

PRODUCT INNOVATIVENESS AND SUSTAINABILITY OF GLOBAL SYSTEM FOR MOBILE COMMUNICATION COMPANIES IN SOUTH-SOUTH, NIGERIA

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ABSTRACT

This study examined the relationship between product innovativeness (predictor variable) and sustainability (criterion variable), measured through economic, environmental, and social sustainability, in Global System for Mobile (GSM) Communication Companies in South-South, Nigeria. The research is underpinned by Dynamic Capabilities Theory and Innovation Diffusion Theory, which collectively explains how innovation drives sustainable competitive advantage, stakeholder engagement, and technology adoption. Adopting a positivist research philosophy, the study employed a correlational and cross-sectional design, surveying 28 managers from four major telecom firms (MTN, Airtel, Globacom, 9Mobile) using a census sampling technique. Data was collected via a validated 5-point Likert scale questionnaire, with reliability confirmed through Cronbach's Alpha (0.876–0.986). Descriptive statistics and Structural Equation Modeling (SEM) were used for analysis, revealing strong positive relationships between product innovativeness and economic ($\beta=0.990$), environmental ($\beta=0.983$), and social sustainability ($\beta=0.984$), all statistically significant ($p=0.000$). The study concludes that product innovativeness is a critical driver of sustainability, enhancing profitability, regulatory compliance, and social impact. Recommendations include prioritizing green innovations (e.g. energy-efficient infrastructure), expanding AI-driven digital services, fostering inclusive community-focused products, and strengthening public-private partnerships for policy and funding support to sustain long-term growth in Nigeria's telecom sector.

Keywords: Product Innovativeness, Sustainability, Economic Sustainability, Environmental Sustainability, Social Sustainability and Corporate Sustainability Strategies.

INTRODUCTION

Organizations globally are increasingly confronted with multifaceted challenges, including environmental degradation, resource depletion, economic instability, and rising social inequalities, which have heightened the need for sustainable business practices (Lozano, 2020). As a result, the concept of sustainability—encompassing economic, environmental, and social dimensions—has gained prominence as a means of ensuring long-term organizational survival and societal impact (Elkington, 2021). In light of these challenges, organizations are expected not only to generate

profits but also to minimize environmental footprints and contribute to social well-being. In the current era of climate change, technological disruption, and health crises like COVID-19, achieving sustainability requires proactive and innovative approaches. This need has spurred increased interest in how firms can integrate innovation—particularly product innovativeness—into their sustainability strategies to create lasting value.

Product innovativeness, defined as the development and introduction of new or significantly improved goods or services, plays a crucial role in promoting sustainability, particularly in dynamic and highly competitive sectors like telecommunications (Zhao *et al.*, 2022). In the context of GSM telecommunication companies, product innovativeness includes the introduction of advanced mobile services, data packages, digital payment platforms, and other customer-focused solutions that respond to evolving market demands. When companies innovate their products, they not only enhance user experience but also improve operational efficiency, reduce resource waste, and respond to regulatory and environmental demands. Such innovations also contribute to economic sustainability by improving financial performance and revenue streams. Additionally, products designed with environmental and social consciousness can strengthen brand loyalty and customer trust, enhancing social sustainability. Therefore, companies that strategically embed product innovativeness into their operations are more likely to thrive in turbulent business environments. The Nigerian telecommunication industry, especially in the South-South region, faces unique and complex sustainability challenges, including high infrastructure costs, unreliable electricity supply, and rising customer expectations (Adelakun *et al.*, 2022). GSM providers such as MTN, Airtel, Globacom, and 9mobile are under pressure to deliver high-quality services while maintaining profitability and meeting environmental standards.

Product innovativeness offers a pathway to address these challenges by creating services that require less energy, offer better connectivity in rural areas, and meet the specific needs of Nigeria's diverse population. For instance, mobile financial services and internet packages tailored to low-income users can foster digital inclusion and socioeconomic empowerment. Despite the growing relevance of product innovativeness in driving sustainability, academic literature has largely underexplored this relationship within the Nigerian telecom sector, particularly in the South-South region. Most existing studies focus broadly on workplace or product innovativeness without adequately isolating product innovativeness and examining its specific impact on sustainability measures such as resource efficiency, environmental responsibility, and inclusivity (Nwafor *et al.*, 2020; Rajput & Singh, 2021). This knowledge gap is significant, considering the importance of product offerings in customer satisfaction, market positioning, and long-term viability in the telecom industry. Thus, this study seeks to fill the identified lacuna by investigating the relationship between product innovativeness and organizational sustainability of GSM telecommunication companies in South-South Nigeria. The findings aim to inform strategic decision-making in these companies, enabling them to leverage innovative products for economic resilience, environmental stewardship, and social impact in a rapidly changing business landscape.

Purpose and Objectives of the Study

The purpose of this study was to examine the relationship between product innovativeness and sustainability of Global System for Mobile Communication Companies in South-South, Nigeria. The specific objectives were to:

- i. Examine the relationship between product innovativeness and economic sustainability of GSM Telecommunication Companies in South-South, Nigeria.
- ii. Examine the relationship between product innovativeness and environmental sustainability of GSM Telecommunication Companies in South-South, Nigeria.
- iii. Examine the relationship between product innovativeness and social sustainability of GSM Telecommunication Companies in South-South, Nigeria.

Conceptual Framework

The Conceptual Framework shows the study variables as presented in figure 1.

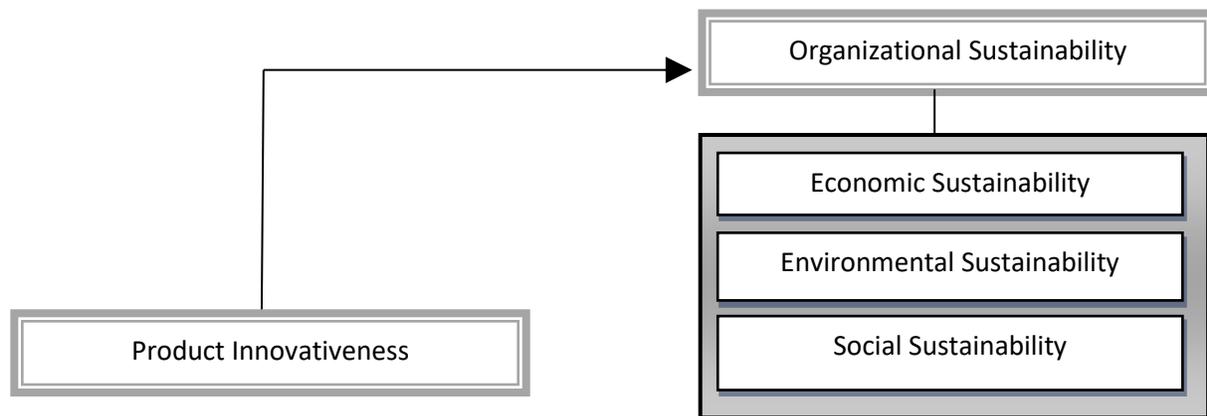


Figure 1: Conceptual framework of Product Innovativeness and Organizational Sustainability.

Source: Desk Research, 2024: The Predictor variable is Product Innovativeness, with dimensions sourced from Damanpour, 1991: Walker, 2004: Damanpour & Aravind, 2012, while the measures of Organizational Sustainability were from (Bansal, 2005: Hart & Milstein, 2003: Clarkson, 1995).

Research Questions

In line with research objectives, the following research questions were raised to guide the study:

- i. How does Product Innovativeness relate with Economic Sustainability of Global System for Mobile Communication Companies in South-South, Nigeria?
- ii. How does Product Innovativeness relate with Environmental Sustainability of Global System for Mobile Communication Companies in South-South, Nigeria?
- iii. How does Product Innovativeness relate with Social Sustainability of Global System for Mobile Communication Companies in South-South, Nigeria?

Statement of Hypotheses

To provide tentative answers to the research questions, and to further guide this study, the following hypotheses were formulated in null form:

H₀₁: There is no significant relationship between Product Innovativeness and Economic Sustainability of Global System for Mobile Communication Companies in South-South, Nigeria.

H02: There is no significant relationship between Product Innovativeness and Environmental Sustainability of Global System for Mobile Communication Companies in South-South, Nigeria.

H03: There is no significant relationship between Product Innovativeness and Social Sustainability of Global System for Mobile Communication Companies in South-South, Nigeria.

LITERATURE REVIEW

Theoretical Foundations

In this study on product innovativeness and organizational sustainability, the Dynamic Capabilities Theory and Innovation Diffusion Theory were used to underpin the study variables.

Dynamic Capabilities Theory

Dynamic Capabilities Theory (DCT) explains how organizations adapt to changing environments by integrating, reconfiguring, and transforming internal and external resources to maintain competitive advantage. Developed by Teece, Pisano, and Shuen (1997), the theory emphasizes three core capabilities: sensing opportunities/threats, seizing opportunities, and transforming resources. Unlike the static Resource-Based View, DCT focuses on organizational agility in volatile markets, making it particularly relevant for industries like telecommunications where technological disruptions are frequent. The theory highlights how firms can foster innovation and sustainability through continuous adaptation, with applications in improving operational efficiency, financial performance, and inclusive practices.

Innovation Diffusion Theory

Innovation Diffusion Theory (IDT) outlines how new ideas and technologies spread within social systems, emphasizing stages from awareness to adoption and the roles of different adopter categories (Rogers, 1962). Critical factors like relative advantage, compatibility, and observability determine adoption rates, with early adopters playing pivotal roles in institutionalizing sustainable practices. In Nigerian telecoms, IDT explains the rollout of 5G and renewable energy solutions, where clear communication and demonstrable benefits accelerate acceptance. Challenges include resistance to change and resource limitations, yet IDT provides a framework for overcoming barriers through targeted strategies.

Conceptual Review

Product Innovativeness

Product innovativeness in the telecommunications industry refers to the creation and launch of new or significantly enhanced products, services, or processes—such as 5G networks, AI-powered chatbots, and IoT-enabled smart devices—to stay competitive and meet shifting consumer expectations. This innovation is crucial for business growth, customer retention, and market differentiation, as it allows telecom companies to offer cutting-edge solutions like high-speed internet, cloud services, and personalized AI-driven experiences. However, challenges such as high R&D costs, regulatory hurdles, and integration with existing infrastructure can impede progress. Success is typically measured through key performance indicators like customer adoption rates, market share expansion, and satisfaction levels.

Sustainability

Sustainability refers to a business's ability to operate in a socially responsible, economically viable, and environmentally conscious manner while balancing stakeholder needs (Hall & Vredenburg, 2020). It integrates environmental conservation, social equity, and long-term profitability, driven by regulatory pressures, consumer demands, and competitive forces (McKinsey & Company, 2021). Companies adopt strategies like sustainable resource management, green technologies, and corporate social responsibility (CSR) to reduce environmental impact and enhance social well-being (Kumar & Patel, 2023). These approaches help businesses align with global sustainability goals while maintaining operational efficiency. However, challenges such as high implementation costs, resistance to change, and regulatory complexities persist, particularly for smaller firms (Deloitte, 2023). Benefits of sustainability include cost savings from energy efficiency, improved brand reputation among eco-conscious consumers, and higher employee engagement (Nielsen, 2022).

Economic Sustainability

Economic sustainability focuses on maintaining long-term economic growth without depleting resources or harming society and the environment (Dyllick & Muff, 2019). It contrasts with traditional GDP-centric models by emphasizing inclusive, equitable, and environmentally sound development (Sachs, 2021). Key principles include resource efficiency, economic diversification, and social equity, supported by frameworks like the Triple Bottom Line (People, Planet, Profit) and SDG 8 (Decent Work and Economic Growth) (Elkington, 2021; UN, 2022). These frameworks encourage businesses and governments to prioritize long-term resilience over short-term profits. Challenges include environmental degradation, fossil fuel dependence, and income inequality, which threaten economic stability (Gulati & Joshi, 2023).

Environmental Sustainability

Environmental sustainability ensures that natural resources are conserved for future generations by minimizing ecological harm (Brundtland, 1987). Core principles include biodiversity preservation, pollution reduction, renewable energy adoption, and sustainable agriculture (IPCC, 2023). These practices are critical to mitigating climate change, protecting ecosystems, and maintaining the planet's carrying capacity. Challenges like deforestation, plastic pollution, and overfishing threaten global biodiversity and resource availability (Pimm et al., 2020). Without urgent action, irreversible damage to ecosystems could disrupt essential services like clean water and food production. Effective strategies include circular economy models, stringent environmental regulations, and corporate commitments to net-zero emissions (Geissdoerfer *et al.*, 2020).

Social Sustainability

Social sustainability promotes equitable access to resources, social justice, and community well-being to foster inclusive societies (Carter *et al.*, 2019). It addresses systemic inequalities in healthcare, education, and employment to ensure no one is left behind (Sachs, 2020). Key dimensions include fair wealth distribution, human rights protection, and strong social cohesion, which are essential for long-term societal stability (Miller & Millar, 2022). Without these, social unrest and economic disparities can undermine progress. Strategies like CSR, policy reforms, and grassroots initiatives help tackle challenges such as income inequality and political instability (Madsen *et al.*, 2022). Global frameworks like the SDGs (e.g., SDG 10 on Reduced Inequalities)

and human rights treaties provide guidance for achieving social sustainability (United Nations, 2020). Successful examples include Scandinavia's welfare systems, which combine high taxation with universal social services to reduce inequality (Andersen & Johansen, 2021).

Empirical Review

The reviewed studies collectively highlight the significant role of product innovativeness in enhancing sustainability across various industries and regions. Ogbonna and Chukwu (2021) found that SMEs in Nigeria benefit from product innovation through increased market competitiveness and operational efficiency, emphasizing the need for government support in funding and training. Similarly, Amadi and Eze (2022) demonstrated that manufacturing firms in Lagos achieved better sustainability outcomes—such as waste reduction and profitability—through innovative product development, advocating for policies that foster industry-research collaborations. Johnson and Smith (2023) reinforced these findings in the context of Silicon Valley tech firms, where green product innovations led to superior long-term sustainability performance, underscoring the importance of continuous investment in eco-friendly technologies. These studies suggest a consistent positive relationship between product innovativeness and sustainability, particularly in competitive and technology-driven sectors; further supporting this trend.

METHODOLOGY

This study adopted a positivist research philosophy, emphasizing objective measurement and statistical analysis to examine the relationship between product innovativeness and organizational sustainability in Nigeria's telecommunications sector (Cohen *et al.*, 2018). Using a correlational and cross-sectional design (Creswell, 2014), the research surveyed all 28 managers from four major telecom companies (MTN, Globacom, Airtel, and 9Mobile) through a census approach (Saunders *et al.*, 2019). Data was collected via a validated 5-point Likert scale questionnaire (Bryman, 2016), demonstrating strong reliability (Cronbach's Alpha 0.876-0.986). The analysis combined descriptive statistics with advanced inferential techniques, including Structural Equation Modeling (SEM) for relationship testing and regression analysis for moderation effects (Field, 2013). This methodological approach ensured rigorous hypothesis testing while maintaining the study's positivist foundations, yielding findings that are both statistically robust and practically applicable to Nigeria's telecom industry.

DATA ANALYSIS AND FINDINGS

Field Report

The researcher conducted a field survey by personally distributing 28 questionnaires to managers across four major Nigerian telecom companies (MTN, Airtel, Globacom, and 9Mobile) with research assistants, achieving an 82.1% retrieval rate (23 returned questionnaires) and 100% usability rate. MTN showed perfect response (7/7), Airtel and Globacom each returned 5/7, while 9Mobile returned 6/7, providing reliable data for analysis with strong participant engagement and methodological transparency.

Data Analysis

Bivariate Analysis

Relationship between Product Innovativeness and Sustainability

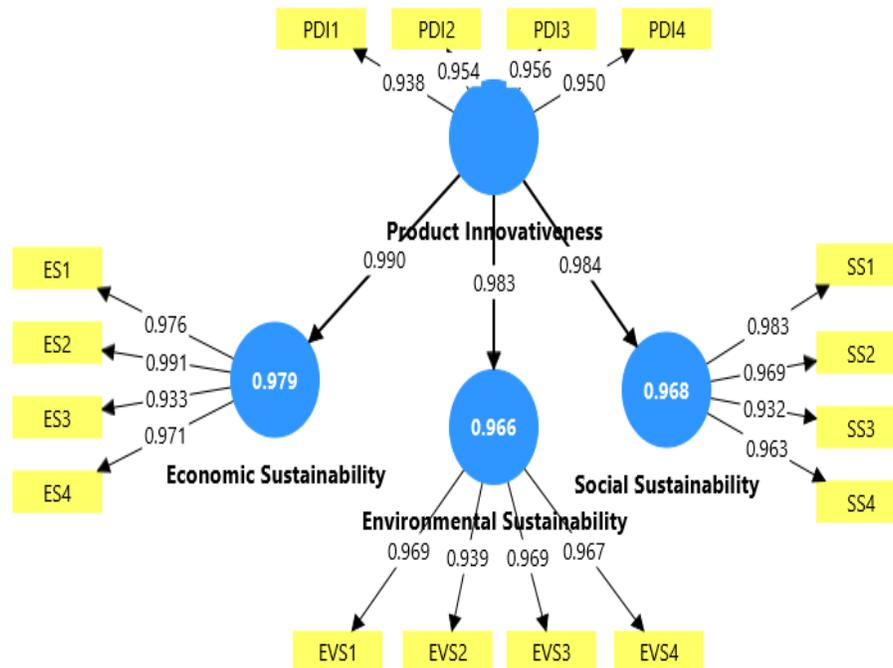


Figure 2: SEM Analysis for the Effect of Product Innovativeness on the Measures of Sustainability

Source: Research Data 2025, (SPSS Output version 23.0)

Figure 2 reveals the relationship between product innovativeness and the three measures of sustainability—economic, environmental, and social—within GSM telecommunication companies in South-South Nigeria. For economic sustainability, the analysis revealed a very strong positive relationship, with a path coefficient of $\beta = 0.990$ and $p = 0.000$. This indicates that GSM companies that prioritize product innovativeness—through continuous development and improvement of offerings—achieve higher profitability, competitive advantage, and long-term financial stability. The high loading values for economic indicators further confirmed the robustness of this construct. As a result, the null hypothesis was rejected, affirming that product innovativeness is a critical driver of economic sustainability. Similarly, the results showed strong positive relationships between product innovativeness and both environmental and social sustainability. For environmental sustainability, the path coefficient was $\beta = 0.983$ with $p = 0.000$, suggesting that innovative product designs often incorporate eco-friendly practices, promoting environmental stewardship. For social sustainability, the coefficient was $\beta = 0.984$ and statistically significant ($p = 0.000$), indicating that product innovation contributes to community development, employee welfare, and stronger stakeholder relationships. The high and consistent indicator loadings validated the reliability of these constructs. In all three cases, the null hypotheses were rejected, confirming that product innovativeness significantly enhances sustainability outcomes.

across economic, environmental, and social dimensions within the GSM sector in South-South Nigeria.

DISCUSSION OF FINDINGS

The study reveals a statistically significant and positive relationship between product innovativeness and all three dimensions of sustainability—economic, environmental, and social—although with varying strengths. The correlations found indicate that innovative product development contributes meaningfully to organizational performance by enhancing competitiveness, reducing environmental harm, and fostering social impact (Ogbonna & Chukwu, 2021; Amadi & Eze, 2022). These results are reinforced by sector-specific studies, such as Johnson and Smith's (2023) work on green innovation in tech firms and Chen and Wong's (2020) research on eco-friendly textile production, which confirm that product innovativeness consistently drives environmental gains.

CONCLUSION AND RECOMMENDATIONS

The study establishes a strong positive link between product innovativeness and sustainability among GSM telecom companies in South-South Nigeria, with significant impacts across economic ($\beta=0.990$), environmental ($\beta=0.983$), and social ($\beta=0.984$) dimensions. These findings confirm that continuous product innovation—through eco-friendly services, digital solutions, and community-focused offerings—drives profitability, regulatory compliance, and social impact. To capitalize on these benefits, telecom firms should prioritize green innovations like energy-efficient infrastructure, expand AI-driven services for enhanced customer experiences, and develop inclusive products for underserved communities. Additionally, strategic partnerships with government and research institutions should be pursued to secure innovation funding and policy support, ensuring sustainable growth in Nigeria's competitive telecom sector.

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