Adoption of Green Business Practices among Small and Medium-Scale Enterprises (SMEs) for Sustainable Development in Anambra State, Nigeria

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Abstract

This study examined the adoption of green business practices among Small and Medium-Scale Enterprises (SMEs) for the sustainable development of Anambra State, Nigeria. Two research questions and two null hypotheses guided the study, utilizing a descriptive survey research design. The population of the study comprised 2093 registered small and medium-scale enterprises (SMEs) in Anambra State, Nigeria. The sample size of 325 managers of SMEs was selected using Krejcie and Morgan (1970) Table for sample size determination. A-26 item structured questionnaire titled 'Adoption of Green Business Practices among SMEs for Sustainable Development (AGBPSMEs-SD) was used for data collection. Face validity of the instrument was ascertained using opinions of three experts in Entrepreneurship Education and one expert from Measurement and Evaluation, while pilot testing of reliability of the instrument was conducted and analyzed using Cronbach alpha formula which yielded correlation coefficients of 0.81 and 0.89 for clusters B1 and B2 with overall reliability index of 0.85 obtained. Mean and standard deviation were used to answer the two research questions, while an independent t-test was used to test the null hypotheses at 0.05 level of significance. Findings revealed that managers of SMEs in Anambra State do not adopt the majority of green business practices examined for the sustainable development of the state. Managers of SMEs agree that the barriers examined hinder their adoption of green business practices. It was also revealed that the size of the business was a significant factor in their adoption of green business practices, while it did not influence their opinion on barriers hindering their adoption of green practices. Based on the findings of the study, the researcher concluded that SMEs in Anambra State are facing significant barriers that prevent them from fully adopting green business practices, thereby hindering their contribution to sustainable development within the State, region, and Nigeria in general. It was recommendedamong others, that Anambra State government should implement targeted educational programmes and workshops to increase SME managers' understanding of the benefits of green business practices and their role in sustainable development. This should include practical examples and case studies relevant to the local context.

Key Words: Adoption, Green Business Practices, SMEs, Sustainable Development

Introduction

Sustainability has emerged as a critical component of modern business operations, with customers, investors, and governments preferring green practices. This transition benefits the environment and businesses by lowering costs, increasing brand image, and opening up new markets. Public awareness of environmental issues such as pollution, flooding, and global warming is driving the global trend toward green business (Almulhim, 2022). The term "green business" originally appeared in the late twentieth century, but it took more than 20 years for businesses to implement these practices (Zhang &Berhe, 2022). Green businesses seek to reduce the adverse effects of business operations on the environment by using green practices that are advantageous to the economy and the environment. The International Labour Organization (2023) stated that green businesses contribute to preserving and minimizing renewable resources and place a high priority on social conscience. The International Labour Organization strike a balance between business and environmental health by delivering eco-friendly products that lower CO2 emissions and fight climate change. Vizologi (2024) opined that a fundamental component of green business theory is the triple bottom line concept, which takes into account - profit, people, and the environment.

Green business practices include energy efficiency; waste minimization, sustainable sourcing, and the creation of environmentally friendly products. The European Union (2021) stated that green businesses prioritize recycling, cutting energy use, and purchasing sustainable products. Khurana, Dutta and Ghura (2022) opined that green business practices in small and medium enterprises (SMEs) cover energy efficiency improvements, waste reduction, sustainable sourcing, and adopting renewable energy sources. In the same vein, Nkwinika and Akinola (2023) pointed out that green practices mitigate environmental harm and position SMEs as responsible corporate entities, enhancing their brand reputation and customer loyalty. Furthermore, they foster corporate social responsibility, ensure that stakeholders are treated fairly, and reduce environmental harm, and promote ethical behavior. The green business practices are linked to the Diffusion of Innovation (DOI) Theory, developed by Everett Rogers in 1962. The theory explains how innovations spread within a society or organization over time, gaining acceptance and adoption among individuals or businesses (Rogers, 1962). The Diffusion of Innovation Theory (DOI) is a framework that helps businesses adopt green practices by identifying stages, barriers, and strategies. It can be used to accelerate the diffusion of sustainability innovations in developing countries like Nigeria, thereby driving long-term environmental benefits.

Small and Medium Enterprises (SMEs) are businesses that maintain revenues, assets, or a number of employees below a certain threshold. The definition of SMEs varies from country to country. The European Union (EU) (2018) categorized SMEs based on financial thresholds and employee count, determining net annual turnover, balance sheet total, and total employees. The definitions of SMEs depend mostly on the Assets Base and staff strength of the company. A medium enterprise with 50 to 199 employees and an asset base ranging from N50 million to N500 million.Nigeria's SMEs are indispensable for economic expansion, poverty reduction, and employment creation. SMEs in Nigeria account for 90% of the manufacturing sector and 50% of industrial employment, with 17.4 million enterprises (First Bank of Nigeria, 2025). They account for more than half of all employment and encourage social inclusion and entrepreneurship, particularly among youths and under-represented groups. Nigeria, with a population of about 200 million (National Bureau of Statistics (NBS, 2024), offers a large entrepreneurial skill pool that SMEs may use to boost economic development. Oluremi and Maku (2025) acknowledged that SMEs provide important contributions to job creation and GDP growth, lowering poverty and promoting economic progress in Nigeria.

SMEs' positive impacts on the nation's sustainable development cannot be overemphasized. Sustainable development is a holistic approach that seeks to balance economic growth, social inclusion, and environmental protection to ensure the well-being of current and future generations. It is the development that meets the needs of the present without compromising the ability of future generations to meet their own need (International Institute for Sustainable Development (IISD, 2025). In most cases, the operations of SMEs lead to environmental issues such as pollution, resource depletion, and waste generation, therefore undermining the achievement of Millennium Development Goal 7 (MDG) (Durrani, Raziq, Mohmood, and Khan 2024). Similarly, regulatory constraints and consumer demand for sustainable goods and services have prompted SMEs worldwide to start adopting green practices (Vizologi, 2024). In Nigeria, Enuoh, Kekong, Etim and Effiong (2020) observed that SMEs are starting to concentrate on green practices to protect environment, although the adoption was still low. In the same vein, the Nigerian Climate Innovation Center (2024) agreed that the adoption of green business practices in the country is gradually gaining attention, particularly among SMEs. However, Durrani et al. (2024) and Jabbour**,** Ndubisi**,** and Seles (2020) disputed these claims by reporting that SMEs have not received significant attention in global discussions about green practices. This is even though with over 95% of businesses being SMEs globally, their collective impact on the environment is significant. Anesa and Bressan (2024) observed that although the operations of large-scale businesses impact the environment more, it is also important to note of the pivotal impact of SMEs as well. Aboelmaged and Hashe (2019) argued that SMEs can foster green innovation by decreasing environmental impact through their commercial activities. Aboelmaged and Hashe posited that SMEs' cumulative impact was greater than that of larger firms. Therefore, reducing SMEs' negative environmental consequences has both internal and external benefits, including increased employee ethical conduct.

Nigeria's Prime Initiative for Green Development educates stakeholders on creating a green environment for green business activities. Similarly, the Nigerian government has also established a comprehensive regulatory framework to promote green business practices, aiming to balance economic growth with environmental sustainability (Enuoh et al., 2020). This framework focuses on environmentally responsible operations and includes the National Environmental Standards and Regulations Enforcement Agency (NESREA, Act, 2007, no. 25), the Nigerian Sustainable Finance Principles (NSFP). Others are the National Council on Climate Change, the Upstream Petroleum Decarbonisation Template (UPDT) (Eboh, 2024), and the Food and Beverage Recycling Alliance (FBRA), which promotes responsible waste management practices, aligning with NESREA guidelines, and aims to foster a sustainable business environment (FBRA, 2023). Despite these frameworks, Toriola-Coker et al. (2021) observed that Nigeria's business climate still reflects unsustainable practices.

. Consequently, the adoption of green business practices by SMEs in Nigeria has been very slow. This could be due to challenges facing SMEs in the country. As pointed out by Adanma and Ogunbiyi (2024), and Adejugbe (2024), Nigerian SMEs face several challenges in integrating green practices into their business, including limited financial resources, lack of expertise, regulatory complexity, and resistance from employees and management. Other challenges include the initial costs of adopting renewable energy sources, upgrading to energy-efficient equipment, and implementing waste reduction processes. Additionally, Toromade and Chiekezie (2024) reported that SMEs in Nigeria often lack dedicated sustainability personnel, making the adoption process more complicated. Regulatory compliance can be time-consuming and costly, and resistance from employees may stem from fear of the unknown, perceived

workload, or skepticism about the tangible benefits of sustainability initiatives in Nigeria especially, Anambra State.

Anambra State in Nigeria's South-East Zone is a key hub for SMEs, which promote economic growth, innovation, and job creation. To enhance environmental sustainability, the Anambra State government has demonstrated a commitment to fostering a conducive environment for SMEs to thrive and adopt green practices (Okorie, 2023). Although, the adoption of green business practices among SMEs in Anambra State appears to be gaining momentum, challenges such as negative attitudes, limited capital access, inconsistent environmental regulations, and reluctance to change business models may hinder its widespread adoption. Okorie (2023)'s report that research on sachet water manufacturers in Anambra State revealed that SMEs managers often have a negative perception of environmental sustainability practices, which hinders the adoption of green practices, as managerial commitment is crucial for implementing sustainable initiatives. Similarly, Fahad et al. (2022) found that there was a lack of research on SMEs' green business innovation barriers and their solutions in emerging economies.

Managers of small-scale enterprises (SSEs) and medium-scale enterprises (MSEs) may adopt green business practices differently, most likely due to a variety of variables. MSEs may have more financial resources, devoted workers, and managerial knowledge, so they may invest more in sustainable technology and infrastructure. They may also have access to environmental training and information, which allows them to make more educated decisions. In addition, MSEs may receive more regulatory monitoring, whereas SSEs may operate beneath the radar. Furthermore, MSEs may encounter more demand for sustainable operations, causing them to embrace green policies more proactively, but SSEs may emphasize immediate survival over environmental concerns. Based on this background, this study examined the adoption of green business practices among SMEs for sustainable development in Anambra State, Nigeria.

Statement of the Problem

Many SMEs in Nigeria, especially those in Anambra State, appear to be sluggish in embracing green business practices despite the potential advantages of doing so. This could be attributed to many problems, including a lack of awareness, financial limits, insufficient enforcement of regulations, and technology limitations. Furthermore, SMEs frequently encounter particular difficulties that impede their shift to green business models, whereas large-scale businesses have embraced sustainability more and more as a result of consumer demand and governmental pressures. A thriving SME sector encompassing businesses like manufacturing, agriculture, trade, and services is found in Anambra State, a major commercial hub in South East Nigeria. Concerns over the ecological effects of commercial operations in the state are raised by the persistence of environmental problems such as pollution, deforestation, and improper waste management. As SMEs play a significant role in the state's sustainable development, it is critical to examine SMEs' adoption of green business practices for the sustainable development of Anambra State, Nigeria. Gaining insight into these dynamics will help SMEs make the shift to green business models while retaining profitability and competitiveness.

Purpose of the Study

The main purpose of this study was to examine the adoption of green business practices among SMEs for the sustainable development of Anambra State, Nigeria. Specifically, the study;

1. Examined the green business practices adopted among SMEs for the sustainable development of Anambra State, Nigeria.

2. Identify barriers to the adoption of green business practices among SMEs for sustainable development of Anambra State, Nigeria.

Research Question

The following research questions guided this study;

1. What are the green business practices adopted among (SMEs) for sustainable development of Anambra State, Nigeria?
2. What are the barriers to the adoption of green business practices among SMEs for sustainable development of Anambra State, Nigeria?

Null Hypotheses

The following null hypotheses were tested at 0.05 level of significance;

1. Managers of small-scale enterprises (SSEs) and medium-scale enterprises (MSEs) will not differ significantly in their mean ratings on the adoption of green business practices for sustainable development of Anambra State, Nigeria.
2. There is no significant difference in the mean ratings of managers of small-scale enterprises (SSEs) and those of medium-scale enterprises (MSEs) on barriers to the adoption of green business practices for sustainable development of Anambra State, Nigeria.

Methods

This study adopted descriptive survey research design. It was carried out in Anambra State Nigeria with a population of 2093 registered small and medium scale enterprises (SMEs) in Anambra State, Nigeria. The sample size of 325 managers of the registered SMEs was selected using Krejcie and Morgan (1970) Table for sample size determination. The instrument for data collection is a structured questionnaire titled 'Adoption of Green Business Practices among SMEs for Sustainable Development (AGBPSMEs-SD)'. The questionnaire consisted of two sections; A and B. Section A contained one item on demographic information of the respondents such as size of business while Section B contained 26 items in respect to the two research questions and structured on a four point rating scale of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. Face validity of the instrument was determined using the opinions of two experts from Entrepreneurship Education and one expert from Measurement and Evaluation. The reliability of the instrument was established using pilot-test and data collected were calculated with Cronbach Alpha formula and correlation coefficient values of 0.81 and 0.89 for clusters B1 and B2 with overall reliability index of 0.85 obtained. The researcher with the help of three research assistants administered the questionnaire to the respondents in their offices. Out of 325 copies of questionnaire distributed, 317 was correctly filled and returned giving 96 percent return rate. Mean and standard deviation were used to answer the research questions and determine the homogeneity of the respondents' opinions while t-test was used to test the null hypothesis at 0.05 level of significance. A hypothesis was rejected where the p-value is less than the alpha value but accepted where the p-value is greater or equal to the alpha level. The analysis was carried out using SPSS 25.0.

Results

The analysis of the research questions and null hypotheses are presented in table 1 to 4 below.

Table 1: Respondents' Mean Ratings and Standard Deviation on Green Business Practices Adopted Among (SMEs) for Sustainable Development

S/N	Adoption of Green Business Practices My organization use:	$\overline{X}$	SD	Remarks
1	recycled paper and cardboard for printing materials	2.15	0.58	Disagree
2	recycled paper for packaging materials.	2.29	0.89	Disagree
3	energy-efficient lighting bob to improve comfort and productivity	2.60	0.71	Agree
4	energy-efficient equipment to improve comfort and productivity	2.22	0.50	Disagree
5	recycled paper and cardboard for marketing materials	1.67	0.82	Disagree
6	ethical labour practices and environmental sustainability.	1.49	0.79	Strongly Disagree
7	solar, wind or hydro energy to generate electricity	2.65	0.63	Agree
8	suppliers who prioritize environmental responsibility.	2.25	0.76	Disagree
9	water conservation measure such as water-saving appliances	2.40	0.82	Disagree
10	implement water leakage control	3.61	0.67	Strongly Agree
11	has introduced carpooling to help reduce carbon emissions, traffic congestion, and fuel costs	1.43	0.86	Strongly Disagree
12	has introduced cycling incentives	2.30	0.74	Disagree
13	has introduced remote work options	2.41	0.80	Disagree
14	has invested in e-documents to minimize paper use	3.57	0.79	Strongly Agree
15	provides training and awareness programmes for employees on environmental sustainability	2.49	0.71	Disagree
16	cloud storage system to minimize paper use.	2.44	0.87	Disagree
	Cluster Mean	**2.45**		**Disagree**

Table 1 shows that out of 16 items listed on adoption of green business practices for sustainable development of Anambra State, items 10 and 14 have mean scores of 3.57 and 3.61 which mean that respondents strongly agree that they are adopted. Respondents agree that they adopt green business practices listed in item 3 and 7 with mean scores of 2.60 and 2.65. Ten items with mean scores of 1.67 to 2.49 indicate that respondents disagree that they adopt them while the remaining two items with mean scores of 1.43 to 1.49 means that the respondents strongly disagree that they adopt them. The cluster mean score of 2.45 indicates that managers of SMEs disagree that they adopt majority of green business practices for sustainable development of Anambra State. The standard deviation for all the items is within the same range showing that the respondents are not wide apart in their mean ratings.

Table 2: Respondents' Mean Ratings and Standard Deviation on barriers to the Adoption of green business practices Among (SMEs) for Sustainable Development

S/N	Barriers to the Adoption of Green Business Practices	$\overline{X}$	SD	Remarks
17	Limited knowledge of green business practices	3.20	0.73	Agree
18	High cost of eco-friendly materials	3.27	0.84	Agree

19	Lack of government support and incentives	3.60	0.80	Strongly Agree
20	Limited knowledge of financial opportunities like tax breaks and subsidies	3.02	0.76	Agree
21	Resistance to change among employees	3.07	0.79	Agree
22	Unavailability of sustainable suppliers	2.49	0.68	Disagree
23	Lack of capital as the central barrier to implementing green business practice	3.85	0.82	Strongly Agree
24	Lacking necessary skills and expertise among employees	3.25	0.85	Agree
25	Lack of support from external stakeholders such as business partners throughout the supply	3.40	0.72	Agree
26	Lack of motivation, and aiming for better public image	2.41	0.87	Disagree
	Cluster Mean	**3.16**		**Agree**

Table two shows that out of 10 items listed on barriers to adoption of green business practices by SMEs, items 19 and 23 has mean scores of 3.60 and 3.85 which indicates that respondents strongly agree that they are barriers to their adoption of green business practices. Six items with mean scores ranging from 3.02 to 3.40 means that respondents agree they are barriers while the remaining two items with mean scores of 2.41 and 2.49 indicates that the respondents disagree that they are barriers to their adoption of green business practices. The cluster mean scores of 3.16 shows that SMEs managers agree that majority of barriers listed affect their adoption of green business practices for sustainable development of Anambra State, Nigeria. The standard deviation for all the items is within the same range showing that the respondents are not wide apart in their mean ratings.

Table 3:Summary of t-test analysis of significant difference between Managers of SSEs and those of MSEs on the adoption ofgreen business practices for sustainable development

Size of Business	N	$\overline{X}$	SD	df	T-value	P-value	Decision
SSEs Managers	168	2.47	0.78				
				315	1.00	0.01	Significant
MESs Managers	149	2.43	0.82				

Table 3 shows that the t-value of 1.00 with 315 degree of freedom has p-value of 0.01 which is less than the alpha level of 0.05 (P-value = 0.01 < 0.05). This means that there is a significant difference in the mean ratings of managers of SSEs and those of MSEs on the adoption of green business practices for sustainable development of Anambra State, Nigeria. Therefore, the null hypothesis was rejected.

Table 4: Summary of t-test analysis of significant difference between managers of SSEs and those of MSEs on barriers to the adoption of green business practices for sustainable development of Anambra State, Nigeria

Size of Business	N	$\overline{X}$	SD	df	T-value	P-value	Decision
SSEs Managers	168	3.23	0.84				
				315	2.19	1.41	Not Significant
MESs Managers	149	3.09	0.79				

Table 4 shows that the t-value of 2.19 with 315 degree of freedom has p-value of 1.41 which is greater than the alpha level of 0.05 (P-value = 1.41 > 0.05). This means that there is no significant difference in the mean ratings of managers of SSEs and those of MSEs on barriers to the adoption of green business practices for sustainable development of Anambra State, Nigeria. Therefore, the null hypothesis was accepted.

Discussion of Findings

Findings of the study show that managers of SMEs disagree that they adopt majority of green business practices listed for sustainable development of Anambra State. The findings specifically found that SMEs in Anambra State are not prioritizing sustainable paper usage**,** energy-efficient equipment, Ethical labour practices and environmental sustainability, and water conservation measures among others. This could be attributed to cost concerns or lack of awareness of the benefits of adopting these green practices among SMEs in the Anambra State. In agreement, Okorie (2023) reported that SMEs managers in Anambra state often have a negative perception of environmental sustainability practices, which hinders the adoption of green practices. Similarly, Toromade and Chiekezie (2024) found that SMEs in Nigeria often lack dedicated sustainability personnel, making the adoption process more complicated. Toriola-Coker et al. (2021) earlier observed that Nigeria's business climate still reflects unsustainable practices. The finding of the study also revealed that there is a significant difference in the mean ratings of managers of SSEs and those of MSEs on the adoption of green business practices for sustainable development of Anambra State, Nigeria. This finding aligns with that of Purwandani and Michaud (2021) which revealed that small-scale enterprises and medium-scale enterprises differ in their level of adoption of green business practices. This difference could be attributed to differences in financial resources, skilled workers, managerial knowledge, as well as sustainable technology and infrastructure. In addition, MSEs may receive more regulatory monitoring, when compared to SSEs who may be operating beneath the radar.

Findings of the study revealed that managers agree that majority of barriers listed affect their adoption of green business practices for sustainable development of Anambra State, Nigeria. The findings of the study concur with the report of Organisation for Economic Co-Operation and Development (2018) that SMEs in Nigeria face various barriers in incorporating green practices into their operations, often unaware of financial opportunities like tax breaks and subsidies. Wu (2017) observed that SMEs lack necessary skills and expertise to embrace new opportunities for environmental improvement. In addition, Gupta and Barua (2018) found that the high cost of investing in green innovations often hampers SMEs from making such shifts. This financial challenge of implementing green innovation is understandable, given the uncertainty on payback periods, and has been noted in prior studies (Ormazabal et al., 2018). Kumar et al. (2019) noted the lack of support from external stakeholders such as governments, business partners throughout the supply chain). Findings of the study revealed that there is no significant difference in the mean ratings of managers of SSEs and those of MSEs on barriers to the adoption of green business practices for sustainable development of Anambra State, Nigeria. It could be that Both SSEs and MSEs often face financial constraints that hinder their ability to invest in green technologies and sustainable practices. The costs associated with implementing environmentally friendly measures can be prohibitive, leading to similar perceptions of financial barriers among managers of both Small Scale Enterprises (SSEs)and Medium Scale Enterprises (MSEs).

Conclusion

Based on the findings of this study, the researcher concludes that the green businesses are not adequately adopted in the operations of SMEs in Anambra. The researcher also concludes that SMEs in Anambra State are facing significant barriers that prevent them from fully adopting green business practices, thereby hindering their contribution to sustainable development within the State, region and Nigeria in general.

Recommendations

Based on the findings of the study, the researcher makes the following recommendations;

1. Anambra State government should implement targeted educational programmes and workshops to increase SME managers' understanding of the benefits of green business practices and their role in sustainable development. This should include practical examples and case studies relevant to the local context.
2. Anambra State government should establish financial incentives, such as grants, subsidies, or tax breaks, to encourage SMEs to invest in green technologies and practices. This will help in alleviating the financial barriers that often hinder adoption. Also provide access to low interest loans for green initiatives.
3. Anambra State government should simplify and streamline regulatory processes related to environmental compliance to reduce the administrative burden on SMEs. Provide clear guidelines and support to help SMEs navigate these regulations.
4. Anambra State government should facilitate collaboration and networking among SMEs, government agencies, and research institutions to share best practices, knowledge, and resources related to green business practices. This can be achieved through industry associations, forums, and online platforms.
5. Managers of SMEs in Anambra State should invest in the development of infrastructure that supports green business practices, such as waste management facilities, renewable energy sources, and recycling centers. Improve access to relevant resources, including information on green technologies and sustainable materials.

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