COVID-19 and Sustainable Performance in Nigeria Listed Industrial Goods Firms

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ABSTRACT

This study examined sustainable performance in the pre-and post-COVID-19 periods, with a focus on listed industrial goods firms in Nigeria. It collected secondary data from the Machame Ratio database. The data collected spanned six (6) years, from 2017 to 2022. The six (6) years were divided into two equal periods of three (3) years each, due to the comparative nature of the study. The three (3) years before COVID-19 comprised years 2017 to 2019, while the three (3) years after the COVID-19 pandemic period consisted of years 2020 to 2022. It employed t-test statistics to analyze the data collected. From the analysis, results showed that the Economic-Social-Governance (ESG) Disclosure Index of listed industrial goods firms in Nigeria was significantly different before and after Covid-19 (t-statistic = -2.96, p-value = .005). On the strength of this finding, the study concluded that sustainable performance before and after the COVID-19 pandemic amongst listed industrial goods firms is significantly different. It is recommended the management of Greif Nigeria Plc, Lafarge Cement Wapco Nigeria Plc, and Premier Paints rejig their operational practices to make them more compliant with the Global Reporting Initiative (GRI), the globally recognized standard for sustainable practices.

Keywords: Covid-19 Pandemic, Sustainable Performance, ESG Disclosure Index, Economic Index & Social Index

INTRODUCTION

COVID-19, caused by the SARS-CoV-2 virus, was initially detected in Wuhan, China in late 2019 and rapidly evolved into a worldwide pandemic. The World Health Organization officially labeled it a global pandemic in early 2020 (Cucinotta & Vanelli, 2020). This pandemic, regarded as the most significant global health, economic, and social crisis of our time, has not only resulted in numerous human fatalities and health issues but has also triggered a slowdown in the global economy due to its unique impacts and government-imposed containment measures (Lassoued & Khanchel, 2021). Some of these measures included business closures or restrictions, leading to a substantial decline in sales and profits for many companies, with some even going out of business, while others struggled to stay afloat (Fonou-Dombeu, Nomlala, & Nyide, 2023). These actions had particularly severe consequences for financially disadvantaged individuals and those with low incomes who heavily depend on daily business transactions for their livelihoods (Ahmed, Adamu, Ude, & Bello, 2021). The COVID-19 pandemic has led to an unprecedented increase in unemployment, a significant reduction in economic activity, and market turbulence that differs from previous crises (Reinhart, 2022; Stiglitz et al., 2020). COVID-19 has already affected the operations of companies, impacting their production and profitability due to lockdowns, flight suspensions, and decreased demand (Barai & Dhar, 2021; Lassoued, et al., 2021).

The impact of the COVID-19 crisis has adverse effects on social, economic, and environmental factors, hindering the growth of organizational goals. However, this crisis has also opened up opportunities for sustainable development goals, particularly in safeguarding against future epidemics. The emergence of infectious diseases, in particular, leads to environmental alterations like deforestation, changes in infrastructure, degradation of the natural environment, hunting, and wildlife trade (Marjea & Sujana, 2022). Nevertheless, certain key factors are intertwined with ecological limitations and contribute to the rise of human-driven activities. Subsequently,

(Barreiro-Gen, Lozano, & Zafar, 2020) explored the impact of the epidemic outbreak on sustainability indicators across various organizations. The results indicated a notable emphasis on the social aspect, followed by economic and environmental dimensions. In a separate study, (Bodrud-Doza, Shammi, Bahlman, Islam, & Rahman, 2020) investigated the psychological and social repercussions of the COVID-19 situation in Bangladesh. Their findings highlighted that partial lockdown escalated health crises, and public transmission, reduced living standards, increased the poverty line, and heightened economic vulnerability. Notably, crime rates surged, and the prices of essential goods fluctuated due to customer panic buying. Consequently, (Shammi, Bodrud-Doza, Islam, & Rahman, 2020) underscored the importance of immediate strategic planning and addressing entrenched challenges to mobilize resources in an unpredictable environment.

Statement of the Problem

The pandemic has posed heightened challenges to both the global and Nigerian economies. As of September 2020, the virus had rapidly spread to 216 countries, causing a mortality toll of 876,616 and 26,763,217 active cases worldwide (WHO, 2020). This situation has accelerated digital transformation and revealed vulnerabilities in the healthcare system. COVID-19 has had a significant impact, affecting businesses across various sectors, such as travel, transport, energy, and manufacturing (Carracedo, Puertas, & Marti, 2021). Nigeria's heavy reliance on oil exports made it susceptible to the drop in global oil prices. Lockdowns, reduced economic activity, and fiscal challenges further strained the economy, leading to a rise in unemployment (Reinhart, 2022; Stiglitz et al., 2020)., especially in the informal sector. Even before COVID-19, the Nigerian economy was fragile, struggling with a 2% GDP growth rate after a recession in August 2020Currently, the global spread of COVID-19 is causing economic expenses, with an anticipated 3.7% to 6% drop in worldwide GDP over a year (Lassoued, *et al.*, 2021). The world's economy is facing substantial risks and uncertainties, with significant setbacks in production, consumption, and international trade (Yan, *et al*., 2022).

The global outbreak significantly impacted the operations of numerous organizations, affecting both production and consumption, as noted by Ivanov (2020). The unprecedented nature of the pandemic left many businesses overwhelmed and exposed to substantial risks. According to Ernst and Young (2020), a 2019 survey revealed that only 20% of 500 senior board members worldwide were confident in their companies' readiness to handle significant adverse risks. While the short and medium-term effects of the pandemic are evident, the long-term implications remain uncertain. COVID-19 caused extensive damage to lean and globalized supply chain structures (Araz, Choi, Olson, Salman., 2020), with 94% of Fortune 1000 companies experiencing pandemic-driven disruptions, as reported by Sherman (2020). Consequently, organizations had to revamp their supply chains, enhance resilience, and reassess their relationships with suppliers to mitigate systemic risks.

Several studies have been carried out by Fonou-Dombeu, Nomlala, & Nyide, 2023) Kurniawan, Agung Maulana & Yusuf Iskandar, (2023) Sudipta, Syed, Muhammad, and Dessalegn, (2022) Fahim and Mahadi, (2022) Marjea & Sujana, 2022) Lassoued & Khanchel, 2021) Ahmed, Adamu, Ude, & Bello 2021) Shabir, and Bishri, (2021) Elkhwesky, Salem, Varmus, and Ramkissoon, (2021) Cucinotta & Vanelli, 2020) Araz, Choi, Olson, & Salman, 2020). For instance, Sudipta, Syed, Muhammad, & Dessalegn, 2022) investigate the influence of COVID-19 on fluctuations in company value, considering the moderating influence of sustainability performance at the firm level. Shabir, and Bishri, (2021) research delves into the extensive and calamitous repercussions of the COVID-19 pandemic on the performance of Zara (Parent company Inditex) from the standpoint of international business risk management. Elkhwesky, Salem, Varmus, and Ramkissoon, (2021) research on sustainable practices in hospitality beyond the COVID-19 era, providing valuable insights. However, Few, if any, research studies have specifically addressed the impact of COVID-19 on the sustainable performance of consumer goods companies in Nigeria.

Research Objective

The main objective of the study is to evaluate the effect of Covid-19 on the sustainable performance of selected industrial goods firms in Nigeria. The specific objective is:

i. to examine whether the Economic-Social-Governance Disclosure Index of listed industrial goods firms in Nigeria is significantly different before and after Covid-19.

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Research Question

The study attempted to provide answers to the following questions:

i. Is the Economic-Social-Governance Disclosure Index of listed industrial goods firms in Nigeria significantly different before and after Covid-19?

Research Hypothesis

The hypothesis below was formulated and tested:

H_0: The Economic-Social-Governance Disclosure Index of listed industrial goods firms in Nigeria is not significantly different before and after COVID-19.

CONCEPTUAL REVIEW

Covid-19 Pandemic

The global health crisis known as the COVID-19 pandemic stems from the rapid spread of the SARS-CoV-2 virus worldwide, affecting various aspects of community life, including health, social dynamics, and economic activities (Gössling, Scott, & Hall, 2020; Haleem, Javaid & Vaishya, 2020). Enterprises, grappling with decreased performance, face challenges due to a lack of capital reserves and increased reliance on external financing. The uncertainty surrounding COVID-19 has created investor anxiety, impacted stock returns, and led to a more conservative investment approach (Ma, Wahab, Huang, & Xu, 2017) Xu, Ma, Chen, & Zhang, 2019). The pandemic-induced production disruptions have elevated operating risks for enterprises, resulting in a decline in future performance expectations (Yan *et al.,* 2022). This negative signal in the financial market diminishes investor confidence, fostering a cautious investment atmosphere (Wang and Wang, 2021). Additionally, stakeholders seek comprehensive information on how COVID-19 has affected enterprises, emphasizing the need for substantial announcements (Elmar-ouky, Albitar, and Hussainey, 2021).

The world's preoccupation with escalating environmental and social challenges was evident before the COVID-19 pandemic. However, the outbreak underscored the equitable importance of considering environmental and social factors alongside economic considerations for achieving organizational business sustainability (Arora & Mishra, 2020). The epidemic significantly impacted lives, leading to a surge in social and domestic violence during quarantine and economic downturn. The vulnerabilities exposed by COVID-19 created a multi-faceted crisis affecting the global economy and sustainable development goals. Recent studies reveal that the pandemic is a consequence of a growing global population and the excessive use of natural environments, including deforestation, extensive land use for agriculture, habitat loss, and biodiversity decline (Marjea & Sujana, 2022). Emphasizing sustainability goals is identified as the most effective strategy to address any pandemic (Arora *et al.,* 2020).

Sustainable Performance

Staniškis (2009) defined sustainable performance as the capacity to uphold performance, emphasizing the management of sustainable aspects in business. Nicolăescu, Alpopi, and Zaharia. (2015) proposed business patterns aligned with sustainable development, linking processes through stakeholders and the impact on corporate sustainability. Various researchers underscore the significance of not just achieving but consistently maintaining sustainable company performance. Factors such as big data, the internet of things, and smart factories (Haseeb et al., 2019) or attributes and sufficiency economy vision (Kantabutra, 2006) are identified as crucial in achieving sustainability. Lo (2010) highlighted two stages of performance evaluation: sustainable company profitability and marketability efficiency. Additionally, innovation, as suggested by Fernando et al. (2019), plays a pivotal role in attaining long-term objectives and competitive advantage for sustainable business performance. Attaining sustainable business performance involves consistently delivering value to stakeholders and shareholders while aligning with environmental standards (Brent & Labuschagne, 2004). Key elements of sustainable value for firms encompass environmental and social responsibility, along with ensuring satisfaction

for both customers and shareholders. According to Dunphy (2011), sustainability involves actions that extend the useful life of an organization, contribute to biosphere viability, protect living species, and enhance societal well-being. Embracing sustainability in business is achieved by fostering an innovative and positive corporate culture, leading to high performance and optimal use of assets for positive economic and societal outcomes (Dunphy, 2011).

Sustainable business performance is a direct approach that generates value in businesses, achieving long-term shareholder objectives by seizing opportunities and addressing threats stemming from social, economic, and environmental developments (Svensson & Wagner, 2012; Fahim and Mahadi, (2022). Nowadays, businesses and corporate sectors prioritize sustainability and environmental practices in financial decision-making. Industries such as beverages, fashion, and food actively engage in sustainable processes, incorporating them into their brand strategy to tackle environmental concerns. For sustainable trade to thrive, it requires buyers to adopt fair value chain systems. Additionally, consumers increasingly seek sustainable and ethical products, prompting industries and supply chains to commit to corporate social responsibilities. This shift has compelled industries to consider environmental factors in financial and trade decisions.

Environmental Sustainable Performance

Environmental sustainable performance refers to the ability of a system, organization, or process to operate in a way that minimizes its negative impact on the environment while promoting long-term ecological balance. Concerns about the environment and ethical considerations are compelling businesses to assess their operational impacts. Junquera et al. (2012) define sustainable environmental performance as the assessment of reduced CO2 emissions, efficient energy and resource utilization, and a decline in the use of hazardous materials. This involves achieving a reduction in resource usage, emitted pollution, and generated waste from undertaken efforts (Brent & Labuschagne, 2004). Environmental performance serves as a valuable indicator for mitigating environmental risks, facilitating external communication, and informing policy-making in both public and private sectors (Chien & Shih, 2007; Mazzi, Mason, Mason & Scipioni 2012). Nevertheless, this pandemic led to worldwide disruptions in social, economic, and environmental aspects. It had direct impacts on the environment, giving rise to both positive and negative consequences. On the positive side, developments such as air conditioning, improvements in water quality, reduction of noise pollution, and ecosystem restoration have been observed (Chakraborty & Maity, 2020). However, the widespread use of personal protective equipment (PPE) like facemasks, hand gloves, goggles, etc., and the disposal of associated waste present environmental challenges within industries (Rume & Islam, 2020).

Economic Sustainable Performance

Economic sustainable performance refers to the ability of an economic system or entity to maintain long-term viability and prosperity while minimizing negative impacts on society and the environment. Over the past two decades according to Fahim and Mahadi, (2022), economic performance has been affected by five trends: (a) a decline in growth rates for advanced economies, (b) a reduction in total factor productivity growth before the global financial crisis, (c) insufficient returns on many investments, (d) a significant decrease in global bond yields, and € despite notable monetary simplification, the economy has approached deflation. These trends are interconnected, collectively contributing to the resurgence of secular stagnation, marking the prolonged economic downturn globally. The ongoing pandemic may exacerbate secular stagnation, introducing uncertainty for both consumers and businesses, leading to reduced confidence, increased risk aversion, and a shift towards greater savings during and after the pandemic. Sen, Antara, Chowdhury, and Studies (2020), explored the impact of COVID-19 on workers in the garment industry in Bangladesh. They found that disruptions in the supply chain led to a significant loss of jobs for many workers. With retailers restricting shop openings and international customers delaying or canceling orders, unemployment and poverty surged. This situation affected approximately two million workers and their families, pushing them into a severe financial crisis.

Social Sustainable Performance

Social sustainable performance refers to the capacity of a system, organization, or process to operate in a manner that contributes positively to societal well-being and addresses social challenges. Teraji (2009) defined

sustainable social performance as the assessment of an organization based on a healthy work environment, social commitment, participation, education, training, and human resources development. The study highlighted that as consumer awareness of corporate social performance grows, management increasingly acknowledges its responsibility to implement ethical programs for enhancing social welfare. Bessire and Onnée (2010) emphasized the importance of proper assessment in areas such as human resources, corporate governance, human rights, and the environment. Brent and Labuschagne (2004) describe sustainable social performance as the accomplishments in creating social welfare for various stakeholders, including suppliers, employees, customers, and society, resulting from operational efforts. Specifically, management bears full responsibility for implementing social commitment, participation, administrative policies, human resource management, and maintaining a healthy work environment. Begum, Farid, Alam, & Barua, (2020) examined the collective adverse effects of COVID-19 on various socio-economic aspects of the country, including education, the food industry, pharmaceuticals, and the financial sector, significantly influencing the Ready-Made Garment (RMG) sector and thereby impacting economic growth negatively. Additionally, Nizam, Islam, Uddin, & Khan, (2021) highlighted the diverse impact of COVID-19 on factors like order flow, worker payments, labor levels, basic salaries, and daily lifestyles.

THEORETICAL REVIEW

Agency Theory

Agency theory originated in the work of Berle and Means (1932) and further developed by Jensen and Meckling (1976). Agency Theory concerns the interaction between owners, shareholders, and their representatives, usually the management of a business. The capacity to hire knowledgeable managers and make ownership changes without affecting operations are two benefits of the separation of ownership and control, but it also presents a big difficulty when it comes to the transfer of wealth from owners to these agents. Jensen & Meckling, (1976) describe agency as a contractual arrangement where one party (the principal) delegates decision-making authority to another party to provide a service on their behalf. Positive accounting theory employs the idea of agency relationships to elucidate the connections between companies and stakeholders. For example, in the manager-shareholder dynamic, shareholders act as principals, while managers function as agents, working on behalf of shareholders to maximize wealth. The agency relationship hypothesis forms the basis for explaining specific financial issues in corporate settings, addressing conflicts of interest, and strategies to prevent incentive challenges (Sletten, Ertimur, Sunder, & Weber, 2018; Kumari & Pattanayak, 2015).

Agency theory examines the relationship between principals (such as shareholders) and agents (such as managers) in organizations. The seminal paper by Jensen and Meckling laid the foundation for agency theory, exploring the challenges in aligning the interests of principals and agents in organizations. When applying this theory to sustainability, one can consider how mechanisms such as transparent reporting and incentive structures influence the balance between short-term financial goals and long-term sustainable practices. In 1989, Eisenhardt's comprehensive review provided insights into agency theory, emphasizing the challenges in aligning the interests of principals and agents. When applied to sustainability, this theory suggests the need for governance mechanisms that bridge the gap between short-term profit motives and the imperative for long-term sustainable performance. Thus, incorporating sustainability into corporate governance mechanisms helps address potential conflicts outlined by agency theory.

Empirical Review

The study of Kurniawan, Agung Maulana, and Yusuf Iskandar, (2023), examined the impact of technology adaptation, innovative financial practices, and financial policy-related factors on the sustainable financial performance and survival-recovery of 1026 Indonesian MSMEs during the Covid-19 pandemic. Utilizing the PLS-SEM technique with SMARTPLS software version 3, data analysis was conducted. Samples were purposefully selected through established criteria, employing both online and offline methods. The findings indicate that the ability of MSMEs to adapt to technology and engage in innovative financial practices significantly influenced their sustainable financial performance amid the COVID-19 pandemic. Moreover, innovative financial practices positively moderated the relationship between technology adaptations and sustainable financial performance. Additionally, bank policies had a noteworthy direct impact on sustainable

financial performance and an indirect effect through the mediating role of perceived policy effectiveness.

According to Marjea and Sujana (2022), World Health Organization (WHO) globally, declared a public health emergency in response to the emergence of the novel coronavirus, COVID-19, in January 2020. Over a year into the pandemic, despite the development of numerous vaccines, its impact persists. This research focuses on three themes to address this challenge. Firstly, it aims to elucidate the influence of COVID-19 on the sustainable performance (environmental, social, and economic) of Bangladesh's ready-made garment (RMG) industry, an aspect often overlooked in developing countries. Secondly, an online survey conducted from July to August 2021 empirically assesses the effects of the COVID-19 crisis on Bangladesh's RMG industries. Survey results indicate concerns about revenue loss (55.9%), employee health (44.4%), and increased waste (52.8%) during the pandemic. The findings highlight the need for heightened awareness in business organizations when navigating uncertain environments, emphasizing that sustainable performance can serve as a strategic solution**.**

According to Fahim and Mahadi (2022), the advancement of the global economy gives rise to environmental concerns worldwide. Addressing issues such as global warming, inequality, climate change, hunger, and poverty requires a focus on sustainable practices. Manufacturers, especially in the pre-COVID-19 era, wielded significant influence over supply chains and the environment. While Pakistan's economy was robust before the pandemic, COVID-19 posed a threat of widespread company bankruptcies. Despite being financially less developed, Pakistan's stock exchange-listed firms are anticipated to experience substantial growth in the demand for green trade credit. This research examines the interconnections between trade credit demand, sustainable firm performance, and the utilization of green credit, drawing on the Resource-Based View theory. The study also evaluates the impact of COVID-19 and proposes strategies to navigate its challenges. Utilizing secondary literature from databases like Scopus, Directory of Open Access Journals, Web of Science, ProQuest, ScienceDirect, Google Scholar, and JSTOR, the research aims to guide policymakers in making informed decisions related to green trade credit. Proactive adoption of green trade credit is essential for buyers to compete in the sustainable marketplace.

Sudipta, Syed, Muhammad, & Dessalegn, (2022) investigated the influence of COVID-19 on fluctuations in company value, considering the moderating influence of the sustainability performance at the firm level. Findings indicate that companies based in countries severely affected by COVID-19 witnessed more substantial declines in their firm value. However, the adverse effect of COVID-19 on firm value is mitigated for companies exhibiting stronger sustainability performance. Moreover, companies situated in nations with a more pronounced environmental and stakeholder-value-oriented culture showed a lesser decline in firm value resulting from the impact of COVID-19.

Shabir and Bishri, (2021) investigated the effect of the COVID-19 pandemic on the performance of Zara (Parent company Inditex) from the standpoint of international business risk management. The focus is on contributing to ongoing investigations into traditional brick-and-mortar retail as this sector has faced a decline in recent years, while e-retailing has seen substantial growth during the COVID-19 lockdowns. The study aims to comprehend and highlight the impact of the coronavirus crisis on Zara's performance in Saudi Arabia, identifying shifts in consumer preferences and purchasing behavior. Given the widespread business collapses during this crisis, the research seeks to pinpoint specific factors affecting Zara's overall performance, leading to key findings. Additionally, the study addresses challenges related to sustainable retailing at Zara and evaluates the incorporation of sustainability into their business, considering the growing concern over environmental issues. Notably, the review reveals a gap in research on sustainable retailing for Zara in the global market. Furthermore, the study proposes potential digital strategies for Zara to sustain its performance in the global market amidst the challenges posed by the COVID-19 pandemic.

Elkhwesky, Salem, Varmus, & Ramkissoon, (2021) noted that sustainability concerns are gaining significance in the hospitality industry, especially in times of crisis like COVID-19 and the post-pandemic era. To synthesize existing literature on sustainable practices in hospitality, the study conducted a systematic review, analyzing 48 articles from the Web of Science (WoS) and Scopus databases spanning 2020–2021, covering the pre- and mid-COVID-19 period. Findings reveal progress in sustainable practices during these years, but we identified conceptual and empirical overlaps. Research on antecedents, outcomes, and integrated theories is lacking. This review aims to guide and enhance future research on sustainable practices in hospitality beyond the COVID-19

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era, providing valuable insights. Notably, this study is among the first to systematically review sustainable practices in hospitality during and before the pandemic, concluding with a comprehensive research agenda and a framework for future theoretical and empirical advancements in the field.

RESEARCH METHODS

Ex-post facto research design was adopted as the study used historical data to understand and explain events and phenomena that have occurred in the past. It collected secondary data from the *MachameRatio* database. The data collected spanned six (6) years, from 2017 to 2022. The six (6) years were divided into two equal periods of three (3) years each, due to the comparative nature of the study. The three (3) years before Covid-19 comprised years 2017 to 2019, while the three (3) years after the Covid-19 pandemic period consisted of years 2020 to 2022. The year 2020 was included as the effect of COVID-19 started early in the year and to allow for more data to aid meaningful analyses.

The population of the study was thirteen (13) firms, from which data was collected from twelve (12) firms, representing 92% of the population. The study adjudged this as very representative of the population. Following extant studies, sustainable performance was measured using the Composite Economic, Social and Governance (ESG) Disclosure Index. The data collected were analyzed using mean, simple percentage, Pearson correlation, and *t*-test inferential statistical device. The hypothesis is tested at 5% level of confidence. As the number of data points exceeded thirty (30), the normality of the distribution of the data was assumed in line with the Central Limit Theorem.

ANALYSIS AND RESULTS

Table 1 presents the results of Paired Samples Statistics. The results revealed that the average ESG Index for pre-Covid-19 was 29.39%, a figure that is 6.17 lower than the average ESG Index in the post-Covid-19 period by about 6.17%. This indicates that the ESG Disclosure Index is higher in the post-COVID-19 period than in the pre-COVID-19 period. What this shows is that sustainable performance appears better in the post-Covid-19 period than in the pre-Covid-19 period. From the table, the dispersion of the ESG index amongst all the sampled firms is wider in the post-COVID-19 period than in the pre-COVID-19 period based on the standard deviation statistics of 23.77 and 18.05.

Table 1: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ESG Pre Covid-19	29.386	36	18.04962	3.00827
	ESG Post Covid-19	35.559	36	23.76583	3.96097

(Source: Author's computation, 2023)

Table 2 presents the results of percentage change in ESG Disclosures between the years 2017 and 2022 for the twelve sampled firms. From the table, it is revealed that Austin Laz & Co Plc recorded the highest level of improved performance judging by its percentage change in its ESG disclosure index of about 171.22%, followed by Chemical & Allied Product Plc and Cutix Plc which posted about 61.9% and 41.64% improvement respectively. However, Greif Nigeria Plc, Lafarge Cement Wapco Nig, and Premier Paints Plc recorded the lowest performance, as their ESG indices showed a decline of about 22.96%, 16.67% and 11.32% respectively.

Table 2: Percentage Change in ESG Disclosures (Between 2017 & 2022)

Firms	31-Dec-22	31-Dec-17	% Change
Austin Laz & Co	11.31	4.17	171.22
Berger Paints Nig	54.16	45.83	18.18

Beta Glass Company	16.93	16.47	2.81
Chemical & Allied Product	56.22	34.72	61.91
Cutix	45.24	31.94	41.64
Dangote Cement	80.03	66.27	20.76
Greif Nigeria	13.76	17.86	-22.96
Lafarge Cement Wapco Nig	44.31	53.17	-16.66
Meyer Plc	14.09	11.31	24.58
Notore Chemical Industries	26.65	23.41	13.85
Premier Paints	18.65	21.03	-11.32
Tripple Gee & Company	29.10	22.02	32.15

(Source: Author's computation, 2023)

Table 3 shows the results of Paired Samples Correlations of the index between the Pre-COVID-19 period and the Post-COVID-19 period. The results revealed Pearson's correlation coefficient of .856 which is significant at 1%, 5%, and 10% levels. This implies that the relationship between the ESG Disclosure Index in the pre-Covid-19 and post-Covid-19 periods is positive and statistically significant.

Table 3: Paired Samples Correlations

		N	**Correlation**	**Sig.**
Pair 1	ESG Pre Covid-19 & ESG Post Covid-19	36	.856***	.000

(Source: Author's computation, 2023)

The asterisks ***, ** & * denote statistical significance at the conventional 1%, 5%, and 10% levels of significance, respectively.

Test of Hypothesis

The hypothesis below was tested at 1%, 5% and 10%. Table 4 presents the results of a paired sample test. Results in the table showed a mean difference of 6.17% between the ESG Disclosure Index before and after the Covid-19 pandemic. The extent to which the population mean ESG will differ from the sample mean ESG is about 2.09 which is the standard error. The t-statistics of -2.96 is statistically significant at 1%, 5%, and 10%, as the p-value of .005 is less than all the assumed levels of significance of .01, .05, and .10. With these results, the study cannot accept the null hypothesis that Economic-Social-Governance Disclosure Index of listed industrial goods firms in Nigeria is not significantly different before and after Covid-19. This result implies that sustainable performance in the post-Covid-19 period is significantly different from that of the pre-Covid-19 period.

i. **H_0**: Economic-Social-Governance Disclosure Index of listed industrial goods firms in Nigeria is not significantly different before and after COVID-19.

Table 4: Paired Sample Test

	Paired Differences			**t**	**df**	**Sig. (2-ailed)**
	Mean	**Std. Deviation**	**Std. Error Mean**			
ESG Pre Covid-19 - ESG Post Covid-19	-6.17	12.51	2.09	-2.96***	35	0.005

(Source: Author's computation, 2023)

The asterisks ***, ** & * denote statistical significance at the conventional 1%, 5%, and 10% levels of significance, respectively.

DISCUSSION OF FINDINGS

Results from the above analyses revealed that the Economic-Social-Governance (ESG) Disclosure Index of listed industrial goods firms in Nigeria was significantly different before and after COVID-19. This implies that sustainable performance in the post-Covid-19 period is significantly different from that of the pre-Covid-19 period. Results further indicated an increasing trend in sustainable practices and performances between before and after COVID-19 practices. These findings support that of Kurniawan, Agung Maulana & Yusuf Iskandar, (2023), Marjea & Sujana, (2022), Sudipta, Syed, Muhammad, & Dessalegn, (2022), and Elkhwesky, Salem, Varmus, & Ramkissoon, (2021). For instance, in the study of Kurniawan, Agung Maulana & Yusuf Iskandar, (2023), there is evidence that the ability of MSMEs to adapt to technology and engage in innovative financial practices significantly influenced their sustainable financial performance amid the COVID-19 pandemic. A common thread that runs through these studies is that sustainable performance is on the rise between and after the COVID-19 pandemic.

CONCLUSION AND RECOMMENDATIONS

This study examined sustainable performance in the pre and post-Covid-19 periods, with a focus on listed industrial goods firms in Nigeria. It collected secondary data from the *MachameRatio* database. The data collected spanned six (6) years, from 2017 to 2022. The six (6) years were divided into two equal periods of three (3) years each, due to the comparative nature of the study. The three (3) years before Covid-19 comprised years 2017 to 2019, while the three (3) years after the Covid-19 pandemic period consisted of years 2020 to 2022. It employed t-test statistics to analyze the data collected. From the analysis, results showed that the Economic-Social-Governance (ESG) Disclosure Index of listed industrial goods firms in Nigeria was significantly different before and after Covid-19. On the strength of these findings, the study concluded that sustainable performance before and after the COVID-19 pandemic amongst listed industrial goods firms is significantly different.

Based on the findings and conclusion, the study offered the following recommendations:

i. The management of Greif Nigeria Plc, Lafarge Cement Wapco Nigeria Plc, and Premier Paints need to rejig their operational practices to make them more compliant with the Global Reporting Initiative (GRI), the globally recognized standard for sustainable practices.

ii. All the other firms in the sector should attempt to benchmark the practices of Austin Laz & Co, Chemical and Allied Plc, and Cutix Plc on sustainable performance.

iii. Although, from the evidence available, the pandemic did have much disruptive effect on the sustainable performance of these firms, however, more preparations should be made ahead in case the pandemic reoccurs in the future.

Contribution to Knowledge

This study has contributed to knowledge by widening the literature on the COVID-19 pandemic and sustainable performance by providing evidence, anchored on agency theory, that sustainable performance is significantly different before and after the COVID-19 pandemic in Nigeria with a focus on listed industrial goods firms.

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