



Green Business Strategies And Performance Of Breweries In South-East Nigeria

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ABSTRACT

This study examined investigated the relationship between green business strategies and performance of brewing firms in South-East Nigeria. Specifically, the study examined the relationship between green business strategies (green production, green innovation, green packaging, green advertising, waste management/minimization, and efficiency/fuel substitution) and performance of brewing firms in South-East Nigeria. Relevant theoretical, conceptual and empirical literatures were reviewed. The study was anchored on natural resource-based view theory. The study adopted descriptive survey research design and the data used were sourced from primary sources. The population of the study constituted all the one thousand, seven hundred and nine (1709) employees of seven brewing companies in South East Nigeria. Partem (1995) formula was employed to determine the sample size of 384. Thereafter, proportional sampling technique was employed in distributing the sample size base on organizations. Structured questionnaire was used in generating data for the study. Face and content validity were employed in determining the validity of the instrument while reliability was determined using Cronbach's alpha coefficient. The questionnaire items were analyzed using frequency tables and percentage while the hypotheses were tested using regression technique at 0.05 level of significance. The study found that green production, green innovation, green packaging, waste management/minimization and energy efficiency/fuel substitution have significant relationship with the performance while green advertising has no significant relationship with the performance of brewing firms in South-East Nigeria. The study concluded that green business strategies have significant relationship with the performance of breweries in South-East Nigeria. It was recommended among others that brewing firms are advised to implement business activities with an attitude of environmental guard to minimize the impact on environment in the entire product life cycle, produce security products that meet the environmental standards, use recyclable and reusable packaging, use better pollution control methods, and operate energy efficiently.

Keywords: Green Business Strategies, Performance

INTRODUCTION

The rapid industrialization in the last century resulting in huge exploitation of the natural resources has caused a significant damage to natural resources, endangering its availability for the future generations. This has necessitated the adoption of green business strategy. Contemporarily, green business strategy is seen as major policy thrust by many companies around the world as a result of their changing role in the society due to environmental concerns among people. Thus apart from economic needs, businesses are also contributing to fulfill the social and environmental needs through adoption of green business strategies. In line with this, Kishore (2014) notes that adopting green strategy by business is aimed at significantly reducing environmental risks, ecological scarcities, and helps in ensuring human well-being as well as social equity.

Green business practices are associated with environmental concerns through continuous integration of environmental friendly products and processes to eliminate pollution and reduce environmental health exposures (Hui, Chan & Pun, 2001). This helps to optimise resources, improve reliability and industrial ecology in green cement manufacturing (Sivapirakasm, Mathew & Surianarayanan, 2011). These practices could be grouped into product strategies that embrace industrial ecology throughout the product lifecycle. These process strategies optimize resources, ensure energy efficiency and eliminate environmental health risks (Smith & Perks, 2010).

Eshikumo and Odock (2017) note that green business strategies includes the entire practices connected with environmental concerns that are endlessly incorporated into eco-friendly manufacturing processes of goods and services. It involves transforming raw materials into finished goods that leaves less environmental hazards but with high efficiency. Green business strategies consider source reduction or prevention, recycling and green product designs. Sivapirakasam, et al (2011) noted that green business strategies involve the transformation process that maximises on the consumption of resource with high reliability and less ecological hazards. This is accomplished by innovative designing of products and processes. Green business alternative can be divided into five major areas: product and production process changes, changes of raw materials, internal re-use of wastes and better housekeeping (Dornfeld, 2009).

Green business strategies is an important driver for manufacturing industries to meet their performance objectives like improved sales and output, cost reduction; good corporate image, less environment health hazards and competitiveness. Reduced pollution helps to reliably achieve some of the operational objectives like cost reduction which improves competitiveness (Porter & Linde, 1995). Pollution can significantly be reduced through continuous improvement strategies that are focused on green manufacturing. Pollution prevention is a sign of reliability in a manufacturing setting. It helps manufacturers to save on equipment installation, manages waste and pollution and it also optimises on the production resources. Reduced amount of waste means a better consumption of production resources by using fewer raw materials to produce more with less cost of managing scrap. Eliminating emissions helps to eliminate liability claims from the stakeholders because it greatly supports compliance. Implementing green operations practices is a strategy toward achieving environmental health and safety. This eliminates environmental disputes costs, environmental accident, ban and loss from customer boycott.

The green business strategy is viewed as an important and integral strategy for overall sustainability of the environment and the business. A firm's overall sustainability, performance and competitiveness are intertwined with its environmental activities in the contemporary business environment. Investing in new strategies that lead to the development of new products, new markets and new technologies can be considered as a main mechanism for developing competitive advantages. In this view, innovative environmentally related practices that lead to producing new green products, developing new clean technology, and developing new market opportunities might improve firm performance and competitive advantage.

The resource-based view argues that specific firm resources and capabilities, which are difficult to imitate, valuable, rare and not substitutable, enhance firm performance (Barney cited in Bıçakcıoğlu, Theoharakis & Tanyeri, 2019). Although the importance of organizational resources and capabilities in attaining a favorable financial position in markets cannot be overemphasized, companies that integrate green issues into their strategies are likely to possess superior resources and capabilities (Christmann, 2004). Therefore, green business strategy necessitates the development of idiosyncratic capabilities that are not easily mimicked by other firms, but their impact on performance may depend on specific circumstances (Aragon-Correa & Sharma, 2003). Companies have realized the essence of green business as a means of gaining competitive advantage, and they are now applying varieties of green business strategies to outsmart rivals in the industry so as to gain competitive advantage and enhanced performance (Arseculeratne & Yazdanifard, 2014). In line with the above Emeizan, Wahab, Zainon, and Obaid (2016) opine that companies have adopted green business as a strategy to enhance overall business performance outcomes.

Furthermore, given the aforementioned importance of green business strategies to competitive advantage and business performance, the dearth of research on the relationship between green business strategies and overall performance in organizations, particularly in developing world now warrants academic inquiry and empirical evaluation. Conceivably, the most persuasive argument for evaluating the relationship between green business strategies and business performance by this current study derives from the fact that preceding studies on these constructs were mostly foreign and focused on big multinational companies and therefore little is known about the same in the local brewing companies' context, particularly in South-East Nigeria. Hence, this lacuna deserves empirical inspection, and this study therefore is investigated the relationship between green business strategies and performance of brewing firms in South-East Nigeria. Specifically, the study examined the relationship between green business strategies (green production, green innovation, green packaging,

green advertising, waste management/minimization, and efficiency/fuel substitution) and performance of brewing firms in South-Africa.

REVIEW OF RELATED LITERATURE

Green Business Strategies

Green business strategy is a relatively new term, and so a consistent and comprehensive definition of the term is lacking in literature (Loknath & Azeem, 2017). However, Banerjee (2000) defines the term as the “integration of environmental concerns into a firm’s decision-making process”. A major consideration in building a green strategy is for enterprises to create a common culture of awareness and action to support environmental responsibility. Green business is perceived as the commitment of a business or an organisation towards the development of safe, eco-friendly goods and services by employing recyclable and easily decomposed packaging, better pollution prevention methods, and a more efficient use of energy (Mukonza & Swarts, 2019).

Green business strategies refers to all the related projects adopted with a specific aim of helping businesses reduce the environmental impacts of their business operations as well as also helping them to save money (Chukwuka, 2016). This means that they will use less raw materials, less natural resources, less energy, and less water which will lead to producing less waste and less cost of running the business. Green business strategy is the management practice that produces environmentally-friendly products and minimizes the impact on the environment through green strategy, green production, green research & development and green marketing (Peng & Lin, 2008). A green strategy for an enterprise-public or private, government or commercial, is one that complements the business operations and overall business strategies that are already well understood and often well-articulated by the enterprise (Olson, 2008). Green business strategy focuses on firm decision making that positively impacts the environment.

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Eshikumo and Odock (2017) note that green business strategies includes the entire practices connected with environmental concerns that endlessly incorporated into eco-friendly manufacturing processes of goods and services. It involves transforming raw materials into finished goods that leaves less environmental hazards but with high efficiency. Green business strategies consider source reduction or prevention, recycling and green product designs. Sivapirakasam, Mathew and Surianarayanan (2011) note that green business strategies involve the transformation process that maximises on the consumption of resource with high reliability and less ecological hazards. This is accomplished by innovatively designing of products and processes. Green business alternative can be divided into five major areas: product and production process changes, changes of raw materials, internal re-use of wastes and better housekeeping (Dornfeld, 2009).

Eshikumo and Odock (2017) further opine that it means adopting strategies that would minimize pollution and wastage that is generated during manufacturing. It gives many chances for reducing costs, meeting environmental principles, improved corporate image and minimising health risks. The aim of green manufacturing is to reduce, control, avoid and prevent wastage during production. It is a strategy that protects environment, consumers, workers and at the same time improving industrial efficiency, profitability and competitiveness. The vision of green business strategy is to create harmonious conditions between commerce and their surroundings. The mission is value creation by producing more with fewer resources through adopting green manufacturing strategies (Sivapirakasam, et al 2011). The outcomes of these strategies should be no pollution, defects, downtime and inventories (Dangayach & Deshmukh, 2001). Industries should develop strategies that will overcome these challenges and this could be through: green technology innovation; learning and environmental technology innovation, continuous improvement to environmental health hazards. Considering the views of stakeholders would also be critical in this case (Miller & Ross, 2003).

The green business strategies studied include:

Green Production: Melnyk and Smith (1996) define green production as “A system that integrates product and process design issues with issues of manufacturing planning and control in such a manner as to identify, quantify, assess, and manage the flow of environmental waste with the goal of reducing and ultimately minimizing environmental impact while also trying to maximize resource efficiency”. Similarly, Liu, Chen, Kang, Ngai and Li (2005) define green production as a modern manufacturing mode considering both the environmental impact and the resource consumption during the whole product life cycle, from design, fabrication, packaging, transportation, usage, recycling, to waste disposal, and its objective is to minimise the negative environmental impacts and maximise the utilization rate of resource, and harmonize optimization of economic benefit and social benefit with the maximum integrated benefit.

Green Innovation: Innovation is defined as realization of new or highly improved product or process on organizational applications, a new marketing method or a new organizational method (Organisation for Economic Co-operation and Development (OECD), 2005). In any industry, the generation, development and adaptation of a new idea or behavior for a company is defined as innovation. According to innovation area, OECD made an innovation grouping on four elements. These are classified as product innovation, process innovation, organizational innovation and marketing innovation (OECD, 2005). Green innovation has become one of the important strategic tools to obtain sustainable developments in manufacturing industries because of the increasing environmental pressure. In the past, investing in environmental activities was considered unnecessary. However, strict environmental regulations and popular environmentalists have changed the competitive rules and patterns for companies. Kemp and Pearson (2008) define green innovation as the production, assimilation or exploitation of a product, production process, service or management or business methods that is novel to the organization (developing or adopting it), and which results, throughout its life cycle, in a reduction of environmental risk, pollution and other negative impacts of resources use (including energy use) compared to relevant alternatives. Similarly, Jin, Chen and Chen (2008) suggest that it involves both introduction of a good/service that is new or significantly improved, and decreases negative impacts on the environment. The goal of green innovation is to systematically align and implement this strategy throughout the supply chain, from new product and service development to consumption (Jones, Clarke-Hill, Comfort & Hillier, 2008).

Green Packaging: Mohamed (2016) describes green packaging as the use of manufacturing methods and materials for packaging of goods that have a low impact on the environment and energy consumption. Green packaging is identified with conveying a duty towards maintainability, ecological activities of organisations and green item characteristics in the marketplace. Kumar, Agarwal and Singh (2017) opined that green packing is the encouragement and utilisation of packaging, which results in improved manageability of items. Green packaging implies that containers do not affect future generations, and should not squander and reduce underground resource utilisation, should respect human needs as far as wages are concerned, and provide good working conditions (Quoquab, Thurasamy, & Mohammad, 2017). Tuwanku, Rohman and Rofiq (2018) opine that green packaging includes three main identities; minimising the use of hard-to-decompose packaging; using a packaging with low energy consumption and using the environmentally friendly packaging.

Green Advertising: Green advertising is one of the methods adopted by business entities to position their products as green products in the minds of consumers (Eren-Erdogmus, Lak, & Çiçek, 2016). Green advertising is defined as advertising that suggests either a positive re-relationship between a product and the environment, promotes a green lifestyle, or presents a positive corporate environmental image (Banerjee, Gulas & Iyer, 1995). It refers to all appeals that target the needs and desires of environmentally concerned stakeholders (Zinkhan & Carlson, 1995). Green advertising promotes green products and informs customers of their environmental benefits. Their objective is to influence consumers' purchase behaviour by encouraging them to buy environmentally friendly products and to direct their attention to the positive consequences for themselves and for the environment of their purchase behaviour (Rahbar & Wahid, 2011). Since advertising both creates awareness, and is a means of persuasion, it must be studied to see how it affects the purchase intention of consumers for green products. The importance of green advertising has also been highlighted by Pickett-Baker and Ozaki (2008) who found that aside from cleaning products, most customers could not identify greener products. This was probably because most green message labels did not make an impression in buyers' minds. Thus, communication is an area of weakness for green marketers.

Carlson et al. (1993) have affirmed a parallel rise in environmental advertising accompanied by increased consumer interest in the environment. Advertising terms such as “recyclable, environmentally friendly, ozone safe, biodegradable” are regularly seen in green advertisements, and consumers are often exposed to such messages (D’Souza, 2005).

Waste Management/Minimization: Sarkis and Rasheed (1995) describe green manufacturing system to be those that can reduce, remanufacture, recycle and reuse their waste. Mohanty and Deshmukh (2008) proposed that building green manufacturing systems require: assessment, foundation, waste minimisation and eco-efficiency. For effective adoption of green manufacturing system and pollution reduction, it is important to consider the hierarchy of control starting with elimination, isolation, substitution, engineering and administrative controls. Sharma, Chattopadhyaya and Hloch (2011) mentioned processes like recycling, reusing, refilling just to mention a few as examples of green business approaches. Strategies for waste management can be divided into a hierarchy of treatment options which include prevention, control and recycling optimally the final disposal and improved monitoring. Waste prevention strategies that eliminate waste at the source are cost effective if properly implemented, while disposal is the least desirable. Prevention of waste focuses on reducing the amount of waste generated initially that would make it less problematic and cost effective in disposing. Emphasis of this principle is put on greener production within industries and this is achieved by influencing markets to demand greener products (Kummer, 1999). Waste that cannot be prevented should be recovered and recycled. Most countries have laws that guide management of industrial ecology. Different industries have different ways of recycling waste into valuable energy that reflect or make up for some cost saving like recycling of excess heat to heat water. There is need to pursue strategies meant to reduce toxicity through recycling, waste stabilization to reduce volume before disposal or creating limited use of by-products when waste cannot be prevented (Von, 2004).

Energy Efficiency/Fuel Substitution: The demand for green products is increasing as technologies that can eliminate the use of fossil fuel are adopted (Mohanty, Misra & Drazal, 2002). Alternative fuels could be adopted in green manufacturing like: biomass, geothermal, hydrogen power, solar, wind and waste-to-energy. Coal has a bearing on the magnitude of carbon dioxide emissions from manufacturing process (Wright, Boundy, Perlack, Davis & Saulsbury, 2006). Product substitution involves replacement of materials with others that require less energy to process or using component that reduces emission like use of fuel that does not contain carbon. Energy consumption can be reduced by modifying to adopt more efficient manufacturing process or by adopting green technologies that reduce energy consumption and hazardous emissions. This could be through electricity reduction or by reducing or eliminating fossil fuel required (Scarlat & Banja, 2013).

Energy efficiency is measured by comparing the energy used versus the goods produced. It is better to get more output from the energy provided through improved operation of energy and process systems. This translates to cost saving through less energy loss. Energy efficiency can be achieved by new heating technology innovation. Improved energy efficiency can provide economic, social and environmental benefits to an economy (Scarlat & Banja, 2013). Cost of burning clinker and electric energy consumption in kilowatts was compared to establish a relationship. Monthly secondary data was collected on the amount of electricity used in Kilowatts and cost of producing clinker for a period of four years. This was also related to the cost of burning clinker when various alternative fuels were used. This was to be used in determining which projects to be implemented to ensure that there was energy efficiency in the plant. It also helped in making appropriate selection and usage of the alternative fuels available.

Performance

The most important part of an organization is the performance, where performance is viewed as the success of an organization in achieving valuable outcomes, such as high returns (Memon & Tahir, 2012). Based on Smith and Reece (1999), business performance is defined as “the organization’s ability to meet the desired result as determined by the company’s major shareholders”. On the other hand, it is to determine whether the actual output of an organization is as what has been targeted (Al Qudah, Osman & Safizal, 2014). Thus, to achieve high business performance, organizations need to attain and sustain competitive advantages. For this reason, many researchers had argued that strategic planning enables organizations to have competitive advantages and the ability to stay in business against competitors. They need to know that the correct performance level is important because it

enables the organization to determine its current position and find ways to improve business if necessary. Consequently, the measurement of business performance has captured the attention of many scholars due to its complexity (Suklev & Debarliev 2012; Matsoso & Benedict, 2014).

Different researchers have different ways to measure performance. Mandy (2014) summarized in his review that “the best way to evaluate performance is by effectiveness, growth and productivity, efficiency, individual employee sales, the value of exports, organization total assets and operation profit ratio as a measurement”. Researchers such as Arshada, Raslib, Arshadc and Zainc (2014) measured performance using financial indicator. Financial measure is done by measuring the sales, market share, number of employees, return on capital employed, inventory turnover, return on investment, growth and profits. However, these indicators focus on the short term rather than long term strategy (Lonbani, Sofian & Barato, 2014). While other researchers such as Anyieni (2014) suggested the performance of benchmarking to compare performance with the relative competitors. Besides, Anyieni (2014) also suggests to benchmark with the pre-set target. Moreover, Dubihlela and Sandada (2014) suggested the use of perception of the owner or managers regarding the organization’s success.

Theoretical Framework

This study is anchored on Natural Resource-Based View Theory. This study is anchored on Natural Resource-Based View (NRBV) developed by Stuart Hart (1995). In classic strategic management, the Resource-Based View (RBV) considers capabilities and resources that companies have which, when bundled in a unique manner bestows a company with a core competence. These core competences can generate a competitive advantage for the firm if they are *valuable, rare, inimitable and non-substitutable* (VRIN). Traditionally, strategic models have not considered how the constraints of the natural environment affect a firm’s ability to generate a competitive advantage through its operations. The Natural Resource-Based View (NRBV) emerged to deal with this aspect. The natural resource based-view (NRBV) works on the principle that a company’s competitive advantage fundamentally depends upon its relationship with the natural environment. This theory focused on the connection with firms’ resources, capabilities and competitive advantages, and proposes that organizations should look inwards to find the sources of competitive advantage rather by searching for competitive environment for it.

The NRBV framework identifies how companies can generate competitive advantage based on capabilities that support sustainable development. Stuart Hart (1995) developed a framework of three interconnected capabilities that firms can build including **pollution prevention, product stewardship, and sustainable development**. The framework is shown in the table below:

A Natural-Resource-Based View: Conceptual Framework

s/ n	Strategic Capability	Environmental Driving Force	Key Resource	Competitive Advantage
1	Pollution Prevention	Minimize emissions, efficient and waste	Continuous improvement	Lower costs
2	Product Stewardship	Minimize life-cycle cost of products	Stakeholder integration	Preempt competitors
3	Sustainable Development	Minimize environmental burden of firm growth and development	Shared vision	Future Position

Each of these has an underlying driving force for the natural environment and they are discussed below.

Pollution Prevention: Pollution stems from the inefficient use/treatment of production materials, resources and by-products. Pollution prevention enhances a company’s capabilities through significant cost savings, increased productivity, and heightened efficiency.

- Less waste in products generates greater efficiency in the use and treatment of inputs, resulting in reduced raw resource material and disposal costs.

- The optimization of operational processes (simplification or removal of outdated technology or unnecessary processes) improves efficiency and reduces production times, resulting in the reduction of pollution and operational costs.
- Pollution limitation/prevention strategies assist companies in fulfilling or exceeding regulatory requirements, thus enhancing their social license to operate and lowering their potential compliance/ liability costs.

Product Stewardship: All activities and processes within a company's operational value chain results in environmental impact. These impacts have to be minimized as the company transits towards sustainability. Product stewardship addresses the environmental concerns of stakeholders within the company's product design and development processes. Concurrently, the company attempts to minimize the environmental impacts and life cycle costs of its products in order to remain competitive. This competitive advantage is achieved by forecasting future market trends, undertaking measures to secure access to resources, and building environmental capabilities. Product stewardship provides companies with the opportunity to:

- Exit environmentally hazardous business activities
- Redesign, innovate or recreate existing products and processes to reduce liability and losses
- Develop new products with lower life cycles costs.

Sustainable Development: Sustainable development serves to remove the negative links between the business world and the natural environment. It visualizes global environmental concerns, and examines how domestic and international strategies can be implemented to build sustainable and resilient global markets and cultures. A company's commitment to adopting sustainable management strategies requires substantial investment and a long-term commitment to market development. This is due to the lack of short term profits. This commitment has the potential to raise a firm's future performance in relation to its competitors – leading to greater future competitive advantage.

This theory is relevant to the study in that it helps in providing a theoretical mechanism through which it is possible to establish the connection between green business practices and performance of business organization. Kumar (2015) identified this theory as the theoretical basis of green business strategies. This theory articulates the connection with firm resources, capabilities and competitive advantages and proposes that organisations should look inside the company to find the sources of competitive advantage rather than searching competitive environments for it. One of such resources is adopting green business strategies. Therefore, the idea of a natural resource-based vision strategy should be incorporated into the ecological corporate system of the business to empower it to achieve competitive advantage in order to produce improved business performance. Hence, organisations should grow and make viable utilisation of their competitive advantage in the environment like green business strategies in order to enhance performance.

Empirical Review

Olayeni, Ogbo, Okwo, Chukwu, Ifediora and Ezenwakwelu (2021) investigated mediating role of product quality on the effect of green strategy on financial and environmental performance. Confirmatory factor analysis and structural equation modelling were employed in analyzing the data. The results show that while environmental performance is strongly predicted by green strategy and product quality (as a mediator), financial performance is also positively predicted, but by a smaller effect.

Chukwuka and Eboh (2018) investigated the effect of green business practices on organizational performance of selected manufacturing firms in Nigeria. Simple percentage was employed in analyzing the data. The study found that green business initiatives had significant and positive effect on the selected manufacturing firm's productivity. The study contends that the implementation of green business practices, principles and processes will lead to very positive outcome that will be visibly manifested in the organization and the environment.

Maziriri (2020) evaluated the impact of green packaging and green advertising on competitive advantage and business performance among manufacturing small and medium enterprises in South Africa. Confirmatory factor analysis, correlation analysis and structural equation modeling were employed in analyzing the data. The result indicates that that green packaging and green advertising had a positive influence on competitive advantage and business performance.

Masoumik, Abdul-Rashid and Olugu (2015) evaluated the effects of green strategy adoption on competitive benefits within the manufacturing industry in Malaysia. The results show that there is a significant relationship between the green strategies, environmental performance and competitive benefits. The study contends that a clean technology strategy has considerable importance in terms of generating competitive benefits, and yet it received the least attention from the manufacturers.

Bıçakcıoğlu, Theoharakis and Tanyeri (2019) investigated green business strategy and export performance in emerging economy. A total of 224 copies of the questionnaires were collected from exporting manufacturing companies and were analyzed using full information maximum likelihood test. The results of the study demonstrate that green business strategy has a strong and positive relationship with export financial performance.

Eshikumo and Odock (2017) investigated the relationship between green manufacturing and operational performance of a firm: Case of cement manufacturing in Kenya. Regression analysis was employed in analyzing the data. The results indicate a significant relationship between green manufacturing practices and operational performance.

METHODOLOGY

The study used descriptive survey research design. This study was carried out in South East Nigeria. Seven breweries namely Nigeria Breweries Plc, 9th Mile, Enugu State, Intafact Beverages Limited, Harbour Industrial Layout, Onitsha, Golden Guinea Breweries, Aba Road, Afara Layout, Umuahia, Dubic Breweries Plc, Osisioma Industrial Layout Aba, Guinness Brewery, Aba, Nigeria Breweries Plc, Aba and Golden Guinea Breweries Plc, Umuahia were sampled for the study. Only the employees of these brewing firms were studied. The study made use of primary data which would be collected by questionnaire technique. The population of this study is made up of 1709 junior and senior employees of the seven breweries in South East Nigeria. Partem (1995) was employed to determine the sample size of 384. Simple random sampling technique was employed in selecting the respondents from each of the brewing firms sampled for the study. Regression technique was employed in analyzing the data. The regression model is presented in functional form as:

$$PERF = f(GP, GI, GPAC, GAD, WMM, EEFS)$$

Where:

PERF = Performance

GP = Green Production

GI = Green Innovation

GPAC = Green Packaging

GAD = Green Advertising

WMM= Waste Management/Minimization

EEFS = Energy Efficiency/Fuel Substitution

The functional model is presented in econometric form as:

$$PERF = \alpha + \beta_1 GP + \beta_2 GI + \beta_3 GPAC + \beta_4 GAD + \beta_5 WMM + \beta_6 EEFS + \epsilon$$

Where:

α = Constant Term

β = Beta coefficients

$\beta_1 - \beta_4$ = Independent Variables

ϵ = Error Term

Various tests were used to evaluate the multiple regression analysis which includes T-statistics, R-squared, F-statistics, Durbin Watson statistics.

RESULTS

Ordinary Least Square Regression technique was employed to test the relationship between the independent or explanatory variables and the dependent variables. The result is presented in the tables below.

Table 1 Summary of the Regression Result

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.240 ^a	.558	.440	4.568	2.037

a. Predictors: (Constant), Green Production, Green Innovation, Green Packaging, Green Advertising, Waste Management/Minimization, Energy Efficiency/Fuel Substitution

b. Dependent Variable: Performance

Source: SPSS 21.0

Table 1 show that R² which measures the strength of the relationship between independent variable and the dependent variable have the value of 0.558. This implies that 55.8% of the variation in performance of breweries in South-East Nigeria is explained by variations in green production, green innovation, green packaging, green advertising, waste management/minimization, and energy efficiency/fuel substitution. This was supported by adjusted R² of 0.440. In order to check for autocorrelation in the model, Durbin-Watson statistics was employed. Durbin-Watson statistics of 2.037 in table 1 shows that the variables in the model are not autocorrelated and that the model is reliable for predications.

Table 2 Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	474.920	7	67.846	33.252	.002 ^a
	Residual	7740.252	372	20.863		
	Total	8215.172	379			

a. Predictors: (Constant), Green Production, Green Innovation, Green Packaging, Green Advertising, Waste Management/Minimization, Energy Efficiency/Fuel Substitution

b. Dependent Variable: Performance

Source: SPSS 21.0

The f-statistics value of 33.252 in table 2 with f-statistics probability of 0.002 shows that the independent variables has significant relationship with the dependent variable. This shows that green production, green innovation, green packaging, green advertising, waste management/minimization, and energy efficiency/fuel substitution can collectively explain the variations in performance of breweries in South-East Nigeria.

Table 3 T-Statistics and Probability Value from the Regression Result

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	14.211	2.688		5.288	.000
Green Production	.107	.045	.121	2.387	.007
Green Advertising	.057	.050	.060	1.146	.252
Green Innovation	.221	.057	.019	3.376	.000
Green Packaging	.167	.051	.168	3.251	.001
Waste Management/Minimization	.080	.049	.083	2.628	.004
Energy Efficiency/Fuel Substitution	.007	.046	.008	2.147	.003

a. Dependent Variable: Performance

Source: SPSS 21.0

Green production has a t-statistics of 2.387 and a probability value of 0.007 which is statistically significant. This implies that there is a significant positive relationship between green production and performance of brewing firms in South-East Nigeria. Green innovation has a t-statistics of 3.376 and a probability value of 0.000 which is statistically significant. This indicates that there is a significant positive relationship between green innovation and performance of brewing firms in South-East Nigeria.

Green packaging has a t-statistics of 3.251 and a probability value of 0.001 which is statistically significant. This indicates that there is a significant positive relationship between green packaging and performance of brewing firms in South-East Nigeria. Green advertising has t-statistics of 1.146 and a probability value of 0.252 which is statistically insignificant. This implies that there is no significant positive relationship between green advertising and performance of brewing firms in South-East Nigeria.

Waste management/minimization has a t-statistics of 2.628 and a probability value of 0.004 which is statistically significant. This indicates that there is a significant positive relationship between waste management/minimization and performance of brewing firms in South-East Nigeria. Energy efficiency/fuel substitution has a t-statistics of 2.147 and a probability value of 0.003 which is statistically significant. This shows that there is a significant positive relationship between energy efficiency/fuel substitution and performance of brewing firms in South-East Nigeria.

CONCLUSION

The study investigated the relationship between green business strategies and performance of breweries in South-East Nigeria. The data generated from the respondents were subjected to empirical analysis and the following became evident. The study found that green production, green innovation, green packaging, waste management/ minimization and energy efficiency/fuel substitution have significant relationship with the performance of brewing firms in South-East Nigeria. The study also found that there is no significant positive relationship between green advertising and performance of brewing firms in South-East Nigeria. Based on the foregoing, the study concludes that green business strategies have significant relationship with the performance of breweries in South-East Nigeria.

The study recommends that there is need for successful implementation of green production practices in brewery firm and this require adequate adoption, routinization and assimilation of technology, such as big data and predictive analytics, as well as higher level of top management commitment, proper HR practices and employee training. These requirements not only help in overcoming the technological challenges of green production, but also in achieving a proper balance of higher organizational and environmental performance and gaining competitive advantage.

Also, the drivers of green innovations and the factors required for their successful implementation should be identified. Recognizing and understanding these drivers and factors will help decision makers devise strategies and policies to successfully adopt green innovations and overcome the technological challenges. Moreover, this understanding can help managers successfully promote practices in their companies, and increase their commitment to green innovations, an essential factor for the successful implementation of the green innovation practices.

Brewing firms are advised to implement business activities with an attitude of environmental guard to minimize the impact on environment in the entire product life cycle, produce security products that meet the environmental standards, use recyclable and reusable packaging, use better pollution control methods, and operate energy efficiently. There is need for the enforcement of environmental laws and will help the manufacturing firm to adopt the green manufacturing strategies in all levels of manufacturing processes for effective waste management and minimization. There also is need to improve the existing state and even introducing advanced technologies for effective waste management in order to safeguard the immediate environment

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