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FIRMS'INNOVATIVENESS AND CORPORATE SUSTAINABILITY DISCLOSURE AMONG LISTED MANUFACTURING COMPANIES IN NIGERIA

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Abstract

This study examines the relationship between corporate sustainability disclosure and firms' innovativeness in Nigerian listed manufacturing companies. Specifically, to evaluate if there are significant difference between firms' complexity, technological infrastructure and corporate sustainability disclosure across listed manufacturing companies in Nigeria. Based on methodological perception, this study used a population of 76 companies with a sample size of 49, based on Krejcie and Morgan's (1970) formula. The Panel Corrected Standard Error (PCSE) result showed that there is no correlation between corporate sustainability disclosure (via the CSD proxy) and the complexity of the firm. This finding provides support for rejecting the null hypothesis, which holds that the complexity of the firm negatively significantly affects social disclosure. On the other hand The Generalized Least Square (GLS) result showed negative relation between technological infrastructures on corporate social disclosure. Consequently, this study finds that technological infrastructure has a major impact on the corporate sustainability disclosures made by Nigerian listed manufacturing businesses, rejecting the null hypothesis in the process. Accordingly, this study suggests that policymakers, in particular the Nigeria Exchange Group (NGX), should strengthen their policies, laws, and regulations to guarantee that manufacturing companies reveal information about the welfare of their workers as a result of the effects of their highly advanced technological assets and complex operating activities, which are adversely affecting workers.

Keywords: Firm' innovativeness, technological infrastructure, global reporting initiative

Introduction

Sustainability disclosure has become corporate reporting issues across the globe particularly companies in developed and developing countries. This arose as a result of corporate issues such as climate change, green washing, noise pollution, air pollution, environmental issues and other socio economic problems. Companies are beginning to change in this new environment and show more care in the information they prepare and share, as well as in the manner and content of their communications (Schiller, 2024). Research has indicated that stakeholders have specific requirements and expectations about each of the three components of sustainability reporting economic, environmental, and social disclosure. Social disclosure has become essential for corporations globally because of its negative consequences on employee welfare, social and environmental policies, performance, and practices for stakeholders.

These environmental and socio economic issues have becoming paramount among companies at global level, for instance an important factor in Italy's economy's expansion is the manufacturing sector. It is Italy's third-largest sector, behind the agricultural and service industries. Italy's

industrial sector accounts for 18.7% of the country's Gross Domestic Product GDP. During the 2011–2012 fiscal year, Italy's manufacturing sector experienced growth at a rate of 3.56%, with investments totaling $1485.0 billion (United Nations Conference on Trade and Development [UNTAD], 2019). The concerning number of Italian manufacturing companies closing their doors in recent years has drawn a lot of attention. This is a result of stakeholders and investors putting pressure on corporate firms to report on their creative activities' effects on the environment and human population on a social and environmental level throughout time. Thus, through sustainability reporting, businesses can advance the agenda or aims of sustainable development. Hence, firm innovation and management skill is widely known to ensure the sustainability reporting disclosure which is generally significant to shareholders and other stakeholders of firms (Sanni et al., 2023). However, in disclosing some of this information, management particular those that are in strategies necessitate the needs for disclosing some of this information in other ensures companies are sustain in the future.

In spite of foregoing issues, in Nigeria, manufacturing companies have become crucial and important among sector. However, the outputs of these companies represent more 60% of Nigeria GDP. Despite of it important, the persistence growth in climate change, air pollution, noise pollution and socio economic issues have becoming more worrisome for instance, Sanni, Oke & Alabere (2023) discovered that Nigeria Exchange Group (NGX) assessment report on disaster reduction of the year 2015 has put economic losses from disasters such as earthquakes, tsunamis, cyclones and flooding at an average of N250 billion to N300 billion annually. Infrastructure, social protection, public health, and public education might all benefit from these resources. In addition, the Nigeria (NGX) found that in their annual reports and accounts, 85 of the top firms with over 600 employees had not reported non-financial information including economic, environmental, or social disclosures.

The NGX has received concerns from stakeholders over the mandate that all listed firms disclose the positive and negative impacts of their unique products. Businesses are required by a number of stakeholders, including communities, customers, employees, and potential investors, to reveal their environmental responsibility policies. Remarkably, beginning in 2011, NGX mandated that all publicly traded firms reveal the environmental consequences of their activities, encompassing air pollution, noise pollution, and more hazardous environmental circumstances. According to the literature, these manufacturing companies were delisted from the NGX because they were unable to comply with the regulations and disclose this information in their annual reports.

However, efforts have been made by scholars on determinant or factor that contribute to the disclosure of this information. In the light of this, innovation such as new innovative assets and creation of new innovative product which has become paramount among Nigeria manufacturing companies due to high volume production activities, which have resulted into high climate change, noise pollution, air pollution, socio economic issues and other harmful environmental hazardous. To support this assertion, Sanni et al. (2023) observed that high level of innovation in terms of the quantity of operating activities spread throughout the many nations, inventive assets, and market opportunity synergy. Consequently, high levels of innovation of companies create more

environmental hazardous and socio economic issues which had led to stakeholders requesting for sustainability reporting practices.

Several studies such as Karim et al. (2022); Sanni et al. (2023); Ndemez and Kayitana (2020) have examined several different determinants or factors of sustainability reporting. However, their conclusions are subject in different dimension. In the light of this, this study finds it worthy to examine firms' innovativeness as a determinant of corporate sustainability disclosure. In view of this, the following research hypotheses were raised:

H_{01}: Firm's complexity does not significantly influence the corporate sustainability disclosure among listed manufacturing companies in Nigeria.
H_{02}: Technological infrastructures do not significantly influence the corporate sustainability disclosure among listed manufacturing companies in Nigeria.

Literature Review

Conceptual Issues

Nigri and Del Baldo (2018) defined sustainability reporting as a designed to help corporations plan, prepare, report and disclose information about corporate commitment, implementation, measurement, disclosure, and accountability to performance management of economic, social, and environmental issues and corporate governance to internal and external stakeholders to realize the vision and objectives sustainable corporations and stakeholders. In addition, companies can target and improve performance, benchmark against other companies, engage and manage stakeholders more structurally, better manage sustainability risk, and establish accountability with the help of sustainability reporting (Ariyani & Hartomo 2018).

Sustainability reports are published by companies or organizations that address how day-to-day activities impact the environment, society, and economy. The sustainability report also illustrates the models and tenets of organizational governance (Global Reporting Initiative, 2014) (Majhi, Mukherjee and Anand 2019) and the relationship between strategy and the company's commitment to the global economy. However, Nigri et al. (2018) have made a distinction between a number of global sustainability reporting frameworks, such as the International Organization for Standardization (ISO), the Principle of Responsible Investing (PRI), the Global Reporting Initiative (GRI), and Economic, Social, and Governance (ESG). Thus, the study's objective is to promote GRI as a concept and its best practices for sustainability reporting around the globe. Despite the above mentioned definitions, it is crucial to discuss how this concept relates to the current research; companies can use sustainability reporting to further their goals or agenda for sustainable development. Sustainability reporting is the method by which businesses disclose the social, economic, and environmental effects that their routine business operations have on society and the environment, according to the Global Reporting Initiative [GRI], 2019.

The best way to consistently track a company's operations regarding air, water, and carbon emissions is through their respective innovation. Companies' complexity, according to (Girón et al., 2021) is the result of having many interdependent and related stakeholders. Grösser worked as an analyst with the technology and market research firm Forrester Research to analyze the

complexity of the firm. Furthermore, Nigri et al. (2018) characterizes complexity as the amount of requirements that companies have to satisfy in order to meet the expectations of its employees and clients as well as changing regulatory requirements, cultural trends, and technology improvements. This description makes it obvious that companies use a range of strategies to accomplish their long-term objectives.

On the other hand, Chong et al. (2010) characterized technological innovation as new technologies that have been proved to be theoretically feasible under particular site conditions but have not been widely deployed under the conditions that occur at the hazardous waste site. Prior to a system's full-scale deployment, conducting pilot-scale treatability tests which are often conducted in the field or a lab and require the installation of technology provides information on the system's financial performance, cost, and design goals (Cho, 2018). These observations imply that businesses participate in a variety of innovative ventures that enhance shareholders and potential investors at the expense of local communities, employees, and customers.

Theoretical Framework

Several theories such as contingency theory, institutional theory and stakeholder theory have review from reviewed from previous studies particular in the area of sustainability disclosure. However, to explain both dependent and independent variables of this study, this study capitalized on stakeholder theory. Therefore, stakeholder's theory which was propounded by R. Edward Freeman (1984), this theory is of the viewed that capitalism that stresses the interconnected relationships between a firm and its shareholders, investors, customers, suppliers, employees, investors, communities and others who have a stake in the companies. According to the principle, a company should generate value for all parties involved, not just shareholders. Regarding Chang (2011) think that a company's values should be determined by its stakeholders in addition to its shareholders. Every facet of an organization's operations that are based on the stakeholders' corporation must be covered by the stakeholder theory of corporate governance. As a result of this, stakeholders are interested in both financial and non-financial information; the study's purpose can be achieved based on the empirical evidence presented above. It is true that managers need to make sure information on innovations that have an impact on communities, workers, customers, green washing, noise pollution, and other stakeholders is disclosed in their annual report. In the light of these predictions and assumptions, this becomes theoretical framework of this study.

Review of Empirical Studies

The study's supporting evidence from earlier research and is covered in this section. However, several studies have emphasized in developed, developing and Nigeria. For instance Nandia and Ghosh (2014); Karim et al. (2022); Ruhana and Hidayah (2019); Nzioka (2013) have examined the influence of innovation on environmental disclosure. For example, the open innovation Nexus between Information Technology, Voluntary Disclosure, and Sustainable Performance was assessed by Karim et al. (2022). The study employed cross-sectional panel regression, especially random effects and fixed effects regression estimation, and looked at a sample of thirty bank-based financial organizations. The study discovered that a firm's environmental disclosure is impacted by open innovation in several ways. However, other researchers (Ikechukwu, 2022; Ruhana, et al 2019) discovered a negative correlation between technical advancements and environmental

disclosure. However, there have been several discussions in the literature regarding the driving forces behind sustainability reporting standards, particularly when it comes to global reporting that takes its cues from the GRI. In Sanni et al. (2023) study, for example, it was evident that management dynamics determined corporate social disclosures among mentioned industrial enterprises in Nigeria. Sixty-three (63) industrial enterprises made up the sample size used in the ex-post factor research design, out of the 76 listed industrial firms. Data were analyzed using Panel Corrected Standard Error Estimation, and the findings indicated that, among Nigerian listed industrial businesses, management effectiveness and corporate social disclosure had a positive association of 0.019, with a significant level of 0.000. These findings conclusively demonstrated that, despite its benefits, management performance has a significant impact on corporate social disclosure.

In the same vein, in the context of Nigerian manufacturing enterprises, Alabere et al. (2024) examined managerial high-energy as a motivator for the worldwide reporting initiative (economic transparency). Secondary data from a sample of 49 manufacturing companies that remained regularly listed on the Nigerian Exchange (NGX) between 2011 and 2023 was used in the study. The collected data were statistically analyzed using both descriptive and inferential statistical techniques. The Generalized Least Square (GLS) regression method was used to generate their results, which show that managerial high-energy significantly affects economic disclosure. Businesses with higher managerial vigor also tend to have more transparent and comprehensive economic disclosure policies. Furthermore, our study showed that companies with high-energy managers reported GRIs at higher levels.

Olagunju and Ajiboye (2022) clarified the market value of listed non-financial firms in Nigeria as well as environmental accounting disclosure. Information was collected from 2012 to 2020. For data analysis, the study used panel feasible generalized least square regression technique. According to the study, environmental disclosure has a favorable and considerable impact on both share price and earnings per share. In contrast, Okolo, et al (2022) discovered that robust environmental policies and technologies had a statistically significant impact on sustainable economic development.

Ahmad et al. (2022) tested the hypotheses with the Ordinary Least Squares estimator (OLS). The endogeneity issue was addressed using the two-step Generalized Method of Moments (GMM) estimator methodology. The findings indicated that the CSD average is 36%, which is greater than the 27% and 31% reported by Qa'dan and Suwaidan (2019) and Gerged (2021) for two Jordanian samples collected between 2010 and 2014 and 2013 and 2015, respectively. Additionally, the outcome showed that IT modifies the link between GO and CSD in a favorable and substantial way. Social disclosure is impacted by tax evasion.
The goal of the Amir et al. (2022) study is to gather empirical data regarding the impact of investment opportunity sets and political ties on tax evasion. 42 manufacturing firms that were listed on the Indonesia Stock Exchange between 2014 and 2019 were examined in the study. The findings suggest that the beneficial impact of investment opportunities and political connections on tax evasion may be mitigated by corporate social responsibility disclosure. Shaheen et al. (2022) investigated the impact of a female CEO succession, specifically a change in gender, on corporate

social responsibility (CSR) reporting. The results show that firm CSR reporting benefits from female CEO succession, and that this effect is more common in high-performance and non-SOE enterprises than in low-performance and SOE firms, respectively.

Pollach and Schaper (2023) discovered a favorable correlation between social visibility and the diversity in the content of social disclosures. Nadia Toumi and Khemiri (2022) also assessed the social disclosure and home regions of the directors. From 2008 to 2018, there were 73 French companies that were members of this 120 index and listed on the Euronext Paris Stock Exchange. Consequently, the research concluded that there is no connection between Middle Eastern directors' participation and this disclosure. According to the title above, Hoepner and Schiemann (2022) assessed firm risk and social disclosure channels. A total of 1,500 S&P components provided information between 2011 and 2015. The study discovered that social problem disclosure through SEC filings raises the danger of idiosyncratic firms.

Summarily, it was observed from previous studies that none or few of this studies emphasized innovation as a determinant of sustainability disclosure particular in the areas of economic, social and environmental disclosure.

Methodology

This study adopted the ex-post facto research design. The population of this study consists of 76 listed manufacturing companies. The sample size representation of the study are 63, it was determined based on Krejcie and Morgan's (1970) sample size determination table. Consequently, as a result of in availability of data and the inconsistent listing of some manufacturing companies in Nigeria, the sample size of this study become forty-nine (49) manufacturing companies. In other to achieve the result of this study, descriptive statistics and correlation analysis were used to analysis the data.

$CSD = \beta 1FC + \beta 2TI\ \mu$ ……

Where:

SD= Corporate Social Disclosure

FC= firms Complexity

TI = Technological Infrastructures

μ = Stochastic error term that captures

Unobserved variables

Table 1: Measurement of Variables

Variables	Construct	Measurement	Evidence from previous studies	A-prior expectation
Dependent variable: Corporate sustainability disclosure	CSD	GRI Index (G4) = Total score disclosed	Nandia et.al (2014)	+/-

Independent variable: Firm's Complexity	FC	Number of business unit / segment in a company	Sanni et.al, (2023);Alabere (2024)Subrameriam et.al (2009) & Nurul et.al (2018)	+/-
Independent variable: Technological Infrastructures	TI	Is Dummy variable to 1 if firms introduce new asset to improve innovation. Zero (0) otherwise.	Sanni et.al, (2023); Alabere (2024) Meriam et. al (2021)	+/-

Source: Authors' Compilation

Results and Discussion

Preliminary Tests and Regression Results

In considering the normality test, Kurtosis, Shapiro wilk and Skewness were used, which one of the first tests was run, as a means of verifying that the data collected was normal before evaluating hypotheses. The early test result indicates that most variables are normally distributed based on skewness, even though most of them are not typically dependent on kurtosis. This is because the majority of the kurtosis values exceed the range of ±1.96, indicating that such data are not normally distribute. As a result, the study employed Panel Corrected Regression Error (PCRE) as the inferential statistic. Additionally, prior to the application of inferential statistics, the data were subjected to diagnostics using the linearity, and serial correlation tests, heteroskedasticity, normality, and Hausman tests. The results of the normality test, conducted using the Shapiro-Wilk test, indicate that the p-value is significant at 1%, thereby rejecting the null hypothesis that the residuals are normally distributed throughout the model. Nevertheless, the Gauss-Markov theorem states that normality of the data and residual distribution are not required for the calculation of the Best Linear Un-bias Estimate (BLUE) as long as the sample size is greater than 15 observations. Sequel to the preliminary and diagnostic test, here is the result of inferential statistics.

Table 2: Summary of Result of Panel Corrected Standard Error

Variable	Coefficient	Std-error	Z-Value	Significant
Firm Complexity	**(-0.1765)**	0.024	-9.26	(0.000)
Technological Infrastructure	**(-0.2061)**	0.024	-3.09	(0.000)

Source: Authors' Computation

Coefficients of determination are obtained by calculating the cumulative the result of 17.46%, which represents the proportion of the overall variation in the dependent variable described by the independent variables taken together. The PCSE result shows the dependent variable, known as corporate sustainability disclosure, and the firms' innovation. Therefore, 17.46% of the variance in the corporate sustainability disclosure of listed manufacturing businesses in Nigeria can be

attributed to the independent variables in the research. Furthermore, the model presented in the above table has a Wald chi2 of 232.25; given that this value is greater than 2, the model appears to be ideal (Gujarati, 2004). Because of this, the model can be used to estimate how the variables interact. Additionally, all of the independent variables in the model together are significant based on the p-value of the wald chi2, which is significant at 1%. This indicates that the dependent variable of the study is accurately predicted by the independent variables of the investigation.

Hypotheses Testing

Restatement and Test of Hypothesis One

Ho1: The firm's complexity does not significantly influence the corporate sustainability disclosures among listed manufacturing companies in Nigeria.

Because p value < 0.005, a firm's complexity significantly affects corporate sustainability disclosures made by Nigerian listed manufacturing enterprises. The investigation thus disproves the null hypothesis. The study also discovered that a company's complexity has a detrimental impact on its corporate sustainability disclosures, as indicated by the Panel Corrected Standard Error (PCSE) in table 2 above: ß1=-0.1765, p<0.01, SE=0.024 This finding suggests that there is no connection between technology infrastructure and the corporate sustainability disclosures made by Nigerian listed industrial enterprises.

Restatement and Test of Hypothesis Two

Ho2: Technological infrastructure does not significantly influence corporate sustainability disclosures among listed manufacturing companies in Nigeria.

The Technological Infrastructure Panel Corrected Standard Error (PCSE) regression result for EVDIS shows a significant value of 0.002, which is smaller than p<0.05. As a result, it suggests accepting the alternative hypothesis and rejecting the null hypothesis. On the other hand, corporate sustainability disclosures made by Nigerian listed manufacturing companies are significantly impacted by technical infrastructure. Additionally, the Panel Corrected Standard Error (PCSE) result, which is reported as ß2 = -0.2061; SE=0.024 p<0.05, indicates that environmental disclosure and technological infrastructure among Nigerian listed manufacturing enterprises are negatively correlated.

Discussion of Findings

Corporate sustainability disclosure and firms' innovativeness were assessed in this study. The innovativeness of organizations was assessed by taking into account their corporate sustainability, technological infrastructure, and complexity. Disclosure Disclosure was also predicated on the 2011 GRI Index. According to ß1b = -0.062; SE=0.024, p<0.00, the empirical finding demonstrates that a firm's complexity is substantial and negatively effects on environmental disclosure (via EVDISC). The study discovered enough evidence to support rejecting the null hypothesis, which holds that there is a significant association between company complexity and environment disclosure of listed manufacturing firms in Nigeria, because the p-value is significant at 1%. These results are consistent with those of Sanni et al. (2023), Alabere et al. (2024), Abdullahi et al. (2021), Ndalu et al. (2019), and Ikpor et al. (2019), who likewise discovered a statistically significant inverse relationship between a firm's complexity and its disclosures about corporate sustainability.

Furthermore, since the p-value is significant at 1%, this study discovered enough data to support rejecting the null hypothesis, which holds that there is no meaningful connection between the corporate sustainability disclosure of Nigerian listed manufacturing companies and their technological infrastructure. Nevertheless, ß2b = -0.075; SE=0.024 p<0.000 as revealed by the Panel Corrected Standard Error (PCSE) Regression results. This suggests that there is a bad correlation between corporate sustainability disclosure and technology infrastructure. The findings of this investigation aligned with those of Ndemez et al., (2020); Sanni et al., (2023); Alabere et al., Benjamin et al., (2018). They all discovered a negative correlation between companies' sustainability declarations and technology infrastructure.

Conclusion and Recommendations

The study comes to the conclusion that listed manufacturing businesses in Nigeria have not been providing sustainability information for each operating sector of their business, taking these findings into account. This study assessed the corporate sustainability disclosure and innovativeness of Nigerian listed manufacturing enterprises. The study's findings demonstrate that, although having a negative association, business complexity has a substantial impact on corporate sustainability disclosure. As mandated by NGX and GRI, the report claims that listed manufacturing companies have not provided adequate information about their technological infrastructure when it comes to the purchase of new or existing assets or environmental problems. In order to ensure that all Nigerian listed manufacturing commissions publish the corporate sustainability disclosure effect of their respective operational sectors. In the light of this, this study recommends that Nigeria Exchange Group (NGX) tighten its present policy. The conclusions and findings of the study served as the foundation for this advice. In addition, (NGX) should penalize the businesses that disobey these guidelines. The report also recommends that all publicly traded manufacturing companies establish internal policies to ensure that companies disclose environmental information when buying a new asset that will help them attract international investors and ensure compliance with international regulations.

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