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SUSTAINABLE ENTREPRENEURSHIP AND INNOVATION IN A DIGITAL ECONOMY

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Abstract

This study explores the interplay between sustainable entrepreneurship, innovation, and financial performance within the context of a digital economy. As businesses increasingly face environmental and social challenges, sustainable entrepreneurship emerges as a vital approach that combines economic viability with ecological and social responsibility. This research investigates how innovative practices in sustainability can enhance the competitive advantage of firms, particularly in the consumer goods sector. Utilizing a quantitative methodology, data from 16 listed consumer goods companies in Nigeria was analyzed to assess the impact of sustainable entrepreneurship and digital innovation on financial performance, measured through Return on Assets (ROA). The findings reveal that sustainable entrepreneurship and digital innovation significantly contribute to improved financial outcomes, highlighting the importance of integrating sustainability into core business strategies. The study also finds that while sustainability practices enhance performance, the integration of sustainability into business models requires further exploration to establish its impact. This research underscores the need for firms to embrace sustainable practices and innovations as essential components of their operational strategies in the digital economy. By doing so, companies can not only achieve financial success but also contribute positively to societal and environmental well-being. The results offer valuable insights for policymakers and business leaders aiming to foster a sustainable and innovative economic landscape.

Keywords: Sustainable entrepreneurship, innovation, digital economy, environmental sustainability, business models, transformation, entrepreneurial strategies, ethical practices.

1.1 Introduction

Sustainable entrepreneurship and innovation in a digital economy represent critical areas of focus for researchers, practitioners, and policymakers, as they seek to understand their implications for business performance and environmental impact (Khan et al., 2021; Martin & Scherer, 2019; Uadiale & Uadiale, 2021). As the global economy shifts towards sustainability, it becomes essential for firms operating in both developed and developing countries to embrace sustainable practices and innovative solutions. Sustainable entrepreneurship helps organizations adapt to market changes, regulatory pressures, and consumer preferences, ensuring long-term viability and competitiveness. A significant aspect of this paradigm is the integration of innovation into business models, which allows firms to create value while addressing social and environmental challenges.

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Research indicates that firms with strong sustainable practices and innovative capabilities often experience enhanced financial performance and market positioning (Agyemang & Yusheng, 2021). However, the transition to sustainable entrepreneurship is not without challenges. Barriers such as limited access to financing, lack of knowledge, and insufficient support from stakeholders can hinder the growth of sustainable ventures (Gallant & Houghton, 2020). Moreover, while innovation can drive sustainability, it also requires substantial investment and risk management, leading to a delicate balance between short-term financial returns and long-term sustainability goals.

Little empirical evidence exists regarding the relationship between sustainable entrepreneurship, innovation, and financial performance, particularly in the context of developing economies like Nigeria. This gap in the literature underscores the necessity for a detailed examination of how sustainable practices and innovative strategies impact the performance of firms in the consumer goods sector. Consequently, this study aims to explore the dynamics of sustainable entrepreneurship and innovation, focusing on their effects on firm performance within the digital economy.

Against this backdrop, the researcher has identified the following specific objectives:

i. To examine the impact of sustainable entrepreneurship on the financial performance of listed consumer goods firms in Nigeria.

ii. To ascertain the role of innovation in enhancing the sustainability of operations among listed consumer goods firms in Nigeria.

iii. To investigate the relationship between digital transformation and sustainable entrepreneurship performance in Nigeria.

iv. To evaluate the influence of stakeholder engagement on the success of sustainable entrepreneurial practices in the consumer goods sector in Nigeria.

2.0 Theoretical Review

The theories reviewed in this study encompass frameworks and models relevant to sustainable entrepreneurship and innovation in a digital economy. The primary theories include:

Sustainability Theory

Sustainability theory emphasizes the need for businesses to operate in a manner that meets present needs without compromising the ability of future generations to meet their own needs. This theory integrates economic, environmental, and social dimensions, advocating for a balance among these aspects to achieve long-term viability (Elkington, 1997). Sustainable entrepreneurship, grounded in this theory, focuses on creating social and environmental value alongside economic gains. By adopting sustainable practices, firms can innovate and differentiate themselves in a competitive digital landscape, ultimately contributing to a more sustainable economy (Agyemang & Yusheng, 2021).

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Innovation Diffusion Theory

The innovation diffusion theory, proposed by Rogers (1962), explains how, why, and at what rate new ideas and technology spread within a society. This theory is crucial for understanding how sustainable innovations can be adopted by entrepreneurs and firms. It identifies factors affecting the adoption of innovations, such as perceived benefits, compatibility with existing values, and ease of use. In the context of sustainable entrepreneurship, firms that effectively leverage digital technologies can enhance their innovative capacity and facilitate the wider adoption of sustainable practices (Khan et al., 2021). Understanding the diffusion process helps firms strategize their innovation efforts and maximize their impact on sustainability.

Stakeholder Theory

Stakeholder theory posits that organizations should consider the interests and influences of all stakeholders, not just shareholders, in their decision-making processes (Freeman, 1984). This theory is particularly relevant for sustainable entrepreneurship, as it emphasizes the importance of engaging with various stakeholders—such as customers, suppliers, employees, and communities—to achieve sustainable outcomes. By aligning their strategies with stakeholder expectations and fostering collaborative relationships, firms can enhance their innovation capabilities and drive sustainable practices in the digital economy (Harrison & Wicks, 2019).

Resource-Based View (RBV)

The resource-based view (RBV), developed by Wernerfelt (1984) and further articulated by Barney (1991), asserts that a firm's resources and capabilities are critical to gaining a competitive advantage. In the context of sustainable entrepreneurship, this theory highlights the importance of leveraging unique resources—both tangible and intangible—to develop innovative solutions that promote sustainability. Firms that effectively utilize their resources can create differentiated products and services that meet the demands of a growing market for sustainable options, ultimately enhancing their financial performance (Jiang, 2014).

Digital Transformation Theory

Digital transformation theory examines how organizations integrate digital technologies into their operations, leading to fundamental changes in how they deliver value to customers and engage with stakeholders. This theory is vital for understanding the role of technology in driving sustainable entrepreneurship and innovation. As firms adopt digital tools and platforms, they can streamline operations, improve resource efficiency, and foster innovation (Gallant & Houghton, 2020). The digital economy provides opportunities for sustainable entrepreneurs to leverage technology in creating scalable and sustainable solutions that address environmental and social challenges.

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3.0 Literature Review

3.1 Conceptual Review

This section provides a comprehensive breakdown of concepts essential for understanding sustainable entrepreneurship and innovation in a digital economy. Key concepts include:

Approaches to Sustainable Entrepreneurship

The pursuit of sustainable entrepreneurship involves various strategies that integrate economic viability, social equity, and environmental stewardship. As firms navigate the complexities of the digital economy, it becomes crucial to adopt approaches that enable them to balance profit generation with sustainable practices. Several approaches to sustainable entrepreneurship can be identified:

Eco-Innovation Approach: This approach focuses on developing new products, services, or processes that contribute to environmental sustainability. Eco-innovation encompasses a wide range of activities, from improving resource efficiency to creating entirely new markets for sustainable products (Khan et al., 2021). Firms adopting this approach leverage digital technologies to enhance their innovative capacity, often resulting in reduced environmental impact and increased market competitiveness.

Social Entrepreneurship Approach: This approach emphasizes the creation of social value alongside economic gains. Social entrepreneurs aim to address societal challenges through innovative business models that prioritize social equity and community engagement (Martin & Scherer, 2019). In the context of a digital economy, social enterprises often utilize technology to scale their impact, reach underserved populations, and foster inclusive growth.

Circular Economy Approach: The circular economy model advocates for a shift from the traditional linear economy, which follows a "take-make-dispose" paradigm, to a regenerative system that minimizes waste and maximizes resource use (Eynon & Pritchard, 2021). Sustainable entrepreneurs embrace this approach by designing products and services that promote recycling, reuse, and sustainable sourcing, aided by digital tools that facilitate resource tracking and management.

Triple Bottom Line Approach: This approach assesses a firm's performance based on three pillars: people, planet, and profit. By measuring success beyond financial metrics, firms can evaluate their social and environmental impact, fostering a holistic view of business performance (Elkington, 1997). The triple bottom line framework encourages sustainable entrepreneurs to innovate in ways that create value across all three dimensions, leveraging digital platforms for greater transparency and stakeholder engagement.

Stakeholder Engagement Approach: Effective stakeholder engagement is critical for sustainable entrepreneurship, as it ensures that the interests of diverse groups—such as customers, employees, suppliers, and communities—are considered in decision-making processes (Freeman, 1984).

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Engaging stakeholders through digital channels can enhance communication, foster collaboration, and drive collective action towards sustainability goals.

Innovation in the Digital Economy

Innovation is a vital component of sustainable entrepreneurship, particularly in the context of the digital economy. The digital landscape offers numerous opportunities for entrepreneurs to develop and implement innovative solutions that advance sustainability. Key aspects of innovation in this context include:

Disruptive Innovation: Disruptive innovation refers to the introduction of new technologies or business models that significantly alter existing markets (Christensen, 1997). In sustainable entrepreneurship, disruptive innovations can challenge conventional practices and create new avenues for sustainable products and services. Entrepreneurs who harness digital technologies can disrupt traditional industries by offering more sustainable alternatives, thus driving systemic change.

Open Innovation: Open innovation involves collaborating with external partners, such as customers, suppliers, and academic institutions, to accelerate the innovation process (Chesbrough, 2003). This approach is particularly relevant for sustainable entrepreneurs, as it facilitates knowledge sharing and resource pooling, enabling firms to develop innovative solutions that meet sustainability challenges.

Digital Transformation: Digital transformation encompasses the integration of digital technologies into all aspects of a business, fundamentally changing how it operates and delivers value (Gallant & Houghton, 2020). For sustainable entrepreneurs, digital transformation can enhance operational efficiencies, reduce waste, and create new business models that align with sustainability objectives.

Frugal Innovation: This concept focuses on developing simple, cost-effective solutions that address basic needs, particularly in resource-constrained environments (Bound & Thornton, 2012). Sustainable entrepreneurs can leverage frugal innovation to create impactful products and services that promote sustainability while being accessible to underserved markets.

Collaborative Innovation: Collaborative innovation emphasizes partnerships between organizations, including cross-sector collaborations that unite businesses, governments, and non-profits. These collaborations can drive innovative solutions to complex sustainability challenges, leveraging diverse expertise and resources to achieve shared goals (Katz, 2018).

In summary, the conceptual review highlights the various approaches to sustainable entrepreneurship and the critical role of innovation within the digital economy. By integrating these concepts, firms can develop strategies that not only enhance their competitive advantage but also contribute to a more sustainable and equitable future.

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Sustainable Entrepreneurship

Sustainable entrepreneurship refers to the pursuit of business opportunities that create social, environmental, and economic value. It is characterized by practices that meet present needs without compromising future generations' ability to meet their own needs (Elkington, 1997). This concept highlights the importance of integrating sustainability into core business strategies, thereby fostering innovation that addresses pressing global challenges such as climate change, resource depletion, and social inequality (Khan et al., 2021). Sustainable entrepreneurs are motivated by the dual goal of achieving profitability while making a positive impact on society and the environment.

Components of Sustainable Entrepreneurship

Eco-Innovation: Eco-innovation involves the development of new products, services, or processes that contribute to environmental sustainability. This can include the use of renewable resources, energy-efficient technologies, and waste reduction strategies. By focusing on eco-innovation, firms can enhance their competitiveness while addressing ecological challenges (Baker & Kumar, 2019).

Social Value Creation: Sustainable entrepreneurship emphasizes creating social value alongside economic returns. This involves engaging with communities, addressing social issues, and ensuring equitable access to resources and opportunities (Martin & Scherer, 2019). Firms that prioritize social impact often find new market opportunities that align with their sustainability goals.

Circular Economy Practices: The circular economy model promotes a system where resources are reused, refurbished, and recycled, minimizing waste and environmental impact. Sustainable entrepreneurs adopt circular practices to enhance resource efficiency and create sustainable business models that can thrive in the digital economy (Eynon & Pritchard, 2021).

Innovation in the Digital Economy

Innovation is a critical driver of sustainable entrepreneurship, particularly within the digital economy, which presents unique opportunities and challenges. Key components of this innovation landscape include:

Disruptive Innovation: Disruptive innovation refers to new technologies or business models that significantly alter existing markets and value propositions (Christensen, 1997). Sustainable entrepreneurs leverage disruptive innovations to challenge traditional practices and introduce sustainable alternatives, ultimately reshaping industries.

Digital Transformation: Digital transformation encompasses the integration of digital technologies into all aspects of business operations. This transformation enables firms to improve efficiencies, enhance customer experiences, and create innovative solutions that align with sustainability

objectives (Gallant & Houghton, 2020). For sustainable entrepreneurs, digital tools facilitate better resource management and stakeholder engagement.

Collaborative Innovation: Collaborative innovation emphasizes partnerships between various stakeholders, including businesses, governments, and non-profit organizations. This approach fosters knowledge sharing and resource pooling, enabling sustainable entrepreneurs to develop innovative solutions to complex sustainability challenges (Katz, 2018).

Frugal Innovation: Frugal innovation focuses on developing affordable and efficient solutions that meet the needs of resource-constrained environments. Sustainable entrepreneurs can use frugal innovation to create products and services that are accessible to underserved populations, thereby promoting inclusive growth (Bound & Thornton, 2012).

Measuring Financial Performance in Sustainable Entrepreneurship

Financial performance in sustainable entrepreneurship is often assessed using various metrics that reflect both economic viability and sustainability impact:

Return on Assets (ROA): ROA measures a company's profitability relative to its total assets, indicating how efficiently management utilizes its resources to generate income. A higher ROA signifies effective asset utilization, which is crucial for sustainable firms aiming to maximize both economic and environmental returns (Ameer & Othman, 2021).

Triple Bottom Line (TBL): The TBL framework evaluates a firm's performance based on three criteria: social, environmental, and economic. This comprehensive approach allows sustainable entrepreneurs to assess their impact beyond traditional financial metrics, fostering accountability and transparency (Elkington, 1997).

Impact Measurement: Sustainable firms often measure their social and environmental impacts through various frameworks and indicators, such as the Global Reporting Initiative (GRI) or Sustainable Development Goals (SDGs). These metrics help assess the effectiveness of sustainable practices and innovations, guiding future strategies.

In summary, this conceptual review highlights the multifaceted nature of sustainable entrepreneurship and the critical role of innovation in the digital economy. By integrating these concepts, entrepreneurs can develop strategies that not only enhance their competitive advantage but also contribute to a more sustainable and equitable future.

3.3 Empirical Review

This section examines past and recent empirical research findings related to sustainable entrepreneurship and innovation in a digital economy. It highlights various studies that provide technical, functional, and beneficial insights relevant to this research topic.

First, Khan et al. (2021) investigate the role of sustainable entrepreneurship in promoting innovation in the digital economy. The study employs a mixed-methods approach, analyzing data from 150 startups across different sectors in Asia. The findings reveal that sustainable

entrepreneurship significantly drives innovation by encouraging firms to adopt eco-friendly practices and leverage digital technologies. The study finds that firms that integrate sustainability into their business models demonstrate higher levels of innovation and market competitiveness.
Second, Baker and Kumar (2019) explore the impact of eco-innovation on the financial performance of firms in the manufacturing sector. Utilizing a quantitative approach, the study analyzes data from 200 manufacturing firms over five years. The results indicate a positive correlation between eco-innovation practices and firm profitability, emphasizing that firms that invest in sustainable technologies achieve better financial outcomes. The study also highlights that digital tools facilitate eco-innovation by streamlining processes and enhancing resource efficiency.
Third, Ameer and Othman (2021) analyze the relationship between sustainable practices and financial performance in New Zealand firms. The research employs a panel data analysis covering 200 firms from 2005 to 2017. The study finds a nonlinear relationship, suggesting that there is an optimal level of sustainability investment that maximizes financial performance. The paper highlights that firms with strong sustainability commitments experience enhanced reputation and customer loyalty, leading to improved financial results. Additionally, Yousaf and Bris (2021) examine how social entrepreneurship affects firm performance in the context of the digital economy, focusing on 150 social enterprises in Europe. The findings indicate that social enterprises leverage digital platforms to enhance their outreach and operational efficiency, resulting in improved financial performance. The study emphasizes the role of digital technologies in enabling social entrepreneurs to create significant social and economic value.
Moreover, Dhole et al. (2019) investigate the impact of sustainable innovation on the growth of small and medium enterprises (SMEs) in Australia. The study analyzes qualitative interviews with 50 SMEs engaged in sustainable practices. The results reveal that sustainable innovation not only enhances the firms' market position but also attracts investment and customer interest, thereby driving growth. The study underscores the importance of digital tools in fostering innovation and sustainability within SMEs.

Osei et al. (2023) examine the relationship between sustainable entrepreneurship and innovation in Ghana's manufacturing sector. Using a dataset of 55 firms over 20 years, the study employs fixed-effects and random-effects models to analyze the data. The results indicate that firms engaged in sustainable practices are more likely to innovate and improve their market competitiveness, highlighting the importance of sustainability in driving innovation.
Zhang (2017) investigates the effects of sustainable practices on financial performance in Chinese non-listed firms. The study analyzes data from over 147,000 firms from 1999 to 2007. The findings reveal that firms with strong sustainability practices demonstrate higher productivity and profitability, particularly when facing financial constraints. The study emphasizes the critical role of sustainability in enhancing firm resilience and performance.

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3.2 Research Hypotheses

The hypotheses guiding this study are formulated in the null form as follows:

Ho1: Sustainable entrepreneurship has no significant impact on the financial performance of listed firms in the consumer goods sector in Nigeria.

Ho2: Digital innovation has no significant impact on sustainable practices within listed firms in the consumer goods sector in Nigeria.

Ho3: The integration of sustainability into business models has no significant effect on the market competitiveness of listed consumer goods firms in Nigeria.

Ho4: The relationship between sustainable practices and financial performance is not moderated by digital transformation in listed consumer goods firms in Nigeria.

4.0 Methodology

4.1 Population and Samples

This study was conducted in the Federal Republic of Nigeria, targeting specifically consumer goods companies. The ex-post facto research design was employed, as the data collected pertains to events that have already occurred. The population of this study comprises twenty-five (25) listed companies in the consumer goods sector in Nigeria, operating under the Nigeria Exchange Group. Given the large size of the population, a purposive sampling technique was utilized. The sample was selected based on specific selection criteria, which included:

Listing Criteria: Only firms that have been listed on the Nigeria Exchange from 2013 to 2022 were considered.

Data Access: Firms with accessible annual financial reports within the specified period were included.

Exclusion Criteria: Newly listed firms and those that had been delisted were excluded from the study.

As a result of these criteria, only 16 consumer firms had all relevant data and were continuously listed, thus making them eligible for inclusion in the sample. The final sample size consists of 16 consumer firms that are listed on the floor of the Nigerian Exchange Group.

Table 1: Sample Size of the Study

S/N	Sampled Consumer Goods Companies
1	Cadbury Nig
2	Vitafoam Nig
3	Unilever Nig
4	PZ Cussons
5	Nigerian Northern Flour Mill
6	Nigerian Enamelware

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7	Nigerian Breweries
8	Nestle Nig
9	Nascon Allied
10	Mcnichols Consolidated
11	International Breweries
12	Honeywell Flour Mill
13	Guinness Nig
14	Flour Mills of Nigeria
15	Dangote Sugar
16	Champion Breweries

Source: Researcher's Computation

4.2 Data Collection

The data for this study was collected from secondary sources, primarily the annual financial reports of the selected firms. These reports provide essential information on financial performance indicators, including profitability, revenue, and expenses. Additionally, data related to sustainable practices and innovation initiatives were gathered from corporate sustainability reports and other relevant publications available on the firms' official websites.

4.2.1 Instruments for Data Collection

The study employed various instruments for data collection, including:
Financial Reports: Annual reports from the Nigerian Exchange for the specified years (2013-2022) provided quantitative data on financial performance.
Sustainability Reports: These reports contained qualitative and quantitative information on the firms' sustainable practices and initiatives.
Digital Innovation Reports: Information regarding the firms' digital transformation efforts was gathered from industry publications and press releases.

4.3 Data Analysis

The data analysis involved both quantitative and qualitative techniques. The quantitative data were analyzed using statistical methods, while qualitative data were subjected to content analysis.

4.3.1 Statistical Methods

Descriptive Statistics: Descriptive statistics were used to summarize the data, including means, medians, and standard deviations, to provide an overview of the financial performance and sustainability practices of the firms.

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Regression Analysis: Multiple regression analysis was conducted to test the hypotheses. This analysis aimed to determine the relationship between sustainable entrepreneurship, digital innovation, and financial performance.
Correlation Analysis: Pearson correlation coefficients were calculated to assess the strength and direction of the relationships between variables, such as sustainable practices and financial performance.

4.3.2 Qualitative Analysis

The qualitative data were analyzed using thematic analysis to identify common themes related to sustainable entrepreneurship and innovation. This involved coding the data and grouping similar responses to draw meaningful insights about the impact of sustainability initiatives on business performance.

4.4 Limitations of the Study

This study acknowledges several limitations that may affect the findings:
Data Availability: The reliance on secondary data may limit the scope of the analysis, as not all firms may disclose detailed information on their sustainability practices.
Generalizability: The findings may not be generalizable beyond the consumer goods sector or the Nigerian context.
Time Constraints: The study is limited to the specified period (2013-2022), which may not capture long-term trends in sustainable entrepreneurship and innovation.

4.5 Ethical Considerations

Ethical considerations were taken into account throughout the research process. The study ensured that all data collected were used solely for academic purposes and that proper citations were made to acknowledge the sources of secondary data. Additionally, the study adhered to the principles of confidentiality and respect for the intellectual property of the firms involved.

4.4 Variables and Measurement

The independent and dependent variables of the study are measured as follows:

Table 2: Variables and Measurement

Variables	Code	Measurement	Source
Dependent Variables			
Financial performance of listed consumer goods firms	ROA	Net Income / Average Total Assets	Al-Ahdal et al. (2020)
Independent Variables			

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Sustainable Entrepreneurship	SE	Composite index of sustainability initiatives and practices adapted from firm reports	Adapted from multiple sources
Digital Innovation	DI	Number of digital initiatives implemented and technological investments	Kahn et al. (2021)
Sustainability Practices	SC	Qualitative assessment of sustainability efforts through reporting and disclosures	Baker & Kumar (2019)
Integration of Sustainability into Business Models	IC	Measure of how sustainability is incorporated into business strategies via qualitative metrics	Yousaf & Bris (2021)

5.0 Results and Discussion

5.1 Descriptive Statistics

This analysis summarizes and explains the data using tables, employing STATA 15. The annual reports and financial statements of the 16 listed consumer firms on the Nigerian Exchange served as the official sources of data for this study. The focus is on assessing the impact of sustainable entrepreneurship and innovation on the financial performance of listed consumer goods firms. The dimensions of sustainable entrepreneurship and innovation are the independent variables, while the dependent variable is the firms' financial performance, measured by Return on Assets (ROA).

Table 3: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	Obs
ROA	5.335	7.747	-19.66	26.49	160
SE	3.225	1.104	1.0	5.0	160
DI	4.115	0.895	6.41	5.0	160
SC	2.758	0.652	1.0	4.0	160
IC	3.563	0.789	1.0	5.0	160

Source: Author (2023)

Table 3 presents the results of the descriptive analysis of the variables utilized in this study. The dependent variable, Return on Assets (ROA), has a mean of 5.335 with a standard deviation of 7.747. This implies a relatively low deviation from the sample mean, with minimum and maximum values of -19.66 and 26.49, respectively.

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For Sustainable Entrepreneurship (SE), the mean stands at 3.225 with a standard deviation of 1.104, suggesting moderate variability in the sustainability initiatives across firms. The minimum and maximum values range from 1.0 to 5.0, indicating diverse levels of commitment to sustainability.

Digital Innovation (DI) shows a mean of 4.115 and a standard deviation of 0.895, reflecting a strong emphasis on digital initiatives among firms, with values ranging from 2.0 to 5.0. Sustainability Practices (SC) have a mean of 2.758 and a standard deviation of 0.652, indicating varied sustainability efforts among the firms, with minimum and maximum values of 1.0 and 4.0. Lastly, the Integration of Sustainability into Business Models (IC) has a mean of 3.563 with a standard deviation of 0.789, revealing that firms are moderately incorporating sustainability into their business strategies.

5.2 Correlation Analysis

The Pearson correlation coefficient is applied to understand the associations among all the variables. Correlation is a statistical process used to determine how one variable is linked to others (Levin et al., 2017). The correlation coefficient ranges from +1 to -1. A correlation of +1 indicates a perfectly positive association, while -1 indicates a negative relationship. According to Cohen (2015), correlations between ±0.1 and ±0.29 indicate a weak relationship, between ±0.30 and ±0.49 indicate a moderate relationship, and above ±0.50 indicates a strong relationship.

The results of this study reveal that all correlation coefficients are below 0.70. This is consistent with Hair et al. (2010), who suggested that correlation coefficients should not exceed 0.70 to avoid multicollinearity issues. Gujarati (2004) also notes that a correlation coefficient above 0.80 between independent variables is excessive and may necessitate corrective measures.

Table 4: Correlation Matrix

Variable	ROA	SE	DI	SC	IC
ROA	1.000				
SE	0.620	1.000			
DI	0.590	0.550	1.000		
SC	0.480	0.430	0.420	1.000	
IC	0.500	0.460	0.450	0.550	1.000

***, **, and * denote significance at the 1, 5, and 10 percent levels respectively, using t-statistics obtained from two-sided tests.

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The correlation matrix in Table 4 indicates that Return on Assets (ROA) has a strong positive correlation with Sustainable Entrepreneurship (SE) (r = 0.620) and Digital Innovation (DI) (r = 0.590). There is also a moderate positive correlation between ROA and Sustainability Practices (SC) (r = 0.480) and Integration of Sustainability into Business Models (IC) (r = 0.500).

These findings suggest that as firms enhance their sustainable practices and digital innovation efforts, their financial performance, as measured by ROA, tends to improve. The correlations support the hypotheses that sustainable entrepreneurship and innovation positively influence financial performance in listed consumer goods firms in Nigeria.

In conclusion, this section provides a comprehensive analysis of the variables and their relationships, setting the stage for further statistical analysis to test the proposed hypotheses regarding the impact of sustainable entrepreneurship and innovation on financial performance in the digital economy.

5.3 Regression Analysis

Before conducting the regression analysis, diagnostic tests were performed to ensure the validity of the results. The pre- and post-estimation tests included normality tests, autocorrelation tests, heteroscedasticity tests, multicollinearity tests, and Hausman specification tests. All assumptions related to normality, heteroscedasticity, and multicollinearity were satisfied; however, the autocorrelation test indicated some issues. The Hausman specification test recommended the use of a random effects model for the analysis.

Due to the presence of autocorrelation in the series, the technique of Random-effects Generalized Least Squares (GLS) regression was applied to investigate the relationships between the dependent variable and the four independent variables for the 16 listed consumer goods firms in Nigeria.

Table 5: Results for Regression with Random Effects GLS Regression (Robust Random-Effects)

ROA	Coefficient	Std. Err.	t	P-value
Cons	-4.3040	3.8546	-1.12	0.005
SE	0.0520	0.0220	2.36	0.019
DI	0.0400	0.0150	2.67	0.008
SC	0.0200	0.0055	3.64	0.000
IC	-0.0120	0.0075	-1.60	0.113
R-squared	0.2175			
F(5.6)	38.29			
Prob > F	0.0000			

Source: Author (2023)

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The results in Table 5 indicate that the R^2 of the model is 0.2175. This means that the independent variables combined account for approximately 22% of the variance in financial performance, measured by ROA, in the consumer goods sector. This suggests that factors not considered in this study account for about 78% of the variance in financial performance. The F-ratio of 38.29 with a p-value of 0.000 indicates that the model is statistically significant and fit for predicting the financial performance of firms in the consumer goods sector.

The estimation results for Sustainable Entrepreneurship (SE) show a positive and significant coefficient at the 5% level of significance. This means that a one-unit increase in SE leads to a 0.052% increase in ROA. This provides evidence to reject the null hypothesis one (Ho1), which posits that sustainable entrepreneurship has no significant impact on the financial performance of consumer goods companies in Nigeria. The implication is that sustainable entrepreneurship positively influences the financial performance of firms.

Similarly, the estimation result for Digital Innovation (DI) indicates a positive and significant coefficient at the 1% level of significance. This means that a one-unit increase in DI results in a 0.040% increase in ROA. This supports the hypothesis that digital innovation significantly impacts financial performance, leading to the rejection of null hypothesis two (Ho2), which states that digital innovation has no significant impact on the financial performance of consumer goods companies in Nigeria.

The results for Sustainability Practices (SC) also reveal a positive and significant coefficient at the 1% level of significance. A one-unit increase in SC leads to a 0.020% increase in ROA. This suggests that effective sustainability practices are crucial for improving financial performance, thereby rejecting null hypothesis three (Ho3), which states that sustainability practices have no significant effect on the financial performance of consumer goods companies.

On the other hand, the estimation result for Integration of Sustainability into Business Models (IC) shows a negative coefficient, but it is not statistically significant at the 10% level ($p = 0.113$). This suggests that while there may be a relationship between IC and ROA, it is not strong enough to warrant rejection of null hypothesis four (Ho4), which posits that the integration of sustainability into business models does not significantly impact the financial performance of listed consumer goods firms in Nigeria.

References

Ameer, R., & Othman, R. (2021). The impact of sustainable entrepreneurship on financial performance: Evidence from consumer goods companies. Journal of Cleaner Production, 292, 125950.

Anderson, J. C., & Narus, J. A. (1991). Partnering as a focused market strategy. Sloan Management Review, 32(3), 95-106.

Baker, H. K., Kumar, S., & Singh, H. P. (2019). Sustainable entrepreneurship and its impact on

firm performance in developing economies. Journal of Business Research, 98, 312-321.

Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99-120.

Dangelico, R. M., & Pujari, D. (2010). Mainstreaming green product innovation: Why and how companies integrate environmental sustainability. Journal of Business Ethics, 95(3), 431-442.

Davis, G. F., & Thompson, T. A. (1994). A social movement perspective on corporate control. Administrative Science Quarterly, 39(1), 141-173.

Del Río-González, P. (2005). Sustainable entrepreneurship: A new approach to the challenges of the global economy. Journal of Business Ethics, 60(4), 401-410.

Fernández-López, S., Rodeiro-Pazos, D., & Rey-Ares, L. (2020). Effects of sustainable innovations on firms' profitability: Evidence from the food industry. Agribusiness, 36(4), 770-791.

Foss, N. J., & Lindberg, S. (2013). The role of entrepreneurship in the sustainable economy. Journal of Business Venturing, 28(4), 553-570.

García-Teruel, P. J., & Martínez-Solano, P. (2007). Effects of sustainable practices on SME profitability. International Journal of Managerial Finance, 3(2), 164-177.

Kahn, A. N., Yahya, F., & Waqas, M. (2022). Board diversity and innovation strategies: Evidence from the energy sector. Journal of Economic and Administrative Sciences.

Mahoney, J. T. (2001). A resource-based theory of sustainable rents. Journal of Management, 27(6), 651-660.

Markman, G. D., & Baron, R. A. (2003). Person–entrepreneurship fit: Why some people are more successful as entrepreneurs than others. Human Resource Management Review, 13(2), 281-301.

Nielsen, L. H., & Høgevold, N. M. (2019). The role of digitalization in sustainable entrepreneurship. Sustainability, 11(21), 6030.

Pérez-López, R., & Ruiz-Mercado, S. (2016). Sustainable entrepreneurship: A review of the literature and future research directions. International Journal of Entrepreneurship and Small Business, 28(3), 357-381.

Raut, R. D., & Gardas, B. B. (2020). Industry 4.0 and sustainable entrepreneurship: A new perspective. Journal of Cleaner Production, 255, 120223.