

CSR Initiatives and Environmental Protection Among SME's in Southwest, Nigeria.

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Abstract:

Environmental degradation remains a persistent challenge in Southwest Nigeria, with Small and Medium-sized Enterprises (SMEs) contributing significantly through poor waste management and inefficient use of water resources. Despite growing advocacy for Corporate Social Responsibility (CSR), empirical evidence on how specific CSR initiatives influence environmental protection among SMEs in the region remains limited and inconclusive. The study examined the effect of CSR initiatives, specifically waste management practice and water conservation programme, on environmental protection among SMEs in Southwest Nigeria. A cross-sectional survey research design was adopted. Data were collected using structured questionnaires administered to 400 SME owners and managers across the six states in Southwest Nigeria. A total of 380 valid responses were retrieved, representing a 95% response rate. Descriptive statistics and multiple regression analysis were employed to analyze the data using SPSS. The results from the study revealed that both waste management practices and water conservation programme have positive and statistically significant effects on environmental protection. Waste management practices showed a significant positive influence on environmental protection, while water conservation programme emerged as the strongest predictor. The model demonstrated a good explanatory power, indicating that CSR initiatives significantly contribute to improved environmental protection outcomes among SMEs in the region. The study concluded that CSR initiatives, particularly waste management and water conservation programme, play a critical role in enhancing environmental protection among SMEs in Southwest Nigeria. SMEs that integrate these practices into their operations are more likely to reduce environmental degradation and promote sustainability. The study recommended that SME operators should strengthen their waste management systems through recycling and proper disposal practices. Additionally, SMEs should prioritize water conservation initiatives, such as efficient water use and wastewater recycling, to enhance environmental sustainability.

Keywords: Corporate Social Responsibility, Waste Management Practices, Water Conservation Programme, Environmental Protection, Small and Medium-Sized Enterprises (SMEs)

Introduction

Environmental protection has become a central global concern as the combined effects of industrialization, rapid urbanization, and unsustainable production and consumption patterns continue to accelerate ecological degradation. The 2025 United Nations Sustainable Development Report identifies climate change, pollution, and inefficient resource management as major constraints to sustainable development, with developing economies disproportionately affected (United Nations, 2025). In response, the Sustainable Development Goals (SDGs), particularly Goal 12 (Responsible Consumption and Production) and Goal 15 (Life on Land), emphasize the need for environmentally responsible practices across all sectors of the economy, including Small and Medium-sized Enterprises (SMEs).

At the continental level, the African Union's Agenda 2063 recognizes sustainable environmental management as a prerequisite for inclusive growth and long-term development. However, persistent challenges such as weak waste disposal systems, inefficient water use, and limited private-sector participation continue to undermine environmental resilience across African economies (AUC, 2024). SMEs, which dominate the business landscape across the continent, often operate below acceptable environmental standards due to limited awareness, weak institutional enforcement, and inadequate access to sustainable technologies (Akinyemi & Ajibola, 2023).

In Nigeria, environmental degradation remains a critical development challenge, with poor waste management and water pollution posing serious risks to public health, ecosystems, and urban infrastructure. SMEs account for over 96% of businesses in Nigeria and therefore exert a substantial cumulative influence on environmental outcomes through their operational practices (SMEDAN, 2023). Despite this dominance, evidence indicates that many SMEs demonstrate weak engagement in structured environmental responsibility, particularly in waste management and water conservation. Inadequate waste segregation, recycling, and disposal practices have resulted in indiscriminate dumping of solid and liquid waste, contributing to blocked drainage systems, recurrent urban flooding, and contamination of land and water resources (Oluwole & Onifade, 2023).

Similarly, limited adoption of water conservation practices among SMEs—such as wastewater recycling, rainwater harvesting, and efficient water-use systems—has intensified water scarcity and pollution, especially in urban and industrial areas. Many SMEs discharge untreated effluents into nearby water bodies,

degrading aquatic ecosystems and reducing the availability of safe water for domestic and agricultural use (Uche & Okonkwo, 2022). These challenges are particularly pronounced in Southwest Nigeria, where high concentrations of industrial and commercial activities in states such as Lagos, Ogun, and Oyo have increased waste generation and pressure on already strained water resources. Weak compliance with environmental regulations and limited Corporate Social Responsibility (CSR)-driven environmental initiatives among SMEs further exacerbate environmental degradation in the region (Adebayo et al., 2023).

Despite the centrality of waste management and water conservation to achieving environmental sustainability and the SDGs, SMEs' engagement in these CSR dimensions remains minimal and inconsistent. Structural barriers such as financial constraints, limited environmental awareness, weak regulatory enforcement, and the perception of environmental responsibility as an added operational cost continue to hinder adoption of sustainable practices (Olayiwola et al., 2023). Moreover, while existing studies on CSR and environmental sustainability have largely focused on large corporations, empirical evidence on how SMEs' waste management and water conservation practices affect environmental protection—particularly in Southwest Nigeria—remains limited.

Given the economic dominance of SMEs and their cumulative environmental footprint, there is a pressing need for focused empirical investigation into how CSR-driven waste management and water conservation practices influence environmental protection outcomes at the SME level. Addressing this gap is essential for generating evidence-based insights that can inform policy design, regulatory enforcement, and SME-level sustainability strategies. Accordingly, this study examines the effects of waste management practice and water conservation program of SMEs on environmental protection in Southwest Nigeria, with the aim of contributing to sustainable enterprise development and improved environmental governance.

2. Literature Review and Hypotheses Development

2.1 Conceptual Review

To ensure a clear understanding of the key concepts used in this study, the study explored how waste management and water conservation contributes to sustainable environmental practices among SMEs, providing insights for policymakers, business owners, and regulatory bodies.

2.1.1 Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) provides an important framework through which Small and Medium-sized Enterprises (SMEs) can contribute to environmental protection, particularly through effective waste management and water conservation practices. While CSR is often broadly defined as businesses' responsibility to society beyond profit-making, its environmental dimension is especially relevant for addressing pollution, resource depletion, and ecological degradation (Carroll, 1999; Dahlsrud, 2008). In the context of SMEs in developing economies such as Nigeria, CSR-related environmental practices are increasingly recognized as essential tools for promoting sustainable development.

Waste management practices constitute a critical component of CSR-driven environmental responsibility. Proper waste segregation, recycling, reuse, and safe disposal help reduce land, air, and water pollution while preventing environmental hazards such as blocked drainage systems and soil contamination. Empirical evidence indicates that SMEs that adopt structured waste management and recycling initiatives experience not only cleaner operational environments but also cost reductions and improved public image (Eigege et al., 2024). Conversely, poor waste handling practices among SMEs, often driven by limited awareness and weak regulatory enforcement, contribute significantly to environmental degradation and public health risks (Akinwale, 2023).

Similarly, water conservation represents a vital CSR practice with direct implications for environmental protection. Efficient water-use systems, wastewater treatment, recycling, and rainwater harvesting reduce pressure on scarce water resources and minimize the discharge of untreated effluents into water bodies. Yusuf and Adebayo (2023) observe that SMEs implementing water conservation measures enhance regulatory compliance while reducing operational dependency on freshwater sources. In contrast, inadequate water management practices among SMEs have been linked to water pollution, ecosystem degradation, and reduced availability of safe water for domestic and agricultural use (Ibrahim, 2024).

Despite the proven environmental benefits of waste management and water conservation, CSR adoption in these areas remains limited among many SMEs. Financial constraints, low environmental awareness, technical capacity gaps, and the perception of environmental responsibility as an additional cost hinder effective implementation (Uba, 2023). Moreover, CSR engagement among SMEs

is often reactive and compliance-driven rather than proactive and sustainability-oriented, limiting its overall impact on environmental protection (Adegbite & Olayemi, 2023).

CSR-driven waste management and water conservation practices play a crucial role in enhancing environmental protection at the SME level. Strengthening these practices through policy incentives, awareness campaigns, and institutional support can significantly reduce SMEs' environmental footprint and contribute to broader sustainability objectives. By integrating waste and water management into their CSR strategies, SMEs can function not only as economic drivers but also as active agents of environmental sustainability.

2.1.2 Waste Management Practice

Waste management practices involve the systematic reduction, collection, treatment, recycling, and disposal of waste materials to minimize environmental and public health risks. In Nigeria, effective waste management includes strategies such as waste reduction, recycling, composting, landfilling, and energy recovery, which aim to address challenges associated with rapid urbanization, inadequate funding, and inefficient waste collection systems (Ukala et al., 2020; Obudulu et al., 2024). Sustainable waste management emphasizes a hierarchical approach that prioritizes waste avoidance, reduction, reuse, and recycling before final disposal.

For Small and Medium-sized Enterprises (SMEs), waste management constitutes a critical component of corporate social responsibility (CSR) and environmental protection. The adoption of waste reduction, recycling, and responsible disposal practices enables SMEs to reduce pollution, conserve natural resources, and comply with environmental regulations (Adeleke, 2022; Ayodeji, 2023). Empirical studies indicate that SMEs implementing sustainable waste management practices experience reduced operational costs, improved resource efficiency, and enhanced corporate reputation (Eigege et al., 2024).

Effective waste management also contributes significantly to environmental and public health protection. Proper disposal and recycling reduce air, land, and water pollution, thereby preserving ecosystems and lowering the risks of waste-related diseases (Obudulu et al., 2024). Additionally, by integrating waste management into their operations, SMEs support climate change mitigation through reduced carbon emissions and contribute to the transition toward a circular economy (Chukwuemeka & Balogun, 2023).

Despite these benefits, many SMEs face challenges in adopting efficient waste management practices due to financial constraints, limited technical capacity, and weak regulatory enforcement (Olawale & Okonkwo, 2023). These limitations often result in improper waste handling and continued environmental degradation. Nonetheless, strengthening waste management practices through regulatory support, technical assistance, and policy incentives can significantly enhance SMEs' contribution to environmental protection and sustainable development.

2.1.3 Water Conservation Program

Water conservation programs refer to structured initiatives aimed at reducing water consumption, improving efficiency, and ensuring the sustainable use of water resources. These programs combine technological solutions—such as water-efficient equipment, wastewater recycling, and rainwater harvesting—with management and behavioral strategies to minimize water wastage (Pérez-Blanco et al., 2020; Mukherjee & Jensen, 2022). For Small and Medium-sized Enterprises (SMEs), water conservation constitutes a critical component of corporate social responsibility (CSR) and environmental protection.

In Southwest Nigeria, where water scarcity and climate-related pressures are increasingly evident, effective water conservation programs enable SMEs to reduce operational water demand, lower utility costs, and minimize pollution arising from untreated wastewater discharge (Ajayi et al., 2021; Adegbite et al., 2022). Compliance with water-related environmental regulations further strengthens SMEs' corporate reputation while reducing the risk of legal sanctions (Olawale & Adebayo, 2023).

From an environmental protection perspective, water conservation programs help maintain ecosystem balance, prevent water contamination, and ensure the sustainable availability of water resources for both businesses and surrounding communities. By reducing excessive water extraction and promoting water reuse, SMEs contribute to broader sustainability objectives, including the achievement of Sustainable Development Goal 6 on clean water and sanitation (UN-Water, 2023). However, the effectiveness of these programs is often constrained by financial limitations, inadequate technical expertise, and low awareness of sustainable water management practices among SMEs (Nwankwo et al., 2023).

Water conservation programs play a vital role in enhancing environmental protection among SMEs. Strengthening policy support, providing technical assistance, and improving access to financing can significantly enhance SMEs'

capacity to adopt effective water conservation practices and contribute to long-term environmental sustainability.

2.1.4 Environmental Protection

Environmental protection refers to deliberate actions aimed at reducing environmental degradation, preventing pollution, and ensuring the sustainable use of natural resources. In the context of Small and Medium-sized Enterprises (SMEs), environmental protection is closely linked to Corporate Social Responsibility (CSR) practices, particularly waste management and water conservation, which directly influence environmental quality and public health (Olawale & Ajibade, 2022; Okonkwo et al., 2023).

Effective waste management practices, such as proper waste segregation, recycling, reuse, and environmentally safe disposal, play a critical role in minimizing land, air, and water pollution. SMEs collectively generate substantial waste, and poor waste handling contributes to environmental degradation and health risks. Empirical evidence from Nigeria indicates that SMEs adopting waste reduction and recycling practices experience improved environmental outcomes alongside enhanced operational efficiency (Eigege et al., 2024). Conversely, inadequate waste management exacerbates pollution, undermines ecosystem stability, and increases public health challenges.

Water conservation is another essential dimension of environmental protection among SMEs. Practices such as efficient water-use systems, wastewater recycling, and controlled discharge of effluents help prevent water pollution, reduce pressure on freshwater resources, and maintain ecosystem balance. Effective water conservation ensures compliance with environmental standards while safeguarding water availability for both businesses and surrounding communities (Adegbite et al., 2022). SMEs that integrate water conservation into their operations significantly reduce excessive water extraction and wastewater discharge, thereby contributing to sustainable environmental management (Mukherjee & Jensen, 2022).

Despite the environmental benefits of waste management and water conservation, many SMEs face challenges in implementation due to financial constraints, limited technical expertise, and weak regulatory enforcement (Chkanikova & Mont, 2022). Nonetheless, strengthening CSR-driven waste and water management practices among SMEs is essential for reducing environmental pollution, protecting public health, and achieving long-term environmental sustainability in Southwest Nigeria.

2.1.5 Small and Medium Enterprises in Nigeria (SMEs)

Small and Medium Enterprises (SMEs) are pivotal to Nigeria's economy, representing over 96% of registered businesses and contributing significantly to employment, poverty alleviation, and economic growth (SMEDAN, 2022). They operate across diverse sectors—including manufacturing, food processing, agriculture, construction, hospitality, and services—reflecting the country's entrepreneurial diversity (Onugu, 2005; Uche & Okonkwo, 2022).

Field observations and preliminary post-field analysis reveal that, despite their economic significance, many SMEs struggle to adopt structured environmental CSR practices. Challenges identified include weak institutional enforcement, limited funding, low awareness of environmental standards, and high costs of sustainable technologies (Eze & Nwankwo, 2022; Ogunleye & Olawale, 2022; Adebayo et al., 2023). In practice, SME operations directly influence environmental outcomes, particularly in waste management and water conservation. For example, reliance on fossil-fuel generators contributes to greenhouse gas emissions, while improper disposal of solid and liquid waste in food processing and manufacturing sectors exacerbates urban flooding and water pollution (Oluwole & Onifade, 2023; Ekanem & Chukwu, 2023; Akinyemi & Ajibola, 2023).

The field data also indicates that SMEs' adoption of environmental CSR is sector-dependent. Manufacturing SMEs, especially in textiles, plastics, food, and beverages, generate significant waste and exert substantial environmental pressure. While some enterprises implement rudimentary waste reduction and water-saving measures, many lack the technical capacity and institutional support for systematic CSR integration. This underscores SMEs' dual potential: they can either aggravate environmental degradation or meaningfully contribute to sustainability depending on CSR adoption.

SMEs in Southwest Nigeria are central actors in environmental protection. Strengthening institutional frameworks, providing financial incentives, and enhancing awareness of sustainable practices are crucial for maximizing SMEs' positive impact on environmental conservation, particularly in waste management and water conservation initiatives.

2.2 Theoretical Framework

The study draws on Stakeholder Theory which was propounded by Freeman in 1984 and the Triple Bottom Line (TBL) Theory which was propounded by Elkington in 1994 to understand how SMEs in Southwest Nigeria implement CSR initiatives that impact environmental protection. Stakeholder Theory posits

that businesses operate within a network of stakeholders—customers, communities, suppliers, and regulators—whose interests extend beyond profit maximization. Field observations indicate that SMEs face pressure from stakeholders to adopt sustainable practices, particularly in waste management and water conservation, as improper disposal and inefficient water use directly affect local communities and regulatory compliance (Freeman et al., 2018; Mitchell et al., 1997; Carroll & Buchholtz, 2014). SMEs that implement effective waste reduction, recycling, and water-saving initiatives demonstrate ethical and strategic responsibility, fostering legitimacy and long-term sustainability. However, financial constraints, limited technical expertise, and risks of symbolic CSR or "greenwashing" can limit SMEs' ability to meet stakeholder expectations (Jensen, 2001; Pedersen, 2010; Lyon & Montgomery, 2015).

The TBL Theory complements Stakeholder Theory by framing environmental responsibility as part of a broader sustainability agenda that balances economic, social, and environmental outcomes. Post-field findings show that SMEs that integrate waste management and water conservation programs reduce pollution, conserve critical natural resources, and ensure compliance with environmental regulations (Gimenez et al., 2012; Slaper & Hall, 2011). Water conservation strategies, such as rainwater harvesting and wastewater recycling, and waste reduction initiatives not only protect ecosystems but also enhance operational efficiency and reduce costs, aligning environmental stewardship with business sustainability. Nevertheless, SMEs often face challenges in fully implementing these practices due to limited resources, inadequate infrastructure, and insufficient awareness of sustainable methods (Milne & Gray, 2013; Jamali et al., 2009; Pope et al., 2017).

The analysis for the study confirms that waste management and water conservation are critical CSR components through which SMEs can significantly contribute to environmental protection. Both theories provide a strong framework to examine the ethical, strategic, and operational dimensions of SME engagement in environmental sustainability.

2.3 Empirical Review

Esara et al. (2024) conducted a study in Uyo Metropolis and assessed household waste disposal practices, including drive-and-throw, burning, and littering. Case study of 100 households in Uyo using purposive sampling; data collected via surveys and observation. Findings showed widespread accumulation due to delayed disposal and limited use of public facilities. Ineffective practices contributed to environmental degradation despite some awareness of

cleanliness. The study highlights the need for structured waste management to ensure sustainability.

Amin et al. (2024) examined environmental protection policies in Kwara and Oyo States, revealing ineffective implementation of waste disposal and recycling strategies. Awareness campaigns existed, and NGOs collaborated with governments, but practical enforcement remained weak. A survey of 400 respondents in Kwara and Oyo States, analyzed using SPSS; framed on Marxian Political Ecology theory. Findings indicate that regulatory measures alone are insufficient without robust operational support. The research emphasizes the gap between policy awareness and actual sustainable waste management practices.

Kola-Olusanya et al. (2024) conducted a study on role of environmental education in water pollution prevention and conservation in Nigeria. The study assessed the role of environmental education (EE) in water pollution prevention and conservation in Nigeria, focusing on the relationship between EE, public awareness, and attitudes toward water-related issues such as scarcity and pollution. The study adopted a survey research design using simple random sampling to select 766 respondents from Southwest Nigeria. Data were analyzed using descriptive statistics and ANOVA. Results from the study showed high awareness of water pollution and conservation strategies, but poor attitudes toward preventive practices. Education level significantly influenced awareness and attitudes, while age had no significant effect. Environmental education was found to be critical in improving water conservation outcomes.

Omokaro et al. (2024) conducted a study on water resources, pollution, integrated management and practices in Nigeria-An Overview. The study employed a secondary-data-based review using reports from government agencies and international organizations such as the World Bank and UNEP. Findings from the study revealed that Nigeria possesses abundant water resources, but severe pollution, especially oil-related contamination in the Niger Delta, has degraded ecosystems and public health. Oil spills and heavy metal pollution significantly reduced water quality and aquatic productivity.

Echioma (2024) conducted a study on evaluation of water pollution in Nigeria. The study examined the legal framework for controlling water pollution in Nigeria, focusing on the effectiveness of existing legislation and regulations. A qualitative legal and policy analysis was conducted using document review of water pollution laws and regulatory frameworks in Nigeria. Although multiple legal instruments exist to control water pollution, enforcement

remains weak. Institutional overlaps, poor coordination, and inadequate water quality standards limit effective pollution control.

Otuaro et al. (2024) conducted a study on effect of tillage practices on hydro-physical properties of soils in a rice-grown environment in North Central Nigeria. The study assessed the physical and chemical properties of soil in a rice-growing environment in Minna, Niger State, Nigeria, under different soil and water conservation practices. Field-based soil sampling was conducted across five sites in Minna, Niger State, with laboratory analysis of hydro-physical and chemical soil properties at varying depths. Findings from the study revealed that Soil properties varied significantly across sites due to tillage practices. Poor infiltration and intensive mechanized plowing increased erosion risk, while conservation-oriented practices improved soil moisture retention and structure.

Salawu and Amin (2023) conducted a study in Kwara State and assessed public awareness and compliance with environmental laws. Survey of 400 personnel from ministries, agencies, and committees in Kwara State; analyzed using SPSS. Results from the study indicated general awareness but low compliance, with only one approved dumpsite in the state. The research underscores the need for stronger enforcement and sustainable practices to mitigate environmental risks.

Ogunniyi et al. (2023) conducted a study on do soil and water conservation practices influence crop productivity and household welfare? Evidence from rural Nigeria. The study examined the impact of soil and water conservation (SWC) practices on crop productivity and household welfare in rural Nigeria. The study analyzed secondary data from IITA using econometric models including propensity score matching (PSM), IPWRA, and multinomial logit regression. Finding from the study revealed that adoption of soil and water conservation practices significantly increased crop productivity and household welfare. Multiple conservation practices produced greater benefits than single practices, with productivity increasing by over 27%.

Okoji (2023) conducted Community perceptions of waste management in Ilorin. Descriptive survey of 200 respondents in Ilorin was employed using a validated questionnaire; data analyzed via t-tests and ANOVA Showed gender-based differences, but marital status, education, and religion had no significant impact. Poor municipal waste collection and disposal practices posed environmental challenges. The study highlighted the importance of public engagement and structured waste management to protect the environment.

Uzoagu and Eheazu (2022) explored the link between waste management, environmental protection, and sustainable community development. Conceptual

analysis of literature on waste management and sustainable development was employed. Findings revealed increased waste generation from economic growth and weak implementation of sustainable strategies. Effective waste management is crucial for mitigating environmental degradation in Nigeria.

Ahuchaogu et al. (2022) conducted a study on soil and water conservation practices in Nigeria: A review. The study examined the level of application of soil and water conservation practices in Nigeria, focusing on mechanical and biological conservation measures. A comprehensive literature and policy review was conducted on soil and water conservation practices in Nigeria. Findings from the study revealed that while conservation practices are well recognized, implementation remains inconsistent due to weak enforcement, funding constraints, low awareness, and limited technical capacity.

Akinbobola et al. (2022) conducted a study on water conservation techniques by Ilukuno, Ikun-Amure, and Ijan Ekiti Communities in Ekiti State, Nigeria. The study examined indigenous water management practices in three selected communities; Ilukuno, Ikun-Amure, and Ijan Ekiti in Ekiti State, Southwest Nigeria. The study used qualitative methods, including interviews, focus group discussions, and observations in three Ekiti State communities. Findings from the study revealed that Indigenous water conservation practices, combined with modern systems, ensured sustainable water management. Strong community leadership and local participation enhanced water system maintenance and conservation.

Sylvester and Orowigho (2022) conducted a research in Delta State and assessed solid waste collection and evacuation by the Waste Management Agency. Descriptive survey of 290 respondents in Delta State was employed, ANOVA and t-tests was used for analysis. Results from the study indicated poor coordination and significant variation across regions. The study highlighted the need for integrated approaches to improve environmental protection through effective waste management.

Noiki et al. (2021) carried out a Systematic literature review on waste management practices in Nigeria. The systematic review showed that urban waste management in Nigeria is largely ineffective, leading to pollution and ecological risks. Weak legal frameworks, poor enforcement, and lack of public-private collaboration exacerbate the problem. Sustainable strategies are needed to mitigate environmental hazards.

Okon and Ojakorotu (2021) conducted a study on environmental security and water wars in Africa: A reflection on Nigeria. The study examined the relationship

between environmental security and water-related conflicts in Nigeria, using the oil-rich Niger Delta region and the shrinking Lake Chad in the Northeast as case studies. A qualitative analysis of secondary data and case studies was employed using existing literature and policy reports. Findings from the study revealed that Environmental degradation from oil pollution and climate change-induced water scarcity intensified resource conflicts in Nigeria. Water depletion in the Niger Delta and Lake Chad regions heightened environmental insecurity and social unrest.

2.4 Gap in Literature

Existing studies on corporate social responsibility (CSR) and environmental sustainability have largely concentrated on large corporations and multinational firms, with limited attention given to small and medium-scale enterprises (SMEs), particularly in developing economies such as Nigeria. Where SMEs are discussed, CSR is often treated broadly, with insufficient emphasis on specific environmental practices. Notably, empirical evidence on how SMEs' waste management practices and water conservation programmes contribute to environmental protection remains sparse, despite SMEs being significant contributors to environmental degradation in urban and semi-urban areas.

Furthermore, the application of environmental-focused frameworks such as the Triple Bottom Line (TBL) Theory in examining SMEs' waste management and water conservation initiatives is underexplored in the Nigerian context. Most CSR studies rely on traditional theoretical perspectives without adequately integrating environmental sustainability as a core operational outcome of SME activities.

Methodologically, existing research is dominated by qualitative approaches and studies from developed economies, limiting contextual relevance and generalisability. There is a clear lack of quantitative, survey-based empirical studies that measure the direct impact of SMEs' waste management and water conservation programmes on environmental protection in Southwest Nigeria. This study addresses these gaps by providing empirical evidence on how SME-driven CSR initiatives in waste management and water conservation influence environmental sustainability within the local context.

2.5 Hypotheses

H₀1: Waste management practices of small and medium-scale enterprises have no significant effect on environmental protection in Southwest Nigeria.

H₀2: Water conservation programs of small and medium-scale enterprises have no significant effect on environmental protection in Southwest Nigeria.

3. Data and Methods

The study adopted a quantitative cross-sectional survey design to examine the effects of waste management practices and water conservation programmes as key Corporate Social Responsibility (CSR) initiatives on environmental protection of Small and Medium-scale Enterprises (SMEs) in Southwest Nigeria. The study area comprises Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti States, a region characterized by a high concentration of SMEs and significant environmental challenges, particularly in waste disposal and pressure on water resources.

The target population consisted of 17,533 registered SMEs across the six states, as obtained from the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and the National Bureau of Statistics (NBS). Using Yamane's (1967) formula, a sample size of 400 SMEs was selected through a multistage stratified random sampling technique to ensure adequate representation across sectors, firm sizes, and states.

Primary data were collected using a structured questionnaire administered to SME owners and managers. The instrument focused specifically on waste management practices, water conservation programmes, and their influence on environmental protection. Responses were measured using a 5-point Likert scale. The questionnaire was validated through expert review, while reliability was confirmed using Cronbach's alpha coefficient, with coefficients of 0.70 or above considered acceptable. A pilot study was conducted to refine the instrument before full-scale data collection.

Data were analyzed using descriptive statistics (frequencies, means, and standard deviations) and inferential techniques, including multiple regression analysis, to determine the impact of waste management and water conservation CSR practices on environmental protection. Statistical analyses were conducted using SPSS to ensure accuracy and robustness of results.

3.1 Model Specification

The study specifies an econometric model to examine the effect of Corporate Social Responsibility (CSR) practices on environmental protection among SMEs in Southwest Nigeria. Adapting the framework of Uwuigbe et al. (2022), the model focuses on waste management practices and water conservation programme as key predictors of environmental protection among SMEs.

The functional relationship is expressed as:

$$EP = f(WMP, WCP)$$

The econometric model is specified as:

$$EP_i = \beta_0 + \beta_1 WMP_i + \beta_2 WCP_i + \varepsilon_i$$

Where:

EP_i = Environmental protection
 WMP_i = Waste management practice
 WCP_i = Water conservation programme
 β_0 = Constant
 $\beta_1 - \beta_2$ = Coefficients of independent variables
 ε_i = Error term

The model assumes that improved CSR activities in waste management and water conservation will enhance environmental protection outcomes among SMEs in Southwest Nigeria.

3.1.1 A Priori Expectation

The study expects CSR practices to have a positive and significant relationship with environmental protection among SMEs. Specifically:

- Waste management practices ($\beta_1 > 0$) are expected to improve environmental protection by reducing pollution, encouraging recycling, and promoting efficient waste disposal.
- Water conservation programmes ($\beta_2 > 0$) are expected to enhance environmental protection by supporting sustainable water usage and reducing water contamination.

The study assumes that SMEs that actively implement waste management and water conservation initiatives are more likely to contribute positively to environmental sustainability.

4. Data Analysis and Discussion of Findings

This section presents the analysis and interpretation of data collected to examine the effect of Corporate Social Responsibility (CSR) initiatives on environmental protection among Small and Medium-sized Enterprises (SMEs) in Southwest Nigeria. The study employed a cross-sectional survey design, targeting SMEs across the six states in the region. A total of 400 structured questionnaires were administered to SME owners, managers, and other key stakeholders involved in environmental sustainability practices. Out of these, 380 valid responses were retrieved, representing a response rate of 95%, which is considered highly satisfactory for statistical analysis. The section provides descriptive statistics, inferential analysis, and discussion of findings, linking the results to the study's objectives and relevant literature

4.1. Descriptive Statistics

Table 4.1 presents the descriptive statistics for waste management practices (WMP), water conservation programmes (WCP), and environmental protection (EP) among SMEs in Southwest Nigeria, based on 380 valid responses. The consistency in the number of observations across all variables indicates completeness and reliability of the dataset for further statistical analysis.

The mean score for waste management practices (WMP) is 4.17, with a relatively low standard deviation (SD = 0.47). This suggests that SMEs in the study area largely engage in waste management-related CSR activities such as proper waste disposal, waste reduction, and basic recycling practices. The low dispersion around the mean indicates a high level of agreement among respondents regarding the adoption of waste management practices.

Similarly, water conservation programmes (WCP) recorded a mean value of 4.19 and a standard deviation of 0.42, indicating that SMEs moderately to strongly adopt water conservation initiatives, including reduced water wastage, efficient water usage, and basic wastewater management. This reflects growing awareness among SMEs of the importance of water sustainability, especially in a region facing increasing water stress.

Environmental protection (EP) recorded the highest mean score of 4.28 with a standard deviation of 0.44, suggesting that SMEs perceive their CSR initiatives as having a positive effect on environmental protection. This implies that waste management and water conservation efforts are translating into improved environmental outcomes, such as reduced pollution and better environmental quality within their operational areas.

The skewness and kurtosis values for all variables fall within acceptable thresholds (± 1), indicating that the data are approximately normally distributed. This supports the suitability of the dataset for inferential statistical techniques such as regression analysis and also aligns with the core objective of the study.

Table 4.1: Descriptive Statistics

	N	Min	Max	Mean	Std.Dev	Skewnes	Kurtosis
WMP	380	3.00	5.00	4.1658	0.46557	-0.242	-0.259

WCP	380	3.00	5.00	4.1898	0.42391	0.118	0.099
EP	380	3.00	5.00	4.2829	0.43782	0.042	-0.443
Valid N	380						

Source: Author's computation (2026)

4.2 Model Summary

Table 4.2 presents the model summary of the regression analysis. The multiple correlation coefficient ($R = 0.650$) indicates a strong positive relationship between the CSR initiatives (waste management and water conservation) and environmental protection. This suggests that improvements in SMEs' waste management and water conservation practices are strongly associated with better environmental protection outcomes. The R Square value of 0.422 implies that 42.2% of the variation in environmental protection among SMEs is explained jointly by waste management practices and water conservation programmes. This represents a substantial explanatory power, particularly in social and environmental studies where outcomes are influenced by multiple institutional and behavioral factors.

The Adjusted R Square of 0.419, which corrects for sample size and number of predictors, confirms the robustness of the model. The minimal difference between R^2 and Adjusted R^2 indicates that the included CSR variables meaningfully contribute to explaining environmental protection and that the model is not over-fitted. The F-change value of 137.841 with a p-value of 0.000 ($p < 0.05$) indicates that the model is statistically significant. This means that waste management and water conservation practices, when considered together, significantly predict environmental protection among SMEs in Southwest Nigeria. Hence, the null hypothesis that CSR initiatives have no significant effect on environmental protection is rejected.

The Durbin-Watson statistic of 2.098 is close to the ideal value of 2, suggesting no serious autocorrelation problem in the residuals. This satisfies one of the key assumptions of regression analysis and confirms the reliability of the estimated coefficients.

Table 4.2: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error	R ² Change	F-Change	Sig. Change	Durbin Watson
1	0.650	0.422	0.419	0.33371	0.422	137.841	0.000	2.098

a. Predictors: (Constant), WCP, WMP

b. Dependent Variable: EP

4.3 Interpretation of the ANOVA Result

The ANOVA table 4.3 evaluates the overall significance of the regression model that examines the joint effect of waste management practices (WM1) and water conservation programmes (WC) on environmental protection (EP) among SMEs in Southwest Nigeria. The regression model produced an F-statistic of 137.841 with a probability value of 0.000 ($p < 0.05$). This result indicates that the model is statistically significant, meaning that waste management practices and water conservation programmes jointly have a significant effect on environmental protection among SMEs. Consequently, the null hypothesis that CSR initiatives (waste management and water conservation) have no significant joint effect on environmental protection is rejected.

The Regression Sum of Squares (30.700) represents the variation in environmental protection explained by the CSR variables, while the Residual Sum of Squares (41.983) reflects the unexplained variation attributable to other factors not included in the model. The relatively large explained sum of squares confirms that the predictors contribute meaningfully to environmental protection outcomes. The Mean Square Regression value (15.350) compared to the Mean Square Residual value (0.111) further demonstrates that the explanatory power of the model substantially exceeds random error.

The ANOVA result confirms that CSR initiatives focused on waste management and water conservation are collectively effective in improving environmental protection among SMEs in Southwest Nigeria. This provides empirical evidence that SME-level environmental responsibility plays a critical role in addressing environmental challenges such as pollution, waste accumulation, and water resource depletion in the region. The findings support the need for targeted CSR frameworks and incentive-based environmental programmes for SMEs. The result also underscores the importance of integrating waste management and water conservation into daily business operations as viable strategies for achieving environmental sustainability.

Table 4.3:		ANOVA				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.700	2	15.350	137.841	.000
	Residual	41.983	377	.111		
	Total	72.683	379			
a. Dependent Variable: EP						
b. Predictors: (Constant), TransWCP, TransWMP						

4.4 Diagnostics Test

The collinearity diagnostics from the study indicate that multicollinearity is not a concern in the estimated regression model. Specifically, both waste management practices (WMP) and water conservation programmes (WCP) record tolerance values of 0.505 and Variance Inflation Factor (VIF) values of 1.981. Tolerance values well above the minimum acceptable threshold of 0.20 suggest that a substantial proportion of the variance in each predictor is unique and not excessively explained by the other independent variable. Similarly, the VIF values are considerably below the commonly accepted critical benchmarks of 5.0 (and more conservatively 10.0), indicating that the predictors do not exhibit strong linear dependence.

The absence of serious multicollinearity implies that waste management and water conservation, although both dimensions of corporate social responsibility, capture distinct aspects of environmental practices among SMEs in Southwest Nigeria. Consequently, the estimated regression coefficients are stable, efficient, and reliable, allowing for meaningful interpretation of the individual contribution of each predictor to environmental protection outcomes. This strengthens the credibility of the empirical findings, as the observed significance of both waste management practices and water conservation programmes can be attributed to their true explanatory power rather than to statistical distortion arising from overlapping constructs.

4.5 Test of Hypotheses

H₀₁: Waste management practice does not have a significant effect on Environmental Protection among SME's in Southwest States of Nigeria

The coefficients table presents the individual effects of waste management practices (WMP) and water conservation programmes (WCP) on environmental protection (EP), controlling for other variables in the model. $B = 1.394$, $p = .000$.

This implies that when both waste management and water conservation practices are zero (a theoretical baseline), the model predicts an environmental protection score of 1.394. Although this baseline has no substantive policy interpretation, its statistical significance confirms the model's intercept is meaningfully different from zero.

From the table, Waste management practices (WMP) were found to have a positive and statistically significant effect on environmental protection among SMEs in Southwest Nigeria. The regression result shows an unstandardized coefficient of 0.104 ($t = 2.001$, $p = 0.046$), with a 95% confidence interval of 0.002 to 0.206, indicating that the effect is statistically reliable. This implies that, holding water conservation programmes constant, a one-unit improvement in waste management practices, such as proper waste segregation, recycling, and safe disposal—leads to an average increase of 0.104 units in environmental protection.

Given that the probability value ($p < 0.05$), the null hypothesis, which states that waste management practices have no significant effect on environmental protection, is rejected. Consequently, the alternative hypothesis is accepted, confirming that waste management practices significantly influence environmental protection among SMEs.

In relation to the study, the finding supports the argument that SMEs that actively implement waste management as part of their CSR initiatives contribute meaningfully to reducing environmental degradation. This result is consistent with previous studies findings by Eigege et al. (2024) and Salawu and Amin (2023), who found that effective waste management reduces pollution and enhances environmental quality. It also aligns with the findings from the study of Noiki et al. (2021), which established that poor waste management practices heighten environmental risks, thereby reinforcing the conclusion that improved waste management positively affects environmental protection outcomes

H₀₂: Waste management practices does not have a significant effect on Environmental Protection among SME's in Southwest States of Nigeria

From the table, the coefficient result for Water Conservation Programme (WCP) indicates a strong, positive, and statistically significant relationship with environmental protection among SMEs. The unstandardized coefficient ($B = 0.586$) implies that a one-unit improvement in water conservation practices, such as efficient water use, wastewater recycling, and rainwater harvesting,

leads to an average increase of 0.586 units in environmental protection outcomes, holding other factors constant. The standardized beta coefficient ($\beta = 0.568$) further shows that water conservation exerts a substantial influence on environmental protection relative to other predictors in the model. This effect is highly significant ($t = 10.303$, $p < 0.001$), and the 95% confidence interval (0.474, 0.698) does not include zero, confirming the robustness and reliability of the estimated relationship. Based on this evidence, the null hypothesis that water conservation programme have no significant effect on environmental protection is rejected, while the alternative hypothesis is accepted.

The finding underscores the central role of water-focused CSR initiatives in enhancing environmental protection outcomes among SMEs, particularly in regions facing acute challenges of water scarcity and pollution. It suggests that investments in sustainable water management practices are not merely symbolic CSR actions but constitute effective mechanisms for mitigating environmental degradation and promoting ecological sustainability. The result aligns with empirical evidence from recent studies. For instance, Kola-Olusanya et al. (2024) and Akinbobola et al. (2022) report that the adoption of water conservation strategies significantly improves environmental sustainability and community water security. Similarly, the findings support the arguments of Omokaro et al. (2024) and Echioma (2024), who emphasize that effective water resource management is critical to reducing environmental degradation and strengthening sustainable development outcomes. Overall, the result reinforces the view that water conservation programmes represent a key CSR pathway through which SMEs can achieve meaningful environmental protection impacts.

Table 4.4: Coefficients

Model	Coefficient	Std. Error	t	Sig	Tolerance	VIF
Constant	1.394	.177	7.880	.000		
WMP	.104	.052	2.001	.046	.505	1.981
WCP	.586	.057	10.303	.000	.505	1.981

a. Dependent Variable: EP

4.6 Discussion of Findings

The study examined the effect of Corporate Social Responsibility (CSR) initiatives on environmental protection among Small and Medium Enterprises (SMEs) in Southwest Nigeria, with particular focus on waste management practices and water conservation programs. The descriptive statistics indicated that SMEs in the region exhibit a relatively high level of engagement in both practices, with mean scores of 4.1658 for waste management and 4.1898 for water conservation

on a 5-point scale. Similarly, the environmental protection variable recorded a mean score of 4.2829, suggesting that SMEs' CSR activities are generally associated with positive environmental outcomes.

The regression analysis showed that waste management practices (WMP) have a positive and statistically significant effect on environmental protection ($B = 0.104$, $\text{Beta} = 0.110$, $t = 2.001$, $p = .046$). This implies that for every one-unit increase in effective waste management activities—such as proper waste segregation, recycling, and reduced accumulation—the environmental protection score improves by 0.104 units, holding other factors constant. The null hypothesis, which posited that WMP has no effect on environmental protection, is therefore rejected, and the alternative hypothesis is accepted.

The finding aligns with previous research indicating that structured waste management is a critical component of corporate environmental responsibility. For instance, Eigege et al. (2024) and Salawu and Amin (2023) found that firms that implement proper waste management significantly reduce pollution levels and improve overall environmental quality. Similarly, Noiki et al. (2021) highlighted that inadequate waste management practices increase environmental risks, reinforcing the importance of CSR-driven waste interventions among SMEs. The results suggest that SMEs' engagement in waste management not only contributes to compliance with environmental standards but also fosters sustainable operational practices, reducing the negative ecological footprint of their activities.

Water conservation program (WCP) was found to exert a stronger and highly significant influence on environmental protection ($B = 0.586$, $\text{Beta} = 0.568$, $t = 10.303$, $p < .001$). This indicates that improvements in water conservation practices—such as efficient water usage, rainwater harvesting, and wastewater recycling—are associated with substantial gains in environmental protection. The study's findings lead to the rejection of the null hypothesis that WCP has no effect on environmental protection, confirming that SMEs' proactive water management strategies play a crucial role in environmental sustainability.

This outcome corroborates the works of Kola-Olusanya et al. (2024) and Akinbobola et al. (2022), who reported that awareness and adoption of water-saving practices significantly enhance community water security and environmental sustainability. Likewise, Omokaro et al. (2024) and Echioma (2024) emphasized that effective water resource management is essential in reducing pollution, preserving aquatic ecosystems, and mitigating the impacts

of water scarcity. The findings suggest that SMEs that prioritize water conservation within their CSR framework can make a meaningful contribution toward mitigating water stress and supporting broader environmental protection goals in the Southwest region.

The combined results of the regression model indicate that CSR initiatives focused on waste management and water conservation collectively explain approximately 42% of the variance in environmental protection outcomes ($R^2 = 0.422$, Adjusted $R^2 = 0.419$). The absence of multicollinearity between the independent variables ($VIF = 1.981$, Tolerance = 0.505) confirms the stability and reliability of the estimates. The findings highlight that while both dimensions are significant, water conservation programs exert a stronger effect on environmental protection than waste management practices, suggesting that SMEs' CSR strategies should prioritize sustainable water use alongside effective waste management to maximize environmental impact.

The results support the premise that CSR practices, when effectively implemented at the SME level, can mitigate environmental degradation, enhance resource sustainability, and contribute to the long-term ecological well-being of industrial and urban communities in Southwest Nigeria. These findings reinforce the theoretical expectations based on the Triple Bottom Line framework, which emphasizes the economic, social, and environmental responsibilities of firms (Elkington, 1997), and demonstrate that SMEs' CSR efforts can translate into measurable environmental benefits.

5. Conclusion and Recommendations

The study examined the influence of Corporate Social Responsibility (CSR) initiatives, specifically waste management practices and water conservation programs, on environmental protection among Small and Medium-sized Enterprises (SMEs) in Southwest Nigeria. The findings reveal that both waste management and water conservation practices have a positive and statistically significant impact on environmental protection. Water conservation programs demonstrated the strongest effect, indicating that efficient water use and sustainable water management are critical drivers of environmental sustainability in the region. Waste management practices also contributed positively, confirming that SMEs' efforts in proper waste segregation, recycling, and disposal help reduce pollution and environmental degradation. Overall, the study underscores the importance of CSR initiatives in enhancing environmental protection, highlighting that SMEs, when engaged in structured and responsible

CSR practices, play a vital role in mitigating environmental challenges in Southwest Nigeria.

Based on the research findings, the study thus provided the following recommendations to further improve quality of CSR initiatives on Environmental Protection among SME's in Southwest, Nigeria:

- i. Enhanced Water Conservation Strategies: SMEs should integrate comprehensive water conservation programs into their CSR activities, including rainwater harvesting, wastewater recycling, and efficient water-use practices. This will help reduce water scarcity, minimize pollution, and improve environmental sustainability in their operational communities.
- ii. Improved Waste Management Practices: SMEs should adopt structured waste management measures such as segregation, recycling, and proper disposal systems as part of their CSR strategies. Regulatory agencies and local government bodies should also provide support and guidance to ensure these practices are effectively implemented, contributing to reduced environmental degradation.

References :

- Adebayo, T. S., Ogunleye, O. J., & Adeyemi, A. A. (2023). *Corporate social responsibility and environmental sustainability among small and medium enterprises in Southwest Nigeria. Journal of Sustainable Development in Africa*, 25(2), 45–62.
- Adegbite, E. O., & Olayemi, K. K. (2023). *Corporate social responsibility and sustainable development goals: Implications for small and medium enterprises in developing economies. Journal of Business Ethics and Sustainability*, 15(1), 22–38.
- Adegbite, E. O., Ogunleye, O. J., & Adeyemi, A. A. (2022). *Water resource management and environmental sustainability in developing economies. Journal of Environmental Sustainability*, 14(2), 101–115.
- Adeleke, O. A. (2022). *Waste reduction and recycling practices among small and medium enterprises in Nigeria. Journal of Environmental Sustainability*, 10(2), 55–69.
- African Union Commission (AUC). (2024). *Agenda 2063: The Africa we want – Fourth ten-year implementation plan (2024–2033). African Union Commission.*

- Ajayi, O. O., Oke, A. E., & Adekunle, A. A. (2021). Water conservation practices and operational efficiency of small and medium enterprises in Nigeria. *International Journal of Water Resources Development*, 37(4), 612–628.
- Akinbobola, T. O., Adegbite, E. O., & Ogunleye, J. A. (2022). Water conservation practices and environmental sustainability among small and medium enterprises in Nigeria. *Journal of Environmental Management and Sustainability*, 11(2), 45–58.
- Akinwale, O. A. (2023). Environmental sustainability challenges of small and medium enterprises in Nigeria. *International Journal of Sustainable Development and World Ecology*, 30(4), 367–379.
- Akinyemi, O. J., & Ajibola, A. S. (2023). Environmental responsibility and sustainability challenges of small and medium enterprises in sub-Saharan Africa. *African Journal of Economic and Management Studies*, 14(3), 389–405.
- Amaeshi, K., Osuji, O., & Nnodim, P. (2016). Corporate social responsibility in Nigeria: A stakeholder perspective. *Journal of Business Ethics*, 1(2), 45–60.
- American Water Works Association (AWWA). (2013). *Water conservation programs: A planning manual*. American Water Works Association.
- Amin, A., Yusuf, R., & Bello, T. (2024a). Strategies of environmental protection policies on sustainable waste management systems in Kwara and Oyo States, Nigeria. *Journal of Environmental Policy and Management*, 12(2), 45–62.
- Amin, A., Yusuf, R., & Bello, T. (2024b). Implementation of environmental protection regulations towards sustainable waste management in Oyo State, Nigeria. *Environmental Governance Review*, 9(1), 55–71.
- Ayodeji, T. O. (2023). Environmental regulatory compliance and waste management practices of SMEs in Nigeria. *Environmental Policy and Law*, 53(4), 271–283.
- Carroll, A. B. (1999). Corporate social responsibility: Evolution of a definitional construct. *Business & Society*, 38(3), 268–295.
- Carroll, A. B., & Buchholtz, A. K. (2014). *Business and society: Ethics, sustainability, and stakeholder management* (9th ed.). Cengage Learning.
- Chkanikova, O., & Mont, O. (2022). Corporate sustainability strategies in small and medium-sized enterprises: Environmental management challenges and opportunities. *Business Strategy and the Environment*, 31(1), 156–170.

- Chukwuemeka, O. C., & Balogun, A. L. (2023). Waste management strategies and climate change mitigation among SMEs in developing economies. *Journal of Cleaner Production*, 392, 136296.
- Dahlsrud, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management*, 15(1), 1–13.
- Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130–141.
- Echioma, C. A. (2024). Corporate environmental responsibility and natural resource management in developing economies. *African Journal of Sustainable Development*, 14(1), 89–104.
- Echioma, I. (2024). Evaluation of water pollution control measures in Nigeria: Legal and institutional perspectives. *Journal of Environmental Law and Policy*, 8(1), 23–39.
- Eigege, A., Okonkwo, P., & Bello, R. (2024). Effectiveness of corporate waste management practices on environmental quality in Nigeria. *Environmental Sustainability Journal*, 12(1), 77–92.
- Eigege, J. I., Musa, A. S., & Lawal, R. T. (2024). Sustainable waste management and performance of small and medium enterprises in Nigeria. *Journal of Cleaner Production*, 412, 137521.
- Eigege, M. A., Yusuf, I. T., & Abdullahi, S. B. (2024). Waste management practices and environmental sustainability of small and medium enterprises in Nigeria. *Journal of Environmental Management and Sustainability*, 12(1), 45–60.
- Ekanem, S. A., & Chukwu, I. O. (2023). Energy consumption and environmental impact of SMEs in Nigeria. *Energy Policy*, 171, 113255.
- Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, 36(2), 90–100.
- Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Capstone Publishing.
- Esara, E., Okon, P., & Essien, J. (2024). Waste management agency practices in Uyo Metropolis: Analysis of Akwa Ibom State Environmental Protection and Waste Management Agency. *African Journal of Environmental Studies*, 18(1), 23–39.
- Eze, S. C., & Nwankwo, P. E. (2022). Challenges of CSR adoption among SMEs in Nigeria: Institutional and financial perspectives. *Sustainable Development*, 30(4), 745–757.

- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.
- Freeman, R. E., Harrison, J. S., & Zyglidopoulos, S. C. (2018). *Stakeholder theory: Concepts and strategies*. Cambridge University Press.
- Gimenez, C., Sierra, V., & Rodon, J. (2012). Sustainable operations: Their impact on the triple bottom line. *International Journal of Production Economics*, 140(1), 149–159.
- Ibrahim, M. S. (2024). Environmental regulation compliance and pollution control among SMEs in Nigeria. *Environmental Policy and Governance*, 34(1), 78–91.
- Jallo, A., Ibrahim, S., & Musa, K. (2021). Waste management practices and environmental implications in Hadejia Metropolis, Jigawa State, Nigeria. *International Journal of Waste Management*, 6(3), 101–115.
- Jamali, D., Zanhour, M., & Keshishian, T. (2009). Peculiar strengths and relational attributes of SMEs in CSR implementation. *Journal of Business Ethics*, 87(3), 355–377.
- Jensen, M. C. (2001). Value maximization, stakeholder theory, and the corporate objective function. *Business Ethics Quarterly*, 12(2), 235–256.
- Kola-Olusanya, A. O., Bello, S. A., & Adebayo, R. I. (2024). Corporate social responsibility initiatives and environmental protection outcomes in Nigerian SMEs. *Journal of Accounting, Environment and Society*, 9(1), 23–41.
- Kola-Olusanya, A., Oladipo, O., & Yusuf, M. (2024). Role of environmental education in water pollution prevention and conservation in Nigeria. *International Journal of Environmental Studies*, 81(4), 657–673.
- Lyon, T., & Montgomery, A. (2015). The means and end of greenwashing. *Organization & Environment*, 28(2), 223–249.
- Milne, M., & Gray, R. (2013). W(h)ither ecology? The triple bottom line, the Global Reporting Initiative, and corporate sustainability reporting. *Journal of Business Ethics*, 118(1), 13–29.
- Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22(4), 853–886.
- Mukherjee, S., & Jensen, O. (2022). Industrial water efficiency and wastewater reuse in emerging economies. *Journal of Cleaner Production*, 356, 131871.
- Noiki, J., Adebayo, S., & Chukwu, M. (2021). Impact assessment of current waste management practices in Nigeria. *Journal of Sustainable Development in Africa*, 23(5), 89–107.

- Noiki, J., Adewale, F., & Okoye, C. (2021). Impact of poor waste management practices on environmental risks in Nigeria. *Nigerian Journal of Environmental Science*, 14(3), 102–115.
- Noiki, M. O., Adebayo, A. A., & Olatunji, O. S. (2021). Environmental risks associated with poor waste management practices among small firms in developing economies. *African Journal of Environmental Economics and Management*, 5(2), 88–101.
- Norman, W., & MacDonald, C. (2004). Getting to the bottom of “triple bottom line”. *Business Ethics Quarterly*, 14(2), 243–262.
- Nwankwo, C. O., Eze, A. C., & Obi, J. N. (2023). Constraints to water conservation practices among small and medium enterprises in Nigeria. *Environmental Policy and Governance*, 33(3), 241–254.
- Obudulu, I. N., Okafor, C. C., & Nwoye, E. A. (2024). Sustainable solid waste management and environmental protection in Nigeria. *Environmental Challenges*, 14, 100841.
- Ogunleye, O. J., & Olawale, A. O. (2022). Sustainable business practices and environmental CSR among SMEs in Nigeria. *Journal of Cleaner Production*, 365, 132915.
- Okoji, F. (2023). Assessment of community perception on waste management practice in Ilorin Metropolis, Kwara State, Nigeria. *Nigerian Journal of Environmental Research*, 15(2), 78–92.
- Okonkwo, I. V., Eze, C. U., & Obi, J. N. (2023). Corporate social responsibility and environmental protection among SMEs in Nigeria. *Environmental Policy and Governance*, 33(4), 356–369.
- Olawale, A. O., & Adebayo, T. S. (2023). Regulatory compliance and sustainable water management among SMEs in Nigeria. *Journal of Environmental Management*, 338, 117602.
- Olawale, A. O., & Ajibade, T. S. (2022). Environmental protection practices and sustainability outcomes of small and medium enterprises in Nigeria. *Journal of Sustainable Development in Africa*, 24(3), 89–104.
- Olawale, A. O., & Okonkwo, I. V. (2023). Technological innovations and waste management efficiency among SMEs in Nigeria. *Journal of Environmental Management*, 334, 117468.
- Olayiwola, K. A., Adekunle, O. O., & Bello, A. I. (2023). Barriers to corporate social responsibility adoption among small and medium enterprises in Nigeria. *Journal of Cleaner Production*, 389, 136092.
- Oluwole, A. O., & Onifade, T. A. (2023). Solid waste management practices and environmental implications in urban Nigeria. *Environmental Challenges*, 12, 100727.

- Oluwole, F. A., & Onifade, T. O. (2023). SMEs' operational practices and environmental sustainability in urban centers of Southwest Nigeria. *Journal of Environmental Sustainability*, 15(1), 23–37.
- Omokaro, D., Eze, P., & Adebayo, K. (2024). Water resources, pollution, integrated management and practices in Nigeria: An overview. *Nigerian Journal of Water Resources*, 29(2), 45–63.
- Omokaro, O. E., Eze, P. C., & Lawal, M. O. (2024). Water resource management and environmental degradation: Evidence from small business operations in sub-Saharan Africa. *International Journal of Environmental Policy and Management*, 10(3), 112–128.
- Onugu, B. A. (2005). *Small and medium enterprises (SMEs) in Nigeria: Problems and prospects*. Lagos: Nigerian Institute for Policy and Strategic Studies.
- Pedersen, E. R. (2010). Managing stakeholder relationships in SMEs: A sustainability perspective. *Business Strategy and the Environment*, 19(7), 417–430.
- Pérez-Blanco, C. D., Borrego-Marín, M. M., & Gutiérrez-Martín, C. (2020). Efficiency, equity, and sustainability in water conservation policies. *Water Resources Research*, 56(9), e2019WR026756.
- Phillips, R. (2003). *Stakeholder theory and organizational ethics*. Berrett-Koehler.
- Salawu, M., & Amin, A. (2023). Developing a sustainable approach to waste management in Nigeria: Lessons from Kwara State. *Environmental Sustainability Journal*, 11(1), 34–50.
- Salawu, R. O., & Amin, A. A. (2023). Corporate social responsibility and pollution control among small and medium enterprises in Nigeria. *Journal of Sustainable Development in Africa*, 25(3), 112–126.
- Slaper, T. F., & Hall, T. J. (2011). The triple bottom line: What is it and how does it work? *Indiana Business Review*, 86(1), 4–8.
- Small and Medium Enterprises Development Agency of Nigeria (SMEDAN). (2023). *National survey of micro, small and medium enterprises (MSMEs) in Nigeria*. SMEDAN.
- SMEDAN. (2022). *National survey of micro, small and medium enterprises (MSMEs) in Nigeria*. Abuja: Small and Medium Enterprises Development Agency of Nigeria.
- Sylvester, O., & Orowhigho, C. (2022). Waste management in solid waste collection and evacuation in Delta State, Nigeria. *Journal of Waste Management and Sustainability*, 8(2), 59–73.

- Uba, M. N. (2023). *Corporate social responsibility practices of small and medium enterprises in Nigeria: Perceptions and realities*. *African Journal of Management Research*, 31(2), 112–128.
- Uche, C. U., & Okonkwo, I. V. (2022). *Industrial effluent discharge and water quality degradation in urban Nigeria*. *Journal of Environmental Management*, 318, 115576.
- Uche, I. E., & Okonkwo, I. V. (2022). *SMEs' environmental practices and sustainable development in Nigeria*. *African Journal of Business and Economic Research*, 17(2), 45–60.
- Ukala, D. C., Akaun, I. F., & Owamah, H. I. (2020). *Solid waste management practices and environmental sustainability in Nigeria*. *Waste Management & Research*, 38(5), 527–538.
- United Nations. (2025). *The sustainable development goals report 2025*. United Nations Department of Economic and Social Affairs.
- UN-Water. (2023). *The United Nations world water development report 2023: Partnerships and cooperation for water*. United Nations.
- Uzoagu, A., & Eheazu, N. (2022). *Waste management and environmental protection for community sustainable development in Nigeria*. *Journal of Environmental Protection*, 13(3), 112–128.
- Yusuf, A. O., & Adebayo, T. S. (2023). *Water conservation strategies and environmental performance of manufacturing SMEs in Nigeria*. *Journal of Environmental Management*, 336, 117624.