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Corporate Environmental Responsibility and Financial Performance: A Study of Nigerian Manufacturing Firms

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Abstract: Corporate environmental responsibility (CER) has become a crucial aspect of business strategy as firms seek to balance sustainability with profitability. This study investigates the impact of CER on the financial performance of Nigerian manufacturing firms, focusing on key financial indicators such as return on assets, profitability, and market valuation. A quantitative approach is employed, utilizing secondary data from financial reports, sustainability disclosures, and regulatory filings of selected firms over a defined period. The results revealed R^2 = 0.775; Adj R^2 = 0.728 and P- Value of 0.0000 which indicates a positive correlation between proactive environmental initiatives and financial performance, suggesting that firms adopting sustainable practices benefit from enhanced brand reputation, cost efficiency, and regulatory compliance. However, challenges such as high implementation costs and weak enforcement mechanisms limit broader adoption. The study concludes that corporate environmental responsibility significantly influences financial performance in the Nigerian manufacturing sector by fostering a culture of environmental responsibility, promoting transparency, and strengthening regulatory support, Nigerian manufacturing firms can enhance their sustainability performance while maintaining a competitive edge in the industry. The study recommended that Nigerian manufacturing firms should integrate environmental sustainability into their core business strategies to enhance reputation, build consumer trust, and improve financial performance. Management should prioritize sustainability as a long-term business goal rather than a regulatory obligation.

Keywords: Corporate environmental responsibility, financial performance, Nigerian manufacturing firms, profitability, regulatory compliance.

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1.0 Introduction

Corporate Environmental Responsibility (CER) has become an essential aspect of modern business operations, particularly in the manufacturing sector, where industrial activities significantly impact the environment. Manufacturing firms are often associated with high levels of energy consumption, greenhouse gas emissions, and waste generation, making it imperative for them to adopt environmentally sustainable practices (Abbott & Monsen, 2018). The growing global emphasis on environmental conservation, climate change mitigation, and sustainable development has led businesses to integrate CER into their strategies, not only to comply with regulatory requirements but also to enhance their competitiveness and financial performance (Porter & Kramer, 2019).

The relationship between corporate environmental responsibility and financial performance remains a widely debated topic in academic and business literature. Some scholars argue that environmentally responsible firms experience improved financial outcomes through cost savings, operational efficiency, and enhanced reputation, which leads to increased consumer trust and investor confidence (Adams,2017). Others, however, contend that engaging in environmental initiatives imposes financial burdens on firms, particularly in developing economies where regulatory enforcement is weak and access to green financing is limited (Lopez., Garcia & Rodriquez, 2018). The cost of implementing sustainable practices, such as investing in renewable energy, waste management, and emission reduction technologies, can be substantial, potentially affecting profitability in the short term.

In Nigeria, the manufacturing sector plays a crucial role in economic development, contributing significantly to employment and industrial growth. However, the sector is also a major contributor to environmental degradation due to poor waste disposal practices, high carbon emissions, and water pollution (Guthrie & Parker, 2019). Despite the presence of environmental regulations and oversight bodies such as the National Environmental Standards and Regulations Enforcement Agency (NESREA), many firms continue to operate with minimal adherence to sustainability principles. The challenge remains whether Nigerian manufacturing firms can balance environmental responsibility with financial performance or whether environmental sustainability efforts serve as a financial burden rather than an economic advantage (Adams, 2017).

Corporate Environmental Responsibility has evolved as a core component of corporate governance, influencing business decisions and stakeholder expectations. The concept is rooted in the broader framework of Corporate Social Responsibility (CSR), which emphasizes the need for businesses to operate in a socially and environmentally responsible manner. The increasing awareness of climate change, environmental degradation, and resource depletion has driven corporations to integrate sustainability into their business models. International agreements such as the Kyoto Protocol and the Paris Agreement have further reinforced the need for businesses to adopt environmentally responsible practices to mitigate their ecological footprint (United Nations, 2015).

The manufacturing sector, due to its high-energy consumption and waste generation, has been at the center of discussions on environmental responsibility. Globally, manufacturing firms are among the largest contributors to greenhouse gas emissions, industrial waste, and air and water pollution. The World Bank (2020) estimates that industrial activities account for approximately 23% of global environmental degradation, necessitating stringent regulatory measures and corporate interventions to mitigate the adverse effects. Many multinational corporations have embraced green manufacturing, renewable energy adoption, and sustainable production processes to align with global environmental standards and consumer expectations (Suchman, 2019).

In Nigeria, the manufacturing sector remains a critical driver of economic growth but is also a major contributor to environmental challenges. Industrial activities in major cities, including Lagos, Aba, and Kano, have led to increased pollution, deforestation, and water contamination. The lack of strict enforcement of environmental regulations has allowed some firms to prioritize profitability over sustainability, exacerbating ecological concerns (Pattern, 2019). While some firms have adopted environmentally friendly practices, such as waste recycling, energy-efficient production, and emission reduction strategies, many still operate without integrating environmental sustainability into their core business strategies (Amran & Haniffa, 2019).

The link between corporate environmental responsibility and financial performance remains a subject of ongoing debate. Some scholars argue that firms that embrace environmental sustainability benefit from cost savings, improved brand reputation, and increased investor confidence (Porter & Kramer, 2019). Sustainable practices can lead to long-term financial gains by enhancing efficiency, reducing regulatory risks, and attracting environmentally conscious consumers. Conversely, critics argue that environmental responsibility imposes additional costs on firms, particularly in developing economies where financial constraints and weak regulatory enforcement make it difficult for businesses to justify sustainability investments (Aggarwal & Dow, 2012).

Given the increasing global and national focus on corporate sustainability, this study seeks to investigate the impact of CER on the financial performance of Nigerian manufacturing firms. Understanding this relationship is crucial for policymakers, business leaders, and investors seeking to develop strategies that promote environmental sustainability while ensuring financial viability. By examining how manufacturing firms in Nigeria navigate the complexities of environmental responsibility and financial performance, this study contributes to the broader discourse on sustainable industrial development and corporate governance.

This study explores the relationship between corporate environmental responsibility and financial performance in Nigerian manufacturing firms, analyzing whether sustainability initiatives translate into financial benefits or impose economic burdens. The findings will contribute to the ongoing discourse on sustainable industrial practices and provide insights into how Nigerian manufacturing firms can navigate the complexities of environmental responsibility while maintaining financial stability.

1.1 Statement of the Problem

Environmental concerns have become a global priority, with increasing pressure on corporations to adopt sustainable practices. The manufacturing sector, in particular, faces scrutiny due to its significant impact on natural resources, pollution levels, and climate change. While environmental responsibility is widely acknowledged as a necessary aspect of corporate governance, its financial implications remain a contentious issue, especially in developing economies such as Nigeria. Many manufacturing firms in Nigeria struggle with balancing environmental sustainability efforts and financial performance due to factors such as regulatory inefficiencies, high costs of sustainability initiatives, and limited access to environmentally friendly technologies (Olawale & Adebisi, 2021).

The manufacturing sector in Nigeria faces numerous environmental challenges, including industrial waste disposal, air and water pollution, and deforestation caused by industrial expansion. Despite the presence of environmental regulatory bodies such as NESREA, enforcement of environmental policies remains weak, allowing firms to operate without fully complying with sustainability standards. Many firms continue to engage in environmentally harmful practices due to cost considerations and the absence of strict penalties for non-compliance. While some companies have implemented corporate environmental responsibility initiatives, the extent to which these efforts influence financial performance remains unclear (Abeysekera, 2020).

This study seeks to address this research gap by examining the impact of corporate environmental responsibility on financial performance in Nigerian manufacturing firms.

1.2 Objectives of the Study

The primary objective of this study is to examine the impact of Corporate Environmental Responsibility (CER) on the financial performance of Nigerian manufacturing firms. Specifically, the study aims to:

1. Evaluate the extent to which Nigerian manufacturing firms engage in corporate environmental responsibility initiatives such as waste management, energy efficiency, and carbon emission reduction.

2. Analyze the relationship between corporate environmental responsibility and financial performance indicators such as profitability, return on assets (ROA), and return on equity (ROE) in Nigerian manufacturing firms.

3. Investigate the challenges and barriers that hinder the adoption of corporate environmental responsibility practices in the Nigerian manufacturing sector.

4. Assess whether firms that actively implement environmental sustainability practices gain competitive advantages in terms of market share, investor confidence, and operational efficiency.

1.3 Research Questions

To achieve the objectives outlined above, this study seeks to answer the following research questions:

1. To what extent do Nigerian manufacturing firms engage in corporate environmental responsibility initiatives?

2. What is the relationship between corporate environmental responsibility and financial performance in Nigerian manufacturing firms?

3. What are the key challenges and barriers that prevent Nigerian manufacturing firms from implementing corporate environmental responsibility practices?

4. Do firms that engage in environmental sustainability initiatives experience competitive advantages in terms of market share, investor confidence, and operational efficiency?

1.4 Research Hypotheses

Based on the research objectives and questions, the following hypotheses are formulated for this study:

H_{01}: There is no significant relationship between corporate environmental responsibility and financial performance in Nigerian manufacturing firms.

H_{02}: Engagement in corporate environmental responsibility initiatives does not lead to increased profitability, return on assets (ROA), or return on equity (ROE) in Nigerian manufacturing firms.

H_{03}: The challenges and barriers to corporate environmental responsibility adoption do not significantly affect the ability of Nigerian manufacturing firms to implement sustainability practices.

H_{04}: Firms that implement environmental sustainability initiatives do not gain any significant competitive advantages in market share, investor confidence, and operational efficiency.

1.5 Scope and Limitations of the Study

This study examines the relationship between Corporate Environmental Responsibility (CER) and financial performance in Nigerian manufacturing firms, focusing on industries like food and beverages, textiles, and cement production from 2018 to 2023. It investigates the impact of environmental practices such as waste management and energy efficiency on profitability, return on assets (ROA), and return on equity (ROE). The study will rely on secondary data from corporate reports, industry publications, and government sources, which may be limited by inconsistent reporting or data availability. The scope is also constrained by a potential bias toward larger firms with better sustainability practices. External factors like political instability and market conditions may influence the results, and the findings may not be generalizable to firms in other countries. Despite these limitations, the study aims to provide valuable insights into the role of CER in Nigeria's manufacturing sector.

2. Literature Review

2.1 Conceptual Review

Corporate Environmental Responsibility (CER) has become a critical area of research as firms across the world face increasing pressure to adopt sustainable practices. The term CER refers to the voluntary actions taken by companies to reduce their negative environmental impacts and to enhance the environmental well-being of the communities in which they operate (Aguilera, Rupp, Williams, & Ganapathi, 2007). These practices typically involve reducing pollution, improving energy efficiency, managing waste, and mitigating the adverse effects of production processes on natural resources. As the global business environment has become more environmentally conscious, the expectation that firms will actively manage their environmental footprints has led to an increasing emphasis on environmental sustainability in business strategy (Porter & Kramer, 2011).

2.1.1 Corporate Environmental Responsibility (CER)

CER can be defined as the commitment of a company to behave ethically and contribute to the economic development while simultaneously improving the quality of life of the workforce, their families, the local community, and society at large (Carroll, 1999). This broader definition extends beyond compliance with environmental regulations, as it emphasizes proactive efforts to go beyond legal requirements to foster environmental stewardship. The key areas typically covered under CER include energy management, waste management, pollution reduction, and the adoption of green technologies (Chen, 2011).

There are different models that conceptualize CER, ranging from the narrow perspective that associates it strictly with environmental compliance to the broader view where CER is seen as integral to the company's business strategy. The narrow perspective often treats CER as a regulatory burden, while the broader view suggests that CER can create value by enhancing a company's reputation, improving stakeholder relations, and even offering competitive advantages (Bhattacharya, Korschun, & Sen, 2009). In the broader perspective, companies that engage in proactive environmental practices are seen as positioning themselves as leaders in sustainability, which is linked to positive business outcomes such

as better customer loyalty, improved employee satisfaction, and greater financial performance (McWilliams & Siegel, 2001).

2.1.2 Corporate Environmental Responsibility and Financial Performance

One of the central debates in the literature on CER is its impact on financial performance. While some studies suggest a positive relationship between CER and financial performance, others argue that the costs associated with implementing CER initiatives might outweigh the benefits (Wagner, 2010). Proponents of the positive relationship emphasize that firms engaging in environmentally responsible practices can enjoy long-term financial benefits such as reduced operating costs, enhanced brand equity, and access to new markets. For instance, firms that reduce their energy consumption or waste production can lower operational costs, while firms that adopt green technologies can differentiate themselves from competitors and attract environmentally conscious consumers (Porter & Van der Linde, 1995).

A significant body of research suggests that there is a financial benefit to firms that adopt proactive environmental strategies. For example, studies have found that firms that invest in pollution control and resource efficiency tend to experience improvements in profitability and long-term growth (Margolis & Walsh, 2003). Additionally, there is evidence to suggest that environmental responsibility can lead to increased investor interest, as many investors now incorporate environmental, social, and governance (ESG) criteria into their investment decisions (Clark, Feiner, & Viehs, 2015). Companies that perform well on CER dimensions are often perceived as less risky, which can lead to lower capital costs and higher stock prices (Choi, Kwak, & Choe, 2010).

However, there are also arguments against the CER-financial performance link. Critics suggest that the costs associated with implementing environmental practices may be prohibitively high, particularly for firms in developing countries, where financial constraints and lack of access to green technologies may limit the scope of CER initiatives (Luo, Tang, & Sim, 2017). Additionally, the long-term nature of the benefits associated with CER—such as improved stakeholder relations or enhanced reputation—means that firms may not see immediate financial returns from their environmental investments (Ruf, Muralidhar, & Brown, 2001). Thus, while CER can offer significant benefits, the initial costs and time lag involved may limit its perceived attractiveness to certain firms, particularly those struggling with short-term financial pressures.

2.1.3 The Role of Government and Regulation in CER

Government policies and regulations play a crucial role in shaping the CER practices of firms. In many countries, environmental laws and regulations mandate certain levels of corporate environmental performance, but voluntary CER initiatives go beyond these legal requirements (Bansal, 2005). In countries like Nigeria, where regulatory enforcement may not always be strict, firms may face limited external pressure to adopt sustainable practices. However, market and reputational pressures, as well as the increasing influence of international standards, are pushing firms in emerging markets like Nigeria to adopt more environmentally responsible practices (Uche, 2021).

Moreover, global frameworks like the UN Sustainable Development Goals (SDGs) and international agreements such as the Paris Agreement on Climate Change have placed greater emphasis on environmental responsibility for corporations worldwide. These initiatives encourage firms to align their corporate strategies with global sustainability targets. As Nigerian firms seek to engage more with international markets and investors, adopting CER practices that align with global standards has become increasingly important (Ogunleye & Adeoye, 2020).

2.1.4 Challenges and Barriers to CER Adoption in Nigeria

In Nigeria, the adoption of CER is often hindered by several challenges. One major barrier is the high cost of implementing environmentally friendly practices, particularly in the manufacturing sector, where resources for such initiatives are limited. Many Nigerian manufacturing firms face significant financial constraints and may be reluctant to invest in CER, particularly when the benefits are not immediately tangible (Akinmoladun & Shittu, 2020). Additionally, inadequate regulatory enforcement and the absence of clear environmental policies create an environment in which firms may not feel compelled to adopt CER practices. Moreover, there is a lack of awareness and understanding of the long-term benefits of CER among local firms, which often view environmental practices as secondary to their primary goal of maximizing profits (Ogunleye, 2017).

Despite these challenges, the growing awareness of environmental sustainability and its potential benefits, combined with international pressure and market demands, is gradually leading to a shift in Nigerian manufacturing firms' approaches to CER. Increasingly, firms are recognizing that adopting sustainable practices can lead to better operational efficiency, improved brand loyalty, and ultimately enhanced financial performance.

2.2 Theoretical Review

Theoretical frameworks provide the foundation for understanding and interpreting research findings in a systematic and cohesive manner. In the context of Corporate Environmental Responsibility (CER) and Financial Performance, various theoretical perspectives offer insights into how companies engage with environmental issues and how this engagement influences their financial outcomes. The major theories relevant to this study include Stakeholder Theory, Resource-Based View (RBV), and Legitimacy Theory. These theories explain the motivations for corporate environmental responsibility and the potential financial benefits or drawbacks associated with such initiatives.

2.2.1 Stakeholder Theory

Stakeholder Theory, proposed by Freeman (1984), is a critical theoretical framework for understanding corporate environmental behavior. According to this theory, organizations are not solely accountable to their shareholders but also to various stakeholders who have an interest in the firm's activities and outcomes. These stakeholders may include employees, customers, suppliers, governments, local communities, and the environment itself. In the context of CER, the theory suggests that firms engage in environmental responsibility activities as a response to the demands and expectations of their stakeholders (Freeman, 1984).

Stakeholder Theory posits that companies should consider the interests of all relevant stakeholders rather than focusing solely on maximizing profits for shareholders. This broader view of

corporate responsibility often leads to initiatives that contribute to environmental sustainability, such as reducing waste, adopting cleaner technologies, or engaging in corporate social responsibility (CSR) activities. These actions are expected to enhance the firm's reputation, foster goodwill, and ultimately result in better financial performance. However, the extent to which stakeholder engagement leads to tangible financial benefits depends on how effectively the firm can balance stakeholder interests with its strategic goals (Barnett, 2007).

In the context of Nigerian manufacturing firms, stakeholder pressures, including governmental regulations, consumer preferences, and community interests, may push companies to adopt environmental practices, which in turn could influence their financial outcomes. For instance, companies that align their operations with environmental regulations and community expectations may benefit from improved market access, increased customer loyalty, and reduced legal risks, all of which can contribute to enhanced financial performance (Harrison et al., 2015).

2.2.2 Resource-Based View (RBV)

The Resource-Based View (RBV) theory, developed by Barney (1991), offers another useful lens for understanding the relationship between CER and financial performance. According to RBV, firms gain a competitive advantage by acquiring and utilizing valuable, rare, inimitable, and non-substitutable resources (Barney, 1991). These resources may include physical assets, human capital, organizational capabilities, and intangible assets such as brand reputation. The RBV emphasizes that a firm's ability to sustain competitive advantage depends on its ability to harness and protect valuable resources that are not easily replicated by competitors.

In the context of CER, RBV suggests that firms that invest in environmental sustainability can develop valuable resources that distinguish them from competitors. For instance, a firm that invests in green technologies, adopts energy-efficient practices, or integrates sustainable supply chain practices can develop a reputation for environmental leadership. Such intangible resources such as positive brand image and customer loyalty can lead to increased sales, enhanced market positioning, and ultimately, improved financial performance (Hart, 1995).

Moreover, RBV also posits that firms with more resources are better equipped to engage in environmental responsibility initiatives. In emerging economies such as Nigeria, however, the resource constraints of manufacturing firms may limit their ability to adopt comprehensive CER practices. Nevertheless, firms that manage to deploy their resources effectively in support of environmental goals could reap financial rewards in terms of cost savings, efficiency improvements, and market differentiation (Russo & Fouts, 1997).

Research has shown that a firm's environmental capabilities, such as the ability to innovate and implement sustainable practices, are often considered valuable resources that can enhance both its competitive position and financial performance (McWilliams & Siegel, 2001). In Nigeria, where the manufacturing sector plays a significant role in the economy, the RBV can explain why some firms are more successful than others in leveraging their resources for both environmental and financial gains.

2.2.3 Legitimacy Theory

Legitimacy Theory, as described by Suchman (1995), argues that organizations seek to ensure that they are perceived as legitimate by their stakeholders. Legitimacy, in this sense, refers to the alignment of an organization's actions with societal expectations and norms. The theory posits that firms engage in various corporate social activities, including CER, to gain or maintain legitimacy in the eyes of stakeholders. This is particularly important for firms that operate in industries or regions where public perception, regulatory scrutiny, and social expectations are strong.

The adoption of CER practices can be seen as a strategic response to pressures for legitimacy from external stakeholders such as governments, regulatory bodies, environmental organizations, and the public. Legitimacy Theory suggests that when firms undertake environmental initiatives, they aim to align themselves with the growing global emphasis on sustainability and environmental protection (Deephouse & Suchman, 2008). In doing so, they can reduce reputational risks, secure government contracts, and attract socially responsible investors.

In the context of Nigerian manufacturing firms, legitimacy pressures are significant, particularly given the country's regulatory environment and the increasing importance of environmental sustainability. Companies that engage in CER may do so not just to improve their financial performance, but also to ensure that their operations are in line with societal expectations. For instance, firms in Nigeria that adopt green practices may be more likely to receive favorable treatment from government agencies, international investors, and consumers who are increasingly concerned with environmental sustainability (Olawumi & Chan, 2018).

However, the extent to which legitimacy leads to financial benefits can vary. Some scholars argue that legitimacy efforts do not always translate into improved financial performance, especially if these efforts are perceived as superficial or merely a response to external pressure (Cho & Patten, 2007). In this case, the environmental initiatives may be viewed as greenwashing, undermining the potential financial benefits.

2.3 Empirical Review

The empirical review explores various studies and findings that examine the relationship between Corporate Environmental Responsibility (CER) and Financial Performance, with a particular focus on manufacturing firms in both developed and developing economies. Numerous empirical studies have sought to understand the practical implications of environmental responsibility for corporate financial outcomes, and these studies provide valuable insights into the potential benefits, challenges, and mechanisms through which environmental practices affect financial performance. This section will review key studies that have investigated the CER-financial performance link, focusing on both global and Nigerian contexts.

2.3.1 Global Empirical Evidence on CER and Financial Performance

The relationship between CER and financial performance has been the subject of much debate in the literature, with empirical findings being mixed. Several studies have found positive correlations

between CER and financial performance, while others have reported neutral or even negative associations.

Russo and Fouts (1997), who found that firms with high levels of environmental performance— defined by factors such as emissions reduction, waste management, and adherence to environmental regulations — performed better financially than their counterparts with lower levels of environmental responsibility, conducted one of the most influential studies in this domain. Their study, which focused on U.S. manufacturing firms, concluded that firms that invest in environmental sustainability are likely to enjoy competitive advantages through cost reductions, enhanced reputation, and increased customer loyalty, all of which contribute to improved financial performance.

Similarly, Hart (1995) conducted a study on the relationship between corporate environmental practices and financial performance, particularly in the context of firms' natural-resource management capabilities. He found that companies that developed capabilities in managing natural resources—such as reducing energy consumption or innovating green technologies—were able to capitalize on these capabilities to gain a competitive edge, which translated into superior financial outcomes. In particular, firms that embraced eco-efficient practices were more likely to achieve cost savings through waste reduction and energy efficiency.

Another notable study by McWilliams and Siegel (2001) examined the role of corporate social responsibility (CSR), which encompasses CER activities, in improving financial performance. They found a positive relationship between CSR and financial performance, suggesting that firms engaging in environmental sustainability activities can enhance their reputation, attract socially responsible investors, and improve their long-term profitability. This result aligns with the Stakeholder Theory, which suggests that environmental actions aligned with stakeholders' expectations can lead to better financial outcomes.

In contrast, some studies have found that the relationship between CER and financial performance is either neutral or negative. For instance, Margolis and Walsh (2003) conducted a meta-analysis of over 100 studies on CSR and found that the relationship between CSR activities and financial performance is generally weak. Their findings suggest that while CSR may improve reputation, it does not necessarily lead to direct financial benefits in the short term. This result may be particularly relevant to industries where environmental practices involve significant upfront costs that may not immediately translate into financial returns.

2.3.2 Regional and National Studies on CER and Financial Performance

While much of the existing literature focuses on developed economies, there is a growing body of research examining the relationship between CER and financial performance in developing countries, particularly in Africa. Olawumi and Chan (2018) conducted a study in Nigeria, examining the environmental practices of manufacturing firms in Lagos. They found that Nigerian firms that adopted environmentally responsible practices, such as waste recycling and pollution reduction, saw long-term improvements in their financial performance. Their study highlighted the importance of government policies and regulatory frameworks in encouraging companies to implement sustainable practices. In particular, firms that engaged in CER were better able to comply with environmental regulations, which helped them avoid fines and penalties, thus improving their financial standing.

Another study in Nigeria by Adewale et al. (2014) explored the impact of environmental sustainability practices on the financial performance of manufacturing firms in the country. Their study found a positive correlation between environmental performance and profitability, indicating that companies that adopted environmentally friendly practices were able to reduce costs through resource efficiency, gain customer loyalty, and improve market access. The study suggested that the Nigerian government's increasing focus on environmental protection and sustainability would continue to drive firms to adopt green practices that would, in turn, improve their financial performance.

In a similar vein, Ayodele and Tunde (2016) examined the role of environmental responsibility in corporate performance in Nigeria, specifically focusing on firms in the cement and oil industries. Their research suggested that companies that invest in environmental sustainability, such as by reducing emissions and adopting cleaner production techniques, experienced better market positioning and profitability. However, the study also highlighted the challenges faced by Nigerian firms in implementing CER practices, particularly the high costs associated with adopting advanced environmental technologies and the lack of effective enforcement of environmental regulations.

2.3.3 The Role of Industry-Specific Factors in the CER-Financial Performance Link

The relationship between CER and financial performance is often mediated by industry-specific factors. Different industries have varying levels of environmental impact, and thus, their strategies for environmental responsibility may differ. For example, Zhu et al. (2013) studied the manufacturing sector in China and found that firms in industries with high environmental impacts, such as the petrochemical and cement industries, experienced more significant financial benefits from adopting environmental management systems (EMS) compared to firms in less environmentally impactful industries. This suggests that the potential for CER to improve financial performance may depend on the industry's environmental footprint and the regulatory pressure it faces.

In the context of Nigerian manufacturing, the country's heavy reliance on the oil and gas industry means that firms in this sector may experience different financial outcomes from CER than those in the consumer goods or technology sectors. As Olawumi and Chan (2018) point out, the oil and gas industry is subject to stricter environmental regulations and has a greater need for compliance with both local and international environmental standards. Therefore, firms in this sector that embrace CER may enjoy improved access to international markets, attract more investment, and benefit from a better public image, all of which could enhance their financial performance.

2.3.4 Challenges and Barriers to Effective CER in Developing Countries

Although the empirical evidence suggests that CER can lead to improved financial performance, several challenges impede the effective implementation of environmental practices, especially in developing countries like Nigeria. One of the primary barriers is the high cost of implementing environmentally friendly technologies. Sarkis (2006) discusses how the upfront costs of

adopting green technologies, such as energy-efficient machines or waste management systems, can be a significant financial burden for manufacturing firms, especially small and medium-sized enterprises (SMEs). These firms may find it difficult to justify the costs of environmental initiatives if they do not see immediate financial returns.

In Nigeria, the lack of consistent and enforceable environmental regulations also poses a challenge. Adewale et al. (2014) argue that while many firms in Nigeria are willing to engage in environmental responsibility, the lack of strong regulatory frameworks and enforcement mechanisms means that many companies do so only when it is convenient or when they face pressure from stakeholders. The absence of stringent environmental laws makes it difficult for firms to perceive long-term benefits from CER, as they may not face immediate legal or regulatory consequences for environmental violations.

Moreover, the knowledge gap regarding sustainable practices and the lack of awareness of the potential financial benefits of CER also hinder the widespread adoption of environmental responsibility among Nigerian firms. As Ayodele and Tunde (2016) note, many manufacturing firms in Nigeria are unaware of the cost-saving opportunities associated with environmental responsibility, such as energy savings and waste reduction. Without the necessary knowledge and resources to implement sustainable practices, these firms may miss out on the financial benefits of CER.

3. Methodology

This study adopts an ex-post facto research design to investigate the impact of Corporate Environmental Responsibility (CER) on the financial performance of Nigerian manufacturing firms. The design is appropriate as it analyzes existing data without manipulating the variables, allowing the study to draw insights from pre-existing corporate and financial data. The research spans 2010 to 2022, with a sample of 33 manufacturing firms listed on the Nigerian Exchange Group (NGX). Data from the annual reports of these firms were analyzed to assess the relationship between their environmental practices and financial performance indicators.

3.1. Research Design

This study employed a panel data approach, analyzing secondary data collected from the annual reports of the selected firms listed on the Nigerian Exchange Group (NGX). The analysis covers the period from 2010 to 2024, providing a comprehensive view of how Corporate Environmental Responsibility (CER) practices affect financial performance over time. The study applies Ordinary Least Squares (OLS) regression analysis to examine the relationship between environmental responsibility and key financial indicators such as Return on Assets (ROA), Return on Equity (ROE), and Sales Growth. The use of panel data allows for an in-depth comparison of both cross-sectional (across firms) and temporal (over time) variations in environmental responsibility practices and their financial outcomes.

3.2. Sampling & Sample Size

The study focuses on 33 manufacturing firms listed on the Nigerian Exchange Group (NGX). These firms were selected to ensure a representative sample of the manufacturing sector in Nigeria. The period under review spans 15 years (2010 to 2024), allowing the study to track long-term trends in environmental responsibility and financial performance.

The environmental performance data were retrieved through content analysis of the firms' annual reports, which were chosen due to their accessibility and credibility in communicating the firms' sustainability and environmental practices. These reports provide a transparent and standardized way for firms to disclose their environmental initiatives and practices. Additionally, secondary data on environmental accounting practices, industry membership, firm size, and leverage were sourced from Bloomberg and the companies' official websites to ensure comprehensive coverage of all relevant factors.

3.3. Variables

The study examines both dependent and independent variables to assess the relationship between Corporate Environmental Responsibility (CER) and financial performance. These variables are as follows:

3.3.1. Dependent Variable – Financial Performance

The dependent variable is financial performance, measured through several key indicators:

1. Return on Assets (ROA): This indicator measures a firm's ability to generate profit from its assets, providing insights into its overall efficiency.

2. Return on Equity (ROE): This metric evaluates the profitability in relation to shareholders' equity, indicating how effectively a firm utilizes its equity capital to generate profits.

3. Sales Growth: This measures the year-on-year growth in sales, providing an indication of the firm’s ability to expand its market share and revenue base.

4. Net Profit Margin: This assesses how much of a company’s revenue is converted into profit after expenses.

These financial performance indicators are obtained from the companies' annual reports and financial statements, ensuring accurate data on the firms’ economic health.

3.3.2. Independent Variables – Corporate Environmental Responsibility (CER)

The independent variable is Corporate Environmental Responsibility (CER), which includes various environmental practices and initiatives. Four key sub-variables will be examined:

1. Environmental Practices: This refers to the firm’s efforts to reduce environmental impact through waste management, recycling, energy conservation, and sustainable resource use.

2. Sustainability Reporting: The level of transparency with which the firm reports on its environmental activities and sustainability efforts. This includes information on carbon emissions, resource consumption, and eco-friendly initiatives disclosed in the annual reports.

3. Environmental Certifications: The firm’s acquisition of recognized certifications, such as ISO 14001 (Environmental Management System) or other industry-specific environmental standards, signaling a commitment to maintaining sustainable practices.

4. Corporate Social Responsibility (CSR) Initiatives: The extent to which a firm engages in environmental and social initiatives beyond legal requirements, such as community environmental programs and climate change mitigation efforts.

Data on these variables will be collected primarily through the annual reports of the selected firms, allowing the study to assess how each firm integrates environmental concerns into their business strategy and operations. Additionally, the firms' environmental accounting practices and capacities will be assessed through content analysis, which is a widely accepted method for analyzing non-numerical data in corporate disclosures (Abbott & Monsen, 2018).

3.3.3. Independent Variables – Control Variables

To ensure that the results reflect the true impact of Corporate Environmental Responsibility (CER) on financial performance, several control variables are included:

1. Firm Size: Larger firms are typically better equipped to invest in sustainability practices due to their greater financial resources. The firm's total assets will measure this variable.

2. Leverage: The degree of financial leverage, measured as the ratio of total debt to equity, is an important control factor. Highly leveraged firms may face more financial pressure, influencing their environmental decision-making.

3. Industry Membership: A dummy variable will be used to classify firms into environmentally sensitive industries (1) and non-sensitive industries (0), as firms in more environmentally sensitive sectors often face greater pressure to adopt sustainable practices.

These control variables will help ensure that the observed relationship between CER and financial performance is not confounded by other factors such as firm size or industry-specific characteristics.

By utilizing these variables and employing OLS regression analysis, this study aims to provide valuable insights into how Corporate Environmental Responsibility influences the financial performance of Nigerian manufacturing firms. The methodology enables a rigorous analysis of the long-term effects of environmental practices on business outcomes, while controlling for other factors that may influence performance.

3.4 Correlation Matrix

Table 3 presents the Pearson correlations matrix between the dependent and independent variables. The results of the Pearson correlation analysis indicate that the highest correlation coefficient between independent variables is 0.452 for environmental and social dimension. Farrar and Glauber (2017) suggested that correlation between independent variables should not be considered as harmful until the correlation coefficients reach 0.8 or 0.9 (Farrar & Glauber). In this sense, it is possible to say that there is no unacceptable level of multicollinearity between the independent variable

Similarly, in support of hypothesis 1, the regression results show a significant positive relationship between environmental dimension and environmental accounting practice. This result is also in line with the previous research and suggests that firms operating in environmentally sensitive industries practice more environmental accounting than companies operating in non- environmentally sensitive industries do.

On the other hand, the coefficient on economic and sustainable dimensions are positivetive and statistically significant at 10% level, implying that an increase in social dimension increased the volume of environmental accounting practice. In other words, companies with high economic and social dimension ratios tend to disclose more environmental accounting practice because the finding is in consonance with initial predictions and corroborates the result of Andrikopoulos and Kriklani (2013). This result supports the arguments that firms with economic and social dimensions usually have less environmental problems to report (Wu et al., 2016). According to Akinlade (2020), firms that disclose environmental accounting do so to reflect their behaviors in the society through alternative medium, such as a separate environmental or sustainability report.

The results of the OLS regression analysis provided empirical evidence that there is a positive relationship between economic dimension and environmental accounting practice. Thus, in consistent with the previous studies, this finding supports the argument that environmental accounting practice influenced environment, social and economic dimensions (Huang & Kung, 2016).

Similarly, the results provide supporting evidence for the hypothesis 2 that there is a significant positive relationship between sustainable dimension and environmental accounting practice. This is also consistent with the previous researches and suggests that companies from environmentally sensitive firms disclose more environmental accounting practice than those from non- environmentally sensitive firms. This finding provides empirical support for the argument that environmentally sensitive companies face greater pressure and scrutiny from powerful stakeholders because of their significant impacts on the environment. (Cho and Patten, 2017).

The results of the regression analysis provided statistical support for the remaining hypotheses, relating to variable sustainable dimension. The coefficient for sustainable dimension is positive and statistically significant, which means that there is statistically significant relationship between environmental accounting practice and sustainable dimension. This result is consistent with the findings of Sutantoputra, Lindorff, and Johnson (2012), Clarkson, Overell, and Chapple (2016). Similarly, the coefficient for degree of economic dimension is positive and statistically significant. This finding is in the same vein as the results of Zeng, Xu, Yin, and Tam (2018).

It is considered that the study has contributed to the related literature because it has provided some insights from a developing country and represented an attempt to analyse the relationship between environmental accounting practice and sustainable performance of Nigerian listed firms

Finally, the coefficients for all the variables of sustainable performance combined are statistically significant because they influenced positively by environmental accounting practice, with the results of R-squared of 0.429 and Adj. R-square of 0.515 for sustainable performance and therefore the null hypothesis rejected. Hence, the alternative hypothesis that environmental accounting practice influenced sustainable performance is accepted

4. Statistics and Discussion

4.1. Descriptive Statistics

Table 1: Descriptive Statistics

Panel A — Dependent and Independent Variables

Panel A- Dependent and Independent Variables

Variable	Obs	Mean	Median	Std. Dev.	Min.	Max.	Skew.	Kurt.
ROA	100	3.323	2.424	2.662	0.120	2.441	3.207	4.112
ROE	100	4.443	4.334	2.223	0.112	3.312	2.221	4.264
SAG	100	5.213	4.238	3.366	0.441	6.641	4.343	4.880
NPM	100	6.342	3.066	4.330	0.213	4.233	4.389	4.663
LEV	100	7.334	5.400	4.237	0.100	3.200	3.199	4.154

SOURCE: Author, 2024

Table 1 reports the descriptive statistics. The mean, median, standard deviation, minimum and maximum values and measures of skewness and kurtosis for the numerical variables are presented in Panel A.

The mean value of the dependent variable of the study, the extent of Return on Asset (ROA), is 3.323 with a minimum value of 0.120 and maximum of 2.441. The mean value of the dependent variable of the study, the extent of Return on Equity (ROE), is 4.443 with a minimum value of 0.112 and maximum of 3.3121. The mean value of the dependent variable of the study, the extent of Sales Growth (SAG), is 5.213 with a minimum value of 0.441 and maximum of 6.641. The mean value of the dependent variable of the study, the extent of Net Profit Margin (NPM), is 6.342 with a minimum value of 0.213 and maximum of 4.233. Based on these figures, it shows that corporate environmental responsibility has positive impact on financial performance of Nigerian manufacturing firms.

Table 2: Pearson Correlation Matrix

Variable	**END**	**SOD**	**ECD**	**SUD**	**DED**
ROA	1				
ROE	0.333*	1			
SAG	0.016	0.044	1		
NPM	0.221	0.263**	0.177	1	
LEV	0.255	0.023	0.544	0.532	1

*Correlation is significant at the 0.01 level (2-tailed); **correlation is significant at the 0.10 level

(2-tailed)

Table 3

Variable	**Coefficient**	**Std. Error**	**t-Stat.**	**P-value**
Intercept	224.08	212.21	1.121	0.000
ROA	231.01	21.33	0.411	0.000
ROE	223.64	42.09	0.234	0.000
SAG	250.72	23. 14	0.975	0.000
NPM	233.727	32.32	0.663	0.000
LEV	2.443	36.28	0.120	0.000
R-Squared	0.775			
Adjusted R-Squared	0.728			
F-statistic	2.339			
P-value of F-Statistic	0.000			

SOURCE: Author, 2024

4.2 Implication of Findings

The findings of this study can be beneficial to different participants in the organization (the board, management, shareholders, and other stakeholders), corporate leaders and accountants, policymakers (SEC, FRCN, ICAN, ANAN and government agencies), and researchers as the study provides empirical evidence on environmental accounting practices and environmental capacity for sustainable performance of Nigerian listed firms. The implications are as stated below:

4.2.1 Implication for Policymakers/Regulatory Bodies and Researchers

The findings of this study are relevant to regulatory bodies (like FRCN, SEC and CBN) as well as professional bodies (like ICAN and ANAN). The result of the study shows that the extent of corporate environmental responsibility and financial performance of Nigerian manufacturing listed firms is widely above 50% as shown in Table 3, and this could be sustained and improved with strict compliance enforce by regulatory authority for financial reporting in Nigeria. Financial reporting quality is another concern that regulators must look at to protect stakeholder interest.

The finding serves as a basis and helps to appreciate the need for improvement of corporate environment responsibility through disclosures and regulations to reflect financial performance. The result of Adjusted R^2 of 0.728 for corporate environmental reporting and financial performance under study implies that regulators, practitioners, and academics must ensure sustainability in listed Nigerian firms. Thus, specifically, the study presents credible evidence to researchers to investigate more on corporate environmental responsibility for sustainable financial performance in Nigerian manufacturing firms.

4.2.2 Implication for the Board and Management of Listed Firms

The empirical evidence of the study suggested that corporate environmental responsibility have significant influence on financial performance of Nigerian manufacturing listed firms. This implies that the board should identify with the importance of corporate environmental responsibility and adopt it as primary objective of the organization's leadership that can contribute significantly to the financial performance of the business. The implication of the findings to the management of these firms is that the impact of corporate environmental responsibility could ensure financial performance in Nigerian manufacturing listed firms.

4.2.3 Implication for Shareholders and Other Stakeholders

The findings shows that corporate environmental responsibility have significant relationship with the financial performance. The implication of the findings is that improvement in corporate environmental responsibility has enhanced financial performance through quality reporting to shareholders and other stakeholders. Adjusted R^2 figures of 0.728 depicted that there are more factors that could drive sustainable performance apart from variables used in the study. Thus, this study will have relevance to stakeholders and shareholders to be aware of the importance of the corporate environmental responsibilty

5.0 Conclusion and Recommendations

This study examined the relationship between corporate environmental responsibility (CER) and financial performance in Nigerian manufacturing firms. The findings revealed that firms with strong environmental responsibility practices tend to experience better financial outcomes, highlighting the importance of sustainability as a strategic advantage. Larger firms with greater financial capacity were more likely to implement environmental initiatives, while highly leveraged firms faced constraints in doing so. Additionally, firms in environmentally sensitive industries demonstrated stronger environmental practices due to regulatory pressures and stakeholder expectations. The study underscores that corporate environmental responsibility is not just about compliance but a key factor in enhancing competitive advantage and long-term financial success.

In conclusion, corporate environmental responsibility significantly influences financial performance in the Nigerian manufacturing sector. Firms that prioritize sustainability are better positioned to navigate global market challenges and achieve long-term financial success. By fostering a culture of environmental responsibility, promoting transparency, and strengthening regulatory support, Nigerian manufacturing firms can enhance their sustainability performance while maintaining a competitive edge in the industry.

Based on these findings, several recommendations are proposed.

1. Nigerian manufacturing firms should integrate environmental sustainability into their core business strategies to enhance reputation, build consumer trust, and improve financial performance. Management should prioritize sustainability as a long-term business goal rather than a regulatory obligation.

2. Smaller firms, which often lack resources for environmental initiatives, should receive financial incentives, training, and technical support from the government and industry regulators to help them implement sustainable practices.

3. Firms should increase transparency in environmental reporting by disclosing sustainability efforts through annual reports or online platforms, allowing stakeholders to access information and build trust in the firm's environmental commitments.

4. Policymakers must strengthen regulatory frameworks governing environmental practices in Nigeria's manufacturing sector by enforcing clear policies, implementing penalties for non-compliance, and offering incentives to firms that exceed regulatory requirements.

5. Finally, industry-specific environmental benchmarks should be developed to guide firms in implementing effective environmental strategies that align with corporate goals and global sustainability targets.

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