



Green Management and Performance Sustainability of Small and Medium Enterprises (SMES) in Anambra State, Nigeria

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ABSTRACT

This study investigated the effect of green management on sustainability performance of SMEs in Anambra State using selected table water manufacturing firms. The specific objectives of the study were to determine the effect of close circuit production on waste generation; to establish the influence of renewable *energy* on emission generation; to ascertain the effect of environmental *consciousness* on social effect and to evaluate the *effect of* green production on financial performance. The study used survey research design to generate data from respondents of firms under study through questionnaire. The Data were presented with descriptive statistics of tables, frequencies and analyzed with ordinary least square regression technique. The study developed one model. The result showed that close circuit production; renewable *energy*; environmental *consciousness* and green production have positive significant effect on sustainability performance measured by waste generation, emission generation, social effect and financial performance of the sampled SMEs during the period under study. The coefficient of determination (R^2) which determines the weight of the explanatory power of the predictor variables on the dependent variable and F-statistics for the model were 0.49 and 2.759 respectively. Close circuit production has a t-statistics of 2.533 and p-value of 0.012 which is statistically significant at 5% level of significance. Renewable *energy* has a t-value of 2.509 with a probability value of 0.013 which is statistically significant at 5% level of significance. Environmental *consciousness* recorded a t-value of 2.175 and a probability value of 0.07 which is within the acceptable threshold. Green production recorded a t-value of 4.928 with alpha value of 0.000 which is statistically significant. The study concluded that explanatory variables of green management have significant positive effect on sustainability performance of table water manufacturing firms in Anambra state Nigeria. The study recommended that government should marshal out relevant tax wavers, incentives, subsidies, or grant for manufacturing firms that are going green or already practicing green business initiative.

Key Words: Green Management, Performance Sustainability, Small and Medium Enterprises (SMES) in Anambra State, Nigeria

INTRODUCTION

The world is facing the consequences of global climate change therefore it is important for Small and Medium Enterprises (SMEs) like table water firms to adopt sustainable practices. Businesses have been operating under the general management systems for a long time, without paying attention to how they

affect the environment (Haden et al., 2019). Gases escaping, natural harm produced by chemical compounds, environmental damage caused by solid waste, and environmental contamination are being ignored (Khare, et al., 2023). Along with global warming, s are refocusing their efforts on green management, which is concerned with minimizing environmental damage (Mursalim, et al.,2024). Businesses like Small and Medium Enterprises (SMEs) need to manufacture environmentally friendly products to ensure their continued existence and boost their profitability and productivity due to their contact with the environment (Lee, 2019). Small and Medium Enterprises (SMEs) play a vital role in sustainable development of nations. They are the core economic system as they provide employment and contribute to gross domestic product (GDP) of any nation (Mursalim, et al., 2024). The need for their sustainable performance is important. In the global business, Small and Medium Enterprises (SMEs) have emerged as crucial drivers of economic growth, innovation, effective means of eradicating poverty and employment generation (Adamu, Wan, & Gorondutse 2019).

In Anambra State, Nigeria, these enterprises form the backbone of the local economy, contributing significantly to development by helping to reduce poverty and provision of employment. They play an important role in the supply chain of key industries, contribute to export earnings, value addition to per capita-income and gross domestic product GDP to both developed and developing economies (Adamu, et al., 2019). As business s, their success depends very much on their practices and how they are being managed (Yu, et al., 2021). With regards to the performance and sustainability of SMEs, some of them continue to maintain their success while others appear to be less successful (Roh, et al., 2021). The successful ones are sustainable because of their ability to adopt effective factors that influence their performance. However, in the case of the unsuccessful SMEs, most often failed because of bad business practices and mismanagement (Worldbank, 2017).As the world faces pressing environmental challenges, the need to align business practices with sustainable principles becomes important through the adoption of green management.

Green management has gained prominence as a strategic approach for businesses to mitigate their environmental impact while simultaneously enhancing operational efficiency and competitiveness (Abdullah & Ismail, 2019). Green management entails the adoption of eco-friendly practices and technologies across various dimensions of business operations from sourcing, production, distribution, and finally to waste management. The fundamental principle for green management is the harmonization of economic objectives with environmental stewardship, recognizing that long-term success hinges on ecological sustainability (Adekunle & Olubodun, 2020). Businesses that implement green management practices by minimizing their environmental impact have an advantage over their competitors when they make environmentally friendly products, use environmentally friendly technology, and think about the environment (Mursalim, et al., 2024).Industries through a variety of applications, create environmentally beneficial activities within itself such as environmentally friendly hybrid in the automotive sector, recyclable papers in the paper industry, green star applications in the tourism sector, ease of recycling packaging in the food sector, and the production of environmentally friendly products (Khare, et al., 2023).

Green management is an enterprise-wide act of preparing creative procedures to achieve performance sustainability through waste reduction and by embracing environmental objectives and strategies that are fully integrated with the goals and strategy of the business (Kumar, 2019). It is a way for businesses to incorporate environmental concerns into their operations while still maintaining profitability (Liao 2020). Industries in the twenty-first century strive for a greener environment by providing green industrial systems and laws to compete in the national and international markets. They place a premium on technological advancements that safeguard the environment (Uygur & Musluk, 2021). Organisations should effect these changes by implementing environmental goals and strategies that align with the organization's goals and strategies. As a result, the organization's mission and vision will be more clearly defined (Matheus et al., 2023; Khare, et al., 2023).

However, why are we choosing green? Green is more than a hue in the rainbow. Going green is a strategy for some like small and medium enterprises and the broader society to modify their lifestyles (Menguc, Auh, & Ozanne 2020). This entails implementing more eco-friendly improvements. The plain truth is that when an individual does something that affects the globe, good or bad, he or she has the full ability to make decisions, allowing the individual to manage the influence caused (Li, et al., 2021). Another critical point is the significance of turning green (Khare, et al., 2023). Few businesses understand the value of turning green. Implementing a green management system ensures that it will exist in perpetuity. While all other types of energy are finite, the green system will never run out (Khare, et al., 2023). Renewable energy sources will always be available to meet human requirements. Secondly, utilizing green materials and quality contributes to protecting the environment instead of costly energy imports. As a result, it has been proved that green technology can contribute to the reduction of the Nigeria economy's trade deficit (Almaqtari, et al., 2022). Environmental consciousness in green management applications aim to evaluate the entire manufacturing process, from design to recycling, replication, and reuse (Khare, et al., 2023). Individuals and organizations are now compelled to act responsibly, and the only way to do so is to go "greener" (Hyndman & Hyndman, 2019). Within each organization, it is the responsibility of every individual, from top management to individual staff members, to strive toward supporting activities that use the fewest possible natural resources and the implementation of activities that promote greener activities (Tam et al., 2020). Going green makes excellent commercial sense, and as a result, corporations worldwide are increasingly adopting a green concept in their management functions (Farrukh, et al., 2022).

Anambra State, endowed with natural resources and cultural diversity, presents a unique context for examining the integration of green management practices within its SME sector. This study focuses on the application of green management by involving performance sustainability of SMEs in form of waste generation, emission generation, social initiator and financial performance while using **close circuit production**, renewable energy, environmental consciousness, green production and green employee engagement as predictor variables of green management. This study also combines the measurement of financial performance and non-financial performance in the form of performance sustainability variables for SMEs.

Statement of the Problem

Economic prosperity of Small and medium enterprises (SMEs) in Anambra State, Nigeria, has been a driving force for local development and employment generation. However, the growth has come at cost to environment, as business operations contribute to resource depletion, pollution, and carbon emission. Waste management practices are becoming a national issue and unsustainable leading to apparent environmental risk. In developing countries such as Nigeria, open dumping of solid wastes into wetlands, watercourses, drains and burrow pit is a prevalent form of disposal which has resulted in the littering of the surroundings, creates eyesore and odour nuisance.

Open defecation can breathe flies, insects and rats thus transmitting diseases like dysentery and diarrhea salmonellosis, leptospirosis and Lassa fever which calls for proper waste management through close circuit production. As global concerns about environmental sustainability escalate, it has become evident that the traditional growth model pursued by SMEs is not compatible with long-term ecological well-being. This problem underscores the urgency of promoting sustainable practices within SMEs in Anambra State to influence not only the economic well-being of the enterprises but also the overall ecological health of Anambra State and its communities. Addressing this problem requires understanding of the barriers preventing SMEs from adopting green management practices and the mechanisms through which these practices can positively impact business performance.

In light of the foregoing, this study seeks to investigate the relationship between green management and performance sustainability of SMEs in Anambra State by elucidating the interconnectedness of **close circuit production**, renewable energy, environmental consciousness, green production and green employee engagement on waste generation, emission generation, social initiatives, and financial

performance respectively. The study aims to provide actionable insights for stakeholders to drive positive change in the state's business ecosystem.

Review of Related Literature

Conceptual Review

Green Management

Green Management can be defined as the process of integrating environmental considerations into the decision-making process of an organization. It involves adopting sustainable business practices that aim to reduce negative environmental impact, conserve resources, and promote eco-friendliness (Navin 2023). Green management is defined as the process inside a company that uses innovation to accomplish sustainability, waste reduction, social responsibility, and competitive advantage via continuous learning and improvement (Khare, et al., 2023). Green management practices apart from improving the organizations' triple line performance (environmental, economic, and social) also sustain a competitive advantage. Green management itself is a business activity to make raw materials and auxiliary materials into goods and services by prioritizing the balance between economic, social, and environmental benefits (Raharjo, 2019). Green management is expected to help industry to not only increase profits, but also to carry out their social responsibilities to the community and to preserve the environment. Since Small and medium enterprises are subject to environmental expectations from visitors, governments, and the community, it is vital to understand what motivates green management practices to overcome environmental obstacles and satisfy those demands. The effect of applying green management to small industries can also improve the sustainable performance of these small industries (Raharjo, 2019). This activity generates higher profits in the industry, as well as improving financial costs efficiency. Small and medium scale companies oriented to the environment can also enjoy financial incentives, which are obtained in the form of subsidies (Mir, & Feitelson, 2017), gifts, soft loans and special tax rates (Bradford, & Fraser, 2018).

Green management has several principles according to Navin, (2023) which include: **close circuit production** approach; renewable energy efficiency; sustainable supply chain management and corporate social responsibility. The first principle of Green Management is the classic "**close circuit production**" approach can significantly reduce business's environmental impact by lowering & controlling the amount of waste generated in their operations, reusing materials whenever possible, and recycling when necessary. Another critical aspect of Green Management is renewable energy efficiency. By adopting energy-efficient practices, such as using LED lighting, upgrading to energy-efficient equipment, and implementing smart building systems, s can significantly reduce their energy consumption and associated costs (Navin, 2023). Supply chain management is another essential component of Green Management. This involves adopting sustainable practices in every stage of supply chain management, from acquiring raw materials to delivering the finished product to customers (Navin, 2023). By working with suppliers who follow sustainable practices and promoting responsible sourcing, s environmental impact would be significantly reduced. Finally, Green Management involves a commitment to corporate social responsibility. This means actively engaging in initiatives that benefit local communities and society were they operate such as volunteering, charitable giving, and supporting social causes (Navin, 2023).

Close circuit production

Close circuit production is a manufacturing approach that aims to create a sustainable and efficient production system by minimizing waste and maximizing the use of resources (Ekins, Domenech, Drummond, Bleischwitz, Hughes, & Lotti, 2019). It involves integrating various components of the production process, such as design, production, and recycling, to create a continuous loop of material and information flow (Solekah, 2020). Solekah, opined that closed circuit production process starts with the design phase, where the product is designed with sustainability in mind. The production phase involves using the most efficient processes and technologies to manufacture the product while minimizing waste and emissions (Darnall, Jolley, & Handfield 2018). Once the product is used and reaches the end of its life, it is recycled, and the materials are reused in the production of new products. The closed circuit production approach is an essential component of

the circular economy, which aims to minimize waste and promote the sustainable use of resources (Raharjo, 2019).

Close circuit production involves a system where materials are used efficiently within a closed loop to minimize waste and reduce environmental impact. In this approach, resources are recycled and reused within the production process, creating a sustainable cycle that minimizes the need for new raw materials and reduces the generation of waste (Ekins, et al., 2019). By implementing close circuit production, businesses decrease their environmental footprint, conserve resources, and promote sustainability. In the realm of green management, close circuit production is like creating a loop where materials are used smartly. Instead of tossing things away, they are recycled and reused in the production cycle. This way, s cut down on waste and limit the need for new resources, making the process more sustainable and eco-friendly. It's all about creating a system where materials are continuously recycled and reused.

Renewable energy

Renewable energy are pivotal components of sustainable business practices, particularly in the context of Small and Medium-sized Enterprises (SMEs). Renewable energy involves the optimization of energy utilization to achieve desired outcomes while minimizing waste and inefficiencies (Idris & Zain, 2019). This is often accomplished through the integration of advanced technologies, streamlined processes, and informed decision-making. On the other hand, energy conservation encompasses deliberate efforts to curtail energy consumption through behavioral adjustments and conscious choices (Nwoba et al 2017). Renewable energy plays a crucial role in promoting sustainability and reducing environmental impact. Renewable energy sources, such as solar, wind, hydroelectric, and geothermal power, are environmentally friendly alternatives to traditional fossil fuels. By incorporating these renewable energy sources into operations, businesses decrease their carbon footprint, lower energy costs in the long run, and contribute to a more sustainable greener future. It is a key component of green management that aligns with eco-friendly practices and helps organizations operate in a more environmentally conscious manner.

These concepts hold substantial significance within the scope of this research on green management practices and the sustainable business performance of SMEs in Anambra State. The integration of energy-efficient practices and technologies by SMEs can yield a spectrum of tangible benefits. Notably, it can lead to considerable cost savings by reducing energy expenditure, consequently enhancing economic performance (Olokundun et al., 2020). Moreover, a commitment to energy efficiency contributes to a diminished carbon footprint, aligning with global environmental conservation objectives. In a broader market context, SMEs that emphasize energy efficiency bolster their competitive standing by projecting an image of environmental responsibility, a quality that resonates with stakeholders who prioritize sustainable practices. This resonance, in turn, fosters robust stakeholder engagement and brand loyalty. A deeper investigation into the extent to which SMEs in Anambra State are adopting energy efficiency and conservation practices is poised to explore valuable insights. By assessing their influence on both the economic and environmental dimensions, research can shed light on the correlation between these practices and sustainable business performance. Additionally, delving into the challenges and opportunities entailed in the adoption of energy-efficient measures offers a comprehensive perspective on the factors influencing the incorporation of these practices within the SME landscape. Ultimately, your research endeavors to contribute to a comprehensive understanding of the intricate interplay between energy efficiency, conservation efforts, and the overarching pursuit of sustainable business performance among SMEs in Anambra State (Nwoba et al 2017).

Environmental consciousness

Environmental consciousness is having a deep awareness and concern for the environment in the business world (Raharjo 2019). Environmental consciousness is seen as a specific psychological factor that is related to individual propensity to participate in eco-friendly behavior (Kim, &Lee 2023). It is the willingness to become aware of environmental problems, support efforts to solve environmental problems, and personally commit and solve these problems (Onurluba, 2019). The concepts of environmental consciousness, which have been dealt with in preceding studies, mainly include an awareness of environmental problems interest in, attitudes, and opinions on environmental problems, and

are explained as an awareness to prevent and improve environmental pollution and damage that occur as a result of human activities (Onurluba, 2019). Environmental consciousness is an intrinsic factor influencing an individual's eco-friendly consumption behavior. It was argued that environmental consciousness has a multidimensional structure composed of cognitive, attitudinal, and behavioral factors (Huang, Kung, & Cheng 2022).

Environmental consciousness is divided into knowledge, attitude, recycling behavior type, recycling degree, and participation activities to prevent environmental destruction (Kim, & Lee 2023). Roberts (2019) classified the environmental awareness dimension into consumer efficiency awareness and environmental interest. Sharmar and Keshewani (2015) divided environmental consciousness into four categories: environmental value, attitude, knowledge, and motivation. Environmental value is the value of nature and nature conservation, and environmental knowledge is regarded as the knowledge of environmental issues. Environmental concern is the degree to which people are aware of and willing to support efforts to address environmental problems or personally contribute to solutions (Huang, et al., 2022). Schultz (2021) classified environmental interest into three dimensions: egoistic concerns, altruistic concerns, and ecological-centered environmental concerns. Egoistic concerns refer to an interest in environmental issues related to one's own health, future, or lifestyle. Altruistic concerns imply an interest in environmental issues related to everyone, including the community, children, and the future. Ecological-centered environmental concerns are the interest of environmental issues related to plants, animals, marine life, and birds. Environmental knowledge can be defined as possessing facts about the natural environment and major ecosystems and a general knowledge of the relationship between people and the environment. It include what people know about the environment, key environmental relationships, recognition of the whole system of the environment and knowing the responsibilities of stakeholders necessary for sustainable development (Huang, et al., 2022).

Environmental knowledge is considered an approach to address environmental and social problems as consumers' perceived knowledge of environmental and social problems (Kim, & Lee 2023). Frick, Kaiser, and Wilson (2020) classified environmental knowledge into system knowledge and behavior-related knowledge. The former implies the understanding of the natural state of the ecosystem and its processes; the latter refers to the knowledge of the actions that consumers can perform to have an impact on environmental issues. Perceived consumer effectiveness (PCE) is a measure of the entity's judgment on whether individual consumers themselves can influence environmental resource problems. It is the extent to which individual consumers believe they can contribute to address environmental problems through personal efforts and daily consumption behavior (Ellen, Wiener, & Walgren 2021). He and Zhan (2018) perceived consumer effectiveness as the extent to which consumers believe that adopting eco-friendly cars can help reduce the negative impact of their vehicle usage on the environment. Ellen, et al., (2021) see it as the degree to which one believes that one's actions for the environment can make a difference in addressing environmental problems. Studies has shown that perceived consumer effectiveness on environmental issues is continuously linked to socially recognized attitudes, but distinct from environmental issues or attitudes and makes a unique contribution to the prediction of environmentally conscious behaviors, such as eco-friendly purchasing (He & Zhan 2018). It is believed that environmental problems can be addressed by individual's willingness to perform that activity. Implementing and being environmental conscious, companies demonstrate their dedication to environmental responsibility and sustainability (Solekah, 2020). It involves being mindful of how business activities impact the environment and taking proactive steps to minimize negative effects. When environmental consciousness is integrate into green management practices, businesses make informed decisions that prioritize sustainability, reduce waste, and promote green operations. It is about being environmentally aware and making decisions that benefit both the business and the planet (Raharjo 2019).

Performance Sustainability

Sustainable performance is a strategy of the practice of sustainable development (Kocmanová & Dočekalová, 2019). The concept of sustainable development arises in an attempt to meet the needs of the present generation without compromising the ability of future generation to meet their own needs (Gupta,

& Jangra 2024). Sustainable performance can be seen as an integration of economic, social and environmental performance (Adamu, Wan, & Gorondutse 2019). Business performance is a measurement of a company's success during a specified period. The performance of a business can be measured by sales growth and market share. Every organization desires long-term survival; thus, strategies and performance are crucial (Hamid and Mohamed 2021). Previously, research on measuring business performance concentrate on financial and non-financial measures (Jerónimo et al., 2020). In order to ascertain the sustainable performance of organisation, management of enterprise takes recognition (Ciemleja & Lace, 2018). This relates to providing effective and efficient sub-systems, taking into account deviations from the state of balance. The practical application of sustainable performance of SMEs requires processes that support sustainability of an enterprise. This process mutually insists that each management level decision should be implemented through dimensions of sustainability. Thus, the quality of SMEs management influences the total result as well as innovative potential of SMEs (Ciemleja & Lace 2018). Performance sustainability comprises economic, social and environmental performance.

There are numerous studies of company sustainability and performance, and it is not difficult to conclude that a positive relationship exists between the sustainable behaviour of small businesses and their financial performance. Murthy (2020) asserted that achieving sustainable performance involves an understanding of "external expectations" and "internal conditions" to build a competitive advantage for the organisation. External expectations can include government-created environmental legislation and community consciousness of environmental issues. Sustainability perspective objective is to minimize waste and environmental disturbances that can impede business growth. Some companies outperform their rivals for brief periods, but few consistently outperform them for longer stretches. The objective of management strategy that exceeds the industry norm for at least ten years is to achieve a durable competitive advantage (Marcus, 2019).

SMEs management's strategy should be geared toward achieving a lasting competitive advantage so that it may dominate both the old and new markets (Khare, et al., 2023). Identifying the true firm assets, the tangible and intangible resources that make the organization unique, is the most significant factor in attaining the success of the applied strategy (Khare, et al., 2023). An has a competitive edge if it possesses something that its competitors do not, performs a task better than its competitors, or can accomplish something that its competitors cannot afford (Matheus et al., 2023). Thus, competitive advantage becomes a crucial prerequisite for long-term success and the longevity of a business (Lee, 2019). Morgan (2021) evaluated the effectiveness of a firm in two ways: first is a financial aspect: this financial performance is the primary objective of all management and investment activities related to performance sustainability. From a financial standpoint, al success is defined and quantified by accounting indicators such as the organization's profitability, investment turnover, sales growth, and cash flows. Secondly, non-financial factors which are intangible factors, such as customer happiness, product development, and sales volume growth. (Gupta, Shuchi & Tripathi, 2020).

Empirical literature has indicated that sustainable development arose as a result of the failure from the conventional development to fight poverty (Kolk, 2016). In order to ascertain the sustainable performance in anorganisation, the management system of the enterprise is taken into recognition (Ciemleja & Lace, 2018). This relates to providing effective and efficient sub-systems, taking into respect deviances from the state of balance. The practical application of sustainable performance of SMEs requires processes that support sustainability of an enterprise. This process is mutually functional that insists each management level decision should be implemented through dimensions of sustainability. The quality of SMEs management influences the total result as well as innovative potential of the SMEs (Ciemleja & Lace, 2018). In recent times, firms are beginning to adopt an account framework with three parts used for performance measurement namely; Social, Environmental and Financial. Thus, a balanced and multi-dimension theory known as the Triple Bottom Line (TBL) became more relevant as an effective tool for measuring sustainable performance and it said to give greater value (Rashid & Qaseer, 2022). Triple Bottom Line (TBL) provides an opportunity for the integration of sustainable business practices that may

lead to sustainable performance (Rashid & Qaseer, 2022). Sustainable performance depend on the firm's deliberate efforts to ensure the success of green activities implementation (Rashid & Qaseer, 2022). In a bid to achieve sustainable performance, economic, social, and the environmental dimensions must prevail (Rashid & Qaseer, 2022).

Waste generation

Waste is an unavoidable by-product of most human activity. Economic development and rising living standards have led to increases in the quantity and complexity of generated waste, whilst industrial diversification and the provision of expanded health-care facilities have added substantial quantities of industrial hazardous waste and biomedical waste into the waste stream with severe environmental and human health consequences (Babayemi & Dauda, 2019). Waste generation refers to the discarded materials from residential and commercial activities of small and medium enterprises that enforce economic and environmental costs for its management and disposal (Laleh, Chunbao, & Madhumita 2021). It could take the forms of refuse, garbage and sludge (Leton & Omotosho in different areas, are limiting capacity to develop effective waste management, 2020). Hence, the management and control of wastes at all stages of production, collection, transportation, treatment and ultimate disposal is a relatively social imperative (Salami et al, 2021). Afon and Okewole (2020) observed that, little documentation of the quantity and composition of wastes generated in different areas are limiting capacity to develop effective waste management systems. Obviously, small and medium enterprises in Anambra state Nigeria are not exempted from the problem of solid waste generation and management.

The first step in waste management approaches is to reduce the waste generation at the manufacturing level. This means using fewer natural resources, avoiding waste generation, qualitative and quantitative reduction at source and reuse of products (Afon, 2020). The next step is to divert waste through recycling and composting. Diversion is performed by reusing and diverting the waste from landfills into new products (Leton & Omotosho, 2020). It provides cost-effective solutions for hazardous waste and hard-to-recycle waste from landfills. The next approach is energy and resource production from waste through incineration, gasification, de-polymerization, pyrolysis, etc (Leton & Omotosho, 2020). The produced energy is in the form of electricity, heat or steam. The least preferred method for waste management is disposal by landfill and incineration. They are usually the most cost-efficient way to dispose of the waste; however, they are associated with some environmental and health concerns.

Emission generation

Emissions generation are activities that generate pollutants such as nitrogen oxide, ammonia, mercury and carbon dioxide, which **pollute water, air and land** and damage human health, the environment and nature (Ma et al., 2019). Massive greenhouse emissions (e.g., carbon dioxide) are primary driver of climate-related issues, including sea-level rise, glacier loss, and increasing frequency of extreme weather, all of which are placing severe stress on the health of the ecological environment (Zhang et al., 2017). Mitigating the correlated environmental health problems related to carbon emissions has become a central focus of national government (Ma et al., 2019). Efforts have been aimed at improving the effectiveness of carbon emissions reduction, and promoting green economic transformation by enacting a series of environmental protection policies and proposing control targets for the amounts of carbon dioxide and other pollutants released.

The importance of understanding and reducing emission generation is setting specific and measurable targets and strategies that contribute to the promotion of sustainable practices in the humanitarian community and beyond (Mangla, Luthra, Rich, Kumar, Rana, & Dwivedi, 2018). In a world aware of climate change and its impacts, it is critical that all s, including table water firms, commit to reducing their gas emission and adopting more sustainable practices (Büyüközkan, Karabulut, 2018). The aim of this action plan is to provide a clear and practical guide by trying to reduce carbon footprint and adopt more sustainable practices, which consider three key areas: energy management, mobility, and procurement (Yanti, Amanah, Muldjono, & Asngari (2018). A good waste management strategy is fundamental for protecting human health, reducing the environmental impacts and enhancing business

activities (Laleh, Chunbao, & Madhumita 2021). To this end, the strict implementation of the environmental protection target responsibility system are employed.

Financial performance

Financial performance refers to how well a company can generate profits and grow its revenues over time (Issa, 2024). It involves analyzing various financial statements like income statements, balance sheets, and cash flow statements to assess the company's profitability, efficiency, and overall health. Key metrics used to evaluate financial performance include revenue growth, profit margins, return on investment, and cash flow. By monitoring these indicators, businesses can track their progress, make informed decisions, and ensure sustainable growth (Murthy, 2020).

Improving financial performance involves effectively managing resources to increase profits and reduce costs. By enhancing operational efficiency, companies can boost their bottom line and achieve better financial results. Strategies such as reducing waste, optimizing processes, and investing in technology can lead to improved financial performance (Bartolacci et al., 2019). Additionally, implementing sustainable practices like energy efficiency can not only reduce operational costs but also positively impact the environment and resources like water. This interconnected approach to sustainability can create long-term benefits for both the company and the community.

Improving financial performance through green management involves integrating environmentally friendly practices like energy efficiency and water conservation (Berry & Rondinelli 2018). By reducing operational costs through sustainable initiatives, companies can enhance profitability while also positively impacting the environment (Bartolacci et al., 2019). This interconnected approach demonstrates how focusing on green management can lead to cost savings, improved financial results, and a more sustainable business model.

Theoretical Framework

Various theories discussed include institutional theory, stakeholder theory but this study is anchored on Hart's (2015) natural-resource-based vision theory.

Institutional theory and Stakeholder theory

Institutional theory propounded by John Meyer and Brian Rowan (1978) and stakeholder theory by Edward Freeman (1984). The two theories are connected and complementary rather than competing. Most significantly, they may be included and related to green management in order to justify the motivations for such practices from a multi-theoretical standpoint. Based on stakeholder theory, sustainability management requires enterprises to provide "an important contribution toward sustainable development of the economy, society, and the ecological environment. In response to stakeholder concerns, corporations include non-financial indicators in green chief executive officer (CEO) compensation, holding them accountable for their eco-friendly behaviour and, consequently, their influence on sustainable performance. This is because, if a CEO operates in a stewardship capacity, protecting the corporation and the ecosystem, a corporation's green practices and innovations will be improved. Similarly, according to institutional theory, institutional pressure affects businesses to incorporate environmental and social matters into their corporate strategies, products, and services, leading to improvements in the performance sustainability.

Consequently, institutional theory and stakeholder theory, managers of the small and medium enterprises seek to respond to the pressures and motivations of stakeholders and institutional pressures and motivations by adopting green management to improve performance sustainability (environmental, economic, and social), and at the same time, these pressures and motivations may help to develop innovativeness which may support the relationship between green management and sustainability performance SMEs.

Therefore, our study tries to construct an integrated theoretical framework in Harts for explaining green management by small and medium enterprises by integrating two mainstream theories, i.e., institutional theory and stakeholder theory, which have been employed in the green management literature by considering theoretical predictive motivations of GMPs.

Empirical Review

Mursalim, Muhammad, Nur, Andi & Bahtiar (2024) investigated the relationships between Green Financial Management (GFM), Green Operational Practices (GOP), and Financial Performance (FP) within Indonesian firms, offering new insights into the strategic importance of sustainability in financial management. We conducted a multivariate analysis of data obtained from a sample of 256 firms in Indonesia. The results revealed significant positive association between GFM and GOP and a subsequent improvement in FP. Moreover, our study finds that the Regulatory Environment (RE) and Market Competition (MC) play moderating roles in the GFM–GOP relationship. The study concluded that GOP serves as a mediator between GFM and FP.

The reviewed study is similar to the present as it discussed the relationships between Green Management (GFM) and Performance which are content scope to the present study. The two studies differ in their geographical and locality of execution. While the reviewed study was carried out in Indonesia, the current study would be carried out in table water firms operating in Anambra State, Nigeria.

Liang, Jingya, Haifeng & Weiyan, (2024) examined Influence of carbon emission reduction of enterprises on economic growth under climate warming. The study discussed the social planner equilibrium and the competitive equilibrium, respectively, and obtain the Hamilton-Jacobi-Bellman (HJB) equations of value function in both contexts. Then, the equations are numerically simulated, leading to the following conclusions: under the same level of pessimism, investments and values of firms, as well as household consumption, all decrease as the emission abatement rate increases, and the social welfare is almost unchanged compared to the situation without the cost of emission reduction. Furthermore, in order to deal with the short-term adverse effects on the economy caused by emission reductions, government subsidy is introduced into the model. The results showed that, under the same level of pessimism, the government subsidy drives the growth of investment and consumption. The value of the firms that pay the emission abatement has been boosted, and economic growth rate has risen to a certain degree, while social welfare remains almost the same.

The study under review is related to the current study in that both looked at relationship between green management and sustainability. On the other hand, the two studies differ on the ground that they didn't use same explanatory variables and geographical scope.

Issa, (2024) examined the relationship between carbon reduction initiatives and financial performance. Additionally, it explores potential moderating variables, such as corporate social responsibility (CSR) and corporate governance practices that may strengthen the link between carbon reduction initiatives and financial performance. The empirical analysis was conducted using 1,740 firm-year observations from UK firms listed on the FTSE 350. Data on carbon emissions and firm-specific characteristics were obtained from the Refinitiv Eikon database for the period 2011–2020. Various econometric techniques, including ordinary least squares and system generalized method of moments, were used to examine the relationship between carbon reduction initiatives and financial performance. Additionally, alternative samples were used to further explore this relationship. Result from the findings showed a significantly positive association between carbon reduction initiatives and financial performance in this study.

The study under review is related to the current study in the sense that they study green management and sustainable performance. On the other hand, the two studies differ on the ground that they didn't use same explanatory variables, population and geographical scope. While the study under review was done in United Kingdom the present is being carried out in Nigeria

Gupta, and Jangra, (2024) in India investigated the role of green human resource management practices by examining their direct and indirect effect on work engagement. Drawing on the integration of four theories, this research addresses how GHRM practices influence work engagement across various manufacturing industries in North India. This research employed a cluster and purposive sampling approach, selecting districts in Haryana, Delhi, and Rajasthan based on industrial concentration. A judiciously chosen sample size of 362 respondents was deemed optimal, aiming for precision and reliability in exploring GHRM practices among employees and HR managers. Structural equation

modeling revealed a significant association between GHRM and work engagement, mediated by managerial support and HRM performance attributions. This study aims to fill the gap in the literature by evaluating the repercussions of GHRM on HRM performance attributions, employing the conservation of resources and attribution theory. The findings contribute valuable insights for organizations aiming to enhance employee engagement and HRM performance attributions through the strategic integration of GHRM.

Dira, Noor, Bangun, Winardi, Kamal, and Utomo, (2024) determined the role of employee involvement in Green HRM to create humanist sustainable performance as an approach that links ecological principles with human resource management in order to achieve sustainable and humane organizational performance. This research method involved surveys and data analysis using multiple linear regression analysis and distribution of questionnaires and interviews as well as literature studies, after which data processing was carried out using SPSS Analysis Version 25 from companies to identify the relationship between the levels of employee involvement in sustainable initiatives. The research technique used a quantitative approach using a sample of 100 respondents and was conducted in June-August 2023, the results showed a significant positive effect on employee engagement and Green HRM variables on sustainable performance increasing productivity, employee loyalty, and company reputation as well as having a positive impact on the humanist aspect, such as job satisfaction and employee welfare. These findings underscore the need to develop a Green HRM strategy that focuses on the active participation of employees in formulating, implementing and strengthening sustainable initiatives, thereby creating a more sustainable work environment.

Omar, Al-shari, Shah, Erkol, Zameer, & Valeri, (2024) explored how green manufacturing practices (GMGP) affect the sustainable performance of small and medium enterprises (SMEs). The study also examined the mediating role of green innovation (GIN) and the moderating role of managerial discretion (MD). Data for the study was collected from 394 manufacturing SMEs through survey and analyzed using SPSS and AMOS (SEM). The results showed positive relationship between GMGP and corporate sustainable performance (CSPR), mediated by GIN. Furthermore, the presence of MD enhances the positive effect of GMGP on CSPR through GIN.

The findings highlight the significance of GMGP and GIN in the manufacturing sector for attaining CSPR goals.

The reviewed study is similar to the present as they focused on green practices affect sustainable performance of small and medium enterprises (SMEs) which are of interest to the present study. The two studies differ in geographical location - while the reviewed study was carried out in Punjab province of Pakistan, the current study would be conducted in Anambra state, Nigeria.

Khatib, Ismail, Salameh, Abbas, Bazhair, Sulimany, (2023) investigated the role of Carbon disclosure on firm performance while considering the moderating role of management environmental training as it enhances the mechanisms of governance and monitoring practices. The data was collected from eleven European countries and listed in the Reuters Eikon database from 2016 to 2021. The Hausman test was used to test the usage of the panel method (panel data) with fixed and random effects. The results are the following: The management's environmental training played a moderating role in carbon emission disclosure, resulting in better firm performance. This means that management environmental training would play a vital role in addressing such disclosure issues and being prepared to formulate better measurements to tackle their effects. Our study is one of the few that analyzes the moderating role of management environmental training in carbon emission disclosure results in better firm performance.

The study under review relates to the current study in the sense that both are concerned on how green management affect sustainable performance. The study under review differ from the present study on geographical location research design, and population.

Oluwamehinola, and Onuoha (2023) examined the relationship between green management practices and the sustainable business performance of Small and Medium-sized Enterprises (SMEs) in Rivers State, Nigeria. The objectives were to investigate the connections between energy efficiency, waste management, economic performance, and environmental performance within the SME sector. The study

employed quantitative research design utilizing Pearson correlation analysis to assess the strength and significance of these relationships. The findings showed significant positive correlations between energy efficiency practices and both economic performance ($r = 0.712$) and environmental performance ($r = 0.731$). Similarly, significant positive correlations were found between waste management and reduction practices and economic performance ($r = 0.667$) as well as environmental performance ($r = 0.698$). The study concluded that green management practices is significance in shaping the sustainable business performance of SMEs in Rivers State.

The reviewed study is similar to the present study given that both of them investigated the relationship between green management practices and the sustainable business performance of Small and Medium-sized Enterprises. The two studies also differ in research design, geographical location, variables use, method of analysis and population of their studies.

Yudawisastra, Anwar, Sulaeman & Yudi (2023) examined the emergence of green management and sustainable performance that can affect sustainable business in Small and Medium Enterprises (SMEs) in the culinary sector in Indonesia. This research sample of 372 SMEs in the culinary sector in Indonesia. Data analysis uses factor analysis and partial least squares (PLS). The sampling technique used stratified based on UNWTO (2012) criteria. The results showed that stakeholder demand has a significant effect on the implementation of green management, resources and knowledge had significant effect on the implementation of green management. It shows that stakeholder demand, available resources, knowledge, and product uniqueness significantly affect green management. Product uniqueness has a significant effect on green management, and green management has significant effect on sustainability performance. The reviewed study is related to the present study as both investigated green management and sustainable performance of Small and Medium Enterprises (SMEs). The two studies also differ in geographical location while reviewed study was carried out in Indonesia, the current study is conducted in Anambra state, Nigeria. They also differ in the methodology.

Khare, Raghuwanshi, Vashisht, Verma, and Chauhan, (2023) examined how stakeholder demand, al resources, knowledge, environmental uncertainty management, and product uniqueness affect green marketing and India's small-scale industry's sustainability. Sustainability performance variables measure financial and non-financial performance in this study. The study quantitatively explained the phenomenon using numerical data and linear equation methods. Madhya Pradesh, with 7.54 percent of India's SSIs, hosted the study. Madhya Pradesh's forest-based industry and environmentally friendly development made these sites ideal. The study chose large cities since SSIs were more prevalent there in prior years. Bhopal, Jabalpur, and Gwalior contributed data. Finding showed that green management affects SSIs' sustainability performance due to stakeholder demand, knowledge, environmental uncertainty management, and product uniqueness, but not all resources. The study concluded that stakeholder demand, resources, expertise, managing environmental uncertainty, and product uniqueness affect green management and SSI's sustainability performance. Green management boosts SSI's sustainability.

The reviewed study is related to the present study as it focused on green management and sustainability performance. The two studies differ in geographical location given that the reviewed study was carried out in India while this current study is carried out in Anambra state, Nigeria. The studies also differ in the research design, area of study and population.

Gap in Literature

The summary of this work reviewed the related literature by different scholars on the topic being studied. The conceptual framework consists of the concept of sustainability performance of SMEs, concept of green management, the relationship between green management and sustainability performance. Green management positively influences financial and non-financial performance through reduction in production costs, minimized environmental damage, efficient energy consumption, minimized waste, adoption of recycling, raw material and water consumption saving, and potential open opportunities for green markets that have yet to be primarily recognized. Furthermore, enhancing the company's image and green technology, improving the strategy the for firms' competitiveness, and increasing social and health

benefits (Raharjo, 2019; Mehta & Chugan 2015) ultimately positively affects the sustainability performance of the SMEs.

The theoretical studies consist of determining the effect of **close circuit production**, renewable energy, environmental consciousness, green production and green employee engagement (explanatory variables of independent variable green management on performance (waste generation, emission generation, social effect, financial performance and supply chain sustainability) of small and medium enterprises in Anambra State using table water firms. The theoretical framework of this study consists of these theories- Institutional theory and Stakeholder Theory but was anchored on natural-resource-based vision theory. The theories were related to this study because with the knowledge derived from the theories, green management if well managed would be an effective tool for sustainability performance of SMEs through innovativeness of **close circuit production**, renewable energy, environmental consciousness, green production and green employee engagement. Thirty related empirical studies were also reviewed which in one way or the other relates to the study under review

METHODOLOGY

Research Design

The study adopted a descriptive survey design because the data were principally primary and the results from the analysis were generalized for the entire population of interest.

Model Specification

The Model for this study is modified using four predictors which have influence on performance sustainability. In line with prior studies of Marti, and Puertas, (2021) and Wendy (2019) that have analyzed the effect of green management on sustainable performance, the study adopted the models of Marti, and Puertas, (2021) $WAM = f(EP, WT, WR; WG)$ and Wendy (2019) $GP = f(PP, HH, EN)$. Then modified on mathematical notation as

$$PS (WG, EG, SE, FP) = f (CCP, RE, EC, GP) \dots\dots\dots (1)$$

When transformed in econometric notation, the model becomes;

$$PS = \beta_0 + WG (CCP) + EG (RE) + SE (EC) + FP (GP) + \mu \dots (2)$$

Where:

- WG = Waste generation,
- EG = Emission generation
- SE = Social Initiatives,
- FP = Financial performance

α = the intercept

CCP = Close circuit production

RE = Renewable energy

EC= Environmental consciousness,

GP= Green production

μ = Stochastic error term

The expected signs or apriori are as follows:

$$\alpha_1 > 0 \text{ to } \alpha_5 > 0$$

This implies that positive relationship is expected between the dependent and independent variables.

Data Analysis

Analysis of the Regression results

The regression results are presented in tables 4.3.1 and 4.3.2 below.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.697 ^a	.686	.725	4.289	1.840

a. Predictors: (Constant), CCP, RE, EC, GP

b. Dependent Variable: PERFSUS

Source: SPSS Version 23.0

Table 1 recorded R square value of 0.686 indicating that **close circuit production**, renewable energy, environmental consciousness and green production explained 68.6% of the variations in performance sustainability of table water manufacturing firms in Anambra State, Nigeria. This was confirmed with the adjusted R² of 73%. The Durbin-Watson statistics value of 1.840 in table 1 shows that the variables in the model are not auto-correlated and are therefore, reliable for predications.

Table .2 ANOVA

The F-ratio in the ANOVA table.2 test whether the overall regression model is a good fit for the data.

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	253.815	3	50.763	2.759	.018 ^a
Residual	6291.848	197	18.397		
Total	6545.664	200			

a. Predictors: (Constant), CCP, RE, EC, GP

b. Dependent Variable: PERFSUS

Source: SPSS Version 23.0

The f-statistics value of 2.759 with a probability value of 0.018 in table .2 indicates that the independent variable (**close circuit production**, renewable energy, environmental consciousness and green production) have significant collective effect on the dependent variable (waste generation, emission generation, social initiatives and financial performance) performance sustainability. This result indicates that **close circuit production**, renewable energy, environmental consciousness and green production can collectively account for the variations in performance sustainability of table water manufacturing firms in Anambra State, Nigeria and therefore has goodness of fit for the data.

Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	10.85	17.33	17.16	.743	282
Residual	-10.867	8.090	.004	5.365	282
Std. Predicted Value	-3.546	3.326	.002	3.000	282
Std. Residual	-2.767	3.227	.000	.865	282

a. Dependent Variable: Performance Sustainability

The descriptive statistics in table 3 is used to describe the basic features of the data in the study. It provides simple summaries about the sample and the measures. Together with simple analysis, they form the basis of virtually every quantitative analysis of data. From table .3, the mean and standard deviation values of employee achievement during the period under review are 17.16 and 0.743 respectively. The statistics equally reveals that maximum number for performance sustainability was 19.24 while the minimum was 11.90. However, the statistics showed that some of the sampled firms suffered negative minimum returns on their investment during the period of study.

Test of Hypotheses

In this section, the four hypotheses earlier formulated in chapter one were tested using the t value and probability value in the regression coefficients outcome. The table is presented below:

Model	Unstandardized Coefficients	Standardized Coefficients		
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	Beta	Std. Error	Beta	t	sig
1 (Constant)	22.006	2.618		8.405	.000
Close circuit production (CCP)	.143	.056	.135	2.533	.012
Renewable Energy (RE)	.144	.057	.137	2.509	.013
Environmental Consciousness (EC)	.069	.059	.063	2.175	.007
Green Production (GP)	.067	.072	.050	4.928	.000

- a. **Dependent Variable: Performance sustainability**
- b. **Source: SPSS Version 23.0**

The unstandardized coefficients which indicate the variance of the dependent variables with an independent variable when all other independent variables are held constant are indicated below.

Emperf = 22.006 + 0.143 **close circuit production**+ 0.144 renewable energy + 0.069 environmental consciousness+ 0.067 green production

The coefficient for the intercept is 22.006 implies that if the factors (**close circuit production**, renewable energy, environmental consciousness and green production) are equated to zero then the performance sustainability will improve by a margin of 22.006. The beta coefficient of **close circuit production** is 0.143 implying that a unit increase in **close circuit production** will lead to an increase in performance sustainability by a margin of 0.143.

Similarly, the beta coefficient of renewable energy is 0.144 meaning that a unit increases in renewable energy leads to an increase in performance sustainability by a margin of 0.144.

Furthermore, the beta coefficient of environmental consciousness is 0.069 meaning that a unit increase in environmental consciousness, leads to an increase in performance sustainability by a margin of 0.069.

Furthermore beta coefficient of green production is 0.067 meaning that a unit increase in green production leads to an increase in performance sustainability by a margin of 0.067.

CONCLUSION

The study examines green management and performance sustainability of SMEs in Anambra State. The data generated were analyzed using multiple regression and the result shows that the explanatory variables of green management (**close circuit production**; renewable energy, environmental consciousness and green production) have significant positive effect on performance sustainability (waste generation, emission generation, social initiatives and financial performance) of selected table water manufacturing firms in Anambra State Nigeria. This means that firms that reduce the environmental impact of its business operations will be more productive than others. This also implies that green business initiatives significantly and positively affect performance sustainability. Finally, the implementation of green business practices, principles and processes will lead to positive outcome that will be visibly manifested in the organization and the environment. The study therefore concluded that green management has significant positive effect on Small and Medium Enterprises in Anambra state Nigeria

RECOMMENDATIONS

Amongst the recommendations is that SMEs should receive training and resources to enhance their **close circuit production**, waste management and reduction practices. Workshops, seminars, and online resources can educate business owners and employees about effective waste segregation, recycling, and responsible disposal methods. Access to waste management infrastructure and recycling facilities should also be improved. SMEs should regularly monitor their energy consumption, emission generation, waste generation, and environmental impact. Benchmarking against industry standards and peers can provide

insights into areas for improvement and help set realistic targets for enhanced economic and environmental performance. The study recommended that SMEs should continually review their green management practices by being environmentally conscious, adapting to changing technologies, regulations, and market trends. A commitment to ongoing improvement ensures that the business remains resilient, competitive, and aligned with evolving sustainability expectations. Furthermore, government should marshal out relevant tax wavers, incentives, subsidies, or grant for manufacturing firms that are going green or already practicing green business initiative. This will be a great way of encouraging green business practice in developing economy like Nigeria.

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