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Market Segmentation and Sustainability of Selected Paint Manufacturing in Lagos State Nigeria

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Abstract: This study explores the relationship between market segmentation and sustainability by analyzing how demographic and psychographic segmentation influences the adoption of eco-friendly production practices within the paint manufacturing industry. By examining these variables the research seeks to understand how segment-specific insights can drive sustainable innovation and greener production choices. The goal is to offer strategic direction for manufacturers to tailor their sustainability efforts in ways that resonate with distinct consumer segments, thereby enhancing both environmental impact and market performance. Given the increasing global emphasis on sustainability, businesses must align their market segmentation strategies with environmentally conscious consumer preferences. For demographic segmentation with a coefficient of 0.5273 and a statistically significant P-value of 0.000 while psychographic segmentation coefficient of 0.4192, and with a statistically significant P-value of 0.000, the findings reveal that market segmentation have an effect on sustainability. The result confirms the overall model significance, reinforcing the crucial role of market segmentation in sustainable business practices. Based on these results, the study recommends that paint manufacturers refine their demographic segmentation strategies by targeting high-income, urban consumers willing to invest in eco-friendly paints. Additionally, psychographic segmentation should be leveraged by integrating sustainability into branding and advertising campaigns to appeal to environmentally conscious buyers. Furthermore, businesses should adopt data-driven strategies, utilizing machine learning and predictive analytics to continuously assess consumer trends and optimize their eco-friendly product offerings.

Keywords: *Market Segmentation, Eco-Friendly Production, Demographic Segmentation, Psychographic Segmentation, Sustainable Business Practices, Paint Manufacturing Industry.*

1. Background of the Study

Market segmentation plays a crucial role in driving sustainability efforts across various industries including manufacturing (Nygaard, 2024). Segmenting markets into distinct groups with common characteristics enables firms to be better positioned to craft strategies that resonate with consumers' environmental values and preferences (Zlatanova, 2024). Effective market segmentation enables businesses to identify and cater to customer segments that place a high priority on sustainability thereby shaping their production methods and overall strategic direction (Sudirjo, 2023). This targeted approach enables companies to maximize resource efficiency, minimize waste, and design eco-friendly products that meet the specific needs of various consumer groups.

The issue of limited awareness and low consumer demand for eco-friendly products is a significant barrier to sustainability in Nigeria's paint manufacturing industry (Onunwa et al., 2024). Global trends have shown a growing preference for environmentally responsible products and this shift has been slow in gaining traction among Nigerian consumers particularly in the mid and low income segments of the market (Duruji & Asagba., 2024). One of the core challenges is the general lack of environmental education and awareness as a large proportion of consumers are unfamiliar with the health hazards associated with conventional manufacturing such as high levels of volatile organic compounds (VOCs) and other toxic substances and as a result of this they tend to prioritize affordability and aesthetic appeal over environmental or health considerations (Hassan & Umar, 2024). Without sufficient public education campaigns or government supported sensitization programs as most buyers remain unaware of the long-term environmental and benefits of sustainability (Ononogbo, 2024).

Moreover, price sensitivity is a critical factor in consumer decision making in Nigeria. Eco-friendly paints often produced with more expensive raw materials and under stricter environmental standards, typically carry a higher price tag. In a country like Nigeria where purchasing power is low and inflation is high many consumers opt for cheaper products regardless of their environmental impact and this creates a pricing disadvantage for companies seeking to produce and sell sustainable products (Ogiemwonyi, 2022).

The lack of visible segmentation in the marketplace also exacerbates the problem. Few manufacturers make an effort to clearly label or market their products as eco-friendly and even when they do there is limited trust or verification of such claims. The absence of a well-established certification system for green products in Nigeria further complicates this issue leading to skepticism among consumers about whether a product advertised as eco-friendly truly meets environmental standards (Onyeka et al., 2024). As a consequence of paint manufacturers find little commercial justification to invest in sustainable product innovation given the weak consumer pull. Lack of strong demand or market pressure will make firms unlikely to take on the added financial and operational burdens associated with sustainability (Alam et al., 2023). This underdevelopment of the eco-friendly segment in the Nigerian paint industry stalls the broader sustainability agenda. It prevents the creation of a robust green economy in the sector and slows down the country's transition toward environmentally responsible industrial practices. Breaking this cycle would require collaborative interventions such as government incentives for green production, public awareness campaigns, clear eco-labeling standards, and educational outreach to both inform consumers and encourage producers to align with sustainability principles (Omoju et al., 2024). Sustainability has become a key consideration in modern business operations due to increasing consumer demand for environmentally friendly products and stricter regulatory requirements (Rajani et al., 2022). Companies that align their production with sustainability goals not only comply with environmental policies but also strengthen their market position by appealing to eco-conscious consumers. Research suggests that firms integrating sustainability into their segmentation strategies experience long-term financial and competitive advantages as they attract loyal customers who value ethical business practices (Ardiansyah & Alnoor, 2024).

Moreover, Segmentation strategies that consider consumer values, behaviors, and demographic characteristics empower firms to direct resources more effectively and invest in sustainable innovations that align with the specific needs and preferences of their target markets (Arnett, 2024). For example, younger consumers often prefer products that have a low environmental footprint, whereas wealthier individuals may view high-quality sustainable goods as symbols of status (Solomon, 2020). By grasping these market tendencies, companies can design customized sustainability strategies that not only promote environmental stewardship but also drive profitability (Braga et al., 2024).

Integrating sustainability into market segmentation has evolved from a strategic option to a critical necessity in contemporary highly competitive business landscape (Zulfikar, 2024). As companies become more aware of the importance of aligning their operations with both consumer demands and environmental regulations, segmentation emerges as a powerful mechanism for promoting enduring sustainability (Fuxman et al., 2022).

Contemporary competitive market makes eco-friendly production to become a strategic imperative for relevant stakeholders to seek balance between profitability with environmental stewardship (Khandare, 2024). One key driver of this shift is demographic segmentation, particularly by age, which helps firms tailor their sustainable practices to meet the evolving values and expectations of their consumers. Younger demographics especially millennials and Generation Z tend to prioritize sustainability and are more likely to support brands that demonstrate environmental responsibility (Brand et al., 2022). This growing awareness among younger consumers has prompted companies to invest in green technologies and eco-efficient production processes, knowing that such innovations can foster brand loyalty and command a premium in the marketplace.

Moreover, studies reveal that the propensity to engage with and purchase eco-friendly products significantly varies across age groups. Research indicates that while older consumers may prioritize factors such as reliability and cost-effectiveness, younger consumers are increasingly driven by the ethical implications of their purchases (Ghouse et al., 2024). This divergence in consumer behavior compels companies to adopt a segmented approach to production designing products and processes that resonate with the distinct preferences of each age cohort. For

instance, firms targeting younger markets might emphasize innovations that reduce carbon footprints and utilize renewable resources, whereas products aimed at older segments might balance traditional quality markers with moderate eco-friendly enhancements (Trivedi & Pal., 2023).

Demographic segmentation not only guides marketing strategies but also influences operational decisions at the production level. As environmental regulations tighten and consumer expectations evolve, integrating eco-friendly practices becomes critical for sustaining long-term competitiveness. This relationship between consumer demographics and sustainable production highlights the importance of aligning business practices with the environmental values of the target market, ensuring that production innovations are both economically viable and socially responsible (Agu et al., 2024).

Eco-friendly production practices have become essential for companies seeking to meet the growing demand for sustainable products. One critical factor driving this shift is psychographic segmentation, particularly regarding social status. Social status influences consumers' lifestyles, values, and purchasing behavior; higher-status individuals often prioritize quality and are increasingly conscious of environmental and social issues (Duncan, 2024). These consumers tend to support brands that not only deliver premium products but also demonstrate a commitment to sustainability. Individuals with elevated social status are more inclined to invest in eco-friendly products because these purchases align with their self-image and desire for social recognition (Lee & Hung., 2024). This trend has encouraged manufacturers to adopt greener production processes and invest in innovative, sustainable technologies that reduce environmental impact while maintaining product excellence. Aligning production strategies with the environmentally conscious values of affluent and high-status consumer segments enables companies to strengthen their brand image and gain a competitive advantage in an increasingly dynamic marketplace (Feng et al., 2025).

With the growing academic and industry interest in sustainable business practices there remains a significant gap in understanding how market segmentation strategies specifically influence eco-friendly production processes. Although theoretical frameworks posit that targeting distinct consumer segments can drive sustainability in production (Nygaard, 2024), empirical studies examining this relationship in practical settings are limited. In particular, it is unclear how various segmentation criteria whether based on demographic, psychographic, or behavioral factors translate into tangible sustainable outcomes within manufacturing operations.

Tailored marketing strategies may enhance consumer engagement and incentivize the adoption of green technologies (Khandare, 2024), the operational mechanisms by which market segmentation affects resource utilization, waste reduction, and overall production efficiency remain underexplored (Solomon, 2020). This is especially pertinent in emerging markets where rapid economic growth and evolving consumer values present both opportunities and challenges for integrating sustainability into business strategies (Braga et al., 2024). Addressing this research gap is vital to advancing the connection of market segmentation and sustainability. A clearer understanding of how specific segmentation strategies particularly those grounded in demographic and psychographic insights affect sustainable business practices will empower firms to develop more targeted and impactful approaches. This alignment ensures that companies not only capture and retain environmentally conscious consumer segments but also embed sustainability into their core operations, fostering long-term ecological responsibility and competitive advantage in the market. The general objective is to examine the impact of market segmentation on sustainability among manufacturing firms in Nigeria.

2. Literature Review

Sarti et al (2018), opine that previous research on sustainability and health related product labels has sought to develop segmentation frameworks based on consumers' self-reports. However, consumers are likely to overstate the effect that these labels have on their purchasing behavior. Moreover, existing consumer segmentation frameworks do not distinguish among product labels based on whether they offer public benefits (e.g., environmental benefits, animal welfare, social equity) vs. private benefits (e.g., cost savings, health benefits) vs. both. Their study addresses these gaps by developing a consumer segmentation based on consumers' actual purchases of sustainability and health related products and differentiating product labels based on the benefits they offer public, private or both.

Soto et al (2021), draws attention to the need for formulating tailored, sustainable transport policies considering heterogeneity in the population regarding their preferences and attitudes. In this regard, the study propose a market segmentation for incentivising sustainable transport policies. The analysis builds from the responses of 1,041 car owners towards environmentally friendly transport alternatives in a survey issued in the five largest Colombian metropolitan areas. Using the collected data, the study estimated a Multiple Indicators Multiple Causes (MIMIC) model to evaluate individual attitudes towards the environment, green transport policies, car use, and technology. Results make the contradiction between car attachment and environmental concern evident. The lower the environmental concern, the higher the attachment to the car. However, the differences between *Traditionalists* and *All Matters* are less pronounced. Finally, the proposed sustainable strategies considering the heterogeneities of each group, analysed the implications of developing custom-made actions and marketing strategies for promoting sustainable transport policies, considering the interests and characteristics of each targeted group in the population.

Bian et al (2019), did their study based on a review of previous literature and an investigation of the empirical facts of market segmentation and environmental pollution in China, the study mainly analyses the impact of market segmentation on environmental pollution from the perspective of resource misallocation. The results generated by the Dynamic Panel Econometric Model show that market segmentation had a significant deteriorating effect on environmental pollution during the investigated period. In addition, market segmentation has significantly aggravated the misallocation of labour and capital resources, which is also an important factor leading to environmental pollution. As for the heterogeneity of different pollutants, market segmentation has a significant negative impact on sulpfur dioxide (SO_2), smoke and dust, suspended particles ($PM_{2.5}$), while for wastewater and solid waste, the impact is not significant. Furthermore, the effect of market segmentation on environmental pollution was significant in the period 2002–2007, and in the Eastern area, the impact was not significant due to the relatively high degree of market integration.

Nur and Siregar (2024), opine that in the rapidly evolving field of digital marketing, precise targeting and segmentation have become essential for optimizing advertising efforts, yet traditional methods often struggle to adequately address the dynamic nature of consumer behaviors. The study delves into the efficacy of cluster analysis as a robust tool in market segmentation, particularly aimed at enhancing the precision of targeted advertising campaigns. By employing a case study approach, the research meticulously analyzes real-world advertising campaigns across various industries, utilizing cluster analysis to segment the market and employing qualitative data analysis to evaluate the outcomes in terms of engagement and conversion improvements. The results indicate that cluster analysis not only facilitates a deeper understanding of market segments but also leads to more tailored and effective advertising strategies. Companies implementing this method reported significant improvements in campaign performance, with higher engagement and conversion rates compared to traditional segmentation approaches. The study underscores the advantages of employing advanced statistical methods like cluster analysis in market segmentation, highlighting its potential to transform targeted advertising by enabling advertisers to adapt more swiftly and effectively to market dynamics. The implications for practice suggest that businesses should integrate cluster analysis into their marketing strategies to gain a competitive edge through enhanced customer insights and optimized advertising effectiveness, thereby contributing valuable empirical evidence to the existing literature.

Jaiswal et al. (2021), opines that in the present era of green consumerism, consumers are shifting towards sustainable consumption with the rising demand of green products. Despite consumers' demand of such products, their attitudes towards eco-friendly practices can neither be the same for different consumer groups nor can be treated as they all are equally green. The purpose of the study is to operationalize the green market segmentation based on demographic, psychographic and behavioural characterization in the Indian context of green consumerism. The deductive approach of questionnaire survey method has been adapted to collect the responses from convenience sampling of Indian consumers using the measured constructs concerning to green consumer psychology. The data were analyzed by applying multivariate techniques of confirmatory factor analysis (CFA), cluster and discriminant analysis. The results revealed that the three distinctive set of consumer groups are evolved as “keen greens”, “moderate greens” and “reluctant greens” based on the eight cognitive variables used in this

study, namely environmental concern (EC), perceived environmental knowledge (PEK), perceived consumer effectiveness (PCE), perception of eco-label, perception of eco-brand and environmental advertisements, green purchase intention (GPI) and green purchasing behaviour (GPB) in the Indian context. The research findings may lack its generalizability as the survey strategy is confined with the most populated territory of India. To provide its robustness, the future studies need more heterogeneous sample across the country. The research findings could provide the key insights into policymakers and enterprises in the framing of marketing strategies to promote green consumerism in the setting of emerging economies.

Yuan et al. (2024), opines that in an era marked by economic globalization, rising protectionism, and the COVID-19 pandemic's ongoing challenges, market segmentation plays a critical role in shaping economic dynamics. In navigating a rapidly changing global landscape, China has formulated strategies to prioritize domestic circulation and harmonize domestic and foreign circulations. Market segmentation, known for its detrimental effects on economic development and income inequality, poses significant challenges to consumers and producers. The study explores the potential of the digital economy, driven by technologies like the Internet, big data, and 5G, to dismantle market segmentation and promote a unified domestic market. Combining theoretical frameworks with empirical analysis, the research investigates the complex relationship between the digital economy and market segmentation. It reveals that the digital economy holds transformative potential, especially in coastal regions, where modern digital infrastructure is prevalent. The study emphasizes the importance of customized policies to address regional disparities and offers strategic policy recommendations. Theoretical implications include expanding our understanding of the digital economy's role in mitigating market segmentation and encouraging scholars to reassess conventional economic paradigms in emerging technology environments. Policy recommendations call for coordinated efforts to support digital infrastructure, develop a regional digital economy, and improve legal frameworks to balance innovation and market regulation.

Su et al (2019), explores the interaction between environmental consciousness and sustainable food attributes as predictors in the market segmentation process for sustainable foods with respect to United States (U.S.) Generation Z (Gen Z) consumers. The study was executed using a cross-national, web-based survey to analyze and categorize Gen Z female (n = 435) and male (n = 377) consumers between 18 and 23 years of age living in the continental United States. The objectives of the study were to classify U.S. Gen Z consumers into unique segments based on their environmental consciousness and to assess the functional relationships among their degree of ecological awareness, the importance of the perception of sustainable food attributes, their food choices associated with healthy eating habits and sociodemographics. Survey data were analyzed using cluster analysis of consumer groups based on environmental consciousness. Environmental consciousness was measured using a composite score of the environmental involvement scale and the environmental values scale. Gen Z consumers with high environmental consciousness (sustainable activists) and moderate ecological awareness (sustainable believers) considered more eco-friendly and healthy product attributes when purchasing sustainable food, whereas Gen Z consumers with low environmental consciousness (sustainable moderates) considered more extrinsic product attributes (e.g., price and convenience). Furthermore, the results indicate that food choices associated with healthy eating habits could be used to develop a profile for different eco-conscious Gen Z consumer groups. The contributions of this study are twofold. First, for academic researchers, this paper extends marketing segmentation research concerning environmentally sensitive young consumers. Second, for industry professionals, this study provides food retailers or food service operators with sustainable consumer values that will aid in the development of effective, green marketing strategies to better attract and meet the sustainability expectations of Gen Z—the consumer segment with the most spending power of any generation.

Bruhn et al (2024), customer-dominant market segmentation is an important basis for developing strategies and measures for market and customer management. The customer-dominant market segmentation aims to divide customers into internally homogeneous and mutually heterogeneous customer segments based on their customer logic. This involves a step-by-step and multidimensional market segmentation according to the customer's objectives and sphere of life, the processes of his customer logic, and his ecosystem. Based on this, an optimal design of the provider integration in the customer ecosystem is carried out with regard to type, intensity, duration, and timing. The study makes it clear that with the alignment of segmentation towards customer logic and the

customer ecosystem, the data generated by market research can be condensed and interpreted using multivariate analysis methods or data mining techniques.

Poortinga and Darnton (2016), describes the development of a sustainability segmentation model that can be used to engage the public across different sustainability policy areas. A nationally representative survey (n = 1538) was conducted containing questions on the three pillars of sustainable development, human values, perceptions of climate change and energy security, and self-reported behaviours in the domains of household energy use, travel and transport, waste and recycling, and water use. A series of cluster analyses identified six segments of the public that relate differently to sustainability. Even if the segments were solely constructed on the basis of thirteen distal psycho-social indicators, they had distinct socio-demographic profiles and diverse patterns of self-reported environmental behaviour. A 15-item screening tool was developed to replicate the segments with an average 72% accuracy.

Haustein and Hunecke (2013), opined that recently the use of attitude-based market segmentation to promote environmentally sustainable transport has significantly increased. The segmentation of the population into meaningful groups sharing similar attitudes and preferences provides valuable information about how green measures should be designed and promoted in order to attract different user groups. The review highlights advances in the understanding of mode choice from a psychological perspective, taking into account behavioural theories of car use and car-use reduction. In this contribution, attitudinal, socio-demographic, geographical and behavioural segmentations are compared regarding marketing criteria. Although none of the different approaches can claim absolute superiority, attitudinal approaches show advantages in providing starting-points for interventions to reduce car use.

Naini et al (2024), did a study on segmentation and the purpose of their study is to accelerate green consumerism efforts by assisting green marketers in identifying the homogeneous and significant eco-friendly customer segments emerging in India. The study determines the antecedents driving customers to purchase green products, which can be leveraged while targeting the studied customer group and designing promotional strategies for these microgreen segments. Non-probability criterion-based sampling technique was used in collecting the data across Pan India through various online platforms like LinkedIn, Twitter, and Facebook. The exploratory factor analysis, followed by the cluster and discriminant analysis, is conducted for inferential results. The results reveal eight major factors influencing green consumer behavior, out of which green habit, green culture awareness and attitude, interpersonal influence, and green purchase intention/behavior emerged as the most significant factors. The study establishes two important clusters of green consumers, that is, “Green Dads”-generation Y males and “Green Janes”-generation Z females, with social media marketing and subjective norms as the most influential factors in discriminating between these two clusters. This research magnifies the importance of profiling customers based on demographics, psychographics, behavioral variables, and external marketing cues. The varied combinations of factors concerning ecological behavior imply the focus on micro variables by marketers, hence promulgating the projected granularity of green market segmentation and consequential consumer behavior.

3. Methodology

This study adopts a quantitative research approach using correlational design to examine the impact of market segmentation strategies on sustainability practices in the paint manufacturing industry. A robust regression model is employed to analyze the relationships between variables for deeper insights. The study employs the following analytical techniques such as the robust regression analysis which examins the effect of demographic and psychographic segmentation on eco-friendly production and assumption testing which encompasses normality, multicollinearity, and heteroscedasticity checks. To examine the relationship between market segmentation and sustainability of selected paint manufacturing, the study employs a multiple robust regression model. The dependent variable is Eco Friendly Production (EFP) while the independent variables are Demographic segmentation (DS) and Psychographic Segmentation (PS).

Mathematical Representation of the Model

$Y=f(X)$ ---------- **(1)**

Y = Dependent Variable [Sustainability]

X = Independent Variable [Market Segmentation]

The regression equation is specified as:

$$EFP_{it} = \beta 0 + \beta 1 DS + \beta 2 PS + \varepsilon \text{ ---------- (2)}$$

Where:

EFP = Eco Friendly Production

DS = Demographic Segmentation score

PS = Psychographic Segmentation score

β_0 = intercept

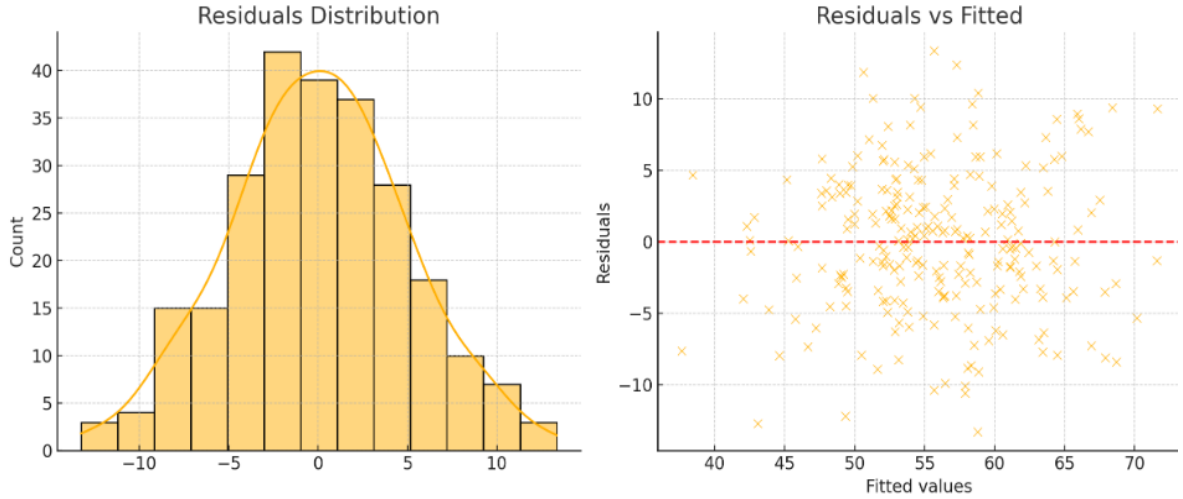
β_1- β_2 = Coefficient of the independent variables

ε_{it} = Residual or error term

4. Result

This section presents the results of a robust linear regression analysis conducted to examine the relationship between market segmentation strategies and its impact on eco-friendly production practices within the paint manufacturing industry. In an era where sustainability has become a strategic imperative, understanding how customer segmentation influences sustainable practice choices is vital for firms seeking to align environmental responsibility with market competitiveness. Drawing from the framework of market segmentation and sustainability the analysis explores how variations in consumer characteristics shape manufacturers' decisions to adopt eco-conscious production methods. The results not only quantify the influence of segmentation on sustainable outcomes but also offer insights into how firms can optimize their marketing strategies to foster long-term environmental and economic value.

The graphical representation of the regression results below provides a visual summary of the relationship between market segmentation variables (demographic and psychographic) and eco-friendly production within the paint manufacturing industry. By illustrating the magnitude and direction of the standardized regression coefficients, the graph makes it easier to interpret the strength of influence each independent variable has on the dependent variable. This visual tool helps to quickly identify which segmentation strategy exerts a greater impact on sustainable manufacturing practices and it reinforces the statistical findings by offering an intuitive depiction of the underlying relationships. The plot also aids in comparing the relative weight of each predictor and offering decision makers a clearer understanding of how consumer characteristics translate into environmental outcomes.



The diagnostic graph generated from the robust regression model provides a comprehensive visual assessment of the underlying assumptions and fit of the analysis. Starting with the Residuals vs Fitted Values plot, it is observed that the residuals are dispersed randomly around the horizontal axis, without any distinct curvature or funnel like shape. This pattern confirms that the relationship between the predictors (demographic and psychographic segmentation) and the dependent variable (eco-friendly production) is appropriately modeled as linear and that the variance of the residuals remains relatively constant across different levels of predicted values. This indicates that the assumption of homoskedasticity, a key requirement in linear regression, is satisfactorily met.

Moving to the Normal Q-Q Plot, the residuals align closely with the 45-degree reference line, especially through the central range of the data. Although minor deviations are noticeable at the extremes, they are not substantial enough to suggest serious departures from normality. This visual evidence supports the result of the Shapiro-Wilk test ($p = 0.072$), confirming that the residuals are approximately normally distributed. This further implies that the regression coefficients, test statistics, and confidence intervals derived from the model are reliable and interpretable.

The Scale-Location Plot (also known as the spread-location plot) provides additional support for the homoskedasticity assumption. Here, the square root of the standardized residuals is plotted against the fitted values. The scatter pattern of the points appears evenly spread with no upward or downward trend, implying that the variability of residuals does not increase or decrease systematically as the predicted value changes. This reaffirms the constancy of variance and enhances confidence in the stability of the model's predictions across the data range.

In this plot, most data points cluster within acceptable bounds of leverage and standardized residuals. Importantly, there are no points with excessive leverage that exceed the Cook's Distance threshold line, which would have indicated outliers with a disproportionate impact on the model. This observation confirms that the regression results are not unduly driven by a small number of extreme or anomalous data points.

The diagnostic plots collectively validate the robustness and appropriateness of the regression model. They confirm linearity, normality of residuals, homoskedasticity, and the absence of influential outliers thereby supporting the reliability of the statistical conclusions regarding the effect of market segmentation on eco-friendly production within the paint manufacturing industry.

Regression Result

	coef	std err	z	P>|z|	[0.025	0.975]
const	4.6150	5.815	0.794	0.427	-6.781	16.011
Demographic	0.5273	0.064	8.200	0.000	0.401	0.653
Psychographic	0.4192	0.046	9.117	0.000	0.329	0.509

The regression analysis reveals meaningful insights into how different segmentation strategies influence eco-friendly production within the paint manufacturing industry. Demographic segmentation, with a coefficient (β) of 0.5273, demonstrates a positive and substantial effect on eco-friendly production. This means that for every one-unit increase in the effectiveness or strategic deployment of demographic segmentation, there is a corresponding 0.52 unit rise in the eco-friendly production index, assuming all other variables remain unchanged. The significance of this relationship suggests that firms that tailor their marketing and production strategies according to demographic attributes are more successful in driving sustainable manufacturing behaviors. For instance, targeting younger, urban, or highly educated consumers, who may be more environmentally aware, appears to enhance the adoption of green production techniques.

In addition to demographic factors, psychographic segmentation also shows a notable impact, with a coefficient (β) of 0.4192. Although slightly lower than the demographic coefficient, the effect remains strong and statistically significant. This implies that understanding and addressing consumer values, lifestyle preferences, personal beliefs, and environmental consciousness meaningfully contributes to the adoption of eco-friendly practices in production. Consumers who identify strongly with sustainability or view environmental stewardship as part of their identity are more likely to support brands that align with these values. As a result, paint manufacturers that design products, messaging, and brand identity around these psychographic characteristics are likely to gain stronger support for their sustainable initiatives. The model confirms that both segmentation strategies are not only statistically sound but also practically impactful in promoting environmentally responsible production methods.

The intercept term, valued at β of 4.6150, represents the theoretical baseline level of eco-friendly production in the absence of any deliberate segmentation efforts. Although this coefficient is not statistically significant meaning that its predictive value is limited it still serves as a conceptual reference point. It suggests that without tailoring strategies based on demographic or psychographic characteristics, companies might still engage in minimal eco-friendly practices, likely due to regulatory requirements or basic environmental standards. However, this base level is not sufficient for firms aiming to establish a sustainable competitive advantage or create significant environmental impact. The real improvements in eco-friendly production emerge when segmentation strategies are actively and thoughtfully implemented.

Together, these findings affirm the critical role of market segmentation in sustainability initiatives. While both demographic and psychographic dimensions independently drive eco-friendly outcomes, their combined use offers a more comprehensive and effective approach. Firms operating in environmentally sensitive sectors like paint manufacturing must therefore move beyond one-size-fits-all marketing, and embrace segmentation as a strategic tool for aligning their production processes with sustainability goals.

5. Conclusion and Recommendations

This study highlights the significant role of market segmentation strategies in promoting sustainability within Nigeria's paint manufacturing industry. Findings reveal that segmentation approaches positively and significantly influence the adoption of eco-friendly production practices. Specifically the study reveals that demographic segmentation, with a coefficient of 0.5273, indicates that targeting consumers based on income, location, and lifestyle (such as urban, middle- to high-income groups) can substantially enhance sustainable manufacturing. Psychographic segmentation with a coefficient of 0.4192 further emphasizes the importance of consumer attitudes, values, and environmental consciousness in driving demand for eco-friendly products.

By integrating these insights, paint manufacturers can leverage segmentation as a strategic tool to align product development, marketing, and operational practices with the values and preferences of sustainability-minded consumers. A data driven and multi-dimensional segmentation strategy will not only foster regulatory compliance but also unlock market growth, brand differentiation, and long-term profitability. The study ultimately reinforces that sustainability is not merely a compliance requirement, but a strategic market opportunity that when guided by informed segmentation can deliver competitive advantage and environmental impact simultaneously. The study recommends that businesses should align their product development with the expectations of these consumer groups by investing in innovations such as low VOC (Volatile Organic Compound) formulations, biodegradable packaging, and energy efficient production methods. Strengthening regulatory compliance and obtaining eco certifications will also enhance brand credibility, making products more attractive to both individual consumers and corporate buyers focused on sustainability. Also, incorporating sustainability into the core of business operations requires a long-term commitment, including educating sales teams on the value propositions of eco-friendly paints and training marketing personnel to effectively communicate these benefits to the right audience. Public awareness campaigns, strategic partnerships with environmental organizations, and collaborations with policymakers to secure incentives for sustainable production will further reinforce industry-wide adoption.

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