

Effect of Sustainability Reporting on Economic Value Added of Manufacturing Firms Listed on Nigeria Stock Exchange

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Authors' contributions

This work was carried out in collaboration between both authors. Author NNB designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author OEI managed the analyses of the study and the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

This study assessed the Effect of Sustainability Reporting on Economic Value Added of Manufacturing Firms Listed on Nigeria Stock Exchange. Twenty one (21) listed manufacturing firms constituted the sample size of this study between 2008 and 2019. *Ex-Post facto* research design and content analysis were adopted while secondary data were extracted from the annual reports and accounts of the sampled firms and were analysed using E-Views 10 statistical software. The study employed descriptive statistics and inferential statistics using Pearson correlation, Panel Least Square (PLS) regression analysis, granger causality test and Hausman test. Findings from the empirical analysis showed that Economic Sustainability Reporting, Social Sustainability Reporting, Environmental Sustainability Reporting and Sustainability Governance Reporting exerted a significant positive effect on Economic Value Added, of listed manufacturing firms in Nigeria at 5% level of significance respectively. It was recommended inter alia that corporate entities in Nigeria should invest in sustainability activities in all its ramifications in order to boost the image/reputation of the firms thereby increasing their returns.

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1. BACKGROUND OF THE STUDY

A report that gives information about economic, environmental, social and governance performance is known as sustainability report. A sustainability report is a report published by a company or organization about the economic, environmental and social impacts caused by its everyday activities. A sustainability report also presents the organization's values and governance model, and demonstrates the link between its strategy and its commitment to a sustainable global economy [1]. Going by the current trend, firms should notify the stakeholders of the various favourable and damaging effects of their activities on the overall society and environment in where they operate. [2] developed the term 'triple bottom line' to emphasize on three aspects -people (social), profits (economic) and planet (environmental). It is widely believed and suggested by researchers (such as, [3,4,5] that in today's dynamic and complex business environment, the corporate sustainability is likely to influence corporate profitability and overall performance. Moreover, firms should make proper disclosure of these impacts in an appropriate sustainability report, which provides a detailed description of their governance structure, stakeholder engagement approach and triple bottom line performance. Economic Value Added (EVA) is an estimate of a firm's economic profit, or the value created in excess of the required return of the company's shareholders [5].

Many benefits accrue to firms for embedding sustainability into their core strategies. The benefits include promoting investor confidence, trust and employee allegiance to the firm. When the market analysts reflect on a company's sustainability disclosures, they are eager to gauge the value and effectiveness of management and their reporting pattern. This, if done well, may offer firms an enhanced access to capital among other benefits. Corporate sustainability reporting gives relevant information for understanding a company's contribution towards a sustainable global economy, taking cognizance of the company's economic, environmental, social and governance performance and impacts.

1.1 Statement of the Problem

Sustainability reporting includes a wide range of information about a company's economic, social, environmental and governance performance and impacts. Sustainability reporting with its impact on financial performance is one of the topical issues for research in this contemporary time. The challenge is to think about how to use the reporting information gathered more flexibly, in order to meet the specific interests of different stakeholder groups in other to create value. In practice, however, and in the absence of a universally accepted approach to categorizing all the components of the sustainability accounting, reporting organizations do not necessarily follow a particular reporting standard in relation to sustainability reporting. They see confusion that results in the receipts of multiple requests for information about the same subject matter from multiple sources. This leads to duplication of efforts. Another challenge is that sustainability reports are frequently a "onesize-fits-all" solution, i.e., they strive to address each of the target groups a company may have. The challenge is to think about how to use the reporting information gathered more flexibly, in order to meet the specific interests of different stakeholder groups in other to create value. In practice, however, and in the absence of a universally accepted approach to categorizing all the components of the sustainability accounting, reporting organizations do not necessarily follow a particular reporting standard in relation to sustainability reporting. Research studies have been carried out over time to explore this relationship. However, they came up with inconclusive, inconsistent, and contradictory results. It ranges from positive [6] to negative [7] and even to non-significant relationship [8]. In the light of the foregoing, it is crystal clear that there exists a gap in knowledge, which this study tends to close. In an attempt to closing the gap in knowledge, this study concentrated on contemporary performance measure; Economic Value Added, as the major focus of prior studies is on traditional measures such as return on assets, earnings per share, return on equity, return on capital employed.

1.2 Objectives of Study

The main objective of this study was to ascertain the effect of Sustainability Reporting on

Economic Value Added of listed manufacturing firms in Nigeria.

The specific objectives were to:

- i. Determine the effect of Economic Sustainability Reporting on Economic Value Added of listed Manufacturing firms in Nigeria.
- ii. Ascertain the effect of Social Sustainability Reporting on Economic Value Added of listed Manufacturing firms in Nigeria.
- iii. Assess the effect of Environmental Sustainability Reporting on Economic Value Added of listed Manufacturing firms in Nigeria.
- iv. Establish the effect of Sustainability Governance Reporting on Economic Value Added of listed Manufacturing firms in Nigeria.

1.3 Research Hypotheses

The following hypotheses, in their null form, were formulated to guide this study:

- Ho₁:** Economic Sustainability Reporting has no significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.
- Ho₂:** Social Sustainability Reporting has no significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.
- Ho₃:** Environmental Sustainability Reporting has no significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.
- Ho₄:** Sustainability Governance Reporting has no significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.

2. CONCEPTUAL REVIEW

2.1 Sustainability Reporting

A sustainability report is an organizational report that gives information about economic, environmental, social and governance performance [9]. Sustainability reporting is not just report generation from collected data; instead it is a method to internalize and improve an organization's commitment to sustainable

development in a way that can be demonstrated to both internal and external stakeholders [10]. A sustainability report is a report published by a company or organization about the economic, environmental and social impacts caused by its everyday activities. The report also presents the organization's values and governance model, and demonstrates the link between its strategy and its commitment to a sustainable global economy [1]. Sustainability reporting can be considered as synonymous with other terms for non-financial reporting; triple bottom line reporting, corporate social responsibility (CSR) reporting, and more. It is also an intrinsic element of integrated reporting; a more recent development that combines the analysis of financial and non-financial performance [11].

Corporate sustainability reporting represents a potential mechanism to generate data and measure progress and the contribution of companies towards global sustainable development objectives as it can help companies and organizations measure their performance in all dimensions of sustainable development, set goals, and support the transition towards a low carbon, resource efficient, and inclusive green economy [12]. A sustainability report in its basic form is a report about an organization's environmental and social performance [13].

2.2 Economic Sustainability Reporting

Economic sustainability reporting refers to the practices that support long-term economic growth without negatively impacting social, environmental, and cultural aspects of the community [14]. Economic sustainability is an integrated part of sustainability which means that resources (human and material) must be used, safeguarded and sustained to create long-term sustainable values by optimal use, recovery and recycling. In other words, finite natural resources must be conserved today so that future generations too can cater to their needs [15].

2.3 Social Sustainability Reporting

Social sustainability reporting is to report on those activities of the enterprise affecting society which can be determined, described or measured and which are important to the role of the enterprise in its social environment [16]. Social sustainability occurs when the formal and informal processes; systems; structures; and relationships actively support the capacity of current and future generations to create healthy and liveable communities. Socially sustainable

communities are equitable, diverse, connected and democratic and provide a good quality of life [17]. Social sustainability reporting is about identifying and managing business impacts, both positive and negative, on people. The quality of a company's relationships and engagement with its stakeholders is critical [18].

2.4 Environmental Sustainability Reporting

Environmental reporting is the process by which management reports to the public about environmental impacts of business activities and environmental initiatives undertaken to mitigate them by disclosing the environmental information related to those activities [19]. Environmental reporting should provide relevant information systematically and comprehensively and in accordance with the general principles for environmental reporting specified in the guidelines [20]. Enterprises, playing a key socio-economic role, use the environment of public goods and thus generate significant environmental impacts. Therefore, enterprises should fulfill their accountability by reporting information concerning their usage of the environment, the environmental impacts generated, the environmental initiatives being taken to mitigate them, and the performance of those initiatives [21].

2.5 Sustainability Governance Reporting

The sustainability governance model is the system by which companies are directed and controlled, in which sustainability issues are integrated in a way that ensures value creation for the company and beneficial results for all stakeholders in the long term [22]. Companies integrate sustainability priorities such as climate change into board mandates, director expertise and executive compensation, and how these board systems affected their performance on sustainability issues [23]. Sustainability governance helps a company implement sustainability strategy across the business, manage goal-setting and reporting processes, strengthen relations with external stakeholders, and ensure overall accountability [24]. Corporate scandals have given rise to numerous activism movements questioning the corporate role in society. This is where corporate governance comes into play. Corporate governance is about leadership. It is about decision-making with accountability, transparency, responsibility and equitable treatment [25,26]. The modern company must make more than creating value

for its shareholders. It needs to build win-win partnerships and to share value with stakeholders [27]. Sustainability can be perceived by a company's board as a business opportunity or as a costly inconvenience [28]. The way a company perceives sustainability, and how it decides to incorporate it in its business strategy and in its relationships with stakeholders will eventually determine whether sustainability can become a competitive advantage, reducing costs and risks, and increasing revenues and intangibles, such as reputation and customer loyalty. For sustainability to become a competitive advantage, it needs to be present in the boardroom, discussed as strategy and transformed into concrete actions to be implemented and followed up by management. This requires thoughtful leadership, rather than instinctive management [29].

2.6 Economic Value Added

Economic Value Added (EVA) or Economic Profit is a measure based on the Residual Income technique that serves as an indicator of the profitability of projects undertaken. Its underlying premise consists of the idea that real profitability occurs when additional wealth is created for shareholders and that projects should create returns above their cost of capital [30]. The calculation shows how and where a company created wealth, through the inclusion of statement of financial position items. This forces managers to be aware of assets and expenses when making managerial decisions [31]. Essentially, it is used to measure the value a company generates from funds invested into it.

$$\text{EVA} = \text{Net Operating Profit After Tax} - (\text{Capital Invested} \times \text{WACC}).$$

2.7 Economic Sustainability Reporting and Economic Value Added

Environmental crisis such as global warming, poor health care services, poverty, water deficit, food insecurity, population explosion, technological advancement, loss of biodiversity, air pollution, extreme weather conditions, noise and disrespect for the protection of immediate and future environment results in decline in the quality and quantity of environmental resources, which consequently translates to social and economic instability [32,33]. Survival and continuity are important objectives every organization strives to accomplish. The accomplishment of these two key objectives centers on how well organizations adapt to their

host environment. The adaption of organizations to their environment exemplifies a symbiotic relationship between both parties, in which the benefits flows from and to each other. It is expected of organizations to intervene in any crises prevailing in their host communities. A large number of research studies have been conducted in the context of sustainability reporting and its impact on financial performance and divergent views were upheld. For example, [34,35] reported a negative relationship between economic reporting and financial performance. On the other hand, [18,36] found a positive relationship between economic reporting and financial performance, while, [37], documented a negative relationship between economic reporting and financial performance.

2.8 Social Sustainability Reporting and Economic Value Added

The globalization and the various scandals and crises in the business world have led to new forms of regulation such as charters and codes of ethics and prompted investors to look for criteria other than those related to simple returns, profitability and financial risks. Furthermore, many governmental initiatives concerning climate, water, pollution, sustainable development, micro credit, consumers' attitudes about ecological consumption and the debate on stakeholders' interests have led investors to rethink their strategies to be more moral and they become more and more interested in ethical, social and sustainable development [38,39]. [40] suggest that CSR reporting should quantify the overall social and environmental effects of the company's activities. [41], mention that the failures of large companies listed on the most important Stock Exchanges led to extra pressure on standard setters to enhance the quality of corporate reporting. At the company level, managers seek to understand whether (and how) Corporate Social Responsibility (CSR) can be operationalized not only to meet social responsibility goals, but also to act for the interests of shareholders [42]. Researchers try to tackle the problems of defining and evaluating the multidimensional construct of CSR, so that they can explain the relation between this ambiguous concept and the firm's financial performance [43,44]. For instance, [45,46] reported positive relations between CSR and financial performance. Negative relations were perceived by [47,48]. Other results presented by [49] for example showed neutral correlation between CSR and financial performance.

2.9 Environmental Sustainability Reporting and Economic Value Added

Air pollution, waste disposal, natural resource depletion, deforestation, water pollution and CO2 emissions are some of the major environmental issues faced in both developed and developing economies. In reaction to the calls and concerns, companies have attempted to improve the information available for stakeholder decisions through supplementing their traditional financial reporting with the reporting of non-financial information [50]. The reporting model that addresses the criticisms of the conventional financial reporting is the one that reflect both positive and negative aspects of the organization's performance to enable a reasoned assessment of overall performance. The intention is to pursue sustainable engagement and to increase the ecological awareness of companies and society. Previous studies on environmental reporting and financial performance are contradictory. Some authors argue that environmental disclosure is just a green-washing strategy, a new perspective of legitimacy theory, to pose as good corporate citizens even when they are not [51,52]. Others found a positive correlation between the level of environmental reporting and actual impact [53,54].

2.10 Sustainability Governance Reporting and Economic Value Added

Every time society faces a new problem or threat, then a new legislative process of some sort is introduced which tries to protect that society from a future reoccurrence [55]. Corporate governance can be considered as an environment of trust, ethics, moral values and confidence as a synergic effort of all the constituents of society, which are the stakeholders; including government, the general public, professional/service providers and the corporate sector. One of the consequences of a concern with the actions of an organisation, and the consequences of those actions, has been an increasing concern with corporate governance [56]. When the resources are too limited to meet the minimum expectations of the people, it is a good governance level that can help to promote the welfare of society. A concern with governance is at least as prevalent in the corporate world [57]. Good governance levels can, for example, improve public faith and confidence in the political environment. When the

resources are too limited to meet the minimum expectations of the people, it is a good governance level that can help to promote the welfare of society. A concern with governance is at least as prevalent in the corporate world [57]. There has been wide range of problems with corporate behaviour, which has arguably led to prominence being given to sustainability responsibility [58]. Part of this effect is to recognise the concerns of all stakeholders to an organisation, and this has been researched by many people (for example, [59,60,61,62,63,64, 65] with inconclusive findings.

3. THEORETICAL FRAMEWORK

3.1 Stakeholder Theory

The stakeholder theory was developed in 1984 by R. Edward Freeman. A stakeholder is any group or individual who can affect or is affected by the achievement of the organization's objectives [66]. The general idea of the Stakeholder concept is a redefinition of the organization. The concept is about what the organization should be and how it should be conceptualized. [67] state that the organization itself should be thought of as grouping of stakeholders and the purpose of the organization should be to manage their interests, needs and viewpoints. The theory argues that a firm should create value for all stakeholders, not just shareholders [68]. Stakeholder theory suggests that the purpose of a business is to create as much value as possible for stakeholders. In order to succeed and be sustainable over time, executives must keep the interests of customers, suppliers, employees, communities and shareholders aligned and going in the same direction.

3.2 Empirical Review

[69] investigated the impact of corporate social responsibility (CSR) engagement on firm financial performance in a developing country, Turkey, and to analyze the moderating role of ownership concentration in the CSR financial performance relationship. The sample consisted of non-financial public firms listed on the Borsa Istanbul (BIST)-100 index and covers the period between 2014 and 2018. Empirical results using an instrumental variable approach showed that corporate social responsibility has a positive relationship with financial performance. Furthermore, findings indicate that this relationship is negatively moderated by

ownership concentration even when endogeneity is controlled for.

[70] examined the impact of sustainable environmental management on performance. The study took the consumers of Thai Town Cuisine, Taiwan, with a total of 288 valid questionnaire items for a response rate of 80%. The results of statistical analysis and various hypotheses showed that: (1) environmental management has a significant positive correlation with brand attitude; (2) brand attitude has a significant positive correlation with customer loyalty; and (3) environmental management has a significant positive correlation with customer loyalty.

[54] investigated how overall sustainability disclosures and its disaggregate dimensions of environment, social and governance affect market value of firms in Nigeria as an emerging economy using company's' specific disclosures. Tobins Q was used to proxy firm market value. The study selected 93 out of 120 non-financial firms listed on the Nigerian Stock Exchange as at 2015. *Ex Post Facto research design* was adopted and the secondary data were collected from annual reports of sampled firms from 2006 to 2015 through content analysis. The data were analysed with descriptive statistics, correlation analysis, principal component analysis while pooled ordinary least squares regression was employed to test formulated hypotheses. The analysis showed that overall sustainability disclosures have significant positive effects on firm value. When treated individually, environmental sustainability disclosures and corporate governance disclosures have a significant positive effect on market value of firm. The study also revealed that social sustainability disclosures have negative and insignificant effect on market value of firm. Based on these findings, the study recommended among other that companies should foster greater sustainability and long-term value creation by integrating sustainability metrics into their reporting model and strategy. Firms in Nigeria should adopt and disclose environmental friendly policies since it portrays their commitment towards achieving the goal of sustainable development.

4. METHODOLOGY

4.1 Research Design

This study employed *ex-post facto* design. A content analysis was performed on the sample

sustainability reports to study how organizational boundaries are set for the whole report and how operational boundaries are set for specific economic, social and environmental indicators.

4.2 Population of the Study

The population of the study consist of all the fifty-nine (59) listed manufacturing companies in Nigeria as at 31st December, 2019 (refer to appendix I).

4.3 Sample Size and Sampling Technique

The sample size of this study comprised twenty one (21) listed manufacturing companies that

have consistently submitted their annual reports to the Nigeria Stock Exchange (NSE) from 2008 to 2019; have embraced Sustainability Reporting in line with global best practices and have integrating sustainability information in their annual reports. Purposive sampling technique was adopted to select the companies with up to date and complete annual reports and accounts for the studied period (2008-2019).

4.4 Source of Data

This study basically utilised secondary data that were extracted from the annual reports and statements of account of the selected listed manufacturing companies.

4.5 Model Specification

To test H₁, H₂, H₃ and H₄, this study estimated the following regression equations:

$$EVA_{it} = \beta_0 + \beta_1 ECOSR_{it} + \beta_2 LEV_{it} + \beta_3 FSZ_{it} + \mu_{it} \quad - \quad - \quad - \quad \text{Model 1}$$

$$EVA_{it} = \beta_0 + \beta_1 SOCSR_{it} + \beta_2 LEV_{it} + \beta_3 FSZ_{it} + \mu_{it} \quad - \quad - \quad - \quad \text{Model 2}$$

$$EVA_{it} = \beta_0 + \beta_1 ENVSR_{it} + \beta_2 LEV_{it} + \beta_3 FSZ_{it} + \mu_{it} \quad - \quad - \quad - \quad \text{Model 3}$$

$$EVA_{it} = \beta_0 + \beta_1 SUGR_{it} + \beta_2 LEV_{it} + \beta_3 FSZ_{it} + \mu_{it} \quad - \quad - \quad - \quad \text{Model 4}$$

Where:

ϵ is the error term capturing other explanatory variables not explicitly included in the model.

β_0 is the intercept of the regression.

β_1, β_2 and β_3 are the coefficients of the regression

EVA_{it} = Economic Value Added of firm i in period t

$ECOSR_{it}$ = Economic Sustainability Reporting of firm i in period t

$SOCSR_{it}$ = Social Sustainability Reporting of firm i in period t

$ENVSR_{it}$ = Environmental Sustainability Reporting of firm i in period t

$SUGR_{it}$ = Sustainability Governance Reporting of firm i in period t

LEV_{it} = Leverage of firm i in period t

FSZ_{it} = Firm Size of firm i in period t

i = individual firms

t = time periods

4.6 Operational Definition of Key Model of Variables

Independent variable:

The independent variable of this study is Sustainability Reporting, which was proxied as:

- i. Economic Sustainability Reporting (ECOSR)

$$\frac{\text{Total Economic Disclosure Score}}{\text{Maximum Economic Disclosure Score Possible for a Firm}}$$

ii. Social Sustainability Reporting (SOCSR)

$$\frac{\text{Total Social Disclosure Score}}{\text{Maximum Social Disclosure Score Possible for a Firm}}$$

iii. Environmental Sustainability Reporting (ENVSr)

$$\frac{\text{Total Environmental Disclosure Score}}{\text{Maximum Environmental Disclosure Score Possible for a Firm}}$$

iv. Sustainability Governance Reporting (SUGR):

$$\frac{\text{Total Governance Disclosure Score}}{\text{Maximum Governance Disclosure Scores Possible for a Firm}}$$

Dependent variable:

Economic Value Added served as the dependent variable of this study.

$$EVA = NOPAT - (WACC * \text{capital invested})$$

Where NOPAT = Net Operating Profits After Tax

WACC = Weighted Average Cost of Capital

Capital invested = Equity + long-term debt at the beginning of the period and (WACC* capital invested) is also known as finance charge

Control Variables:

- i. Leverage: $\frac{\text{Total Debt}}{\text{Total Assets}}$
- ii. Firm Size: Natural logarithm of Total Assets

5. METHOD OF DATA ANALYSIS

This study adopted the Global Reporting Initiative (GRI) framework disclosures according to the G4 guidelines for the purpose of developing the Economic, Social, Environmental and Governance disclosure indices. Economic Reporting was evaluated by 4 indicators: Economic Performance; Market Presence; Indirect Economic Impacts and Procurement Practices. Environmental Reporting was evaluated by 12 indicators: Materials; Energy; Water; Biodiversity; Emissions; Effluents and Waste; Products and Services; Compliance; Transport; Overall; Supplier Environmental Assessment; Environmental Grievance Mechanisms. Social Reporting was evaluated by 30 indicators: Employment; Labor/Management Relations; Occupational Health and Safety; Training and Education; Diversity and Equal Opportunity; Equal Remuneration for Women and Men; Supplier Assessment for Labor Practices; Labor Practices Grievance Mechanisms; Investment; Non-discrimination;

Freedom of Association and Collective Bargaining; Child Labor; Forced or Compulsory Labor; Security Practices; Indigenous Rights; Assessment; Supplier Human Rights Assessment; Human Rights Grievance Mechanisms; Local Communities; Anti-corruption; Public Policy; Anti-competitive Behavior; Compliance; Supplier Assessment for Impacts on Society; Grievance Mechanisms for Impacts on Society; Customer Health and Safety; Product and Service Labeling; Marketing Communications; Customer Privacy; Compliance. Governance Reporting was evaluated by 8 indicators: Governance Structure and Composition; Highest Governance Body's Role in Setting Purpose, Values, and Strategy; Highest Governance Body's Competencies and Performance Evaluation; Highest Governance Body's Role in Risk Management; Highest Governance Body's Role in Sustainability Reporting; Highest Governance Body's Role in Evaluating Economic, Environmental and Social Performance; Remuneration and Incentives; Ethics and Integrity.

All the above indicators were rated on a scale from 0 to 3 points. When a company does not take into account the specific indicator at all, it is rated with 0 (i.e. non-reporting). A company is ranked 1 or 2 depending on the broadness of the description (e.g. 1 if the company only names the indicator and 2 if there is a very poor or unclear description (partial reporting). The company is rated 3 if it takes the indicator into consideration with a satisfying description (full disclosure). So, a total score for sustainability reporting could reach the maximum score of 138 (i.e. $4+12+30+8 = 54 \times 3 = 162$).

Therefore,

$$SRI = TDP/MP$$

Where;

SRI = Sustainability Reporting Index

TDP = Total Disclosure Points of a Firm

MP = Maximum Points for a Firm (162)

6. DATA PRESENTATION AND ANALYSIS

Interpretation: Based on Table 1, it can be observed that on average, as indicated by the mean, the economic value added for manufacturing firms in Nigeria is 3.46. The implication is that manufacturing companies in

Nigeria generates N3.46 returns above their cost of capital. However, throughout the period of 2008 to 2019, the maximum EVA for manufacturing firms is N8.82% while the minimum EVA for manufacturing firms in Nigeria is N0.54. ECOSR has a mean of 0.273 with a standard deviation of 0.037 for Nigeria manufacturing firms, implies that involvement of manufacturing companies in Nigeria towards corporate economic sustainability is about 27.3% with a maximum level of 33% and a minimum of 3%. SOCSR with an average mean of 0.428 and standard deviation of 0.18 infers that the participation of manufacturing companies in Nigeria towards Social Sustainability is averagely 42.8%. The maximum level of manufacturing companies' participation in Social Sustainability is 63% with 0% minimum level. The average mean for the involvement of manufacturing companies towards environmental sustainability in Nigeria is about 24.3% with a maximum of 27% and a minimum of 1%. SUGR has a mean of 0.5000 with a standard deviation of 0.098 for Nigeria manufacturing firms, implies that involvement of manufacturing companies in Nigeria towards corporate governance sustainability is about 50% on the average with a maximum degree of 69% and a minimum of 6%.

Table 1. Descriptive statistics for listed manufacturing companies in Nigeria

	EVA	ECOSR	SOCSR	ENVSR	SUGR	LEV	FSZ
Mean	3.465000	0.273333	0.427500	0.243333	0.500000	3.613333	6.128333
Median	2.735000	0.275000	0.485000	0.245000	0.490000	3.725000	5.890000
Maximum	8.820000	0.330000	0.630000	0.270000	0.690000	5.380000	6.930000
Minimum	0.540000	0.030000	0.000000	0.010000	0.060000	1.460000	5.250000
Std. Dev.	2.615254	0.036515	0.184791	0.020151	0.098442	1.398963	0.529851
Skewness	1.117186	0.235765	-0.6578	-0.19856	0.324269	-0.24852	0.092968
Kurtosis	3.015370	1.732066	2.016714	1.821787	2.336458	1.655656	1.748943
Jarque-Bera	2.496327	0.914999	1.348834	0.772946	0.430445	1.027156	0.799858
Probability	0.287031	0.632864	0.509453	0.679449	0.806362	0.598351	0.670368
Sum	41.58000	0.880000	3.930000	0.520000	2.400000	43.36000	73.54000
Sum Sq. Dev.	75.23510	0.014667	0.375625	0.004467	0.106600	21.52807	3.088167
Observations	12	12	12	12	12	12	12

Source: E-Views 10 Descriptive output, 2020

Table 2. Pearson correlation matrix

	EVA	ECOSR	SOCSR	ENVSR	SUGR	LEV	FSZ
EVA	1.0000	0.2259	0.3308	0.3916	0.3204	0.1855	-0.1891
ECOSR	0.2259	1.0000	-0.0660	0.2924	-0.2453	-0.1325	-0.2924
SOCSR	0.3308	-0.0660	1.0000	-0.0830	-0.2219	-0.2615	-0.2089
ENVSR	0.3916	0.2924	-0.0830	1.0000	0.1421	-0.1059	-0.6389
SUGR	0.3204	-0.2453	-0.2219	0.1421	1.0000	0.0949	0.1567
LEV	0.1855	-0.1325	-0.2615	-0.1059	0.0949	1.0000	0.0145
FSZ	-0.1891	-0.2924	-0.2089	-0.6389	0.1567	0.0145	1.0000

Source: E-Views 10 Correlation Output, 2020

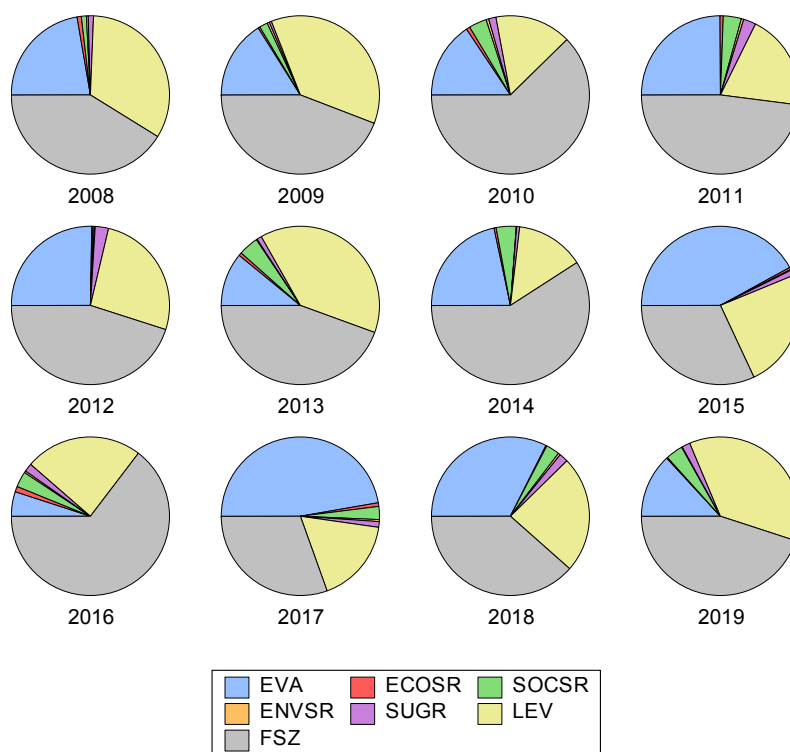


Fig. 1. Graphical representation of descriptive statistics

Source: E-Views 10 Output, 2020

The Pearson Correlation Matrix in Table 2 delineates the existence of a moderate positive relationship between ECOSR, SOCSR, ENVSR, LEV, FSZ and EVA, since the degree of correlation between the dependent and explanatory variables is between 0.10 – 0.70. However, correlation coefficient values of 0.2259, 0.3308, 0.3916 and 0.1855 demonstrated that ECOSR, SOCSR, ENVSR, LEV positively correlate with EVA, while, FSZ with the coefficient factor of -0.1891 negatively correlates with EVA.

Test of Hypotheses:

Test of Hypothesis I:

- H₀₁:** Economic Sustainability Reporting has no significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.
- H₁:** Economic Sustainability Reporting has significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.

Table 3. Panel least square regression analysis testing the effect of economic sustainability reporting on economic value added

Dependent Variable: EVA
 Method: Panel Least Squares
 Date: 05/20/20 Time: 13:05
 Sample: 2008 2019
 Periods included: 12
 Cross-sections included: 21
 Total panel (balanced) observations: 252

Variable	Coefficient	Std. error	t-Statistic	Prob.
C	4.850263	1.216692	3.986434	0.0001
ECOSR	1.087376	1.024000	4.661891	0.0000
LEV	0.042438	0.046983	0.903247	0.3673
FSZ	-0.389249	0.179868	-2.164080	0.0314

R-squared	0.729659	Mean dependent var	2.563047
Adjusted R-squared	0.717921	S.D. dependent var	1.828461
S.E. of regression	1.812003	Akaike info criterion	4.042489
Sum squared resid	814.2721	Schwarz criterion	4.098511
Log likelihood	-505.3536	Hannan-Quinn criter.	4.065031
F-statistic	22.56721	Durbin-Watson stat	1.726693
Prob(F-statistic)	0.000000		

Source: E-Views 10 Regression Output, 2020

Interpretation of Regression Output: Table 3 shows the output of regression on the effect of Economic Sustainability Reporting on Economic Value Added and the result of the model is written as:

$$EVA_{it} = 4.850263 + 1.087376ECOSR_{it} + \mu_{it}$$

The model infers that 1% increase in ECOSR will exert 109% increase on EVA of listed manufacturing firms in Nigeria. It also shows that ECOSR ($\beta_1=1.087376$) and LEV ($\beta_2=0.042438$) have a positive relationship towards EVA, while, FSZ (-0.389249) negatively relates with EVA. The slope coefficient reveals that; $P(x_1=0.0000; x_2=0.3673; x_3=0.0314)$. The model delineate that at 95% confidence level, there is a significant positive relationship between ECOSR and EVA; a non-significant positive relationship between LEV and EVA; a significant negative relationship between FSZ and EVA. The Durbin-Watson Value of 1.726693 buttressed the fact that the model does not contain auto-correlation, thereby, making the regression fit for prediction purpose. The adjusted R-Squared of 0.717921 shows that

71.8% of the systematic variation in EVA could be explained by ECOSR, LEV and FSZ, while the remaining 28.2% is explained by the error term as part of the EVA which is not interpreted by the regression model.

Decision: Following the F-statistics of 22.56721 with an associated P-value of 0.000000 ($p < 0.05$) which is less than 5%. Therefore, hypothesis H_1 is accepted while H_0 is rejected. Hence, economic sustainability reporting has significant positive effect on economic value added of listed manufacturing firms in Nigeria at 5% level of significance.

Test of Hypothesis II:

H_{02} : Social Sustainability Reporting has no significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.

H_2 : Social Sustainability Reporting has significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.

Table 4. Panel least square regression analysis testing the effect of social sustainability reporting on economic value added

Dependent Variable: EVA
Method: Panel Least Squares
Date: 05/20/20 Time: 13:13
Sample: 2008 2019
Periods included: 12
Cross-sections included: 21
Total panel (balanced) observations: 252

Variable	Coefficient	Std. error	t-Statistic	Prob.
C	4.827880	1.240965	3.890424	0.0001
SOCSR	0.077891	0.708263	3.209975	0.0022
LEV	0.032645	0.046420	0.703243	0.4826
FSZ	-0.363613	0.179187	-2.029240	0.0435
R-squared	0.685294	Mean dependent var	2.563047	
Adjusted R-squared	0.643503	S.D. dependent var	1.828461	
S.E. of regression	1.816074	Akaike info criterion	4.046976	
Sum squared resid	817.9346	Schwarz criterion	4.102999	
Log likelihood	-505.9190	Hannan-Quinn criter.	4.069519	
F-statistic	7.245251	Durbin-Watson stat	1.745018	
Prob(F-statistic)	0.000033			

Source: E-Views 10 Regression Output, 2020

Interpretation of Regression Coefficient

Result: The following regression equation was obtained from Table 4:

$$EVA = 4.827880 + 0.077891SOCSR$$

Using the above model, it is possible to determine the relationship between SOCSR and EVA of listed manufacturing firms. Holding all other factors constant, an increase in one unit of the independent variable (SOCSR) results into a corresponding increase in one unit of EVA, this means that a positive relationship exists between SOCSR and EVA. The slope coefficient shows that the probability value; $P(x_1=0.0022 < 0.05)$ is less than the critical P-value of 0.05. This implies that SOCSR has a positive significant relationship with EVA. Results in Table 4 indicate that the adjusted R-squared for the model is 0.643, meaning that the regression model used for this study is a good predictor. The independent variables explained 64.3% of the variation in EVA of listed manufacturing firms. Only 35.7% of variation in EVA of listed manufacturing companies is not explained by the regression model. The Durbin-Watson value of 1.745018 indicates the absence of serial correlation in the model. From the test of coefficients result in Table 4, the probability value

of the F-statistics = 0.000033 implies that the regression model is significant in predicting the relationship between the independent variables (SOCSR, LEV, FSZ) and the dependent variable (EVA). The degree of significance between the variables is less than $\alpha=0.05$, therefore, the result indicates that the overall regression model is statistically significant and is useful for prediction purposes at 5% significance level.

Decision: The P-Value of the test $Prob(F\text{-statistic}) = 0.000033$ is less than the α -value value of 0.05; therefore H_1 is accepted and H_0 is rejected. Thus, social sustainability reporting has a significant positive effect on economic value added of listed manufacturing firms in Nigeria at 5% level of significance.

Test of Hypothesis III:

H₀₃: Environmental Sustainability Reporting has no significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.

H₃: Environmental Sustainability Reporting has significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.

Table 5. Panel least square regression analysis testing the effect of environmental sustainability reporting on economic value added

Dependent Variable: EVA
 Method: Panel Least Squares
 Date: 05/20/20 Time: 13:21
 Sample: 2008 2019
 Periods included: 12
 Cross-sections included: 21
 Total panel (balanced) observations: 252

Variable	Coefficient	Std. error	t-Statistic	Prob.
C	4.475469	1.216046	3.680344	0.0003
ENVSR	2.137071	0.972904	2.196590	0.0290
LEV	0.071600	0.049053	1.459654	0.1457
FSZ	-0.366179	0.176701	-2.072305	0.0393
R-squared	0.743849	Mean dependent var		2.563047
Adjusted R-squared	0.732283	S.D. dependent var		1.828461
S.E. of regression	1.798705	Akaike info criterion		4.027756
Sum squared resid	802.3640	Schwarz criterion		4.083779
Log likelihood	-503.4973	Hannan-Quinn criter.		4.050299
F-statistic	3.791107	Durbin-Watson stat		1.756887
Prob(F-statistic)	0.010980			

Source: E-Views 10 Regression Output, 2020

Interpretation of Regression Result: Table 5 has shown the meaningful role of ENVSR in determining the strength of EVA. The results are satisfactory in terms of standard analytic tests. The value of adjusted R-square showed that 73% of the total variation in dependent variable (EVA) is explained by independent variables (ENVSR, LEV, FSZ) to the determination of EVA while the remaining 27% is caused by other explanatory factors outside this model and this is captured by the error term. There is no problem of auto correlation in the model as shown by the value of Durbin-Watson stats of 1.756887. The overall performance of the model is satisfactory as shown by Prob(F-statistics) = 0.010980. From the empirical evidence, it is clearly obvious that there is a positive significant relationship between the ENVSR and EVA.

$$EVA = 4.475469 + 2.137071ENVSR + \mu$$

This implies that ENVSR has significant effect on EVA and that ENVSR is significant in influencing the value of EVA.

Decision: Since there is strong evidence that EVA is affected by ENVSR at 5% level of significance, this research upholds that ENVSR has a significant positive effect on EVA of manufacturing companies listed on the floor of Nigeria Stock Exchange for the period of 2008 to 2019.

Test of Hypothesis IV:

Ho₄: Sustainability Governance Reporting has no significant effect on Economic Value Added of listed Manufacturing firms in Nigeria.

H₄: Sustainability Governance Reporting has significant effect on Economic Value

Added of listed Manufacturing firms in Nigeria.

Interpretation of Regression Result: From the findings in the Table 6, the value of adjusted R squared was 0.754, an indication that there was variation of 75.4% on EVA due to changes in SUGR, LEV and FSZ. This implies that only 75.4% changes in EVA of listed manufacturing companies could be accounted for by SUGR, LEV and FSZ, while 24.6% was explained by unknown variables that were not included in the model. The probability of the slope coefficients indicate that; $P(x_1=0.0013 < 0.05$; $x_2=0.4663 > 0.05$; $x_3=0.1931 > 0.05$). The coefficient value of; $\beta_1=1.348786$ for SUGR implies that EVA is statistically significant and positively related to SUGR at 5% level of significance. The linear regression model becomes;

$$EVA = 3.664282 + 1.348786SUGR + \mu$$

The coefficient of SUGR implies that if sustainability governance reporting increases by 1%, then EVA would increase by 135%. The Durbin-Watson Statistic of 1.818892 suggests that the model does not contain serial correlation since the value is not more than 2 approximately. The F-statistic of the overall regression result is equal to 5.756729 and the associated F-statistic probability is equal to 0.000804, so the null hypothesis was rejected and the alternative hypothesis was accepted.

Decision: Since the Prob(F-statistic) of 0.000804 is less than the critical value of 5% (0.05), then, it was upheld that sustainability governance reporting has a significant positive effect on EVA of listed manufacturing firms in Nigeria at 5% level of significance, thus, H₁ is preferred over Ho.

Table 6. Panel least square regression analysis testing the effect of sustainability governance reporting on economic value added

Dependent Variable: EVA				
Method: Panel Least Squares				
Date: 05/20/20 Time: 13:31				
Sample: 2008 2019				
Periods included: 12				
Cross-sections included: 21				
Total panel (balanced) observations: 252				
Variable	Coefficient	Std. error	t-Statistic	Prob.
C	3.664282	1.243672	2.946340	0.0035
SUGR	1.348786	1.029884	3.251614	0.0013
LEV	0.033054	0.045298	0.729684	0.4663
FSZ	-0.233711	0.179098	-1.304935	0.1931

R-squared	0.765104	Mean dependent var	2.563047
Adjusted R-squared	0.753795	S.D. dependent var	1.828461
S.E. of regression	1.778600	Akaike info criterion	4.005276
Sum squared resid	784.5277	Schwarz criterion	4.061299
Log likelihood	-500.6648	Hannan-Quinn criter.	4.027818
F-statistic	5.756729	Durbin-Watson stat	1.818892
Prob(F-statistic)	0.000804		

Source: E-Views 10 Regression Output, 2020

7. FINDINGS, CONCLUSION AND RECOMMENDATIONS

7.1 Summary of Findings

In consonance with the analysis of this study, the following findings were deduced:

- i. Economic sustainability reporting has significant positive effect on economic value added of listed manufacturing firms in Nigeria at 5% level of significance.
- ii. Social sustainability reporting has a significant positive effect on economic value added of listed manufacturing firms in Nigeria at 5% level of significance.
- iii. Environmental Sustainability Reporting has significant positive effect on Economic Value Added of listed Manufacturing firms in Nigeria.
- iv. Sustainability governance reporting has a significant positive effect on EVA of listed manufacturing firms in Nigeria at 5% level of significance.

7.2 Conclusion

The thrust of this study was to ascertain the effect of sustainability reporting on economic value added of listed manufacturing firms in Nigeria for a period of twelve years (12) spanning from 2008-2019. Sustainability reporting which is the independent variable was proxied with economic sustainability reporting, social sustainability reporting, environmental sustainability reporting and sustainability governance reporting, while economic value added served as the dependent variable of this study. Panel data were obtained from annual reports and accounts of the sampled manufacturing firms for the study period, using twenty one (21) listed manufacturing firms in Nigeria. Regression analysis was employed via E-Views 10. The results of the tested hypotheses revealed that; economic sustainability reporting, social sustainability reporting and environmental sustainability reporting have a significant positive effect on economic value added at 5% level of significance respectively.

7.3 Recommendations

Based on the findings of this study, the following recommendations were made:

- i. Corporate entities in Nigeria should invest in economic sustainability activities in all its ramifications in order to boost their image/reputation thereby increasing their returns.
- ii. Based on the positive effect of social sustainability reporting on economic value added, companies should be socially responsible in order to enlarge the value for the shareholders and other stakeholders, hence, social accounting practices should be viewed as authorized not to be voluntary in all companies in Nigeria.
- iii. Government agencies should give tax credit to organizations that comply with its environmental laws of the land which will encourage environmental reporting and in the long run enhance firm performance.
- iv. Since governance reporting positively affects economic value added, regulatory bodies and all stakeholders involved should mount policies among firms to ensure that firms act in ethical manner. The regulatory bodies in Nigeria have to bring out guidelines and requirements for firms in reporting governance sustainability.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Theodoropoulou DJ, Zuleeg YI. Environmental reporting management: A continental European perspective. J. Account. Public Pol. 2019;22:43–62.
2. Elkington J. Cannibals with forks. Gabriola Island, BC, Canada: New Society Publishers; 1998.

3. Ball A, Grubnic S. Sustainability accounting and accountability in the public sector. In: Unerman, J., Bebbington, J. & O'Dwyer (eds): Sustainability Accounting and Accountability. 2017;243-265.
4. Osariemen A, Edosa JA, Uwuigbe U, Olubukunola U. Audit committee attributes and audit quality: A benchmark analysis. Business: Theory and Practice; 2018.
5. Chen J. Economic value added (EVA); 2019. Available:<https://www.investopedia.com/terms/e/eva.asp>.
6. Steglitz JE, Sen A, Fitoussi JP. Report by the commission on the measurement of economic performance and social progress; 2019. Available:http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf.
7. Danchev A. Social capital and sustainable behavior of the firm. Industrial Management & Data Systems. 2016;106(7):953-965.
8. Ioannou I, Serafeim G. The consequences of mandatory corporate sustainability reporting. Working Paper. Harvard Business School. 2012;11-100.
9. Dudley CK. What is sustainability reporting; 2019. Available:<https://www.rmagreen.com/rma-blog/what-is-sustainability-reporting> Retrieved 24/08/2019
10. Swanson P, Pintér H. Voluntary environmental disclosure quality and firm value: The role of venue and industry type; Working Paper; University of Utah: Salt Lake City, UT, USA; 2016.
11. Organisation for Economic Co-operation and Development (OECD). Sustainable Development; 2010. Available:<https://www.oecd.org/greengrowth/47445613.pdf>
12. Hughes A. Managing public impressions: Environmental disclosures in annual reports. Acc Organ Soc. 2017;23(3):265–282.
13. Berger D, Gjoski IM. Corporate responses in an emerging climate regime: The institutionalization and commensuration of carbon disclosure. Eur. Account. Rev. 2019;17:719–745.
14. Löf MW. Organizational responses to environmental demands: Opening the black box. Strateg. Manag. J. 2018;29: 1027–1055.
15. GRI. Towards more and better reporting; 2018. Available:<https://www.globalreporting.org/Pages/FR-ERM-2018.aspx>. Retrieved 22/04/2019
16. Woodcraft YC. Economic and environmental efficiencies based on material flow analysis and data envelopment analysis: A case study of Liaoning province. Acta Ecologica Sinica. 2012;35(11):3797.
17. Corsini DC, Moultrie TC. The research for Liaoning environmental efficiency and spatial-temporal differentiation. Geographical Research. 2019;33(12):2345-2357.
18. Amahalu NN, Ezechukwu BO, Obi JC. Corporate social responsibility and financial performance of quoted deposit money banks in Nigeria. Asian Journal of Science and Technology. 2018;08(12): 7183-7191.
19. Chery KL. Elucidating the relationship between sustainability reporting and organisational change management for sustainability. J. Clean. Prod. 2019;125: 168–188.
20. Fortes UN. Is corporate reputation associated with quality of CSR reporting? Evidence from Spain. Corp. Soc. Resp. Environ. Manag. 2012;24:121–132.
21. Mclaughlin RW. Studying organizational change and development: Challenges for future research. Acad. Manag. J. 2019;44: 697–713.
22. Kent P, Chan C. Application of stakeholder theory to corporate environmental disclosures. Corp. Owners Control. 2019;7: 394–410.
23. Moore K, Moore J. Corporate social responsibility: The link between sustainability disclosure and sustainability performance. Abacus. 2019;50:422–459.
24. Shad MK, Lai FW, Fatt CL, Klemes JJ, Bokhari A. Integrating sustainability reporting into enterprise risk management and its relationship with business performance: A conceptual framework. J. Clean. Prod. 2019;208:415–425.
25. Bakker HL. An empirical analysis of triple bottom-line reporting and its determinants: Evidence from the United States and Japan. J. Intern. Fin. Manag. Account. 2019;18:123–150.
26. Abela MS. Corporate responsibility reporting and its determinants in comparative perspective—A review of the empirical literature and a meta-analysis. Bus. Strateg. Environ. 2019;22"1–35.
27. Freijo A. Critical review of social and environmental accounting research.

- Crit. Perspect. Account. 2019;21:76–89.
28. Sial M, Zheng C, Khuong N, Khan T, Usman M. Does firm performance influence corporate social responsibility reporting of Chinese listed companies? *Sustainability*. 2018;10:2217.
29. Nathan FH. Drivers of environmental disclosure and stakeholder expectation: Evidence from Taiwan. *J. Bus. Ethics*. 2019;96:435–451.
30. Stewart GB. *Best-practice EVA*. John Wiley & Sons; 2013.
31. Dheeraj V. Economic value added; 2019. Available:<https://www.wallstreetmojo.com/economic-value-added-eva/>. Retrieved 11/09/2019
32. Lodhia S, Hess N. Sustainability accounting and reporting in the mining industry: Current literature and directions for future research. *J. Clean. Prod*. 2014; 84:43–50.
33. Melloni G, Caglio A, Perego P. Saying more with less? Disclosure conciseness, completeness and balance in integrated reports. *J. Account. Public Policy*. 2017;36: 220–238.
34. Chen L, Tang O, Feldmann A. Applying GRI reports for the investigation of environmental management practices and company performance in Sweden, China and India. *J. Clean. Prod*. 2015;98:36–46.
35. Ma Y, Zhang Q, Yin Q, Wang B. The influence of top managers on environmental information disclosure: The moderating effect of company's environmental performance. *Int. J. Environ. Res. Public Health*. 2019;16:1167.
36. Meng X, Zeng S, Xie X, Zou H. Beyond symbolic and substantive: Strategic disclosure of corporate environmental information in China. *Bus. Strateg. Environ*. 2019;28:403–417.
37. Plumlee M, Brown D, Hayes RM, Marshall RS. Voluntary environmental disclosure quality and firm value: Further evidence. *J. Account. Public Policy*. 2015;34:336–361.
38. Hassan OA, Romilly P. Relations between corporate economic performance, environmental disclosure and greenhouse gas emissions: New insights. *Bus. Strateg. Environ*. 2018;27:893–909.
39. Xu S, Liu D. Do financial markets care about corporate social responsibility disclosure? Further evidence from China. *Aust. Account. Rev*. 2018;28:79–103.
40. Cormier D, Magnan M. The economic relevance of environmental disclosure and its impact on corporate legitimacy: An empirical investigation. *Bus. Strateg. Environ*. 2015;24:431–450.
41. Fazzini M, Dal, Maso L. The value relevance of “assured” environmental disclosure: The Italian experience. *Sus. Account. Manag. Policy J*. 2016;7:225–245.
42. Testa F, Miroshnychenko I, Barontini R, Frey M. Does it pay to be a green washer or a brownwasher? *Bus. Strateg. Environ*. 2018;27:1104–1116.
43. Cho CH, Michelon G, Patten DM, Roberts RW. CSR disclosure: The more things change? *Account. Audit. Account*. 2015;28: 14–35.
44. Radhouane I, Nekhili Shad MK, Lai FW, Fatt CL, Klemes JJ, Bokhari A. Integrating sustainability reporting into enterprise risk management and its relationship with business performance: A conceptual framework. *J. Clean. Prod*. 2018;208:415–425.
45. Qiu Y, Shaukat A, Tharyan R. Environmental and social disclosures: Link with corporate financial performance. *Br. Account. Rev*. 2016;48:102–116.
46. Li D, Zhao Y, Sun Y, Yin D. Corporate environmental performance, environmental information disclosure, and financial performance: Evidence from China. *Hum. Ecol. Risk Assess*. 2017;23:323–339.
47. Ghisetti C, Rennings K. Environmental innovations and profitability: How does it pay to be green? An empirical analysis on the German innovation survey. *J. Clean. Prod*. 2014;75:106–117.
48. Ma Y, Hou G, Xin B. Green process innovation and innovation benefit: The mediating effect of firm image. *Sustainability*. 2017;9:1778.
49. Wang X, Sun C, Wang S. Going green or going away? A spatial empirical examination of the relationship between environmental regulations, biased technological progress and green total factor productivity. *Int. J. Environ. Res. Public Health*. 2018;15:1917.
50. Benlemlih M, Shaukat A, Qiu Y, Trojanowski G. Environmental and social disclosures and firm risk. *J. Bus. Ethics*. 2018;152:613–626.
51. Masud M, Hossain M, Kim J. Is green regulation effective or a failure: comparative analysis between Bangladesh

- Bank (BB) green guidelines and global reporting initiative guidelines. *Sustainability*. 2018;10:1267.
52. Mahmood Z, Kouser R, Ali W, Ahmad Z, Salman T. Does corporate governance affect sustainability disclosure? A mixed methods study. *Sustainability*. 2018;10:207.
53. Hasan I, Kobeissi N, Liu L, Wang H. Corporate social responsibility and firm financial performance: The mediating role of productivity. *Journal of Business Ethics*. 2018;149(3):671-688.
54. Emeka-Nwokeji NA, Osisioma BC. Sustainability disclosures and market value of firms in emerging economy: Evidence from Nigeria. *European Journal of Accounting, Auditing and Finance Research*. 2019;7(3):1-19.
55. Guerrero-Villegas J, Pérez-Calero L, Hurtado-González J, Giráldez-Puig P. Board attributes and corporate social responsibility disclosure: A meta-analysis. *Sustainability*. 2018;10:4808.
56. Chan A, Unger J. Corporatism in China: A developmental state in an East Asian context. In *China after socialism: In the footsteps of Eastern Europe or East Asia*; Routledge: Abingdon, UK. 2017;95-129.
57. Li S, Tan HY, Wang N, Cheung F, Hong M, Feng Y. The potential and action mechanism of polyphenols in the treatment of liver diseases. *Oxidative Med. Cell. Longev*. 2018;2(8):127-136.
58. Zhang Y, Weng Q, Zhu N. The relationships between electronic banking adoption and its antecedents: A meta-analytic study of the role of national culture. *Int. J. Inf. Manag.* 2018;40:76-87.
59. Hamrouni A, Miloudi A, Benkraiem R. Signaling firm performance through corporate voluntary disclosure. *J. Appl. Bus. Res.* 2015;31:609-620.
60. Forte LM, Neto JB, Nobre FC, Nobre LH, Queiroz DB. Determinants of voluntary disclosure: A study in the Brazilian baking sector. *Rev. Gest. Financ. Contab.* 2015;5:23-37.
61. He P, Hou ZL, Wang CY, Li ZJ, Jing J, Bi S. Mutual promotion effect co-substitution on structure and multiferroic properties of BiFeO₃ ceramic. *Ceram. Int.* 2017;43:262-267.
62. Platonova E, Asutay M, Dixon R, Mohammad S. The impact of corporate social responsibility disclosure on financial performance: Evidence from the GCC Islamic banking sector. *J. Bus. Ethics*. 2018;151:451-471.
63. Yao S, Liang H. Analyst following, environmental disclosure and cost of equity: Research based on industry classification. *Sustainability*. 2019;11:300.
64. Ismagilova E, Slade E, Rana NP, Dwivedi YK. The effect of characteristics of source credibility on consumer behaviour: A meta-analysis. *J. Retail. Consum. Serv.* 2019;13(5):48-55.
65. Eisend M. Morality effects and consumer responses to counterfeit and pirated products: A meta-analysis. *J. Bus. Ethics*. 2019;154:301-323.
66. Freeman RE. *Strategic management: A stakeholder Approach*. Boston, MA: Pitman; 1984.
67. Friedman AL, Miles S. *Stakeholders: theory and practice*. Oxford University Press; 2006.
68. Freeman RE. *A stakeholder theory of modern corporations*. *Ethical Theory and Business*, 7th edn; 2004.
69. Elif AS. Corporate social responsibility and financial performance: The moderating role of ownership concentration in Turkey. *Sustainability*. 2019;11(3643):1-10.
70. Chih-Yun Y, Yang CH. The impact of sustainable environmental management in the food and beverage industry on customer loyalty: A view of brand attitude. *Ekoloji*. 2019;107:965-972.

APPENDIX I
NIGERIA STOCK EXCHANGE
Listed Manufacturing Firms

A. Population of the Study

1. Consumer Goods

- i. DN Tyre & Rubber Plc
- ii. Champion Breweries Plc
- iii. Golden Guinea Breweries Plc
- iv. Nigerian Breweries Plc
- v. Guinness Nigeria Plc
- vi. International Breweries Plc
- vii. Jos International Breweries Plc
- viii. Premier Breweries Plc
- ix. 7-Up Bottling Company Plc
- x. Tiger Branded Consumer Goods Plc
- xi. Dangote Sugar Refinery Plc
- xii. Flour Mills of Nigeria Plc
- xiii. Honeywell Flour Mills Plc
- xiv. P.S Mandrides Plc
- xv. Multi-Trex Integrated Foods Plc
- xvi. Nascon Allied Industries Plc
- xvii. Northern Nigeria Flour Mills Plc
- xviii. Union Dicon Salt Plc
- xix. UTC Nigeria Plc
- xx. Cadbury Nigeria Plc
- xxi. Nestle Nigeria Plc
- xxii. Nigerian Enamelware Plc
- xxiii. Vitafoam Nigeria Plc
- xxiv. Vono products Plc
- xxv. PZ Cussons Nigeria Plc
- xxvi. Unilever Nigeria Plc

2. Health Care

- i. Ekocorp Plc
- ii. Union Diagnostic and Clinical Services Plc
- iii. Morison Industries Plc
- iv. Evans Medical Plc
- v. Fidson Healthcare Plc
- vi. GlaxoSmithKline Consumer Nigeria Plc
- vii. May & Baker Nigeria plc
- viii. Neimeth International Pharmaceuticals Plc
- ix. Nigerian German Chemicals
- x. Pharma-Deko Plc

3. Industrial Goods

- i. African Paints (Nigeria) Plc
- ii. Austin Laz & Company plc
- iii. Berger Paints Nigeria Plc
- iv. Chemical and Allied Products Plc
- v. Cement Company of Northern Nigeria
- vi. DN Meyer Plc
- vii. IPWA Plc

- viii. Paints and Coatings Manufacturers Nigeria Plc
- ix. Portland Paints and Products Nigeria Plc
- x. Premier Paints Plc
- xi. Lafarge Africa Plc
- xii. Cutix plc
- xiii. Beta Glass plc
- xiv. Avon Crowncaps and Containers (Nig) Plc
- xv. Grief Nigeria Plc
- xvi. West African Glass Industry Plc
- xvii. Nigerian Ropes Plc

4. Agriculture

- i. FTN Cocoa Processors Plc
- ii. Okomo Oil Farm Plc
- iii. Presco Plc
- iv. Ellahlakes Plc
- v. Livestock Feeds Plc
- vi. Smart Products Plc

5. Sample Size

- i. Nigerian Breweries Plc
- ii. Guinness Nigeria Plc
- iii. Flour Mills of Nigeria Plc
- iv. UTC Nigeria Plc
- v. Nestle Nigeria Plc
- vi. PZ Cussons Nigeria Plc
- vii. Unilever Nigeria Plc
- viii. Vitafoam Nigeria Plc
- ix. Morison Industries Plc
- x. Evans Medical Plc
- xi. GlaxoSmithKline Consumer Nigeria Plc
- xii. May & Baker Nigeria plc
- xiii. Neimeth International Pharmaceuticals Plc
- xiv. Nigerian German Chemicals
- xv. Pharma-Deko Plc
- xvi. Berger Paints Nigeria Plc
- xvii. DN Meyer Plc
- xviii. Lafarge Africa Plc
- xix. IPWA Plc
- xx. Cutix plc
- xxi. Livestock Feeds Plc

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