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Relationship between Environmental Reporting Practices and Financial Performance of Some Select Companies in the USA: An Empirical Study

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Abstract

Environmental reporting involves organisations disclosing their environmental performance to promote transparency, accountability, and sustainability. This study examines corporate environmental disclosure practices in the U.S., emphasising their relationship with economic attributes and their impact on environmental performance. By analysing key financial indicators like CRR, WTA, DBTA, CFTA, and ROTA, the study finds a meaningful collective relationship with environmental disclosure (ENVNDS). However, more than half of the variability (55.3%) remains unexplained, suggesting that additional factors influence ENVNDS. The weak and statistically insignificant relationship between DBTA and WTA further highlights the complexity of financial-environmental interactions. Benchmarking frameworks like GRI-302, GRI-303, GRI-305, and GRI-306 help assess corporate compliance and environmental performance. Despite some limitations, environmental reporting has become integral to corporate transparency and sustainability efforts in the U.S.A. Future research should focus on improving environmental disclosure metrics, evaluating the influence of reporting on organisational behaviour, and assessing the long-term benefits of transparency. A deeper understanding of these factors can enhance reporting frameworks and drive meaningful corporate sustainability initiatives.

Keywords: CRR; DBTA; Environmental Reporting; ENVNDS

Introduction

The concept of Environmental, Social, and Governance (ESG) reporting has gained significant traction in the corporate world, driven by an increasing recognition of the importance of sustainable and responsible business practices. This rise in prominence can be attributed to a variety of factors, including heightened public awareness of climate change, social inequalities, and corporate governance failures that have permeated headlines in recent years (Almaqtari *et al.*, 2023). As stakeholders demand greater transparency and accountability from companies, traditional financial metrics alone no longer suffice to evaluate corporate performance. ESG reporting emerges as a critical tool for businesses to communicate their sustainability efforts and ethical practices to a broad audience, including investors, consumers, employees, and regulatory agencies (García Martín & Herrero, 2020). Recent studies indicate a positive correlation between robust ESG performance and a company's financial outcomes - companies that actively manage their ESG risks and opportunities often experience better capital access, lower costs of capital, and enhanced long-term financial performance.

Despite the recognised benefits, the ESG reporting landscape is characterised by fragmentation and complexity. The proliferation of reporting standards - such as the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), and Task Force on Climate-related Financial Disclosures (TCFD) - creates challenges for firms striving to meet diverse stakeholder expectations and regulatory requirements. Inconsistencies in metrics and methodologies may obscure the true ESG performance of companies.

Several research papers investigated the intricate relationship between ESG reporting and firms' performance (Clarkson, Overell & Chapple, 2011; Khatri & Kjaerland, 2023), exploring the financial and operational implications of effective ESG practices. Some research papers analysed various ESG frameworks and their effectiveness in enhancing corporate accountability, as well as the impact of ESG disclosures on stakeholders' perceptions and investment behaviours.

On the other hand, environmental reporting, being a part of ESG reporting, refers to the practice of organisations disclosing information about their environmental performance and impacts. Its primary objectives are to promote transparency, encourage accountability, and provide stakeholders with relevant insights into a company's environmental practices. Sustainability reporting, guided by frameworks like GRI-200, GRI-300 and GRI-400 Series, integrates financial and non-financial (environmental and social) activities, offering a holistic view of corporate responsibility. However, global reporting lacks uniform guidelines, leading to variations across companies and countries. Effective environmental reporting enhances corporate reputation, strengthens stakeholder relationships, and influences competitive positioning in both developed and developing economies.

Present Scenario of Environmental Reporting in the United States of America

ESG (Environmental, Social, and Governance) reporting is not currently mandatory at the federal level in the United States. However, the Securities and Exchange Commission (SEC) has proposed rules that would require publicly traded companies to report on ESG factors: climate-related risks, greenhouse gas emissions, and other ESG factors. The SEC plans to implement the rules in phases. The rule was originally expected to be finalised in April 2023. Some states, like California, have implemented their own ESG-related regulations. For example, in October 2023, California enacted two bills that mandate climate risk and GHG disclosures for certain companies. Almost. GHG reporting is required for companies doing business in California that generate over $1 billion in annual revenue. The SEC has proposed climate disclosure reporting for listed companies by 2024. Here lies the significance of environmental reporting. Meanwhile, SASB provides industry-specific standards that help companies disclose sustainability information to investors. While not mandatory, SASB guidelines are increasingly adopted by US corporations. Moreover, in the USA, companies are very much aware of disclosing their sustainability performance in their reporting practices.

Through this exploration, the research seeks to contribute to the understanding of how environmental reporting influences firms' strategic decision-making and overall performance. By identifying best practices and key drivers of successful integration of environmental aspects into the reporting practices, this paper aspires to examine companies' environmental disclosure practices with a hope to provide their stakeholders a sustainable environment in the United States of America. In order to do so, this paper is categorised into six sections: Section I provides the background of the study; Section II highlights the review of literature; Section III mentions the objectives of the study; Section IV describes the research methodology used in this study; Section V explains the analysis and findings of the study; and Section VI concludes the study with some recommendations.

Objectives of the Study

This study has two specific objectives:

- To interpret the relationship between certain financial attributes of the companies in the United States of America and level of environmental narrative disclosures.
- To assess the impact of financial performance on the environmental disclosure practices of the companies in the United States of America.

Literature Review

Environmental reporting is an evolving field that examines how organisations disclose their environmental impacts, policies, and initiatives. Recent studies have explored aspects such as information quality, policy influence, technological integration, and the impact on firm performance.

Clarkson, Overell and Chapple (2011) highlighted that firms with higher pollution levels need greater environmental disclosure and advocated for enhanced mandatory reporting in Australia. Tasneem Muhammad and Basit (2016) identified greenhouse gas emissions, water consumption, and waste disposal as key indicators in global environmental reporting frameworks. Braam *et al.* (2016) found that corporate environmental reporting (CER) is influenced by greenhouse gas emissions, water use, and external assurance, reinforcing legitimacy theory.

Nor *et al.* (2016) revealed mixed findings on environmental disclosure's impact on financial performance in Malaysia, stressing regulatory roles. Zamil and Hassan (2019) examined Fortune 500 firms and found that reductions in emissions and water use positively impacted financial performance, while waste reduction had a negative effect. García Martín and Herrero (2020) showed that gender diversity and CSR committees enhance environmental performance.

Islam *et al.* (2020) emphasised that most companies neglect environmental disclosure in financial reports. Petera, Wagner and Paksiova (2021) established that environmental strategy positively affects environmental performance and economic outcomes. Ifada *et al.* (2021) found that environmental performance and firm size improve financial and environmental disclosure, while independent board oversight had no impact.

Khatri and Kjaerland (2023) studied Nordic firms and suggested that sustainability reporting can be used to gain corporate legitimacy, especially among firms lacking strong environmental commitments. Almaqtari *et al.* (2023) found that emissions disclosure, eco-friendly investments, and board attributes significantly impact environmental and ESG performance.

Franklin (2024) explored environmental reporting in Ghana's hospitality industry, emphasizing its role in sustainability tracking. Islam *et al.* (2024) found that environmental disclosures improve market performance but do not significantly affect financial performance. Schimberg (2024) revealed that environmental reporting influences policymaking through media framing and public mobilisation.

These studies highlight the growing importance of environmental reporting in corporate strategy, financial performance, and policy influence, stressing the need for improved transparency and regulatory frameworks worldwide. On the basis of the above-mentioned literature, it can be stated that almost all the literature emphasised the need for environmental reporting practices in this current era for an organisation struggling to achieve sustainable growth in the long run. But there is a dearth of literature showing the relationship between environmental reporting practices and firms' financial performance in the U.S. economy. Therefore, this study makes an attempt to bridge the gap.

Research Methodology

Sample Companies

This study considers only 10 companies operating in the USA and listed on the Dow Jones Stock Exchange. The Dow Jones Industrial Average (DJIA), Dow Jones, or simply the Dow, is a stock market index of 30 prominent companies listed on stock exchanges in the United States. These companies are chosen due to the availability of their environmental reports over the reporting years spontaneously.

The DJIA is one of the oldest and most commonly followed equity indexes. Many professionals consider it to be an adequate representation of the overall U.S. stock market compared to a broader market index such as the S&P 500. The DJIA includes only 30 large companies. It is price-weighted, unlike other common indexes such as the Nasdaq Composite or S&P 500, which use market capitalisation.

Table 1: List of Reporting Companies

Sl. No.	Companies	Symbol	Year of Inception	Title of Financial Report	Title of Non-Financial Report
1	United Health Group	UNH	1977	Annual Report	Sustainability Report
2	Goldman Sachs Group	GS	1869	Annual Report	Sustainability Report
3	Microsoft Corporation	MSFT	1975	Annual Report	Environmental Sustainability Report
4	Home Depot	HD	1978	Annual Report	Responsibility Report
5	Caterpillar	CAT	1925	Annual Report	Sustainability Report
6	Amgen	AMGN	1980	Annual Report	ESG Report
7	McDonald S Corp	MCD	1955	Annual Report	Impact Report
8	Visa Inc Class A Shares	VCA	1958	Annual Report	ESG Report
9	American Express Co	AXP	1850	Annual Report	ESG Report
10	Salesforce Inc	CRM	1999	Annual Report	Stakeholder Impact Report

Source: S&P Global (2024)

From Table 1, it is observed that all the ten reporting companies used to follow common reporting practices to disclose their financial information, that is to say, the annual report. But when it is a matter of non-financial information, their preferential pattern got differentiated due to the absence of any specific guidelines. UNH, GS, and CAT prepared the Sustainability Report; AMGN, VCA, and AXP prepared the ESG Report; MSFT used the Environmental Sustainability Report; MCD preferred the Impact Report while CRM went for the Stakeholder Impact Report to disclose their different non-financial information in relation to environmental and social activities.

Period of Study

This study considers four consecutive years ranging from 2020 to 2023 for the study. It is randomly chosen. Furthermore, this study does not consider 2024 due to the unavailability of ESG reports from the website of some reporting companies.

Sources of Data

All the data is collected from the respective non-financial reports and annual reports, as published by the sample companies.

Reporting Variables

For the measurement of financial performance of the sample companies, the following variables are considered.

Table 2: List of Variables

Variables	Abbreviation Used	Type of Variable	Measurement
Environmental Narrative Disclosure Score	ENVNDS	Dependent	Score of Narrative Disclosure as calculated through "Narrative Disclosure Index" consist of 40 items from 8 different categories. Dichotomous score of 1, or 0 is applied for the availability or non-availability of a particular item in the corporate non-financial report of sample companies for the financial year 2020-2023.
Return on Total Assets	ROTA	Independent	It is the company's Net Income divided by its Total Assets except Fictitious Assets.
Debt to Total Assets Ratio	DBTA	Independent	It is the Long-term Debt divided by Total Assets except Fictitious Assets.
Working Capital to Total Assets	WTA	Independent	It is the Working Capital (Current Assets – Current Liabilities) divided by Total Assets except Fictitious Assets.

Cash Flow to Total Assets	CFTA	Independent	It is the Operating Cash Flow divided by Total Assets except Fictitious Assets.
Cost to Revenue Ratio	CRR	Independent	It is the Total Cost incurred per unit of Total Revenue earned. Here, Total Cost is the summed-up value of Cost of Goods Sold (COGS) and Operating Expenses.

In order to measure the environmental reporting practices in terms of environmental narrative disclosure score of the sample companies, eight environmental parameters are taken into consideration on the basis of GRI – 300 series. These are:

1. Materials (GRI – 301)
2. Energy (GRI – 302)
3. Water & Effluents (GRI – 303)
4. Biodiversity (GRI – 304)
5. Emissions (GRI – 305)
6. Waste (GRI – 306)
7. Environnemental Compliance (GRI – 307)
8. Supplier Environmental Assessment (GRI – 308)

Hypothesis of the Study

H_{01}: There is no significant relationship between ROTA and level of environmental disclosure score.

H_{02}: There is no significant relationship between DBTA and level of environmental disclosure score.

H_{03}: There is no significant relationship between WTA and level of environmental disclosure score.

H_{04}: There is no significant relationship between CFTA and level of environmental disclosure score.

H_{05}: There is no significant relationship between CRR and level of environmental disclosure score.

Methodology Used for the Study

For the purpose of analysis of the study, following methodologies are used here. These are:

1. Correlation Analysis
2. Simple Linear Regression
3. Multiple Linear Regression

Assimilation between Objectives of the Study and Methodology Used

Table 3 highlights the type of methodology used to attain research objectives.

Table 3: Objective-Wise Methodology Used

Research Objectives	Methodology Used
Objective 1	1. Environmental Narrative Disclosure Index 2. Descriptive Statistics
Objective 2	1. Simple Linear Regression
Objective 3	1. Multiple Linear Regression

Results and Discussion

In order to attain the stated objectives, this section analyses the relationship between environmental reporting practices of the select companies and their financial attributes. Moreover, this section also analyses the impact of such financial variables on the environmental reporting practices of the sample companies from 2020 to 2023.

Correlation Analysis

The results of correlation analysis among the sample variables are shown in Table 4.

Table 4: Correlations among the Variables

VARIABLES		ROTA	DBTA	WTA	CFTA	CRR	ENVNDS
ROTA	Pearson Correlation	1	.416[**]	-0.117	.938[**]	-.759[**]	0.297
	Sig. (2-tailed)		0.008	0.471	0.000	0.000	0.063
	N	40	40	40	40	40	40
DBTA	Pearson Correlation	.416[**]	1	-0.248	.385[*]	-.438[**]	.594[**]
	Sig. (2-tailed)	0.008		0.122	0.014	0.005	0.000
	N	40	40	40	40	40	40
WTA	Pearson Correlation	-0.117	-0.248	1	-0.109	-0.141	0.040
	Sig. (2-tailed)	0.471	0.122		0.504	0.384	0.809
	N	40	40	40	40	40	40
CFTA	Pearson Correlation	.938[**]	.385[*]	-0.109	1	-.662[**]	0.198
	Sig. (2-tailed)	0.000	0.014	0.504		0.000	0.220
	N	40	40	40	40	40	40
CRR	Pearson Correlation	-.759[**]	-.438[**]	-0.141	-.662[**]	1	-.411[**]
	Sig. (2-tailed)	0.000	0.005	0.384	0.000		0.008
	N	40	40	40	40	40	40
ENVNDS	Pearson Correlation	0.297	.594[**]	0.040	0.198	-.411[**]	1
	Sig. (2-tailed)	0.063	0.000	0.809	0.220	0.008	
	N	40	40	40	40	40	40

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

ROTA has a very strong correlation with CFTA, suggesting that higher cash flows are closely tied to higher returns on total assets. It has a moderate correlation with DBTA, suggesting that a higher proportion of debt in assets is associated with increased profitability. On the other hand, ROTA is negatively associated with CRR, suggesting that high costs tend to have lower profitability.

A strong positive relationship between DBTA and ENVNDS indicates that firms with a higher debt ratio tend to have a higher environmental score. It means companies with higher debt might prioritise environmental reporting practices to attract investors and ensure sustainability. In other words, it can be said that debt financing may support investment in environmentally sustainable initiatives.

There is a negative correlation between CRR and ROTA, DBTA, and CFTA, indicating that overemphasising cost might hinder firms from leveraging their assets or debt to generate profits. A moderate negative correlation between CRR and ENVNDS suggests firms with higher costs have lower environmental scores.

WTA exhibits no significant correlation with other variables, thereby implying that working capital is not a critical factor in determining the profitability or cost structure of an organisation or environmental performance in this dataset. WTA might not play a central role in financial or sustainability strategies.

As a whole, ENVNDS is boosted by debt while negatively impacted by excessive cost. It clearly indicates that environmental investments must be aligned with strategic debt utilisation for optimal outcomes.

Simple Linear Regression Analysis

1. To examine the relationship between ROTA and ENVNDS of sample companies in the USA, the following null hypothesis has been formulated and tested for the financial year from 2020 to 2023.

H_{01}: There is no significant relationship between ROTA and level of environmental disclosure score.

The Regression Model to test the hypothesis is:

$Y = α + β_1X_1 + €$

Where, Y = Level of Environmental Narrative Disclosure (ENVNDS)

α = Intercept, $β_1$ = Coefficient of ROTA, X_1 = ROTA, € = Regression Residual

The result of the Regression Model has been presented in Table 5 below:

Table 5: Regression Result: Rota and ENVNDS

Year	Constant	Coefficient of ROTA	R Square	*F* Value	*t* Value	Sig.
2020	63.637	0.862	0.161	1.532	1.238	0.251
2021	62.296	0.712	0.092	0.807	0.898	0.395
2022	64.549	0.634	0.141	1.316	1.147	0.284
2023	68.458	0.272	0.017	0.139	0.373	0.719

The results indicate that the coefficient of ROTA fluctuates over the years, with the highest value in 2020 (0.862) and the lowest in 2023 (0.272). The R-Square values remain low across all years, suggesting a weak explanatory power of ROTA on ENVNDS, with the highest in 2020 (0.161) and the lowest in 2023 (0.017). The *F*-values indicate the overall model significance, but none of the years show statistically strong results, with the highest in 2020 (1.532). Similarly, the *t*-values remain below critical thresholds, indicating that ROTA is not a strong predictor of environmental performance during this period. The significance (Sig.) values are all above 0.05, confirming that the relationships are statistically insignificant. Overall, the findings suggest that ROTA does not have a significant impact on environmental performance from 2020 to 2023, implying that other factors may play a more crucial role in determining financial outcomes.

2. To examine the relationship between DBTA and ENVNDS of sample companies in the USA, the following null hypothesis has been formulated and tested for the financial year 2020, 2021, 2022 and 2023.

H_{02}: There is no significant relationship between DBTA and level of environmental disclosure score.

The Regression Model to test the hypothesis is:

$Y = α + β_2X_2 + €$

Where, Y = Level of Environmental Narrative Disclosure (ENVNDS)

α = Intercept, $β_2$ = Coefficient of DBTA, X_2 = DBTA, € = Regression Residual

The result of the Regression Model has been presented in Table 6 below:

Table 6: Regression Result: DBTA and ENVNDS

Year	Constant	Coefficient of DBTA	R Square	*F* Value	*t* Value	Sig.
2020	56.600	0.459	0.298	3.388	1.841	0.103
2021	55.459	0.479	0.368	4.665	2.160	0.063
2022	59.481	0.372	0.342	4.158	2.039	0.076
2023	57.120	0.455	0.418	5.754	2.399	0.043

The regression analysis shows that the coefficient of DBTA fluctuates moderately, ranging from 0.372 in 2022 to 0.479 in 2021, indicating a varying degree of impact on financial performance.

The R-squared values suggest a moderate explanatory power of DBTA, with the highest in 2023 (0.418) and the lowest in 2020 (0.298). The *F*-values increase over the years, peaking at 5.754 in 2023, indicating an improving model fit. The *t*-values also show an upward trend, with 2023 having the highest value (2.399), suggesting a stronger relationship between DBTA and ENVNDS.

The significance (Sig.) values decline over time, reaching 0.043 in 2023, which falls below the 0.05 threshold, making the relationship statistically significant. This suggests that in 2023, DBTA had a meaningful impact on environmental performance, unlike in previous years when the relationship remained statistically insignificant. Overall, the findings indicate a growing influence of DBTA on environmental performance, with 2023 showing the strongest relationship, emphasizing the importance of debt management in financial strategy.

3. To examine the relationship between WTA and ENVNDS of sample companies in the USA, the following null hypothesis has been formulated and tested for the financial year 2020, 2021, 2022 and 2023.

H$_{03}$: There is no significant relationship between WTA and Level of Environmental Disclosure Score.

The Regression Model to test the hypothesis is:

Y = α + β$_3$X$_3$ + €

Where, Y = Level of Environmental Narrative Disclosure (ENVNDS)

α = Intercept, β$_3$ = Coefficient of WTA, X$_3$ = WTA, € = Regression Residual

The result of the Regression Model has been presented in Table 7 below:

Table 7: Regression Result: WTA and ENVNDS

Year	Constant	Coefficient of WTA	R Square	*F* Value	*t* Value	Sig.
2020	68.986	0.175	0.021	0.173	0.416	0.689
2021	71.586	-0.114	0.008	0.063	0.252	0.808
2022	72.068	-0.085	0.005	0.043	0.207	0.841
2023	68.785	0.209	0.023	0.191	0.437	0.673

The constant, representing the predicted ENVNDS when WTA is zero, fluctuates slightly between 68.785 and 72.068 across all years. In 2020 and 2023, the positive coefficients (0.175 and 0.209) suggest a minor increase in ENVNDS as WTA rises, while in 2021 and 2022, the negative coefficients (-0.114 and -0.085) indicate a slight decrease. However, all coefficients are close to zero, implying a negligible effect of WTA on ENVNDS.

The R-square values are very low (0.005 to 0.023), meaning WTA explains only 0.5% to 2.3% of ENVNDS variability, highlighting a weak relationship. Similarly, the *F*-values (0.043 to 0.191) indicate that the models lack statistical significance. The small *t*-values (0.207 to 0.437) and high *p*-values (0.673 to 0.841) confirm that WTA does not significantly influence ENVNDS. Overall, the findings suggest that WTA is not a meaningful predictor of ENVNDS. The weak coefficients, low explanatory power, and lack of statistical significance indicate that changes in WTA have little to no impact on ENVNDS.

4. To examine the relationship between CFTA and ENVNDS of sample companies in the USA, the following null hypothesis has been formulated and tested for the financial year 2020, 2021, 2022 and 2023.

H_{04}: There is no significant relationship between CFTA and Level of Environmental Disclosure Score.

The Regression Model to test the hypothesis is:

Y = α + β₄X₄ + €

Where, Y = Level of Environmental Narrative Disclosure (ENVNDS)

   α = Intercept, $β_4$ = Coefficient of CFTA, X_4 = CFTA, € = Regression Residual

The result of the Regression Model has been presented in Table 8 below:

Table 8: Regression Result: CFTA and ENVNDS

Year	Constant	Coefficient of CFTA	R Square	*F* Value	*t* Value	Sig.
2020	63.631	0.598	0.140	1.307	1.143	0.286
2021	64.673	0.405	0.037	0.303	0.551	0.597
2022	67.501	0.283	0.025	0.209	0.457	0.660
2023	71.042	0.015	0.000	0.001	0.024	0.982

In 2020, the predicted value of ENVNDS is 63.631 when CFTA is zero. Across all years, the constant values increase slightly from 63.631 (2020) to 71.042 (2023). In 2020, the coefficient is 0.598, indicating a weak positive relationship: a 1-unit increase in CFTA is associated with a 0.598-unit increase in ENVNDS. The declining coefficients suggest that the effect of CFTA on ENVNDS diminishes over time. The coefficients are consistently small, indicating a weak influence of CFTA on ENVNDS.

A continuous decrease in the R-squared value over the reporting period suggests that CFTA is not a strong predictor of ENVNDS. The *F*-values are low across all years, indicating that the models are not statistically significant. Across all years, the *t*-values are small (ranging from 0.024 to 1.143), and the *p*-values (Sig.) are much greater than 0.05. High *p*-values indicate that the coefficients are not statistically significant in any year. The coefficients and R-squared values decrease over time, suggesting that the potential impact of CFTA on ENVNDS weakens or becomes negligible (as seen in 2023 with R-Square = 0.000). CFTA does not appear to be a strong or reliable predictor of ENVNDS.

5. To examine the relationship between CRR and ENVNDS of sample companies in the USA, the following null hypothesis has been formulated and tested for the financial year 2020, 2021, 2022 and 2023.

H_{05}: There is no significant relationship between CRR and Level of Environmental Disclosure Score.

The Regression Model to test the hypothesis is:

Y = α + β₅X₅ + €

Where, Y = Level of Environmental Narrative Disclosure (ENVNDS)

   α = Intercept, $β_5$ = Coefficient of CRR, X_5 = CRR, € = Regression Residual

The result of the Regression Model has been presented in Table as below:

Table 9: Regression Result: CFTA and ENVNDS

Year	Constant	Coefficient of CRR	R Square	*F* Value	*t* Value	Sig.
2020	85.689	-0.219	0.101	0.900	-0.949	0.371
2021	87.168	-0.267	0.183	1.788	-1.337	0.218
2022	92.874	-0.332	0.381	4.916	-2.217	0.057
2023	85.097	-0.213	0.107	0.962	-0.981	0.355

In 2020, the predicted value of ENVNDS is 85.689. Across all years, the constant values range between 85.097 (2023) and 92.874 (2022). In all years, the coefficient is negative (e.g., -0.219 in 2020, -0.267

in 2021, etc.), suggesting an inverse relationship: as CRR increases, ENVNDS decreases. The magnitude of the coefficient grows in 2022 (-0.332), indicating a stronger negative relationship during that year. The coefficients remain relatively small, showing that the changes in CRR have a modest effect on ENVNDS. Across all years, the regression results suggest a negative relationship between CRR and ENVNDS, meaning that as CRR increases, ENVNDS tends to decrease. However, the strength of this relationship varies. The strongest negative relationship is observed in 2022, as indicated by the larger negative coefficient (-0.332) and the relatively higher R-squared (0.381). In 2020, 2021, and 2023, the models have low R-squared values, low *F*-values, and high *p*-values, indicating that CRR is not a significant predictor of ENVNDS in those years. In 2022, the model approaches statistical significance ($p = 0.057$), suggesting that CRR may have some predictive power for ENVNDS in that year. Overall, CRR is not a significant predictor of ENVNDS in most years, and the model explains only a small portion of the variability in ENVNDS. Additional variables or factors should be explored to better understand what drives ENVNDS.

Multiple Linear Regression Analysis

In order to examine the collective effort of all the independent variables on the dependent variable, multivariate analysis has been done. The equation that has been applied is given below along with the results obtained by estimating the regression model.

The Regression Equation is:

$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + €$

Where, Y = Level of Environmental Narrative Disclosure (ENVNDS)

   α = Intercept, X_1 = ROTA, X_2 = DBTA, X_3 = WTA, X_4 = CFTA, X_5 = CRR

   $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = Respective Coefficients

   $€$ = Regression Residual

The result of the Regression Model has been presented in Table 10 below:

Table 10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.669[a]	0.447	0.366	11.7958	0.486

a. Predictors: (Constant), CRR, WTA, DBTA, CFTA, ROTA
b. Dependent Variable: ENVNDS

The independent variables (CRR, WTA, DBTA, CFTA, ROTA) together explain about 44.7% of the variability in ENVNDS (R Square = 0.447). While this is a moderate level of explanatory power, the adjusted R Square (0.366) suggests that some of the predictors may not be significantly contributing to the model. The low Durbin-Watson value (0.486) indicates significant autocorrelation in the residuals. This suggests that the model might not be fully capturing the structure of the data or that some key variables are missing. With an Adjusted R Square of 0.366, the model leaves a large portion of the variability in ENVNDS unexplained, indicating the potential for including additional variables or interactions. The standard error (11.7958) also suggests that there is still considerable variability in the predictions, which might be reduced with better model specification.

Table 11: ANOVA Result

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3827.783	5	765.557	5.502	0.001[b]
	Residual	4730.811	34	139.142		
	Total	8558.594	39			

a. Dependent Variable: ENVNDS
b. Predictors: (Constant), CRR, WTA, DBTA, CFTA, ROTA

The table provides information about the ANOVA (Analysis of Variance) results for the regression model predicting ENVNDS (dependent variable) using the predictors CRR, WTA, DBTA, CFTA, and ROTA. The F statistic (5.502) and its associated *p*-value (0.001) indicate that the overall regression model is statistically significant. This means that the independent variables (CRR, WTA, DBTA, CFTA, ROTA) collectively have a meaningful relationship with ENVNDS. From the R-Square value (from the previous result, 0.447), we know that 44.7% of the variability in ENVNDS is explained by the predictors. Despite the model's significance, a large portion of the variability in ENVNDS (55.3%) remains unexplained by the model (Residual Sum of Squares = 4730.811). This suggests that additional variables or factors not included in the model may also influence ENVNDS.

Table 12: Regression Result

Model		Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	61.471	15.160		4.055	0.000		
	ROTA	1.154	0.922	0.563	1.252	0.219	0.080	12.450
	DBTA	0.439	0.113	0.592	3.902	0.000	0.707	1.415
	WTA	0.213	0.181	0.172	1.178	0.247	0.762	1.312
	CFTA	-1.088	0.682	-0.607	-1.595	0.120	0.112	8.916
	CRR	-0.064	0.143	-0.102	-0.448	0.657	0.312	3.202

a. Dependent Variable: ENVNDS

The table provides detailed information about the individual predictors (ROTA, DBTA, WTA, CFTA, and CRR) in the regression model for ENVNDS. While ROTA shows a positive relationship with ENVNDS, it is not statistically significant. High multicollinearity (VIF = 12.450) suggests that its effect may overlap with other variables. DBTA is a strong and statistically significant positive predictor of ENVNDS. It has the largest beta coefficient (0.592), indicating it has the most substantial effect among all predictors. WTA shows a positive but weak relationship with ENVNDS and is not statistically significant. CFTA has a negative relationship with ENVNDS, with a relatively strong beta coefficient (-0.607), but the relationship is not statistically significant. High multicollinearity (VIF = 8.916) may be affecting the reliability of this coefficient. CRR shows a very weak and statistically insignificant negative relationship with ENVNDS. DBTA is the only statistically significant predictor of ENVNDS in this model, with a strong positive relationship. ROTA and CFTA exhibit high multicollinearity (VIF > 10 and VIF > 5, respectively), which could inflate standard errors and reduce the reliability of their coefficients. Addressing multicollinearity (e.g., by removing or combining correlated variables) could improve the model. ROTA, WTA, CFTA, and CRR are not statistically significant predictors of ENVNDS at the 0.05 level. Their contributions to the model are weak or redundant.

Conclusion

This study shows how different financial attributes of companies in the U.S. market are related to their environmental reporting practices and the impact of such attributes on the environmental performance of those companies. It is observed that the independent variables (CRR, WTA, DBTA, CFTA, ROTA) collectively have a meaningful relationship with ENVNDS. However, the model has limitations, as more than half of the variability remains unexplained, and individual predictor contributions to the model's significance are unclear. Despite the model's significance, a large portion of the variability in ENVNDS (55.3%) remains unexplained by the model (Residual Sum of Squares = 4730.811). This suggests that additional variables or factors not included in the model may also influence ENVNDS. Across all four years, the regression analysis shows that DBTA (ENVNDS) has a very weak and statistically insignificant relationship with WTA.

Environmental reporting has become a cornerstone of corporate transparency and sustainability efforts. While significant progress has been made in terms of standardisation and adoption, challenges such

as data quality, greenwashing, and resource constraints persist. Emerging trends, including technological integration and the focus on double materiality, promise to address these challenges and enhance the utility of environmental reporting for stakeholders. Future research should focus on developing robust metrics, exploring the impact of reporting on organisational behaviour, and assessing the long-term value of environmental disclosures.

This study, however, suffers from some limitations, like insufficient time for the study and restrictions on words. Thus, all the variables that may influence environmental performance are not taken into consideration. Had all the parameters been taken into consideration, the result would have been a different one.

Conflict of Interest

The authors affirm that there are no conflicting objectives.

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