

## **GREEN TRANSPORTATION AND BUSINESS PERFORMANCE OF OIL AND GAS COMPANIES IN SOUTH-SOUTH NIGERIA**

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### **Abstract**

This study investigated the relationship between green transportation and business performance of oil and gas companies in South-South Nigeria. The study was conceptualized using green transportation as predictor to customer satisfaction, quality service delivery and customer retention components of business performance. The study adopted a correlational research design. The study population comprised 24 multinational oil and gas companies in South-South Nigeria. The sample size of the study was the same as the population. The study utilized structured questionnaire to collect primary data. The reliability of the questionnaire was ascertained via Cronbach's alpha test. 3 copies of the questionnaire was administered to Operations Manager, Logistics Manager and Marketing Manager of each of the multinational oil and gas companies. After data cleaning, only 66 copies of questionnaire were used for the data analysis. The Pearson Product Moment Correlation was used to test the hypotheses, relying on the assistance of the Statistical Packages for Social Sciences (SPSS) version 23.0. Findings from the study revealed the existence of significant positive relationship between green transportation and business performance of oil and gas companies in South-South Nigeria. The study therefore, concluded that green transportation has significant positive relationship with business performance of oil and gas companies in South-South Nigeria; and recommends that managers of oil and gas companies in South-South, Nigeria should engage in green transportation practices to boost customer satisfaction, service quality and customer retention.

**Keywords:** Business performance, customer satisfaction, customer retention, quality service delivery, green transportation

### **Introduction**

The global concern for environmental sustainability and the adverse effects of climate change has led to a significant shift towards greener and more sustainable practices across industries. The transportation sector, known for its heavy reliance on fossil fuels, has been a significant contributor to greenhouse gas emissions and environmental degradation (International Energy Agency, 2021). The concept of "green transportation" whose aim is to reduce carbon footprint of transportation systems while improving overall efficiency and sustainability, emerged in response to the sustainability challenge (Oyedepo, 2012).

Green transportation encompasses a wide range of strategies and technologies aimed at reducing the environmental impact of transportation systems. This includes adoption of electric vehicles (EVs), hybrid vehicles, biofuels, efficient public transportation systems, and the development of infrastructure

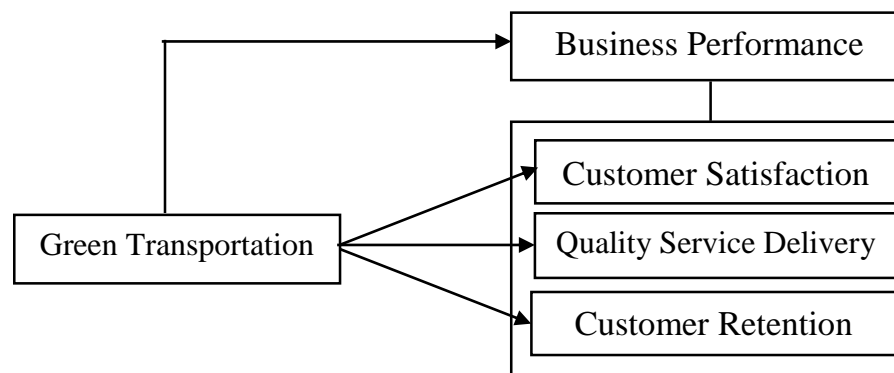
that supports cycling and walking (Nnaji & Adebola, 2016). By transitioning from conventional internal combustion engine vehicles to electric and hybrid alternatives, the transportation sector in Nigeria can significantly decrease its carbon emissions and dependency on fossil fuels.

Nigeria has been a significant player in the global oil and gas industry, with its economy heavily reliant on revenue from petroleum exports. However, the environmental and social impacts of oil exploration and extraction, particularly in the Niger Delta region, have raised concerns about the long-term sustainability of this economic model. The integration of green transportation practices can potentially influence the business performance of oil and gas companies in Nigeria. It will help organizations leverage their resources and expertise to invest in renewable energy projects like solar and wind power, thereby diversifying their revenue streams and reducing their environmental impact (Akinwumi & Adejumo, 2020); enhance their reputation, foster positive relationships with stakeholders, encourage regulatory compliance with evolving standards, and lead to reduced operational costs in the long term (Agbobu & Ibeagha, 2021).

The adoption of green transportation practices by oil and gas companies in Nigeria is not only a response to environmental concerns but also a strategic move to ensure long-term business viability (Oyedepo, 2012). Balancing economic growth with environmental sustainability presents challenges and opportunities for companies to redefine their roles in a changing energy landscape. In spite of the growing interest in green transportation among academics and practitioners, its implementation is problematic in the Nigerian business context.

This problem exist for several reasons, one of which is that literature depicting the relationship between green transportation and business performance of oil and gas companies is still modicum. Most studies in this area were conducted in foreign economies. For instance, Juriah (2015) studied impacts of green practices on green performance in the Malaysian Automotive Industry; Szuchnicki (2014) evaluated the importance of green practices in food stores; while Dipietro et al. (2013) examined green practices in upscale food service operations performance.

There are little or no empirically evidence on the relationship between green transportation and business performance of oil and gas companies in South-South Nigeria. Thus, this study sought to bridge the identified gap in knowledge, by investigating the relationship between green transportation and business performance of oil and gas companies in South-South Nigeria



**Fig. 1:** Conceptual framework of relationship between green transportation and business performance.

**Source:** Lokesh, V., Jitesh, T. & Gopal, A. (2017). Green transportation practices and performance: The role of

firm-size for emerging economies. *Journal of Manufacturing Technology Management*, 28(3), 299-323.

### **Theoretical Foundation of the Study**

This study is premised on ecological modernization theory (EMT) proposed by Martin Janicke in (1970). EMT suggests that it is possible to promote economic growth by giving higher priority to the environment. It is no longer necessary to trade off economic growth for environmental quality (Littig & Griebler, 2005). EMT advocate that organizations should imbibe the capacity to develop sustainable solutions to environmental problems.

Ecological modernization theorists believe that “the environmental problems facing the world today, act as a driving force for future industrial activity and economic development” (Murphy, 2000). Applying this theory to the current study, it can be said that it is possible to promote economic growth by giving higher priority to the environment. Organizations in Nigeria’s oil sector can leverage green transportation practices to enhance their business performance.

### **Concept of Green Transportation**

Green transportation is a part of the broad concept of sustainable development that aspires to deliver current and future needs of communities and advance individual well-being (Kirunga & Kihara, 2018). Green transportation practices take care of the environment and also bring social, economic and functional value (Browne et al., 2012). According to Deng and Huang (2011), green transportation practices are characterized by minimal movements, less material handling, short distances of logistics, direct routes of shipping and better utilization of available resources.

The adoption of green transportation implies that firms run their activities and grow competitive edge through economically, socially and environmentally acceptable standards (Zinkeviciute et al., 2013). Green transportation advocates decreased use of private automobiles, increased walking, use of bicycle and public transport; as well as the use of clean energies. It is a low-cost, pollution-free, land resource and space saving transportation system suitable for all kinds of travel.

Green transportation includes various low-pollution vehicles, such as dual-energy vehicle, natural gas vehicle, electric vehicle, hydrogen power vehicle and solar energy vehicle among other transport modes (Hsu & Wang, 2015). Green transportation is not only a low-carbon and environmental travelling mode, but also a return to healthy and leisure lifestyle. Green transportation as a practice does not only entail attaining sustainability, it is all about ethical, social responsibility to ensure that there is a minimum effect on the environment throughout the supply chain and to ensure that sound economic decisions are made and that good business practice is always upheld (CIPS, 2014).

### **Business Performance**

Business performance is described as the way in which a firm accomplishes its financial and market-based and objectives (Chesire & Kombo, 2015). It is the attainment of the goals of the organization as set out in the organization’s plans (Wheelen & Hunger, 2013); or overall performance of a firm’s financial position at the end of a financial year (Powell, 2008). Business performance is a multidimensional construct that can be viewed from financial (sales, value of net assets and profit) and non-financial (staff strength, customer retention, market share, product quality and customer satisfaction) perspectives (Kaplan & Norton, 1992, as cited in Ateke & Kalu, 2016).

Business performance cannot be adequately determined without considering financial and nonfinancial measures (Alder, 2012). According to Chesire and Kombo (2015), business performance comprise three distinct areas of company results: Financial performance, market performance and shareholders' return. Business performance help firms determine the relationship between their marketing activities and their performance.

Singh (2011) measured performance using sales growth, return on investments (ROI), market share, service quality, positive corporate image, industry harmony, customer retention and team spirit. Similarly, Ongore and Kusa (2013) measured it using market share, quality service delivery, return on assets, retention of customers, new product success and customer satisfaction. In this study, we adopted customer satisfaction, service quality and customer retention as key attributes of business performance as non-financial measures business performance.

### **Customer satisfaction**

Customer satisfaction is the core philosophy of marketing strategy of any organization and plays a key role in an organization's success retention (Lai & Wong, 2012). According to Liu et al. (2018), customer satisfaction is the necessary foundation for customer. Ise and Wilton (1988, as cited in Ismail & Yunan, 2016) describe customer satisfaction as customers' reaction to the assessment of the anticipated differences between prior expectations and real performance of product. This indicates that customer satisfaction manifest from the result of examination and post-purchase behavior. Ali et al., (2016) emphasized that customer satisfaction is a tool for enhancing the performance of organizations.

### **Quality service delivery**

The term "service quality" is a combination of two different words: service and quality. Service is an important aspect of economies that have increasingly become a part of everyday life as economies develop. According to Azman, Hafizah and Ilyani (2016), service means any activity or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything.

Service quality is customers' appraisal of the overall excellence of the service they receive and the extent to which it meets their expectations and provides satisfaction (Al-Jazzazi, & Sultan, 2017, as cited in Ateke & Amangala, 2021). Service quality is one of the most prominent ways commercial enterprises that aspire to achieve increased profits through new customer acquisition and retention of current ones attain their aim (Ateke & Amangala, 2021).

Services are key factors towards retaining satisfied customers and ultimately, building successful business regardless of any industry (Akbar et al., 2010). Quality in a service measures the extent to which a delivered service meets the customer's expectations and is determined by the customer's perception and not by the perceptions of the providers of the service. Service quality is a perceived judgment in the offering of a service. It comes from assessing customer expectations considering the degree of service, customers believe to have experienced (Liu et al., 2018).

### **Customer retention**

Customer retention is more than giving the customer what they expect; it is about exceeding their expectation so that they become loyal advocates for your brands. It is finding ways to make the customers who you acquire become repeat buyers who are loyal to your brand. It is advantageous for

businesses to retain customers, since retaining customers cost businesses less than acquiring new customers. Hsu and Wang (2015) state that customer retention occurs when customer purchase a product again and again, this phenomenon is called customer retention over an extended period of time. For Hsu and Wang (2015), customer retention is the number of customers doing business with a firm at the end of a financial year expressed as a percentage of customers that were active at the beginning of the year.

### **Green Transportation and Business Performance**

The relationship between green transportation and business performance across industries is well evidenced in literature. In an assessment of level of implementation of sustainable transportation activities by multinational manufacturing companies in Kenya, and how sustainable transportation impact operational outcomes, Wanjohi (2020) found that sustainable transportation practice and sustainable distribution were related to a moderate extent; and that a strong positive relationship exists between sustainable transportation practices and operational performance.

Lu et al. (2019) investigated environmental logistics performance index (ELPI) for assessing overall performance in green transportation and logistics practices of 112 countries. The study found that green transportation is strongly correlated with logistics performance. Similarly, Kirunga and Kihara (2018) indicated that green storage, green packaging, green transportation and eco labeling have positive significant influence on environmental performance of chemical manufacturing firms in Kenya.

Also, Diane (2016) studied sustainable transportation practices amongst UK manufacturers, and established that adoption of sustainable transportation practices facilitate improved performance of UK manufacturers. Just as Mwaura et al. (2016) determined that green transportation strongly influence distribution techniques and cuts costs and enhance competitive advantage. In their own study, Pembere (2016) verified the existence of positive impact of application of green transportation management procedures on business performance.

In addition, Conding (2015) linked green practices to business performance in context in Malaysia's automotive industry; Yan and Yazdanifard (2014) established that majority of firms believe that such ideas of going green would be beneficial to the society and that those who implemented it, performed better than those who did not; while Muma et al. (2014) reported that green distribution, green packaging and green storage enhance sustainability results. Nyabate (2014) in his investigation on sustainable transportation practices and performance of mobile phones enterprises in Kenya proved that sustainable transportation practices contribute positively to business performance.

Furthermore, Lee et al. (2012) discovered that, there is an immediate connection between green transportation and business execution. This demonstrates that business execution would be enhanced when green transportation improves operational effectiveness. Mohamed (2012) found that green transportation positively affects competitive advantage; and Chan et al. (2012) argue that green transportation is a justifiable response to environmental concerns.

Considering the review of literature so far, it is right to hypothesize as follows:

**H<sub>01</sub>:** There is no significant relationship between green transportation and customer satisfaction of oil and gas companies in South-South, Nigeria.

**H02:** There is no significant relationship between green transportation and quality service delivery of oil and gas companies in South-South, Nigeria.

**H03:** There is no significant relationship between green transportation and customer retention of oil and gas companies in South-South, Nigeria.

## Methodology

This study adopted a correlational research design. The study population comprised 24 multinational oil and gas companies operating in South-South Nigeria as enlisted in the finelib.com (2021). The sample size of the study was the same as the population. The study collected primary data using questionnaire that whose reliability was ascertained via the Cronbach Alpha test. Table 1 depicts the instrument's reliability values. 3 copies of the questionnaire were administered to Operations Manager, Logistics Manager and Marketing Manages of the multinational oil and gas companies, making it a total of 72 respondents that were used for the study. After data cleaning only 66 copies of questionnaire were used for the data analysis. The Pearson Product Moment Correlation was used to test the hypotheses with the help of the Statistical Packages for Social Sciences (SPSS) version 23.0.

**Table 1: Results of Instrument Reliability Test**

S/N	Variables	Number Of Items	Cronbach's Alpha
1.	Green Transportation	5	0.833
2.	Customer Satisfaction	5	0.793
3.	Quality Service Delivery	5	0.701
4.	Customer Retention	5	0.726

Source: SPSS version 23.0 output of data analyses (2024).

The instrument's reliability as shown in Table 1 suggests that the four constructs used in the study had high reliability values of 0.833, 0.793, 0.701 and 0.726 respectively. This entails that the research instruments has satisfactory constructs reliability.

## Data Analysis

**Table 2: Descriptive Statistics of Green Transportation**

	N	Sum	Mean	Std. Dev.	Variance
We use transport system for our logistics operations	66	225	3.41	.803	.645
Our transport system considers sustainability of the environment	66	241	3.65	1.074	1.154
We repair and maintain our vehicles to avoid noise pollution	66	239	3.62	1.120	1.254
We handle our vehicles in ways that avoid harm on the people	66	230	3.48	1.026	1.054
We use electronic transportation system	66	251	3.80	1.084	1.176
Valid N (listwise)	66				

Source: SPSS version 23.0 output of data analyses (2024).

Table 2 depicts high mean scores of the questionnaire items ranging over 3.00; this means that greater number of the respondents agreed and strongly agreed to the research question with respect to green transportation. However, it can be seen that question 5 which sought to determine the extent to which oil and gas multinational companies in South-South, Nigeria use electronic transportation system, has the highest mean score of 3.80. This shows that question 5 has the strongest influence on the variables.

**Table 3: Descriptive Statistics of Customer Satisfaction**

	N	Sum	Mean	Std. Dev.	Variance
We prioritize the needs of our customers	66	221	3.35	.832	.692
We work hard to satisfy our customers	66	261	3.95	.968	.936
Our customers place high expectations on us	66	269	4.08	1.168	1.363
Our customers are happy with us	66	255	3.86	.959	.920
We meet up with the performance demand of our customers	66	273	4.14	.926	.858
Valid N (listwise)	66				

Source: SPSS version 23.0 output of data analyses (2024).

Table 3 depicts high mean scores of the questionnaire items ranging over 3.00; this means that greater number of the respondents agreed and strongly agreed to the research question with respect to customer satisfaction. However, it can be seen that question 5 which sought to determine the extent to which oil and gas multinational companies in South-South, Nigeria meet up with the performance demand of customers, has the highest mean score of 4.17. This shows that question 5 has the strongest influence on the variables.

**Table 4: Descriptive Statistics of Quality Service Delivery**

	N	Sum	Mean	Std. Dev.	Variance
We try to fulfill our promises to our customers	66	258	3.91	.799	.638
We treat our customers with empathy and responsiveness	66	215	3.26	1.293	1.671
We give our customers value.	66	268	4.06	1.149	1.319
Our customers trust and believe in our service	66	277	4.20	.964	.930
Our customers speak good of us	66	264	4.00	1.008	1.015
Valid N (listwise)	66				

Source: SPSS version 23.0 output of data analyses (2024).

Table 4 depicts high mean scores of the questionnaire items ranging over 3.00; this means that greater number of the respondents agreed and strongly agreed to the research question with respect to quality of service. However, it can be seen that question 4 which sought to determine the extent to which customers of oil and gas multinational companies in South-South, Nigeria trust and believe in their services, has the highest mean score of 4.20. This shows that question 4 has the strongest influence on the variables.

**Table 5: Descriptive Statistics of Customer Retention**

	N	Sum	Mean	Std. Dev.	Variance
We have built a long-standing relationships with our customers	66	263	3.98	1.209	1.461
Our customers know and identify products from other similar firms	66	263	3.98	.850	.723
We record sales from both old and new customers	66	278	4.21	.668	.447
We have engaged the patronage of too many customers in the market	66	276	4.18	.943	.890
Our customers believe in our products	66	241	3.65	1.116	1.246
Valid N (listwise)	66				

Source: SPSS version 23.0 output of data analyses (2024).

Table 5 depicts high mean scores of the questionnaire items ranging over 3.00, meaning that majority of respondents agreed and strongly agreed to the items on customer retention. However, it can be seen that item 3 has the highest mean score of 4.21. This shows that item 3 describes customer retention more, in the opinion of the respondents.

**Table 6: Correlation between Green Transportation and Customer Satisfaction**

		Green Transportation	Customer Satisfaction
Green Transportation	Pearson Correlation	1	.470**
	Sig. (2-tailed)		.000
	N	66	66
Customer Satisfaction	Pearson Correlation	.470**	1
	Sig. (2-tailed)	.000	
	N	66	66

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS version 23.0 output of data analyses (2024).

Table 6 reveals a correlation coefficient of 0.470\*\* between green transportation and customer satisfaction. This indicates a moderate positive relationship between green transportation and customer satisfaction. The probability value (0.000) is less than the critical value (0.05), this shows that a significant relationship exists between green transportation and customer satisfaction. Based on this, we reject the null hypothesis that there is no significant relationship between green transportation and customer satisfaction of oil and gas companies in South-South, Nigeria.

**Table 7: Correlation relationship between Green Transportation and Quality Service Delivery**

		Green Transportation	Quality Service Delivery
Green Transportation	Pearson Correlation	1	.705**
	Sig. (2-tailed)		.000
	N	66	66
Quality Service Delivery	Pearson Correlation	.705**	1
	Sig. (2-tailed)	.000	
	N	66	66

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS version 23.0 output of data analyses (2024).

Table 7 reveals a correlation coefficient of 0.705\*\* between green transportation and quality service delivery. This indicates a strong positive relationship between green transportation and quality service delivery. The probability value (0.000) is less than the critical value (0.05), this shows a significant relationship exists between green transportation and quality service delivery. Based on this, we reject the null hypothesis that there is no significant relationship between green transportation and quality service delivery of oil and gas companies in South-South, Nigeria.

**Table 8: Correlation relationship between Green Transportation and Customer Retention**

		Green Transportation	Customer Retention
Green Transportation	Pearson Correlation	1	.370**
	Sig. (2-tailed)		.002
	N	66	66
Customer Retention	Pearson Correlation	.370**	1
	Sig. (2-tailed)	.002	
	N	66	66

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS version 23.0 output of data analyses (2024).



Table 8 reveals a correlation coefficient of 0.370\*\* between green transportation and customer retention. This indicates a weak positive relationship between green transportation and customer retention. The probability value (0.000) is less than the critical value (0.05), meaning that the relationship between green transportation and customer retention is statistically significant. Thus, we reject the null hypothesis that there is no significant relationship between green transportation and customer retention of oil and gas companies in South-South, Nigeria.

### **Discussion of Findings**

From results of the correlation analysis, it can be seen that green transportation has a moderate positive with customer satisfaction; a strong positive relationship with quality service delivery; and a weak positive relationship with customer retention. These findings validate the findings of Wanjohi (2020) that there is relationship between sustainable transportation practices and operational performance; as well as the findings of Lu et al. (2019) that green transportation is strongly correlated with logistics performance.

The findings also align with the report green storage, green packaging, green transportation and eco labeling have a positive and significant influence on environmental performance of chemical manufacturing firms in Kenya (Kirunga & Kihara, 2018). The findings support the position that sustainable transportation practices improve business performance (Logeshe, 2017; Diane, 2016; Nyabate, 2014) and competitive advantage (Mwaura et al., 2016).

Similarly, the findings align with the arguments that sustainable transportation practices have positive impact on environmental performance (Pembere, 2016), sustainable business outcomes (Lee et al., 2012) and competitive advantage via utilization of raw materials that yield maximum output (Mohamed, 2012).

### **Conclusion and Recommendations**

Based on the results obtained from the statistical analyses, the study concludes that green transportation significantly relates to business performance of oil and gas companies in South-South, Nigeria. Green transportation is pivotal to any business practice as it moderates the balance between business operations and environmental protection and this helps organizations to build competitive edge and also fulfill their duty to protect the natural environment leading to overall business performance. Consequently, the following recommendations are made:

- a) Managers of oil and gas companies in South-South, Nigeria should engage in green transport practices to boost customer satisfaction.
- b) Managers of oil and gas companies in South-South, Nigeria should implement green transportation to ameliorate the impact of environmental pollution and at the same time achieve business performance.

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