EFFECT OF GREEN ACCOUNTING ON THE VALUE OF FOOD AND BEVERAGE FIRMS IN NIGERIA

EDWIN CHUKWU OKORO (Ph.D)
Department Of Accountancy
Chukwuemeka Odumegwu University,
Igbariam, Anambra State,
Nigeria.

Abstract

This study was carried out to evaluate the effect of green accounting on the value of food and beverage companies in Nigeria for the periods 2014 and 2023. The *ex*-post facto research design was adopted for the study while secondary obtained from a sample of ten firms purposively selected from the food and beverage industrywere analyzed, using the panel least squared regression estimator. The study reached the following conclusion based on the empirical evidence:environmental energy depletes the value of food and beverage companies in Nigeria; environmental audit enhanced the value of food and beverage companies in Nigeria; It was recommended that: environmental energy programs should be well designed and properly implemented as ill-conceived and poorly implemented environmental energy programs negatively impact the value of food and beverage firms in Nigeria; food and beverage firms in Nigeria should regularly carry out environmental audits as environmental audit enhanced the value of food and beverage companies in Nigeria; future studies should focus on other sectors within the economy of Nigeria and cross-country examination of how firms within the different countries in Sub-Saharan African are performing jointly and differently.By utilizing the different green accounting index and using Tobin Q (a reliable measure of firm's market value) has unraveled the nature and magnitude of effect each of the green accounting index has on the value of food and beverage companies in Nigeria.

Key words: Green accounting, environmental energy, environmental audit, firm value

Introduction

The growing public concern regarding the harmful impact of industrial activities on the environment has compelled companies to take measures to minimize the adverse effects of their operations. In this context, environmental accountability has emerged as a crucial aspect of business, with a company's performance being evaluated not only based on its financial results but also on its efforts to preserve and enhance its immediate environment, (Gupta, 2011). Economic growth cannot be sustainable if it destroys society and the environment. Sustainable development is built on three key pillars - protecting the environment and its resources, ensuring employment opportunities, and addressing people's social needs. Investors now evaluate the risks associated with investing in a company based on the extent to which the company addresses environmental concerns. To maintain their viability, companies must adapt to the environmental realities around them. A reliable means of meeting the increasing demand for environmental information is to incorporate the company's environmental performance in its reports, (Kalunda, 2007). The trend towards social and environmental reporting has gained momentum as businesses have become more aware and mindful of their responsibilities and obligations towards society and the environment. In this context, companies are grappling with the challenge of preserving scarce resources while simultaneously maintaining optimal levels of profitability. Environmental reporting is voluntary regarding statutes or listing rules in most countries, including Nigeria. Therefore, companies are not forced to disclose their environmental activities and impact. As a consequence, researchers have initiated investigations into the extent of disclosures, encompassing the type, nature, quantity, and standard of information that is revealed.

The primary objective of environmental accounting is to itemize the environmental costs associated with each process and distinguish them from non-environmental costs (Jepkogei, 2015).

While all companies listed on the Nigerian Exchange are obliged to publish annual reports that communicate basic qualitative and quantitative information to their stakeholders, these firms have the option of voluntarily disclosing additional information. Environmental accounting is part of the voluntary disclosure requirements by firms.

Firm value has been defined as an investor's perception of the level of success of the firm that is often associated with stock prices. A high firm value will make the market believe not only in the firm's current performance but also in the firm's prospects in the future (Agustia et al., 2019). Tobin's q is a financial metric that measures the market value of a company's assets relative to their replacement cost.

The global food & beverage industry has experienced phenomenal growth due to factors like growing population, technological advancements, streamlined manufacturing processes, and more efficient supply chains. We expect these factors to sustain growth in the short to medium term. On a global scale, the recent trends in the food & beverage industry include; increasing importance of corporate environmental sustainability, innovative packaging and changes to regulations around nutritional facts. Total revenue in the Food & Drink market is projected to reach US$0.70m in 2022. Total revenue is expected to show an annual growth rate (CAGR 2022-2029) of 5.59%, resulting in a projected market volume of US$1.05m by 2029. Nigeria, with its large consumer market, has the potential to be the fastest-growing economy in Africa, with a projected annual GDP growth rate of 4.2% in the period 2016-2050 according to the IMF.

Review of Related Literature

Green accounting (also known as environmental accounting), according to Liyanage (2023) is the identification, measurement, and allocation of environment related assets, liabilities and expenses. Gupta (2011) defines it as the process of identifying, gathering, estimating, and evaluating information about the costs associated with environmental factors for the purpose of assisting organizations in making informed decisions that can have a positive impact on the environment. Gray (2001) on his part, defines environmental accounting as the process through which a company communicates the environmental consequences of its economic activities to specific interest groups in society and the society at large. For the purpose of our study, Green accounting then can be defined as the selection. Collection, analysis and reporting of the environmental consequences of the organization's activities to the various stakeholders for informed decision making.

There are two approaches to environmental accounting: the physical approach and the monetary approach. The physical approach was first proposed by the United Nations and involves classifying a country's resources based on their state and use. This approach presents environmental operations in a physical manner, displaying the current status of resources, as well as any increases or decreases. This approach does not assign any monetary value to environmental resources (Ahamed, 2002). However, the physical approach did not fully meet the requirements of environmental accounting, which led to the emergence of the monetary approach. Despite its difficulties, the monetary approach provides valuable data on the profits and losses associated with environmental operations and enables the calculation of an environmentally adjusted economic index. The physical approach remains important for obtaining physical information about resources and preparing environmental statistics, and is considered the first step in the monetary approach (Hamid, 2002). Environmental factors have a monetary impact on a company's economic system, affecting past, present, and future cash flows, financial position, and results. The financial impact of the company's influence on the environment is a concern and must be quantified. This includes costs related to adopting cleaner energy sources and other environmentally induced financial impacts. The accounting system is a representation of the valuable components of the company's business process. However, accounting also includes information in physical units to assess a company's environmental practices. Knowing about environmental issues and the effects of a company's operations, goods, and services on the environment is essential (Horngren et al., 2000). The conventional accounting system is insufficient in meeting the information needs of users seeking to evaluate a company's environmental behaviour and its economic impact.

The traditional accounting system focuses mainly on providing financial information to interested parties about the company's economic performance. However, attention has recently shifted to environmental factors and the company's impact on the environment, as well as the environment's effect on the company's economic structure. As a result, both financial and physical information must be included in environmental accounting to enable users to assess the company's environmental behaviour and its non-financial economic impact. It is crucial to consider the diverse information needs of various stakeholders in environmental accounting. This concept is based on the understanding that the accounting system's growth in the 20th century was driven by the need to reflect the business process in a manner that aligns with users' information needs and decision-making tasks (Karl, 2002)

Environmental Energy disclosure
Environmental energy could refer to the use of energy sources that are environmentally friendly or sustainable. This includes renewable energy sources such as solar, wind, hydro, and geothermal energy, which are replenished naturally and have a lower environmental impact compared to fossil fuels such as coal, oil, and gas. The term could also refer to the use of energy-efficient technologies and practices that reduce energy consumption and minimize the environmental impact of energy (Ullah, Yakub& Hossain, 2013). The Serial Number Elements of green accounting index under environmental energy include: Energy saving and conservation, Use/development/exploration of new sources, efficiency, insulation, etc, Utilization of waste materials for energy conservation, Discussion of the company's efforts to reduce energy consumption, Voicing the company's concern about the energy shortage, Direct energy use and Indirect Energy use.

According to Chung, Kunene and Chang (2024), environmental energy could refer to the use of energy sources that are environmentally friendly or sustainable. This includes renewable energy sources such as solar, wind, hydro, and geothermal energy, which are replenished naturally and have a lower environmental impact compared to fossil fuels such as coal, oil, and gas. The term could also refer to the use of energy-efficient technologies and practices that reduce energy consumption and minimize the environmental impact of energy.

Renewable Energy Certificate (REC) has been considered as an innovative technology for a green society. Many firms look to reduce carbon emissions and improve their environmental, social, and governance (ESG) performance through renewable energy certificates (RECs) purchases (Chung, Kunene and Chang, 2024).

Ralman and Islam (2023) opine that One area where green accounting can have a significant impact is in improving energy efficiency. Energy efficiency is a measure of how effectively a company uses energy-reduction devices to produce goods or provide services. By implementing green accounting practices that focus on energy efficiency, companies can reduce their energy consumption, lower their environmental impact, and improve their financial performance (Deb et al., 2022). Another way that green accounting can support energy efficiency is by promoting the use of renewable energy sources. Renewable energy sources, such as wind and solar power, are becoming increasingly cost-competitive with traditional fossil fuel sources (Niu et al., 2017). By investing in renewable energy and implementing green accounting practices that prioritize renewable energy use, companies can improve their energy efficiency and reduce their environmental impact.

According to Muffee (2021), environmental Accounting may attract incentives from the government in form of tax reduction and subsidies. Environmental Accounting, when well managed and used can help in bringing increased turnover for the companies because of improved company and product image through better costing and pricing of product; make a company's share more attractive to investors and hence increase the share prices due to improved company or product image and environmental risk rating. It makes the shares attractive because investors need information on environmental performance and expenditure to make decisions. Environmental Accounting can help the firm get better access and better interest rates and terms from lending institutions because of reliable environmental risk incidents. Environmental accounting guarantees that the firm is respecting environmental laws which will help reduce its exposures to future financial loss arising

from environmental incidents. It also leads to avoidance of penalties or fines given by Environmental Protection Agency in the countries where such legislation exists. Environmental Accounting brings about an increase in the company's profile as a result of an increase in the area of environmental responsibilities. Environmental Accounting promotes research and development which will eventually translate into significant reduction in many environmental costs through the design of more environmentally friendly production process (Medley, 1987). That is, it can lead to new inventions because organizations can recycle what was formerly considered waste to invent new products. (Dorwayiler, 2002) Environmental Accounting may attract incentives from the government in form of tax reduction and subsidies. Chung, Kunene and Chang (2024) reported that the largest majority shareholders of Taiwanese listed companies, i.e., domestic companies, view the green measures of REC purchase negatively and reduce their trading volume. The results of Lai, Yue and Cheng (2022) suggest that green credit significantly improved new energy firms' value, and this positive impact can last over the long term (Lai, Yue & Cheng, 2022).

Environmental Audit Disclosure
An environmental audit is a process of evaluating an organization's environmental performance and compliance with environmental regulations, policies, and best practices. The audit involves a systematic review of an organization's environmental impact and management practices, including its use of natural resources, waste management, pollution control, and energy efficiency. Environmental audits may be conducted by internal or external auditors and can cover various aspects of an organization's operations, including facilities, operations, and supply chains (Ullah, Yakub& Hossain, 2013). The Serial Number Elements of green accounting index under environmental audit include: Reference to environmental review, scoping, audit, and assessment, including independent attestation, Incidents of and fines for non-compliance, Obtaining certification for Environmental Management Systems/ISO 14001, Conducting Environmental Impact Assessment (EIA) / air quality assessment, Execution of environmental policies, Compliance with environmental standards and regulation and Environmental risk assessment and estimation.

Environmental Protection Act (1970) states that 'an environmental audit assesses the nature and extent of harm, or risk of harm, to the environment posed by an industrial activity, waste, substance or noise". According to Bassey, Enya and Akung (2017), environmental audit involves assessment by an expert into the activities of an organization with respect to compliance with regulatory guidelines, health and safety compliance and social impact. They identified the three stages of environmental audit which include pre-audit, audit and post-audit that have to flow together for successful project implementation, environmental sustainability and profit maximization. Grayson (1992) observed that environmental audit improves performance and effectiveness through periodic documentation of business activities. Alege and Ogundipe (2013) opine that environmental audit should encapsulate organization activities that speak mightily in defence of its going concern through measurement of qualitative values assigned for environmental improvement and hence increase firm value. The result from Bassey, Enya and Akung (2017) suggest that there exists a significant relationship between company's profit and the independent variables of environmental audit represented by employee/community health status, Air quality and Material quality Used for production.

Firm Value
Khanifah, Udin, Hadi and Alfiana (2019) defined Firm value as an investor's perception of the level of success of the firm that is often associated with stock prices. High stock prices make the firm value too high (Fama, 1978). A high firm value will make the market believe not only in the firm's current performance but also in the firm's prospects in the future (Agustia et al., 2019). The wealth of shareholders and firms is presented by the stock market price, which is a reflection of funding investment decisions and asset management. Firm value is defined as the stock market value. The reason is, the higher the stock price, the higher the shareholders' profits so that this situation will be in demand by investors because with increased stock demand, the value of the firm will also increase (NurleladanIslahudin, 2008).

Tobin's q is a financial metric that measures the

market value of a company's assets relative to their replacement cost. It is named after its creator, economist James Tobin. Tobin's q is calculated by dividing the market value of a company's equity and debt by the replacement cost of its assets. The replacement cost is the amount of money needed to replace the company's assets with similar ones at current prices (Lindenberg& Ross, 1981; Dowell et al. 2000).

The study of Iatridis (2013) showed that superior environmental accounting, particularly disclosures, are seen by investors as value relevant; thus, it increases not only firm performance but also firm valuation. Similarly, as discussed earlier in this paper, Connelly and Limpaphayom's (2004) research supports that of Iatridis (2013) that environmental accounting disclosures have a significant positive relationship with the market valuation. Interestingly, the research of Qiu, Shaukat, and Tharyan (2016) found no link between environmental disclosures and firm value. They attributed this unexpected result to differences in disclosure indexing, limits in the importance of environmental accounting to the sectors involved, and investors' perception of the company's environmental activities.

Theoretical Review
Theoretical perspectives on the relationship between green accounting and firm profitability can be divided into two main categories - the stakeholder theory and the legitimacy theory.

Stakeholder theory
The stakeholder theory posits that firms have a responsibility to satisfy the needs and expectations of all their stakeholders, including shareholders, employees, customers, and the wider society. This theory suggests that firms that adopt green accounting practices are likely to enhance their reputation and credibility with stakeholders, leading to increased loyalty and trust, which can translate into improved financial performance. Legitimacy theory is a theoretical perspective that suggests that a company's long-term success is strongly tied to its ability to maintain its perceived legitimacy within its social and environmental context. In other words, a company's actions and operations should be in line with the expectations of its stakeholders, including shareholders, employees, customers, suppliers, and the broader community. Companies have different stakeholders who influence and have authority over an organization's activities. This theory is based on communication with stakeholders, including shareholders, suppliers, customers, employees, competitors, etc. According to Roberts (1992), stakeholders have a vested interest in a company's environmental performance, which implies that an organization must respond to the expectations of influential stakeholders by making disclosures. To ensure the long-term viability of an organization, it is essential to meet the needs of stakeholders who must support its activities. Gray et al. (1995) suggest that the stakeholder theory emphasizes the need to expand corporate plans to include non-traditional stakeholders, such as regulatory groups. Companies must adapt to changing social demands and environmental awareness, and environmental accounting can motivate stakeholders to fulfill their obligations to the organization. When stakeholders receive environmental information, they are more likely to invest in the organization, thereby increasing profitability. Therefore, firms tend to engage in environmental accounting practices to justify their profits. Trotman (1999) argues that accounting for the environment is a way of meeting stakeholders' demands and can motivate them to invest in the organization, leading to increased profitability.

Legitimacy Theory
Deegan (2008) explains that the legitimacy theory posits that an organization's survival is dependent on its ability to meet the social expectations of its associated communities. This theory implies that market forces and community expectations determine an organization's viability, and it is essential to understand the broader concerns of society as expressed in community expectations for the organization to survive. The legitimacy theory suggests that organizations must respond to society's needs by providing what society requires, and this can be achieved by providing environmental reports to society. Organizations can use disclosures to shape society's perceptions of their firms, and when there is a mismatch between a firm's values and societal environmental values, it is considered a violation of the social contract, which could threaten the firm's survival. To repair the social contract, organizations that violate societal environmental values must provide positive environmental disclosures. Organizations

that do not violate the social contract must disclose their environmental practices regularly to maintain good legitimacy. The legitimacy theory also aligns with the argument that profitable firms can offset the costs of environmental disclosure and that more profitable companies are expected to be more environmentally friendly. (Milne and Pattern, 2002)

This work is anchored on the stakeholders' theory because of the link and role it has with the work. The stakeholder theory assumes that an organisation will respond to the concerns and expectations of powerful stakeholders, and some of the response will be in the form of strategic disclosure. Organizations need to take care of the environment in which they draw resources from by ensuring that the environment is conducive and healthy. There is always a conflict between the stakeholders and the public interest. Stakeholders are interested in profit, while the public is interested in a conducive and healthy environment. The stakeholder theory maintains that firms have a stewardship role towards a variety of stakeholders, different from shareholders. These include creditors, customers, suppliers, host community, government, future generations, etc. A firm understands the role the customer, the environment, and the host community play towards the success of a firm.

Statement of the Problem
Various studies have delved into the relationship between environmental accounting practices and financial performance in Nigeria. For instance, Ilelaboye and Alade (2022) explored the impact of environmental accounting on the financial performance of family-owned companies and found that Environmental accounting (waste management costs, community development expenses, employee health costs have a substantial association with the financial performance of family- owned firms in Nigeria. Mohammed et al. (2022) focused on the steel industry. Olayemi et al. (2022), Edwin (2021), Karimu (2021), Emeke et al. (2021)), studied the play out of environmental accounting on the performance of banking companies, while Nkwoji (2021), Musa (2022) and Nwafor et al. (2021) reported varied effects of environmental accounting practices on net profit in oil and gas companies. Olayemi and Ishola (2021) emphasized the significant effect of environmental

conservation costs on the financial performance of natural resource companies. Olusola et al. (2021) revealed a significant positive effect of environmental accounting disclosure on earnings per share for multinational companies.

However, research on the relationship between green accounting and firm value needs to be addressed more, particularly in the context of the food and beverage sectors of the Nigerian Exchange. Therefore, this study aims to address this research gap by investigating the impact of green accounting on the value of food and beverage firms in Nigeria.

Scope of the Study
The study was carried out to investigate the effect of green accounting on the performance of food and beverage firms listed on the Nigerian Exchange group from 2014 to 2023, using environmental policies, environmental pollutions, environmental energy, environmental audit and environmental financials as variables of study

Objectives of the Study
The main objective of this study is to ascertain the effect of green accounting on the value of food and beverages firms in Nigeria. The specific objectives of the study include:
i.   to assess the effect of environmental energy on the value of food and beverage firms in Nigeria;
ii.   to examine the effect of environmental audit on the value of food and beverage firms in Nigeria;

Research Questions
To guide the research process, the following research questions were posed:
i.   to what extent does environmental energy affect the value of food and beverage firms in Nigeria?
ii.   to what level does environmental audit affect the value of food and beverage firms in Nigeria?

Research Hypotheses
As tentative answers to the above research questions, the following hypotheses are provided:
i.   Environmental energy has no significant effect on the value of food and beverage firms in Nigeria;

ii.   Environmental audit has no significant effect on the value of food and beverage firms in Nigeria;

Research Methodology

The methodology and procedures that were employed to investigate the effect of green accounting on the value of food and beverage firms in Nigeria. These include research design, area of the study, population of the study, sample size and sampling techniques, the nature and source of data, methods of data analysis, model specification and operationalization of variables.

Research Design

The design adopted for the study is the ex-post facto research design. This research design is based on secondary data obtained from the historical records of the sampled firms which cannot be easily manipulated by the researcher. This make for the reliability of data used for the study.

Area of the Study

The study will be domiciled in Nigeria while focusing on the food and beverage firms in Nigeria. The Food and Beverage sector is among the most significant contributors to environmental degradation due to the nature of their products and processes. These sectors often face strict environmental regulations, which can negatively impact their profitability. Thus, there is a need to examine how green accounting practices can mitigate the impact of environmental regulations and contribute to the profitability of these sectors.

Population of the study

The population of the study comprises of all the fifteen (15) food and beverage firms listed by the Nigerian Exchange group from 2014 to 2023. These include:

Cadbury Nigeria plc, Dangote Floor Mills Plc, Dangote Sugar Plc, Floor Mills Plc, FTN Cocoa Processing Plc, Horney well Plc, Multiplex Integrated Foods Plc, Menichols Plc, National Salt Co. Nigeria Plc, Nestle Foods Nigeria Plc, Northern Nigeria Flour Plc, PZ Cussor Nigeria, Tantalizers Plc, Union Dicon Salt and Unilever Nigeria Plc.

The study covered a period of ten (10) years (from 2014 to 2023). The period is significant because of some events that impacted heavily on the Nigerian economy which include the economic melt-down in 2015, the Covid-19 Pandemic and the current depreciation of the Nigerian Currency.

Sample Size and Sampling Technique

The sample size of ten firms was used for the study. This was purposively selected from the fifteen listed food and beverage firms in Nigeria based on the prompt publication of their financial statement and the availability of the financial statement.

Nature and Source of Data

The environmental practices information were obtained from the annual reports using content analysis. Content analysis was adopted because it is one of the most suitable, systematic, objective and quantitative method of data collection technique employed in prior research studies in measuring a company's social environmental disclosure in annual audited reports (Wiseman, 1982; Deegan & Gordon, 1996; Hackston and Milne, 1996; Krippendorff, 2004; Onyali, Okafor and Egolum, 2014). Environmental accounting disclosures, was measured by the environmental disclosure index. A manual content analysis approach was used to analyze the annual reports and score the volume of green accounting practices. The data set of 56 items was classified into six classes

Methods of Data Analysis

The tools of data analysis employed for the study include: descriptive statistics, correlation analysis, and panel regression analysis. The descriptive statistics was used to check the nature and normality of data used for the study; the correlation analysis was used to measure the strength and direction of relationship between the dependent and independent variables and to check for autocorrelation among the variable of study; while the panel least square (PLS) regression analysis was used to test the hypotheses.

Decision rule

The decision rule for the test of hypotheses is to accept the null hypothesis and reject the alternate hypothesis if the p-value of the test statistic is greater than alpha at 5% significant level and vice-versa.

Model Specification

The model used for the study was adopted from Ikpor, Ituma and Okezie (2019) which is specified as follows:

$$PAT = a0 + b1EOPEX + b2EPOPREX + b3ECAPEX + ei$$

Where
EOPEX, POPREV and ECAPEX = Environmental operating expenditure, Environmental Pollution Prevention Expenditure and Environmental Capital Expenditure respectively.

For the purpose of our study the above model was adapted as follows:

$$TONIN'S\ Q = F\ (EEYD_{it}, EATD_{it}, FMZ_{it}, FLVG_{it}).$$

This is stated in econometric form as follows:

$$TONIN'S\ Q = B_O + B_1EEYD_{it} + B_2EATD_{it}, + B_5FMSZ_{it} + B_6FLVG_{it} + \mu_{it},$$

Where Tobin' Q Is the Dependent Variable of Firm Value,

while EPYD = Environmental Energy Disclosure;

EPND = Environmental Audit Disclosure,

FMSZ = Firm size;

FLVG = Firm leverage;

BO = Constant Term Intercept of the Model;

B1 – B5 = Explanatory Variables Co-Efficient of Green Accounting Applied in this Study;

μ_{it}, = Components of the Unobserved Error Term Of The Firms Selected;

$it_1 – it_5$ = Cross Section of Sampled Firms for the Time Period 2014 to 2023.

3.8 OPERATIONALIZATION OF VARIABLES

VARIABLES	NOTATION	MEASUREMENT	AUTHOR(S)
Dependent: Tonin's Q	Tobin's Q	Tobin's Q is a financial metric that measures the market value of a company's assets relative to their replacement cost as market value divided by replacement costs	Lindenberg& Ross (1981), Dowell Et Al. (2000)
Independent: Environmental energy Disclosure	EEYD	Proportion of environmental energy items disclosed in the financial report according to green accounting index (GAI). See Appendix I	Ullah, Yakub& Hossain (2013)
Environmental Audit Disclosure	EATD	Proportion of environmental audit items disclosed in the financial report according to green accounting index (GAI). See appendix I	Ullah, Yakub& Hossain (2013)

Data analysis

This chapter presents the result of data analysis and test of hypotheses formulated earlier for the study. First is the descriptive statistics, followed by correlation analysis and Least Square Regression Result.

Descriptive Statistics

The descriptive statistics measures the individual characteristics of the variables used for the study – namely, the mean, standard deviation, minimum and maximum values. This is shown in table 4.1 below.

Table 4.1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TobinQ	100	.5560313	.4877159	-.9342	1.7896
EEYD	100	.6616	.1665376	.29	.86
EATD	100	.4724	.1827739	.14	.71
FMSZ	100	17.6113	1.78142	13.64	20.39
FLVG	100	.7835	.8025004	.28	8

Table 3 present the outcome of the summary statistics used to unravel the features of the data set for the interest variable. Accordingly, Tobin Q has a mean of 0.50313 and ranges between -.09342 and 1.7896 suggesting possible variation in values across food an d beverage companies in Nigeria over the sample periods. Environmental energy averaged 0.6616 and ranged between 0.29 and .086. The average value of environmental audit stood at 0.4724 and falling within the range of 0.14 and 0.71 while environmental financial averaged 0.5374 and ranging between 0.29 and 0.86. For firm size, the mean value is 17.6113 and ranged between 13.64 and 20.39 while leverage has an average of 0.7835 and ranges between 0.28 and 8. In all, there exist a form of variations across the different firms although not reasonable variation exist across periods especially for the green accounting indexes.

Correlation Matrix

The correlation matrix was used to determine the degree and direction of relationship between the dependent and independent variables. This is presented in table 4.2 below.

Table 4.2. Correlation result

TobinQ	EEYD	EATD	FMSZ	FLVG	
TobinQ	1.0000				
EEYD	.0375	1.0000			
EATD	0.5204	0.5172	1.0000		
FMSZ	0.0227	0.4325	0.0036	1.0000	
FLVG	-0.0989	0.0254	0.0625	-0.2028	1.0000

In table 4, the correlation matrix for the study variables is presented with the intent of examining the nature and magnitude of relationship between each of the repressors and the response variable. As shown by the result, there is very weak positive correlation between environmental energy (EEYD) and firm value (0.0375). While environmental audit (EATD) has a strong positive correlation with firm value (0.5204). Firm size (FMSZ) has a very weak positive correlation with firm value (0.0227) whereas, leverage (FLVG) has a very weak negative correlation with firm value (-0.0989). In all there are no reason to suspect issues of multi-colinarity in the model of this study. This

multi-colinarity issue will be further investigated using a more robust test which is the variance inflation factor (VIF).

Variance Inflation Factor (VIF) test
The variance inflation factor (VIF) test was used to check for multi-colinarity of the variables in the model of this study. The result is presented in table 4.3

Table 4.3. Variance Inflation Factor (VIF) test

Variable	VIF	1/VIF
EATD	1.73	0.578203
EEYD	1.53	0.654996
FMSZ	2.22	0.450518
F LVG	1.09	0.913969
Mean VIF	2.77	

Table 5 presents the variance inflation factor (VIF) test result used to check for multi-colinarity in the model of this study. Accordingly, the individual VIF coefficient and VIF values falls within the acceptable region having a value that is less than 10. Moreover, the mean VIF of 2.77 further validates the claim - thereby authenticating the fact the model of this study has no multi-colinarity issues which makes it good fit and suitable for this study.

Least Square Regression Result
The least square regression estimator was used for testing the hypotheses earlier provided for the study. The result is presented in Table 4.4 below.

Table 4.4: Least Square Regression Result

Tobin Q	Coef.	Std. Err.	T-ratio	P- value
EEYD	- .6116684	.2614818	- 1.130994	0.021
EATD	.8993737	.2535821	.3957378	0.001
FMSZ	- .0821955	.0294748	- .140735	0.006
F LVG	- .0058422	.0459369	- .097077	0.085
Constants	1.082059	.5232587	.0428224	0.041

Source	SS	df	MS	Number of Observations =	100
F(7, 92) = 14.22	Model	12 .236039	7	1.74800558	
Prob> F = 0.0000	Residual	11.3127773	92	.12296497	
R- squared = 0.5196		Adj R - squared		= 0.4831	
Total	23.54881 63	99 . 237866831	Root MSE	= .35066	

The results statistics reveals that approximately 52% of the changes in market value of food and

beverage companies in Nigeria as implied by the R^2 value of 0.5196. This implies that the remaining 48% are traceable to other factors not captured in the model of this study but are accounted for by the error term. Similarly, the F-probability value of 0.00 indicates that at 5% that the repressors have joint statistically significant effect on the dependent variable. Validating the soundness and robust ness of the estimated model. Thus, the result employed to test the proposed hypothesis in the current study.

Hypotheses testing

H_01: Environmental energy has no significant effect on the value of food and beverage firms in Nigeria

Table 4.4 shows that environmental energy (EEYD) has a negative and significant effect on the market value (Tobin Q) of food and beverage firms in Nigeria as shown by the coefficient and probability values of -0.6116684 and 0.021, at the 5% significant level. Supporting the rejection of the null hypothesis that environmental energy has no significant effect on market value of food and beverage firms in Nigeria while accepting the alternative hypothesis. The implication of these findings is that increasing environmental energy by a unit tend to reduce the market value of food and beverage firms by 0.6116684% and reducing same will increase the market value of the sample firms by 0.6116684%.

H_02: Environmental audit has no significant effect on the value of food and beverage firms in Nigeria

As shown in table 6, environmental audit disclosure (EATD) has a positive and significant effect on the market value (Tobin Q) of food and beverage firms in Nigeria, at the 5% significant level. This is indicated by the coefficient value of 0.8993737 and probability value of 0.001, suggesting the rejection of the null hypothesis that environmental audit has no significant effect on the market value of food and beverage firms in Nigeria, and accepting the alternative hypothesis. Thus, a positive change in environmental audit will bring about a positive change in market value at a magnitude of 0.8993737% and vice versa all things being equal. This outcome aligns with a priori expectation.

The result reveals further that firm size (FMS) and

leverage (LVG) depletes the value of food and beverage companies in Nigeria but only firm size does so significantly.

Discussions

The findings from the regression estimates shows that while environmental audit enhances the value of food and beverage firms environmental energy deplete the value of food and beverage firms in Nigeria. Environmental policies play a crucial role in the financial performance and long-term success of food and beverage firms in Nigeria. These policies promote sustainability practices, manage environmental risks, and enhance a company's reputation. Renewable energy and energy-efficient technologies can lower operational costs, especially in Nigeria where energy costs are a significant portion of business expenses. Waste management policies encourage recycling, waste reduction, and water conservation, reducing disposal costs and avoiding fines for non-compliance. Sustainability as a selling point in Nigeria's growing trend towards conscious consumerism can enhance a firm's brand image and attract investment from sustainable businesses. Risk management policies help firms manage environmental risks, such as climate change, which affect the supply chain. Corporate Social Responsibility (CSR) builds trust and loyalty with consumers, leading to increased customer retention and higher prices for sustainably produced products. Compliance with environmental standards can gain positive recognition from the government and the public, leading to favorable media coverage and opportunities for government contracts or partnerships.

Similarly, Environmental audits and environmental financial are crucial practices for Nigerian food and beverage firms to align with environmental standards, reduce operational costs, mitigate risks, and enhance their reputation. Environmental audits ensure compliance with laws and regulations, identifying areas for improvement in environmental management. Regular audits help avoid fines and penalties, while environmental financial allocates funds for environmental projects like investing in green technologies, sustainable practices, and renewable energy sources. Early identification allows businesses to take corrective measures, mitigating the risk of

future environmental crises. Environmental financial also involves financial instruments like green bonds, loans, or incentives to support environmental initiatives. Positive effects on value include access to green financing and incentives, such as government and donor support, green bonds, renewable energy investments, waste-to-energy projects, climate resilience, and sustainability as a long-term strategy. These strategies contribute to improved financial performance, a stronger competitive position, and long-term sustainability, ultimately enhancing the value of these firms.

However, Environmental pollution and inefficient energy practices can negatively affect the value of food and beverage firms in Nigeria. Pollution from industrial processes, waste disposal, and other activities can lead to legal liabilities, reputational damage, increased costs, and supply chain disruptions. These factors can erode profitability, decrease market share, and reduce the firm's attractiveness to investors. Regulatory penalties from Nigerian authorities can result in substantial fines, penalties, or temporary cessation of operations, increasing operational costs and reducing profitability. Reputation damage is another significant issue for food and beverage firms in Nigeria. Public backlash can lead to decreased sales, loss of customers, and a tarnished brand image, directly affecting the firm's market value. Consumer trust can also be lost due to negative publicity regarding pollution, leading to reduced customer loyalty, decreased demand for products, and lower revenues. Inefficient waste management practices can lead to increased operating costs and eroded profit margins. Supply chain disruptions can result in higher production costs or the need to find alternative suppliers. Energy inefficiency can lead to high operating costs, reduced competitiveness, regulatory risks, and long-term financial instability.

Conclusion
This study evaluated the effect of green accounting on the value of food and beverage companies in Nigeria for the periods 2014 and 2023 using the panel least squared regression estimator. The study reached the following conclusion based on the empirical evidence:
i.   That environmental policy could enhance the value of food and beverage companies in Nigeria.
ii.   That environmental pollution could hamper the value of food and beverage companies in Nigeria.
iii. That environmental energy depletes the value of food and beverage companies in Nigeria.
iv.   That environmental audit enhanced the value of food and beverage companies in Nigeria.
v.   That environmental financial enhanced the values of food and beverage companies in Nigeria.

Recommendations
In line with the findings of the current study, the following recommendations are proffered:
i.   Environmental energy policies in Nigeria can negatively impact food and beverage firms if not well-designed. To mitigate this, policymakers should avoid stringent or costly regulations, provide targeted financial assistance, and encourage the adoption of low-cost, energy-efficient technologies. They should also implement policies that stabilize energy prices or provide subsidies for critical sectors like food and beverage. Addressing infrastructure challenges is crucial before promoting renewable energy adoption. Small and medium-sized firms are more vulnerable to high energy efficiency costs, so gradual introduction of carbon taxes or emissions penalties is recommended. Balancing energy-related investments with business growth needs is also crucial. Training programs can help firms understand and implement energy-efficient practices.
ii.   Environmental audits can boost the value of Nigerian food and beverage firms, leading to cost savings, regulatory compliance, improved reputation, and access to capital. They help identify inefficiencies, improve sustainability practices, and enhance environmental responsibility, driving profitability and long-term growth. Policymakers should encourage the integration of environmental audits into corporate strategy, offering incentives like tax breaks, grants, or certifications. Establishing regulatory

support ensures compliance with environmental regulations and identifying areas for improvement. The industry should focus on public awareness, continuous improvement, sustainability certifications, industry-specific best practices, transparency, and collaboration.

iii. Nigerian food and beverage firms can benefit from environmental finance, leading to cost savings, operational efficiency, and long-term profitability. To fully utilize this, policymakers should strengthen green financing programs, create a green investment framework, encourage CSR investments, provide tax incentives for sustainable capital investments, foster partnerships with financial institutions, and implement a comprehensive environmental management strategy. Additionally, promoting green bonds and climate finance for adaptation and mitigation is crucial for these firms in vulnerable regions.

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Yessica C.Y. Chung[a], Noxolo Kunene[a], Hung-Hao Chang (2024)