African Journal of Social and Behavioural Sciences (AJSBS)
Volume 14, Number 2 (2024) ISSN: 2141-209X

SOLAR POWER AND ECO-FRIENDLY CONFERENCES AS CORRELATES OF AIR AND LAND POLLUTION IN LISTED BEVERAGE FIRMS IN IMO AND ABIA STATES

Kenneth Chukwudi Njoku[1]*, Remigius Chinedu Onuegbu[2], & Chukwunenye Jude Ugo[3]

[1]Department of Business Administration, University of Agriculture and Environmental Sciences (UAES), Umuagwo, Imo State, Nigeria

[2,3]Department of Business Administration and Management, Imo State Polytechnic, Omuma, Imo State, Nigeria

*kenneth.njoku@uaes.edu.ng, kennethphd78@gmail.com

ABSTRACT: Huge research gaps exist as it relates to the use of solar power and eco-friendly business conferences in businesses in Imo and Abia States. This research problem necessitated this present study. The objectives of the study were to examine the relationship between use of solar panels and reduced air pollution as well as assess the extent to which eco-friendly business conferences influence the reduction of air pollution and land pollution in the listed beverage firms. The researchers employed the survey research design in the research. A structured questionnaire was the major instrument for data collection. Cronbach Alpha statistic was used to obtain a reliability ratio of 0.85. Data analysis was committed to descriptive statistics. Correlation analysis was used to test hypotheses. The study found positive and significant relationships between the use of solar panels and reduced air pollution; the use of eco-friendly business conferences and reduction of air pollution; and the use of eco-friendly business conferences and reduced land pollution in the listed firms. These findings constitute a major contribution to empirical literature on the use of solar power and eco-friendly conferences in listed beverage firms. It was concluded that solar power and eco-friendly business conferences are correlates of air and land pollution in listed beverage firms in Imo and Abia States. The study recommends, among others, that management should make more efforts to expand the use of solar energy so as to reduce air pollution for business premises preservation.

Keywords: Solar Power, Eco-Friendly Conferences, Air Pollution, Land Pollution.

INTRODUCTION

Solar energy and eco-friendly business conferences are generally believed to be strategic testimonies over the employment of creativity and technological solutions in the curbing of adverse environmental effects with a view to maximizing sustainability in businesses and in the environment. The use of solar energy and eco-friendly conferences in businesses fall squarely in the area of green energy of which Roue (2023) in Njoku, Udo-Orji and Adioha (2024) describe as a tool for positioning the globe unto sustainability irrespective of its cost. It further involves the creation of new technologies as well as processes that are not environmentally harmful and sustainable (Institute of Innovation & Knowledge Exchange, 2023) and it includes anything that ranges from the development of new renewable energy

sources to the creation of more efficient way of materials recycling (Njoku et al, 2024). The researchers therefore state at this juncture that the solar energy and eco-friendly conferences which this study handles are core indices of green innovation whose usage can be geared towards the preservation of business premises.

Adedeji, Deveci, Saiman and Abiola (2023) are of the view that the most abundant form of energy in planet Earth is solar energy. Also, Diemuodeke, Mulugetta, Njoku, Briggs and Ojapah (2021) reveal that there is a growing interest in the development and deployment of renewable energy technologies as a result of the rapidly declining cost of solar power, breakthrough in battery technologies and energy security and the intensified climate change challenges.

Eco-friendly business is also an integral part of green innovation which this study covers. EcoSmart (2023) maintains that being eco-friendly implies being earth-friendly. Eco-friendly products are meant to do no harm to the environment. Events (2023) maintains that eco-friendly conferences reduce costs linked to events and enrich the experiences of the attendees. Such conferences target strategies to minimize carbon footprint, reduce waste, and conserve energy. In fact, Stewart (2023) in Njoku et al (2024) reveal that the strengths of sustainable corporate events planning include a reduction in impacts on the environment, bringing down costs significantly, beefing of reputes and enhanced partnerships among stakeholders in the industry. The ways to host sustainable business conferences are by creating eco-friendly event policy and budget; organizing virtual conferences; opting for a hybrid conference model; choosing a green and accessible event venue; working with sustainable event vendors; offering eco-friendly event transportation service; combining accommodations with the venue; using digital event invites; designing an App for corporate events; focusing on recycling practices, and by donating leftover food from the corporate events among others.

It may be possible that solar energy and eco-friendly conferences may affect business premises preservation in listed beverage firms. By preservation of business premises, the researchers mean the use of solar energy and eco-friendly conferences to reduce air pollution and land pollution in the premises of listed beverage firms in Imo and Abia States. Air is polluted when it is contaminated and indeed no longer safe for humans. Mackenzie and Turrentine (2023) maintain that air pollution occurs when pollutants are released into the air and the pollutants are unarguably harmful to the health of human beings and indeed the earth as a planet. They maintain that not less than seven million people die each year as a consequence of air pollution. Air pollution remains a function of driving a car on gasoline, using oil to heat a home and using gas to run a power plant hence fossil fuel is what is actually burned thereby releasing very lethal chemicals and gases into the air. The European Environment Agency (2024) reveals that air pollution causes disease conditions. Morbidity is not unconnected to exposure to air pollution and it can impact the economy because it is a cause of increases in the costs of healthcare while causing reduced life expectancy and losses in working days. It is a destroyer of vegetation, ecosystems, water, quality of soil and local ecosystems. Medline (2024) reveals that air pollution is when solid particles mix with gases in the air. Emissions from cars, chemicals from factories and dust among others are dangerous. Air pollutants are poisonous at times hence inhaling them has the capacity to increase the tendency of developing serious health challenges. Lelieveld, Haines, Burnett, Tonne, Klingmulter, Munzel and Pozzer (2023) reveal that globally, air pollution causes deaths estimated at 8.34 million per year. They believe

that moving away from fossil fuels to clean, renewable sources of energy in tens of years to come will help to avoid many deaths from the pollution of the air.

In fact, reduction in land pollution is another index of business premises preservation which this study assesses. Land pollution is the disposition of solid or liquid waste materials on the soil of business premises thereby causing unsightly conditions and nuisances. Texas Disposal Systems (2024) refers to land pollution as the deterioration of the surfaces of the earth especially at both the ground level. It is a consequence of the accumulation of solid and liquid waste materials which make the soil contaminated. VFC (2023) maintains that land pollution is the release of materials which have harmful effects on the environment onto the land. Its sources include industrial, agricultural and individual sources. Indeed, land pollution is often the beginning point of air pollution and water pollution. Bradford (2023) is of the view that pollution is the process of making land, water, air or other parts of the environment dirty and not safe or suitable to use. Land can become polluted by household garbage and by industrial waste. Nathanson (2024) opines that land pollution is a major type of pollution.

It is based on the forgoing that this research which centres on solar energy and eco-friendly conferences as correlates of business premises preservation in listed beverage firms aims at investigating how the use of solar panels and eco-friendly business conferences may influence and indeed aid reduction of both air pollution and land pollution. The study is an avenue to bridge existing research gaps and contribute to the existing body of knowledge in the area of solar energy and eco-friendly conferences.

Statement of the Problem

It is ideal for organizations to embrace green innovation for reasons that hover around maintaining sustainability in corporate operations. There are a number of enterprises that have however been observed by the researchers to have taken the use of solar panels and eco-friendly business conferences for granted in the management of their entities. This attitude has been observed to have negatively affected the preservation of business premises as both air pollution and land pollution have been on the increase in such hallowed premises. No wonder Njoku et al (2024) posit that many businesses seem to have insisted on using environmentally unfriendly energy sources in their day-to-day operations thereby causing air and noise pollutions while unnecessarily raising the cost of doing business. Many listed firms in Imo and Abia States have been observed to have relegated the relevance of solar energy and eco-friendly conferences to the background thereby exposing their business premises to avoidable air and land pollutions.

It is however important to articulate the research gap which this study addresses. Indeed, empirical studies accessed by the researchers in the area of solar energy and eco-friendly conferences did not show how the use of solar panels affected reduced air pollution in listed beverage firms in Imo and Abia States. The studies did not show how eco-friendly business conferences influenced the reduction of air pollution and the reduction of land pollution in the listed beverage enterprises in Imo and Abia States thereby exposing wide research gaps. It is based on these research gaps that this present study was conducted to bridge the gaps and contribute to knowledge.

Objectives of the Study

The major objective of this study is to investigate solar energy and eco-friendly conferences as correlates of air and land pollution in listed beverage firms in Imo and Abia States. The specific objectives include to:

i) assess the relationship between the use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States.
ii) ascertain the extent to which eco-friendly business conferences correlate with reduced air pollution in listed beverage firms in Imo and Abia States.
iii) investigate the level of correlation between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States.

Research Questions

Based on the objectives of the study, the following research questions were developed to guide the study:

1. What is the relationship between use of solar panels and use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States?
2. To what extent do eco-friendly business conferences correlate with reduced air pollution in listed beverage firms in Imo and Abia States?
3. What is the level of correlation between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States?

Hypotheses

In agreement with the research questions, the researcher developed the following null hypotheses:

Ho_1: There is no significant relationship between the use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States.

Ho_2: There is no significant extent to which eco-friendly business conferences correlate with reduced air pollution in listed beverage firms in Imo and Abia States.

Ho_3: There is no significant level of correlation between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States.

Scope of the Study

The geographical scope of the study is Owerri Municipal, Imo State and Aba, Abia State. For the content scope, the study concentrates on the relationship between the use of solar panels and reduced air pollution; eco-friendly business conferences and reduced air pollution; eco-friendly business conferences and reduced land pollution. The unit scope comprises of the Managers and other senior staff in the study firms.

REVIEW OF RELATED LITERATURE

This section provides a comprehensive overview of relevant concepts and theories with critical analysis and synthesis of existing research closely related to the variables under study. It comprises of conceptual, theoretical and empirical reviews as well as discussion of findings which not only helps to identify gaps but also educates the reader/s on the concepts used in the study.

Conceptual Framework

Solar Power

By definition, solar panels are those devices designed to absorb the rays of the sun while converting same to heat or electricity. This is as posited by Njoku et al (2024) who also cite Ashok (2024) as maintaining that solar energy is the radiation from the sun and such radiation has the capacity to produce heat which leads to chemical reactions hence the generation of electricity. The aggregate amount of solar energy incident in the world is quite in excess of the global present and anticipated energy needs. Collins and Mack (2023) opine that solar energy exposes people to savings in their energy bills and it makes offices and homes self-reliant and independent from the electric grid.

Eco-friendly Business Conferences

Ideally, conferences are characterized by large consumption of energy, water, materials and other resources and the conferences lead to the generation of much waste; they contribute to emissions of carbon via transportation and operations at the venue while adopting heavily, non-renewable resources. It is by way of prioritizing sustainability that their effect on the environment may be adequately reduced. Again, once conferences are made to be more sustainable, it implies that there is minimization of resource usage and optimization of resource management. The employment of technologies that are efficient energy-wise, the reduction of the consumption of water and the implementation of those options that reduce waste give rise to a major conservation of resources (Fohet, 2023). This method is beneficial to the environment and makes the event more cost-effective for the organizers and the exhibitors. Also, by the implementation of practices that are sustainable like local participation, aiding public transportation and the use of renewables; and adoption of waste reduction and recycling programmes, the conferences can effectively reduce their carbon emissions. Eco-friendly conferences enhance positive brand image, engage and educate attendees, and encourage sound industry leadership and innovation (Fohet, 2023) in Njoku et al (2024).

Air Pollution

Olamide (2024) opines that air pollution which is mainly driven by emissions from vehicles and activities from industries, poses a serious threat to the health of the public. Cities in Nigeria experience a situation whereby citizens struggle with the negative effects of poor air quality. Akoni (2024) reveals that the Government of Lagos State, Nigeria stresses how important green and improved air quality is in all corners of the State with a view to ensuring good health for those living in the State. This admonition is as a result of the discovery of air quality that is not

healthy in some areas in the State. This situation no doubt could apply to other cities in Nigeria including Owerri and Aba. Don (2024) reveals that the Nigerian Meteorological Agency, NiMet, tells Nigerians to disregard news that makes the rounds of a change in weather over extreme air pollution. Kemper & Chaudhuri (2020) show that sickness and untimely deaths result as a consequence of air pollution hence it led to losses of two billion, one hundred million dollars in 2018 which represents over two percent of the GDP of Lagos State while causing about eleven thousand, two hundred untimely deaths, the highest in West Africa in 2018. Air pollution is a key cause of heart disease, lung cancer and serious obstructive pulmonary disease. It is caused by pollutants like nitrogen oxides, sulphur oxides, ozone, air toxics and fine particulate matter with an aerodynamic diameter of less than 2.5 micrometres. These are lethal hence they can pass lung barriers, enter the bloodstream and lead to both mortality and morbidity.

Mahmud, Mitra, Uddin, Hridoy, Aina, Abubakar, Rahman & Tan (2023) lament the growing concern about the increasing deterioration of the quality of air as a result of corresponding pollution. The 2019 assessment of global air quality shows that Nigeria came first in Africa and fourth globally in the area of air pollution with a mortality rate of one thousand, five hundred deaths for every one million people, attributable to air pollution. Also, Maumoud et al (2023) posit that this spatial variation of air pollutants in Nigerian cities reveals distinct distribution patterns and pollution traces as there are higher tropospheric NO_2 and O_3 concentrations in Aba, Port Harcourt and Umuahia.

Land Pollution

Texas Disposal Systems (2024) maintains that land pollution results from improper disposal of hazardous and non-hazardous waste. Alatise (2021) opines that land pollution is any changes in the physical or chemical composition of land which render it incapable of beneficial treatment. In orthodox Economics, land is one of the factors of production and indeed the backbone of agricultural economics. Pollution is considered land-based many a time because a god number of pollutions are generated from the land. Land pollution has continued to increase in Nigeria due to surge in industrial activities (Alatise, 2021).

Theoretical Framework

The researcher used the following theory to show the relevance of this study:

Fred D. Davis Technology Acceptance Model (1989)

Fred D. Davis Technology Acceptance Model is an extension of the theory of Reasoned Action. This model has two major aspects that influence an individual/s intention to use new technology: perceived ease of use and perceived usefulness. Perceived usefulness describes the degree to which people believe that their work performance can be increased by using the system example whether the system can help them to complete a task more quickly. Perceived ease of use refers to the extent to which a person has to make a mental or physical effort to use the technology (Njoku, Alozie & Ohiri, 2024).

Solar power and eco-friendly conferences have become the kinds of technology which any organization that values sustainability must embrace in our present world. The uses of solar and eco-friendly conferences are all technologically-driven green innovative strategies. Such makes this theory very relevant to this study.

Empirical Review

In order to beef the study, the researchers employed the following empirical studies:

Salihi, Ibrahim and Baharudia (2024) assessed environmental governance as a driver of green innovation capacity and firm value creation. The survey research design was used in the study. Regression analysis, robustness analysis and sensitivity analysis were used for data analysis. The study finds that the more a firm recognizes the importance of governance, environment and economic governance, the higher the tendency for companies to have capacities in green innovation. Also, more emphasis on environment and governance dimensions raises the inclination for capacities in green innovation. It was concluded that the adoption of green innovation capacity was becoming vital globally and such had made enterprises to continue the enhancement of corporate green capabilities and the implementation of novel and excellent green techniques for the purposes of conserving the environment and preserving the same plus firm value creation. Also, Alao, Adegbie and Joshua (2023) assessed the green intellectual capital and environmental sustainability of listed manufacturing companies in Nigeria. Theirs was survey research. Multiple regression was used to handle data analysis. It was found that green intellectual capital positively and significantly influenced environmental sustainability. It was recommended that corporate entities need to invest in environmental systems.

Njoku, Udo-Orji, and Anyanwu (2024) assessed green management and organizational outcomes in hospitality firms in Mbaise. The objectives of the study are to evaluate the level of correlation between pollution control and market share; assess the level of correlation between pollution control and employee retention; examine the level of correlation between waste management and market share; and to determine the relationship between waste management and employee retention in hospitality enterprises in Mbaise. The research adopts the survey research design. To analyse data, descriptive statistics was used. It uses Spearman Product Moment correlation analysis to test hypotheses. The paper reveals that pollution control and market share; pollution control and employee retention; waste management and market share; waste management and employee retention in hospitality enterprises in Mbaise, have positive and significant relationships. The study concludes that green management improves organizational outcomes in hospitality enterprises in Mbaise. The researchers recommend that management of hospitality firms should make more efforts to control all forms of pollution in the enterprises for improved market share and employee retention. Waste to wealth strategy should be employed by hospitality firms for improved organizational outcomes. Hospitality firms in Mbaise should always seriously embrace green management.

Indeed, Li, Wang and Nutakor (2023) conducted a research on the influence of corporate digitalization on green innovation. Theirs was an ex post facto research. The resource-based theory was employed. Regression analysis was used for data analysis. It was found that corporate digitalization improved green innovation by improving human capital. It was concluded that enterprises that boost their digital strategies do better in green innovation. It was

recommended that organizations need to encourage green innovation for sustainable business development. Also, Elshaer, Azazz and Fayyad (2023) investigated green management and sustainable performance of small and medium-sized hospitality businesses: moderating the role of an employee's pro-environmental behaviour. Theirs was a survey research. The study used the Smart PLS-structural equation modelling technique to analyse data. It was found that green management improved environmental, economic and social performance of businesses. It was recommended that enterprises should concentrate on creating a culture of environmental stewardship and involvement in green initiatives for improved sustainable corporate outcomes.

In addition, Goni, Binti, Isa and Abdullah (2023) examined green innovations and environmental performance of hotels in Kano, Nigeria: moderating role of green transformational leadership. Theirs was a survey research. PLS-SEM was used for data analysis. It was found that green innovation positively and significantly influenced environmental performance of Kano-based hotels. The study concludes that green innovations affect environmental performance. It was recommended that management should use facilities that do not expose the environment to pollutions. Also, Su, Bei-Bei, Shan, Xu and Jin-Long (2023) handled an empirical analysis of green finance and high-quality economic development in the Yangtze River Delta based on VAR and coupling coordination model. Theirs was an ex post facto study. VAR, gray correlation method and gray prediction method were used for data analysis. It was found that green finance has short-term mutual promotion effects with high-quality economic development. It was recommended that more professionals need to be involved in green finance innovation.

Again, Soyeye, Makinde and Akinlabi (2023) assessed green supply chain management and organizational performance of fast moving consumer goods firms in Lagos Nigeria. Theirs was a survey research. Data analysis was committed to multiple regressions, Cronbach Alpha and descriptive statistics. It was found that green supply chain management had positive and significant effect on the performance of fast-moving consumer goods companies in Lagos. Also, Jesuleye, Adepoju and Akinlosofu (2020) investigated the level of green innovation in the food and beverage firms in Lagos State. It was a survey research. Partial Least Square Structural Equation Modelling (PLS-SEM) and Mean Item Rating (MIR) were used for data analysis. T indicate that the firms were practicing green innovation. Green managerial innovation practice was relatively high when compared with the adoption of green process innovation and green product innovation. It was concluded that the level of green innovation in the food and beverage firms in Lagos State, including green process innovation, green product innovation and green managerial innovation was relatively high. The study recommends that firms need to place more value on green product and green process innovation for competitive abilities, sustainability and well-being of individuals.

Gap Identified in Literature

Based on studies the researchers were able to access, empirical studies were not conducted on the relationships between the use of solar panels and reduced air pollution; eco-friendly business conferences and reduced air pollution; eco-friendly business conferences and reduced land pollution. This present study covers the gaps.

METHODOLOGY

In this study, the researchers employed the survey research design in the study. A structured questionnaire was the major instrument for data collection. The population of the study was made up of the managers and workers of 4 listed beverage firms in Imo and Abia States with focus in Owerri and Aba. The total population of the study was 211. The researcher used the Taro Yamen's formula for sample size determination to obtain a sample size of 138 for the study. Accordingly, 138 copies of the questionnaire were administered to respondents in the study beverage firms. The judgmental/purposive sampling technique was used in the study. To avoid bias, workers from all sections of the study organizations who had worked for at least two years were sampled. They include male and female workers. The sources of data included the primary and secondary sources. While the questionnaire was the major instrument of data collection used for the study as a primary data tool, the researchers relied on texts, journals and internet sources for secondary data. The validity of the instrument was done by showing the instrument to research experts for their inputs and by ensuring that the study focused on the research questions. Both face and content validity were therefore ensured. Questionnaire items were based on the research questions and objectives of the study. The reliability ratio of the instrument was done with the use of pilot study whose results were committed to Cronbach alpha statistic. There was consistency in responses after the instrument was administered to five workers from four other beverage firms apart of those under study and the instrument was re-administered after two weeks. A reliability ratio of 0.85 was obtained. The instrument was therefore 85% reliable. The study employed the descriptive statistics of mean and standard deviation for data analysis. The mean used is the mean score. And it is used on a five-point Likert Scale questionnaire weighted from 5 to 1 the common average of which is 3.0. Any questionnaire item whose mean score is 3.0 and above is accepted. Any questionnaire item whose mean score is below 3.0 is rejected. Any questionnaire item whose standard deviation is at least 0.4 is accepted. Spearman Product Moment Correlation analysis was used to test hypotheses. The use of correlation is because the study is a correlational study. Correlation examines the relationship between the independent variable (x) and the dependent variable (y). Each of the research objectives and hypotheses in this study has an independent variable (x) and a dependent variable (y). This shows the relevance of correlation in the testing of the hypotheses. The rejection of the null hypothesis was based on $P<0.05$.

DATA PRESENTATION AND ANALYSIS/DISCUSSION OF RESULTS

Out of the 138 questionnaire copies distributed to the respondents, only 121 copies were properly filled and returned. This means 87.7% return.

Research Question 1:

What is the relationship between use of solar panels and use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States?

Table 1: Respondents' responses on the level of correlation between use of solar panels and use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States

Q/No	Item	SA 5	A 4	U 3	D 2	SD 1	N	Mean	Std. Dev.
1	Use of solar panels increases reduced air pollution in listed beverage firms.	49	35	14	11	12	121	3.81	0.822
2	The reduction of air pollution over the use of solar panels increases desired organizational outcomes in the enterprises.	45	33	16	14	13	121	3.69	0.815

Field Survey (2024)

The Table 1 above presents data from responses by the respondents under study. The result also disclosed a strong agreement by the respondents on their opinion on the level of correlation between use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States. The results further shows that the use of solar panels increases reduced air pollution in listed beverage firms ($\bar{\bar{x}} \pm$ S. D of 3.81 ± 0.822); the reduction of air pollution over the use of solar panels increases desired organizational outcomes in the enterprises (with a $\bar{\bar{x}} \pm$ S. D of 3.69 ± 0.815).

Given that the mean score of each of the questionnaire items is at least 3.0 and the standard deviation for same is at least 0.4, this shows a sound relationship between use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States.

Research Question 2:

To what extent do eco-friendly business conferences correlate with reduced air pollution in listed beverage firms in Imo and Abia States?

Report on Research Question 2 is presented on Table 2

Table 2: Respondents' responses on the level of correlation between eco-friendly business conferences and reduced air pollution in listed beverage firms in Imo and Abia States

Q/No.	Item	SA	A	UN	D	SD	N	Mean	Std. Dev.
3	Eco-friendly business conferences enhance the reduction of air pollution in the listed beverage firms.	37	33	21	14	16	121	3.5	0.677
4	The reduction in air pollution exposes the workers and customers to many health benefits at the business premises.	39	28	24	18	12	121	3.53	0.743

Field Survey (2024)

The Table 2 above presents data from responses by the respondents under study. The result also disclosed a good agreement by the respondents on their opinion on the level of correlation between eco-friendly business conferences and reduced air pollution in listed beverage firms in Imo and Abia States. The results further show that eco-friendly business conferences enhance the reduction of air pollution in the listed beverage firms with a ($\bar{\bar{x}} \pm$ S. D of 3.5 ± 0.677); the reduction in air pollution exposes the workers and customers to many health benefits at the business premises (with a $\bar{\bar{x}} \pm$ S. D of 3.53 ± 0.743).

Given that the mean score of each of the questionnaire items is at least 3.0 and the standard deviation for same is at least 0.4, this shows a sound correlation between eco-friendly business conferences and reduced air pollution in listed beverage firms in Imo and Abia States.

Research Question 3:

What is the level of correlation between ecofriendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States?

Table 3: Respondents' responses on the relationship between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States

Q/No.	Item	SA	A	UN	D	SD	N	Mean	Std. Dev.
5	Eco-friendly business conferences drastically reduce land pollution in the business premises.	44	31	26	11	9	121	3.74	0.733
6	Management provides necessary facilities for curbing land pollution in the business premises.	42	34	28	9	8	121	3.77	0.682

Field Survey (2024)

The Table 3 above presents data from responses by respondents on the relationship between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States. The results show that majority of the respondents affirmed the statements. The results show that eco-friendly business conferences drastically reduce land pollution in the business premises as the result accounted for a mean of 3.74 and a standard deviation of 0.733. The result also shows that the management provides the necessary facilities for curbing land pollution in the business premises (with a $\bar{x} \pm \text{S.D}$ of 3.77 ± 0.682).

Given that the mean score of each of the questionnaire items is at least 3.0 and the standard deviation for the same is at least 0.4, this shows a sound correlation between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States.

Testing of Hypotheses

Ho1: There is no significant relationship between use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States.

Table 4: Correlation analysis between use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States

Item	Mean	Standard Deviation	Correlation Coefficient	P-value
Use of solar panels	3.81	0.822	0.721	0.001
Reduced air pollution	3.69	0.815		

SPSS Correlation Analysis Output (2024).

The result on Table 4 presents the correlation analysis between use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States. The result shows a p-value of 0.001 and correlation coefficient of 0.721. The result shows a p-value less than 0.05 being the level of significance; therefore, rejecting the null hypothesis and accepting the alternative hypothesis. Therefore, the correlation coefficient between use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States is statistically significant. Therefore, there is a significant relationship between use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States.

Ho$_2$: There is no significant extent to which eco-friendly business conferences correlates with reduced air pollution in listed beverage firms in Imo and Abia States.

Table 5: Correlation analysis between eco-friendly business conferences and reduced air pollution in listed beverage firms in Imo and Abia States

Item	Mean	Standard Deviation	Correlation Coefficient	P-value
Eco-friendly business conferences	3.5	0.677	0.705	0.001
Reduced air pollution	3.53	0.743		

SPSS Correlation Analysis Output (2024).

The result on Table 5 presents the correlation analysis between eco-friendly business conferences and reduced air pollution in listed beverage firms in Imo and Abia States. The result shows a p-value of 0.001 and correlation coefficient of 0.705. The result shows a p-value less ≤ 0.05 level of significance; therefore, rejecting the null hypothesis and accepting the alternative which states that there is a significant extent to which eco-friendly business conferences influence reduced air pollution in listed beverage firms in Imo and Abia States.

Ho_3: There is no significant level of correlation between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States.

Table 6: Correlation analysis between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States

Item	Mean	Standard Deviation	Correlation Coefficient	P-value
Eco-friendly business conferences	3.74	0.733	0.708	0.001
Reduced land pollution	3.77	0.682		

SPSS Correlation Analysis Output (2024).

The result on Table 6 presents the correlation analysis between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States. The result shows a p-value of 0.001 and correlation coefficient of 0.708. The result shows a p-value less ≤ 0.05 level of significance; therefore, rejecting the null hypothesis and accepting the alternative which states that there is a significant level of correlation between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States.

Findings

After the data analysis, the study found that:

1. There is a significant relationship between use of solar panels and reduced air pollution in listed beverage firms in Imo and Abia States.
2. There is a significant extent to which eco-friendly business conferences correlate with reduced air pollution in listed beverage firms in Imo and Abia States.

3. There is a significant level of correlation between eco-friendly business conferences and reduced land pollution in listed beverage firms in Imo and Abia States.

DISCUSSION OF FINDINGS

The fact that the use of solar panels increases reduced air pollution in listed beverage firms as shown on Table I indicates that solar panels are environmentally friendly to businesses. With solar panels, business premises can be better preserved. The implication of this finding for the firm is that when enterprises use solar, they avoid burning fossil fuel thereby reducing the rate of polluting the air. This makes the use of solar environmentally friendly. This is supported by the fact that the reduction of air pollution over the use of solar panels increases desired organizational outcomes in the enterprises as the same Table 1 reveals. The organizational outcomes, no doubt, includes increases in customer acquisition, customer retention, employee retention, profitability enhancement as it affects profitability indicators of listed firms like profit after tax and profit before tax. Others are: earnings per share, return on equity, return on assets, gross profit, net profit, return on investment and improved occupational health and safety. The foregoing indicates how important it is for businesses to acquire solar panels in readiness to always combat air pollution. However, it is based on good organizational governance and leadership as well as sound managerial will and magnanimity that the goals of using solar power may be achieved in an organization. This is because as expensive as solar is in Nigeria today, only a manager with strong will and governance skills can go for it and get it installed in the business premises. This agrees with the study by Salihi, Ibrahim & Baharudia (2024) who assessed environmental governance as a driver of green innovation capacity and firm value creation. The survey research design was used in the study. Regression analysis, robustness analysis and sensitivity analysis were used for data analysis. The study finds that the more a firm recognizes the importance of governance, environment and economic governance, the higher the tendencies for companies to have capacities in green innovation.

The study by Salihi et al (2024) leaves the gap of not investigating the listed firms in Imo and Abia States. This present study bridges this serious gap.

Given that eco-friendly business conferences enhance the reduction of air pollution in the listed beverage firms as shown on Table 2, it implies that businesses ought to embrace the use of Zoom technology and Google Meet as well as video conferencing technologies in combating air pollution in their business premises thereby preserving the business premises. Eco-friendly conferences have the capacity to eliminate unwarranted air pollution in business premises. The foregoing is supported by the revelation in Table 2 that the reduction in air pollution exposes the workers and customers to many health benefits at the business premises. This is because the workers and customers shall no longer inhale toxic elements in the business premises and such would always remain a welcome development. This is both encouraging and a testimony to the strengths of green innovation. The foregoing agrees with the study by Njoku, Udo-Orji, & Anyanwu (2024) who assessed green management and organizational outcomes in hospitality firms in Mbaise. Their research adopts the survey research design. Descriptive statistics was used. The paper reveals that pollution control and market share; pollution control and employee retention; waste management and market share; waste management and employee retention in hospitality enterprises in Mbaise, have positive and significant

relationships. Since pollution control is eco-friendly, their study agrees with the findings made in this present study.

The study by Njoku et al (2024) leaves the gap of not investigating the listed firms in Imo and Abia States. This present study bridges this serious gap.

Indeed, the fact that eco-friendly business conferences drastically reduce land pollution in the business premises as shown on Table 3 indicates that business conferences can still hold without physical contacts that may necessitate the use of foils, plates, cans, bottles, and edibles which can pollute the business premise's soil. The implication is that businesses can use the instrumentality of video conferencing, zoom and google meet among other technologies to hold conferences in an eco-friendly manner. This is supported by the revelation on the same Table 3 which shows that management provides necessary facilities for curbing land pollution in the business premises. This is in agreement with the study by Njoku et al (2024) who handled green management and organizational outcomes in hospitality firms in Mbaise as shown above.

The study by Njoku et al (2024) leaves the gap of not investigating the listed firms in Imo and Abia States. This present study bridges this serious gap.

Conclusion and Recommendations

Conclusion

In alignment with the key findings in the study, the study concludes that solar energy and eco-friendly business conferences are correlates of air and land pollution in listed beverage firms in Imo and Abia States. The use of solar panels significantly helps to reduce air pollution. Also, the adoption of eco-friendly business conferences significantly serves for both the reduction of air pollution and the reduction of land pollution. The researchers further conclude that the findings made in this study have deep significances for theory and practice as the findings adds to both conceptual and empirical literatures on use of solar energy and eco-friendly conferences in business premises especially for the purposes of pollution control and general preservation of the business premises.

This is in addition to the perceived ability of this study to design the strategic corporate behaviours of businesses to become sustainability conscious in their possible quest to embrace green innovativeness in their dealings especially as it relates to pollution control. The study therefore submits that any organization that relegates use of solar panels and eco-friendly business conferences to the background exposes itself to avoidable air and land pollution thereby failing to preserve its business premises.

Recommendations

Based on the findings, the study makes the following recommendations:

i. Management of listed beverage firms should make more efforts to expand the use of solar energy for enhanced reduction of air pollution in the business premises. The firms should do this by providing high-powered and high-quality solar panels on the roofs of

each departmental block in the firms irrespective of the high costs of solar panels in Nigeria. This should be done to reduce and indeed avert the health and business implications of experiencing air pollution in business premises. Enterprises should even borrow from banks when they lack adequate resources to procure solar panels for reduced air pollution in the business premises. This shall certainly help for both customer and employee retention while making the firms socially responsible.

ii. Eco-friendly business conferences should be always employed by listed beverage firms for boosting reduction in air pollution for the preservation of the business premises. This can be done by creating more awareness over use of eco-friendly business conferences. Management of listed firms should develop policies that pose zero tolerance for behaviours that are not eco-friendly in the business premises. Use of noisy generators that produce lethal black smoke should be avoided during business conferences in the firms. Alternative and digitalized ways of attending conferences like adoption of zoom, Google Meet and video conferencing technologies should be adopted since these are core eco-friendly options that have the capacity to reduce air pollution.

iii. Listed beverage firms should always use Google Meet and other eco-friendly technologies to avert and combat land pollution of their business premises. Government of Imo State and other State Governments should emulate the governments of Abia and Lagos over banning of foils in their Abia and Lagos States. This shall remain eco-friendly if adopted and it is a seamless eco-friendly strategy for reducing land pollution at the business premises. Business Management should also make and implement policies that prohibit littering of business premises during conferences and dust bins should be stationed at relevant points in the premises for seamless accessibility and usage.

Contribution to Knowledge

The study infers that this work contributes to knowledge by providing empirical literature and by bridging research gaps on the relationships between each of use of solar panels and reduced air pollution; use of eco-friendly business conferences and reduced air pollution and use of eco-friendly business conferences and reduced land pollution. The study also adds to the body of existing knowledge in the area of green innovation and management.

REFERENCES

Adedeji, I., Deveci, G., Saiman, H., & Abiola, I. (2023). The benefits of solar energy on the provision of sustainable affordable housing in Nigeria. *Journal of Power and Energy Engineering, 11(6*). DOI: 10:4236/jpee.2023.116001.

Akoni, O. (2024). '*Climate change: Lagos raises alert over unhealthy air quality'*. vanguardngr.com. Retrieved 4/4/2024.

Alao, E.M., Adegbie, F.F., & Joshua, A.A. (2023). Green intellectual capital and environmental sustainability of listed manufacturing companies in Nigeria. *Academy of Accounting and Financial Studies Journal, 27(55): 1-14.*

Alatise, T.N. (2021). '*Land pollution in Nigeria: reflection on the legal frameworks'*. academia.edu. Retrieved 4/4/2024.

Ashok, S. (2024). "*Solar energy*". britannica.com. Retrieved 12/1/2024.

Bradford, A. (2023). '*Pollution facts and types of pollution'*. livescience.com. Accessed 13/4/24.

Collins, K., & Mack, E. (2023). "*The pros and cons of solar panels: Are they worth it*?". cnet.com. Retrieved 13/11/2023.

Diemuodeke, O.E., Mulugetta, Y., Njoku, H.I., Briggs, T.A., & Ojapah, M.M. (2021). Solar PV electrification in Nigeria: current status and affordability analysis. *Journal of Power and Energy Engineering, 9(5).* DOI: 10.4236/jpee.2021.95001.

Don, S. (2024). '*Disregard news of change in weather, extreme air pollution – NiMet tells Nigerians'*. dailypost.ng. Retrieved 4/4/2024.

EcoSmart, S. (2023). "*What does eco-friendly mean*?". smartsolution.com. Retrieved 12/12/2023.

Elshaer, I.A., Azazz, A.M.S., & Fayyad, S. (2023). Green management and sustainable performance of small and medium-sized hospitality businesses: moderating the role of an employee's pro-environmental behavior. *International Journal of Environmental Research and Public Health, 20(3): 2244;* doi:10.3390/ijerph20032244.

European Environment Agency (2024). '*Air pollution'*. eea.europa.eu/en. Accessed 13/4/24.

Events, M.S. (2023). "*The importance of eco-friendly events and how to plan them*".eventsmadesimple.co.uk. Retrieved 12/12/2023.

Fohet, J. (2023). "The importance of making trade shows and conferences more sustainable". linkedin.com. Retrieved 12/11/2023.

Goni, K.M., Binti, Y.Z., Isa, M., & Abdullah, T.B. (2023). Green innovations and environmental performance of hotels in Kano, Nigeria: moderating role of green transformational leadership. *Journal of Human Resource and Sustainability Studies, 11(3):* doi.10.4236/jhrss.2023.113036.

Institute of Innovation & Knowledge Exchange (2023). "*Green innovation*". ikeinstitute.org. Retrieved 12/12/2023.

Jesuleye, O.A., Adepoju, A.O., & Akinlosotu, O.I. (2020). Level of green innovation in the food and beverage firms in Lagos State. *African Journal of Science Policy and Innovation Management, 1*,103-117. https://www.researchgate.net.

Kemper, K., & Chaudhuri, S. (2020). '*Air pollution: a silent killer in Lagos'*. gs.worldbank.org. Retrieved 4/4/2024.

Lelieveld, J.,Haines, A., Burnett, R., Tonne, C., Klingmuller, K., Munzel, T., & Pozzer, A. (2023). Air pollution deaths attributable to fossil fuels: observational and modelling study. *BMJ 2023; 383*. DOI:https://doi.org/10.1136/bmj-2023-077784.

Li, J., Wang, L., & Nutakor, F. (2023). Empirical research on the influence of corporate digitalization on green innovation. *Environmental Economics and Management, 11;* https://doi.org/10.3389/fenvo.2023.1137271.

Mackenze, J., & Turrentine, J. (2023). *'Air pollution: Everything you need to know'*. nrdc.org. Accessed 13/4/24.

Mahmud, K., Mitra, B., Uddin, M.s., Hridoy, A.E., Aina, Y.A., Abubakar, I.R., Rahman, S.M., & Tan, M.L. (2023). 'Temporal assessment of air quality in major cities in Nigeria using satellite data'. *Atmospheric Environment: X, Vol. 20,* December 2023, 100227. https://www.sciencedirect.com; researchgate.net. Retrieved 4/4/2024.

Nathanson, J.A. (2024). '*Pollution*'. britannica.com. Accessed 13/4/24.

Njoku, K.C., Ayozie, E.A., & Ohiri, I.F. (2024). Technological innovation and job satisfaction of Managers and Accountants in Owerri. *West African Journal of Sustainable Development, 1*(1):250-260. https://journals.unizik.edu.ng.

Njoku, K.C., Udo-Orji, C., & Adioha, L.E. (2024). Green innovation and stakeholders' satisfaction in Deposit Money Banks in Owerri, Imo State, Nigeria. *Journal of the Management Sciences, 60(5).* https://journals.unizik.edu.ng/jfms/article/view/3442.

Njoku, K.C., Udo-Orji, C., & Anyanwu, R.C. (2024). Green management as a predictor of organizational outcomes in hospitality enterprises in Mbaise. *UAES Journal of Social and Management Science (UJSMS), Volume 1, Issue 1: 17-40 (Online).* https://doi.org/10.5281/zenodo.11021458.

Olamide, F. (2024). 'Nigeria, make 2024 the tear of the environment'.francis.medium.com. Retrieved 4/4/2024.

Salihi, A.A., Ibrahim, H., & Baharudia, D.M. (2024). Environmental governance as a driver of green innovation capacity and firm value creation. *Innovation and green Development, 3(2),* https://doi.org/10.1016/j.igd.2023.100110.

Soyeye, S.O.O., Makinde, G.O., & Akanlabi, B.H. (2023). Green supply chain management and organizational performance of fast-moving consumer goods firms in Lagos Nigeria. *International Journal of Entrepreneurship, 6(2): 1-20.* https://doi.org/10.47672/ije.1517.

Su, Z., Bei-Bei, L., Shan-Zhi, X., & Jin-Long, H. (2023). Empirical analysis of green finance and high-quality economic development in the Yangtze River Delta based on VAR and coupling coordination model. *Environmental Economics and Management, Volume 11*. https://doi.org/10.3389/fenvs.2023.1211174.

Texas Disposal Systems (2024). '*Land pollution: causes, effects and prevention'*. texasdisposal.com. Retrieved 4/4/2024.

VFC, F. (2023). *Land pollution: causes, effects and possible solutions*. vfcfoods.com. Accessed 13/4/24.