The Moderating Role of Public Administration in Accounting Profit and Internet-based Environmental Disclosures in Nigeria: Evidence from Manufacturing Companies.

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Abstract
This paper investigated the relationship between corporate profitability and web-based environmental disclosure in Nigeria. The manufacturing sector, representing the real sector of the Nigerian economy was selected, and the role of public administration as a moderating factor was considered as a variable. The study adopted the quantitative panel methodology of the ex post facto and correlational research design. Secondary data were extracted from the fact books of the Nigerian Stock Exchange for the period, 2014 and 2019. The 83 manufacturing companies listed on the Stock Exchange represented the population of the study. The sample used was 69. Three hypotheses were tested at a 0.05 level of significance. Multiple and simple regression analyses were used on the data collected to find the relationship between the independent and dependent variables. The findings indicated an insignificant negative relationship between web-based environmental disclosure (WED) and earnings per share (EPS) on one hand and an insignificant positive relationship between WED and return on asset (ROA) on the other. It was recommended that quoted firms can use the findings of the study to enhance their disclosure of environmental incidents while government policies should strengthen regulatory bodies to carry out their oversight functions. Listed firms should own websites and dedicate separate pages on their corporate websites solely for reporting environmental events.

Keywords: Environmental Accounting Disclosure, Firm performance, Corporate websites, Government regulatory agencies, Disclosure Index, Public Administration.

1. Introduction
Sustaining the environment has become a global issue that concerns all nations of the world. This comes as a result of environmental degradation faced by nations over activities of companies. Corporate and public managers are now expected to ensure the sustainability of the environment through corporate practices which should not only centre on firm value maximization but also on the overall benefit of the general populace. Environmental issues are now seen by many companies as a fundamental issue. According to Debreceny, Gray, and Rahman (2002), environmental issues have now been seen as the hallmark of corporate progression. Bhasin (2012) affirms that globally,

corporate organizations are constantly challenged regarding environmental disclosures as a result of threatening public concerns about environmental degradation. As a matter of necessity, firms are now obliged to ensure a safer environment (Malarvizhi & Yadar, 2009).

Environmental sustainability has always been in the front burner of countries and organisations in the world. Several summits have been held by world leaders to tackle environmental issues at various times. In recent times, the Copenhagen summit (COP15), the London and the parallel Pittsburgh Summit of the G20 Leaders, the United Nations Special Summit on Environment as well as the United Nations Climate Change Summit in Paris (COP21) where over 200 leaders from countries in the globe converged, discussions on environmental sustenance and reporting were the major highlights. The result of the United Nations Climate Change Summit in Paris (COP21) was the adoption of a new template for environmental sustainability (Firoz & Ansari, 2010; Jia, Liaxia & Adam, 2010).

Uwuigbe (2011) observed a noticeable shift from the traditional objective of firms as Michael and Okwoli (2018) confirm a paradigm shift from the traditional financial bottom line or profitability reporting, to an environmental management reporting as the key to good corporate image in the competitive world. Greenhouse emissions have to be lowered; carbon trace should be reduced while the use of alternative renewable energy should be enhanced to curtail environmental pollution. The disclosure of these environmental activities using the effective tool of environmental accounting culminates in the environmental accounting disclosures. Dutta and Bose (2007) recognize environmental account as the tracking of environmental responsibility costs, including waste disposal, and reporting same.

These disclosures have overtime, been traditionally done through the conventional print media including companies' annual reports (Lohdia, 2005; Malarvizhi and Yadar, 2009). Ghasempour and Yusuf (2014) however, observe that there could be considerate delay in getting print-based information such as annual reports to stakeholders. Therefore, Adams and Frost (2004) opine that companies now explore new method of unconventional reporting and communication media. This is settled in web-based corporate reporting, which is supported by public administrators for the overall wellbeing of the globe.

Web-based corporate disclosure, as discussed by various scholars (Sharma, 2013; Ashbaugh, Johnstone, & Warfield, 1999) is the dissemination of corporate related financial and non-financial information using the internet technologies. It is a wider term than simply internet financial reporting as it entails other performance measures covering environment, social responsibility and corporate governance (Sharma, 2013; Comier, Lediux & Magnan, 2009).

Web is seen as one of better media platforms to disclose financial and non-financial information since it has the advantage of providing direct contact between the firms' management and stakeholders, without going through intermediaries such as the press or analysts (Martson & Polei, 2004). Web-based disclosure, according to Debreceny, Gray and Rahman (2002) is cost effective, covering a wider audience with speed and reliability.

1.1 Statement of the Problem

Studies have been conducted by scholars on web-based environmental disclosures in developed countries, particularly on bigger firms operating in the developed world (Adams & Frost, 2004; Lohdia, 2007; Jose & Lee, 2006; Razeed, 2009; Chowdury & Hamid, 2013). A recent study by Michael and Okwoli (2018) describes web-based disclosure in Nigeria, but without specific findings on manufacturing companies which control the real sector of the economy and most prone to environmental degradation in their activities. Therefore, the need for a research to assess the extent of web-based disclosures by manufacturing companies in pursuing stakeholders' wealth maximization through public policy implementation seems appropriate to fill the apparent gap in literature.

1.2 Objectives of the Study

The objectives of the study were to:

i. Examine the extent of relationship between web-based disclosure in the public interest and corporate profitability of Nigerian manufacturing companies.
ii. To find out the relationship between traditional print-based disclosure and enhanced corporate profitability in Nigeria manufacturing companies.
iii. To examine if administration of digital disruption and innovation can improve profitability as traditional print-based disclosure does in Nigeria manufacturing companies.
iv. To determine whether firms' performance is enhanced by the degree of web-based environmental disclosures (WED) of quoted firms in Nigeria.

v. 2. Literature Review

Sharma (2013) asserts that web-based reporting of financial and non-financial information became popular with the advent of the world -wide -web in 1994 and as opined by Anyanwu (2012), companies that use their websites to disclose a broad spectrum of corporate information since then reported lower cost of distributing their annual and other reports to stakeholders. Aside the lower cost of information dissemination, Michael and Okwoli (2018) surmise that as businesses strive to provide goods and services to their customers, they engage in activities that impact negatively on the environment. This creates a corporate responsibility for businesses to report how the impact of their operation have affected their immediate and remote environment which they operate (Ramana, 2013; Ugwuigbe, 2012).

Corporate environmentalism, including disclosures therefore become an upshot of environmental cost which the Global Development Research Centre (2014) believes is a significant part of firms' total expenditure in recent times. Adams and Frost (2004) indicate that web reporting has revolutionized businesses and communications in the twenty-first century while Glautier, Underdown, and Morris (2011) examine both web-based and print-based annual report disclosures and acknowledge that the web has revolutionized how companies disseminate information.

The general public, in recent times, have strong concern regarding firms' environmental events and there have been a fierce follow-ups for adequate disclosures by these companies, especially those in manufacturing. Sharma (2013) opines that disclosure decisions of companies are influenced by several firm-specific characteristics, such as size, culture, market listing and corporate governance characteristics (Armitage & Marston, 2008; Cooke, 1992; Khanna, Palepu, & Srinivasan, 2004). Sharma (2013) concludes that larger companies, internationalized, liquid and more profitable companies were found to engage in internet financial reporting. The firms that are averse to web-reporting were found to be factored by concentrated ownership. These are mostly the type of firms we have in Africa. From the study, it could be inferred that African firms do not embrace the concept of web-based reporting.

2.1 Environmental Accounting Concept

Citing Dutta and Bose (2007), Michael and Okwoli (2018) aver that environmental accounting is the recognition and reporting of those special costs that are related to corporate environmental responsibility. Uwuigbe (2011) had earlier recognized environmental accounting as a management tool used for strategic purposes to improve the environment using different approaches. Glautier, Underdown and Morris (2011) aver that environmental accounting emerged as an extension of corporate social objectives reflecting varying degrees and types of environmental degradation. Glautier et al (2011) assert that environmental issues permeate all aspects of business, from servicing to product design and manufacturing.

The impact of environmental accounting on the stakeholders of firms is to raise the level of awareness and consciousness as regards environmental costs. This will cause such costs to be reduced or avoided, while improving environmental quality. Environmental accounting also assists firms in building the culture of sustaining the environment in which they operate and do business (Martson & Polei, 2004).

2.2 The corporate environmental responsibility

Corporate environmental responsibility is a business moral and corporate social responsibility that could ensure environmental sustainability. Brown and Deegan (1998) stress that as complex and multidimensional as corporate environmental responsibility is, it is made up of corporate practices that look into natural resource management, waste generation and disposal, recycling, marketing of environmentally friendly products, as well as pollution prevention and control.

Referring to the above disposition, Michael and Okwoli (2018) aver that environmental responsibility goes hand in gloves with environmental commitment and awareness, stakeholder engagement, measuring, reporting and auditing, transparency, commitment to continuous improvement and looking beyond compliance. This implies that as Africans, our captain of industries should show commitment in accounting for our environment, not merely waiting to be coerced while managing our firms for profitability.

2.3 The Role of Public Administration

Public Administration is an instrument of the State welfare, where the state is confidently expected to meet all the social and economic needs of the citizenry, service delivery, and resource allocation. Public administration is concerned on how the largesse from Corporate Social Responsibilities made by companies are administered. It is a commitment to maintain a central role in policy making and implementation through the State entering into a dialogue with private enterprises to promote and support Corporate Social Responsibility (CSR) for the benefits of the people through socio-economic development plans, educational empowerment, recreational facilities and cultural purposes, to improve the quality of life and the society at large. The efficiency of these could be derived optimally through web-based environmental reporting.

2.4 The Western Outlook of Web-based Environmental Disclosure

Bhasin (2012) surveyed the use of internet for investor relations' activities, focusing on the provision of financial data, of United Kingdom, Germany and united states companies. The study found out that 95 percent of companies in US, 85 percent in UK and 76 percent in Germany had websites which were effectively used for environmental reporting. The study also revealed that 91 percent of companies in US,72 percent in UK, and 71 percent in Germany used the internet for investors' relations.

Adams and Frost (2004) also investigated selected corporate websites from Australia, Germany and the United Kingdom and discovered that amongst the stakeholders, customers and shareholders significantly influenced websites designs in web-based environmental reporting. They also found out that raising corporate awareness and improving corporate image were the primary factors influencing the development of corporate websites. Overall, findings from various scholars on web-based environmental disclosure in western countries (Zhang, Gao and Zhang, 2007; Bashin, 2012) suggest that multinational companies are becoming more environmentally sensitive today than ever before. This is what is expected from African firms.

2.5 African Outlook of Web-based Environmental Disclosure

There is a perceptible gap in the literature on the use of corporate websites for environmental reporting. The bulk of environmental accounting researches in Nigeria, nay Africa is focused on the traditional print media, particularly the company's annual reports, when information is required (Michael and Okwoli, 2018).

However, though Salawu (2013) and Uwuigbe (2012) investigated web-based account disclosures in Nigeria, Salawu (2013) chiefly investigated web-based financial disclosure contents and did not reckon with non-financial disclosures. Uwuigbe (2012) only attempted to address web-based environmental disclosure practices, selecting fifteen financial and fifteen non-financial firms. The study examined the use of internet for environmental reporting practices by quoted financial and non-financial firms in Nigeria. He found out that a significant positive association exists between firms' performance and the degree of web-based disclosures.

These few studies on web-based environmental disclosures, as compared to the myriad of studies in the western world, suggest that web-based environmental reporting in Nigeria, and indeed, Africa is still at the developing stage and should be continued (Uwuigbe, 2012).

2.6 Empirical framework

Most previous studies as reviewed above examined the degree of web-based environmental disclosures (WED), but there are explanatory studies that examined the factors that are responsible for WEDs. Mendes-da-silva & Christensen (2004); Andrew (2003); Mohamed & Basuony, (2014); and Juhmani, (2014) found that firm size is statistically significant to disclosures made on corporate websites while research such as Ismail (2002) and Andrew (2003) revealed that leverage, profitability and industry-type also influence web-based disclosures.

FASB (2000) empirically investigated the extent and content of WED information. Their findings suggested that size and profitability are positively correlated with the content of social disclosure information on firms' websites. They further revealed that State-owned corporations disclose more WED information than privately owned corporations do. They also found significant differences between different industries.

Jia, Linxiao, & Adam (2010) investigated the environmental accounting disclosure of S&P 100 firms using keyword frequency count of company's reports from 2004 through 2008 and showed that environmental disclosure has a significant negative impact on firm performance. They further found that firms with better financial value and highly-leveraged firms have lower environmental disclosures, suggesting that these firms have better environmental laws and regulations compliance rate.

Murray, Sinclair, Power & Gray (2005) studied the largest 100 UK firms based on turnover. They explored whether stock market participants in the UK exhibited any marked reaction to the environmental reports made by such firms. They found convincing evidence that the level of company returns over time is associated with the level of environmental disclosures over time.

2.7 Theoretical Framework

It is obvious that diverse and competing theoretical frameworks are used by many scholars to explain why corporations may voluntarily engage in environmentalism. The concern of this study is on why firms should do the needful, voluntarily or through compulsion, to create harmony in the existence of companies as a legal person whose existence would not negatively affect the real human person, being the society, they operate.

2.7.1 Stakeholders' theory by Ed Freeman (1984)

Freeman's stakeholder theory was created in the first instance, to put forward another vision of what the firm's objective should be. Before this theory was put forth, the dominant ideology such as Milton Friedman's classic model was of the view that the objective of a company is profit accumulation for redistribution to the owners of capital, the shareholders. But Freeman's (1984) theory argued that profit should not be seen as the primary cause of setting up a firm, but rather, a consequence of the activities of the company over a time period. According to Ghasempour & Yusof (2014), the point of view of the theorist was that shareholders and others who have stake in the business should be recognized by the firm, and their needs attended to.

The stakeholder theory is concerned with how the company can have respect to the community and environment of business, comply with legal requirements, as well as be involved in contribution to sustainable environmental development (Ojedokun, 2020). This theory Is important for firms who have corporate profitability as a major objective to also pursue web-based environmental disclosures, especially in Africa, which is under-reported in this area.

2.7.2 Legitimacy theory

This theory is based on the idea that for firms to continue in their successful operations, they must act within the bounds of what society identifies as socially acceptable behaviour (O'Donavan, 2002). Any firm that falls short of acting within these societal bounds risks corporate social acceptability and this will affect its profitability. Such company will be faced with legal limitations impressed on its operations which will result in reduction in demand for its products.

Uwuigbe (2012) and O' Donovan (1999), both agreed that firms will increase environmental disclosures where it becomes necessary to validate negative environmental activities associated with the firm as this may enhance public perception of the firm. Suchman (1995) and Lodhia (2007) elucidate that the motive behind the above assertion is to gain and maintain legitimacy in the eyes of major stakeholders.

Both of the theories were adopted in this study as they were seen to be relevant in the instances of stakeholding and reporting of environmental issues to the various stakeholders as well as ensuring that firms operate within the limits of legitimate and acceptable societal acceptable behaviour.

3 Hypothesis and Model development

The hypothesis for this study were developed from the model shown below:

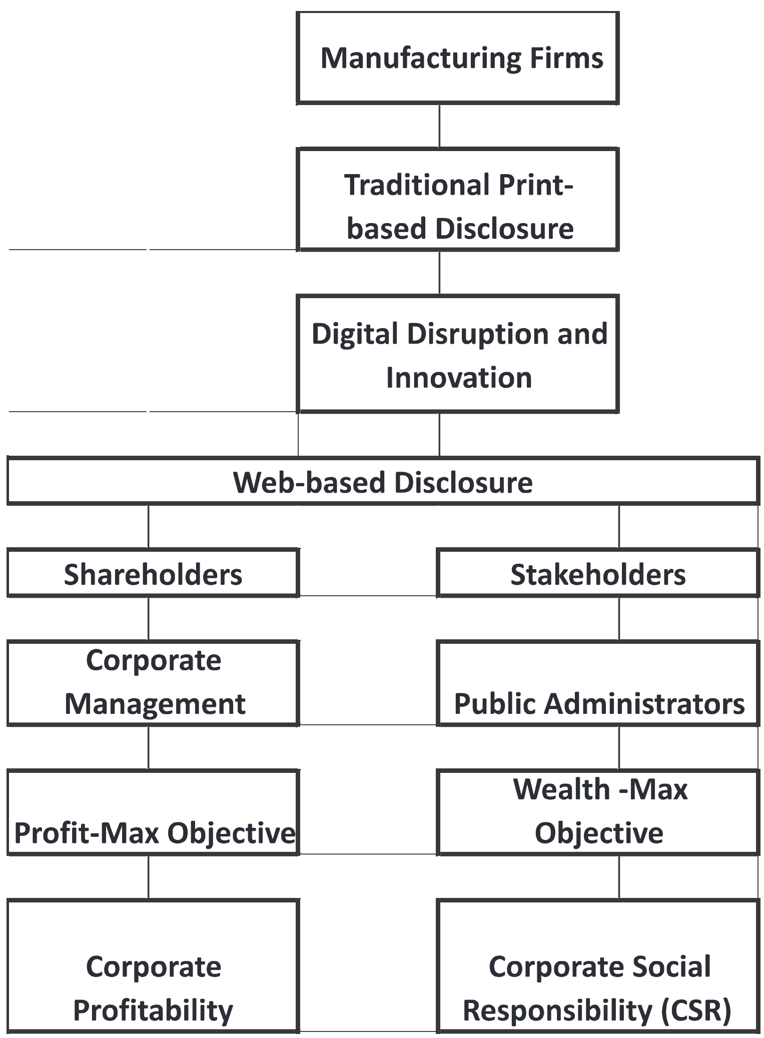

Figure 1. Development of conceptual model guiding the hypotheses

The study is based on manufacturing firms as corporate entities and how the adoption of web-based environmental disclosures has enhanced their profitability. The model is developed on the comparison of listed firms that do not have well developed websites for annual and subsidiary reports and those that have.

Web-based environmental disclosure is an offshoot of digital disruption/innovation. Digital disruption represents those changes that occur when new digital technologies and business models affect the value proposition of existing goods and services. Disruption can also be described as “making things that make the old things obsolete” while innovation is “doing the same things a bit better” (Ojedukun, 2020).

From the above disposition, the model outlines that web-based disclosures by corporate entities in Nigeria can achieve better firms' objectives (wealth maximization) which embrace every stakeholder in companies. This would take a nearer route to corporate profitability than the traditional print-based disclosures which were sent to company owners (shareholders) only, and whose major objective was profit maximization at the expense of other stakeholders' wealth. The moderating role of public administrators is factored in here, indicating how wealth maximization objective which supports the corporate social responsibility is projected for the public, rather than just profit making for company shareholders.

Hypothesis 1: There is no significant relationship between the extent of web-based disclosure and corporate profitability of Nigeria manufacturing companies.

Hypothesis 2: There is no significant relationship between traditional print-based disclosure and enhanced corporate profitability in Nigeria manufacturing companies.

Hypothesis 3: There is no significant joint relationship between Earnings per share (EPS), Return on Assets (ROA) and Web-based Environmental Disclosure (WED).

4 Research Methodology

4.1 Research design

The study adopted quantitative panel methodology using the post facto and correlational research design. The goal of this design was to measure the relationship between the two variables of corporate profitability and web-based environmental disclosure. This methodology was used in analyzing secondary (panel) data collated from the Nigerian Stock Exchange fact books and portal from 2014-2019.

The profitability of the manufacturing companies was indicated by EPS and ROA and depended on web-based environmental disclosures as an independent variable. The population of the study was the 83 manufacturing companies listed in the Nigerian Stock Exchange under the manufacturing sector. The Taro Yamane formula was used to arrive at a sample size of 69 manufacturing companies, and a non-census (probability sampling) technique was adopted, making use of the stratified random sampling to have a true representation of all strata of the manufacturing companies in the population. The strata include manufacture of consumer goods, construction, food and agricultural processing, manufacturing of healthcare and pharmaceutical products, industrial goods and oil and gas.

4.2 Model specification

Multiple regression model was used as the major statistical tool. Students' t-test was used to measure the responsiveness of explanatory variables on the dependent variable, corporate profitability. In the same vein, to see the overall fit of the model, ANOVA was used, which measured collective influence of all the dependent variables on the independent variable.

The full specification of the regression model is Y = f(X)

$$Y = \alpha + \beta_1 x_1 + \mu$$

Where, Y = Corporate profitability (Dependent variable), indicated by Earnings per share (EPS) and Return on Assets (ROA)

X = Web-based environmental Disclosures (WED) as Independent variable.

α = Intercept

$\beta_1 x_1$ = Coefficient of the independent variable

Model: *Corporate profitability of the firm = f (Web-based Environmental Disclosures)*

Therefore,

$$EPS = a_0 + \beta_1 WED + \mu \quad \text{.................}(1)$$

$$ROA = a_0 + \beta_1 WED + \mu \quad \text{.................}(2)$$

Data presentation and analysis

Table 1 Showing multiple regression of the relationship between corporate profitability sub-variables and Web-based environmental disclosures.

Model	Unstandardized coefficient		Standardized coefficient B	t	Sig	Result
	B	Std error				
Constant	70.037	2.327	----------	30.092	0.000	Significant
EPS	0.447	0.126	0.234	3.536	0.000	Significant
ROA	-0.325	0.195	-0.113	-1.666	0.097	Insignificant

Dependent Variable: Corporate profitability

Source: SPSS V.20 Field Data Analysis.

Table 2 showing analysis of variance associated with multiple regression on the joint relationship between variables of corporate profitability and web-based environmental disclosures.

Model	Sum of Squares	D.F	Mean of square	F	R	R2	Sig	Result
Regression	54496.814	6	9082.802	56.029	0.720	0.519	0.000	Significant
Residual	50578.277	312	162.110					
Total	105075.091	318						

Source: SPSS V.20 Field Data Analysis.

5. Results

The multiple regression in table 1 above reveals a beta value of 0.234 for earnings per share. This value however was significant at 0.000 alpha level. Hence, since the p-value of 0.000 was less than the choosen alpha level of 0.05, the null hypothesis 1 was rejected and the alternate accepted implying that web-based disclosure and corporate profitability of Nigerian manufacturing companies are significantly related.

The analysis in the table also reveals a beta value of -0.113 which represents approximately 11% of the total contribution to corporate profitability. Furthermore, a p-value of 0.09 was also realized. However, since the p-value was greater than the chosen alpha, hypothesis 2 was accepted and its corresponding alternative rejected. This in actual sense implies that there is no significant relationship between traditional print-based disclosure and enhanced corporate profitability in Nigeria manufacturing companies.

Table 2 reveals that a multiple r corelation between all the dependent variables with the independent variable. A multiple correlation coefficient (R) of 0.720 was realized indicating a high correlation. A R squared value of 0.519 was also realized. This value indicates that the independent variable combined with the proxies of the dependent variable contribute about 51.9% to the corporate profitability of firms in Nigeria. The table also reveals a p-value of 0.000. Since the p-value is less than the chosen alpha level of 0.05, hypothesis 3 was rejected meaning that there is a significant joint relationship between Earnings per share (EPS), Return on Assets (ROA) and Web-based Environmental Disclosure (WED) of Nigerian manufacturing companies.

6. Conclusion and Recommendations

Considering the global trend in web-based environmental reporting, the question as to whether companies within Nigeria, nay Africa can afford to be left out of the all-encompassing wave of technological competency for environmental reporting practice is still begging for answers. Therefore, this study employed empirical methods to test the effect of web-based environmental reporting on firms' profitability. The evidence suggests that firms' performance (profitability) significantly relates with web-based environmental disclosure level of listed firms in Nigeria. Firms' performance may not be used as an input factor for investment decision-making or explain why companies make web-based environmental disclosures. Perhaps firms make choice details regarding their environmental issues to enhance their corporate profitability.

It was discovered in the study that a number of listed firms do not own a website that can show significant details about their operations. In improving web-based environmental transparency level, it is recommended that regulatory laws and standards be set compelling listed companies to own and operate corporate websites, especially those without corporate websites, and dedicate separate pages on their websites for making environmental disclosures. This has the tendency of improving companies' consciousness towards web-based environmental reports. Where this becomes the case, sufficient and quality environmental disclosure will be guaranteed.

A significant factor that contributes to a company's corporate survival is dependent on the communities' acceptability of the firm. Thus it is recommended that firms enhance their corporate existence by engaging more on corporate environmental responsibility activities.

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