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ESGE DISCLOSURE AND FINANCIAL DISTRESS OF LISTED NON-FINANCE FIRMS IN SUB-SAHARAN AFRICA

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Abstract

This study investigated the effect of ESGE reporting on financial distress of listed non-financial firms in Sub-Saharan Africa from (2012-2021). Four research questions and four corresponding hypotheses were developed for the study. An ex-post facto research design was employed. The population of the study included all non-financial firms listed on the Nigerian Exchange Group (NGX), Johannesburg Stock Exchange, and Nairobi Stock Exchange as of December 31, 2022. The study employed a simple filtering technique to select the sample because firms were included in the sample on certain selection criteria. The final sample size consists of 76 non-finance firms in Nigeria, 149 non-finance firms in South Africa, and 24 non-finance firms in Kenya. Thus, the sample size of this study was 282 listed non-finance firms in Nigeria, South Africa, and Kenya. The study relied on secondary sources of data obtained from annual reports of sampled companies as provided by individual companies and the Nigerian Exchange Group (NGX) website. Amongst other preliminary analyses and tests, fixed effect regression analysis was performed to validate the hypotheses. The study found that environmental reporting has a significant positive effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of the Altman Z-score during the period under review. The study also found social reporting to have a significant negative effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of Altman Z-score during the period under review. Governance and economic reporting have an insignificant negative effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of Altman Z-score during the period under review. Consequent to the findings emanating from the analysis, the study therefore recommended, among others, that insufficient disclosure of green environmental issues be addressed by environmental regulatory bodies working in tandem with governments to establish a green information disclosure standard.

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1.0 INTRODUCTION

1.1 Background of the study

Traditional financial reporting has become unable to satisfy the information needs of a variety of stakeholders, who increasingly demand extension of reporting to include intellectual capital statements, value reporting, and sustainability reports (Wulf, Niemöller, & Rentzsch, 2014). The practice of environmental, social, governance, and economic (ESGE) reporting has grown in significance for businesses, policymakers, activists, and other stakeholders and has remarkably changed the tone of the marketplace (Arvidsson & Dumay, 2022). It has also become an interesting phenomenon in the academic literature.

A considerable number of studies have been devoted to sustainability disclosure issues, most of which focused on the relationship between ESGE reporting and firms' financial performance. These studies have found varied outcomes. Most studies found positive relationships , such as Luo & Tang, (2022); some, such as Curran & Moran (2007), found negative relationships, while others, such asChetty, Naidoo, & Seetharam, (2015) and Gladysek & Chipeta (2012), found insignificant or no correlations of performance to ESGE reporting, although each has viewed it from different theoretical standpoints. Irrespective of the conceptualization of these studies, they found ESGE reporting to add some facelift to the company that attracts and retains most investors. CSR reporting is related to image, brand, and reputation, and these values are cherished by firms desirous of enhancing their performance. Most managers or companies are fascinated by the benefits of quality ESGE reports and would be competing to provide high-quality ESGE reports to obtain the maximum benefits.

Despite these merits of ESGE reporting, the quality of reports has remained a challenge for ESGE adopters, and financial handicaps could have some effects. Quality ESGE reporting according to Harymawan, Putra, Fianto, & Wan Ismail (2021) entails some financial sacrifices; therefore, financially distressed firms might have limited access to the needed resources. The management of financially distressed firms might act irrationally in their fear of losing resources, which dampens their urge to attain higher performance and pursue a low-cost strategy. Hence, they may not want to produce a high-quality ESGE report.

A number of studies and governance reports, webinars, press articles, etc., that discuss ESGE reporting often imply that applying these ESGE reporting frameworks leads to corporate profitability and eventually stock price performance improvements. However, this may not be the case all the time. Some studies have found that ESGE reporting is related to image, brand, and reputation (Harymawan, et al., 2021). Hence, it is expected that these ESGE benefits should be cherished more by firms desirous of enhancing their performance, which in turn would inspire better quality ESGE disclosures. If ESGE reporting has the potential for all these benefits and values, then why have organizations not embraced ESGE for centuries? What could have impacted ESGE reporting disclosure in the sub-Saharan African countries? Against these backdrops, this study examines how ESGE reporting affects the financial condition of listed non-finance firms in sub-Saharan African countries.

1.2 Objectives of the study

This study's main objective is to examine the ESGE reporting and financial distress of listed non-finance firms in Sub-Saharan Africa. However, the specific objectives of the study are as follows:

- Examine the effect of environmental reporting disclosure on the financial distress of listed non-finance firms in Sub-Saharan Africa.
- To investigate the effect of social reporting disclosure on the financial distress of listed non-finance firms in Sub-Saharan Africa.
- To ascertain the effect of governance reporting disclosure on the financial distress of listed non-finance firms in Sub-Saharan Africa.

- To evaluate the effect of economic reporting disclosure on the financial distress of listed non-finance firms in Sub-Sahara Africa.

2.0 REVIEW OF THE RELATED LITERATURE

2.1 Conceptual Framework

2.1.1 Environment, Social, and Governance Disclosure

Environmental degradation is really a serious problem, and the growth and development of companies is a cause of environmental degradation. Companies degrade the environment through their use of resources in ways that are not suitable for obtaining large economic benefits. In addition, the company's production activities can also produce environmental pollution, which will have a significant impact on society. Corporate Social Responsibility (CSR) normatively emphasizes that good citizenship comprises serving one's country without harming it while performing business or other activities. It considers not so much about how firms are but a prescription of how several political and social thinkers would like them to be, especially with regard to externalities, both positive and negative, affecting the natural environment. Hence, sustainability reporting involves disclosure of corporate performance on these pillars of environmental, social, governance, and economic (ESGE).

2.1.2 Corporate financial distress

Financial distress is a condition in which a company or individual cannot generate sufficient revenues or income to settle its financial obligations (Hayes, 2021). This could be due to high fixed costs, a large degree of non-liquid assets, or revenues sensitive to economic downturns. Companies under financial distress may find it difficult to secure new financing and the market value of the firm falls significantly as customers cut back on new orders and suppliers change their delivery terms.

Corporate financial distress encompasses four generic terms: failure, insolvency, bankruptcy, and default. Failure occurs when the realized rate of return on investments, after adjusting for risk considerations, is significantly lower than the returns generated from comparable investments or when revenue is insufficient to cover costs. Insolvency refers to firms' inability to settle current obligations, possibly owing to liquidity concerns. The bankruptcy indicates that the firm is in financial distress, which in most jurisdictions requires a legal declaration involving the courts. A default can be both technical and legal. Technical default refers to a situation in which a firm breaches a condition stipulated in contracts (e.g., debt covenant violation). Failure to meet periodic repayments on a loan is more likely to lead to a legal default. Irrespective of the nature of the default, both types of default signal deteriorating firm performance and financial distress (Altman and Hotchkiss, 2010).

The Altman Z Score, which is used to predict the likelihood that a business will go bankrupt within the next two years, is used in this study to measure the financial distress conditions of listed non-finance firms in sub-Saharan African countries. The formula for the Z Score model is based on information found in the financial performance and financial positions of the organization. It is based on the liquidity, profitability, solvency, sales activity, and leverage of the targeted business, which captures the four generic aspects or terms of financial distress of firms. Given the ease with which the required information can be found, the Z Score is a useful metric, especially for an outsider who has access only to a company's financial statements.

The Altman Z score formula is as follows:

$$Z = 1.2A + 1.4B + 3.3C + 0.6D + 0.99E$$

Where:

A - Working capital/Total assets (Measures the relative number of liquid assets)

B - Retained earnings/Total assets (Determines cumulative profitability)

C - Earnings before interest and taxes / Total assets (measures earnings away from the effects of taxes and leverage)

D - Market value of equity / book value of total liabilities (incorporates the effects of a decline in the market value of a company's shares)

E - Sales/Total assets (measure asset turnover)

Source: *Altman Z Score Formula, (2023)*

A Z-score of greater than 2.99 indicates that the entity being measured is safe from bankruptcy. A score of 1.81 means that a business is at considerable risk of going into bankruptcy, while scores between 2.99 and 1.81 should be considered a red flag for possible problems. The major advantage of the Z-score model comes from the fact that it is not using just a single ratio and it brings together the effects of multiple items - assets, profits, and market value. It is most commonly used by creditors and lenders to determine the risk associated with extending funds to customers and borrowers.

2.2 Theoretical Framework

Most literature on sustainability reporting, such as Abdul, Rashidah, & Alsayegh, (2021); Mahadeo, Oogarah-Hanuman, & Soobaroyen, (2011); O'dwyer, (2002); Martens, & Bui, (2023); Archel, Husillos, Larrinaga, & Spence, (2009); Burlea, & Popa, (2013); etc., anchored their studies on the legitimacy theory to explain the motivation of managers to engage in voluntary ESGE reporting. Some others , such as Nwokeji and Osisioma (2019), used stakeholder theory to explain the concept of different groups that have interests in the company to whom reasonable disclosures must be made to increase transparency and corporate accountability. Other studies on ESGE, such as Khan, Lockhart, and Bathurst (2020), adopted institutional theory, and some, such as Al Fadli, Sands, Jones, Beattie, and Pensiero (2019), used social role theory, token theory, and resource dependence theory. Agency and stewardship theories were used by (Buallay, Hamdan, Barone, & Hamdan, 2022).

This study was anchored on the legitimacy theory of stakeholders since legitimacy theory plays a prominent role in explaining the motivations for ESGE reporting among firms in financial distress.

2.2.1 Legitimacy Theory

Organizations provide goods to the society, and the society in turn supplies the organization with resources such as employees, acceptability, and others. Thus, entities are social creations that depend on the society for existence (Hahn & Kühnen, 2013). The social perceptions of the firms' activities are reported to the societal expectations, and if those activities do not respect the values of the society, the firm is severely sanctioned by the society, which may lead to its failure (Burlea, & Popa, 2013). The basis of legitimacy theory is that organizations should operate in accordance with the norms and values of their respective societies to exist. The wrong side of legitimacy is criminality, and any crime by a firm makes its legitimacy void. When this happens, even a very profitable venture might be closed down by its owners. This happened to Arthur Anderson in the wake of the Enron scandal at the beginning of this century and to England's News of this decade. (Baker 2003).

Legitimacy theory states that organizations continuously attempt to ensure that they perform activities in accordance with societal boundaries and norms (Deegan et al., 2002). Thus, the firm has to justify itself through legitimate economic and social actions that do not jeopardize society or the environment. This theory explains why firms make voluntary disclosures of information even when the law does not compel them. It is assumed that firms can acquire legitimacy in the eyes of the public, usually investors and sometimes customers, or even the public as a whole. Studies such as Corazza, Truant, Scagnelli, and Mio (2020) supported that organizations must disclose information about their activities to reinforce their legitimacy despite social or environmental crises. Suchman (1995) added that establishing legitimacy leads to the perception of being responsible, dependable, trustworthy, and authentic.

Legitimacy gap is a term used to illustrate the difference between the values adopted by the company and the values of the community where the company will be in a threatened position. The legitimacy gap will arise if the

company is not sensitive to the impacts that may arise from the company's activities and the expectations of the community toward the company and is only oriented toward generating the maximum profit (Ang & Masella, 2015). CSR is needed to minimize the legitimacy gap by increasing the compatibility between company operations and community expectations.

Legitimacy theory is widely used in accounting research as a framework to explain voluntary disclosures by organizations (O'Donovan 2000, 2002). This explains why financially distressed firms must disclose their ESGE activities irrespective of their lack of access to financial resources. They are expected to identify, measure, and disclose their social responsibility activities in order to justify them and obtain the needed legitimacy; otherwise, it is criminal. Thus, Burlea and Popa (2013) see legitimacy theory as possessing a strong disciplinary background. Some scholars, such as Mobus (2005; Owen, (2008), among others, criticized this legitimacy theory enhancement. Owen (2008) see legitimacy as the key motivation for managerial actions, which mostly lack real efforts to promote transparency and accountability toward non-capital provider stakeholder groups. Thus, organizations must voluntarily disclose social and environmental information to legitimate their legitimacy.

2.3 Empirical Review

Egbunike and Okoro (2018) investigated the effect of green accounting practices on profitability in Nigeria. The sample comprised ten non-consumer goods firms listed on the Nigerian Stock Exchange from 2012 to 2016. The data were sourced from the annual reports and accounts of selected non-consumer goods firms. They used canonical correlations to analyze the data. The study finds no significant relationship between green accounting and profitability.

Ivan, Roberto, and Francesco (2017) examined the impacts of corporate green practices on financial performance. They obtain indexes of pollution prevention, green supply management, green produc, andvelopment and ISO 14001 from each firm in a panel of 490 publicly-traded companies from 58 countries. Their results show that internal green practices (pollution prevention and green supply chain management) are the major environmental drivers of financial performance, whereas external green practices (green product development) play a secondary role in determining financial performance. Their findings also revealed that the adoption of ISO 14001 appears to have a negative impact on financial performance.

Ekwe, Odogu, and Mebrim (2017) examined the link between triple bottom line accounting and profitability in Nigeria. The sample comprised two firms, Conoil and Forte Oil. They used secondary data from the annual reports and accounts of the companies. The hypotheses were tested using ordinary least squares (OLS). The study finds that triple bottom line accounting has a negative but non-significant effect on EPS; but a significant negative effect on ROA.

Nnamani, Onyekwelu, and Ugwu (2017) investigated the effect of sustainability accounting and reporting on financial performance in Nigeria. The sample comprised three firms from the brewery sector from 2010 to 2014. Data were sourced from the annual reports and accounts of the selected brewery firms. They used ordinary linear regression to test the hypotheses. They found that total personnel cost to total assets has a significant effect on ROA, whereas total equity to total assets did not.

Burlea and Popa (2013) examined legitimacy theory as a concept that supports organizations in developing and executing voluntary social and environmental disclosures as a means to fulfill their socialobligations. This measure aids in the appreciation of their objectives and their survival in a harsh and turbulent environment. They argued that social perceptions of the firms' activities are reported to the societal expectations, and if those activities do not respect the values of the society, the firm is severely sanctioned by the society, which may lead to the firm's failure.

3.0 METHODOLOGY

3.1 Research Design

The research design employed in this study is a longitudinal *ex-post facto* research design. Specifically, *ex-post facto* research, also known as after-the-fact research, is a type of study in which the events have already occurred and are thus not subject to any form of manipulation by the researcher. The study is longitudinal, covering a period of ten (10) years. That is, from 2012 to 2021, non-finance firms from Nigeria, South Africa, and Kenya will be employed.

3.2 Area of study

The study covered the entire equity of non-finance listed firms in Nigeria, South Africa, and Kenya. Because bond markets are essentially non-existent in Africa, African stock exchanges are solely equity exchanges (Osaze, 2007). Over half of the 54 African countries have stock markets. Non-financial firms in Nigeria, South Africa, and Kenya provide a unique opportunity for use in this study, thus meeting the need to capture a larger firm observation unlike previous studies because most firms in the three Sub-Saharan African countries are classified under the non-finance sectors. As noted, this study will draw samples from Nigeria, Kenya, and South Africa. The choice of Nigeria, South Africa, and Kenya is based on the need to have regional coverage in Africa, which most studies failed to consider; hence, the present study covers a more geographical scope. Furthermore, these countries have large markets that have aided economic development in a variety of ways, including facilitating long-term capital mobilization, providing alternative investment opportunities, attracting foreign capital inflows, and serving as a signal of economic performance (Kumo, 2009). Specifically, according to the World Bank Report of 2021, Nigeria is the largest economy in West Africa and contributes more than 41% of West Africa's GDP in general. On the other hand, the World Bank Ease of Doing Business report of 2021 showed that South Africa ranked 84 out of 190 economies and provides opportunities for investment with many attractive assets, a transparent legal system, and political stability. For Kenya, it has been noted that the Kenyan government has been actively taking measures and implementing reforms to improve investment opportunities. As a result, it was ranked 56th in the World Bank's ease of doing business.

3.3 Population of the study

The study population consists of all listed non-finance firms in Nigeria, South Africa, and Kenya. As of December 2021, we had 109 non-finance firms listed on the floor of the Nigerian Exchange Group (NGX), 243 non-finance firms listed on the floor of the Johannesburg Stock Exchange (JSE), and 41 non-finance firms listed on the floor of the Nairobi Stock Exchange (NSE). From the foregoing, the total population of this study will be 393 non-finance firms listed in Nigeria, South Africa, and Kenya.

3.4 Sample size and sampling technique

We used a simple filtering technique to select the sample because firms will be included in the sample on the basis of certain selection criteria. These criteria will be based on firms listed on the Nigerian Exchange Group market, Johannesburg Stock Exchange market, and Nairobi Stock Exchange market for 2012-2021; there should be access to their annual financial reports within the period and not firms operating subsidiaries in Nigeria, South Africa, and Kenya that are not listed on the relevant stock exchanges. Newly listed and delisted firms will also be excluded from the study. Thus, only non-finance firms that had all relevant data due to continuous existence were included in the sample. Our final sample size will comprise 76 non-finance firms in Nigeria, 149 non-finance firms in South Africa, and 24 non-finance firms in Kenya. Thus, the sample size of this study will be 282 listed non-finance firms in Nigeria, South Africa, and Kenya.

3.5 Sources of Data Collection

In this study, we will employ a secondary data source for data collection since the data will be sourced from the relevant stock exchange Factbooks and related companies' annual financial reports for the periods. In this study, we will employ a secondary data source that has been justified by recent studies by Jayeola, Agbatogun, and Akinrinlola (2017). The data will be sourced from each listed firm's annual audited financial reports as compiled by MachameRATIOS®.

3.7 Method of Data Analysis

The study conducted descriptive statistics to provide an understanding of the data in terms of the mean, standard deviation, maximum, and minimumvalues. Correlation analysis will also be conducted to express the relationship between the independent and dependent variables employed in this study. However, to achieve the objective of the study, panel fixed and random effect regression will be employed as captured in the model specification sections. The rationale for its usage is based on the following justifications: the data that will be collected may have time and cross-sectional attributes as well as across the sampled firms (cross-section); panel data regression provides better results since it uses large observations and reduces the problem of degree of freedom; it avoids the problem of multicollinearity and helps to capture the individual cross-sectional (or firm-specific) effects that the various pools may exhibit concerning the dependent variable in the model.

3.8 Model Specification

Based on the theoretical literature and earlier empirical studies, the present study adapts the model of Gholami, Sands, and Rahman (2022) to express the econometric form of the model as follows:

$$ZSCO_{it} = \beta_0 + \beta_1 EVDI_{it} + \beta_2 SOCI_{it} + \beta_3 GOVI_{it} + \beta_4 ECOI_{it} + \beta_5 RETA_{it} + \mu_{it}$$

Thus, the apriori expectation based on the literature reviewed and related theories is stated as follows; $\beta_1 X_{1it} < 0$, $\beta_2 X_{2it} < 0$, $\beta_3 X_{3it} < 0$, $\beta_4 X_{4it} < 0$, $\beta_5 X_{5it} < 0$. The basis for this expectation flows from the outcome of the literature review and empirical findings. The operationalization of the above proxies is captured in Table 3.2.

Where:

ZSCO	=	Altman Zscore
EVDI	=	Environmental Disclosure Index
SOCI	=	Social Disclosure Index
GOVI	=	Governance Disclosure Index
ECOI	=	Economic Disclosure Index
RETA	=	Return on assets
β_0	=	Constant
β_1- β_4	=	Slope Coefficient
μ	=	Stochastic disturbance
i	=	i^{th} company
t	=	period

4.0 PRESENTATION, ANALYSIS, AND DISCUSSION OF THE RESULTS

4.1 Data presentation

In testing for the effect of ESGE reporting on the financial distress of listed non-finance firms in Sub-Sahara Africa, the study conducts a pool least square regression analysis and then checks (diagnoses) for inconsistencies with the basic assumptions of the least square regression estimation technique as provided by Woodridge (2002). Succinctly, the diagnostic tests include tests for multicollinearity and heteroscedasticity. Specifically, the study

also performed preliminary regression analysis to include descriptive statistics, correlation matrix, and normality of residua test. However, the results are analyzed as follows.

4.1.1 Descriptive statistical analysis

In this section, we provide basic information for both the explanatory and dependent variables of interest. Each variable is described on the basis of the mean, standard deviation, maximum, and minimum. Table 1 displays the descriptive statistics of the study.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
zsco	2,359	2.102798	109.4043	-3741.95	3615.58
envi	2,360	.2576568	.2542011	0	1
soci	2,360	.4275466	.2269249	0	1
govi	2,360	.4880042	.18278	0	1
ecoi	2,360	.2462331	.13783	0	.82
reta	2,359	-1.406878	3010.059	-122137.7	76901.88

Source: Author (2023)

The table above shows the descriptive statistics of this study. For the dependent variable, the table shows that the mean of financial distress when measured in terms of Altman Z-score (ZSCO) was 2.10 with a standard deviation of 109.40. In the case of the independent variables, the study reveals that the mean of environmental reporting (ENVI) was 0.26 with a standard deviation of 0.25, indicating that on average, the sample firms in the selected Sub-Sahara African countries reported about 26% of their environmental related activities. The results also reveal that the mean of social reporting (SOCI) was 0.43 with a standard deviation of 0.23. This implies that on average, the sample firms in the selected Sub-Saharan African countries reported only about 43% of their social activities during the study period. The result also indicates that the mean of governance reporting (GOVI) for listed firms in Sub-Saharan African countries was 0.49 with a standard deviation of 0.18 during the study period. This implies that on average, approximately 49% of the non-finance firms in the selected Sub-Sahara African countries reported information about their governance setup during the period under review. The result also indicates that the mean of economic reporting (ECOI) had a mean of 0.96 and a standard deviation indicating that on average, approximately 96% of the listed firms under study reported information relating to their economic activities. In the case of the control variable, the study finds that on average, the sample non-finance firms reported a loss since the mean of return on assets (RETA) was -1.41 with a standard deviation of 3010.06 during the study period.

4.1.2 Normality Test

Particularly, when testing for normality, where the probabilities are greater than (>) 0.05, the data are NORMAL. Conversely, where the probabilities are less than (<) 0.05, the data are NOT NORMAL.

Table 2: Normality Test

Variable	Obs	W	V	z	Prob>z
zsco	2,359	0.01833	1352.669	18.450	0.00000
envi	2,360	0.96621	46.576	9.829	0.00000
soci	2,360	0.98684	18.135	7.416	0.00000
govi	2,360	0.98924	14.835	6.902	0.00000
ecoi	2,360	0.96477	48.562	9.936	0.00000
reta	2,359	0.01481	1357.517	18.459	0.00000

Source: Author (2023)

Table 2 shows that the dependent variable of financial distress as measured in terms of Altman Z-score has a z-statistic from the Shapiro– Wilk test of 18.450 with a probability of Z-statistics of 0.00000. This result implies that the dependent variable of financial distress is not normally distributed because the probability of the z-statistic, as seen in table 2, is significant at 1% level. In the case of the independent variable, the result shows that environmental disclosure has a z-statistic from the Shapiro– Wilk test of 9.829 with a probability of Z-statistics of 0.00000. This implies that environmental disclosure is not normally distributed because the probability of the z-statistics, as seen in table 2, is significant at 1% level. Furthermore, the result shows that social disclosure has a z-statistic from the Shapiro– Wilk test of 7.416 with a probability of Z-statistics of 0.00000. This implies that social disclosure is not normally distributed because the probability of the z-statistic, as seen in table 2, is significant at 1% level. The result also shows that the independent variable of governance disclosure is not normally distributed because the probability of the z-statistic, as seen in table 2, is significant at 1% level. Specifically, the study shows that governance disclosure has a z-statistic from the Shapiro– Wilk test of 6.902 with a probability of Z-statistics of 0.00000. We also find that the independent variable of economic reporting has a z-statistic from the Shapiro– Wilk test of 9.936 with a probability of Z-statistics of 0.00000, indicating that economic disclosure is not normally distributed since the probability of the z-statistic, as seen in table 2, is significant at 1% level. In the case of the control variable, the study shows that the return on assets is not normally distributed since the probability of the z-statistic, as seen in table 2, is significant at 1% level. Specifically, the study shows that return on asset has a z-statistic from the Shapiro– Wilk test of 18.459 with a probability of Z-statistics of 0.00000. However, the study proceeds with non-parametric regression analyses but carefully interprets the probability statistics against the t-statistics in line with the recommendation of Guajarati (2004).

4.2 Data Analyses

To achieve the objectives of the study, the pool ordinary least square (OLS) regression was conducted before proceeding to check for inconsistencies with the basic assumptions of the OLS regression. Succinctly, these diagnostic tests include tests for multicollinearity and heteroscedasticity. However, the study first tests for the association between the independent and dependent variables employed in the study using the Spearman rank correlation.

4.2.1 Correlation Analysis

In examining the association among the variables, this study employed the Spearman rank correlation coefficient (correlation matrix), and the results are presented in Table 1.

Table 3: Correlation analysis

	zsco	envi	soci	govi	ecoi	reta
zsco	1.0000					
envi	0.1665	1.0000				
soci	0.1601	0.5569	1.0000			
govi	0.1037	0.2700	0.4740	1.0000		
ecoi	-0.0960	-0.0036	-0.0186	-0.0348	1.0000	
reta	0.6477	0.1722	0.1561	0.0766	-0.0933	1.0000

Source: Author's computation (2023)

In the case of the correlation between the independent and dependent variables under study, the result from table 3 shows that economic disclosure (-0.0960) has a negative association with the dependent variable of financial distress as measured in terms of Altman Z-score during the study period. However, we find that environmental

reporting (0.1665) has a positive association with the dependent variable of financial distress, as measured in terms of the Altman Z-score during the study period. Similarly, social reporting (0.1601) has a positive association with the dependent variable of financial distress as measured in terms of Altman Z-score during the study period. Our results also indicate that the independent variable of governance reporting (0.1037) has a positive association with the dependent variable of financial distress, as measured in terms of the Altman Z-score during the study period. Finally, we find that the control variable of return on assets (0.6477) has a positive association with the dependent variable of financial distress, as measured in terms of the Altman Z-score during the study period.

4.2.2 Regression Analyses

Specifically, to examine the cause– effect relationships between the dependent and independent variables as well as to test the developed hypotheses, the study used a panel fixed and random effect regression analysis because the results reveal the presence of heteroscedasticity. The panel regression and OLS pooled results obtained are presented and discussed below.

4.2.2.1 Combine regression analyses

The pool OLS regression results obtained from the combined regression analyses are presented and discussed below.

Table 4: Combine Regression Results

	ZSCO Model (Pool OLS)	ZSCO Model (FIXED Effect)	ZSCO Model (Random Effect)
CONS.	0.988 {0.000} ***	1.411 {0.000} ***	1.299 {0.000} ***
ENVI	0.189 {0.051} **	0.009 {0.000} ***	0.048 {0.603}
SOCI	0.123 {0.358}	-0.009 {0.000} ***	0.078 {0.542}
GOVI	0.569 {0.000} ***	-0.208 {0.169}	-0.057 {0.686}
ECOI	-0.402 {0.007} **	-0.043 {0.717}	-0.091 {0.436}
RETA	0.063 {0.000} ***	0.055 {0.000} ***	-0056 {0.000} ***
F-Stat	**414.32 (0.0000)**	**694.53 (0.0000)**	**3575.51 (0.0000)**
R- Squared	**0.4688**	**0.6218**	**0.6214**
VIF	**1.34**		
Hettest	**90.09 {0.0000}**		
Hausman Test		**42.57 {0.0000}**	

Note: (1) bracket {} are p-values: (2) **, *, imply statistical significance at 5% and 1% levels, respectively**

In table 4 , it is observed from the OLS pooled regression that the R-squared value of 0.4688 shows that approximately 47% of the systematic variations in financial distress when measured using Altman Z-score of the pool non-finance firms in Sub-Sahara Africa over the period of interest was jointly explained by the independent and control variables in the model. The unexplained part of financial distress can be attributed to the exclusion of

other independent variables that can impact financial distress but were captured in the error term. The F-statistic value of 414.32 and the associated P-value of 0.0000 show that the overall OLS regression model is statistically significant at 1% level, which means that the regression models are valid and can be used for statistical inference. However, the study conducted some post-regression tests to further validate the OLS regression estimates.

4.2.2.1 Multicollinearity Test

Variance inflation (VIF) was used to examine multicollinearity. If the variance inflation result is above 10, then it calls for concern. The table above shows a mean VIF value of 1.34, which is within the benchmark value of 10. This indicates the absence of multicollinearity in the models, indicating that no independent variable should be dropped from the models.

4.2.2.2 Heteroskedasticity Test

The presence of heteroscedasticity tends to produce p-values that are smaller than they should be due to the increased variance of the coefficient estimates, which unfortunately the OLS estimator will not detect. The study employs the Breusch– Pagan Godfrey test to determine the presence or absence of heteroscedasticity in the regression results. From the table above, it can be observed that the OLS results had no heteroscedasticity problems in the model because its probability value was insignificant at 5% [90.09 (0.071)]. The absence of heteroscedasticity in the models clearly shows that our sampled non-finance firms are homogeneous. Thus, the panel regression method of both fixed and random effects is adopted, while the fixed effect technique is employed to test the hypotheses.

4.2.3 Fixed and Random Effect Regression

The F-statistic and Wald-statistic values of 694.53 (0.0000)} and 3575.51 (0.0000) for fixed and random effect regressions, respectively, show that both models are valid for drawing inferences because they are statistically significant at 5%. In the case of the coefficient of determination (R-squared), it was observed that more of the changes in financial distress because of the ESGE used in this study are explained using both the random and fixed effects (62%) than the OLS regression (47%).

4.2.3.1 Hausman Specification Test

In selecting from the two panel regression estimation results, the Hausman test was conducted, and the test is based on the null hypothesis that the random effect model is preferred to the fixed effect model. Specifically, a look at the p-value of the Hausman test (0.104), implies that we should reject the null hypothesis and accept the alternative hypothesis at a level of significance above 5% or 1%. This implies that the study should adopt the fixed effect panel regression results in drawing the conclusion and recommendations. This also implies that the fixed effect results tend to be more appealing statistically compared with the random effect. Following the above, the discussion of the fixed effect results became imperative in testing the hypotheses.

4.2.4 Sensitivity Analysis

The study conducted a robust sensitivity test in addition to the combined regression results shown in table 4. Specifically, the robust sensitivity check implies running a different specific regression for each country under study. The results obtained from each specific country regression are presented and discussed below:

Table 5: Country-specific pool OLS regression results

	Kenyan Sample			Nigeria Sample			South Africa Sample		
	ZSCO Model (Pool OLS)	**ZSCO Model (Fixed Effect)**	**ZSCO Model (Random Effect)**	**ZSCO Model (Pool OLS)**	**ZSCO Model (Fixed Effect)**	**ZSCO Model (Random Effect)**	**ZSCO Model (Pool OLS)**	**ZSCO Model (Fixed Effect)**	**ZSCO Model (Random Effect)**
CONS.	1.441 {0.000} ***	1.380 {0.000} ***	1.368 {0.000} ***	0.697 {0.000} ***	0.988 {0.000} ***	0.913 {0.000} ***	1.579 {0.000} ***	1.724 {0.000} ***	1.681 {0.000} ***
ENVI	-0.161 {0.580}	-0.356 {0.073}	-0.343 {0.078}	-0.588 {0.006} **	-0.235 {0.221}	-0.263 {0.159}	0.028 {0.836}	0.349 {0.008} **	0.301 {0.017} **
SOCI	-0.371 {0.397}	-0.220 {0.462}	-0.120 {0.496}	0.851 {0.007} **	0.383 {0.202}	0.518 {0.072}	-0.110 {0.453}	-0.150 {0.384}	-0.142 {0.374}
GOVI	-0.378 {0.481}	-0.717 {0.042} **	-0.682 {0.048} **	0.453 {0.048} **	0.039 {0.868}	0.144 {0.520}	0.015 {0.944}	-0.544 {0.028} **	-0.433 {0.059}
ECOI	-0.544 {0.216}	0.470 {0.071}	0.427 {0.096}	-0.360 {0.146}	-0.331 {0.250}	-0.363 {0.176}	-0.404 {0.050} **	-0.009 {0.950}	-0.038 {0.789}
RETA	0.070 {0.000} ***	0.056 {0.000} ***	0.057 {0.000} ***	0.061 {0.000} ***	0.052 {0.000} ***	0.053 {0.000} ***	0.063 {0.000} ***	0.059 {0.000} ***	0.058 {0.000} ***
F-Stat	**44.88 (0.0000)**	**79.45 (0.0000)**	**412.40 (0.0000)**	**209.95 (0.0000)**	**250.69 (0.0000)**	**1316.64 (0.0000)**	**162.52 (0.0000)**	**373.01 (0.0000)**	**1906.60 (0.0000)**
R- Squared	**0.4700**	**0.6353**	**0.6352**	**0.5885**	**0.6547**	**0.6544**	**0.3761**	**0.6059**	**0.6058**
VIF	**1.50**			**1.43**			**1.14**		
Hettest	**10.28 {0.0013}**			**21.72 {0.0000}**			**74.58 {0.0000}**		
Hausman Test			**3.13 {0.6793}**			**1.90 {0.7321}**			**4.91 {0.4268}**

Note: *(1) bracket {} are p-values: (2) **, ***, imply statistical significance at 5% and 1% levels, respectively*

4.3 Test of the Hypotheses

Following the above, the discussion of the fixed effect regression of the combined regression results became imperative in testing the study's hypotheses. Below is a specific analysis for each of the independent variables using fixed- effect regression.

$H0_1$: Environmental reporting has no significant effect on the financial distress of listed non-finance firms in Sub-Saharan Africa.

The results obtained from the fixed effect regression model revealed that environmental reporting [coef. = 0.009 (0.000)] has a significant positive effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of Altman Z-score during the period under review. This result implies that an increase in environmental disclosure will significantly increase the Altman Z-score and thus reduce the financial distress of the firms under study. Hence, the null hypothesis that environmental reporting has no significant effect on the financial distress of listed non-finance firms in Sub-Saharan Africa is rejected. Hence, environmental reporting significantly reduces the financial distress of listed non-finance firms in Sub-Saharan Africa during the period under study.

$H0_2$: Social reporting has no significant effect on the financial distress of listed non-finance firms in Sub-Saharan Africa.

The results obtained from the fixed effect regression model revealed that social reporting [coef. = -0.009 (0.000)] has a significant negative effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of Altman Z-score during the period under review. This result implies that an increase in social disclosure will significantly decrease the Altman Z-score and thus increase the financial distress of the firms under study. Hence, the null hypothesis that social reporting has no significant effect on the financial distress of listed non-finance firms in Sub-Saharan Africa is rejected. Hence, social reporting significantly increases financial distress of listed non-finance firms in Sub-Saharan Africa during the study period.

$H0_3$: Governance reporting has no significant effect on the financial distress of listed non-finance firms in Sub-Saharan Africa.

The results obtained from the fixed effect regression model revealed that governance reporting [coef. = -0.208 (0.169)] has an insignificant negative effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of Altman Z-score during the period under review. This result implies that an increase in governance disclosure will insignificantly decrease the Altman Z-score and thus increase the financial distress of the firms under study. Hence, the null hypothesis that governance reporting has no significant effect on the financial distress of listed non-finance firms in Sub-Saharan Africa is accepted. Hence, governance reporting insignificantly increased the financial distress of listed non-finance firms in Sub-Saharan Africa during the period under study.

$H0_4$: Economic reporting has no significant effect on the financial distress of listed non-finance firms in Sub-Saharan Africa.

The results obtained from the fixed effect regression model revealed that economic reporting [coef. = -0.043 (0.717)] has an insignificant negative effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of Altman Z-score during the period under review. This result implies that an increase in economic disclosure will insignificantly decrease the Altman Z-score and thus increase the financial distress of the firms under study. Hence, the null hypothesis that economic reporting has no significant effect on the financial distress of listed non-finance firms in Sub-Saharan Africa is accepted. Hence, economic reporting insignificantly increases the financial distress of listed non-finance firms in Sub-Saharan Africa during the study period.

4.4 Discussion of the findings

Since this study is an extension of existing studies, only a few findings in the literature are not in agreement with the current positions of this study.

4.4.1 Environmental reporting and financial distress

The study shows that an increase in environmental disclosure will significantly increase the Altman Z-score and thus reduce the financial distress of the firms under study. Hence, environmental reporting significantly reduces the financial distress of listed non-finance firms in Sub-Saharan Africa during the period under study. In particular, the result obtained from the specific country regression, as shown in Table 5, indicates that environmental reporting has a negative and insignificant effect on the financial distress of listed non-finance firms in Kenya and Nigeria. Similar to the baseline model, we document that environmental reporting has a significant positive effect on the financial distress of listed non-finance firms in South Africa. The findings of this study contradict those of Gross (2009), who found a significant negative impact of ratings of environmentally responsible firms in the determination of firm performance level by examining data from Kinder, Lydenberg, and Domini for 650 companies in the United States. We also agree with the position of Gupta and Krishnamurti

(2016), who found that environmental engagement helps firms that are already in the bankruptcy stage in the United States. They found that morale and exchange capital increase the firm's chances of recovering from bankruptcy, and the ability of moral capital to take the firm out of the adverse situation is more than exchange capital. Furthermore, we consistency with Al-Hadi et al. (2017), who studied the corporate environmental reporting and financial performance nexus by empirically examining 651 Australian listed firms from 2007 to 2013. Their findings reveal that positive engagement in environmental activities significantly decreases Australian firms' financial distress. Inferring from these theoretical perspectives and empirical findings, this study argues that engagement in and signals of better environmental activities (through enhanced adherence to environmental strategies) will create an insurance-type cushion for firms in reducing their financial distress.

4.4.2 Social reporting and financial distress

In this study, we document that an increase in social disclosure will significantly decrease the Altman Z-score and thus increase financial distress of the firms under study. Hence, social reporting significantly increases financial distress of listed non-finance firms in Sub-Saharan Africa during the period under study. The result obtained from the specific country regression, as shown in Table 5, indicates that social reporting has a negative and insignificant effect on the financial distress of listed non-finance firms in Kenya and South Africa. However, we document that social reporting has a positive but insignificant effect on the financial distress of listed non-finance firms in Nigeria. Specifically, the findings of this study misalign with those of Murray et al. (2006), who tested the relationship between social and environmental disclosure and the financial distress performance of top UK companies in a longitudinal and cross-sectional study. They used share price returns and distinguished between mandatory and voluntary disclosure. No direct relationship between share returns and disclosure was found. However, these findings contradict the results of Jones *et al.* (2007), who tested the relationship between abnormal share price returns and sustainability disclosure by top Australian companies. According to their results, CRR is negatively but weakly associated with abnormal share returns. We also contradict the studies of Moneva and Ortas (2008), who hypothesized that sustainability reporting (or CRR) using internationally accepted rules such as the Global Reporting Initiative (GRI) guidelines has a positive effect on the market value of companies. They included 142 European companies representing several countries and industries in their study and tested the association between disclosure and share price returns. They found no significant difference between the share price returns for companies using the GRI guidelines and those not using the GRI guidelines for CRR.

4.4.3 Governance reporting and financial distress

We also find that an increase in governance disclosure will insignificantly decrease the Altman Z-score and thus increase the financial distress of the firms under study. Hence, governance reporting insignificantly increases the financial distress of listed non-finance firms in Sub-Saharan Africa during the period under study. The result obtained from the specific country regression, as shown in Table 5, indicates that governance reporting has a negative and significant effect on the financial distress of listed non-finance firms in Kenya. However, we document that governance reporting has a positive insignificant effect on the financial distress of listed non-finance firms in Nigeria and a negative insignificant effect on the financial distress of listed non-finance firms in South Africa. The findings agree with those of Hassan and Melegy (2015), who sought to determine the economic consequences of corporate voluntary disclosure for Egyptian listed companies. Tobin's Q was used to measure market value, while voluntary disclosure was assessed from company annual reports and corporate websites using a disclosure index classified into strategic, financial, non-financial, and governance information. Strong significant linkages were found between voluntary disclosure of governance information and corporate financial distress. This implies that the content spelt out in annual reports and websites about voluntary disclosure has some economic value. However, we disagree with Emrinaldi's position (2007), who showed that the relationship

between managerial ownership and financial distress is inversely proportional. On the other hand, Emirzon (2006) states that good corporate governance is believed to assist a company to improve its performance by up to 30% and thus reduce financial distress. Another study conducted by Leal and da-Silva (2005) in Brazil concluded that the implementation of good corporate governance in a company reduces the cost of capital, improves the company's performance, and ultimately reduces the risk of financial distress. The results of these studies are supported by Fauver and Fuerst (2004). La Porta *et al.* (2000) also revealed that good corporate governance may also provide protection for investors. Li *et al.* (2008) examined the elements of corporate governance using centralized proxies.

4.4.3 Economic reporting and financial distress

Finally, we find that an increase in economic disclosure will insignificantly decrease the Altman Z-score and thus increase financial distress of the firms under study. Hence, economic reporting insignificantly increases financial distress of listed non-finance firms in Sub-Saharan Africa during the period under study. The result obtained from the specific country regression, as shown in Table 5, indicates that economic reporting has a negative and insignificant effect on the financial distress of listed non-finance firms in Nigeria and South Africa. However, we document that economic reporting has a positive but insignificant effect on the financial distress of listed non-finance firms in Kenya. The type of investors, as observed by Park, Wilcox, and Berry (2011), matters a lot in determining when to buy or sell given the available information. For conservative investors, market reactions to firms are greater than those to aggressive firms, where investors devalue firms with an improvement in financial information voluntary disclosure (Park *et al.*, 2011). Kothari, Shu, and Wysocki (2009) also investigated whether it was important to disclose bad news as well as good news in US firms. Results showed that managers are likely to delay disclosing bad news, especially financial information, due to fear for their tenures and compensation, and accelerate information when the company holds good news. Kothari *et al.* (2009) also established that the cost of releasing bad news to the market had a lethal impact on stock returns, a gain that would be realized when good news is disclosed on financial matters.

5.0 SUMMARY OF THE FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Summary of the Findings

The results of the empirical findings with respect to each objective of the study are as follows:

1. Environmental reporting [coef. = 0.009 (0.000)] has a significant positive effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of the Altman Z-score during the period under review.
2. Social reporting [coef. = -0.009 (0.000)] has a significant negative effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of the Altman Z-score during the period under review.
3. Governance reporting [coef. = -0.208 (0.169)] has an insignificant negative effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of the Altman Z-score during the period under review.
4. Economic reporting [coef. = -0.043 (0.717)] has an insignificant negative effect on the financial distress of listed non-finance firms in Sub-Saharan Africa when measured in terms of the Altman Z-score during the period under review.

5.2 Conclusion

The objective of all business operations, including those in Sub-Saharan African countries, is to maximize shareholders' wealth, as evidenced by profit maximization objectives, sustainable growth, and general corporate sustainable development. ESG regulation is firmly anchored in the larger regulatory frameworks in which

businesses operate. These environments include legislative and institutional environments, the efficacy, efficiency, and application of judicial powers/independence, and general environmental business support. The patchwork of legislation constitutes what might be called corporate governance regulation. In addition, both in case law and judicial terminology, businesses are primarily governed by the statutes and case laws of a particular social area or environment-in this case, Nigeria. This is because corporations' attitudes toward regulation are typically evaluated in conjunction with their surroundings and other ways or standards through which corporate operationalization is conceptualized globally. As a result, regulators such as Nigeria's CAC, SEC, and other bodies are structured and prepared to regulate the Nigerian business environment for good governance in accordance with the country's prevailing regulatory environment, which is determined by various enacted laws and judicial precedents.

In Africa, and particularly in Nigeria, South Africa, and Keya, corporate regulation is frequently conceived and considered in terms of the dynamics of unique institutional, leadership, regulatory, and legal functioning, which is characterized by high levels of corruption and weak regulatory mechanisms. This scenario jeopardizes accountability and sound regulation, thereby eroding the potential to control corporate governance culture and business environment efficiently. Capital market regulation, and checks and balances on corporate behavior could be viewed as a pathway to improved regulation. Thus, the intersection of (political) leadership and corporate social performance (CSP) serves as a litmus test for gaining a better understanding of corporate behavior and, more importantly, how business settings are controlled. Additionally, it is a necessary component of understanding corporate social responsibility reporting and governance. Thus, an institutional approach to sustainability (reporting) can assist in illuminating the manner in which sustainability issues are reported, controlled, and governed.

Based on the findings of the study, we conclude that an increase in environmental disclosure will significantly increase the Altman Z-score and thus reduce the financial distress of the firms under study. Hence, environmental reporting significantly reduces the financial distress of listed non-finance firms in Sub-Saharan Africa during the period under study. In particular, the result obtained from the specific country regression indicates that environmental reporting has a negative and insignificant effect on the financial distress of listed non-finance firms in Kenya and Nigeria. Similar to the baseline model, we document that environmental reporting has a significant positive effect on the financial distress of listed non-finance firms in South Africa. We also conclude that an increase in social disclosure will significantly decrease the Altman Z-score and thus increase financial distress of the firms under study. Hence, social reporting significantly increases financial distress of listed non-finance firms in Sub-Saharan Africa during the study period. The result obtained from the specific country regression indicates that social reporting has a negative and insignificant effect on the financial distress of listed non-finance firms in Kenya and South Africa. However, we document that social reporting has a positive but insignificant effect on the financial distress of listed non-finance firms in Nigeria.

We also conclude that an increase in governance disclosure will insignificantly decrease the Altman Z-score and thus increase the financial distress of the firms under study. Hence, governance reporting insignificantly increases the financial distress of listed non-finance firms in Sub-Saharan Africa during the period under study. The result obtained from the specific country regression indicates that governance reporting has a negative and significant effect on the financial distress of listed non-finance firms in Kenya. However, we document that governance reporting has a positive insignificant effect on the financial distress of listed non-finance firms in Nigeria and a negative insignificant effect on the financial distress of listed non-finance firms in South Africa. Finally, we conclude that an increase in economic disclosure will insignificantly decrease the Altman Z-score and thus increase the financial distress of the firms under study. Hence, economic reporting insignificantly increases the

financial distress of listed non-finance firms in Sub-Saharan Africa during the period under study. The result obtained from the specific country regression, as shown in Table 5, indicates that economic reporting has a negative and insignificant effect on the financial distress of listed non-finance firms in Nigeria and South Africa. However, we document that economic reporting has a positive but insignificant effect on the financial distress of listed non-finance firms in Kenya.

5.3 Recommendation

Overall, our evidence offers support for the wider spread and mandatory adoption of ESGE reporting, as it benefits not only the firms but also shareholders. Firms with a high quality of sustainability reporting are expected to have a more positive image with stakeholders and thus reduce the likelihood of financial distress. Shareholders are also expected to positively impact sustainability reporting because the report helps investors better evaluate the company's market value and reduce their uncertainty regarding the firm's future environment and social performance. However, on the basis of the specific findings of the study, the recommendations of the study are presented as follows.

1. We recommend that insufficient disclosure of green environmental issues, as documented in this study, be addressed by environmental regulatory bodies working in tandem with governments to establish a green information disclosure standard. Environmental accounting disclosures are useful information for all stakeholders in decision making; hence, compliance should be made mandatory for all businesses and will subsequently reduce financial distress.
2. Policies on social disclosure should also be re-evaluated. In particular, we recommend that the management of non-finance firms should plan and implement specific programs that adhere to a well-defined social policy. This agrees with global best practices that when a firm engages in social activities, it will enhance its relationship with the community, encouraging those communities to provide more favorable contracts to the firm and thus reduce financial distress risk.

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