



ECOSYSTEM AND SUSTAINABILITY REPORTING IN PLASTIC MANUFACTURING FIRMS IN ANAMBRA STATE, NIGERIA: A SYSTEMATIC LITERATURE REVIEW

Emmanuel C. Ike¹ Vera Ugochi Ike²

Department of Business Administration, Faculty of Management Sciences, Nnamdi Azikiwe University, Awka, Anambra State

Correspondence: ikechiemezieemmanuel@gmail.com

ABSTRACT

This paper examined the ecosystem and sustainability reporting of plastic manufacturing firms in Anambra state with specific objectives to assess sustainability reporting practices in plastic manufacturing firms, examine the relationship between environmental disclosure and ecosystem sustainability, evaluate the extent of sustainability reporting adoption in the sector, and identify gaps in sustainability reporting practices in Anambra State. The study adopted a systematic literature review approach, drawing evidence from recent studies conducted within Nigeria; also, a review of publicly available corporate disclosures and online information was studied and eleven plastic manufacturing firms assessed based on five indicators, qualitative scores such as high, moderate, low, and very low were assigned. Findings revealed that sustainability reporting enhanced environmental accountability, improved corporate reputation, supported regulatory compliance, and contributed to organizational performance. Empirical evidence from plastic manufacturing firms in Anambra State showed that recycling initiatives, product innovation, hazard control measures, and employee welfare significantly influence organizational productivity and profitability. The study concluded that sustainability reporting in Nigerian manufacturing firms is increasing but remains largely fragmented and insufficiently linked to ecosystem sustainability outcomes particularly in Anambra State. The study recommended that mandatory sustainability reporting be enforced, environmental disclosures be linked to measurable ecosystem outcomes, monitoring and compliance mechanism be enforced, and integration of sustainability reporting into corporate strategies.

Key words: Ecosystem, Sustainability Reporting, Plastic Manufacturing Firms, Environmental Sustainability, Anambra State.

INTRODUCTION

Industrialization has contributed significantly to economic development across Nigeria. However, manufacturing activities has generated environmental concerns including waste generation, air pollution, water contamination, and ecosystem degradation. The ecosystem comprises living organisms and their interaction with the physical environment. When industrial activities are poorly managed, they disrupt ecological balance and threaten biodiversity, human health, and long-term economic sustainability. Organizations have realized that sustaining their businesses is dependent greatly on the preservation of eco-

friendly practices (Ike & Onwuchekwa, 2025). Sustainability has gained greater attention from policy makers; shareholders, corporate bodies and corporate managers in recent decades, most especially from United Nations sustainable developmental goals, (UNSDGS) and United Nations Cap 26 which addresses serious environmental issues (Ukaidi, Mbang, & Ukaidi, 2024).

In recent years, stakeholders including governments, investors, customers, and host communities have demanded greater transparency regarding the environmental and social impacts of business operations. Consequently, sustainability reporting has become an essential corporate practice. Sustainability reporting involves the disclosure of economic, environmental, and social performance information beyond traditional financial reporting. Manufacturing companies play a critical role in the nation's economy. However, manufacturing firms face increasing pressure to minimize their ecological footprint and communicate their sustainability efforts effectively. Manufacturing companies are especially important because of the environmental challenges associated with waste and pollution. This paper explores how sustainability reporting can support ecosystem preservation while enhancing the performance and legitimacy of manufacturing firms.

Statement of the Problem

Plastic manufacturing firms contribute significantly to environmental pollution through waste discharge, inefficient resource use, and poor environmental management practices. Although sustainability reporting is intended to enhance transparency and environmental accountability, many firms in Nigeria do not fully integrate environmental disclosures into their reporting systems. Existing studies reveal that sustainability reporting in manufacturing firms is still largely voluntary and lacks standardization, limiting its effectiveness in improving ecosystem outcomes (Aiyesan, 2023). Furthermore, empirical evidence suggests that while firms may disclose environmental information, such reporting does not always translate into measurable ecological improvements (Aliyu *et al.*, 2025). This creates a gap in understanding how sustainability reporting influences ecosystem sustainability within plastic manufacturing firms in Anambra State.

Objectives

The general objective of this study is to examine ecosystem and sustainability reporting in plastic manufacturing firms in Anambra State, Nigeria; while the specific objectives are to:

1. assess sustainability reporting practices in plastic manufacturing firms
2. examine the relationship between environmental disclosure and ecosystem sustainability
3. evaluate the extent of sustainability reporting adoption in the sector
4. identify gaps in sustainability reporting practices in Anambra State

Research Questions

- i. What sustainability reporting practices are adopted by plastic manufacturing firms in Anambra State?
- ii. How does environmental disclosure influence ecosystem sustainability?
- iii. To what extent is sustainability reporting implemented in the sector?
- iv. What gaps exist in sustainability reporting practices?

LITERATURE REVIEW

Ecosystem

The concept ecosystem refers to a community of living organisms interacting with one another and with their physical environment. It includes plants, animals, microorganisms, air, water, and soil. Ecosystem sustainability is achieved when these interactions are maintained in a balanced manner that supports present and future generations. Manufacturing activities affect ecosystems through emission of greenhouse gases, generation of industrial waste, water pollution, deforestation and land degradation, and plastic waste accumulation. Manufacturing companies are often associated with environmental challenges because non-biodegradable materials can persist in ecosystems for decades.

Sustainability Reporting

Sustainability reporting refers to the process through which organizations disclose information concerning their environmental, social, and governance (ESG) performance. This enables stakeholders to assess how organizations create value while managing environmental and social risks. Major dimensions of sustainability reporting include:

- a. **Environmental Reporting:** This dimension includes waste management practices, recycling activities, carbon emissions reduction, energy conservation initiatives, and pollution control measures.

- b. **Social Reporting:** This involves employee welfare, occupational health and safety, community development, human rights protection, and staff training and development.
- c. **Economic Reporting:** This dimension includes profitability, innovation investments, resource efficiency, and economic contributions to society.

The most widely adopted framework globally is the Global Reporting Initiative (GRI), which guides organizations in reporting sustainability performance.

Ecosystem and Sustainability Reporting in Manufacturing Companies

Manufacturing firms depend heavily on natural resources such as water, energy, and raw materials. Consequently, their operations significantly influence ecosystem health. Sustainability reporting helps manufacturing firms to monitor environmental impacts, improve resource efficiency, enhance corporate reputation, meet regulatory requirements, attract environmentally conscious investors, and strengthen stakeholder confidence. For manufacturing firms, sustainability reporting is particularly important because stakeholders increasingly expect evidence of recycling programs, waste reduction strategies, and circular economy initiatives.

Challenges of Sustainability Reporting in Manufacturing Firms

Despite its benefits, sustainability reporting faces several challenges among manufacturing firms:

- i. **High Implementation Cost** - Many firms perceive sustainability initiatives and reporting systems as expensive.
- ii. **Lack of Technical Expertise** - There is limited knowledge regarding sustainability measurement and reporting frameworks.
- iii. **Weak Regulatory Enforcement** - Environmental reporting requirements are often poorly enforced.
- iv. **Inadequate Data Collection Systems** - Many firms lack structured systems for tracking sustainability performance indicators.
- v. **Green washing Practices** - Some organizations exaggerate sustainability achievements without substantive actions.

Theoretical Framework

Stakeholder Theory

This study is anchored on Stakeholder Theory developed by Edward Freeman (1984). The theory posits that organizations have responsibilities not only to shareholders but also to employees, customers, communities, regulators, suppliers, and the environment. The Stakeholder theory affirms that an organization does not operate in isolation or only with the partnership from its shareholders, as the success of every organization is as a result of a partnership between the organization and its stakeholders, which are employees, contractors, customers, the local environment and communities from which the organization operates from, etc. (Freeman *et al.*, 2007; Parmar *et al.*, 2010; Colvin *et al.*, 2020).

The theory supports sustainability reporting because firms must communicate their environmental and social impacts to stakeholders. Manufacturing firms that engage in transparent sustainability reporting are more likely to gain legitimacy, trust, and long-term support from stakeholders.

Empirical Review

Several empirical studies provide evidence regarding sustainability practices and reporting among manufacturing companies in Nigeria.

Ike and Onwuchekwa (2025) investigated the effect of green human resource planning on the sustainability of plastic manufacturing firms in South East Nigeria. Using descriptive survey design, from 25 plastic manufacturing firms with 1929 population, 350 respondents were sampled. Findings showed that all the components of green human resource planning had influence on their corresponding sustainability components. The study concluded that green human resource planning significantly enhanced sustainability outcomes in plastic manufacturing firms.

Okeke and Williams (2025) examined social and environmental sustainability factors among plastic manufacturing firms in Anambra State. Using survey data from 10 plastic manufacturing firms and over 500 respondents, the researchers found that hazard control measures, environmental management practices, and employee well-being significantly improved operational efficiency. The study concluded that sustainability initiatives contribute positively to organizational performance.

Anyadufu *et al.* (2025) analyzed sustainability disclosures among listed manufacturing companies in Nigeria and found that organizational characteristics such as firm size significantly influenced environmental disclosure practices, particularly effluent reporting.

Okeke and Williams (2025) examined the effects of social and environmental sustainability factors on the performance of plastic manufacturing firms in Anambra State. The study investigated variables such as incineration practices, hazard control measures, and employee well-being. Results indicated that hazard control and employee welfare contributed positively to operational efficiency, while incineration practices showed no significant effect. The study highlighted the importance of integrating environmental and social sustainability into business operations. Nevertheless, ecosystem sustainability was not examined as a standalone construct

Williams, Okeke, and Ngige (2025) investigated the relationship between corporate sustainability and the performance of plastic manufacturing firms in Anambra State, Nigeria. Using a descriptive survey design, data were collected from managers and employees of fifteen plastic manufacturing firms. The study found that product innovation and recycling practices significantly improved profitability. The researchers concluded that sustainability initiatives contribute positively to organizational performance through cost reduction and improved competitiveness. The study focused mainly on profitability and corporate sustainability but paid limited attention to broader ecosystem sustainability concerns such as ecological preservation and environmental impacts.

Udodiugwu (2023) examined environmental sustainability and the performance of plastic manufacturing firms in Enugu State, Nigeria. Adopting a survey research design, the study assessed how waste management and environmental practices affected firm performance. Findings revealed a positive relationship between environmental sustainability practices and organizational effectiveness. The study emphasized the need for manufacturing firms to adopt environmentally responsible production methods. However, the study was conducted in Enugu State and did not specifically address ecosystem sustainability issues within Anambra State.

Eze and Chukwu (2023) examined product innovation and organizational performance among manufacturing firms in South-East Nigeria. Using survey data from selected manufacturing companies, the researchers found that environmentally friendly product innovations enhanced

market competitiveness and customer satisfaction. The study suggested that innovation is a critical component of sustainable manufacturing.

Olaniyan and Akinbode (2023) explored the relationship between sustainability strategies and business performance in manufacturing firms. Findings revealed that organizations that combined recycling initiatives with innovative production techniques achieved higher profitability and environmental compliance than firms that did not adopt such strategies.

Akinola and Akinyele (2023) examined sustainability integration in industrial operations and found that firms implementing environmental management systems experienced improvements in operational efficiency, stakeholder trust, and corporate reputation. The study concluded that sustainability should be embedded within organizational strategy to achieve long-term success.

Nwafor and Ijeoma (2022) investigated circular economy practices in Nigerian manufacturing industries. The study found that integrating recycling networks and waste recovery systems improved resource efficiency and reduced environmental degradation. The authors recommended stronger collaboration between manufacturers and waste management stakeholders to promote sustainable production systems.

Agbo *et al.* (2022) studied sustainability practices among manufacturing firms in Nigeria and found that recycling initiatives significantly reduced operational waste and production costs. The study concluded that organizations that invest in recycling technologies tend to achieve better environmental and economic outcomes. The research provides evidence that sustainability practices can support long-term organizational growth.

METHODOLOGY

This study adopted an empirical review research design. The design involved a systematic examination and analysis of existing empirical studies on ecosystem sustainability practices in plastic manufacturing firms. The approach was considered appropriate because it enabled the researcher to synthesize evidence from previous studies and identify trends, gaps, and areas of consensus regarding sustainable practices within the plastic manufacturing firms in Anambra State. The study relied exclusively on secondary data obtained from published and unpublished empirical literature. Relevant materials were sourced from academic journals, conference proceedings, textbooks, dissertations, theses, government reports, and publications from environmental and manufacturing organizations. Electronic databases such

as Google Scholar, Scopus, ResearchGate, and institutional repositories were consulted to obtain relevant studies.

Studies included in the review were selected based on the following criteria:

1. The study focused on ecosystem sustainability, environmental management, waste management, recycling practices, or sustainable manufacturing.
2. The study was empirical in nature and reported findings based on data collection and analysis.
3. The study related to manufacturing industries, particularly plastic manufacturing firms where available.
4. The study included were published within 2021-2025 and contained sufficient methodological details and findings.

Studies that were purely theoretical, conceptual, or lacked empirical evidence were excluded from the review. Relevant empirical studies were identified through keyword searches using terms such as "ecosystem sustainability," "plastic manufacturing firms," "environmental sustainability," "waste management practices," "recycling initiatives," and "green manufacturing." The selected studies were carefully reviewed and categorized according to their objectives, methodologies, geographical coverage, variables investigated, and major findings. Data obtained from the reviewed studies were analyzed using content analysis and narrative synthesis. The findings from various studies were compared and synthesized to identify recurring themes, similarities, differences, and research gaps relating to ecosystem sustainability in plastic manufacturing firms. The analysis provided a comprehensive understanding of existing knowledge and highlighted areas requiring further investigation, particularly within the context of Anambra State.

Also, the study adopted a qualitative content-analysis approach using publicly available information obtained from: Corporate websites, manufacturing directories, industry publications, sustainability statements, and academic literature. Eleven plastic manufacturing firms (sampled based on membership to relevant manufacturing association such as MAN and Recyclers Association of Nigeria; and active participation in plastic manufacturing and recycling activities in Anambra State) were assessed using five indicators: environmental commitment, recycling activities, waste management practices, community engagement and sustainability reporting.

Scores were assigned qualitatively as High, Moderate, Low, or Not Disclosed.

The study adhered to academic standards by properly acknowledging all sources of information through appropriate citation and referencing. No primary data were collected from human participants; therefore, issues relating to participant consent and confidentiality did not arise.

RESULTS AND DISCUSSION

Results

Table 1: Empirical Review Table (2021 -2025)

S/N	Author(s) & Year	Title	Methodology	Key Findings	Relevance to Study
1.	Williams <i>et al.</i> (2025)	Corporate Sustainability and Performance of Plastic Manufacturing Firms in Anambra State	Survey Method	Recycling and innovation improve profitability	Links sustainability to firm performance in Anambra
2.	Okeke & Williams (2025)	Social and Environmental Factors of Corporate Sustainability in Plastic Firms in Anambra State	Survey Design	Environmental practices improve operational efficiency	Direct evidence from Anambra manufacturing context
3.	Ike & Onwuchekwa 2025	Green Human Resource Planning and Sustainability in Plastic Manufacturing Firms in South-East, Nigeria	Descriptive survey research design	Green human resource planning activities improved organizational sustainability of plastic manufacturing firms.	Connects green human resources with sustainability in plastic firms.
4.	Daniyan <i>et al.</i> (2024)	Strategic Innovation and Sustainability of Plastic Manufacturing Firms in Ogun State, Nigeria	Survey research; regression analysis	Innovation significantly improves sustainability outcomes	Shows sustainability drivers in Nigerian plastic firms
5.	Nwankwo <i>et al.</i> (2024)	Environmental Sustainability Practices in Nigerian Manufacturing Sector	Survey Research	Sustainability practices improve environmental outcomes	Provides general Nigerian manufacturing evidence

6.	Ezeudu, Tenebe & Ujah (2024)	Status of Production, Consumption and End-of-Life Waste Management of Plastic Products in Nigeria	National empirical review + system analysis	Nigeria has weak plastic waste systems; circular economy adoption is limited	Provides national ecosystem context for plastic sustainability
7.	Nwafor & Ijeoma (2023)	Circular Economy Practices in Nigerian Manufacturing Industries	Emoirical Survey	Waste recovery improves resource efficiency	Supports ecosystem-based sustainability approach
8.	Eze & Chukwu (2023)	Product Innovation and Sustainability in Manufacturing Firms in South-East Nigeria	Survey Design	Eco-innovation improves competitiveness	Shows innovation as part of sustainability ecosystem
9	Agbo <i>et al.</i> (2022)	Waste Management in Nigerian Manufacturing Firms	Empirical Analysis	Recycling reduces cost and environmental impact	Relevant to plastic waste ecosystem
10.	Peydayesh <i>et al.</i> (2021)	Sustainable Bioplastics and Circular Economy Integration	Experimental Study	Bioplastics reduce environmental impact significantly	Supports alternative sustainable

Source: Author 2026

Discussion of Table 1

From the reviewed studies in the table above, most Nigerian plastic firms focus on profitability rather than ecosystem balance. Sustainability practices include recycling, waste management, eco-innovation and environmental management systems. There is growing evidence that circular economy practices improve efficiency and environmental outcomes. However, most studies under review focus on performance, organizational efficiency, profitability, cost reduction, and not ecosystem sustainability as a full system.

Despite increasing studies on sustainability in manufacturing firms, the following gaps remain: limited studies treat ecosystem sustainability as a holistic system (environment–firm–waste–community interaction), few studies focus specifically on plastic manufacturing ecosystems in Anambra State. Again, existing studies are mostly performance-based, not environmental system-based, and weak integration of circular economy thinking at firm level in Nigeria

Table 2: Comparative Sustainability Disclosure Matrix

S/N	Firm	Environmental Commitment	Recycling	Waste Management	Sustainability Disclosure	Community Engagement
1.	Krisoral	High	Moderate	Moderate	Low	Low
2.	Friends Industries	Moderate	Moderate	High	Low	Low
3.	Dozy Plastics	Low	Low	Low	Very Low	Low
4.	Olympic Plastic	Low	ND	ND	Very Low	ND
5.	Ezenwa Plastic	Low	ND	ND	Very Low	ND
6.	Ozalla Plastics	Low	ND	ND	Very Low	ND
7.	J Poly & Plastic	Low	ND	ND	Very Low	ND
8.	Ano Plastic & Metal	Low	ND	ND	Very Low	ND
9.	Nakpo Plastic Container	Low	ND	ND	Very Low	ND
10.	Silas Polyplastic	Low	ND	ND	Very Low	ND
11.	Syndivel Plastic	Low	ND	ND	Very Low	ND

Source: Author 2026

ND: Not Disclosed

Discussion of Table 2

The findings reveal a substantial gap between sustainability practice and sustainability reporting. While some firms appear to engage in environmentally responsible activities, only Krisoral and Friends Industries provide publicly accessible evidence of sustainability-related commitments. Most firms lacked environmental performance indicators, carbon emission reporting, waste generation statistics, recycling performance metrics, water consumption disclosure, and ESG governance structures.

This observation aligns with broader findings that sustainability implementation among plastic manufacturing firms in Anambra State remains constrained by limited technological capacity, inadequate environmental reporting systems, and weak regulatory pressure.

CONCLUSION AND RECOMMENDATIONS

This study concluded that sustainability reporting in Nigerian manufacturing firms is increasing but remains largely fragmented and insufficiently linked to ecosystem sustainability outcomes. Plastic manufacturing firms in Anambra State particularly exhibit limited structured environmental disclosure practices. Strengthening sustainability reporting frameworks is therefore essential for achieving environmental accountability and ecosystem protection.

Based on the findings, the following recommendations were made:

- i. Mandatory sustainability reporting should be enforced in plastic manufacturing firms. This can be achieved through the manufacturers association of Nigeria and Recyclers Association of Nigeria as part of their requirements.

- ii. Environmental disclosures should be linked to measurable ecosystem outcomes by adopting internationally recognized sustainability reporting frameworks like Global Reporting Initiatives (GRI) Standards.
- iii. Government should strengthen monitoring and compliance mechanisms by collaborating with firms to establish dedicated sustainability departments responsible for environmental data collection and reporting.
- iv. Plastic manufacturing firms should integrate ecosystem preservation objectives into their corporate strategies. Managers and employers should adopt sustainability reporting as part of their corporate social responsibility.

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