

Efficacy of Nigerian Energy Industry's CSI Initiatives on Sustainable Development Goals (SDGs) Optimization in Niger Delta Communities: A PLS-SEM Analysis

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Abstract

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Nigeria ranked 146 out of 166 on the 2023 SDG index, scoring 54.3/100, despite a GDP per capita of \$5,408. The research investigates the effectiveness of Nigerian energy companies' CSI initiatives in the Niger Delta and their impact on achieving Nigeria's SDGs by 2030. Using an exploratory design, an online survey collected responses from 460 members (representing 92% sample rate) of Niger Delta host communities, analysed using the PLS-SEM model. The results show that CSI initiatives (economic, legal, ethical, and philanthropic) are well-practiced among oil and gas firms and correlated with a 68.9% increase in sustainable development indicators in the region. By being backed up by Cronbach's Alpha (over 0.70) and Composite reliability (over 0.75), the findings criticize the conventional notion that profit-maximization is the sole focus of businesses, particularly in socially and environmentally vulnerable areas. The research suggests implementing a CSI reporting framework, enhancing government oversight, and fostering positive interactions between oil companies and local communities.

Keywords: CSI initiatives, Energy companies, Niger Delta, Nigeria, Sustainable development

1.0 Introduction

The industrial revolution marked a transformative era in the business environment, revolutionizing production and sparking unprecedented economic growth. However, it also triggered environmental degradation and resource depletion, highlighting the need for sustainable practices. The Fourth Industrial Revolution (4IR) has profoundly influenced Nigeria's energy sector since the discovery of crude oil in 1956, with the sector being a crucial pillar of the economy, contributing 8.6% to GDP, 70% to government revenues, and 90% to export earnings (Okotie, 2018; Ogbonna, Mobosi, & Ugwuoke, 2020; Ebimobowei, 2022). Despite these contributions, the sector has grappled with sustainability challenges, including pollution, ecological degradation, community unrest, and corruption, resulting in a 35% increase in floods, CO2 emissions, and

greenhouse gases (Kumar et al., 2022). This social criticism has spurred a widespread call for sustainability and social responsibility, particularly among the younger generation, aiming to achieve the Sustainable Development Goals (SDGs) by 2030, especially in the environmentally sensitive Niger Delta region. Consequently, there is a growing focus on corporate social investment (CSI) in the SDGs, with policymakers and academics actively discussing strategies to address the environmental and social issues (Saka-Helmhout et al., 2024; Naidoo & Naidoo, 2019).

Nigeria's low ranking of 146 out of 166 on the SDG index worth 54.3/100 with a poverty headcount of \$2.15/day in 2023 despite \$5,408 GDP per capita underscores the urgent need for sustainable practices (World Bank, 2023). Nigeria has experienced over 4 million deaths since 2017, with 23% among adults, 26% among children, and over 40% among the elderly attributed to various causes of oil spills (Peace, 2020; Pona et al., 2021). Major contributors to these spills include corrosion (50%), sabotage by restive youths (28%), and operational mishaps during oil production activities (21%), with minimal impact from engineering drills and machine inefficiencies (Ndubuisi-Okolo et al., 2020). Consequently, the World Health Organization (2018) has linked unsustainable environmental practices in Nigeria to 85 out of 102 categories of diseases and injuries in the Niger Delta region.

Despite the significant role of the oil and gas industry in Nigeria's economy, CSI in SDGs practices exhibit a low adoption rate, especially among energy companies and academicians, with only 35% of Nigerian companies publishing sustainability reports, contrasting with the global average of 72% (Duttagupta et al., 2021; Odera, 2021). Moreover, only 27% of these initiatives are fully integrated into business strategies, advocating profit maximization over people and planet security, as noted by the Triple Bottom Line Theory. Thus, the absence of a clearly defined CSI and sustainability policy, as well as dedicated departments responsible for implementing such policies, is concerning, especially considering the staggering loss of over \$16 billion in government revenue due to non-transparent and corrupt practices in the industry (Jo & Harjoto, 2012; Harjoto, Jo, & Kim, 2017; Harjoto et al., 2023). Additionally, environmental impact assessments conducted by companies within the industry are inadequate, with only 24% of Nigerian oil and gas firms engaging in comprehensive assessments (Uduji & Okolo-Obasi, 2022; Erhinyoja & Marcella, 2019). This highlighted policy gap points out that the CSI and SDG index in Nigeria need to

be empirically tested from a local community perspective. This approach will provide valuable insights into the CSI's industry efficacy and identify improvement areas (Alhassan, Islam, & Haque, 2021). Through this, policymakers and industry stakeholders can develop more targeted and sustainable strategies to enhance environmental management practices in the Nigerian energy sector. To address these empirical gaps, the research explores the efficacy of Nigerian energy companies' CSI initiatives in the Niger Delta and their influence on achieving Nigeria's SDGs index by 2030. Specifically, the research seeks to:

- I. Investigate the range of CSI initiatives implemented by these companies and their effectiveness in promoting community development as measured by the SDGs index,
- II. Analyze the influence of Carroll's CSI pyramid on community development indicators in the Niger Delta.

The research provides valuable empirical evidence for several reasons. Firstly, in the modern age, there has been a noticeable shift from a focus solely on profit maximization to a greater awareness of social responsibilities among businesses (Kajola et al., 2023). This shift has led many business managers to consider the impact of their organizational activities on all stakeholders, not just financial gains. This change in business ideology has given rise to the concept of CSI, which aims to contribute to the achievement of sustainable development goals within local communities' economies, as noted by Adekunle et al., (2024). Secondly, there are concerns about the motivations behind implementing CSI in Nigeria's energy industry, particularly due to allegations of environmental misconduct by multinational oil companies (MOC) in the Niger-Delta region (Velte, 2022; Bian et al., 2021). Therefore, the research serves as a reminder that these companies can do more to help Nigeria achieve better SDGs development performance by 2030. Lastly, despite numerous studies investigating the impact of exploiting non-renewable resources on the environment (Nursetiawati et al., 2022; Aguirre, 2023), CSI's PLS-SEM analysis in Nigeria's energy sector is still in its early stages, with unresolved issues regarding SDGs index as theoretical frameworks, measurement approaches, and empirical methods (Castillo-Villar, 2020; Fallah-Shayan et al., 2022). Consequently, CSI's prominent scholars, like Zhang et al., (2022) and Prabawani et al. (2023), emphasize that MOC should expand their value proposition beyond mere profits by considering the community as the organic stakeholders affected by their operations. This is essential as energy companies face accusations of unethical business practices and negative social

impacts, including extortion and conflicts of interest, as noted by Emmanuel et al., (2021) and Olanrewaju et al., (2020). Therefore, the research findings serve as a guide for firms on how to ethically improve their performance in achieving SDGs in Nigeria.

2.0 Literature Review

2.1 Conceptual Clarification

Origin of CSI Dimension in Nigeria

CSI's origin can be traced back to various points in the industrial revolution era, with indications suggesting its presence as early as the 1930s and 1940s (Abubakar & Mohammed, 2018). Early scholarly works, like Theodore Kreps's "Measurement of Social Performance in Business," J.M. Clark's "Social Control of Business," and Chester Barnard's "The Function of the Executive," hinted at the early foundations of this social investment practices. However, CSI gained formal recognition and began to take shape in the mid-20th century, particularly with the publication of Howard R. Bowen's groundbreaking book "Social Responsibilities of the Businessman" in 1953, which marked a significant starting point for formal literature on CSI, synonymous with CSR (Adedeji, 2023). During this era, Keith Davis emerged as a prominent figure, contributing extensively to defining CSR by focusing on the interplay between social responsibility and business influence, which gained widespread acceptance and laid the foundation for subsequent discussions (Allen & Eze, 2019).

Nigeria's CSI landscape underwent significant development in the mid-1990s, driven by changes in public sector involvement and notable corporate scandals like the incidents involving Ken Saro-Wiwa and Shell (Angela et al., 2021). This period underscored the importance of responsible business practices as it saw the emergence of organizations like 'Business for Social Responsibility', serving as catalysts for promoting CSI initiatives within the business community. Over time, CSI evolved into a subject of extensive discussion, analysis, and research, with businesses worldwide expected to undertake voluntary actions addressing SDGs issues like environmental conservation, climate change, and human rights (Babajee et al., 2022). Despite its widespread discussion, the definition of CSI remains multifaceted, lacking a universally accepted interpretation (Battilana et al., 2022). However, empirical discussions highlight its importance in the realm of effective management, ethical operations, transparency towards stakeholders, and the integration of social and environmental initiatives into regular business practices (Dmytriiev et al., 2021). As of today's 4IR, CSI evolution has been

marked by shifts in focus, terminology, and perspective reflecting its dynamic nature (Gbali et al., 2021). For instance, from its early beginnings in the 1930s to its formalization in literature in the mid-20th century, CSI's prominence in the modern business landscape demonstrates its enduring relevance and adaptation to changing societal needs (Ekhatior & Iyiola-Omisore, 2021). The complex interplay between CSI, business practices, societal expectations, and stakeholder relationships has cemented its status as a crucial aspect of corporate operations, enabling a more responsible and sustainable approach to business.

The concept of CSI is coined as 'triple bottom line,' or '3Ps known as people, planet, profit,' highlighting its multidimensional nature beyond profit-centric operation (Elisha & Golden, 2022). While these terms were introduced by John Elkington in 1998, CSI emphasizes environmental stewardship, social responsibility, and economic growth, ensuring that business operations align with stakeholder and consumer interests. Today, CSI has become a standard practice in contemporary business reporting.

SDGs Dimension of Community Development in Niger Delta

The origin of the SDGs can be traced back to the League of Nations, now known as the United Nations, in 1934 when a commitment to achieving universal primary education was declared in response to the end of the Cold War. However, the concept of the SDGs emerged as a successor to the Millennium Development Goals (MDGs) in the development agenda, representing a new plan proposed by the UN following the perceived shortcomings of the MDGs in 2015 (Abdulkareem et al., 2023). The SDGs encompass a comprehensive set of developmental goals that were formulated after the UN Conference on Sustainable Development, also known as the Rio+20 Conference, held in June 2012. In response to this conference, the Open Working Group (OWG) was established to gather input and recommendations for the SDGs. The OWG held its initial meeting on March 14-15, 2013, focusing on key themes such as water, energy, sanitation, green energy, risk reduction, and management (Lincoln & Diamond, 2023). In June 2014, the UN presented the proposed post-2015 Sustainable Development Goals, aiming to enhance and restructure the previous MDGs. The SDGs were considered more comprehensive and ambitious compared to their predecessors (Lawrence et al., 2020), as the official document titled "Transforming our world: the 2030 agenda for sustainable development" formalized the SDGs (Khan et al., 2022). This agenda comprises 17 sustainable goals along with 169 targets, with the core aim of eradicating poverty, which

serves as the primary focus of Nigeria's community problem today (Abubakar, 2022).

Scholarly literature focuses on development and sustainability, emphasizing a dynamic system that endures over time rather than a static endpoint. Sustainability in communities refers to the long-term preservation of valued environmental resources, ensuring that present needs are met without compromising the ability of future generations to meet their own needs (Adeyinka et al., 2020, 2021). Community sustainability is assessed by measuring natural resource depletion and the feasibility of sustaining current resource use rates into the distant future. The overarching goal of sustainable development is to enhance the quality of life comprehensively, contingent upon the vigorous pursuit and societal adherence to environmentally sound policies. Despite Nigeria's emergence as Africa's largest economy, accounting for 17% of the continent's total GDP with a GDP of \$397 billion, a concerning 40.1% of Nigerians, approximately 83 million people, are living in poverty, recording below \$2.56 per capita, which is below the UN threshold (Begho, 2022). This showcases a high poverty level in the Niger Delta region, although there has been observed improvement in southern regions.

Over the past few decades, scholarly literature has documented strategies for sustainable development in Nigeria in three phases: the Pre-SAP era, the SAP era, and the democratic era (Fagbemi & Osinubi, 2020). As Nigeria's economy has grown, the government has shifted poverty alleviation strategies to new approaches, of which the National Social Investment Program (NSIP) introduced in 2016 is a key intervention strategy. This program consists of four critical components: the N-Power program, Conditional Cash Transfer (CCT), Government Enterprise and Empowerment Program (GEEP), and the National Home-Grown School Feeding Program (NHGSFP) (Nwani & Osuji, 2020). These programs have been lauded by academic literature, such as Yetano-Roche et al., (2020), for their efficiency in addressing youth unemployment, despite Olanrewaju et al., (2020) criticizing them for being exploited by politicians and lacking lasting impact. In overall, sustainable development challenges in the Niger Delta have persisted over the years, proving difficult to address through short-term philanthropic projects driven by profit motives and a focus on brand image.

2.2 Theoretical Framework

The research is anchored on the presumption of Stakeholder Theory and Triple Bottom Line (TBL) or 3Ps theory, introduced by John Elkington in 1994 through his book "Cannibals with Forks: The Triple Bottom Line of 21st Century Business." The theory criticizes conventional accounting theory by postulating the need for sustainability through responsible business, which means the company's responsibility and accountability not just for its financial performance (the "profit/bottom line" of traditional business), but also for its social and environmental impact (coined as people and planet line) (Francis & Pegg, 2020). This further supports the stakeholder theory proposition, introduced by R. Edward Freeman in the 1980s, that business consideration is anchored on stakeholders' value proposition, not just shareholders' returns, in their decision-making processes (Gbali et al., 2021). These theories' assumptions suggest that oil and gas companies' success is closely tied to the well-being of various stakeholders, including the communities and the environment itself. Businesses must recognize that they operate within a complex network of relationships and interactions, where the actions and decisions of community members can significantly impact their existence. By acknowledging that communities have legitimate claims on a company's resources and serving as partners in value creation, the TBL theory emphasizes pursuing long-term sustainability and ethical practices (Hirsch et al., 2023). This can build better relationships and ultimately improve business sustainability that covers people, profit, and the planet.

The concept of 3Ps is justified in CSI practices, especially as corporate scandals and criticisms have highlighted the importance of ethical business conduct. The 3Ps theory emphasizes the need for companies to consider not just financial gains but also the impact on people and the planet (Imoisi, 2022). From a profit perspective, CSI is seen as a necessary requirement for company development, as it can lead to responsible behavior and long-term profitability. However, the economic aspect of CSI goes beyond profit-making; it includes the direct and indirect economic impacts of a company's activities on the local community and other stakeholders. Muoboghare and Guanah, (2023) note that socially responsible companies can be profitable in the long term by saving costs and showing greater concern for their communities. However, the "people" aspect of CSI emphasizes the importance of society and the workforce in a company's success (Izidor, 2022). CSI serves to develop and maintain good relationships between companies and society, which is particularly important for energy companies and their relationship with local communities. Moreover, the "planet" aspect highlights the environmental responsibility of companies (Jackson, 2020).

Thus, irresponsible use of natural resources, waste production, and pollution are major negative impacts of corporations. Moreover, environmentally responsible businesses should measure their environmental impact, minimize detrimental effects, and seek win-win situations where both the company and the environment benefit. Through this, the company should avoid exploiting people, by aligning with the SDGs framework that showcases the need for firms to be environmentally responsible and contribute positively to society while maintaining profitability (Kalu & Ott, 2019).

2.3 Hypothesis Development

Traditional business priorities have focused on improving efficiency, increasing profits, and expanding globally through diversification and product differentiation. The evolving strategic thinking now requires integrating efforts that blend societal and environmental considerations into business decision-making processes. Significant research has been conducted on how CSI dimensions influence the community in question. Researchers have shown interest in examining the interplay between the regulation of CSI and value creation (Brammer et al., 2021; Saka-Helmhout et al., 2024). This contrasts with the findings of the CSI effect on human resources development (Soltani et al., 2024; Saeidi et al., 2022). However, researchers' focus on the developmental role of CSI from the perspectives of economic, legal, and ethical citizenship is limited within the Nigerian context (Simpson et al., 2020). Additionally, researchers' interest in exploring the key drivers of CSI in Multinational Corporations (MNCs), particularly from the stakeholder perspective, is less explored (Thompson et al., 2022). Szegedi et al., (2017) explored the role of foreign direct investment in improving social conditions through CSI and ethical business practices, while Strand et al., (2015) examined the existence of top management positions for CSR and how they affect CSR performance. Iborra and Riera, (2023) argued that CSI provided context and outcomes for leadership scholars, while leadership models could provide the processes of explaining CSR. Given this context, there is a need to test whether:

H₁: Philanthropic CSI initiatives have no significant impact on the good health and wellbeing dimension (SDG 3) of the Niger Delta sustainable development goals in Nigeria,

H₂: The ethical CSI initiative does not positively influence the responsible consumption and production dimension (SDG 12) of the Niger Delta sustainable development goals in Nigeria,

CSI research has transformed, shifting from theoretical development to a societal focus on its impact and benefits. Key themes in the literature are anchored on the relationship between CSI and competitive advantage (Herrera, 2015; Trinovianti & Ruslan, 2021), firm performance (Wei et al., 2020; Lenz et al., 2017). Scholars have also investigated stakeholders' perceptions of firms' CSI activities and its impact on business and productivity (Adekunle et al., 2024, Alhassan et al., 2021). Additionally, researchers have explored CSI reporting, social, and environmental reporting (Bian et al., 2021, Duttagupta et al., 2021), the effect of CSI on employee job satisfaction (Erhinyoja & Marcella, 2019; Harjoto et al., 2017; Harjoto et al., 2023). Scholars assess the link between CSI's stakeholder relationships and increased competitiveness (Jo & Harjoto, 2012; Kajola et al., 2023). Despite the descriptive value of this empirical evidence, the range of CSI research reflects the global nature of business, leaving room for its current focus on ethics and the dimensions of SDGs indices like poverty and social security and development (Odera, 2021). This aligns with Velte, (2022) opinion that scholars have paid scant attention to the SDGs index as a strategy for engaging stakeholders to ensure improved outcomes of CSI programs in Nigeria's energy industry. This is significant given the industry's importance as the mainstay of Nigeria's economy. Uduji and Okolo-Obasi, (2022) suggest that CSI policy reformation should address sustainable development, globalization, governance, and the social impact of corporate activities. Therefore, empirical testing is needed to determine whether:

H₃: There is no significant relationship between the legal CSI initiative and the sustainable cities-communities (SDG 11) dimension of the Niger Delta sustainable development goals in Nigeria,

H₄: Economic CSI initiative and decent work and economic growth dimension (SDG 8) of Niger Delta sustainable development goals in Nigeria have no significant relationship.

The hypothesized framework is crucial for several reasons. Firstly, it provides analytical evidence to either support or refute the common assumption that CSIs positively impact SDGs achievement in Nigeria. This is essential in the Niger

Delta region, where CSIs are prevalent due to the region's socio-economic and environmental challenges (Pona et al., 2021). Secondly, the results can inform policy and practice, helping companies and policymakers understand which types of CSIs are most effective in contributing to specific SDGs. This knowledge can assist businesses, policymakers, and other stakeholders in allocating resources effectively and implementing strategies that have the greatest impact on the community and the environment. Lastly, it adds to the academic literature, advancing the understanding of the complex relationship between CSIs and sustainable development in the Niger Delta and beyond.

3.0 Research Methodology

Online-based questionnaire survey was the adopted primary data-gathering method, which targeted members of the host communities in the Niger Delta region. This involved randomly approaching potential respondents via Google Form, ensuring voluntary participation with assurances of strict confidentiality and anonymity. The Niger Delta region was intentionally chosen for its diverse cross-section of the population, including potential first-time home users of SDGs initiative from various backgrounds, to ensure a representative sample. The questionnaire accommodated a five-point Likert rating scale ranging from "Strongly Support (SS)" rated as 5, "Support (S)" rated as 4, "Neutral (N)" rated as 3, "Oppose (O)" rated as 2, to "Strongly Oppose (SO)" rated as 1. This is ideal owed to Rice et al., (2017) emphasizes its ethical rigor and data validity. The survey method was then justified by its ability to reach a large sample size, its cost-effectiveness, and its suitability for studying widely dispersed populations like Niger Delta youth (Lefever et al., 2007). This aligned with its predefined response options allowed respondents to express their preferences, ensuring the acquisition of reliable and unbiased responses. This approach is ideal for accommodating a large number of participants while facilitating diverse and quantifiable data collection.

The Niger Delta region hosts approximately 70 oil and gas companies, with 18 categorized as Major Oil Companies (MOCs), employing around 10,000 individuals (Torty et al., 2023). In contrast, the Niger Delta host communities are home to an estimated 28.8 million people, with an almost equal gender distribution of 49.5% male and 50.5% female as of 2006. These communities also comprise 3462 community leaders, according to Torty et al., (2023). The selection of these respondents was based on their relevance to the research topic, given their interactions within the shared environment of the oil industry and the host

communities. Their geographical location in the Niger Delta region and their involvement in similar business activities also justify their inclusion in the study. However, while the probabilistic sampling technique ensures equal sample representativeness, the study anchored on simple random sampling technique that accurately reflects the specificity of the target population, thus enhancing the generalizability of the research findings. This approach is ideal as the researcher can estimate sample parameters with known probabilities, making the results statistically sound (Archaya et al., 2013). This thereby contributes significantly to the CSI research in the community development field. Consequently, the researcher determined the sample size adopting Yamane's formula (1973), at a 95% confidence interval level with a 0.05 precision level of significance:

Formula,
$$n = N / (1 + Ne^2)$$

Where: "n" = sample size, "N" = population, "e" = significance level (95% confidence level or 5% precision level).

$$"n" = 28.81m / (1 + 28.81m (0.05)^2) = 400 \text{ sample size}$$

The total sample size (n) = 500 sample size @ 25% tolerable errors

Partial Least Squares Structural Equation Modelling (PLS-SEM) is considered the most appropriate method for analysing the construct variables in this study, as recommended by Adzovie and Jibril, (2020). This choice is essential because the research framework is dimensional, constructed using composite indices measured as a second-order reflective construct. This enables the simultaneous examination of multiple structural equations, accommodating a large number of dependent and independent variables, and enabling the investigation of both direct and indirect effects, including the identification of mediating variables. Additionally, PLS-SEM allows for the assessment of construct reliability and validity through statistical tools such as mean, median, adjusted regression (R^2), and correlation statistics. This is true as it does not require data normality and can handle large sample sizes, making it an appropriate choice for this study. Consequently, the research analysis is guided by the PLS-SEM assumptions anchored on linearity, reflective measurement model, data interval and ordinal, sample size adequacy, reliability and validity of the indicators, normal distribution of the residuals, and model invariance across groups.

4.0 Result Presentation and Discussion of Findings

The study collected 460 electronic responses through a Google Form from members of host communities in the Niger Delta, which accounts for 92% of the estimated sample size. This can significantly impact the generalizability of

findings, as there may be a risk of underrepresentation or bias, potentially leading to skewed results and limiting the ability to apply findings to the broader population accurately. Thus, analysis and result presentation are based on the 460 responses received. The data was then analysed using the partial least squares equation supported by structural equation modelling, with Smart-PLS 3.2.8 utilized for preliminary analysis and data screening. This included verifying and addressing missing values, outliers, normality tests, common method variance, and multicollinearity tests. These tests ensured that the data was cleaned and ready for further investigation. Finally, Smart-PLS 3.2.8 structural equation modelling was used to build the measurement model and the path modelling. This approach was chosen for its adaptability in terms of distribution and research population, as well as its ability to correct for potential mistakes that could lead to under or overestimation of relationships among the construct (Sarstedt et al., 2017). Consequently, the research analysis is guided by the PLS-SEM assumptions anchored on linearity, multivariate normality, and path measurement model specification.

A) Measurement Model

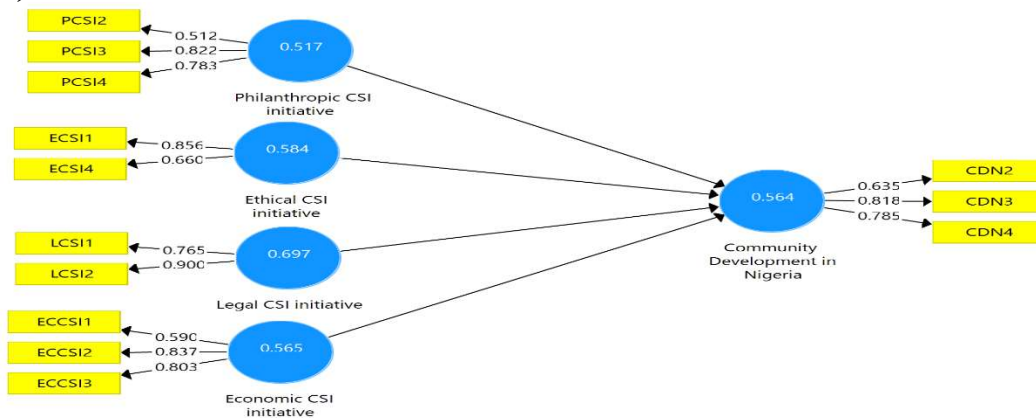


Figure 1: Construct Measurement Model (Smart-PLS, 2024)

Figure 1 showcases the measurement model's validity and reliability, assessed for internal consistencies, convergent, and discriminant validities as proposed by Sohaib et al., (2019) and Henseler et al., (2015). The research found that Cronbach's reliability and internal consistencies, measured by composite reliability, exceeded the recommended threshold of 0.70, aligning with Cheung et al (2023) recommendation to retain construct items with loadings above 0.4 for

reliability and discard those below this threshold. Additionally, correlations between variables were lower than the square root of the average variance extracted (AVE), indicating suitable discriminant validity. All variables had AVE values exceeding the suggested threshold of 0.50 (Shrestha, 2021). The Variance Inflation Factor (VIF) for all indicators exceeded the threshold value of 3.3, indicating a successful collinearity test with no bias (O'brien, 2007). These results are summarized in Table 1, presenting the measurement model outcomes:

Table 1: Internal Consistency and Reliability

	Cronbach's Alpha	Composite Reliability	AVE	Discriminant Validity	HT MT	Loading	Cross Loading
Sustainable Development (SDGs)	0.682	0.793	0.564	0.751	0.651	0.746	0.752
Economic CSI	0.694	0.792	0.565	0.752	0.674	0.743	0.743
Ethical CSI	0.701	0.734	0.584	0.764	0.706	0.758	0.758
Legal CSI	0.688	0.821	0.697	0.835	0.737	0.833	0.92
Philanthropic CSI	0.731	0.756	0.517	0.719	0.681	0.706	0.706

Source: Smart-PLS (2024)

Table 1 shows the Cronbach's Alpha values ranging from 0.734 to 0.821, indicating good internal consistency reliability as they exceed the recommended threshold of 0.7 noted by Leong et al. (2015). The Composite Reliability values range from 0.564 to 0.697, also indicating acceptable internal consistency. However, the Average Variance Extracted (AVE) values range from 0.517 to 0.584, which are above the recommended threshold of 0.5 as noted by Chan and Chong (2012), suggesting that the constructs have adequate convergent validity. This suggests that while the constructs demonstrate good internal consistency reliability, there are no issues with convergent validity. Therefore, researchers need not reconsider the measurement model and potentially revise the items or constructs to improve the model's validity. However, the discriminant validity analysis using the Fornell-Larcker approach, which assesses whether different constructs or variables in the research are distinct from each other (Henseler et al., 2015), shows the bolded diagonal values in Table 1 are higher than the correlations between constructs, indicating good discriminant validity. This suggests that the constructs (Philanthropic CSI, Community Development in Nigeria, Economic CSI, Ethical CSI, and Legal CSI) are distinct from each other. Researchers can therefore be confident that these constructs are measuring unique

aspects of CSI, allowing for a more accurate understanding of the impact of different types of CSI initiatives on sustainable development outcomes like decent work and economic growth, good health and wellbeing, and responsible consumption and production. This implies that companies should consider implementing a variety of CSI initiatives to address various societal needs and enhance their overall social impact.

Cross-loading assesses the load of items onto multiple factors, with a threshold of 0.3 considered significant for the relationship factor, as suggested by Sarstedt et al., (2017). Table 1 shows load and cross-load items above 0.3, implying a significant relationship factor. For instance, ethical CSI initiative (E-CSI) items have a loading of 0.635 on sustainable development (SDGs), which is above 0.3, showcasing relationship factors. This suggests that E-CSI is not specific to the SDGs factor and may also be relevant to other initiatives, indicating that the items may not be as distinct or unique to a single factor as empirically thought, showcasing no overlap or ambiguity in the underlying constructs being measured. Thus, researchers can statistically capture the underlying relationships between items and factors. Finally, Heterotrait-Monotrait Ratio (HTMT) values assess the correlations between the research constructs, indicating that the inter-correlations between constructs are all below the conservative threshold of 0.85, as suggested by Shrestha (2021). This suggests that the constructs have discriminant validity, meaning they represent conceptually different ideas, implying that the construct in question is distinct and does not overlap or share similarities with the other constructs in question.

B) Structural Equation Modelling

The PLS-SEM model was used to examine four hypothesized relationships, with a bootstrapping procedure of 10,000 iterations confirming the relationships between predictor and criterion variables. The study also assessed effect size (F^2), predictive relevance (Q^2), and coefficient of determination (R^2). These statistical measures are crucial for several reasons. Firstly, effect size (F^2) provides insights into the strength of the relationships between variables, helping researchers determine the practical significance of their findings (Kurt et al., 2020). Secondly, predictive relevance (Q^2) indicates the model's ability to predict outcomes, offering valuable information about its reliability and validity (Hang et al., 2022). Lastly, the coefficient of determination (R^2) quantifies the proportion of variance in the dependent variable that is predictable from the independent variables, aiding in the understanding of the model's overall explanatory power (Yamin,

2020). In overall, these measures contribute to the robustness and credibility of the research findings, enhancing their relevance and applicability in the management literature.

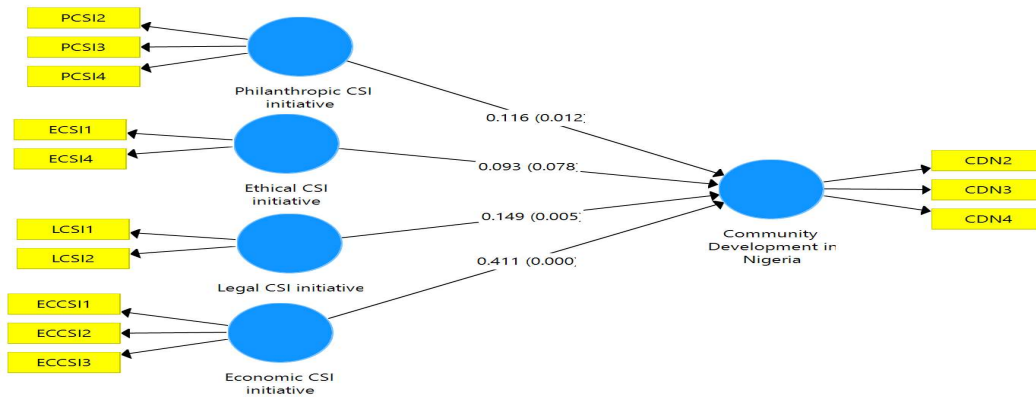


Figure 2: PLS-SEM Equation Model (Smart-PLS, 2024)

As shown in Figure 2, using a significance level threshold of 5% (equivalent to a value of 1.96), the results indicate that approximately 38.9% of CSI initiatives have had a positive impact on the sustainable development of communities in the Niger Delta region. This percentage, which falls within the range of 0 to 1 as suggested by Zabukovšek et al., (2019), represents the proportion of CSI initiatives that have led to an increase in sustainable development. However, Table 2 showcases that the positive value of beta indicates that a 1% increase in CSI initiatives corresponds to a 38.9% increase in sustainable development in the Niger Delta communities. This suggests a strong positive relationship between the two variables, highlighting the significant impact that CSI initiatives can have on sustainable development outcomes. This suggests that increasing investment in CSI initiatives can lead to substantial improvements in the sustainable development of communities in the Niger Delta region. This underscores the importance of continued and possibly expanded efforts in this area, as it has the potential to drive meaningful and positive change in the region.

Table 2: Bootstrapping Results of Hypothesis Testing

Hypothesis	R ²	Adjusted (R ²)	Q ²	F ²	Beta	Standard Error	T Value	P Value	Effect
SDGs	0.389	0.383	0.204						
H ₁				0.016	0.562	0.198	0.012	0.016	Small
H ₂				0.182	0.424	0.241	0.078	0.093	Large
H ₃				0.008	0.430	0.178	0.005	0.149	Small
H ₄				0.022	0.382	0.274	0.000	0.411	Moderate

Source: Smart-PLS (2024)

As different effect sizes are used to describe the strength of variable relationships, Correll et al., (2020) notion that the effect size values of 0.02, 0.15, and 0.35 are considered small, medium, and large effects respectively. Table 2 illustrates that the effects sizes for the relationships among the research variables of H₁ and H₃ are deemed small, while H₂ exhibits a large effect size, and H₄ shows moderate effect. This notion significant relationship between CSI initiatives and SDGs of Niger Delta communities. However, according to Henseler et al., (2015) presumption that a Q² score of 0 or below indicates a lack of practical utility in the model. Thus, the research Q² value of 0.204 in Table 2 suggests that the model does have practical utility. This implies that the continuous efforts of oil and gas firms through CSI initiatives in the Nigerian energy industry could positively contribute to the achievement of SDGs in the Niger Delta communities.

C) Discussion of Findings and Result Implication

The 17th century efforts of oil exploration in Nigeria have had profound social, political, and economic implications on both the Nigerian states and the state-society dynamic (Ebimobowei, 2022). This has led to a significant scholarly interest in the concept of CSI as an industrial weapon, strategy and tools to foster sustainable development, particularly in the Niger Delta region. Despite this focus, CSI and SDGs practices in Nigeria's oil and gas sector show a low adoption rate as only 35% of Nigerian companies publish sustainability reports annually. This well below the global average of 72%, despite 94% of companies having established CSI initiatives anchored on three pillars of community: profit, people and planet. However, despite the substantial loss of over \$16 billion in government revenue due to non-transparent and corrupt practices in the industry, only a mere 27% of these initiatives are fully integrated into their business strategies. This business philosophical stance has led to the sector lacking a clearly defined CSI and sustainability policy, with no dedicated individual and

government departments responsible for implementing CSI and SDGs reporting policies in Niger Delta. In the modern age of technology, there has been a noticeable shift from a sole focus on maximizing profits to a greater awareness of social responsibilities among businesses. This shift compels business managers to consider the impact of their organizational endeavors on the sustainable development of all stakeholders, especially in the Niger Delta community. Consequently, while contrary to the research hypothesis, the research discovered that the implementation of CSI initiatives by Nigeria energy companies has had a positive and significant impact on sustainable development in the Niger Delta community. This finding is consistent with previous literature on CSI and community development (Gulakov, Vanclay, & Arts, 2020; Lefike et al., 2023; Emeka-Okoli et al., 2024; Nthoi-Molefe, 2021; Pasaribu Vanclay, & Zhao, 2020; Prabawani et al., 2023; Makuyana & Nzo, 2022; Guyalo et al., 2022; Makhavhu, Swanepoel, & Venter, 2022). For example, Makhavhu et al., (2022) discovered that CSI projects tend to align with the business strategies of the corporations and target community needs that fit the corporate's area of focus. This aligns with Gulakov et al., (2020) perspective that effective CSI strategies in the oil and gas industry involve a combination of financial investment, stakeholder engagement, and sustainable development practices that prioritize long-term partnerships with local communities and actively involve them in decision-making processes. This tends to achieve better outcomes in terms of social and environmental impact. Therefore, the positive impact of CSI activities extends beyond economic benefits to include philanthropic, ethical, and legal duties to society, and fostering overall sustainable development in Niger Delta community.

The research offered several implications across theoretical, empirical, and managerial aspects of CSI initiative and SDGs performance index in Nigeria. Theoretically, the findings challenge the conventional assumption that profit-maximizing strategies are the primary focus of businesses, especially in resource-rich but socially and environmentally vulnerable regions like the Niger Delta. The research underscores a shift towards a more holistic business approach that considers the social and environmental impacts of corporate activities. This aligns with stakeholder theory, which suggests that businesses should consider the interests of all stakeholders, including communities impacted by their operations. Empirically, the research contributes to the growing body of literature on CSI, SDGs, and community development in the context of the oil and gas industry. By highlighting the effect of hypothesis development, the research provides empirical

evidence that such initiatives can be effective in addressing social and environmental challenges in resource-rich regions.

5.0 Conclusion and Recommendations

While facing social criticism including limited practice, corruption, and lack of reporting framework, CSI remains a valuable tool for managerial organizations, allowing the consideration of broader societal impact of their actions, recognizing the interconnectedness between corporations and society. By promoting environmental consciousness, recognizing resource limitations, and enhancing transparency in operations, the research underscore the CSI contribution to sustaining the past, present, and future generations of the Niger Delta community. Modern business managers are urged to integrate CSI principles into their strategies, as this can benefit both their companies and society. These principles, which encompass economic (profit), environmental (planet), and social (people) sustainability, should be woven into top management's competitive strategies. By doing so, companies not only enhance their corporate citizenship but also foster loyalty from customers, employees, and stakeholders. For energy companies, particularly in the Niger Delta region, embracing CSI dimensions is crucial for sustainable development. The statistically significant impact of these dimensions on sustainable development underscores the importance of adhering to CSI principles. Consistency in providing CSI initiatives is vital for meeting community expectations and fostering a positive perception. This consistency, coupled with adherence to CSI standards, can significantly improve the relationship between companies and the communities they operate in. Therefore, CSI managers should uphold these standards, project the corporation's image effectively, and consistently reinforce the company's positive image in the eyes of stakeholders. The below action plans should be fostered:

Managerially, the research suggests that Nigerian energy companies should prioritize the integration of CSI initiatives into their business strategies. This includes aligning CSI projects with corporate goals, engaging stakeholders, and adopting sustainable development practices. It also emphasizes the importance of transparency and accountability in reporting CSI activities, as this can enhance the credibility and effectiveness of such initiatives. Overall, the research underscores the potential for CSI initiatives to contribute to sustainable development in resource-rich regions like the Niger Delta. It suggests that by embracing a more holistic approach to business, Nigerian energy companies can not only improve

their social and environmental impact but also enhance their long-term sustainability and reputation.

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