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The Role of Environmental Disclosures in Enhancing Firm Value: Evidence from Listed Manufacturing Firms

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Abstract
The traditional approach to financial performance reporting has experienced a significant shift as stakeholders increasingly demand greater transparency regarding firms' environmental and social impact. This has elevated the importance of environmental reporting due to its potential influence on firms' financial strength. This study investigates the relationship between environmental reporting and the value of manufacturing firms listed on the Johannesburg Stock Exchange (JSE) in South Africa. The study conducted a content analysis on 250 annual integrated reports from 50 manufacturing firms listed on the JSE between 2016 and 2020 and utilized a multiple regression analysis. The findings revealed a negative relationship between environmental reporting and firm value, suggesting that adopting environmental reporting may involve additional financial resources, which are perceived as an outflow of funds in an economic context. Consequently, this study recommends that manufacturing companies analyse their stakeholders' characteristics and information needs to present relevant environmental reporting in their annual integrated reports. By doing so, companies can enhance their legitimacy with stakeholders, maximise shareholder value, and ultimately increase firm value. This research contributes to the existing literature on environmental, social, and financial reporting, particularly in South Africa, by focusing specifically on manufacturing firms listed on the JSE.

Keywords: Environmental Reporting, Social Reporting, Financial Performance, Firm Value.

1. Introduction

Manufacturing firms are crucial in driving South Africa's economic growth and development (Mandler et al., 2021). The manufacturing process includes value chains which incorporate the extraction and transformation of raw materials into finished goods (Agrawal & Narain, 2018). corporate financial experts have emphasised that firms should not only focus on maximising profit and shareholder wealth but also strive to maximise firm value (Khuong and Anh, 2023). Firm value, reflected in share prices on the stock exchange market, serves as an indicator for prospective investors to assess a firm's potential (Kurniati, 2019). Higher firm value results to increased market share and boosts investors' confidence regarding reasonable dividend payouts (Bataineh, 2021).

Traditionally, shareholders delegate managers to enhance their wealth by utilising firm resources to maximise profits (Foss et al., 2022). However, the stakeholder theory argues that shareholders should not solely prioritise profit motives but also consider environmental and social concerns wherein conducting their business activities (Arora & De, 2020). The stakeholders are with the view that firms should prioritise fulfilling the their demands by engaging on social and environmental responsibilities(Che-Ahmad, Osazuwa, and Mgbame,

2015; (Baah et al., 2021). Due to endless environmental awareness many firms and other corporate organisations have found themselves facing the responsibility to compile with stakeholders demands relating the environment (Maama & Appiah, 2019). In this context, the act of being socially and environmentally responsible includes preparing a detailed report outlining all the environmental and social aspects of firms.

Environmental reporting has gained prominence worldwide due to its impact on investor decision-making and financial performance (Alsayegh et al., 2020). Consequently, numerous companies provide information on their environmental activities in annual reports across many countries. In South Africa, the King IV Code of Corporate Governance mandates firms to include environmental, social, and governance information in their annual integrated reports (Ackers & Eccles, 2015). However, there is no standardised mandated set of information to be included in these reports, granting firms flexibility in responding to stakeholders' demands (Beretta et al., 2019). Despite the growing adoption of environmental reporting practices, concerns have been raised regarding its benefits to firms considering the associated costs.

Prior academics highlight the implications of environmental and social information for external stakeholders. Firstly, Maama (2021) holds that adopting environmental reporting depletes resources and it is costly to firms. Similarly, Ruan and Liu (2021) found a significant negative relationship between environmental, social, governance activities and firm performance, suggesting that implementing environmentally and socially friendly activities can impose financial burdens to the firms. However, Chen (2021) and Mohammad (2021) document a different view that, environmental reporting minimises environmental violations, enhances competitive advantage, and strengthens firms' long-term performance and value. Studies by Lee and Yeo (2016) and Zhou et al. (2017) reveal that including environmental and social information in integrated annual reports provides a comprehensive account of a firm's value and performance, benefiting short-, medium-, and long-term value creation.

These conflicting views have raised issues on whether firms benefit from environmental accounting. Although it has been noted that, previous studies conducted in South Africa have predominantly focused on all listed firms, potentially influenced by the characteristics of those firms. For instance, financial services and technology firms may have minimal or no direct carbon footprint or negative environmental impact. This might have affected the results of the prior studies, as such firms may still have a section on environmental impact in their integrated annual reports. The research paper identifies a gap in the existing literature by highlighting the need for further investigation into the relationship between environmental reporting and the value of manufacturing firms listed on the JSE in South Africa. While previous studies have examined the association between environmental reporting and firm value, they have often focused on different industries or countries, leading to inconsistence in findings. Additionally, the impact of environmental reporting on firm value in the context of South Africa, specifically for manufacturing firms, has not been thoroughly explored. Hence, the current study investigates the association between environmental reporting and the value of manufacturing firms listed on the JSE in South Africa.

The contribution of this research lies in its specific focus on manufacturing firms listed on the JSE in South Africa. The aim of the study is to provide insights on the relationship between environmental reporting and firm value in South Africa. The study employs a content analysis on 250 annual integrated reports and further uses a multiple regression analysis. The study contributes to the ongoing literature and debates on environmental and social reporting and their relationship with firm valuation. Furthermore, the study recognises the incongruity in previous studies, resulting from sample size issues, variations in industries, and environmental

regulations among countries. By addressing these limitations and focusing on manufacturing firms in South Africa, this study provides a more nuanced understanding of the relationship between environmental reporting responsibility and firm value. This contributes to filling the research gap and expanding the environmental and financial reporting knowledge base.

The organisation of this paper is as follows: the next section is the literature review, followed by the methodology section. Subsequently, the results are analysed, and the conclusion provides recommendations based on the findings.

2. Literature Review

Several studies have examined the relationship between environmental reporting and firm value in different countries and industries, providing various evidence for their relationships. Carandang and Ferrer (2020) investigated the impact of environmental accounting on firms' profitability and value for 24 listed mining and oil companies in the Philippines from 2012 to 2016. Their findings indicated no significant relationship between environmental reporting and either profitability or firm value. The study also highlighted that the Securities and Exchange Commission has not set any requirements for the disclosure of environmental accounting. Similarly, Sukmadilaga et al. (2023) examined the relationship between green accounting and firm value among 15 Asian listed companies that received the Asian Sustainability Reporting Awards in 2021. Analysing reports from 2017 to 2021, the study found no significant relationship. This study has been backed up by Anggita and Nugroho (2022) who investigated the link between carbon emissions and green practices on firm value using a sample of 15 consumer goods companies in Indonesia from 2019 to 2020. Their multiple linear regression analysis revealed no significant effect.

In the UK, Li et al. (2018) conducted a study on a sample of large public firms from 2004 to 2013 to examine the impact of environmental, social, and governance (ESG) reporting on firm value. Their findings showed a positive relationship between ESG reporting and firm value, suggesting that ESG disclosures can enhance business value by increasing fairness, accountability, and stakeholder confidence. In a similar perspective, Li et al. (2020), investigated the impact of corporate environmental responsibility on firm value. They found that in the early stages of adoption, corporate environmental responsibility had a negative impact on firm value. However, it began to have a positive relationship at a certain stage. This suggests that engaging in corporate environmental responsibility incurs immediate spending and resource outflow but contributes to a good reputation and enhances firm value in the long run. In this regard, it is understandable that engaging on corporate environmental responsibility will obviously constitute immediate spending which will reflect as an outflow of funds and firms' resources. Although in the long run corporate environmental engagement results in a good reputation that also enhances firm value (Gangi et al., 2020; Li et al., 2020).

Likewise, Buallay (2019) examined the link between financial performance, market value, and ESG among 235 European banks from 2007 to 2016. The results indicated a significant positive relationship between ESG, financial performance, and market value. Xie et al. (2019) explored the profitability of firms concerned about ESG issues in a study conducted on 6,631 companies from 74 countries in 2015. Their findings demonstrated a strong positive relationship between ESG disclosures and corporate performance, indicating that environmental engagements can result in lower costs. Deswanto and Siregar (2018) found a strong positive connection between environmental reporting and corporate value in Indonesia. Their results suggested that users of annual reports base their economic decisions on financial accounting and non-financial information, including environmental and social aspects of companies. These findings indicate that environmental reporting practices strengthen a firm's image in society, contributing to

higher returns and desired firm performance. Considering these findings, environmental reporting practices strengthen business image in society, which, perhaps in some other firms, significantly contributes to high returns to reflect a desired performance (Murguia & Lence, 2015).

In another study, Effendi (2020) examined the impact of environmental accounting on company value and established a positive relationship between the two variables. Environmental performance was found to influence company productivity, supporting corporate growth significantly. Moloi and Iredele (2020) explored the value relevance of integrated annual reporting quality for listed firms in South Africa. Their findings indicated a strong link between Tobin's Q and firm value, suggesting that disclosing environmental reporting information is valuable to firms. Similarly, Gerged, Beddewela, and Cowton (2021) explored the relationship between enterprise value and corporate environmental disclosure and documented a positive association.

Despite these studies, a research gap exists. The results of the reviewed studies are influenced by factors such as sample size, the nature of businesses or firms studied, and variations in environmental rules and regulations across different countries. Moreover, certain firms may have a lesser environmental footprint than others, leading to potential differences in the findings. Therefore, there is a need for further investigation specifically focused on the relationship between environmental reporting responsibility and the value of manufacturing firms listed on the JSE in South Africa. This study aims to address this research gap and contribute to understanding the implications of adopting environmental reporting practices on firm value in the context of South African manufacturing firms.

3. Methodology

The study employed a quantitative research design and focused on a population of 50 manufacturing firms listed on the Johannesburg Stock Exchange (JSE). The sample size was determined based on data availability of integrated annual reports from 2016-2020. Finally, Secondary data was collected from audited integrated annual reports of the listed manufacturing firms, retrieved directly from their websites. Environmental reporting data was obtained through content analysis. Regression analysis was used to examine the relationship between environmental reporting and profitability, while Tobin's Q was used to assess the relationship between environmental reporting and firm value.

3.1. Measurements of Environmental Reporting

The study thoroughly examined the environmental, social responsibility, and environmental degradation practices reported in the annual integrated reports. Following the procedures and guidelines of the evaluation matrix, content analysis was used to review all the retrieved reports. Content analysis is a recognised and relevant method for analysing companies' social, environmental, and corporate practices (Hossain et al., 2015). A content analysis identifies the patterns found in data following their respective context (Renz et al., 2018). In this study, the disclosures were perused from the annual integrated reports. Moreover, the differences between the rating scores were based on the quality of the information disclosed by each manufacturing firm, as there is no prescribed standard as to which information to disclose with regard to environmental reporting. The 250 integrated annual reports were retrieved from 50 manufacturing firms, and the reports were from 2016 to 2020, representing five years of integrated annual reports.

The evaluation matrix was developed to ensure consistency with prior studies and frameworks

such as the Integrated Reporting Framework (IRF) and the Global Reporting Initiative. Each manufacturing firm's disclosures were assigned a score based on the quality and quantity of the information provided. The scoring measurements followed a five-point Likert scale stated below.

Score 1: Very inadequate information or the information was not provided at all in the report.
Score 2: Inadequate or limited information was provided.
Score 3: Average information was provided to some extent.
Score 4: Strong information was provided to a large extent.
Score 5: Extremely adequate and detailed information was provided.

The Likert scale, based on a checklist, was used to collect, and measure data related to Environmental Reporting Responsibility (ERR), Social Reporting Responsibility (SRR), and Environmental Degradation Reporting (EDR). The quality of the information provided by each manufacturing firm was assessed to ensure compliance with International Financial Reporting Standards and the Global Reporting Initiative, considering attributes such as materiality, relevance, timeliness, comparability, understanding, strategic focus, future orientation, verifiability, and faithful representation.

3.2. Validity and Reliability

In this study, validity was used to enhance the degree of validity of data and other various documents containing relevant related evidence that was out most important for this study. In highlighting this viewpoint, this study depended on many published and accredited studies on environmental reporting as well as audited annual integrated reports. The mentioned sources of the study are considered reliable. Additionally, an evaluation matrix was developed to ensure validity. This matrix was thorough and critically formulated to be in line and consistent with the evidence reviewed from prior studies and the content elements of the Integrated Reporting Framework (IRF) and the Global Reporting Initiative. The initial researcher coded all the 250 reports following all the developed evaluation matrix as guidelines, and the initial author was consistent with the coding guidelines to ensure validity and reliability. During the coding process, the other principal researchers constantly checked and reviewed the work to ensure that the researcher was on the right track to achieve data validity.

3.3. The Estimation Techniques and Econometrics Model

A multiple regression analysis was developed for this study. Fixed effect and random effect estimation techniques were used to estimate the regression models. The relationship between environmental reporting and the value of firms was estimated by using the value relevance model developed by Ohlson (1995). According to the Ohlson's (1995) model, the provision of information influences the decisions of investors and other stakeholders, which would result in improved performance. Guided by Ohlson's Model and following the study of Soyemi, Okewale and Olaniyan (2021), the following econometric models are developed for the estimation. Model 1 examines the impact of the individual components of environmental reporting on firms' value (Tobin's Q). On the other hand, Models 2 assesses the impact of the combined environmental reporting score on firms' value (Tobin's Q).

$$TobinQ_{it} = \beta 0 + \beta 1ERR_{it} + \beta 2EDR_{it-1} + \beta 3SRR_{it} + \beta 4BVPS_{it} + \beta 5EPS_{it-1} + \beta 6Size_{it} + \beta 7Age_{it} + \beta 8Leverage_{it} + \varepsilon_{it} \quad (1)$$

$$TobinQ_{it} = \beta 0 + \beta 1ERI_{it} + \beta 2BVPS_{it} + \beta 3EPS_{it-1} + \beta 4Size_{it} + \beta 5Age_{it} + \beta 6Leverage_{it} + \varepsilon_{it} \quad (2)$$

The variables in the models are described below.

β0 to β8: This variable is known as Beta, and it represents the variation of independent variables.

$TobinQ_{it}$; Tobin's Q is the ratio of the firm's ratio at time t.: Tobin's Q is measured by the total market value of the firm divided by the total value of all the assets. This ratio depends on the theory of market value and replacement value.

ERR_{it}: ERR denotes Environmental Responsibility Reporting of firm *i* at time *t*. In this specific study, environmental reporting was all the information related to the relationship that South African JSE- listed manufacturing firms have with the environment and relevant scores were assigned to determine the quality and the weight of the information provided in integrated annual reports. Previous literature shows that environmental reporting responsibility is a tool that has become essential to respond to an increased interest of stakeholders concerning environmental sustainability (Braam et al., 2016). The literature expanded by explaining how environmental reporting has become predominantly recognised as a weapon to address and mitigate environmental harm.

SRR_{it}: SRR denotes the Social Responsibility Reporting of firm *i* at time *t.*

The Social Responsibility Reporting of firms from 2016 to 2020 was examined using the content analysis method, where the quantity and quality of the information provided were examined using the checklist. Therefore, environmental reporting was all the information that explained and showed the relationship that firms had with society regarding corporate investment at the time.

EDR_{it}: This denotes Environmental Degradation Reporting of firm *i* at time *t.* Environmental Degradation Reporting responsibility was all the information related to the report on pollution of the environment due to the business activities of manufacturing firms, altogether with the measurements taken to ease the impact on the environment for the benefit of both business and relevant stakeholders at the time.

$Size_{it:}$ $Size_{it}$ denotes firm Size *i* at time *t.* In this study, the size of firms was determined by the natural logarithm of the manufacturing firms' total assets value, which comprised of the sum of current and non-current assets. This is consistent with the study conducted by Amka (2020).

$Leverage_{it}$: This variable is the leverage of firm *i* at time *t.* Firms' leverage was measured by the percentage of total debt to shareholders' equity.

$BVPS_{it}$: BVPS represents the book value per share of firm *i* at time *t.* A book value per share represents a firms' equity to the number of outstanding shares. BVPS acts as a gauge that investors use to evaluate the stock exchange amongst the firms. Investors look for high-valued stock, suggesting that, ordinarily, when the market value per share is lower than the book value per share, the stock may be undervalued, which may attract new investors.

EPS_{it-1}: EPS denotes the earnings per share of firm *i* at time *t*. The EPS was measured by the percentage of earnings after preference dividends to the total number of shares and was obtained from the McGregor BFA database.

4. Results and Discussion

This section of the study discusses results on the relationship between environmental reporting and firm value. It comprises three sub-sections. The first section discusses a descriptive statistic; the second section presents multicollinearity amongst the independent variables, whilst the third section presents the regression results on the relationship between environmental reporting and firm value.

4.1. Descriptive Results

The analysis of Table 1 provides valuable insights into the environmental reporting practices and firm value of listed manufacturing firms. The mean scores indicate that, on average, the firms have made efforts to provide fair and adequate information on their environmental, social, and degradable activities in their integrated annual reports. The mean scores of 4.14 for environmental responsibility reporting, 3.57 for environmental degradation reporting, and 4.30 for social responsibility reporting suggest that enough disclosures were provided, according to the criteria developed for this study. The standard deviations of the environmental reporting variables indicate some variability in the extent and quality of the disclosures. The standard deviation of 0.89 for environmental responsibility reporting, 1.13 for environmental degradation reporting, and 0.87 for social responsibility reporting highlight the differences in the level and depth of information provided by the manufacturing firms.

The results also revealed that the average Tobin's Q is 1.51, indicating that the market value of the manufacturing firms exceeds their book value. This suggests that the firms have been able to increase their value over the past five years. The analysis further highlights the high capital intensity in the industry, demonstrated by the large average size of the firms at 30.09 billion rands. This large average size of the firms implies that manufacturing firms needs to responsible in their environmental and social practices. The mean book value per share of the firms is 4792.82 rands, indicating an increase in the net worth of assets. In addition, the mean earnings per share is R489.72, which suggests a favourable profitability for investors. In addition, the leverage is relatively moderate, with an average of 35.5%, suggesting that the firms rely less on external investors and have a relatively higher proportion of equity financing. Lastly, the average age of the manufacturing firms is 40 years, indicating that they have been operating for a long period.

Table 4: Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
ERR	250	4.14	0.89	2.00	5.00
EDR	250	3.57	1.13	2.00	5.00
SRR	250	4.30	0.87	2.00	5.00
ERI	250	4.01	0.88	2.00	5.00
TobinsQ	175	1.51	1.42	0.10	11.29
BVPS (Rands)	250	4792.82	8986.86	0.13	50826.55
EPS (Rands)	250	489.72	1201.44	-1764.32	12044.82
Leverage (%)	248	35,55	34.79	-77.59	518.30
Age (Years)	250	40.00	28.01	12.00	128.00
Size (billions of Rands)	190	30.09	70.35	0.02	400.79

4.2. Multicollinearity Test

A multicollinearity test is carried out in a regression analysis to examine the level of collinearity amongst the independent variables. This test is necessary because a high level of collinearity can render spurious results. Given this, the study conducted a multicollinearity test using a

Spearman correlation analysis to determine the level of association among the independent variables. The results of the multicollinearity test are presented in Table 2.

Table 5: Correlation results

	ERR	EDR	SRR	ERI	BVPS	EPS	Lev	Age	Size
ERR	1.000								
EDR	0.774***	1.000							
SRR	0.759**	0.634***	1.000						
ERI	0.926***	0.922***	0.852**	1.000					
BVPS	0.057**	-0.052*	-0.001**	-0.007	1.000				
EPS	0.013*	-0.115**	-0.031*	-0.060**	0.794**	1.000			
Leverage	-0.044*	0.012	-0.072	-0.031	-0.054	0.017	1.000		
Age	-0.117	-0.028	-0.050	-0.067*	0.029*	0.023*	-0.036**	1.000	
Size	0.155**	0.150**	0.082***	0.147**	0.681**	0.463	-0.015	-0.018**	1.000

Note: *** = significance at 0.01; ** = significance at 0.05; * = significance at 0.1

Table 2 presents the results of the multicollinearity test, indicating the correlation level among the independent variables. The results are demonstrated to check the existence of multicollinearity s amongst variables. Table 2 shows no serious multicorrelational issues because the correlation coefficients amongst the independent variables are less than 0.70, which is regarded as the designated benchmark to measure the correlation amongst the independent variables. However, there is a strong correlation among the environmental reporting variables, which is EDR (0.774), SRR (0.759) and ERI (0.926). However, this poses no correlation issue because the three independent variables are used for differentiated models. In fact, a firm that reports on environmental reporting information is likely to report on social and environmental degradation, so it is almost expected to experience high correlations among these variables, which are sometimes referred to as the components of environmental reporting. Overall, the results presented in Table 2 suggest the absence of collinearity issues mainly because all the variables are less than 0.70. Hence, the estimates from the models are expected to be valid and reliable.

4.3 Impact of Environmental Reporting on Firm Value

Table 3 presents the results on the impact of the individual components of environmental reporting on firms' value. On the other hand, Table 4.4 presents the results of the impact of the combined environmental reporting score on firms' value. The probability of the Hausman test is insignificant (p = 0.153); hence, the Random effect estimation technique results were used for the analysis.

Table 3: Impact of Environmental Reporting on Firm Value

Tobin's Q	Random Effect			Fixed Effects		
Variables	**Coef.**	**t-stats**	**p-value**	**Coef.**	**t-stats**	**p-value**
ERR	-0.125	-2.49	0.014	-0.285	-2.03	0.030
EDR	-0.118	-0.73	0.463	-0.075	-0.46	0.646
SRR	0.015	2.60	0.009	0.1339	2.67	0.005
BVPS	-0.001	-8.02	0.000	-0.001	-9.28	0.000
EPS	0.001	2.63	0.011	0.001	2.26	0.023
LEVERAGE	0.003	1.52	0.128	0.002	1.27	0.205
AGE	-0.005	-0.69	0.489	-0.189	-4.83	0.000
Size	0.545	2.40	0.016	-0.409	-1.22	0.225
Constant	-0.616	-4.34	0.000	14.203	4.18	0.000
Observation	175			175		
R-squared (R^2)	0.9385			0.9499		

Adjusted R^2	0.9045	0.9237
F-stats	107.673	146.86
Prob. > F-stats	0.000	0.000
Prob. of Hausman Test	0.153	0.153
Durbin-Watson stats.	2.092	1.762

Table 4: The Impact of Combined Environmental Reporting on Firm Value

Tobin's Q	**Random Effect**			**Fixed Effects**		
Variables	**Coef.**	**t-stats**	**p-value**	**Coef.**	**t-stats**	**p-value**
ERR	-0.255	1.21	0.225	-0.194	0.75	0.455
BVPS	-0.001	8.02	0.000	-0.001	9.37	0.000
EPS	0.001	2.72	0.007	0.001	1.32	0.189
LEVERAGE	0.003	1.50	0.134	0.002	1.28	0.204
AGE	-0.005	0.67	0.501	-0.183	4.73	0.000
LnSize	0.554	2.48	0.013	-0.409	2.22	0.022
Constant	-0.541	0.32	0.748	13.873	4.18	0.000
Observation	175			175		
R-squared (R^2)	0.9381			0.9153		
Adjusted R^2	0.9026			0.8874		
F-stats	94.728			121.60		
Prob. > F-stats	0.000			0.000		
Prob. of Hausman Test	0.028			0.028		
Durbin-Watson stats.	1.826			1.941		

The analysis examines the relationship between environmental reporting responsibility and firm value based on the results presented in Table 3 and Table 4. The findings reveal important insights regarding the impact of environmental reporting on firm value and shed light on the role of social responsibility reporting and other variables. Table 3 shows that environmental reporting has a negative and insignificant association with Tobin's Q, as indicated by the coefficient of -0.125 and p-value of 0.014 > 0.05. Table 4 further reveals a negative and insignificant impact of combined environmental reporting (ERR) on firm value (p-value > 0.05), where the Ceff=0194 and a p- value=0.455. These findings contradict the assumption that investors value environmental reporting quality, as previous literature suggested. The research findings suggest that the resources and finances invested in environmental reporting negatively impact share capital or net asset value. This finding aligns with previous studies supporting this viewpoint (Li et al., 2019; Vijayakumaran, 2019). In contrast, Carandang and Ferrer (2020) reported different results, suggesting that environmental accounting does not significantly impact firm value. The disparity in findings can be attributed to various factors such as the diversity in a country's historical background, variations in environmental strategic government policies, and differences in the adoption of environmental reporting practices among firms. In South Africa, government regulations and accountability requirements may act as a strong motivator for firms to comply with environmental regulations. Legal and stakeholder pressures may drive the widespread adoption of environmental reporting, even though the actual impact on firm value may be insignificant (Alshbili et al., 2021).

On the other hand, Table 3 demonstrates a positive and significant relationship between social responsibility reporting (SRR) and Tobin's Q, with a coefficient of 0.015 and a p-value of 0.009. This suggests that an increase in proper and relevant presentation of environmental and social

reporting responsibility information significantly increases the value of manufacturing firms. Social responsibility reporting can enhance employee motivation, customer loyalty, financial status, and reputation. Conversely, other authors documented a negative relationship between SRR and firm value (Chen & Hung, 2021; Hendratama & Huang, 2021; Nekhili et al., 2017; Su et al., 2020). The latter authors argue that an investment in social responsibility reporting does not guarantee favourable levels of profitability. The stakeholder theory supports the positive impact of SRR on shareholders' wealth by meeting the interests and desires of stakeholders. It is plausible that the strategic use of social responsibility reporting can contribute to increased firm value, attract new investors, and gain support from local authorities and communities. Thus, an increase in social responsibility reporting would likely lead to an increase in firm value.

Table 3 also presents the results of the association between environmental degradation reporting and Tobin's Q. As reflected in Table 3, the coefficient of EDR is -0.118 with a p-value of 0.463, indicating a negative but insignificant connection between EDR and firm value. This implies that the influence of the other stakeholders with an interest in environmental reporting degradation reporting has a relatively less significant role in firm value, probably driving the statistically insignificant EDR-valuation relationship in manufacturing firms. This finding contradicts prior studies such as those of (Wang & Wei, 2020) and Hardiyansah, Augustini and Purnamawati (2021).

The book value per share shows a Coefficient of -0.001 and a p-value of 0.000, indicating a negative and significant connection between variables. EPS with a Coeff= 0.001 and a p-value = 0.011, meaning that investors in manufacturing firms still use EPS as an indicator to base their decision-making. Age and size variables also demonstrate negative and significant relationships, suggesting that manufacturing firms should consider adopting environmental reporting practices that align with investor preferences. The firm size determines firms' capabilities to meet the stakeholders' needs (Adiputra & Hermawan, 2020). In this regard, firm size is a good benchmark for investors, resulting in a remarkable increase in firm value, and firm size is a variable likely to influence firm value. The fixed effect results reveal that R-squared (R^2) is 0.9153, but with a degree of freedom adjusted the R^2 to 0.8874, indicating a strong predictive power of the model amongst the variables.

The research has several implications for both theory and practice. The findings challenge the assumption that investors prioritise the quality of environmental reporting. Firms must consider the costs and benefits of environmental reporting to optimise resource allocation and maximise firm value. The study further highlights the positive relationship between social responsibility reporting and firm value, suggesting strong social responsibility practices can attract investors and increase their value. The research highlights the complex and nuanced relationship between environmental reporting responsibility and firm value. While the results suggest a negative and insignificant association between environmental reporting and firm value, some important factors influence this relationship. Understanding these dynamics and taking appropriate measures can help the manufacturing firms and policymakers to work towards improving their environmental reporting practices and promote sustainable business practices.

Conclusion

The research examined the relationship between environmental reporting and firm value in South African. The study relied on 250 annual integrated reports of the firms for the environmental reporting data. The environmental reporting data was extracted through a content analysis method. The analysis was conducted using random and fixed effects estimation techniques. The results revealed that environmental responsibility reporting (ERR) had a

significant negative relationship with firm value. On the other hand, social responsibility reporting (SRR) showed a significant positive relationship with firm value. On he other hand, the results showed a negative and insignificant relationship between environmental degradation reporting (EDR) and firm value. Regarding the combined environmental reporting score, the results varied. In the random effects estimation technique, the combined score showed a significant relationship with firm value. However, variables such as BVPS and EPS had significant positive coefficients in the fixed effects model.

In conclusion, the research provides insights into the impact of environmental reporting on firm value in South African manufacturing firms. The findings suggest that environmental and social responsibility reporting play a significant role in influencing firm value. The results suggest that firms with strong environmental and social responsibility reporting practices tend to have higher market value. The study also highlights the complexity of the relationship. The combined environmental reporting score did not consistently show a significant relationship with firm value, suggesting that specific components and quality of environmental reporting may have varying effects on firm value. The research contributes to literature on environmental reporting and firm value, particularly in South Africa. The findings demonstrate the value relevance of environmental and social reporting because it enhances the credibility and performance of manufacturing firms. This study acknowledges that there may be some factors that may influence the relationship between environmental reporting and the value of firms. Hence, we recommend further research to explore the potential factors that may moderate the relationship between environmental reporting and firm value.

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