size (coefficient = -9.919, p-value = 0.000) was the only independent variable that had a significant effect on the readability of the financial statement score and that effect was negative which implied that large volumes of financial statements were more difficult to read than smaller volumes.

**Table 7: Regression analysis findings**

```
Prais-Winsten AR(1) regression -- iterated estimates
```

Source	SS	df	MS	Number of obs = 277		
Model	4889.98856	6	814.998093	F( 6, 270) =	85.97	
Residual	2559.52246	270	9.47971283	Prob > F =	0.0000	
				R-squared =	0.6564	
				Adj R-squared =	0.6488	
Total	7449.51103	276	26.990982	Root MSE =	3.0789	

Rscore	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
roa	1.297156	.6903864	1.88	0.061	-.0620696	2.656381
LNFAge	-12.31603	7.660309	-1.61	0.109	-27.39756	2.765507
sector	1.806554	1.889955	0.96	0.340	-1.914369	5.527476
P_B_RATIO	.0239663	.0635144	0.38	0.706	-.1010801	.1490127
lev	.1798906	.134164	1.34	0.181	-.08425	.4440312
lnfsz	-9.555041	2.62253	-3.64	0.000	-14.71825	-4.391832
_cons	130.4725	32.41345	4.03	0.000	66.65726	194.2878

rho	.9429593
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Durbin-Watson statistic (original) 0.102926  
 Durbin-Watson statistic (transformed) 1.582271

**Source:** current study data

The current findings agree with those of Alvaro (2021) who also found that text quantity had a significant and negative effect on the readability of financial statements. The current findings, however contradict the findings of Lougran and McDonald (2014) and Boritz et al. (2016) in the US who found that file size had a significant and positive effect on the readability of financial reports in the US. The current research findings can be said to be consistent with reality since large documents consume more time to read and can thus be deemed to be more complex to read than small documents.

Based on the current study's regression findings H1: firm characteristics have a positive effect on the readability of financial statements was rejected as the firm characteristics lacked a significant effect on the readability of financial statements in Kenyan listed firms. H2: file size has a positive effect on the readability of financial statements was rejected as file size part of firm characteristics had a significant and negative effect on the readability of financial statements in Kenya.

## 5. CONCLUSION

The current study set out to investigate the determinants of readability of financial statements of Kenyan-listed firms. A deductive approach was employed and data was collected from a sample of 59 companies listed in the NSE in a census study over 5 years between years 2014 to 2018. Prais Winsten regression model was employed and the overall findings of the current study indicated that file size had a significant and negative influence on the readability of financial statements of companies listed in the NSE. Past scholars like Lougran and McDonald (2014) advocated for the use of text count and file size as a proxy metric for readability and they criticized the current readability scores like the FOG index for viewing words with or more syllables as complex yet business and financial reports often contain such words and are read by investors who can comprehend their meaning. The implication is that large-size financial statements are more difficult to read than smaller ones. This finding is consistent with reality since it will take less time to read small-sized financial statements than larger ones. Preparers of financial statements who are the firm managers should thus be careful about this finding. Regulatory authorities should develop policies that encourage the production of smaller volume financial statements to enhance their readability by the end-users. The current study is the first in East Africa since there has been no study on the readability of financial statements that have employed readability indices and that has regressed determinants against the readability of financial statements in this region.

### 5.3 Recommendations

The findings imply that the regulatory agencies and management of listed Kenyan firms should advocate for the production of financial statements that are not very large in terms of file size to make it easier for readers to comprehend the contents of the financial statements. The current study was limited to secondary data obtained from listed Kenyan firms. Future scholars can explore the use of primary data from the listed firms and even unlisted firms in Kenya and beyond. Financial statement information is prepared based on estimates and the judgment of the preparers and can be affected by misstatements in the form of fraud and errors (Ocansey, 2016). The current research employed externally audited financial statements to minimize the effect of misstatements on the data analysis findings.

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