IMPACT OF FIRM CHARACTERISTICS ON SUSTAINABILITY REPORTING OF
LISTED INDUSTRIAL GOODS FIRMS IN NIGERIA

Muhammad Adamu Chamo
Department of Accounting
Bayebo University, Kano – Nigeria

ABSTRACT
One of the recent emerging issues in financial reporting is sustainability accounting, which is not receiving adequate attention from researchers, especially in the developing economies. Sustainability reporting is becoming prominent in the corporate world, as it is an accounting performance measurement system that integrated non-financial information, which report on the impact of business operations on people and planet. It generally provide relevant information about firm performance in the areas of economic, social, environmental, governance, management policies and strategies, that influence sustainability practices. This study examined the impact of firm specific attributes on the sustainability reporting practices of industrial goods firms listed on the floor of the Nigerian Stock Exchange (NSE) Market. Correlational research design in a sample of 11 firms, for a period of 9 years (2010-2018) was employed. Secondary data and panel regression technique of data analysis was used and the study found a significant positive relationships between sustainability reporting and firm characteristics in the listed industrial firms in Nigeria. The findings indicate that firm size and firm financial performance have a significant statistical negative impact on the sustainability reporting, while leverage and growth have a significant positive impact on the sustainability reporting during the period under review. The study conclude that large firms with good financial performance are related to sustainability performance and practices. We recommend that board of directors as well as the management of listed industrial goods firms in Nigeria should ensure adequate profitability and strong financial position, so as to improve on the sustainable development practices. The study also recommend that regulators and policy makers should encourage firms on compliance with sustainable business practices in Nigeria.

Keywords: Environmental Pollution, Economic Sustainability, Profitability, Debt

Introduction
In recent years corporations have become more sensitive to environmental and social issues in their efforts to becoming good corporate citizens. They also focused on stakeholders’ concerns in order to comply with the government regulations, stakeholder pressures and economic profit. Hence, these issues of concern to the environmental and social factors are now captured in the annual reports known as sustainability reporting. Sustainability performance is currently a yardstick of evaluating managers, which make them to more effectively manage their social, economic, and environmental impacts.

Therefore, in most countries business organizations have been required by governments to disclose their sustainability activities in their annual reports. Although, it is voluntary in Nigeria, many companies are now focused on sustainability reporting. Therefore, it is crucial to examine the corporate sustainability reporting practice as well as the factors that influence public companies listed on the Nigerian Stock Exchange Market (NSE) to disclose their sustainability activities in the annual reports.
For instance, several studies have been conducted on corporate sustainability reporting in other countries such as Nazli and Weetman (2006); Clarkson et al (2008); Sutantoputra (2009); Isaksson (2009); Zeng et al (2010); Suttipun and Stanton (2012), Hahn and Kuhnan (2013). These studies highlighted on the nature of sustainability information reported in those countries. In Nigeria, there are studies on environmental reporting, which convey information on environmental performance (Owolabi, 2009; Uwuigbe, 2011) focus on environmental reporting in Nigeria.

Therefore, there is a need for a similar study to be carried out in Nigeria, because the social, economic, and political environment in Nigeria are different from other countries. Nigeria is unique in the sense that even though it follows and adopted an accounting system similar to other developed capital markets but the corporate governance system and structure differs from that of other countries. The finding from the current study will add on to knowledge and provide better understanding of sustainability reporting practices throughout the world.

**Objectives of the Study**
The main objective of the study is to examine the effects of firm specific characteristics on sustainability reporting of listed industrial goods firms in Nigeria. The other objectives of the study are:

i. To determine the effect of firm size on sustainability reporting of listed industrial goods firms in Nigeria.

ii. To assess the effect of firm financial performance on sustainability reporting of listed industrial goods firms in Nigeria.

iii. To evaluate the effect of firm leverage on sustainability reporting of listed industrial goods firms in Nigeria.

iv. To examine the effect of firm growth on sustainability reporting of listed industrial goods firms in Nigeria.

**Hypotheses of the Study**
The following research hypotheses are formulated in null form for the study;

H\(_0\)_1: Firm size has no significant effect on sustainability reporting of listed industrial goods firms in Nigeria.

H\(_0\)_2: Firm financial performance has no significant effect on sustainability reporting of listed industrial goods firms in Nigeria.

H\(_0\)_3: Firm leverage has no significant effect on sustainability reporting of listed industrial goods firms in Nigeria.

H\(_0\)_4: Firm growth has no significant effect on sustainability reporting of listed industrial goods firms in Nigeria.

**Literature Review**
The empirical findings from prior literature on the relationship between firm characteristics and sustainability reporting was mix and inconclusive. For example, Ziegler and Schröder (2010) examined the determinants of the inclusion of European firms in the Dow Jones Sustainability World Index and the Dow Jones Stoxx Sustainability Index. They found that a positive effect of corporate financial performance, this impact becomes ambiguous in more flexible panel probit models. In addition, their analysis shows a positive effect of firm size, a negative impact of financial health and no significant influence of the risk tolerance of the management.
Chih et al. (2010) investigated whether corporate sustainability is affected by financial and institutional variables, using a sample of 520 financial firms in 34 countries. They classified firms appearing in the DJSI World Index as corporate sustainability firms, while those appearing in the Dow Jones World but not in the DJSI World Index are classified as non-corporate sustainability firms. They concluded that larger firms will be more corporate sustainability-minded, and firms in countries with stronger legal enforcement measures engage in more corporate sustainability activities, but firms in countries with stronger investor rights engage in less corporate sustainability activities; and self-regulation in the financial industry has a significantly positive effect on corporate sustainability.

Muttalib et al. (2014) examine the availability, extent and quality of Sustainability Reporting (SR) by Malaysian firms subsequent to the mandatory disclosure. Based on an across-industry sample of 300 firms in 2011, the results indicate that despite the mandatory disclosure, 3% of the sampled firms failed to make such reporting. Meanwhile, firms in the infrastructure, finance and plantation industries perform the best of extent and quality of SR, while firms in hotel industry marks the poorest in quality and lowest in extent of SR.

The findings in the literature on the relationship between company size and sustainability reporting are inconclusive. Studies (such as Elijido-Ten, 2010; Uwuigbe, 2011; De Villiers et al., 2014) find that size was a determining factor of sustainability disclosures as well as social disclosures, environmental disclosures. Also, Tavares and Rodrigues (2016) deduce that size was a determinant of sustainability disclosures of public Sector organizations. Studies (Aggarwal, 2013; Bassey et al., 2013; Mohamad et al., 2014; Nugroho and Arjowo, 2014) find that aspects of sustainability reporting significantly influence profitability. Bassey et al. (2013) assess the relationship between environmental cost and firm profitability, and argue that environmental costs increase a company’s development in areas such as energy, material and waste management. Furthermore, Aggarwal (2013) finds that environmental aspects of sustainability reporting had negative influence on profitability, and governance aspects had positive influence on sustainability reporting.

There is also no significant relationship between company size and environmental disclosures in De Villiers et al. (2014). Interestingly, Ebiringa et al. (2013) is based on quoted oil and gas companies in Nigeria which are environmentally sensitive due to the nature of their operations, they also show that, there is no significant relationship between company size and social disclosures. On the other hand, Amran et al. (2014) found that some company boards do not carry out oversight of sustainability reporting. A reason for this finding could be that the board size is not large enough to meet the responsibility of board oversight on sustainability issues. Tamoi et al. (2014) find that organizations where the board is large, with members having higher degrees, disclose more sustainability information.

**Methodology**

The study adopted correlational research design to investigate the effect of firm specific characteristics on sustainability reporting of listed industrial goods firms in Nigeria. The population of the study comprises of all the 11 industrial goods firms listed on the floor of the Nigerian Stock Exchange (NSE) Market as at 31st December, 2018. However, the study applied census sampling, that all the 11 firms are sample size of the study (see appendix). The study used secondary data from the financial statements of the sampled firms for the period of Nine years.
Method of Data Analysis and Model Specification

The study employed panel regression technique of data analysis. The analysis was conducted using Statistics/Data Analysis Software (STATA 13.0). Therefore, the measurements of the variables used in the study are presented in Table 1;

Dependent Variable - Sustainability Reporting

The dependent variable is measured using Sustainability Reporting Index (SRI), measured based on Global Reporting Initiatives (GRI3) performance indicator. The indicator is considered to be a valid and suitable measure of SRI because it contains comprehensive measure of social and environmental performance (Sutantoputra, 2009). Therefore, the study applied SRI disclosure rating by Sutantoputra (2009) and Clarkson (2008), which has 83 total score of disclosure items for social performance, 95 total score for environmental performance and 19 total score for economic performance. This rating system is developed based on GRI 2002 guidelines which categorized the score based on two categories: hard disclosures and soft disclosures. The CSR score in this study was obtained by content analysis of annual reports of the sample firms.

Table 1: Independent Variables Measurement

<table>
<thead>
<tr>
<th>Variables</th>
<th>Definition/Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Size (FSZ)</td>
<td>Measured using the natural logarithm of total assets at the end of accounting period.</td>
</tr>
<tr>
<td>Leverage (LEV)</td>
<td>Measured using the ratio of debt to equity at the end of accounting period.</td>
</tr>
<tr>
<td>Financial Performance (ROA)</td>
<td>Is measured by the ratio of profit before tax to total assets at the end of accounting period.</td>
</tr>
<tr>
<td>Firm Growth (GRW)</td>
<td>Measured by the ratio of changes in sales revenue to total assets at the end of accounting period.</td>
</tr>
</tbody>
</table>

In order to estimate the effects of firm specific characteristics on sustainability reporting of listed industrial goods firms in Nigeria, the econometric model is mathematically expressed as follows;

\[ SRI_{it} = \gamma_0 + \gamma_1 FSZ_{it} + \gamma_2 ROA_{it} + \gamma_3 LEV_{it} + \gamma_4 GRW_{it} + \mu_{it} \]

Where SRI_{it} is the sustainability reporting index of firm i in year t; FSZ_{it} is size of firm i in year t; ROA_{it} is financial performance of firm i in year t; LEV_{it} is the leverage of firm i in year t; GRW_{it} is the growth of firm i in year t; And \( \gamma_0 \) is the intercept, while \( \gamma_1, \gamma_2, \gamma_3, \text{and } \gamma_4 \), are the coefficients/estimators and \( \mu_{it} \) is the residuals.

Results and Discussion

Descriptive Statistics

The descriptive statistics is presented in Table 2 showing the minimum, maximum, mean, and standard deviation of the variables used in the study.
Table 2: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Min.</th>
<th>Max.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRI</td>
<td>0.0340</td>
<td>0.0481</td>
<td>0.0013</td>
<td>0.3714</td>
<td>99</td>
</tr>
<tr>
<td>FSZ</td>
<td>7.0894</td>
<td>1.4344</td>
<td>3.3618</td>
<td>10.086</td>
<td>99</td>
</tr>
<tr>
<td>ROA</td>
<td>13.631</td>
<td>8.2821</td>
<td>0.7200</td>
<td>28.400</td>
<td>99</td>
</tr>
<tr>
<td>LEV</td>
<td>24.302</td>
<td>8.9733</td>
<td>8.0400</td>
<td>39.120</td>
<td>99</td>
</tr>
<tr>
<td>GRW</td>
<td>20.903</td>
<td>0.9159</td>
<td>19.111</td>
<td>22.311</td>
<td>99</td>
</tr>
</tbody>
</table>

Source: Descriptive Statistic Results Using STATA 13 (Appendix)

Table 2 shows that the average Sustainability Reporting Index (SRI) of the listed industrial firms is 0.0340, with the minimum and maximum values of 0.0013 and 0.3714 respectively. The mean value implies that the firms’ average sustainability disclosure during the period covered by the study is 3.4%. The standard deviation of 0.0481 indicated that the data is widely dispersed from both sides of the mean value by 4.81%. The results from Table 2 also shows that the average firm size (FSZ) of the listed industrial goods firms is 7.089, with the minimum and maximum values of 3.3618 and 10.086 respectively. The mean value implies that the industrial firms’ average asset size during the period covered by the study is the natural log 7.089. The standard deviation of 1.4344 indicated that the data is dispersed from both sides of the mean value by 1.4344.

The descriptive results in Table 2 shows that the average financial performance as measured by the return on assets (ROA) of the listed industrial firms is 13.63%, with the minimum and maximum values of 0.72% and 28.4% respectively. The standard deviation indicated that the data is dispersed from both sides of the mean value by 8.282. The results from the table also shows that the average firm leverage (LEV) of the listed industrial firms is 24.3019, with the minimum and maximum of 8.04 and 39.12 respectively. The standard deviation indicated that the data is dispersed from both sides of the mean value by 8.9733.

Lastly, the table shows that the average firm growth (GRW) of the listed industrial firms is 20.90%, with the minimum and maximum of 19.11% and 22.31% respectively. The standard deviation indicated that the data is dispersed from both sides of the mean value by 0.9159. Although the analysis of the descriptive statistics suggested that the data collected for the variables of the study did not meet the normality assumption, as indicated by the standard deviations. A more specific test for normal data (Shapiro Wilk) test are applied to determine the normality of the data in the following sub-section, from the result in Table 3.

Table 3: Normality Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>W</th>
<th>V</th>
<th>Z</th>
<th>Prob&gt;Z</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRI</td>
<td>0.5143</td>
<td>39.765</td>
<td>8.166</td>
<td>0.0000</td>
<td>99</td>
</tr>
<tr>
<td>FSZ</td>
<td>0.9891</td>
<td>0.891</td>
<td>-0.255</td>
<td>0.6006</td>
<td>99</td>
</tr>
<tr>
<td>ROA</td>
<td>0.8945</td>
<td>8.635</td>
<td>4.780</td>
<td>0.0000</td>
<td>99</td>
</tr>
<tr>
<td>LEV</td>
<td>0.9759</td>
<td>1.974</td>
<td>1.507</td>
<td>0.0659</td>
<td>99</td>
</tr>
<tr>
<td>GRW</td>
<td>0.9336</td>
<td>5.435</td>
<td>3.753</td>
<td>0.0001</td>
<td>99</td>
</tr>
</tbody>
</table>

Source: Results Using STATA 13 (Appendix)

Null hypothesis principle is used in the Shapiro-Wilk (W) test for normal data, under the principle; null hypothesis that ‘the data is normally distributed’ is tested. Table 3 indicates that data from all the
variables of the study are not normally distributed except FSZ and LEV, because the P-values are significant at 1% level of significance (p-values of 0.0000). Therefore, the null hypothesis (that, the data is normally distributed) is rejected for SRI, ROA and GRW. This may lead to some bias results in OLS regression and, hence the need for a more generalized regression models.

**Correlation Analysis**

Table 4 shows the Pearson Correlation coefficients between the dependent and the independent variables. It also shows the relationship amongst the independent variables. The asterisk beside the correlation coefficient shows the level of significance of the coefficients.

**Table 4: Correlation Matrix**

<table>
<thead>
<tr>
<th>Variables</th>
<th>SRI</th>
<th>FSZ</th>
<th>ROA</th>
<th>LEV</th>
<th>GRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRI</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSZ</td>
<td>-0.4249*</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.1956**</td>
<td>-0.8510*</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEV</td>
<td>0.3770*</td>
<td>0.2994*</td>
<td>-0.3327*</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>GRW</td>
<td>0.3456*</td>
<td>0.0799</td>
<td>-0.0811</td>
<td>0.3263*</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Correlation is Significant at 1% Level **Correlation is Significant at 5% Level

Source: Correlation Matrix Results Using STATA 13 (Appendix)

Table 4 shows that Sustainability Reporting (SRI) is negatively correlated with firm size (FSZ) of the listed industrial goods firms in Nigeria, from the correlation coefficient of -0.4249, which is statistically significant at 1% level of significance. This implies that firm size has an inverse relation with the sustainability reporting practices during the period under review. The results from Table 4 shows that Sustainability Reporting (SRI) has a significant positive correlation with firm financial performance (ROA) of the listed industrial goods firms in Nigeria, from the correlation coefficient of 0.1956, which is statistically significant at 10% level of significance. This implies that financial performance has a direct relation with the sustainability reporting practices during the period under review.

Table 4 also indicates that Sustainability Reporting (SRI) is positively correlated with firm leverage (LEV) of the listed industrial goods firms in Nigeria, from the correlation coefficient of 0.3779, which is statistically significant at 1% level of significance. This implies that firm leverage has a direct relation with the sustainability reporting practices during the period under review. The table also shows that Sustainability Reporting (SRI) has a significant positive relationship with firm growth (GRW) of the listed industrial goods firms in Nigeria, from the correlation coefficient of 0.3456, which is statistically significant at 1% level of significance. This implies that firm growth has a direct relation with the sustainability reporting practices during the period under review.
Regression Results and Hypotheses Testing
The analysis of the regression result and the test of the research hypotheses are conducted from the results in table 5;

Table 5: Summary of Robust Random-Effects (GLS) Regression

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coef.</th>
<th>t-stat</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSZ</td>
<td>-0.1377</td>
<td>-12.19</td>
<td>0.000</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.0371</td>
<td>-6.59</td>
<td>0.000</td>
</tr>
<tr>
<td>LEV</td>
<td>0.0607</td>
<td>6.60</td>
<td>0.000</td>
</tr>
<tr>
<td>GRW</td>
<td>0.3344</td>
<td>1.79</td>
<td>0.074</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>-3.6316</td>
<td>-0.99</td>
<td>0.321</td>
</tr>
<tr>
<td>R Square</td>
<td>0.5698</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-Statistic</td>
<td>261.76</td>
<td></td>
<td>0.0000</td>
</tr>
<tr>
<td>Hausman Test</td>
<td>7.77</td>
<td></td>
<td>0.1003</td>
</tr>
<tr>
<td>Hettest: Chi2</td>
<td>4.12</td>
<td></td>
<td>0.0424</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>2.43</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Results Using STATA 13 (Appendix)

Table 5 indicated the absence of the perfect multicolinearity among the explanatory variables as shown by the mean Variance Inflation Factor (VIF) of 2.43. The decision criterion for the VIF is that a value of 10 and above implies the presence of perfect multicollinearity. Table 5 also shows the presence of Heteroskedasticity in the model as indicated by the Breuch Pagan/Cook-Weisberg test for heteroskedasticity Chi-square of 4.12 with p-value of 0.0424. This makes the interpretation of Ordinary Least Square (OLS) not suitable because of the violation of the classical assumptions of OLS. However, steps were taken to correct it by estimating a robust standard error and conducting a normality test of the error term. The results from Table 5 shows that the Hausman specification test for choice between the Fixed-Effect Regression Model and Random-Effect Regression Model, confirm that the Random-Effect Regression Model is the most suitable for the study, from the Hausman Chi-square value of 7.77 with p-value of 0.1003.

The cumulative R-square of 0.5698, which is the coefficient of multiple determination, indicated that the independent variables jointly explained 56.98% of the total variation in the dependent variable (Sustainability Reporting). Hence, it signified that 56.98% of the total variation in Sustainability Reporting of listed industrial goods firms in Nigeria is accounted for by the firm size, firm leverage, firm growth and firm financial performance. The F-Statistic (Wald Chi-Square) value of 261.76, which is statistically significant at 1% level of significance (p-value 0.0000), indicates that the model is fit at 99% confidence level. Based on the overall fitness of the model, the analysis of the regression estimators as well as the hypotheses testing could be conducted.

Table 5 shows that firm size (FSZ) has a significant statistical negative effect on sustainability reporting of listed industrial goods firms in Nigeria, from the regression coefficient of -0.1377 and t-value of -12.19. This is significant at a 1% level of significance (p-value 0.000), and implies that for every increase in the firm size, there is a significant decrease in the sustainability reporting of listed industrial goods firms during the period under review. Based on this evidence, the study reject the null hypothesis one (H01) which states that firm size has no significant effect on sustainability.
reporting of listed industrial goods firms in Nigeria. This contradict the findings of Ziegler and Schröder (2010) and Chih et al. (2010) who found a positive effect of firm size on sustainability.

The result from Table 5 shows that firm financial performance (ROA) has a significant statistical negative effect on sustainability reporting of listed industrial goods firms in Nigeria, from the regression coefficient of -0.0371 and t-value of -6.59. This is significant at a 1% level of significance (p-value 0.000), and implies that for every increase in the firm financial performance, there is a significant decrease in the sustainability reporting of listed industrial goods firms during the period under review. Based on this evidence, the study reject the null hypothesis two (H02) which states that firm financial performance has no significant effect on sustainability reporting of listed industrial goods firms in Nigeria. This contradict the findings of Ziegler and Schröder (2010) who found a positive effect of firm financial performance on sustainability.

Table 5 shows that firm leverage (LEV) has a significant statistical positive effect on sustainability reporting of listed industrial goods firms in Nigeria, from the regression coefficient of 0.0607 and t-value of 6.60. This is significant at a 1% level of significance (p-value 0.000), and implies that for every increase in the firm leverage, there is a significant increase in the sustainability reporting of listed industrial goods firms during the period under review. Based on this evidence, the study reject the null hypothesis three (H03) which states that firm leverage has no significant effect on sustainability reporting of listed industrial goods firms in Nigeria. This contradict the findings of Ziegler and Schröder (2010) who found a negative effect of firm leverage on sustainability reporting.

Lastly, the table indicates that firm growth (GRW) has a significant statistical positive effect on sustainability reporting of listed industrial goods firms in Nigeria, from the regression coefficient of 0.3344 and t-value of 1.79. This is significant at a 10% level of significance (p-value 0.000), and implies that for every increase in the firm growth, there is a significant increase in the sustainability reporting of listed industrial goods firms during the period under review. Based on this evidence, the study reject the null hypothesis four (H04) which states that firm growth has no significant effect on sustainability reporting of listed industrial goods firms in Nigeria.

**Conclusion and Recommendation**

The study examined the relationship between firm specific attributes and sustainability performance disclosure among listed industrial goods firms in Nigeria. Using Global Reporting Initiatives (GRI3) performance indicator, the study concludes that there is a significant relationship between firm specific characteristics and sustainability reporting practices of the sampled firms. Specifically, the study concludes that firm size and firm financial performance have a significant negative effects on sustainability reporting of listed industrial goods firms in Nigeria. The study on the other hand concludes that firm leverage and growth have a significant positive effects on sustainability reporting of the listed industrial goods firms in Nigeria. The study recommends that board of directors as well as the management of listed industrial goods firms in Nigeria should ensure adequate profitability and strong financial position and health, so as to improve on the sustainable development practices. The study also recommend that regulators and policy makers should encourage firms on compliance with sustainable business practices in Nigeria.
References

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