



## Effluence Disclosure and Financial Performance of Listed Consumer and Industrial Goods Firms in Nigeria and South Africa

MIESEIGHA, Ebipanipre Gabriel<sup>1</sup> & OKEWALE, Joel ADENIYI<sup>2</sup>

<sup>1&2</sup>Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria

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### Abstract

*This study investigated the effect of effluence disclosure on financial performance of listed consumer and industrial goods firms in Nigeria and South Africa. Ex-post facto research design was used and secondary data were obtained from the audited yearly annual reports and accounts of selected consumer and industrial goods firms in Nigeria and South Africa. Data obtained were analyzed using descriptive, diagnostic and inferential statistics. The study found that high-quality effluence disclosure (waste management disclosure) is imperative for corporate transparency and accountability, especially for corporate firms operating in Sub-Saharan Africa such as Nigeria and South Africa. The implication of this finding is that investing in effluence or waste management practices and disclosing these efforts can lead to increased efficiency, reduced costs, and enhanced reputation, ultimately contributing to better financial outcomes. As such, firms are to consider integrating environmental sustainability into business strategies and ensure disclosure of these efforts to stakeholders. On the basis of the findings, the study recommends that consumer and industrial goods firms should focus more attention on waste/effluence management information disclosure because it can boost their corporate image and reduce industrial conflict with host communities*

**Keywords:** Effluence disclosure; Financial performance; Return on equity; Return on asset; Waste management; Nigeria; South Africa

**JEL Classification:** M40; M49

### Introduction

Practically, corporate organizations have been contending to increase their performance in numerous ways, despite the negative effects their activities may have on stakeholders within confines of their area of operations. These contentions as observed by Atube and Okolie (2024), has attracted interests of stakeholders such as the international organizations, national and international governments, together with the imperative roles of external dynamics like pressure from consumers, competitors, globalization, accounting regulators and researchers alike. For this reason and many others, companies are compelled to pay significant attention to social cost disclosures in financial statements (Nkwoji, 2021).

In light of this, companies do not contemplate corporate social responsibility (CSR) expenses as a cost (Adeyemi, et al, 2020), rather it is seen as a strategic tool to boost the efficiency, and retention of talented workforce and to inspire management to facilitate companies to gain a reputable corporate image. Accordingly, this study is directed to ascertain the effect of social accounting disclosures (particularly Effluence Disclosure) on corporate performance of listed consumers and industrial goods firms in Sub-Saharan Africa. Fundamentally, this study was motivated by two (2) identified research gaps – Literature and Measurement Gaps. First, there

is no single research examining how effluence disclosure interacts with financial performance of listed consumer and industrial goods companies in sub-Saharan Africa is relatively scarce. Therefore, it is critical to continue and step-up research into the relationship between effluence disclosure and financial results of listed companies in sub-Saharan Africa. Second, there have been measurement bottlenecks as to how effluence disclosure is measured.

Consequently, there was a need for a comprehensive method that provided a nuanced understanding of effluence disclosure and their relationship with corporate performance. Accordingly, this study used a multifaceted Global Reporting Index standard to measure effluence activities. So far, little is known about single research in Sub-Saharan Africa that has examined the relationship between effluence disclosure and financial performance using the recommended GRI index/indicators. This study addressed the deficiencies that were found after a comprehensive examination of how effluence disclosure affected the financial performance of publicly listed firms in the consumer and industrial goods sectors of two (2) sub-Saharan Africa countries namely – Nigeria and South Africa.

### Review of Related Literature

#### Effluence Disclosure

Cooper (2018) defines waste management, also known as effluence management, as the actions an organisation takes to reduce, eliminate, and ideally prevent any negative environmental effects that may result from its environmental activities. Managing waste includes all waste management-related operations and resources, such as maintaining garbage transport trucks and disposal sites and adhering to environmental and health regulations. Two elements of waste management methods are the collection and breakdown of solid waste.

Numerous activities that take place both within and outside of a company's primary operations may add to the total quantity of waste produced during the manufacturing or delivery of goods or services. Effective waste and residual material management necessitates a thorough understanding of the resource usage and recycling procedures that non-financial businesses employ in their manufacturing operations, as well as an understanding of how each step affects each stakeholder. The materials and waste management issue is influenced by organisational levels, operating cycles, and resource flow (Kurdve et al., 2017). Organisations and businesses collaborate to recycle materials from the many phases of resource recovery.

### **Financial Performance**

The central role in gauging an entity's overall health and advancement rest on performance and the idea of corporate performance has remained a prominent thread in accounting literature (Adekunle & Adeyemi, 2013). The word "corporate performance" is used to describe the advantages that a corporation gets from its shares, operations, and functioning, which are often detailed in its financial statements. In order to measure how well a business is doing, analysts use a variety of profitability measures. These include operational profit, return on equity, return on assets, profit margin, profitability, turnover, and market-based indicators like Tobin's Q.

Herly and Sisnuhadi (2011) believe that the financial statement is a good tool for evaluating a firm's performance. It is believed that a high-performing firm would strengthen quality disclosure in its financial accounts. Financial ratios are a common way to assess an entity's performance since they reveal relationships between the variables included in the financial statements. According to Kabayeh, Nu'aimat and Dahmash, (2012), financial ratios may be a helpful tool for assessing company performance when contrasted with other relevant data, such financial ratios from the same company or related industries, both current and historical. This according to Arikewuyo, Adeyemi and Edu (2019) could aid strategic managerial planning.

Strategic management is centered on improving company performance (Al-Matari, Al-Swidi & Fadzil, 2014). Several related studies were directed to analyze different aspects of strategy and

implementation of the concept of corporate performance. Accounting makes the significance of corporate performance clear by offering several recommendations to boost financial performance. Social accounting and the stated success of corporations are mostly reliant on accounting-based metrics revealed in empirical studies. When looking at the connection between social accounting and corporate performance, several researchers used accounting-based metrics or market-based metrics.

Furthermore, an often-used accounting indicator for evaluating a company's performance is the benchmark rate of return also known as the risk-adjusted weighted average cost of capital. Metrics based on accounting might reveal a company's short-term performance from prior years. Profits earned by a corporation throughout an accounting period as a percentage of total assets, capital employed, net worth, turnover, etc. is called the corporate performance ratio, and it is a key indication of the overall efficiency of the organization. This is considered a sign of progress, achievement, and mastery. Creditors look at corporate performance ratios since they provide information to assess whether or not the firm can pay its interest bills.

By contrast, corporate performance ratios are of importance to shareholders because they reveal the development and return on investment of their capital (Al-Matarneh, 2009). The profit metric was panned by Kapopoulos and Lazaretou (2007) due to its inability to look forward and its reliance on depreciation and amortization to partially predict future occurrences. Various approaches to valuing physical and intangible assets place constraints on accounting profit margins due to rules imposed by the accounting profession. Wahla, Shah and Hussain, (2012) sees market-based assessment ratios as a mirror on shareholders' expectations for the entity's future grounded on past or present performance. Market-based metrics includes Tobin's Q, Market Value Added, Market Value to Book ratio, dividend yield, yearly stock return, among others.

### **Corporate Performance Measures of the Study Return on Asset (ROA)**

A company's return on assets (ROA) can be calculated by dividing its total assets by its net profit after taxes. The ratio of operational income to total assets and the division of net income by total assets are the two most widely used techniques for calculating return on assets. Social and environmental costs significantly impacted enterprises' return on assets (ROA), according to earlier research by Nnamani et al. (2017), Muhammad, Faisal and Muhammad (2016), Jeroh and Okoro (2016), Gamble et al. (2015), Freedman and Jaggi (2012), and Ingram and Frazier (2010). The literature has presented contradictory data regarding the relationship between corporate performance and social and environmental costs.

While some research have found a favourable correlation, others have found the opposite. This draws attention to two issues with the empirical findings.

This study used operational performance dynamics, like ROA, to assess corporate performance while accounting for the submission of prior research. In an attempt to elucidate the claim in the accounting literature, this study focused on ROA and ROE as corporate performance variables in its empirical model because prior research has produced contradictory findings about the relationship between ROA and ESG. Therefore, it can be assumed that social accounting has no effect on the return on assets of some public companies in Sub-Saharan Africa.

### **Return on Equity (ROE)**

Return on equity (ROE) is a metric that is typically used to analyse a company's performance over time, and investors are more concerned with ROE than with debt. From the standpoint of the shareholder, using retained profits is better than looking for outside investment. This is predicated on the notion that businesses would only resort to debt financing in the event that retained earnings were inadequate. As a proportion of the original equity invested, ROE calculates the portion of a company's net income that is distributed to shareholders. ROE, which measures how much profit shareholders receive from their investments, is calculated by dividing net income after taxes by total equity or capital employed.

Social and environmental accounting and return on equity (ROE) have a positive or negative correlation (Egbunike & Okoro, 2018; Nnamani et al, 2017; Ifurueze, Lydon, & Bingilar, 2013). In light of the results of these empirical studies, the return on equity (ROE) is included in this study as a gauge of corporate performance. Therefore, it is assumed that the return on equity of some quoted consumers and industrial goods firms in Sub – Saharan Africa are unaffected by social accounting methods.

### **Theoretical Framework**

This research used a combination of contemporary management theories; the Stakeholder and legitimacy theories are foundational ideas in this inquiry. Stakeholder theory and legitimacy theory are both intricate and related theoretical frameworks. In both views, the organization is seen as functioning inside a larger social system, having both external and internal influences. An essential tenet of legitimacy theory is the idea of an implicit agreement between an organization and the community in which it functions. Legitimacy theory takes societal interactions into account, while stakeholder theory focuses on specific stakeholders.

Legitimacy and stakeholder theories both provide a comparable but somewhat different views on the factors that motivate managerial behavior.

Legitimacy theory, which complements stakeholder theory, offers a suitable framework for studying corporate disclosure practices by shedding light on how companies comprehend and address evolving public and institutional demands and expectations. It also emphasized that corporate reporting and other organizational practices are tied to the values of the community in which a company works and the importance of preserving the legitimacy of the organization. Social accounting is an important concept in this field, legitimacy theory and stakeholder theory add to it by presenting more commercial reasons why companies should work towards disclosing information about the social component of the organization.

### **Methodology**

This study used *ex-post facto design* in this inquiry; this approach was utilized because the aim was to identify factors associated with a particular event or behavior by examining similar events that have already occurred. Firms in four nations in sub-Saharan Africa that are openly traded on reputable stock exchanges made up the sample population for this research. The recognized stock exchanges were Nigerian Exchange Group (Nigeria) and Johannesburg Stock Exchange (South Africa). This was premised on the fact that they constitute the most liquid stock markets in Sub-Saharan Africa and complies with the provisions of International Financial Reporting Standards with regards to preparation of corporate financial reports. There were 312 companies listed on the Johannesburg Stock Exchange, and 173 on the Nigerian Exchange Group as of December 31, 2022.

Inclusion and exclusion criteria were used because data collected were from those companies that had incorporated effluence disclosure in their activities from 2012-2022. Consequently, the researcher chose its sample size using the inclusion and exclusion criteria. The researcher used this approach to evaluate data from consumer and industrial goods firms who had adequately disclosed effluence variables in their financial statements. Hence, excluded from the sample were consumer and industrial goods companies that had not traded on the Nigerian Exchange Group, and Johannesburg Stock Exchange during the eleven years period (2012–2022) as well as firms that had not disclosed effluence activities in their financial statements.

The study's sample size was made up of firms with available financial statements for the period of this research as of December 31, 2022; forty-one (41) were from consumer and industrial goods companies quoted on the Nigeria Stock Exchange, one-hundred and sixty four (164) on the Johannesburg Stock Exchange. Secondary sources (yearly published annual reports and accounts) were used to gather data. Additionally, corporate performance metrics used were ROE and ROA (dependent variable) while the

independent variable is effluence disclosure (waste management). Drawing inferences from these theories, statistic and dynamic regression models were developed to allow for country specific analysis and dynamic panel regression analysis for combined country analysis.

#### Linear Model:

$$ROE_{it} = (\gamma_0 + \beta_1 WD_{it} + \beta_2 FL_{it} + \beta_3 FS_{it} + \varepsilon_t) \dots\dots\dots (1)$$

#### Common Effect Model or Pooled Least Square (PLS)

$$ROE_{it} = (\gamma_0 + \beta_1 WD_{it} + \beta_2 FL_{it} + \beta_3 FS_{it} + \varepsilon_t) \dots\dots\dots (2)$$

#### Fixed Effect Model or Least Squares Dummy Variable (LSDV)

$$ROE_{it} = (\gamma_0 + \beta_1 WD_{it} + \beta_2 FL_{it} + \beta_3 FS_{it} + \varepsilon_t) \dots\dots\dots (3)$$

#### Random Effect Model or Generalized Least Square

$$ROE_{it} = (\gamma_0 + \beta_1 WD_{it} + \beta_2 FL_{it} + \beta_3 FS_{it} + \mu_i + \varepsilon_t) \dots\dots (4)$$

Where: ROE= Return on equity; WD=waste management disclosure (effluence disclosure); Financial Leverage= Firm Size; FS= Firm Size; i= number of individuals or cross section; t= number of periods;  $\varepsilon_t$ = white noise.

Table 1: Description and Measurement of Variables

S/N	Variables	Description	Measurement
1.	Return on Assets	The results derived from utilization of firms' assets.	This is calculated as the profit before tax divided by total asset; expressed as a percentage.
2	Return on Equity	A gauge of firms' profitability. It is a measure of net income by shareholders' equity.	This is expressed as the profit before tax divided by total equity; expressed as a percentage
3.	Waste Management Disclosure	The disclosure of amount expended on the management of corporate waste.	Presented as content analysis with a value of "1" when reporting waste management is active and "0" when not.
7	Financial Leverage	It is the percentage of debt-to-equity ratio of the organisation	It measured by dividing total debt from total equity of the organisation.
8	Firm Size	It is the value of the overall asset of the organisation	It is the Logarithms of the total asset in the organisation

Source: Author's Compilation (2025).

Using panel data covering 2012–2022, the study analysed four sub-Saharan African nations' consumer and industrial products companies (Nigeria, and South Africa) based on their effluence disclosure (waste management), and corporate performance. The countries were selected because they appear to be among the leading nations in sub-Saharan Africa in terms of recognized Stock Exchanges, regulation and having robust capital markets (Okoro & Ekwueme, 2021). Furthermore, another reason for the selection of Nigeria and South Africa as sampled countries for this study was premised on the fact that

they were among the first countries in Sub-Saharan Africa to join the league of nation in the implementation of IFRS as well as compliance to Global Reporting Index (GRI) on sustainability matters. Given the wide variation in currencies across the sub-Saharan African nations studied (e.g., the Naira of Nigeria, and the Rand of South Africa) and to prevent problems with scaling, the study's variables were converted to US dollars (USD) as the base value. The study used descriptive, regression diagnostic and inferential statistics in analyzing the data obtained in the study.

## Results and Discussion

**Table 2: Descriptive Statistics (Aggregate)**

	ROE	ROA	WD	FL	FS
<b>Mean</b>	1.470732	1.355109	0.530314	0.937922	7.056672
<b>Median</b>	0.138767	0.056483	1.000000	0.340000	7.028959
<b>Maximum</b>	840.1909	769.0188	2.000000	99.69000	9.525021
<b>Minimum</b>	-1964.350	-179.9200	0.000000	-7.540000	4.370476
<b>Std. Dev.</b>	54.18121	16.40439	0.501309	2.803216	0.926545
<b>Skewness</b>	-24.68207	36.49559	-0.095985	18.72698	0.075015
<b>Kurtosis</b>	895.9072	1719.302	1.076326	587.6666	2.579767
<b>Jarque-Bera</b>	934.67280	3.457808	436.6497	401.15922	23.27036
<b>Probability</b>	0.000000	0.000000	0.000000	0.000000	0.000009
<b>Sum</b>	4125.403	3801.079	1487.000	2630.871	19793.97
<b>Sum Sq. Dev.</b>	8231432.	754567.8	704.4233	22033.89	2407.193

Author's Compilation (2025); Note: ROE (Return on equity), ROA (Return on Asset); WD (Waste management disclosure); FL (Financial Leverage) and FS (Firm size)

The average ROE is 1.47%, with a median of 0.13% and a standard deviation of 54.18. ROA has a mean of 1.35 percent, a median of 0.05 percent, and a standard deviation of 16.40 percent. The median value of WD (Waste management disclosure) is 1.00%, with a standard deviation of 0.50. The mean value is 0.53%. Financial leverage (FL) ranges from a mean of 0.93% to a median of 0.34% with a standard deviation of 2.80%. The median value of FS (Firm Size) is 7.02%, with a standard deviation of 0.93. The mean value is 7.05%. One example of a skew variable is return on equity (ROE), which has a negative skewness of -24.68. The following variables exhibit positive skewness: Return on Asset (ROA) at 36.49, Waste Management (WD) at -0.09, Financial Leverage (FL) at 18.72, and Firm Size (FS) at 0.07.

The following metrics are platykurtic: FS (Firm Size) is leptokurtic at 2.57, FL (Financial Leverage) is platykurtic at 587.6, WD (Waste Management Disclosure) is leptokurtic at 1.07, and ROE (Return on Equity) is platykurtic at 895.9. The Jarque-Bera test is an asymptotic test that shows that ROE (Return on Equity) is not normally distributed, with a value of 4125.4 at 0.0000 probability. At 0.0000, the ROA (Return on Asset) is 3801.0. Waste management disclosure, or WD, is not normally distributed, with a value of 436.64 at 0.0000 probability. The value of FL, which is not normally distributed, is 1261.3 at 0.0000 probability. FS has a value of 23.270 at 0.0000 probability which is not normally distributed.

**Table 3: Correlation Analysis (Aggregate)**

	ROE	ROA	WD	FL	FS
<b>ROE</b>	1				
<b>ROA</b>	0.4081	1			
<b>WD</b>	-0.0112	-0.0447	1		
<b>FL</b>	0.0102	0.0034	0.0023	1	
<b>FS</b>	0.0287	0.0115	0.1067	-0.0022	1

Author's Compilation (2025);

The dependent and independent variables' correlation matrices are shown in Table 3 above. Importantly, waste management (WD) disclosure and return on equity (ROE) reveal a negative correlation between

these variables, while financial leverage (FL) and firm size (FS) show a positive correlation. Return on Asset (ROA) is positively correlated with FL and FS, but negatively correlated with WD

**Table 4: Variance Inflation Factor (Aggregate)**

Variables	Centered VIF
<b>WD</b>	1.195985
<b>FS</b>	1.018973
<b>FL</b>	1.004631
<b>C</b>	NA

Author's Compilation (2025)

The variance inflation factor in Table 4, which is more resilient to the correlation matrix, aids in

examining the existence of multicollinearity between the independent variables. As a general rule, the

value that appears before the decimal point shouldn't exceed five. Multicollinearity is present when the value is greater than five, but it is absent when the number is less than five. Multicollinearity is absent

in the data, which suggests that the explanatory variables are suitable to define together in an econometric model.

**Table 5: Pooled Regression Model**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<b>ROA (-1)</b>	0.153186	0.019633	7.802624	0.0000
<b>WD</b>	-1.255643	0.679201	-1.848707	0.0646
<b>FL</b>	-0.002677	0.116158	-0.023049	0.0016
<b>FS</b>	0.222225	0.359760	0.617704	0.5368
<b>C</b>	0.878298	2.666699	0.329358	0.7419
R-squ.	0.525822		Mean dep. var	1.395881
Adj. R-squ.	0.523907		S.D. dep. var	16.95715
S.E of reg.	16.75322		Akaike info criterion	8.477410
Sum squ. resid	713745.2		Sch. criter	8.491164
Log likelihood	-10798.46		Hannan-Quinn criter.	8.482398
F-stat.	13.48127		D-W stat	2.106847
Prob(F-stat.)	0.000000			

Author's Compilation (2025)

The dynamic pooled effect model (upper limit) results show a positive and statistically significant influence on ROA. There is a negative but negligible relationship between WD (Waste Management Disclosure) and ROA, meaning that for every percentage point rise in WD (Waste Management Disclosure), ROA will drop by 1.25 points. The

relationship between financial leverage (FL) and ROA is negative and statistically significant; that is, for every percentage point rise in FL, there will be a -0.00 point increase in ROA. An increase of 1% in FS (Firm Size) results in a rise of 0.53% in ROA, suggesting that FS (Firm Size) has a positive but small impact on ROA.

**Table 6: Fixed Effect Model**

Variable	Coefficient	Std. Error	t-Stat.	Prob.
<b>ROA (-1)</b>	0.020985	0.020620	-1.017677	0.3089
<b>WD</b>	0.346926	1.148309	0.302119	0.7626
<b>FL</b>	-0.023990	0.126627	-0.189450	0.8498
<b>FS</b>	0.087239	1.361026	0.064098	0.9489
<b>C</b>	1.866821	9.589522	0.194673	0.8457
Cross section fixed (dummy variables)				
R-squ.	0.596393		Mean dep. var	1.395881
Adj. R-squ.	0.588243		S.D dep. var	16.95715
S.E. of reg.	16.11916		Akaike info criterion	8.494310
Sum squ. resid	594745.0		Sch criteri	9.090347
Log likelihood	-10566.00		H-Q criter	8.710487
F-stat.	2.049462		D-W stat	2.104692
Prob(F-stat.)	0.000000			

Author's Compilation (2025)

The dynamic fixed effect model's (lower limit) revealed a positive but small influence on ROA. ROA is positively and insignificantly affected by WD (Waste Management Disclosure), suggesting that a 1% increase in WD would result in a 0.3% boost to ROA. A percentage rise in financial leverage

(FL) will result in a -0.02 increase in ROA, suggesting that FL has a negative but minor influence on ROA. An increase of 1% in FS (Firm Size) results in a 0.08 percentage point rise in ROA, suggesting that FS (Firm Size) has a positive but minor influence on ROA.

**Table 7: Generalized Method of Moment Model**

Variable	Coefficient	Std.Error	t-Stat.	Prob.
<b>ROA (-1)</b>	0.133296	0.000538	-247.8733	0.0000
<b>WD</b>	16.44023	0.287649	57.15371	0.0000
<b>FL</b>	0.457328	0.072810	6.281134	0.0000
<b>FS</b>	17.98424	1.636598	10.98880	0.0000
Cross section fixed (dummy variables)				
Mean dep. var	0.215220		S.D. dep.Var	22.39394
S.E. of reg.	21.87769		Sum squ.Resid	1095113.
J-stat.	59.45874		Instrument rank	49
Prob(J-stat.)	0.509843			

Author's Compilation (2025)

Table 7 above shows the difference GMM estimation. The lagged dependent variable of 0.13 coefficient which is above the (lower bound) fixed effect model lagged dependent variable of 0.02. It is therefore indicating that the model is correctly instrumented and the regressors could explain the dependent variable accurately in the long-run. It indicates a reasonable level of persistence significant below 0.05 probability level. The Hansen- Sargan test captured by the J-statistic shows probability value of 0.50 which is still within the boundary of ( $0.25 < p\text{-value} < 1.0$ ). This indicates that all over-identifying restrictions are valid.

ROA is positively and significantly affected by WD (Waste Management Disclosure), suggesting that a 1% increase in WD would result in a 16.44% rise in ROA. A positive and statistically significant relationship exists between financial leverage (FL) and ROA, suggesting that for every percentage point rise in FL, there will be a 0.45% increase in ROA. A positive and statistically significant relationship exists between FS (Firm Size) and ROA, suggesting that a 17% boost to ROA may be achieved with a 1% rise to FS (Firm Size). The Arellano bound serial correlation test for objective 1 is presented in table 4.23:

**Table 8: Arellano Bound Serial Correlation Test**

Test order	m-Statistic	rho	SE(rho)	Prob.
AR(2)	-1.035312	-88538.962828	85519.096684	0.3005

Author's Compilation (2025);

The AR (2) statistics aid to indicates the presence of second order correlation in the model, but with an insignificant value above 0.05 probability level, it

indicates no presence of auto-correlation in the model.

**Table 9: Pooled Regression Model**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<b>ROE(-1)</b>	0.085644	0.016303	5.253254	0.0000
<b>WD</b>	-3.250931	2.003041	-1.622998	0.0047
<b>FL</b>	0.066793	0.321584	0.207701	0.8355
<b>FS</b>	2.025894	1.000606	2.024667	0.0430
<b>C</b>	-9.202248	7.726697	-1.190968	0.2338
R-squ.	0.521633		Mean dep. var	2.077900
Adj. R-squ.	0.514355		S.D. dep. var	46.61053
S.E of reg.	46.33862		Akaike info criterion	10.51297
Sum squ. resid	5443324.		Sch criter	10.53134
Log likelihood	-13359.24		H-Q criter.	10.51963
F-stat.	5.274211		D-W stat	2.269218
Prob(F-stat.)	0.000005			

Author's Compilation (2025)

A positive and statistically substantial connection between return on equity and its historical performance is shown by the dynamic pooled effect model's upper limit. ROE is significantly impacted by waste management disclosure (WD), meaning that for every percentage increase in WD, there will be a - 3.25 fall in ROE. ROE is positively and

insignificantly affected by financial leverage (FL), meaning that a 1% rise in FL will result in a 0.06% improvement in ROE. ROE is positively and significantly correlated with Firm Size (FS), suggesting that a 1% increase in FS would result in a 2.02% rise in ROE.

**Table 10: Fixed Effect Model**

Variable	Coefficient	Std.Error	t-Statistic	Prob.
<b>ROE (-1)</b>	0.001750	0.017294	0.101167	0.9194
<b>WD</b>	-1.103930	3.339773	-0.330541	0.0410
<b>FL</b>	-0.012078	0.362186	-0.033348	0.0034
<b>FS</b>	-1.102861	3.894296	-0.283199	0.7771
<b>C</b>	6.377360	27.69743	0.230251	0.8179
Cross section fixed (dummy variables)				
R-squ.	0.622957		Mean dep. var	2.077900
Adju. R-squ.	0.622603		S.D dep. var	46.61053
S.E. of reg.	46.08075		Akaike info criteri	10.59599
Sum squ. resid	4843557.		Sch criteri	11.19779
Log likelihood	-13210.81		H-Q criter	10.81428
F-stat.	1.225230		D-W stat	2.348984
Prob(F-stat.)	0.011250			

Author's Compilation (2025)

According to the dynamic fixed effect model (lower limit), a positive and statistically substantial influence on ROE. A negative and statistically significant relationship exists between WD (Waste Management Disclosure) and ROE (Return on Equity), meaning that for every percentage point rise in WD (Waste Management Disclosure), ROE will fall by 1.10 points. Return on Equity (ROE) is

negatively and significantly affected by financial leverage (FL), meaning that for every percentage rise in FL, there will be a -0.01 fall in ROE. ROE is negatively and insignificantly affected by Firm Size (FS), meaning that for every percentage increase in FS, there will be a -1.10 drop in ROE.

**Table 10: Generalized Method of Moment Model**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<b>ROE(-1)</b>	0.028815	0.000409	70.41290	0.0000
<b>WD</b>	3.382776	3.630190	0.931846	0.3515
<b>FL</b>	0.736846	0.205256	3.589886	0.0003
<b>FS</b>	219.2019	7.108624	30.83605	0.0000
Cross section fixed (dummy variables)				
Mean dep.Var	0.329592		S.D. dep. var	66.87242
S.E. of reg.	92.53838		Sum squ. resid	19481627
J-stat.	41.70587		Instrument rank	51
Prob(J-stat.)	0.570436			

Author's Compilation (2025)

Table 10 above shows the difference GMM estimation. The lagged dependent variable of 0.02 coefficient which is above the (lower bound) fixed effect model lagged dependent variable of 0.00. It is therefore indicating that the model is correctly instrumented and the regressors could explain the dependent variable accurately in the long-run. It indicates a reasonable level of persistence significant below 0.05 probability level. The Hansen- Sargan test captured by the J-statistic shows probability value of 0.57 which is still within the boundary of (0.25 < p-value < 1.0). This indicates that all over-identifying restrictions are valid.

ROE is positively but insignificantly affected by WD (Waste Management Disclosure), suggesting that a 3% drop in ROE may be achieved with a 1% rise in WD. The relationship between financial leverage (FL) and ROE is positive and statistically significant. This means that for every percentage point rise in FL, there will be a 0.73% increase in ROE. A positive and statistically significant relationship exists between FS (Firm Size) and ROE, suggesting that a 219.2% boost to ROE is possible for every percentage point rise in FS (Firm Size).

**Table 11: Arellano Bound Serial Correlation Test**

Test order	m-Stat.	Rho	SE(rho)	Prob.
AR(2)	-0.512866	-100350.20464	195665.430947	0.6080

Author's Compilation (2025)



The AR (2) statistics aid to indicates the presence of second order correlation in the model, but with an insignificant value above 0.05 probability level, it indicates no presence of auto-correlation in the model. The key distinction According to GMM estimate, ROA is positively and significantly affected by WD (Waste Management Disclosure), suggesting that a 1% increase in WD would result in a 16.44% rise in ROA. A positive and statistically significant relationship exists between financial leverage (FL) and ROA, suggesting that for every percentage point rise in FL, there will be a 0.45% increase in ROA. ROA is positively and significantly correlated with Firm Size (FS), suggesting that a 1% increase in FS would result in a 17.98% rise in ROA.

The findings indicate that Waste Management Disclosure (WD) positively affects ROA, highlighting that effective waste management practices can enhance profitability, likely due to cost savings and improved operational efficiency. These results underscore the importance of strategic resource allocation in sustainability efforts, where certain disclosures can either detract from or contribute to a firm's financial performance. Companies should carefully evaluate the financial implications of their sustainability initiatives to optimize their impact on profitability.

Theoretically, this finding conforms to legitimacy and stakeholder theories which offer comparable but somewhat diverse views on factors motivating managerial behaviour. For instance, both theories offered suitable frameworks for studying social accounting disclosure practices by shedding light on how firms comprehend and address public and institutional expectations. Accordingly, social accounting disclosure and other organizational practices are tied to values of waste management in which a firm operates and the imperativeness of preserving legitimacy of the firm. Empirically, finding of this study is consistent with Nkwoji (2021); Daferighe, et al (2019); Amran and Siti-Nabiha (2017); Jeroh and Okoro (2016); Magara, et al (2015)

### Conclusion and Recommendations

This study concludes that consistent and high-quality effluence disclosure is vital for corporate transparency and accountability, especially for corporate firms operating in Sub-Saharan Africa. Firstly, the positive relationship between waste management disclosures (effluence disclosure) and return on assets suggests that firms can improve financial performance substantially. This implies that investing in waste management practices and disclosing these efforts to stakeholders can lead to increased efficiency, reduced costs, and enhanced reputation, ultimately contributing to better financial outcomes. As such, firms are to consider integrating environmental sustainability into business strategies and ensure disclosure of these efforts to stakeholders.

The findings also have implications for firms' human capital management practices. On the basis of the findings, the study recommends that consumer and industrial goods firms in Sub-Saharan Africa should focus more attention on waste management (effluence management) information disclosure because it will boost their corporate image and reduce industrial conflict with host communities. This may encourage external stakeholders to patronize firms' product.

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