# Board Characteristics and the Readability of Sustainability Reports of Listed Companies in East Africa

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## Abstract

*There is a significant risk that sustainability reports can be manipulated to give a better impression of a firm's sustainability performance than the actual performance. Sustainability reports need to be readable to enable users of financial statements to monitor the actions of management with respect to the firm's sustainability performance. The board of directors is charged with the responsibility of the preparation of financial statements including sustainability reports therein. This research thus sets out to investigate whether board characteristics affect the readability of sustainability reports. The study employed Flesch readability ease and Fog readability indices. The explanatory research design was employed a census approach was used in studying 15 listed firms across East African security exchanges that voluntarily prepared sustainability reports during the 5-year study period between years 2017 to 2022. The purposive sampling method was employed that focused on listed firms in the NSE that had published sustainability reports during the study period. The study results indicated female directorships had a significant and positive relationship with the readability of sustainability reports in companies listed in East Africa security exchanges. The findings implied that the more female directors in a board, the more the readability of sustainability reports. Policymakers and owners of the listed firms in EA security exchanges should thus take note of these findings in order to make the sustainability reports more readable. Listed firms in Kenya should consider increasing the proportion of female directors in order to enhance the readability of sustainability reports.*

**Keywords:** Readability; Sustainability Reports; Board Characteristics

## Introduction

Climate change globally has triggered the urgent need for governments and firms to take action to control the overexploitation of resources minimize its ecological footprint through energy efficiency, waste management, and sustainable practices. In East African countries, sustainability reporting by listed firms has been on a voluntary basis. However, the Nairobi Securities Exchange (NSE) in November 2021 issued ESG guidelines requiring that sustainability reports be prepared and reported by each listed firm at least annually. Countries in EA have legal and policy frameworks aimed at environmental preservation and restoration and are signatories to the Paris Climate Agreement which is a legally binding international treaty on climate change that was adopted by 195 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015 and came into force on 4 November 2016 (Boyle, 2018).

Corporate governance is the system by which companies are directed and controlled, and good corporate governance ensures ethical leadership, transparency, and regulatory compliance, which are vital for reducing risks and maintaining financial stability (Blay et al., 2024). Financial scandals in the corporate world have increased globally and regulators have found the need to reconstitute corporate boards and have more financial experts and women in more diversified board membership, for the prosperity of companies (Vintila & Gherghina, 2012). Corporate governance practices differ globally with shareholders' interests being prioritized on corporate boards in the US and UK. In Germany, banks and other lenders sit on corporate boards to protect the loans advanced to firms. In Japan employee interests are prioritized and hence worker union representatives sit on corporate boards Mohamed and Sori (2011). In Kenya just like the US and UK shareholder interests are prioritized.

Globally, some past studies on readability of financial statements have concentrated on the readability of financial statements as a whole Aymen *et al*. (2018) in France; Luo and Chen (2018) in China; Jayasree1 and Shette (2021) in India, Xu *et al*., (2018) in USA. Other past studies on readability that have concentrated only on the sections of financial statements like the chairman's report or director's report, the statement on corporate governance or sustainability reports including studies by Loughran and McDonald (2014) in the USA, Cheung and Lau (2016) in Australia, Prabhawa and Iman (2022) in Indonesia. In Africa, past studies on readability of financial statements have concentrated on the readability of sections of financial statements like the chairman's statement or the directors' report including Mgoyana and Phesa (2023) in South Africa, Ezat (2019) in Egypt, Franz and Elda (2023) in South Africa, Ndegwa (2022) in Kenya. This study has focused only on the readability of sustainability reports.

Conceptual research gaps arose for this study to focus on from the few past related studies globally on the relationship between characteristics to the readability of sustainability reports in EA. Smeuninx *et al.* (2020) studied the readability of sustainability reports the developed countries of USA, UK, Australia and India. Adhariani and du Toit (2020) studied the readability of sustainability reports in Indonesia; Nilipour et al (2020) studied the readability of sustainability reporting in New Zealand. Cervantes (2020) studied communication from the board of directors on readability in Spanish language on sustainability reporting in Spain, but these past studies did not relate board characteristics to readability of sustainability reports and hence a conceptual research gap. Regionally, Blay et al. (2024) studied the impact of board committee characteristics on social sustainability reporting in sub-Saharan Africa with the moderating role of institutional ownership. This study also omitted readability of sustainability reports and hence created a conceptual research gap. Locally, Lewa et al., (2024) studied board attributes and sustainability reporting of selected listed nonfinancial firms in anglophone Sub-Saharan African countries. Also locally, Githaiga and Kosgei (2022) studied board characteristics and sustainability reporting of listed firms in East Africa. However, these local studies did not concentrate on the readability of sustainability reports and hence a conceptual research gap arose that the current study focused upon.

Readability of financial statements is enhanced when financial statements achieve the characteristics of good financial reports including relevance, completeness, comparability, reliability and understandability (Xu *et al*., 2018). Financial statements are more readable if they lack jargon and have sentences that are shorter to enhance the understandability of texts for the readers (Richard *et al.,* 2015). Readability thus concentrates on the textual difficulty and the appropriateness of text to various readers. For example, texts for children tend to be easier to read than texts targeted at postgraduate scholars (Wissing *et al.,* 2016). The understandability of text as a concept refers to the ability of a reader to make meaning of a text is affected by the characteristics of a reader including the reader's prior knowledge, background, and interests. On the other hand. The characteristics of readers do not change the readability of texts (Wissing *et al.,* 2016; Xu *et al*., 2018). Hence there is a distinction between understandability and readability of texts.

The objective of this study is to examine the effect of board characteristics on the readability of sustainability reports of listed companies in East Africa. Key limitations of this study included the use of secondary data which is affected by bias of the preparers (Ocansey, 2016). There were only 15 firms that prepared sustainability reports in EA during the study period of 2017 to 2022.

## Literature Review

### Theoretical Review

The relationship between board characteristics and the readability of sustainability reports in East Africa is supported by obfuscation theory by Bloomfield (2002) and agency theory by Jensen and Meckling (1976), The obfuscation theory also referred to as the incomplete revelation theory posits that the level readability of financial reports is indirectly related to the financial performance of firms. According to this theory, management can be exploitative and can make financial statements less readable in case of poor financial performance. The practice of manipulating financial statements can be extended to sustainability reports which can be manipulated to give a better impression of a firm's sustainability performance than the actual sustainability. This manipulation of sustainability reports is regarded to be part of as greenwashing. Greenwashing involves making false and deceptive claims about a firm's sustainability performance (Becker-Olsen & Potucek, 2013).

Agency theory by Jensen and Meckling (1976) is also relevant in supporting the study about the relationship between board characteristics and the readability of sustainability reports in East Africa. Agency theory opines that managers tend to exploit the positions they hold to benefit themselves at the expense of shareholders. In the context of readability of sustainability reports, it is likely that managers can manipulate the sustainability reports to appear better than the actual state of sustainability performance (Ngole, 2019).

## Empirical Literature Review

*Board Size and Readability of Sustainability Reports*

Past studies have been disagreed about the effect of board size and the readability of financial statements including sustainability reports. Large boards have been associated with being less effective in monitoring management in Romania (Sorin et al, 2017); Muneeb and Zhou (2019) in Pakistan; Dalwai et al. (2021) in Oman found that board size had a significant and negative effect on the readability of financial statements. However, Mohammadi and Naghshibandi (2019) in Iran; Ezat (2020) in Egypt; Luo and Chen (2018) in China all found that board size had a significant and positive effect on the readability of financial statements. Hassan et al. (2018) also found a positive association between board size and the readability of financial statements in Qatar. The obfuscation and agency theories combined with that have conflicting findings in related past studies on the relationship between board size and readability of financial statements and sustainability reports, generated the following null hypothesis:

H01: Board size lacks a significant effect the readability of sustainability reports in East African listed companies.

**Female Board Membership and Readability of Sustainability Reports**

Past studies have disagreed about the effect of female directorship and readability of financial statements including sustainability reports. Ginesti et al. (2018) in Italy found that the participation of women as directors had a significant and positive relationship with the readability of financial statements which was consistent with the findings of Odia and Ken-Otokiti (2021) in Benin in a study that related chief executive officer characteristics and sustainability disclosures as opposed to readability of financial statements and sustainability reports. On the other hand, Efreteui (2013) in the UK and Ezat (2020) in Egypt and Sun et al. (2022) in China found that female directorship had a significant and negative relationship with the readability of financial statements. The conflicting evidence of past related research findings about the effect of female board directorships and the readability of financial statements and sustainability reports and the incomplete revelation or obfuscation and agency theories the following null hypothesis was generated:

H02: the proportion of female directorship lacks a significantly effect on the readability of sustainability reports in East African listed companies

**Age of Directors and Readability of Sustainability Reports**

Past studies have conflicted about the effect of age of directors, and the readability of financial statements and sustainability reports therein. Efreteui (2013) in the UK and Sun *et al.* (2022) in China found that the age of directors had a significant and negative effect on the readability of financial reports. These findings contradicted those of Xu et al. (2018) in the USA who found that CEO age had a positive impact of the readability of annual reports. Given the inconclusive and disagreeing findings from the above indicated past related studies and the obfuscation and agency theories that posit that directors can manipulate financial statements and sustainability reports depending on the financial performance of firms, the following null hypothesis was developed:

H03: Age of directors lacks a significantly effect on the readability of sustainability reports in East African listed companies

**Independent Directorships and Readability of Sustainability Reports**

Independent directors are expected to be unmanipulable and thus their presence should enhance the readability of financial statements and sustainability reports. However, past studies indicate otherwise. Ezat (2020) in Egypt found that there was no significant relationship between independent directorships and the readability of financial statements. Sun et al. (2022) in China, Dalwai et al. (2021) in Oman and Prabhawa and Harymawan (2022) in Indonesia found that independent directorships were negatively associated the readability of financial statements. Hassan et al. (2018) in Qatar found a significant and positive relationship between independent directorships and the readability of financial statements. As a result of the conflicting findings in past studies and with the obfuscation and agency theories the following null hypothesis was developed:

H04: Independent directorship lacks a significant effect the readability of sustainability reports in East African listed companies.

## Methods

**Population and Sampling**

During the years 2017 - 2021 securities exchanges in East Africa had 15 listed firms that voluntarily prepared sustainability reports and were distributed as follows: 10 listed firms in Nairobi Securities Exchange, 3 firms in Dar es Salaam Securities Exchange, 2 firms in Uganda Securities Exchange. All the 15 listed firms in East Africa were thus involved in this study in a census approach.

**Data Collection**

Secondary data was collected from sustainability reports of 15 listed companies and from websites of Nairobi Securities Exchange, Uganda Securities Exchange, Dar es salaam Stock Exchange and Rwanda Stock Exchange.

**Data Analysis**

*Readability Indices*

There are various indices that are employed in readability of financial statements including Flesch Ease index, Flesch Kincaid index, FOG index, SMOG index, F-Grade index including the studies by Aymen et al. (2018), Luo and Chen (2018), Jayasree1 and Shette, Cheung and Lau (2016), Prabhawa and Iman (2022). Some authors have employed legibility to measure readability of text by focusing on ease of reading another person’s handwriting with ease (Loughran and McDonald, 2014; Wissing et al., 2016).

The Flesch reading ease level (FRE) and the Gunning Fog Index (FOG) are widely used measures of readability of texts. Higher FRE scores are associated with more text readability. The Gunning FOG index focuses on estimating the number of years of formal education a reader required to understand a given text and hence lower FOG scores imply more text readability (Xu *et al.,* (2018).

*Gunning Fog Index*

Higher scores of the Fog Index were associated with higher reading difficulty. According to the Fog index, scores of 17 and above were interpreted as very difficult to read while scores of 12–17 were deemed as difficult to read. The ideal scores were between 7–8 which meant that the text was easy to read. The computation of Fog index was as follows (Smeuninx *et al.,* 2020):

*FOG index = 0.4 * (average sentence length + percentage of complex words) …………… (1)*

*Average Sentence Length = number of words divided by the number of sentences…………. (2)*

**Flesch Reading Ease Level (FRE)**

The Flesch index is based on a 100-point scale, and it estimates the ease of reading using the number of words in a sentence, the number of syllables per word, the average length of sentences. The Flesch index is calculated as follows (Xu *et al.,* (2018):

*FRE index =206.835 - [(1.015*ASL) – (84.6*ASW)] ……………………………………….(3)*

**Where:**

FRE = Flesch Readability Ease score
ASL = Average Sentence Length = number of words / the number of sentences
ASW = Average number of syllables per word = the amount of syllables / number of words

**Panel Regression Model**

In this study that involved 15 firms listed across the East African security exchanges over 5 years from year 2017 to year 2021, the readability indices or scores of the sustainability reports were regressed against board characteristics including the board size, the proportion of female directorship, the average age of directors and the proportion of independent directors. File size as measured in terms of bytes contained by the sustainability reports and profitability as measured by return on assets and the foreign ownership of the firms were controlled for in the study since the readability of sustainability reports is likely to be influenced by not only board characteristics but other factors.

The following panel regression model employed was as follows:

For the equilibrium regression analysis:

$$FOG_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 FD_{it} + \beta_3 DA_{it} + \beta_4 ID_{it} + \beta_5 FO\_Control_{it} + \beta_6 ROA\_Control_{it} + \beta_7 FLS\_Control_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

and for robustness test:

$$FRE_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 FD_{it} + \beta_3 DA_{it} + \beta_4 ID_{it} + \beta_5 FO\_Control_{it} + \beta_6 ROA\_Control_{it} + \beta_7 FLS\_Control_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5)$$

### Description of Variables

*Table 1: Description of Variables*

| Variable | Symbol | Measure |
|---|---|---|
| Gunning FOG<br>Flesch Reading Ease score | FOG<br>FRE | = 0.4 * (average sentence length + percentage of complex words)<br>=206.835- ((1.015*ASL) – (84.6*ASW)) |
| Female directorship | FD | = Number of female directors / total number of directors |
| Directors age | DA | = Average age of directors in years |
| Independent directorship | ID | = Number of independent directors / total number of directors |
| Return on assets | ROA | = Profit after tax / total (control variable) |
| File size | FLZ | = Natural log of the bytes in a text (control variable) |
| Foreign ownership | FO | = Proportion of issued shares owned by foreigners |
| Error term | ε | = residuals |

### Diagnostic Tests

Diagnostic tests were carried out to test the suitability of the data for panel regression analysis including of normality test, serial correlation test, heteroscedasticity test, multicollinearity test, stationarity test and Hausman test.

## Findings and Discussions

### Findings on Descriptive Statistics

The descriptive statistics findings on Table 1 indicated that the average Flesch readability ease score in Kenyan listed firms was 21.719% while Fog index indicated a score of 22.457%. These findings implied that the sustainability reports of East African listed firms were very difficult to read. The average board size comprised of 10 members of which 39.2% were women. The average age of directors of the EA listed firms was 53 years. The proportion of independent directors was 52.7%. in the EA listed firms. The return on assets ratio was at 30.3% for the EA listed firms while the average file size of the sustainability reports was 257.728 bytes for these firms. The average foreign ownership of the listed firms in EA security exchanges was 34.7%.

*Table 2: Descriptive Statistics*

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| FRI | 67 | 17.220 | 24.980 | 21.719 | 2.106 |
| FOG | 67 | 19.830 | 24.980 | 22.457 | 1.430 |
| BS | 67 | 5.000 | 14.000 | 9.848 | 2.265 |
| FD | 67 | 0.000 | 0.890 | 0.392 | 0.292 |
| DA | 67 | 3.640 | 4.170 | 3.952 | 0.134 |
| ID | 67 | 0.140 | 0.890 | 0.531 | 0.248 |
| ROA | 67 | -1.460 | 7.680 | 0.303 | 1.328 |
| FLZ | 67 | 109.880 | 430.800 | 253.728 | 82.716 |
| FO | 67 | 0.010 | 0.780 | 0.347 | 0.243 |

### Normality Test

The data was tested for normality and the findings as per Figure 1 on normality test findings indicated a p-value of 0.183 which was greater than 0.05 level of significance. These findings indicated that the data was normally distributed.

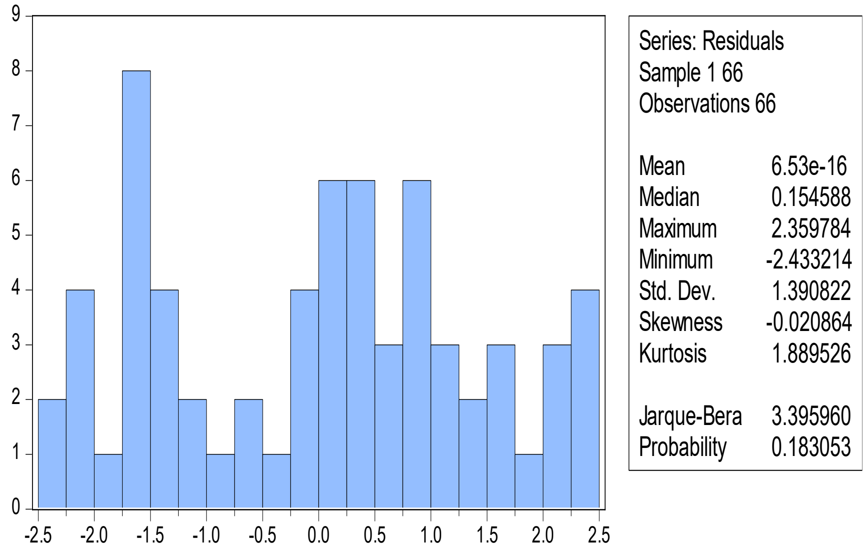


*Figure 1: Normality Test Findings*

### Serial Correlation Test

The data was tested for existence of serial correlation problems and the findings as per Table 2 indicated that there was lack of serial correlation in the data with p-value of the Breusch-Godfrey Serial Correlation LM Test being 0.080 that was more than 0.05 level of significance (Reyna and Brainerd, 2007).

*Table 3: Breusch-Godfrey Serial Correlation LM Test*

| **Breusch-Godfrey Serial Correlation LM Test** | | | |
|---|---|---|---|
| F-statistic | 13.054 | Prob. F (2,55) | 0.092 |
| Obs*R-squared | 21.245 | Prob. Chi-Square (2) | 0.080 |

### Heteroscedasticity Test

The data was tested for presence of heteroscedasticity problem using the Breusch-Pagan-Godfrey heteroskedasticity test. The findings indicated that the data was homoscedastic with p-value being 0.307 greater than 0.05 level of significance as per Table 3.

*Table 3: Breusch-Pagan-Godfrey Heteroskedasticity Test*

| **Heteroskedasticity Test: Breusch-Pagan-Godfrey** | | | |
|---|---|---|---|
| F-statistic | 1.188 | Prob. F (8,57) | 0.323 |
| Obs*R-squared | 9.429 | Prob. Chi-Square (8) | 0.307 |
| Scaled explained SS | 3.128 | Prob. Chi-Square (8) | 0.926 |

### Multicollinearity Test Findings

Multicollinearity was tested using the value inflation factor (VIF) test. The findings in Table 4 indicated that the data lacked the problem of multicollinearity with the VIF values for the variables being less than 5.

*Table 4: Multicollinearity Test Findings*

| | Tolerance | VIF |
|---|---|---|
| BS | 0.615 | 1.626 |
| FD | 0.262 | 3.818 |
| DA | 0.668 | 1.498 |
| ID | 0.265 | 3.776 |
| ROA | 0.875 | 1.143 |
| FLZ | 0.552 | 1.812 |
| FO | 0.776 | 1.289 |

### Pearson's Correlation Matrix Findings

The Pearson's correlation matrix findings as per Table 5 indicated a significant positive association between the female directorships and the readability of sustainability reports of firms listed in EA. This finding is consistent with Ginesti et al. (2018) in Italy and Odia and Ken-Otokiti (2021) in Benin. The correlation findings found a significant and negative association between the age of directors and readability of financial reports in EA listed firms. This finding conflicted with those of Xu et al. (2018) in the USA, Efreteui (2013) in the UK and Sun *et al.* (2022) in China who all found a significant and negative relationship between the age of directors and the readability of financial statements. The correlation findings in Table 5 indicated a significant and positive association between director independence and the readability of financial reports in EA listed firms. This finding was consistent with that of Hassan et al. (2018) in Qatar.

*Table 5: Correlation Matrix Findings*

| | FRI | BS | WD | DA | ID | ROA | FLZ | FO |
|---|---|---|---|---|---|---|---|---|
| FRI | 1 | | | | | | | |
| BS | 0.17 | 1 | | | | | | |
| FD | .553** | 0.074 | 1 | | | | | |
| DA | -.485** | -.346** | -.365** | 1 | | | | |
| ID | .362** | 0.199 | .764** | -0.142 | 1 | | | |
| ROA | -0.085 | -0.175 | -0.213 | 0.203 | -0.159 | 1 | | |
| FLZ | .338** | .493** | 0.106 | -0.095 | .415** | -0.229 | 1 | |
| FO | -.281* | -.292* | -.297* | .338** | -0.134 | 0.213 | -0.07 | 1 |

### Findings on Panel Data Regression Analysis

Upon employment of the Prais Winsten panel regression analysis with FRI readability index being the dependent variable while the independent variables were board size, female directorships, directors' age and independent directorships. The control variables were return on assets, file size and foreign ownerships. The findings as per Table 6 revealed that in Kenya female directorships have a significant and positive relationship with readability of financial statements. This finding implied that the more the female directors, the better the readability of sustainability reports. The null hypothesis H02 was thus not rejected. These findings agreed with those of Ginesti *et al.* (2018) in Italy found that the participation of women as directors had a significant and positive effect on readability of financial statements. Table 6 regression findings also indicated that file size had a significant and positive relationship with the readability of sustainability reports in EA listed companies and hence the larger the reports the better their readability.

*Table 6: Findings on Regression Analysis*

| Variable | Flesch index |
|---|---|
| BS | -0.001 |
| | (-0.01) |
| FD | 5.395*** |
| | (3.16) |
| DA | -3.545 |
| | (-1.40) |
| ID | -2.823 |
| | (-1.46) |
| FO | 0.199 |
| | (0.22) |
| ROA | 0.126 |
| | (0.95) |
| FLZ | 0.010*** |
| | (2.24) |
| Intercept | 32.561*** |
| | (3.09) |
| Overall R-squared | 0.529 |
| F statistic | 109.13 |
| Prob. > F | 0.000 |
| Controls | YES |
| Firm-year observations | 66 |

*Note: *, **, and *** denote significance at the 10, 5 and 1 percent, respectively. Z-values are in parentheses.*

For robustness test, the dependent variable was altered to be the Fog readability index while the independent and control variables remained unaltered. The findings as per Table 7 also indicated that the readability of sustainability reports was not related to the independent variables and control variables.

*Table 7: Robustness test regression findings*

| Variable | FOG Index |
|---|---|
| BS | -0.062 |
| | (-0.40) |
| FD | -6.149 |
| | (-0.42) |
| DA | 5.342 |
| | (1.44) |

| | |
|---|---|
| ID | -1.690 |
| | (-0.82) |
| FO | -0.591 |
| | (-1.75) |
| ROA | -0.033 |
| | (-0.77) |
| FLZ | 0.000 |
| | (0.15 |
| Intercept | 1.545 |
| | (0.11) |
| Overall R-squared | 0.181 |
| F statistic | 1.30 |
| Prob. > F | 0.273 |
| Controls | YES |
| Firm-year observations | 49 |

Note: *, **, and *** denote significance at the 10, 5 and 1 percent, respectively. Z-values are in parentheses.

## Conclusion and Recommendations

The focus of this study was the effect of board characteristics on the readability of sustainability reports in companies listed in East Africa and the study period 2017 to 2021. Explanatory research design was used, and panel data regression analysis was employed. The population comprised of 15 companies that voluntarily included sustainability reports in their annual reports across EA security exchanges. Board size, female directorships, age of directors and directors' independence of directors were the determinants. The control variables were returned on assets, file size and proportion of foreign ownership of the listed companies. The readability of sustainability reports as the dependent variable was measured using the Flesch readability ease and the Gunning Fog readability indices.

The findings also indicated that female directorship had a significant and positive effect on readability of sustainability reports in listed East African companies. The findings implied that the more the female directors in a board, the more the sustainability were readable. Policy makers including the Capital Markets Authorities, Management and owners of listed East African firms and scholars should be aware of these findings so that the necessary interventions can be put in place.

Agency theory has been extended by this study on readability of sustainability reports. Management as the preparers of sustainability reports have more information about the sustainability performance of firms than the user's sustainability reports which allows management to exploit their privileged position to prepare sustainability reports that present better than actual performance. The practice of reporting better than the actual sustainability performance is referred to as greenwashing (Becker-Olsen & Potucek, 2013; Huang et al., 2022). Period. Future scholars can explore readability of sustainability reports in relation to other aspects and even consider primary data analysis for the East African listed and unlisted firms.

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