

WASTE ACCOUNTING PRACTICES AND MARKET CAPITALIZATION OF CONSUMER GOODS COMPANIES IN NIGERIA

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Abstract

Global warming caused by greenhouse gas emissions and poor waste management systems has posed serious threats to human lives and ecosystems. This has made investors value companies that are committed to promoting the principles of circular economy, reducing waste generation, and driving resource efficiency. The main objective of this study was to examine the effect of WAPs on the market capitalization of listed consumer goods firms in Nigeria from 2014 to 2023. The research design adopted for the study was ex post facto, secondary data were employed, and a purposive sampling technique was adopted to select 16 out of 21 listed consumer goods firms in Nigeria. Ordinary least square regression analysis was used to analyze the data, and E-views version 10 was used as the statistical package. The findings revealed that carbon and waste recycling disclosures have a significant positive effect on market capitalization, whereas effluent and water disclosures have no significant effect on the market capitalization of listed consumer goods firms in Nigeria. Thus, waste accounting practices have a significant effect on the market value of listed consumer goods firms in Nigeria. Therefore, it was recommended that management of consumer goods firms in Nigeria should implement robust waste management systems and effectively communicate their progress and achievements to stakeholders as this boosts the investors' confidence, builds a reputation for environmental stewardship, and potentially boosts their market value over the long term.

INTRODUCTION

Waste accounting practices are becoming increasingly important for companies worldwide, as environmental sustainability and corporate responsibility are key considerations for investors, consumers, and regulators. According to Kornom-Gbaraba and Chukwuemeka (2022), waste accounting involves identifying and

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quantifying waste streams, analyzing waste management costs, and implementing strategies to reduce waste and improve sustainability. This practice helps investors understand the company's environmental impact and its efforts to reduce waste, conserve resources, and mitigate environmental risk. Investors now integrate ESG factors into their investment analysis, and waste management is a crucial environmental component. Investors see strong waste management practices as an indicator of responsible corporate behavior. Effective waste management has become increasingly crucial for consumer goods firms, which often have significant environmental footprints due to large-scale production, packaging, and distribution activities.

Waste accounting is an emerging area of environmental and sustainability accounting that focuses on identifying, measuring, valuing, and reporting waste generated by a company's operations (Etuk et al., 2024). This includes disclosures of carbon, water and effluent, and waste recycling. Carbon disclosures refer to the practice of companies publicly reporting information about their GHG emissions and their efforts to manage and reduce their carbon footprint. Effluent refers to wastewater or liquid waste discharged from industrial processes, often containing pollutants that can harm the environment if not properly managed. According to Naddeo and Liu (2020), effluent disclosures provide transparency regarding the quantity and quality of wastewater generated by a company's operations. Waste recycling disclosure involves the communication of information regarding the company's efforts to recycle and reduce the amount of waste generated by its operations. This disclosure typically includes data on the types and quantities of waste produced, as well as information on recycling rates, waste diversion strategies, and waste generation minimization initiatives.

Market capitalization refers to the total market value of a company's outstanding shares of stock. Market capitalization is defined as a company's stock value multiplied by its total number of outstanding shares (Charles & Uford, 2023). According to Nkanga et al. (2024), market capitalization allows investors to evaluate a company based on how valuable the public perceives the company. Alao et al. (2021) noted that companies with robust waste accounting practices are often perceived as being more environmentally responsible, which can enhance their ESG ratings. Waste accounting strengthens ESG ratings, making a company more attractive to institutional investors and ESG funds, thereby increasing market capitalization. Effective waste accounting can identify inefficiencies in resource usage and waste management, leading to cost savings. These savings can positively impact a firm's profitability, which in turn can boost its market value. According to Kameri-Mbote et al. (2023), the integration of waste accounting practices into corporate governance is not just a matter of regulatory compliance or ethical responsibility but also has financial implications. Globally, there is evidence that firms with strong environmental practices, including waste management, tend to perform better in the stock market. For instance, Akpan and Nkanta (2023) noted that disclosures showing high levels of carbon emissions or poor performance in reducing emissions can erode investors' confidence. Deegan (2014) submitted that high emissions disclosures could attract criticism from environmental groups or the media, leading to a decline in consumer sentiment and, by extension, investor confidence. Eniefiok et al. (2024) found that disclosure of carbon emissions has a significant positive relationship with market capitalization. Haboye and Sdeniyi (2020) found that water and effluent disclosures have a significant negative effect on earnings per share. Riyadh et al. (2020) found that waste recycling disclosures have a significant negative effect on both net profit margin and return on assets. Nkanga et al. (2023) examined the effect of voluntary disclosures on market value and found a significant positive effect.

Global warming caused by greenhouse gas emissions and poor waste management systems have posed serious threats to human lives and ecosystems. This has made investors value companies that are committed to promoting circular economic principles, reducing waste generation, and driving resource efficiency. Adequate waste management and recycling of some waste products could help reduce these negative environmental footprints

and set companies on a sustainable course. Thus, it is expected that these companies whose economic activities have caused this damage put in place various waste management and remediation measures to reduce these negative footprints and engage only in sustainable business activities. However, this is not the case, except for a few corporate social responsibilities that are not commensurate with the level of damage suffered by society and the environment. This has exposed companies to hostilities from host communities, fines by regulatory agencies, and loss of goodwill by customers. Empirical reviews revealed that some studies on waste accounting used only one aspect, such as carbon emission disclosures (Aulia et al., 2024; Hardiyansah et al., 2021; Kurnia et al., 2020) and environmental clean-up (Ubokudom et al., 2024). It was also discovered that most of the works that studied waste accounting focused on its effects on other performance indicators other than market capitalization (Kornom-Gbaraba & Chukwuemeka, 2022- ROE; Bogdan et al., 2022, ROA; Okeke et al., 2021, EVA; Kurnia et al., 2020, Tobins q; Mohammad & Aisa, 2020, Tobins q). Unfortunately, there was no consensus from the outcome of these studies because of different findings. This study was conducted to ascertain the effect of waste accounting practices (carbon disclosures, effluent and water disclosure, and waste recycling disclosure) on the market capitalization of listed consumer goods firms in Nigeria.

LITERATURE REVIEW

Waste accounting practices

Waste accounting practices refer to various methods and techniques that organizations use to track, manage, report, and optimize waste generation, disposal, and recycling efforts. According to the United Nations Environment Program, waste management (WM) is "the collection, transportation, processing, recycling, or disposal of waste materials, usually produced by human activity, in an environmentally responsible manner" (Kameri-Mbote et al., 2023; Mattos & Calmon, 2023). This definition emphasizes the importance of managing waste in a manner that minimizes environmental harm. The American Society of Civil Engineers defines waste management as "the planning, design, construction, operation, and maintenance of facilities and systems for the collection, treatment, storage, and disposal of solid, liquid, and gaseous wastes" (Lee, 2020). The International Solid Waste Association defines waste management practices as "the generation, prevention, characterization, monitoring, treatment, handling, reuse, and residual disposition of solid wastes" (Bockreis & Ragossnig, 2013). This definition takes a more holistic approach to waste management, including not only the physical management of waste but also efforts to reduce waste generation and promote reuse and recycling. Proper waste management is vital in Nigeria to mitigate the health and environmental risks associated with improper practices (Federal Ministry of Environment, 2016). However, challenges such as inadequate funding, infrastructure, and public awareness contribute to the high cost of waste management in the country (Alao et al., 2021). To address these challenges, the Nigerian government has introduced initiatives like the Extended Producer Responsibility (EPR) program and the National Policy on Solid Waste Management (Federal Ministry of Environment, 2016).

Carbon disclosures

Carbon disclosures refer to the practice of companies publicly reporting information about their GHG emissions and their efforts to manage and reduce their carbon footprint. Carbon information refers to a range of measures taken by companies to address climate change and achieve low-carbon development. According to Okeke et al. (2021), carbon disclosure refers to a proven method of communicating information about a company's carbon emissions, carbon assets, carbon management strategy, and potential opportunities and challenges related to carbon emissions to those who need carbon information, ensuring that investment decision-makers, business managers, and external regulators have access to useful information for decision-making (Sudibyo, 2018). The carbon information is communicated to those who need it, ensuring that decision-makers, business managers, and

external regulators have useful decision-making information. Disclosure of carbon emissions is important because stakeholders need information to assess the potential risks they face by investing in those companies.

Effluent and water disclosures

Effluent and water disclosures play a crucial role in waste accounting practices, particularly within the realm of corporate sustainability reporting and environmental management. Effluent refers to wastewater or liquid waste discharged from industrial processes, often containing pollutants that can harm the environment if not properly managed. According to Naddeo and Liu (2020), effluent disclosures provide transparency regarding the quantity and quality of wastewater generated by a company's operations. This information is essential for assessing environmental impacts, compliance with regulations, and potential risks to water resources. Companies typically report on effluent parameters such as volume discharged, chemical composition, treatment methods used, compliance with discharge limits, and efforts to reduce effluent pollution. Effective effluent disclosures enable stakeholders to evaluate a company's wastewater management practices, identify improvement opportunities, and assess the potential risks and liabilities associated with water pollution (Choi, 2019).

Waste recycling disclosures

Waste recycling disclosure refers to the practice of companies publicly reporting information about their waste management practices, specifically focusing on efforts to recycle and reduce the amount of waste generated by their operations. This disclosure typically includes data on the types and quantities of waste produced, as well as information on recycling rates, waste diversion strategies, and waste generation minimization initiatives. According to Elsayed (2023), the purpose of waste recycling disclosure is to increase transparency and accountability regarding a company's environmental impact, particularly its waste footprint. Companies demonstrate their commitment to sustainability and responsible resource management by disclosing their waste recycling efforts and provide stakeholders with valuable information to assess their environmental performance. Companies may report the types and quantities of waste generated by their operations, broken down by categories such as hazardous waste, non-hazardous waste, organic waste, and recyclable materials (Riyadh et al., 2020). Tang (2024) noted that waste recycling disclosure is important for demonstrating corporate responsibility, promoting waste reduction and recycling practices, and contributing to a more sustainable and circular economy transition.

Market capitalization

Market capitalization refers to the total value of all a company's shares of stock. It is defined as a company's stock value multiplied by its total number of outstanding shares. Market capitalization allows investors to evaluate a company based on the public's perception of its value. According to Wu et al. (2020), the increase or decrease in market capitalization depends on investors' confidence and perception. The movement of investors' confidence toward a particular company depends on that company's positive information. Environmental disclosure practices provide assurance to investors, and the degree of assurance depends on firms' level of sustainable and eco-friendly investment to protect their investments. Sound environmental disclosure practices enhance investors' confidence in the future cash flows and growth prospects of the firm (Haque *et al.*, 2013). Market capitalization is one of the most important characteristics that helps investors determine the returns and risk in the share (Uford, 2017; Duh & Uford, 2019). It also helps investors choose the stock that can meet their risk and diversification criteria. Market capitalization is important because it enables potential investors to understand the true value of companies and the size of a company relative to another (Nkanga et al., 2023). It helps investors predict a company's future performance because it reflects what the market is willing to pay for the stock.

Theoretical framework

Several theories have been employed in the literature to explain the motivation for waste accounting practices. However, this study is anchored on the signaling theory. The signaling theory, as propounded by Michael Spence in 1973, explains the reasons for firms' incentive to report information voluntarily to the capital market. This theory is a framework that supports the content reported in sustainability reports, considering that firms can influence stakeholders' perceptions, create a competitive advantage, and positively impact their corporate image through companies' sustainability disclosures. However, signaling theory states that the company's value can be increased if the firm voluntarily reports (signals) credible private information about itself through environmental and social responsibility activities, thereby reducing outsider uncertainty (Nkanga et al., 2023). According to Akpan and Nkanta (2023), insiders know more about a company and its future prospects than investors do; therefore, investors will offer a lower price for the company to protect themselves.

This study is anchored on the signaling theory because it is believed that the environmental disclosure activities of health care companies in Nigeria are a signaling tool to investors. Hence, company managers will choose to disclose more corporate environmental information to signal that they are sustainable, green, eco-friendly, and responsible citizens (Omran & El-Galfy, 2014).

The theory is relevant to this study because a positive signal will improve investor's confidence and perception of operational activities and, thus, the firms' market value. Consistent with signaling theory, Connelly et al. (2011) document that environmental disclosure can provide a positive signal regarding a firm's reputation, which will improve the firm's market value.

Review of the Empirical Studies

Tang (2024) used a multiple linear regression model to explore the specific mechanism of the impact of CED on enterprise market value. The findings of the study revealed that enterprises' carbon emissions can help them improve their transparency, thus enhancing the trust and recognition of consumers and investors and thus positively affecting the enterprises' market value. Akpan (2024) examined the effect of environmental, social, and governance (ESG) disclosures on the wealth of listed industrial good companies in Nigeria. The results of the data analysis revealed that environmental performance disclosure and governance performance disclosure have a significant positive effect, whereas social performance disclosure has no significant effect on the EVA of listed industrial goods firms in Nigeria. Etuk et al. (2024) examined the effect of environmental waste management disclosure on the financial performance of consumer goods firms in Nigeria, using 21 listed consumer goods companies as the study population. The result obtained however, revealed that environmental waste management has a significant negative effect on financial performance of listed consumer goods companies in Nigeria. Etim et al. (2024) examined the effect of GAPs on the financial performance of oil and gas companies in Nigeria. Findings revealed that green accounting significantly influenced the financial performance of quoted oil and gas firms in Nigeria during the review period. Dwi et al. (2024) examined the impact of green accounting on environmental performance and the impact of environmental performance on CSR disclosure. The results show that green accounting adoption positively affects environmental performance (coefficient = 0.291 and p -value < 0.01). Meanwhile, environmental performance positively affects CSR disclosure with a coefficient of 0.296 and a p -value < 0.01.

Ubokudom et al. (2024) examined the effect of waste management, environmental cleanup, and environmental safety costs on these companies' return on assets. The results of the analysis showed that waste management costs have an insignificant negative effect on the return on assets; however, environmental cleanup costs and environmental safety costs have a significant positive effect on the return on assets of the companies under study. Aulia et al. (2024) illustrated the importance of corporate disclosure of carbon emissions as a strategy to increase

firm value in a global context that is increasingly concerned with sustainability. Through a meta-analysis of five international journals, findings show that disclosure of carbon emissions is positively correlated with increased firm value in several Asian countries, such as Korea and Taiwan. Bankole and Oluwayomi (2023) examined the relationship between environmental accounting information and listed manufacturing firms' financial performance in Nigeria and found that environmental accounting information significantly impacts manufacturing firms' financial performance.

Akpan and Nkanta (2023) investigated the effect of green accounting practices on shareholder value in Nigeria by drawing samples from the Nigerian Exchange Group's listed consumer goods firms from 2012 to 2021. The result showed that biodiversity disclosure and compliance to environmental laws disclosures have a significant positive effect on shareholders' value added, and water and effluents disclosures have a significant positive effect on shareholders' value added. Nkanga et al. (2023) examined the effect of voluntary disclosures on firms' value taking samples from deposit money banks listed on the Nigeria Exchange Group's floor from 2012 to 2021. The findings of the study revealed that disclosure of social donation and gifting has a significant positive effect on the market value of deposit money banks, whereas disclosure of employee health and safety has an insignificant negative effect on the market value of listed deposit money banks in Nigeria. Hardiyansah et al. (2021) examined the effect of CED on firm value and found that CED had a positive and significant effect on firm value. Okeke (2021) analyzed the effect of effluent and waste treatment cost disclosure on the EVA of quoted oil and gas firms in Nigeria and found that effluent and waste treatment cost disclosure has a significant effect on the EVA and revenue growth of firms.

METHODOLOGY

This study used an ex-post facto research design, which was suitable for this study because it used historical data obtained from the annual reports of the studied firms. The study population comprised 21 listed consumer goods companies. The sample size of 16 consumer goods companies was purposively selected. The data source for this study was a secondary source. The method of data analysis employed was pooled OLS, and the statistical software employed was E-views version 13. Content analysis was used to derive data for waste accounting practices through the instrumentation of the disclosure checklist developed according to the Global Reporting Initiatives (GRI) disclosure guidelines. The score or disclosure index for each disclosure parameter was the ratio of the actual disclosure to the expected disclosure. This is given as follows:

$$\text{Disclosure index} = \frac{\text{Aggrgate actual disclosure score}}{\text{Total expected disclosure}} \times 100$$

Model specification

In line with previous research, the researcher adapted and modified the model of Etuk et al. (2024) to determine the effect of waste accounting practices on Nigeria's consumer goods firms' market capitalization. This is given below:

$$\text{Market capitalization} = f(\text{Waste accounting practices}) \quad (\text{I})$$

$$\text{Market capitalization} = f(\text{carbon disclosures, effluent and water disclosures, and waste recycling disclosures}) \quad (\text{II})$$

$$\text{MCAP}_{it} = \beta_0 + \beta_1 \text{CABD}_{it} + \beta_2 \text{EWAD}_{it} + \beta_3 \text{WARD}_{it} + \varepsilon_{it} \quad (\text{III})$$

Where;

MCAP = Market capitalization

CABD = Carbon disclosures

EWAD = Effluent disclosures

WARD = Disclosure of waste recycling

β_0 = Model intercept

- $\beta_1\text{-}\beta_3$ = Coefficient to be derived from results of data analysis
 ϵ_{it} = Cross-section of listed consumer goods firms with time variants (%)
 ϵ_{it} = Stochastic error term

Results and Interpretations

This section focuses on the data analysis techniques and findings.

Descriptive Statistics

Table 4.1: Descriptive statistics of the effect of waste accounting practices on listed consumer goods firms' market capitalization in Nigeria

	MCAP	CABD	EWAD	WARD
Mean	4.327	0.518	0.304	0.242
Median	30.035	0.400	0.493	0.476
Maximum	9.100	0.833	0.833	0.833
Minimum	5.180	0.170	0.330	0.500
Std. Dev.	63.226	0.602	0.660	0.706
Skewness	50.603	12.582	0.261	0.534
Kurtosis	85.480	16.312	4.079	0.660
Jarque-Bera	52.757	19.939	10.786	52.376
Probability	0.000	0.0000	0.004	0.000
Sum	12.642	95.234	88.438	35.712
Sum Sq. Dev.	56.632	17.232	13.060	2.466
Observations	160	160	160	160

Source: Researcher's computation (2025)

Table 4.1 summarizes the descriptive statistics of the study. Table 4.1 shows that on average, the mean of market capitalization was 4.3 with a standard deviation of 63.22 and minimum and maximum values of 5.18 and 9.1, respectively. This implies that on average, the market capitalization of the pooled consumer goods firms was 4.3 billion naira. Also, CABD had a mean value of 0.418 with a standard deviation of 0.60. It also has minimum and maximum values of 0.17 and 0.833, respectively. This implies that on average, the pooled consumer goods firms disclosed only 42% of the carbon-related information as required by the GRI. Similarly, Table 4.1 also shows that EWAD had a mean value of 0.401 with a standard deviation of 0.66. It also has minimum and maximum values of 0.33 and 0.833, respectively. This implies that on average, the pooled consumer goods firms disclosed only 40% of the effluent- and water-related information as required by the GRI. Finally, Table 4.1 shows that waste recycling disclosures (WARD) had a mean value of 0.542 with a standard deviation of 0.70. It also has minimum and maximum values of 0.5 and 0.833, respectively. This implies that on average, the pooled consumer goods firms disclosed only 54% of the waste recycling-related information, as required by the GRI. Overall, Nigerian consumer goods firms only averagely meet the disclosure criteria of the Global Reporting Disclosure guidelines.

Correlation Analysis**Table 4.2:** Correlation analysis of the relationship between waste accounting practices and listed consumer goods firms' market capitalization in Nigeria

	MCAP	CABD	EWAD	WARD
MCAP	1.000000			
CABD	0.225634	1.000000		
EWAD	-0.106821	-0.034622	1.000000	
WARD	0.127234	0.042923	-0.142362	1.000000

Source: Author's computation (2025)

Table 4.2 presents the correlation analysis of the study variables. The analysis from the Spearman rank correlation showed that only the effluent and water disclosures (-0.1068) is negatively associated with the market capitalization. However, carbon disclosures (0.2256) and waste recycling disclosures (0.1272) are positively associated with MC. Clearly, no perfect association exists between the variables as they all showed coefficients of less than 80%, after which the problem of autocorrelation may begin to manifest (Green, 2003).

Regression analysis**Table 4.3: OLS regression analysis of the effect** of waste accounting practices on the market capitalization of Nigerian listed consumer goods firms

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.627293	1.802873	4.187292	0.0000
CABD	0.014267	0.272839	2.516282	0.0122
EWAD	0.067282	0.727239	1.358896	0.0561
WARD	0.026272	0.827389	3.234567	0.0004
R-squared	0.219922	Mean var dependent		5.627292
Adjusted R-squared	0.382733	S.D.-dependent var		1.273938
S.E. of the regression	1.526383	Akaike information criterion		3.452522
Sum squared resid	12.38292	Schwarz criterion		3.232443
Log likelihood	-123.2205	Hannan-Quinn writer.		3.653032
F-statistic	8.737324	Durbin-Watson stat		2.239912
Prob(F-statistic)	0.000240			

Source: Author's computation (2025)

The pooled OLS regression table 4.3 shows an F-statistic of 8.737324 with a p-value of 0.000240, indicating that the model is fit for statistical inference and that overall, waste accounting practices have a significant effect on the market capitalization of the companies under study. The model gave an R-squared value of 0.22, which means that 22% of the changes in the dependent variable can be explained by the independent variables of this study. The unexplained part of market capitalization (88%) could be attributed to the exclusion of other independent variables that could impact market value but were captured in the error term.

Discussion of the findings and conclusions

The results obtained from OLS regression analysis in Table 4.3 show that carbon disclosures [coef. = 0.14 p-value 0.0122] have a significant positive effect on the market capitalization of listed consumer goods firms in Nigeria. The significant positive effect of carbon disclosure on the market capitalization of Nigerian consumer goods firms underscores the importance of addressing business operations' environmental sustainability issues. Companies can attract socially responsible investors, improve their brand reputation, and gain a competitive advantage in the market by disclosing their carbon emissions and demonstrating a commitment to reducing their environmental impact. This finding highlights that investors value transparency and accountability regarding climate-related risks and opportunities, indicating a growing trend toward sustainable investing practices in Nigeria's consumer goods sector. This finding was supported by Tang (2024), Aulia et al. (2024), and Hardiyansah et al. (2021), who concluded that carbon emission disclosure had a positive and significant effect on firm value.

The results of the OLS regression analysis in Table 4.3 show that effluent and water disclosures [coef. = 0.067, p-value 0.056] have no significant effect on the market capitalization of listed consumer goods firms in Nigeria. This implies that the disclosure of liquid waste practices does not affect the market capitalization of Nigerian consumer goods firms. The lack of a significant effect of effluent disclosure on market capitalization shows that investors may perceive effluent management as a regulatory compliance issue rather than a key driver of financial performance or competitive differentiator. This shows that the market perceives effluent management as less critical to a firm's long-term value or that there is a lack of sufficient awareness or regulatory pressure regarding effluent-related issues. Okeke et al. (2021) supported the findings of this study when they noted that effluent and waste treatment cost disclosure has a significant effect on the EVA and revenue growth of listed oil and gas firms in Nigeria.

The results obtained from OLS regression analysis in Table 4.3 show that waste recycling disclosures [coef. = 0.026 p-value 0.0004] have a significant positive effect on the market capitalization of listed consumer goods firms in Nigeria. The significant positive effect of waste recycling disclosure on market capitalization highlights the value investors place on companies' efforts to promote circular economy practices and reduce environmental impact through responsible waste management. By transparently reporting on waste recycling initiatives and showcasing a commitment to resource efficiency, Nigeria's consumer goods firms can differentiate themselves in the market, attract environmentally conscious investors, and potentially drive increased market value. This finding corroborates the findings of Bankole and Oluwayomi (2023), who found that waste management disclosures have a significant effect on firms' performance in Nigeria.

CONCLUSION AND RECOMMENDATIONS

The study highlighted how waste disclosures, specifically, carbon emissions, water and effluent, and waste recycling, affect investors' confidence in Nigeria's consumer goods firms. The study revealed that when companies efficiently manage and disclose their environmental footprints, investors react positively to such information, which sends signals that these companies are environmentally responsible, committed to continuous improvement, and positioned for long-term success and value creation. Thus, waste accounting is a significant driver of market capitalization. Based on the findings of this study, it was recommended that management of consumer goods firms in Nigeria should implement robust measurement systems for tracking carbon emissions, set ambitious reduction targets, and effectively communicate their progress and achievements to stakeholders. This will boost investor confidence, build a reputation for environmental stewardship, and potentially boost their market value over the long term. Management should also invest in efficient waste recycling systems to minimize waste and maximize resource recovery.

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