

Chapter One

Introduction

1.1 Background to the Study

Financial performance is a crucial factor for all companies worldwide, particularly those operating in the oil and gas industry. It has a direct influence on the company's profitability, expansion, and overall achievement. Nevertheless, in recent years, there has been an increasing focus on non-monetary components of corporate operations. Stakeholders, including investors, customers, employees, and regulators, are increasingly requesting openness and responsibility that goes beyond financial measurements. The increase in demand has resulted in the emergence of sustainability reporting.

Financial performance is the degree to which a corporation accomplishes its financial goals, which is measured by monetary gains resulting from greater sales, improved efficiency, enhanced profitability, and increased market value for shareholders as a result of successful financial management¹. Profitability is a vital metric that assesses a company's ability to create revenues or profits in relation to its costs and expenses. It showcases the efficiency with which a business employs its resources to create income and attain financial prosperity.

Investors, analysts, and stakeholders utilise this crucial financial statistic to evaluate the financial well-being and long-term viability of companies. Sustainability measures in the oil and gas sector can greatly influence financial performance². It includes a range of measurements, such as revenue, profit margins, return on assets (ROA), return on equity (ROE), and profits per share (EPS). These indicators are crucial for stakeholders, such as investors, management, employees, and regulators, as they offer valuable insights into the company's operational efficiency, profitability, and overall financial well-being.

Companies worldwide face several problems that impact their financial success, such as economic volatility, regulatory shifts, market rivalry, technological progress, and geopolitical uncertainty. It is essential for firms to understand and manage these complexities in order to maintain and improve their financial performance. Furthermore, the importance of environmental, social, and governance (ESG) concerns has significantly increased due to stakeholders' escalating expectations for openness and responsibility in corporate activities. The financial performance of enterprises in the oil and gas sector is especially crucial since their operations need significant capital investment and are subject to the unpredictable fluctuations in commodity prices. The sector encounters distinct problems, including volatile oil prices, rigorous regulatory demands, environmental considerations, and the increasing shift towards renewable energy sources. By maintaining strong financial performance, these organisations are able to allocate funds towards investing in innovative technology, conducting research and development for new reserves, and ensuring adherence to regulatory obligations. In the face of complex difficulties, the oil and gas industry must prioritise the inclusion of sustainability reporting. This will offer a complete perspective on environmental, social, and governance (ESG) practices and promote a sustainable approach to ensuring long-term financial well-being.

Historically, corporate strategy has been primarily focused on maximising the interests of shareholders, in line with classical economic theory that emphasised the importance of profit maximisation for retaining capital. Nevertheless, the emergence of worldwide issues like climate change has prompted firms to embrace sustainable practices that go beyond simply financial gain. Incorporating sustainability reporting into corporate initiatives is essential in order to improve transparency and gain a competitive edge. Corporate sustainability (CS) refers to the process of ensuring that an organization's actions are in line with the economic, environmental, and social requirements of both present and future stakeholders. The approach,

represented by the triple bottom line of economic, environmental, and social values, focuses on long-term sustainability while ensuring that future generations can fulfil their own needs^{1,2,3}.

On a global scale, sustainability refers to the concept of achieving development that fulfils the requirements of the current generation without jeopardising the capacity of future generations to fulfil their own need. This is a significant difficulty that all organisations face today, impacting both the financial and non-financial aspects of business performance. This study aims to examine the influence of sustainability reporting on the financial performance of specific publicly traded oil and gas firms in Nigeria by analysing existing literature.

Sustainability reporting is a methodical instrument employed to collect and present both monetary and non-monetary data for the purpose of managing processes and informing stakeholders^{3,4,6}. A sustainability report provides a detailed explanation of a company's philosophy and governance structure. It also highlights the relationship between a company's commitment to sustainable development and its overall strategy. In order for sustainability reporting to have significance, it must be aligned with the company's goal and include quantitative performance indicators⁴.

The disclosure of sustainability information by oil and gas corporations globally is greatly influenced by public pressure. In Nigeria, namely in the South-South zone, these enterprises that require significant investment and involve substantial risks are expected to provide reports on their economic, social, financial, and environmental performance. Sustainability reporting, designed to offer a more comprehensive view of company performance, encompasses not just financial measures but also environmental performance, social responsibility, governance, and economic repercussions. It encompasses both monetary and non-monetary data, adhering to different criteria, and methodically collecting and displaying

information for management and stakeholders. This reporting approach improves the clarity and openness of a company's principles, organisational structure, and dedication to sustainable development. The rationale behind corporate sustainability reporting is that it enhances transparency and accountability of organisations towards society⁵. By addressing and reporting the impacts of their economic activities, organisations ensure that these activities are socially and environmentally sustainable in the long term.

The oil and gas sector in Nigeria plays a vital role in the economy, making a substantial contribution to the country's GDP and government revenue. The oil sector contributes significantly to Nigeria's Gross Domestic Product (GDP), with its share fluctuating over time: in Q1 2022, it accounted for 6.63% of the total real GDP; by Q3 2023, this figure had decreased to 5.48%; prior to the COVID-19 pandemic, the sector typically made up around nine percent of GDP; and in Q2 2024, its contribution stood at 5.70%^{7,8}. Oil and gas firms in Nigeria have difficulties due to frequent changes in regulations, lack of infrastructure, and security issues in oil-producing areas. Sustainability recognises the interconnectedness of environmental, economic, and social concerns. The national planning is a process by which a government sets a country's long-term development goals and creates strategic frameworks and multi-year plans to achieve them, often focusing on economic growth, poverty reduction, and improved social welfare⁵. However, in Nigeria, the federal ministry of budget and Economic Planning is the government organ that is responsible for preparing national planning. This ministry formerly known as national planning commission, has the core responsibility for formulating medium and long-term economic and development plans and coordinating them across all government levels. Sustainability reporting for oil and gas firms entails providing comprehensive information on their environmental effects, including incidents like oil spills, gas flaring, and waste management methods, as well as the actions made to minimise these effects.

Oil and gas industries frequently harm environmental sustainability through activities such as oil spills, gas flaring, and the production of hazardous and solid waste. Oil spills result in the pollution of water, air, and land, leading to significant negative effects on host communities. This includes the depletion of fish populations and the contamination of arable land and water sources. In Nigeria, namely in the South-South region, environmental degradation is worsened by pipeline sabotage, oil pilferage, and leaks from illicit refineries. Inadequate upkeep of deteriorating pipes also leads to oil leaks, as ageing pipelines are susceptible to rupture and corrosion. The incorporation of sustainability reporting in the oil and gas industry is essential for multiple reasons. Firstly, it improves openness and accountability, fostering confidence among stakeholders such as investors, regulators, and local communities. Furthermore, it has the potential to enhance financial performance by identifying and minimising environmental risks that may lead to expensive liabilities. Furthermore, organisations that exhibit a dedication to sustainability may enjoy enhanced access to finance, as investors progressively prioritise environmental, social, and governance (ESG) aspects when making investment choices.

Assessing company performance and sustainability in modern business contexts now involves considering the crucial elements of environmental, social, and economic implications. The increasing worldwide apprehension regarding environmental deterioration, primarily caused by industrial activity, emphasises the necessity for firms to embrace sustainable practices. These methods not only reduce negative environmental impacts such as pollution and depletion of resources, but also tackle social issues such as community relations, labour practices, and human rights. Furthermore, the economic aspect of sustainability focuses on the financial strength and ability of enterprises to thrive in the face of changing regulations and the expectations of stakeholders. Both scholars and practitioners highlight the interdependence of environmental, social, and

economic variables in influencing corporate goals and results. In their study, it is crucial to maintain a harmonious equilibrium between business profitability and environmental stewardship in order to avert lasting ecological harm and reduce potential risks to stakeholders. This viewpoint is consistent with the wider concept of corporate sustainability, which necessitates companies to include environmental and social factors into their governance structures and operational procedures³.

Recent studies have emphasised the growing interest in investigating how sustainability reporting affects the performance of publicly traded companies. This interest is motivated by global environmental concerns and the significant impact that business operations have on local ecosystems. The increased public scrutiny and criticism of socially irresponsible companies have accelerated a movement towards increased corporate accountability. The pursuit of financial success and material affluence should not come at the detriment of ecosystems and human well-being⁴. Companies are required to recognise and deal with the environmental and social effects of their activities on the communities and stakeholders where they operate, according to the principles of sustainability reporting. It is crucial to fulfil these commitments in order to reduce long-term risks and losses that impact local stakeholders. Corporations have a significant impact on both the creation and resolution of environmental issues⁵.

Investors, regulators, and stakeholders closely examine the financial performance of publicly traded oil and gas businesses. Factors such as the fluctuation of oil prices, the effectiveness of production, adherence to operational standards, and compliance with regulatory requirements have a substantial impact on their economic well-being. The increasing importance of sustainability reporting techniques is a direct response to the growing awareness of environmental, social, and governance (ESG) challenges. The move is motivated by stakeholders' acknowledgment of the role that ESG factors play in ensuring long-term

sustainability and competitiveness. Integrating sustainability reporting into company operations in Nigeria can have a significant impact on the financial performance of oil and gas companies. Transparent disclosure of environmental, social, and governance (ESG) practices not only increases attractiveness to investors but also reinforces risk management frameworks and operational efficiencies. In addition, as global and local expectations for responsibility and long-term viability increase, organisations who adopt proactive sustainability reporting are positioned to achieve a clear competitive edge. An inquiry is required to determine whether companies in Nigeria, namely in the oil and gas sector, match their sustainability reports with the various requirements of their stakeholders, due to the intricate nature and high expectations associated with sustainability reporting. Furthermore, upstream companies in the oil and gas sector are responsible for the exploration and production of crude oil and natural gas, including finding deposits and drilling to extract raw materials. The key players in the sector include both major integrated companies with broader operation, such as NNPC, ExxonMobil, Chevron, and Shell, Ardel Holding PLC, Eterna PLC, Japaul Gold & Venture PLC, Oando PLC, Seplat PLC, Total energies SE Nigeria and specialized service providers like Schlumberger (SLB). Others examples are national oil companies (NOCS) like Saudi Aramco and PetroChina, and independent oil and gas firms such as ConocoPhillips.

1.1 Statement of the Problem

The Nigerian economy has significantly benefited from the revenue generated through oil and gas production. However, intense competition for financial performance among oil and gas companies has engendered apprehension and discontent among residents of the South-South region, encompassing Akwa-Ibom, Bayelsa, Cross-River, Delta, Edo, and Rivers states⁸.

Petroleum activities, particularly in the Niger Delta, have led to extensive environmental damage, affecting the atmosphere, soils, sediments, surface and groundwater, marine environments, and terrestrial ecosystems⁹. Fossil fuel combustion has notably increased air pollution levels, prompting urgent measures to mitigate contamination. Moreover, pipeline transportation poses risks of soil and water pollution from potential leaks, while marine transport raises concerns about oil spills that threaten marine life. Despite legal frameworks like the polluter pays principle, aimed at ensuring responsible parties cover environmental management costs, persistent environmental degradation, water pollution, and ecological harm continue to impact communities where oil extraction is concentrated. Many host and impacted communities in reality its locals have not seen equitable economic benefits from these operations.

There is a critical need to re-examine how sustainability reporting is integrated into financial statements. The existing research has not significantly explored its impact on delivering equitable economic benefits to host and impacted local communities, particularly in the context of Nigerian oil and gas companies in the South-South region^{3,4,5}. This gap is crucial because this region is where most of the exploration and production activities are taking place, affecting the local economy and environment directly. In order to bridge the gap between ideal and actual sustainability reporting practices in South-South oil and gas companies is very important in this study.

However, most of the previous research primarily focuses on downstream companies involved in marketing and sales^{5,7}. These companies have a less direct impact on environmental degradation compared to upstream activities like exploration and production. This presents a gap in understanding the full environmental impact, particularly on economic sectors such as farming and fishing, which are vital to the local communities in the South-South region¹⁰.

While much of the existing research emphasizes environmental sustainability, there is limited focus on the comprehensive incorporation of environmental, economic, and social concerns in financial disclosures^{11,12}. This holistic approach is essential for a more accurate assessment of sustainability reporting practices and their impact on financial performance. The lack of attention to this in the South-South region's context is a notable gap.

This study seeks to fill these gaps by exploring how the quality and comprehensiveness of sustainability reporting influence financial statements and performance metrics in selected quoted oil and gas companies in Nigeria's South-South region. By elucidating the mechanisms through which ESG factors impact financial outcomes, this research aims to provide actionable insights that bridge the divide between sustainability objectives and financial performance metrics. Thus, the study investigates the effect of Sustainability Reporting Employed on Financial Performance of Selected Quoted Oil and Gas Companies in South - South of Nigeria. Moreso, Nigeria is the jewel of in the Africa oil crown but oil, militancy and insecurity in the South-South in general Niger Delta has become a subject of discussion just like the British Weather, whereas the crude oil produced in the region is the life blood of the Nigerian economy. Crude oil has failed to translate to prosperity development in the South-South of Nigeria. The region has become hot bed of crisis because the problem of neglect and marginalization has been pushing the people especially the youths to resist deprivations, intimidation, domination, hegemony politics and injustice¹³.

1.2 Aim and Objectives of the study

The main aim of the study is to examine the effect of sustainability reporting employed on the financial performance of selected quoted oil and gas companies in South - South of Nigeria. Some of the specific objectives were to:

1. determine the effect of Sustainability Reporting on the Return on Assets (ROA) of oil and gas companies operating in South – South, Nigeria.
2. verify the effect of Sustainability Reporting on Return on Equity (ROE) of oil and gas companies operating in South–South, Nigeria.
3. compare effect of Sustainability Reporting on the Return on Capital Employed of oil and gas companies operating in South-South Nigeria.

1.3 Research Questions

In the process of carrying out this study, the following questions were addressed:

1. What is the effect of sustainability reporting on the Return on Assets (ROA) of oil and gas companies operating in South-South Nigeria?
2. What is the effect of sustainability reporting on the Return on Equity (ROE) of oil and gas companies operating in South-South Nigeria?
3. What is the effect of sustainability reporting on the Return on Capital Employed (ROCE) of oil and gas companies operating in South-South Nigeria?

1.5 Hypotheses

Based on this framework and the research questions above, the following hypotheses are developed:

H₀₁: Sustainability reporting has no significant effect on the Return on Assets (ROA) of oil and gas companies operating in South-South Nigeria.

H₀₂: Sustainability reporting has no significant effect on the Return on Equity (ROE) of oil and gas companies operating in South-South Nigeria.

H₀₃: Sustainability reporting has no significant effect on the Return on Capital Employed (ROCE) of oil and gas companies operating in South-South Nigeria.

1.6 Scope of the Study

This study covered sustainability reporting in relation to environmental reporting, economic reporting, social reporting and financial performance in terms of return on assets, return on equity and return on capital employed of oil and gas companies in South-South, Nigeria. The period in focus was between 2015 and 2023 comprises of pre-covid19, covid 19 and post covid19 financial performances. Therefore, the outbreak of covid 19 in China as largely affected the global economy due to it wides spread health and social effect and its spread of contagiousness. The effect of the period emanated as a result of global economy recession (oil prices globally decreased), particularly in Nigeria it started from the year 2015. The study adopts Ex-post facto research design and used multiple regression to test hypothesis.

1.7 Significance of the Study

The study is of vital benefit to many stakeholders such as students, oil and gas industry, governments, investors, multinational and local oil and gas companies, oil and gas companies management, academic staff and the general public. The primary significant of this study is that finding will assist management to make decision with planning in terms of quality sustainability reporting. The study is of vital benefit to stakeholders in the oil and gas sector of the economy in the following ways:

The study findings and recommendations would help the industry in dealing with affecting climatic change issues.

The findings would help management to improve on policies of decision making on weaknesses of financial performance.

The study would help interesting researchers as contribution to knowledge, who might find it necessary and relevant to carryout research into the concept of sustainability reporting of oil and gas sector in Nigeria or abroad. This will also assist in the provision of literatures which would enrich future research works.

This study will provide interesting information to investors in oil and gas sector. The information will build the confidence of interest and ability of potential investors to align with contemporary developments in the oil and gas sector.

The study would help to provide information to the Nigeria government to assess the level of sustainability reporting compliance in the oil and gas industry.

The findings from the study aim to provide new knowledge regarding reporting thus, relationship between sustainability reporting quality and financial performance which are vital benefit to management and board of directors of oil and gas companies.

The general public would be help with the information from this study to assess how responsible oil and gas companies operating in South-South towards sustainable development of host communities in the region.

1.8 Limitation of the Study

Obtaining comprehensive sustainability reporting data proved challenging, as not all companies publicly published their sustainability information. Some data had to be specially sourced through alternative means beyond public disclosures. However, these data availability constraints were effectively managed and overcome through meticulous data collection procedures, cross-verification from multiple sources, and consistent application of the GRI sustainability reporting framework to ensure data validity and reliability across the sample. Despite these measures, the sample size limitation remains a consideration when interpreting the study's findings.

1.9 Operationalization of the Research Variables

This study is based on two key constructs namely sustainability reporting and financial performance that is $Y = F(x)$, where Y = financial performance (dependent variable) and x = sustainability reporting (independent variable).

Therefore, financial performance is operationalized with the following sub – indicators:

$$Y = Y_1, Y_2, Y_3$$

Where Y_1 = Return on assets

Y_2 = Return on equity

Y_3 = Return on capital employed

Likewise, sustainability reporting as independence variable was measured with the following sub-indicators:

$$X = X_1, X_2, X_3$$

Where X_1 = Environmental sustainability reporting

X_2 = Economic sustainability reporting

X_3 = Social sustainability reporting

1.10 Operational Definition of Terms

The following key operational terms were involved in the conduct of this study:

Economic sustainability reporting: Refers to the disclosure of information regarding companies impact on the economic systems and economic conditions of all stakeholders.

Environmental sustainability reporting: Refers to the disclosure of the effect of company's operations that impact directly or indirectly on the ecosystem.

Financial performance: Refers to the measure of a firm costs and benefits through the utilization of its financial resources.

Social Sustainability Reporting Quality: refers to the extent to which a company's sustainability reporting adequately covers social aspects, providing clear, accurate, comprehensive, and relevant information about its social performance and impact. High-quality social sustainability reporting ensures transparency and accountability regarding how a company addresses social issues and contributes to social well-being.

Return on Assets: Refers to financial ratio that indicates how profitable a company is in relation to its total assets. In other words, it indicates how profitable companies are generating revenue through the efficient or optimal utilization of non- current and current assets. The ratio also served as one of the key performance indicators by measuring an entity's ability to turn the assets of the entity into profit. This is a very useful measure of comparison within an industry. A low result of return on assets compared to industry may indicate that the entity's competitors have found a way to operate more efficiently. After tax, interest expense can be added back to numerator since return on assets measures profitability on all assets whether such assets are financed by equity or debt.

Return on capital employed: Refers to as financial ratio that assesses a company's profitability and capital efficiency. That is, it is a measure for comparing profitability of companies after taking into consideration the amount of capital utilized. The profit used here is profit before interest and tax. The return on capital employed shows how much operating income is generated for each dollar of capital invested. A higher return on capital employed is favorable, as it indicates a more efficient usage of capital employed. The return on capital employed should be used in conjunction with other profitability ratios such as return on equity, return on assets, etc., when evaluating company performance in terms of profitability.

This ratio (metric) should only be compared for companies operating in the same industry- comparisons across industries offer very little value.

Return on Equity: Refers to the measure of financial performance in term of profitability of entity in relation to the shareholders equity. The profit used here is profit after tax. This ratio helps investors to know whether an entity is making enough profit to compensate for the risk of being in business or how the return compare to less risky investments like bonds. Primarily, this ratio is useful to investors by showing the rate of return on investment by shareholders.

Endnotes

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Chapter Two

Literature Review

The review of literature shall focus on views, opinions and studies of several authors, intellectuals, eminent scholars as well as professional on the subject matters within and globally context.

2.1 Conceptual Review

2.1.1 Financial Performance

Financial performance pertains to the execution of financial activities. Financial performance, in a broader context, refers to the extent to which financial goals have been achieved or are being achieved. It refers to the act of quantifying the outcomes of a company's strategies and activities in terms of money. The firm's return on investment, return on assets, and value added, among other factors, demonstrate these findings¹. Business performance refers to the measure of a company's success or failure during a specific timeframe, shown by the overall financial gains or losses incurred during that period. Assessing the financial performance of a corporation enables decision-makers to objectively evaluate the outcomes of corporate strategy and actions in terms of money. Financial performance is an evaluative measure of a company's ability to effectively utilise assets from its main business operations and create income. This word is also utilised as a comprehensive indicator of a company's total fiscal well-being throughout a specific timeframe. It can be employed to compare similar companies within the same industry or to compare industries or sectors as a whole².

It refers to the evaluation of a company's costs and benefits by using its financial resources (assets), based on personal opinions or feelings. The impact of measuring a corporation's asset utilisation can have significant implications for both its current and future operations. A good result indicates that the firm is able to operate with a competitive advantage, while a

negative result suggests that the organisation may face competitive disadvantages^{4,11,13}. The financial performance of oil and gas firms is often assessed through the analysis of their statement of comprehensive income and statement of financial position. The assets, liabilities, revenues, gains, losses, expenses, and equity are crucial indicators that assist stakeholders in making educated decisions on their investments, whether to invest further or withdraw their existing investments. The financial performance of a firm is considered viable when its financial transactions align with the interests of managers, investors, and other stakeholders. Oil and gas companies operating in the South-South region of Nigeria are expected to comply with the regulations set by the authorities. The oil and gas business environment continues to be unclear owing to the Covid-19 epidemic. It is imperative for upstream oil and gas firms to provide transparency regarding their management of the current scenario. Investors in the oil and gas industry anticipate comprehensive disclosures of both financial and non-financial performance, which should outline several potential outcomes considering the inherent uncertainty. It is crucial for all oil and gas firms to provide thorough, accurate, sufficient, and reliable reports.

Financial performance refers to the overall achievement of a firm in terms of its profits, sales, and growth, as measured by financial metrics. It is a crucial factor for the survival and expansion of businesses¹². Financial performance demonstrates the ability of a firm to make profits within a specific time frame, typically assessed on an annual basis. This is done by comparing the company's performance with that of previous years and with one or more other companies in the same industry. Financial performance indicators encompass many measurements such as Return on Assets (ROA), Return on Equity (ROE), Return on Capital Employed (ROCE), Earnings Per Share (EPS), and others. The computation of relevant ratios, such as profitability ratios, efficiency ratios, and investors or stock ratios, is used to calculate most of these metrics of financial performance.

2.1.2 Return on Assets

Return on assets is a profitability ratio that quantifies the amount of profit a firm may create from its assets. Put simply, return on assets (ROA) quantifies the effectiveness of a company's management in creating profits from the economic resources or assets listed on its balance sheet³. Return on assets (ROA) is a metric that measures a company's profitability in relation to its overall assets. Return on assets (ROA) provides insight into the efficiency of a company's management in utilising its assets to create earnings⁴. Return on assets is expressed as a percentage. The Return on Assets (ROA) is calculated by dividing the Net Income (profit after tax) by the Total Assets and multiply the result by 100.

This is a financial ratio that quantifies the profitability of a company in relation to its total assets. Oil and gas firms utilise this ratio to evaluate the profitability of their assets (reserves) in relation to the costs incurred for exploration, development, and production within a specific operational period. The numbers are 4, 6, and 7. It is necessary to understand how the utilisation of assets is generating profitable returns to ensure the long-term sustainability of oil and gas firms. The return on assets metric provides investors with insight into the company's efficiency in generating net income from its investments. Return on Assets (ROA) is determined by dividing a company's net income by its total assets.⁶ A higher return on assets signifies more asset efficiency, whereas a lower return implies inefficiency in asset utilisation.

Return on Assets (ROA) is calculated by dividing total earnings by the total assets within a specific accounting period. This ratio quantifies the firm's ability to create profits through the efficient use of all its assets. The statement signifies the level of effectiveness with which the company's assets are utilised to generate profits [8]. A higher return on assets (ROA)

indicates effective utilisation of the company's resources, while a lower ROA suggests the opposite.

2.1.3 Return on Capital Employed

Return on Capital Employed (ROCE) is determined by dividing a company's operational profits by the total assets minus current liabilities over a specific time period. The ROCE is calculated by subtracting the operating expenses, such as distribution costs, administrative charges, and other relevant expenses, from the earnings of the company for the accounting period. It is a financial ratio that evaluates a company's profitability and effectiveness in using money. It is a metric used to compare the profitability of organisations, taking into account the amount of capital they have used. The profit referred to here is the profit generated prior to accounting for interest and taxes. ROCE, or return on capital employed, is a profitability ratio that measures the efficiency of an entity in generating profit from its capital. The return on capital employed metric is widely regarded as one of the most effective profitability ratios. The researcher chose to apply this metric since it is regularly used by investors to assess the suitability of an entity for investment. ROCE is a metric that measures the amount of operating income earned per dollar of capital invested. A higher return on capital employed (ROCE) is generally more advantageous, as it signifies that more earnings are earned for each dollar of capital utilised. Nevertheless, it is insufficient to solely calculate the return on capital employed (ROCE) when evaluating the financial performance of an entity. It is essential to also consider other profitability ratios, such as return on equity, return on assets, and return on invested capital, in order to accurately assess the efficiency or inefficiency of the entity in terms of profit or loss. It is advisable to only compare this profitability performance ratio among entities operating in the same business. Comparisons across different sectors have little significance.

To determine the ratio, divide the profit before interest and tax by the total capital utilised and then multiply the result by 100. The percentage represents the amount of profit generated by combining funds from shareholders and external borrowed capital during a specific time period. Profit before interest and tax (PBIT) refers to the total profit of an entity, which includes all expenses except for interest and tax charges. Capital employed refers to the aggregate value of the financial resources that have been invested in a business through stock. Capital employed is often calculated by subtracting current liabilities from total assets, or by adding non-current assets to working capital.

2.1.4 Return on Equity

Return on equity is a financial metric that assesses a company's profitability relative to its shareholders' equity^{4,6}. The profit referred to in this context is the net profit after deducting taxes, while the capital refers specifically to the shareholders' equity. The calculation involves dividing the profit after tax by the stockholders' fund. A higher return on equity leads to increased equity funding for the corporate entity. This ratio enables investors to assess whether a firm is generating sufficient profit to offset the inherent risk of being in business, or how the return compares to less hazardous investment options such as bonds⁶. Essentially, this ratio is valuable to investors since it indicates the profitability of investments for shareholders.

Return on equity (ROE) is a crucial indicator for current and potential investors, since it measures the company's ability to generate revenue from its investments and reflects the effectiveness of management's decision-making⁷. Entities that have a greater return on equity (ROE) are more likely to be profitable due to their effective capital deployment and their ability to attract external investments when necessary. The ability to raise funds is a characteristic that applies to all firms and is a quality that investors look for in possible

investments (as well as in the management team). It serves as evidence of an organization's capacity to effectively utilise financial resources and implement well-considered strategic choices⁷. Hence, the company's ability to generate greater output with fewer finances might result in more advantageous conditions, particularly for early-stage businesses, corporations, and start-ups. When investors donate capital to entities or firms, they also invest in the management's capacity to use the capital effectively towards successful objectives, without squandering it or misusing it for personal gain.

Return on equity (ROE) is the ratio of net income to shareholders' equity, expressed as a percentage. Return on equity quantifies a company's profitability by indicating the amount of profit it earns relative to the capital invested by shareholders. Return on equity (ROE) is quantified as a percentage and computed using the following formula: The Return on Equity is calculated by dividing the Net Income by the Shareholder's Equity.

Net income refers to the total earnings of a company throughout the entire fiscal year, excluding dividends paid to common stockholders but including dividends paid to preferred stockholders. Preferred shares are not included in the calculation of shareholder's equity. Also referred to as "return on net worth"⁵. The Return on Equity (ROE) is a valuable metric for assessing the profitability of a company relative to its industry peers.

2.1.5 Sustainability Reporting

Sustainability reporting involves providing comprehensive information about both financial (accounting) and non-financial aspects, including economic, social, and environmental factors, that have a direct or indirect impact on a company's operations during a specific timeframe^{1,2}. Sustainability reporting is a methodical procedure for collecting and presenting

both financial and non-financial data to support management decision-making and enlighten stakeholders. This includes information related to economic and environmental matters. The main focus here is on the concept of integrating economic, social, and environmental information by organisations. This integration is aimed at facilitating efficient and effective decision-making that would have a good impact on both the companies themselves and the communities in which they operate, both in the present and in the future, ensuring their existence^{1,2,3}.

Sustainability reporting include the reporting of efforts and initiatives aimed at safeguarding the environment, protecting marine and terrestrial life, eradicating poverty, addressing inequalities, and establishing robust institutions³. Organisations are increasingly focused on implementing a contemporary operation that meets the requirements of the current generation while also safeguarding the needs of future generations. Oil companies can work towards achieving these goals by including a triple bottom line approach, encompassing environmental, social, and economic obligations, into their mission statement⁶. Today, the capacity of corporations to survive is contingent upon the extent to which they include sustainability factors into their strategic plans. Incorporating sustainability concerns into the industry's strategy will help organisations reduce waste, emissions, and energy consumption while promoting efficiency and conservation⁵.

Organisations that demonstrate exceptional proficiency in implementing and disclosing sustainability practices are motivated not just by the desire for public approval, but also by the recognition that it is a lucrative business strategy that yields substantial returns on investment³.

The operations of an oil company entail numerous engagements with local populations throughout the processes of exploration, production, and marketing. As a consequence, there is a growing expectation for oil firms to allocate resources towards the advancement of their

neighboring communities⁷. In addition, the government, non-governmental organisations, and the World Bank have recently asserted that sustainability could have a beneficial impact on poverty alleviation and community development². Socially sustainable organisations are those that contribute to the enhancement of local communities. Social sustainability encompasses the preservation of citizens' political and economic rights. These rights may encompass, but are not restricted to, appropriate and ethically aware corporate governance frameworks, labour rights, community culture, and sustainable human development⁵. As a result, this could result in increased trust among the many stakeholders, hence assisting organisations in attaining reduced operating expenses⁶. Nevertheless, sustainability reporting, which encompasses environmental, social, and economic reporting, does not serve as a substitute for conventional financial reporting. Sustainability reporting consolidates pertinent financial and non-financial data and conveys an organization's strategies and commercial achievements to a diverse range of stakeholders. In essence, there is a direct correlation between financial performance, sustainability reporting, and company models and strategies. Globally, a survey conducted by the accounting firm reveals an increasing focus on corporate transparency, specifically in relation to sustainability reporting and disclosure⁷.

Oil and gas firms engage in sustainability reporting by doing a thorough study of the costs and benefits involved. Oil and gas firms carefully consider the advantages and disadvantages of both voluntary and required reporting. In this analysis, the conflicting internal and external pressures exerted by different stakeholders are carefully weighed against each other to ascertain if and to what degree oil and gas corporations will divulge information about their sustainability performance^{1,8}. Nevertheless, it is important to note that sustainability reporting is often anticipated to enhance or diminish an organization's performance. The production activities of corporations have a direct or indirect influence on the quality of the environment, often leading to environmental deterioration. The historical annual reports of these entities

mostly emphasize financial reporting, focusing on whether the entity is generating profits or experiencing losses. The report is traditionally generated by calculating the discrepancy between the entity's total revenue and total expense. When computing the former, the social costs of production are not factored in, which leads to an inflated aggregate income and profit, while also hiding a substantial percentage of the aggregate expenses. When translated into the national accounts, it becomes evident that the national income reporting system faces challenges in capturing the social or environmental costs associated with the production operations of corporations in the oil and gas industry. In order to rectify this inadequacy, the practice of environmental reporting (disclosure) has been established to supplement national financial reporting. These papers provide comprehensive information on the complete economic expenses of natural resources used and the resulting environmental impacts. The promotion of sustainability reporting, which is a result of sustainability accounting, is advocated by major institutions. The European Commission in 2002 outlines its plan for corporate social responsibility for the upcoming three-year period in a communiqué. The EU is commended for its global leadership in corporations that offer corporate social responsibility and related reports. Nevertheless, the European Commission does not offer rules for reporting nor does it mandate a certain format for the reports. These domains are also utilised by various other institutions and groups, including the International Integrated Reporting Council (IIRC), which has joined more recently. The European Union in 2014 has issued a directive that requires certain large corporations to disclose non-financial indicators and diversity statistics. The aim is to enhance the consistency and comparability of this information across the EU. One of the requirements is the development of a "consolidated non-financial statement" that comprises a description of the business model, the pursued policies, primary risks, and significant non-financial performance indicators⁸. While sustainability reporting remains optional, the adoption of this kind of disclosure is rapidly

increasing worldwide. Sustainability reporting is at a critical juncture where it is transitioning from being embraced by only the most forward-thinking individuals and organisations to becoming widely accepted and practiced. Not participating in the reporting process could harm performance, reputation, and the capacity to acquire capital⁹.

Given that sustainability reporting is not obligatory in many countries, including Nigeria, companies have the freedom to choose how they disclose their sustainability practices. As a result, the type of disclosure might differ among organisations, even within the same country and industry. Companies frequently utilise their official websites to provide information about their socially responsible initiatives, either through several hyperlinks or in the form of a detailed report. Various frameworks have been developed to ensure comparability of those reports. Key providers of sustainability reporting guidance comprise GRI (GRI's Sustainability Reporting Guidelines), the United Nations Global Compact (the Communication on Progress), the International Organisation for Standardisation (ISO 26000, International Standard for social responsibility), and the Organisation for Economic Co-operation and Development (OECD Guidelines for Multinational Enterprises).

The GRI Sustainability Reporting Guidelines are the most advanced and widely utilised framework that allows organisations throughout the world to measure their influence on the environment, society, and the economy. Aggregating the body of literature on sustainability reporting, six factors that may motivate managers to implement sustainability reporting and accounting¹⁰:

One rationale for engaging in sustainability accounting is green-washing, where management is motivated to show care and gather data for communication and reporting, rather than actually improving sustainability performance. From this perspective, accounting functions as a mechanism to facilitate cost-effective communication efforts related to sustainability.

Mimicry and industry pressure play a significant role in explaining management operations and can serve as a motivation for management to address and discuss sustainable accounting. Mimicry can serve as a means to introduce novel accounting concepts related to sustainability. However, the unthinking adoption of methodologies might also overlook linked issues. Legislative pressure, stakeholder pressure, and the need to maintain the licence to operate can be addressed by implementing required information and reporting obligations through governmental legislation. When sustainability regulations are imposed, companies must comply with institutional requirements and communicate with stakeholders. Dialogues become important to ensure the ongoing operation of the corporation.

Self-regulation refers to the voluntary practice in which a firm or industry group limits its operations or commits to specific nonmarket activities⁸. The corporation or industry aims to enhance its performance and reputation through voluntary means, operating within a framework where commercial or profit-oriented factors may be significant, but are not necessarily the primary motivator. Industry-level self-regulation is frequently used to hinder the imposition of more government restrictions, uphold social approval and reputation, or prevent competing enterprises from taking advantage without contributing.

Corporate responsibility and ethical considerations: The concept of corporate responsibility is often debated, as it is commonly associated with individuals rather than organisations. However, the idea of responsibility accounting acknowledges the significant role played by both individuals and institutions. The process of assigning responsibility to an individual starts with perceiving things and then progresses to identifying certain morally significant aspects, such as the impact on others, injury, or pain¹⁰. From the standpoint of corporate responsibility, the corporate information collection system enables the company to get an understanding, which is the initial stage in behaving responsibly, before identifying the ethically significant aspects of corporate activity. Insufficient, irrelevant, or non-comparable

information systems can lead to reckless company behaviour and consequences⁹. The importance of accounting information in developing and sustaining responsible organisations is connected to the belief that accounting focuses on the behaviour of persons, whether on an individual level and within groups such as departments, divisions, or corporations. The ethical drive and justification for using accounting practices to tackle sustainability concerns is undeniably crucial. Accounting information has a crucial role in guiding and influencing the decisions made by company executives. Sustainability accounting is essential for managers who seek to enhance corporate sustainability. One rationale for implementing sustainability accounting is to uncover and capitalise on the financial benefits (such as cost reduction or increased sales revenue) that might result from voluntary social and environmental initiatives¹⁰. If corporate management has an indication that the company may have a business case for pursuing sustainability, they will be motivated by this rationale. However, the transparency of this business case would improve with better information.

Sustainability Reporting in Nigeria

Sustainability reporting is gaining recognition globally and is being acknowledged by relevant stakeholders. Nigeria is also adopting sustainability reporting in the business community, specifically in the oil and gas and financial sectors, due to their significant contributions to the nation's economic development⁶. The Institute of Chartered Accountants of Nigeria (ICAN), the Association of National Accountants of Nigeria (ANAN), the Nigeria Securities and Exchange Commission, the Central Bank of Nigeria, and the Banks Committee, along with various labour and trade unions, spearheaded the campaign for the adoption of SR. Nevertheless, despite the influence of institutions and regulations, as well as pressure from stakeholders, sustainability reporting in Nigeria remains voluntary. This means that banks or companies choose to disclose such information in order to gain the trust of users and as a means to demonstrate their performance, rather than being compelled to do so through

sanctions or enforcement. The sustainability movement in the banking sector commenced in 2008, when a globally authorised bank (World bank) developed a fully operational Sustainability department and implemented Employee Volunteering across the entire organisation. In 2009, the bank was the first in the Nigerian financial sector to introduce Sustainability reporting, following the principles provided by GRI. Additionally, it was one of the first to sign on to Equator Principles, LBG, Business in the Community (BITC), and United Nations Principles for Responsible Investment (UNPRI). In 2010, they incorporated sustainability into their Corporate Philosophy, guaranteeing that sustainability factors are taken into account in all elements of their company activities. In 2011, they spearheaded and advocated for the process that resulted in the creation of the Nigerian Sustainable Banking Principles (NSBPs) - a collection of 9 principles that have been embraced by all banks operating in Nigeria. Since 2013, they have served as the Chair of the steering committee responsible for implementing the NSBPs, overseeing and guiding the advancement of sustainable banking in Nigeria¹¹. Deposit Money Banks (DMBs) incorporate the three fundamental aspects of sustainability, namely economic, environmental, and societal, in their operations and engagement with the environment and society. Due to its significant strategic value and the unwavering determination, resilience, and consistency of DMBs in embracing sustainable banking as a means to achieve exceptional performance, the CBN released a circular in September 2012, urging banks to adopt and implement sustainable banking practices. In addition to the intermediary role, banking operations also have a significant impact on sustainable development. This is because banks utilise both non-human and human resources, allowing them to make substantial contributions to the triple bottom line in various ways. Banks can promote environmental sustainability by efficiently using resources such as energy, water, and paper, as well as adopting new technologies to conserve resources. Furthermore, alongside the security and exchange commission (SEC) regulation in 2011, the

Central Bank of Nigeria (CBN) issued a circular to banks and financial institutions in September 2012 mandating business organisations in the financial sector to submit reports on sustainability¹². However, unlike the SEC code of corporate governance, the CBN guidelines on sustainability reporting are more extensive. The Nigerian Sustainability Banking Principles (NSBP) are a set of standards established by the central bank of Nigeria (CBN) and the bankers' committee. These principles aim to demonstrate a commitment to environmentally responsible and socially significant economic growth within the financial sector in Nigeria. The Global Reporting Initiative (GRI) categories, which encompass economic, environmental, and social obligations, are widely employed as the primary principles for sustainability reporting. Although there have been multiple guidelines issued by statutory organisations through circulars, sustainability disclosures in Nigeria remain voluntary. However, they are increasingly being embraced in the banking sector. While economic and social components are widely revealed, there is limited research on environmental concerns.

Sustainability in Oil and Gas Sector in Nigeria

The oil and gas industry is the fundamental and predominant sector of Nigeria's economy, responsible for¹³ more than 95% of its foreign exchange earnings, 40% of its GDP, and 85% of the revenue collected by the Federal Government^{10,11}. The primary oil-producing corporations in Nigeria are Shell Petroleum Development Company of Nigeria Ltd., Mobil Producing Nigeria Unlimited, Chevron Nig. Ltd., Nigerian Agip Oil Company Ltd., Elf Petroleum Nig. Ltd., and Texaco Overseas Petroleum Company of Nigeria Unlimited. These multinational companies engage in the petroleum industry through partnerships with the Nigeria National Petroleum Corporation (NNPC). They operate and provide services in Nigeria's deep water under production sharing contracts (PSC), which do not include provisions for sustainability reporting. In one case, they also have a service contract with

NNPC. The upstream oil sector in Nigeria operates through a joint venture operating agreement (JOA) between the Nigeria National Petroleum Corporation (NNPC) and major international oil firms (IOCs). This arrangement establishes them as joint operating partners in both the upstream and downstream activities. The JOA differs from a memorandum of understanding (MOU) as it focuses on the overall concept of the joint venture (JV) and establishes the guidelines and modalities for operating the business, rather than solely addressing fiscal incentives.

Global Best Practice and Global Reporting Initiative (GRI) Standards in Sustainable Reporting

Although social sustainability reporting offers advantages, it also encounters obstacles. These factors encompass the intricacy of assessing social effects, the requirement for dependable and comparable information, and the danger of "greenwashing" or shallow reporting. Organisations should make a concerted effort to guarantee the accuracy, comprehensiveness, and significance of their reports. To achieve this, it is necessary to have a strong dedication to gathering comprehensive data, involving all relevant parties, and consistently enhancing reporting methods¹².

The global standard for sustainability reporting includes many reporting criteria that require companies to report on their environmental, economic, and social performance. Evaluating the environmental report of companies indicates the extent to which the company reveals the effects of its manufacturing operations on the environment. In addition, the economic report reflects the firm's disclosure of the economic effects of its sustainable actions, while the social report includes the firm's report on the several social responsibility initiatives undertaken during the year. The GRI Standards are emerging global benchmarks for sustainability reporting. The standards are a cohesive and interconnected framework that

embodies the most advanced global approach to reporting on various economic, environmental, and social consequences in Global Reporting Initiative, 2002. Multiple reporting standards serve as recommendations for reporting sustainability. The following are the specified standards: (i) The Global Reporting Initiative sustainability reporting guideline was created by the Global Reporting Initiative in 2006. The Oil and Gas Industry Guidance on Voluntary Sustainability Reporting was created by the American Petroleum Initiative (API) and the International Petroleum Industry Environmental Conservation Association (IPIECA). The Organisation for Economic Cooperation and Development (OECD) developed the Guidelines for Multinational Enterprises. (iv) Environmental Management (ISO 14001, EMAS) The Greenhouse Gas Protocol was created by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI). (vi) The Global Compact and United Nations Norms were created by the United Nations. (vii) AA 1000 is an auditing and assurance method created by Accountability, which is a worldwide membership organisation. Social Accountability 8000 was created by Social Accountability International, an autonomous organisation comprised of businesses, non-governmental organisations, trade unions, and other entities. The GRI G3 Sustainability reporting guidelines and the API/IPIECA oil and gas sector guidance on voluntary sustainability reporting are highly recognised and widely accepted standards.

At now, a significant majority of the Fortune Global 250 firms, specifically ninety-two percent (92%), engage in sustainability reporting. The KPMG report on corporate social responsibility reporting reveals that the Fortune Global 250 companies are projected to maintain a sustainability reporting rate of 90%-95%. The Asia Pacific region emerges as the primary driver of sustainability reporting, surpassing Europe, America, and the Middle-East Africa. The overall sustainability reporting average in Europe is influenced by the relatively low percentage of sustainability reporting in Eastern Europe. The overall sustainability

reporting average in Africa is influenced by the relatively low percentage of sustainability reporting from Nigeria in West Africa. Currently, organisations disclose information about their sustainability using many methods. This includes stand-alone sustainability reports, distinct sections on sustainable practices in yearly reports, dedicated webpages on sustainability reporting/practices, and integrated reports. The inclusion of both financial and non-financial information, such as environmental, social, economic, and governance data, in reports is a mandatory requirement for public accountability and openness to all stakeholders. The countries that have the highest rate of integrated reporting are those that have regulations mandating the inclusion of sustainability disclosure in annual reports. Some examples of such countries include Malaysia, South Africa, UK, Norway, France, and India. The primary catalyst for sustainability reporting is the implementation of statutory requirements. In order to fulfil this purpose, firms, particularly in the oil and gas sector, have faced public pressure to make sustainability reporting a compulsory practice. Companies in nations lacking sustainability reporting regulations still engage in sustainability reporting. Nevertheless, non-governmental organisations (NGOs) have raised concerns over the adverse consequences of globalisation and have organised protests at international forums such as the World Trade Organisation (WTO) and the Group of Seven (G7) summit in Genoa. The publication opposing globalisation garnered significant attention and led to increased protests against both globalisation and corporations. Specifically, multinational companies were singled out and pressured to disclose comprehensive information regarding their efforts and protocols in addressing social and environmental responsibilities. This includes issues such as human rights violations, greenhouse gas emissions, and other negative impacts stemming from globalisation. This article examined the implementation of sustainability reporting and highlighted the increasing involvement of governments in regulating this practice by offering assistance for voluntary disclosure. Various organisations, such as the Global Reporting

Initiative (GRI), the United Nations (UN) Global Compact, the Organisations for Economic Cooperation and Development (OECD), and the International Standard Organisation (ISO), have developed sustainability frameworks to aid in sustainability reporting. These frameworks include the GRI Guidelines, the OECD Guidelines for Multinational Enterprises, and ISO26000's Guidance on Social Responsibility.

The Global Reporting Initiative (GRI) Standards are extensively employed for the purpose of social sustainability reporting. The GRI Standards offer a thorough structure for reporting on social, environmental, and economic performance¹². The indicators encompass labour practices, human rights, community impacts, and product responsibility, among other factors. These standards assist organisations in guaranteeing uniformity, comparability, and reliability in their sustainability reports.

Organisations can derive several advantages from engaging in social sustainability reporting. Enhancing openness and accountability fosters confidence among stakeholders and promotes the organization's reputation. Additionally, it assists firms in recognising and controlling social risks and opportunities, resulting in improved decision-making and long-term viability. In addition, social sustainability reporting can facilitate ongoing enhancement by identifying areas for improvement and monitoring progress over time¹³.

The financial success of oil and gas firms is impacted by various factors, such as market dynamics, regulatory regimes, and operational efficiencies. Lately, there has been a rise in examination of the correlation between social sustainability measures and financial performance in this industry.

1. Effective implementation of social sustainability measures improves corporate reputation, resulting in heightened investor confidence and customer loyalty. Effectively addressing

social risks, such as community conflicts, labour disputes, and regulatory penalties, can help avoid financial losses and operational interruptions^{10,11,13}.

2. Enhancing operational efficiency and achieving cost savings: Implementing social sustainability activities, such as enhancing labour practices and engaging with the community, can lead to better operational efficiency and ultimately result in cost savings. Implementing measures to guarantee safer working conditions and equitable labour practices can effectively diminish staff turnover and enhance productivity, hence exerting a beneficial influence on financial performance¹⁴.

Companies that possess robust social sustainability credentials frequently benefit from improved access to funding. As investors include Environmental, Social, and Governance (ESG) factors into their decision-making process, organisations that exhibit strong social sustainability practices are more likely to attract investment, resulting in a decrease in the cost of capital¹⁵.

1. Ensuring regulatory compliance with social sustainability requirements enables organisations to evade legal penalties and fines that are linked to non-compliance. This leads to a direct enhancement in financial performance by mitigating the financial impact of regulatory penalties¹³.

Companies widely adopt the GRI principles and standards as the primary framework for sustainability reporting. The origins of the GRI may be traced back to the organisation known as the Coalition for Environmentally Responsible Economies (CERES). Both the G4 Guidelines and GRI standards encompass reporting concepts that organisations must comply with to get a superior level of sustainability reporting. In order for organisations to assert that their sustainability report aligns with the G4 Guidelines criteria, it is imperative that they fully adhere to the reporting principles. The principles guiding the

reporting process include stakeholder inclusiveness, sustainable context, materiality, completeness, accuracy, clarity, comparability, reliability, balance, and timeliness.

The framework includes both general standards disclosure and specialised standards disclosure. The general criteria pertain to the entity's organisational profile, strategy, ethics and integrity, governance, and stakeholder involvement. The objective of providing information is to aid stakeholders in comprehending the background of a corporation. The standards disclosures pertain to three primary concerns on the economic, social, and environmental effect. The GRI offers a mapping tool that outlines the distinctions and similarities between the GRI G4 Reporting Guidelines and the GRI standards.

The United Nations Global Compact is a project established by the United Nations (UN) that has two primary goals. The primary aim is to incentivize firms to embrace socially and environmentally responsible policies, with the intention of promoting wider societal objectives, such as the Sustainable Development Goals. Furthermore, in order to incentivize corporations to engage in responsible business practices by upholding the 10 principles on human rights, labour, environment, and anti-corruption, The 10 principles serve as a foundational framework for companies engaged in sustainability reporting. The ten principles encompass the following: i) Upholding and respecting internationally recognised human rights; ii) Ensuring non-involvement in human rights violations; iii) Safeguarding freedom of association and recognising the right to collective bargaining; iv) Eradicating all forms of forced and compulsory labor; v) Effectively combating child labor; vi) Eliminating discrimination in employment and occupations; vii) Advocating for a precautionary approach to environmental challenges; viii) Taking initiatives to promote environmental responsibility; ix) Encouraging the development and dissemination of environmentally friendly technologies; x) Combating corruption in all its manifestations, including extortion and bribery.

The OECD Guidelines for Multinational Enterprises (MNEs) serve as an appendix to the OECD Statement on International Investment Multinational Enterprises. The Guidelines are a set of suggestions that establish principles and criteria for responsible business conduct for multinational enterprises (MNEs) that operate in countries that are party to the declaration. The proposals encompass the following areas: i) Human Rights; ii) Disclosure; iii) Employment and industrial relations; iv) Environment; v) Combating bribery. The topics covered include bribery and extortion, consumer rights, science and technology, compensation, and taxation.

The ISO 26000 aims to promote a shared comprehension of social responsibility in order to support organisations in their efforts to contribute to worldwide sustainable development. This is achieved by adhering to the seven fundamental areas of social responsibility. The seven fundamental subjects encompassed are as follows: i) Human Rights; ii) Labour practices; iii) Environment; iv) Fair operating practices; v) Consumer Issues; vi) Community involvement and development; and vii) Non-discrimination in employment and equitable treatment.

The ISO 26000 includes concepts on social responsibility, in addition to the seven basic subjects. The following principles are included: i) Accountability; ii) Transparency; iii) Ethical conduct; iv) Consideration for stakeholder interests; v) Adherence to the rule of law; vi) Respect for human rights; and vii) Compliance with international norms of behaviour.

The main goal of sustainability reporting is to assess a company's current and future impact on economic, environmental, and social conditions, as well as local, regional, and worldwide trends^{8,14,15,16}

Sustainability Reporting and Financial Performance

There are two types of studies that examine the relationship between financial success and sustainability disclosures. The initial approach use the event study methodology to evaluate the immediate financial consequences (abnormal returns) that occur when companies undertake socially responsible or irresponsible actions. The second study investigates the correlation between company sustainability disclosures and financial success through the utilisation of accounting indicators of profitability. This study focuses on the latter.

In order to achieve the business objective of eco-efficiency, companies must assess the internal and external advantages and disadvantages of their actions. Comprehending the ecological expenses and advantages of processes and products can facilitate more precise calculation and pricing of items and can assist enterprises in developing more ecologically favourable processes, products, and services for the future¹³. The evaluation activity necessitates the utilisation of technical expertise and specialised equipment to develop, execute, and oversee strategies and policies.

The United Nations Division for Sustainable Development UNDSO in 2003 suggests conducting a precise examination of the investment's susceptibility to environmental consequences. The investigation must employ suitable timeframes and indicators that do not exhibit bias against long-term saves and advantages. Additionally, it must acknowledge the influence of fluctuations in input prices and anticipate forthcoming alterations in the regulatory framework, including fees, fines, and penalties.

Governments and private enterprises in developing countries, including Nigeria, face the task of enhancing the performance and capabilities of their industries. This is necessary in order to maximise the industrial sector's contribution to productivity and economic growth¹⁷. The factory machinery in certain sectors in Nigeria is outdated and in a state of disrepair, resulting

in inefficient output and significant pollution in UNEP, 2012¹⁰. A diligent endeavour has been undertaken to rejuvenate the industry.

Emerging inexpensive manufacturers are penetrating international markets and intensifying rivalry. Developing economies must confront this challenge or be excluded from the global market.

The achievement of the aforementioned depends on the capacity of different actors to develop, assess, execute, and oversee plans, policies, and programmes that can guarantee the fulfilment of international and market benchmarks¹⁷.

An assessment of profitability should be conducted using suitable timeframes and metrics that do not unfairly favour short-term savings and advantages. A comprehensive assessment of the investment's susceptibility to environmental costs should be conducted, taking into account the influence of fluctuations in input prices and potential alterations in the regulatory framework (such as fees, fines, and penalties¹⁷).

2.1.6 Economic Sustainability Reporting

The economic aspect of sustainability pertains to the impact of an organisation on the economic situations of its stakeholders and its interaction with economic systems at the local, national, and global levels. It does not solely concentrate on the financial circumstances of businesses. Corporate disclosure is the act of corporations providing information about their financial performance to stakeholders, typically shareholders, who have invested their assets in the firm's operations. Economic reporting focuses on the financial aspects of a company and is primarily concerned with the value that is generated for the shareholders.

In the capital market, a firm's economic performance is measured by its profitability. Nevertheless, it is important to note that this information may be influenced by the manager's subjective decisions in accounting. In addition, the assessment of companies' rankings, often

determined by their accounting performance, might be influenced by environmental concerns or ineffective corporate governance¹⁸. Enhancing economic performance in the future can be achieved by making appropriate investments in mitigating social and environmental repercussions, as well as taking accountability for them¹⁸. By taking this action, the potential future financial obligations resulting from these effects are significantly diminished. Furthermore, companies are subject to external pressures exerted by other stakeholders, in addition to the owners who are directly involved in providing money and financing for corporate activities.

In meeting up to standard accounting terminology, the evaluation of a business organisation is based on its ability to make profits¹⁷. This quantity is the determining factor for the amount of tax that must be paid to the government and, ultimately, the dividend that will be distributed to the shareholders of the firm. However, in the realm of corporate disclosure, social and environmental challenges have become more and more prevalent. This is demonstrated by the response of the capital market to these issues, the inclusion of these issues in fundamental analysis when purchasing or holding a stock, and the contribution of these issues to shareholders' knowledge¹⁹.

Research on the value relevance of non-financial information, such as corporate sustainability reporting, suggests that other types of information may be important enough to outweigh the importance of accounting profitability²¹. Therefore, sustainability disclosures are gaining global recognition and corporate reporting is increasingly focused on the concerns of business stakeholders. Although disclosing this information might enhance transparency with stakeholders, it can also impact the market performance of a company's shares. The conventional theory of disclosure suggests that when a company reveals more information, its cost of equity capital decreases^{18,20}, leading to an eventual increase in its share price. Furthermore, through the mitigation of investor risk and the reduction of

information asymmetry between the firm and external owners in the capital market, investors will be empowered to make more informed decisions based on these disclosures.

Investors are primarily interested in public or private information that can help them evaluate the value of the firm for the aim of making educated economic decisions. There are numerous elements that contribute to the swings in the value of a corporation²¹. Accounting information is a significant factor. This information has faced enduring criticism due to its historical character. In addition to accounting information, there are several sustainability disclosures that may be utilised to evaluate a corporate organisation. The discussion on the other two significant aspects of sustainability, namely the environment and social performance, is presented in the following subheadings. The NSE sustainability disclosure standards of December 2016 outline the fundamental components of economic performance as:

Businesses must prioritise safety and efficient resource utilisation throughout the entire lifespan of their product, from its initial design to its eventual disposal. It is crucial for all individuals involved in the product's lifecycle, including designers, producers, value chain members, customers, consumers, and recyclers, to be fully aware of their respective roles. Businesses must prioritise the implementation of relevant and informative product labelling, suitable and helpful marketing communication, comprehensive descriptions of contents and composition, and the promotion of safe usage and disposal of their products and services. When creating a product, businesses should ensure that the manufacturing methods and technology needed to make it are both efficient in their use of resources and sustainable. Businesses should periodically evaluate and enhance the process of developing, implementing, and marketing new technologies, while taking into account social, ethical, and environmental factors.

Businesses should acknowledge and honour the rights of individuals who may possess traditional knowledge and other types of intellectual property.

Businesses should acknowledge that excessive use of resources leads to the unsustainable exploitation of our planet's resources. Consequently, businesses should actively encourage sustainable consumption practices, such as resource recycling.

Maintaining responsible procurement policies is crucial, as they encompass openness, confidentiality, fairness, child labour, corruption, conflict of interest, support for SMEs and women-owned firms, forced work, social responsibility, and health and safety.

Economic Sustainability Disclosure Index

Economic Performance

Economic performance is a crucial measure of economic sustainability, which demonstrates an organization's capacity to create and distribute economic value. The GRI code G4-EC1 highlights the significance of reporting the specific economic value produced and distributed, encompassing revenues, operational expenses, employee remuneration and perks, payments to capital providers, and community contributions¹². In addition, organisations must take into account the financial consequences and hazards related to their activities as a result of climate change (G4-EC2). This involves evaluating the possible expenses and advantages that may result from the effects of climate change on business activities, supply networks, and markets (PwC, 2010). Ensuring coverage of defined benefit plan requirements (G4-EC3) guarantees that organisations uphold their financial responsibilities towards employees' retirement benefits, emphasising long-term financial stability¹³. The government's provision of financial assistance (G4-EC4) has an impact on economic performance, highlighting the dependence on public funds and potential effects on financial well-being¹³.

Market Presence refers to the extent to which a company or brand is recognised and known within a certain market or industry.

Market presence is a crucial element of economic sustainability, which emphasises fair wage standards and the employment of local individuals. The comparison of gender-specific standard entry-level pay to the local minimum wages at important operational sites indicates an organization's dedication to equitable remuneration practices and gender parity (ILO, 2016). In addition, the percentage of senior executives recruited from the local population at important operational sites (G4-EC6) demonstrates an organization's commitment to employing local individuals and promoting economic inclusivity (World Bank, 2013). Engaging in this activity has the potential to improve the economic development of the local area and establish strong connections within the community, therefore promoting long-lasting progress (UN, 2015).

Secondary Economic Consequences

Infrastructure investments and services, as sponsored by an organisation, demonstrate its contribution to community development and have a significant influence. Investments in infrastructure, including projects related to transportation, electricity, and communication, have the potential to boost economic growth and enhance the overall quality of life¹⁶. The extent of significant indirect economic repercussions (G4-EC8) offers valuable insights into the wider economic consequences of an organization's actions on local communities. The potential effects of this initiative encompass the generation of employment possibilities, heightened economic productivity, and enhanced availability of services and prospects¹⁷. Evaluating and documenting these effects assist organisations in comprehending their contribution to regional economic growth and sustainability.

Procurement Methods and Procedures

Procurement methods play a vital role in advancing economic sustainability by prioritising local procurement and increasing supplier variety. The allocation of funds towards local

suppliers in key operational areas reflects an organization's commitment to bolstering local economies and supporting local suppliers (G4-EC9). Local procurement has the potential to stimulate economic growth, minimise environmental effects, and enhance community connections²². Organisations can enhance the economic resilience of their operating locations and foster sustainable business practices within the community by giving priority to local suppliers^{22,23}.

2.1.6.1 Environmental Sustainability Reporting

Environmental sustainability reporting has become a crucial practice for organisations, particularly in businesses with substantial environmental effects, such as the oil and gas sector. It entails the methodical revelation of a company's environmental performance and its endeavours to handle environmental hazards and possibilities. This approach is influenced by established frameworks and standards such as the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), and the Task Force on Climate-related Financial Disclosures^{12,23}.

The correlation between environmental sustainability reporting and financial performance has attracted considerable interest, especially in ecologically vulnerable sectors like oil and gas. Environmental sustainability reporting is the act of organisations sharing information about their environmental performance, including their effects on natural resources, pollution levels, energy consumption, and waste management²³. The purpose of this openness is to provide stakeholders with information regarding the company's environmental stewardship and its dedication to sustainable practices.

Sustainability and Environmental Concerns

The environmental aspect of sustainability pertains to the influence an organisation has on both living and non-living natural systems, encompassing ecosystems, land, air, and water.

Environmental indicators encompass measurements of inputs, such as material, energy, and water, as well as outputs, including emissions, effluents, and waste. Additionally, they include performances that are connected to biodiversity, adherence to environmental regulations, and other pertinent details such as environmental spending and the effects of products and services^{12,22}.

Corporate organisations should prioritise their environmental performance as it directly impacts their financial performance²⁴. Discovered a notable correlation between firms that demonstrate environmental responsibility and those that do not²⁵. The criterion for assessing "environmental responsibility" was based on disclosure of environmental and social issues that exceeded 50%.

Historically, accountants have traditionally compiled corporate reports that are rooted in the financial performance of the company. Recently, there have been developments in the field of social and environmental accounting, suggesting that accountants can contribute to enhancing social justice (Tilt, 2009). Social justice problems focus on a company's role in promoting social and environmental advantages for society. Accountants recognise the significance of environmental responsibility when examining the connection between the accounting profession and environmental challenges²⁶.

Prior research has assessed environmental performance by evaluating the efforts made to preserve and conserve natural resources, such as engaging in recycling activities, implementing measures to reduce noise pollution, implementing plans to improve noise levels, treating water and processes, preventing and controlling pollution, discontinuing the use of substances that deplete the ozone layer, and complying with building regulations and requirements set by authorities. Additionally, it involves collaborating with suppliers to establish environmentally-friendly methods in the supply chain and motivating employees to actively contribute to local, national, or worldwide environmental efforts by promoting and

sustaining their understanding of environmental issues. Organisations can achieve environmental performance by deploying Environmental Management Systems (EMS). The method allows an organisation to decrease its environmental footprint and enhance its operational efficiency (U.S EPA, 1995).

There is a strong and positive correlation between voluntary environmental disclosure and the share price or market value of equity²⁷. Discovered that voluntary publication of environmental information has economic repercussions²⁸. firms that provide positive environmental disclosure experience much higher market performance compared to firms that reveal negative environmental information. It was observed that the empirical research on the correlation between corporate social responsibility and economic success is not yet definitive. Positive environmental disclosures refer to the information that portrays the company as operating in alignment with the environment. Negative environmental disclosures refer to material that portrays the corporation as engaging in activities that harm natural resources.

Ethical acts taken by a commercial organisation are likely to result in extra expenses, which may not contribute to the maximisation of shareholder value in a competitive context^{29,30}. This could result in an increase in the acceptance of immoral behaviours by the investors. Furthermore, allocating funds towards ethical endeavors has the potential to yield financial advantages. For instance, by taking measures to prevent environmental catastrophes, minimising waste, and avoiding financial litigation, it is possible to save future expenses. Companies that disclose their sustainability practices to a greater extent tend to have higher share prices and net profits^{31,32,33}.

There exist two metrics to evaluate sustainability performance³⁴. Dash the initial metric assesses the environmental and/or social hazards associated with the industry in which a company operates, relative to comparable industries. The second metric assesses the environmental and social activities of a firm in comparison to the industry average. These

social activities serve as a means of promoting social awareness in order to mitigate the adverse environmental effects, such as emissions or other hazardous substances, which could lead to legal action or regulatory penalties for non-compliance. The study revealed that companies with a stronger environmental performance, meaning they had less environmental hazards, experienced a significant beneficial impact on their average monthly stock returns. Based on this outcome, the stock market provides higher returns for investments in stock corporations operating in clean industries (with identical economic qualities, such as financial factors) compared to organisations with high social performance. Several organisations have implemented a successful environmental business strategy³⁵, and academic studies have found a direct relationship between environmental performance and financial performance³⁶.

Currently, there is a widely acknowledged belief that there is a direct relationship between environmental performance and financial performance. However, the exact strength of this relationship and how it comes about are still frequently not well understood. Moreover, it is essential to examine not just the impact of environmental business strategies on financial performance, but also their impact on environmental performance.

As per the December 2016 sustainability disclosure guidelines of the Nigerian Stock Exchange (NSE), the fundamental aspects of Environmental performance encompass the following:

1. Enterprises should employ natural and artificial resources in an efficient and accountable manner, while ensuring the long-term viability of these resources through waste reduction, reuse, recycling, and waste management.

2. Businesses should implement strategies to monitor and mitigate pollution. They should evaluate the ecological harm and assume the expense of pollution reduction while considering the welfare of the general public.

3. Businesses must ensure that the advantages resulting from the availability and commercialization of biological and other natural resources, as well as accompanying traditional knowledge, are distributed fairly and justly.

4. Businesses should strive for ongoing enhancement of their environmental performance through the adoption of cleaner manufacturing processes, the promotion of energy-efficient and environmentally friendly technology, and the utilisation of renewable energy sources.

5. Businesses ought to establish Environment Management Systems (EMS) and contingency plans and processes to proactively prevent, mitigate, and control environmental harm and disasters that may arise from their own activities or those of their value chain partners.

6. Businesses ought to disclose their environmental performance, which includes evaluating potential environmental hazards linked to their activities, to their stakeholders in an equitable and transparent manner. Businesses should actively encourage and assist their value chain in adopting this principle.

Environmental Sustainability Disclosure Index

Environmental sustainability is a multifaceted concept encompassing various aspects of resource utilization, energy consumption, water management, biodiversity conservation, emissions control, waste management, and overall environmental impact.

Materials

Materials usage is a foundational aspect of environmental sustainability, focusing on both the quantity and quality of resources utilized. The Global Reporting Initiative (GRI) code G4-EN1 emphasizes the importance of reporting materials used by weight or volume, which

allows organizations to track their resource consumption³⁷. Moreover, the percentage of materials used that are recycled input materials (G4-EN2) reflects an organization's commitment to sustainable practices and resource efficiency by integrating recycled content into their production processes³⁸.

Energy

Energy management is crucial for reducing environmental footprints. Energy consumption within the organization (G4-EN3) and energy consumption outside the organization (G4-EN4) provide a comprehensive view of total energy use, while energy intensity (G4-EN5) measures the efficiency of energy use per unit of output (IEA, 2018). Efforts to reduce energy consumption (G4-EN6) and the energy requirements of products and services (G4-EN7) are essential for minimizing environmental impacts and improving sustainability³⁹.

Water

Water stewardship is integral to environmental sustainability, involving the careful management of water resources. Total water withdrawal by source (G4-EN8) and water sources significantly affected by withdrawal (G4-EN9) highlight the extent of an organization's water use and its impact on local water bodies (WWF, 2014). Additionally, the percentage and total volume of water recycled and reused (G4-EN10) indicate efforts to reduce freshwater use and promote water conservation⁴⁰.

Biodiversity

Biodiversity conservation involves protecting ecosystems and species. Reporting on operational sites located in or adjacent to protected areas and areas of high biodiversity value (G4-EN11) underscores the need to mitigate adverse impacts on these critical habitats (IUCN, 2020). Descriptions of significant impacts on biodiversity (G4-EN12) and efforts to protect or restore habitats (G4-EN13) are crucial for maintaining ecological balance. The presence of

species from the IUCN Red List and national conservation lists in areas affected by operations (G4-EN14) further highlights the importance of biodiversity preservation⁴¹.

Emissions

Controlling emissions is vital for mitigating climate change. Direct greenhouse gas (GHG) emissions (Scope 1) (G4-EN15), energy indirect GHG emissions (Scope 2) (G4-EN16), and other indirect GHG emissions (Scope 3) (G4-EN17) provide a comprehensive view of an organization's carbon footprint (IPCC, 2014). GHG emissions intensity (G4-EN18) measures emissions efficiency, while efforts to reduce GHG emissions (G4-EN19) are essential for achieving sustainability goals. Additionally, monitoring emissions of ozone-depleting substances (ODS) (G4-EN20) and other significant air pollutants like NO_x and SO_x (G4-EN21) is critical for protecting air quality and public health⁴².

Effluents and Waste

Effective waste management is a key component of environmental sustainability. Total water discharge by quality and destination (G4-EN22) helps track effluent impacts on water bodies, while the total weight of waste by type and disposal method (G4-EN23) provides insights into waste management practices (EPA, 2018). Significant spills (G4-EN24) and hazardous waste transport (G4-EN25) require careful monitoring to prevent environmental contamination. Understanding the impact on water bodies and related habitats (G4-EN26) is crucial for preserving aquatic ecosystems⁴³.

Products and Services

Mitigating the environmental impacts of products and services (G4-EN27) involves assessing the full lifecycle of products, from production to disposal. Reporting the percentage of products sold and their packaging materials that are reclaimed (G4-EN28) indicates efforts to promote recycling and reduce waste⁴⁴.

Compliance

Adherence to environmental laws and regulations is essential for sustainability. The monetary value of significant fines and the total number of non-monetary sanctions for non-compliance (G4-EN29) reflect an organization's commitment to legal and regulatory standards³⁷.

Transport

The environmental impacts of transporting products, goods, materials, and workforce members (G4-EN30) must be assessed to identify opportunities for reducing carbon footprints and improving sustainability³⁹.

Thus total environmental protection expenditures and investments by type (G4-EN31) showcase an organization's commitment to environmental sustainability through financial investments in protective measures and sustainable practices (GRI, 2013). Screening new suppliers using environmental criteria (G4-EN32) and addressing negative environmental impacts in the supply chain (G4-EN33) are critical for promoting sustainable procurement practices. Finally, tracking the number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms (G4-EN34) demonstrates transparency and accountability in environmental management⁴⁵.

2.1.6.2 Social Sustainability Reporting

Social sustainability reporting is a crucial element of complete corporate sustainability strategy, which specifically examines the influence of organisations on their employees, communities, and society as a whole. This form of reporting covers a broad spectrum of topics, including as labour practices, human rights, community involvement, and product accountability. Organisations can showcase their dedication to ethical behavior, social fairness, and sustainable progress by offering clarity on these social aspects.

The social component of sustainability pertains to the effects that an organisation has on social systems, including labour practices, human rights, and its interaction with the communities in which it operates. The indicators encompass labour practices and decent work, human rights, society, and product responsibility³⁷.

Profit is regarded as the main objective of profit-oriented corporate organisations, particularly those functioning in the private sector. To achieve this goal, firms typically aim to reduce the expenses related to their operations while maximising their financial gains. While businesses utilise limited resources for production, the concept of 'sustainability' emphasises the importance of considering societal welfare when conducting production activities. Responsibility towards social justice concerns refers to a company's capacity to actively address and take responsibility for the social and environmental effects it has on society. Sustainability reporting is one of the methods used to express accountability. A corporation has a multidimensional role towards its shareholders, which includes providing them with a satisfactory return on investment, fulfilling its tax obligations to the state, being socially responsible towards people, and reducing environmental impacts resulting from its daily operations. Additionally, it is also involved in community development through the implementation of policies that aim to improve the immediate environment, as well as participating in activities related to sports, education, social amenities, infrastructure, and community health. The responsibility for these positions is demonstrated by the information provided by companies in their corporate communication channels. The continued existence of a corporation is contingent upon the limitations imposed by the individuals comprising the society and the planet.

There is a divergence of ideas on the correlation between social success, which is a part of sustainability, and financial performance. There is no agreement among empirical research findings. Prior researchers, assert that social responsibility incurs costs and can therefore

negatively impact a company's performance⁴⁶. Conversely, Social responsibilities may restrict a company's ability to maximise value and result in inferior financial performance^{1,3,46}. When enterprises engage in sustainable development, it indicates a decrease in future profitability and a decline in short-term returns for investors⁴⁷. Corporate social disclosure is not an effective means of maximising business aims⁴⁸. The primary goal of a corporation is to maximise its earnings. This research concluded that social disclosure had no effect on earnings per share. The implication of this discovery is that commercial organisations may not have a duty to address matters related to social justice. Markets may either disregard corporate social responsibility entirely, efficiently assess its value, or inefficiently assess its worth⁴⁹.

Enterprises should only adopt green management methods when it aligns with their own self-interest⁵⁰. From this viewpoint, choices related to computer science are seen as a type of deliberate investment⁵⁰. The aim to determine the nature of the correlation between social and financial performance, whether it is good, negative, or nonexistent^{10,14}. Furthermore, they aim to ascertain the presence of a causal relationship among these components. This implies that social performance can impact financial performance, financial performance can affect social performance, or there may be a mutually beneficial relationship between the two. Researchers found no evidence of any negative correlation between social and financial performance in major U.S. corporations, which aligns with the principles of stakeholder theory. The most compelling data is that there is a positive synergy between social and financial performance. This means that having sufficient cash leads to positive social performance, and positive social performance also contributes to financial performance^{10,14,47}.

Focusing on corporate social performance helps establish strong and enduring ties with stakeholder groups, leading to improved financial success¹⁵. To determine whether there is a direct correlation between Corporate Social Performance (CSP) and financial quality

performance^{15,50}. Additionally, they investigate whether the presence of spare resources and the application of good management philosophy can occur simultaneously. The slack resources theory posits that financially successful organisations possess sufficient resources to allocate towards social sustainability projects, hence suggesting that superior financial performance serves as a signal of enhanced corporate social performance. Based on a careful examination of real-world data, that the performance of a company in terms of its social responsibilities has an impact on its financial performance^{3,51}. Furthermore, they found that a company with excellent financial performance is more likely to engage in sustainable practices. Their final argument aligns with Preston and O'Bannon, asserting that this link follows a virtuous cycle in which companies excel, enhance corporate sustainability, and then achieve even greater performance. The NSE sustainability disclosure guidelines of December 2016 outline the fundamental components of Social performance as follows:

Businesses are obligated to uphold the right to freedom of organisation, participation, and collective bargaining, as well as give access to suitable grievance resolution processes. Businesses should ensure equal chances in recruiting and employment regardless of caste, creed, gender, colour, religion, or disability. Businesses must refrain from employing child labour, forced work, or any type of involuntary labour, whether compensated or uncompensated. Businesses should be aware of and prioritise the work-life balance of their employees, particularly women.

Businesses should ensure the provision of facilities to promote the wellbeing of all employees, including those with special needs. It is imperative to guarantee the prompt disbursement of equitable salaries that are sufficient to cover essential necessities and provide financial stability for the workers.

Businesses should ensure that their employment environment is secure, sanitary, compassionate, and respects the dignity of their employees. Businesses should disseminate this provision to their staff and provide frequent training sessions.

Businesses must guarantee the ongoing enhancement of skills and competence for all employees by granting them equitable and unbiased access to appropriate learning opportunities. They should enhance employee morale and foster career advancement through smart human resource interventions.

Businesses should establish robust procedures and use effective practices to guarantee a workplace that is free from harassment. This will create an environment where employees can confidently fulfil their duties without any concerns for their safety or well-being. Businesses must to methodically identify their stakeholders, comprehend their problems, establish the purpose and extent of their involvement, and make a commitment to engaging with them.

Businesses ought to recognise, accept accountability, and openly disclose the influence of their policies, decisions, products, services, and related operations on the stakeholders.

Businesses should prioritise stakeholders in undeveloped regions. Businesses should strive to resolve conflicts with stakeholders in a manner that is characterised by justice, fairness and equity.

Social Sustainability Disclosure Index

Labor Practices and Decent Work

Social sustainability reporting in the oil and gas sector often begins with labor practices and decent work. Companies report on employment metrics such as the total number and rates of new employee hires and employee turnover by age group, gender, and region (G4-LA1). They also disclose benefits provided to full-time employees that are not available to

temporary or part-time employees at significant locations of operation (G4-LA2), and return to work and retention rates after parental leave by gender (G4-LA3). Labor/management relations are detailed through minimum notice periods regarding operational changes, specifying whether these are included in collective agreements (G4-LA4).

Occupational health and safety is another crucial area, with companies reporting the percentage of total workforce represented in formal joint management-worker health and safety committees (G4-LA5). They disclose data on types of injuries, rates of injury, occupational diseases, lost days, absenteeism, and work-related fatalities by region and gender (G4-LA6). Specific attention is given to workers with high incidence or risk of diseases related to their occupation (G4-LA7), and health and safety topics covered in formal agreements with trade unions (G4-LA8).

Training and education are highlighted through the average hours of training per year per employee by gender and employee category (G4-LA9). Programs for skills management and lifelong learning that support employability and career management are described (G4-LA10), alongside the percentage of employees receiving regular performance and career development reviews by gender and employee category (G4-LA11).

Diversity and equal opportunity are critical components, with reports on the composition of governance bodies and breakdown of employees by gender, age group, minority group membership, and other indicators of diversity (G4-LA12). Companies provide data on the ratio of basic salary and remuneration of women to men by employee category and significant locations of operation (G4-LA13).

Supplier assessment for labor practices includes the percentage of new suppliers screened using labor practices criteria (G4-LA14) and significant actual and potential negative impacts for labor practices in the supply chain and actions taken (G4-LA15). Grievance mechanisms

address the number of grievances about labor practices filed, addressed, and resolved through formal mechanisms (G4-LA16).

Human Rights

Investment in human rights involves reporting the total number and percentage of significant investment agreements and contracts that include human rights clauses or underwent human rights screening (G4-HR1). Companies also disclose total hours of employee training on human rights policies or procedures relevant to operations and the percentage of employees trained (G4-HR2).

Non-discrimination metrics include the total number of incidents of discrimination and corrective actions taken (G4-HR3). Companies identify operations and suppliers where the right to exercise freedom of association and collective bargaining may be violated or at significant risk and measures taken to support these rights (G4-HR4).

Child labor reports include operations and suppliers with significant risks for incidents of child labor and measures taken to contribute to its abolition (G4-HR5). Forced or compulsory labor disclosures follow similar lines, identifying operations and suppliers at risk and measures to eliminate such practices (G4-HR6).

Security practices highlight the percentage of security personnel trained in the organization's human rights policies or procedures relevant to operations (G4-HR7). Indigenous rights include the total number of incidents of violations involving rights of indigenous peoples and actions taken (G4-HR8).

Human rights assessments cover the total number and percentage of operations subject to human rights reviews or impact assessments (G4-HR9). Supplier human rights assessments report the percentage of new suppliers screened using human rights criteria (G4-HR10) and significant actual and potential negative human rights impacts in the supply chain and actions

taken (G4-HR11). Grievance mechanisms for human rights impacts report the number of grievances filed, addressed, and resolved through formal mechanisms (G4-HR12).

Society

Local community engagement is reported through the percentage of operations with implemented local community engagement, impact assessments, and development programs (G4-SO1), and operations with significant actual or potential negative impacts on local communities (G4-SO2).

Anti-corruption measures include the total number and percentage of operations assessed for risks related to corruption and the significant risks identified (G4-SO3), communication and training on anti-corruption policies and procedures (G4-SO4), and confirmed incidents of corruption and actions taken (G4-SO5). Public policy reporting covers the total value of political contributions by country and recipient/beneficiary (G4-SO6).

Anti-competitive behavior metrics report the total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes (G4-SO7). Compliance includes the monetary value of significant fines and the total number of non-monetary sanctions for non-compliance with laws and regulations (G4-SO8).

Supplier assessment for impacts on society details the percentage of new suppliers screened using criteria for impacts on society (G4-SO9) and significant actual and potential negative impacts on society in the supply chain and actions taken (G4-SO10). Grievance mechanisms for impacts on society report the number of grievances filed, addressed, and resolved through formal mechanisms (G4-SO11).

Product Responsibility

Customer health and safety disclosures include the percentage of significant product and service categories for which health and safety impacts are assessed for improvement (G4-PR1) and the total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their lifecycle (G4-PR2).

Product and service labeling involves reporting on the type of product and service information required by the organization's procedures and the percentage of significant product and service categories subject to such information requirements (G4-PR3). Companies also disclose the total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling (G4-PR4), and the results of surveys measuring customer satisfaction (G4-PR5).

Marketing communications metrics include the sale of banned or disputed products (G4-PR6) and the total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship (G4-PR7).

Customer privacy reports cover the total number of substantiated complaints regarding breaches of customer privacy and losses of customer data (G4-PR8). Compliance includes the monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services (G4-PR9).

Social sustainability reporting is essential for demonstrating a company's commitment to ethical conduct, social equity, and sustainable development. In the oil and gas sector, integrating social sustainability practices into business operations can enhance financial performance by improving reputation, managing risks, increasing operational efficiency, and ensuring regulatory compliance. As stakeholders continue to prioritize ESG criteria, the

relationship between social sustainability and financial success will likely become even more significant.

2.2 Theoretical Framework

There are various theories that authenticate the existence of relationship between sustainability reporting and financial performances of companies. The various theories in support of sustainability reporting include the legitimacy theory and stakeholders' theory.

2.2.1 Stakeholder Theory

Stakeholder Theory emerges as a pivotal theoretical framework. Stakeholder Theory emphasizes the importance of considering the interests of all stakeholders beyond shareholders in decision-making processes⁵². This is a theory with the view that corporate entities activities impact on a wider spectrum of the society rather than just the shareholders. Stakeholders should be furnished with information concerning organizations social and environmental impacts (i.e disclosures on the environment, health and safety, employment and community development/sponsorship)⁵². However, the organizations have stakeholders who influence and are affected by its activities⁵³. Therefore, the specific information needs of various stakeholders must be disclosed in order to reduce information asymmetry. These stakeholders include employees, customers, suppliers, local communities, and governments, all of whom can be significantly impacted by the operations of oil and gas companies.

In the context of sustainability reporting, Stakeholder Theory highlights several critical aspects. Firstly, it underscores the necessity for multi-stakeholder engagement. Sustainability reporting involves disclosing information that is relevant to a broad range of stakeholders. By addressing the concerns and expectations of these stakeholders through transparent reporting, oil and gas companies can build trust and foster positive relationships. This, in turn, can enhance operational stability by reducing conflicts and improving regulatory compliance.

Secondly, Stakeholder Theory promotes effective risk management practices. Engaging with stakeholders allows companies to identify and mitigate potential risks associated with their operations. For instance, addressing community concerns about environmental impacts can help companies avoid regulatory penalties and reputational damage, thereby positively influencing their financial performance.

Moreover, Stakeholder Theory emphasizes the role of reputation and legitimacy. Transparent sustainability practices can enhance a company's reputation, leading to increased customer loyalty and investor confidence. In the oil and gas sector, where public perception and regulatory scrutiny are significant, maintaining legitimacy in the eyes of stakeholders is crucial for long-term profitability and sustainability.

In practical terms, Stakeholder Theory finds application in various facets of oil and gas operations. For instance, companies can demonstrate their commitment to environmental stewardship and community development through comprehensive sustainability reporting. This can improve community relations, mitigate operational risks, and attract investment from socially responsible investors who prioritize environmental, social, and governance (ESG) criteria.

Stakeholders include stockholders, creditors, managers, employees, customers, suppliers, local communities (communities in the vicinity of the company's operations) and the general public⁵³. The general idea of the stakeholder concept is a redefinition of the organization. Stakeholder theory explains specific corporate actions and activities using a stakeholder-agency approach, and is concerned with how relationships with stakeholders are managed by companies in terms of the acknowledgement of the society where they operate. In general the concept is about what the organization should be and how it should be conceptualized. In the stakeholder concept, if corporate managers are there to maximize the total wealth of the

organisation, they must take into account the effects of their decisions on all stakeholders. This theory is consistent with the view of corporate sustainability. Moreover, if management decisions do not take into account the interests of all stakeholders by way of practice and disclosure, the firm cannot maximise its value. The practice of stakeholder management will result in higher profitability, stability and growth, and will thus affect, investment and firm performance⁵⁴.

Stakeholder Theory serves as a robust anchor theory for examining the relationship between sustainability reporting and the financial performance of oil and gas companies due to its comprehensive approach to stakeholder engagement and risk management. In the complex landscape of the oil and gas industry, where operations can significantly impact diverse stakeholders including local communities, regulators, and investors, Stakeholder Theory provides a structured framework to navigate these relationships. By prioritizing transparency and addressing stakeholder concerns through sustainability reporting, companies can enhance trust, mitigate operational risks, and improve long-term financial performance. This theory's emphasis on building legitimacy and fostering positive stakeholder relationships aligns with the industry's growing focus on environmental, social, and governance (ESG) factors, making it particularly relevant for analyzing how sustainability practices contribute to sustainable business practices and financial outcomes in the oil and gas sector.

2.2.2 Stakeholder Theory Legitimacy Theory

The legitimacy theory is been credited to shuns men C. Mark in 1995. The theory was derived from the political economy, the theory relies upon on the initiative of legitimacy of a company to operate in the environment depends on an implicit social contract between the society and the company⁵⁵.

The major assumption of this theory is that the causes of actions of a company are appropriate or desirables within constructed social system. This implies that firms are bound by social contracts which they are expected to perform in return for the approval of the corporate objectives. That is, companies should be socially responsible in the society⁵⁶.

In context, this theory survives when companies attain quality sustainability reporting, they have asserted their good performance in corporate social responsibility reporting of business practices in compliance to standards and regulations⁵⁶. This can enhance stakeholders' perception of the company's financial performance, economic performance and environmental performance with transparency. Ideally, a company's value can be enhanced with a high level of stakeholder perceptions and support.

The theory connects the relevance of disclosing sustainability issues such as economic issues, environmental issues and financial quality issues relating to a company, within the boundaries of the legitimacy it holds through its incorporation. At the same time the theory also connects sustainability reporting indicating perceptions of company responsibilities about immediate (host) communities and the general society can value the company⁵⁵.

Legitimacy Theory serves as a complementary framework to Stakeholder Theory in the study of sustainability reporting and financial performance within the oil and gas sector, particularly where Stakeholder Theory's limitations may arise⁵⁷. While Stakeholder Theory focuses on engaging diverse stakeholders and managing their interests, its limitations include potential conflicts among stakeholders' competing demands and the challenge of prioritizing interests amidst varying expectations. In contrast, Legitimacy Theory provides a complementary perspective by emphasizing how organizations must conform to societal norms and expectations to maintain legitimacy and secure their social license to operate.

One significant advantage of integrating Legitimacy Theory is its focus on proactive legitimacy-seeking behaviors through transparent sustainability reporting. Oil and gas companies often face scrutiny regarding their environmental impact, social responsibilities, and ethical governance practices. Legitimacy Theory suggests that by openly reporting on efforts to address these concerns such as environmental stewardship, community engagement, and ethical business practices companies can enhance their perceived legitimacy. This proactive approach not only mitigates reputational risks but also fosters trust among stakeholders, including regulators, investors, and local communities, thereby enhancing long-term financial performance.

Furthermore, where Stakeholder Theory may struggle to address the broader societal expectations and pressures that influence regulatory frameworks and industry standards, Legitimacy Theory provides a structured framework for understanding and responding to these external dynamics. By aligning with societal expectations through sustainability reporting, oil and gas companies can navigate regulatory uncertainties more effectively, anticipate changes in stakeholder preferences, and position themselves as responsible corporate citizens committed to sustainable development.

Integrating Legitimacy Theory complements Stakeholder Theory by providing a deeper insight into how sustainability reporting practices contribute to organizational legitimacy, risk management, and long-term financial performance in the oil and gas industry. By leveraging both frameworks, researchers can comprehensively analyze the multifaceted impacts of sustainability reporting on corporate strategy and stakeholder relations, addressing the complexities and evolving dynamics of the industry while enhancing the study's theoretical robustness and practical relevance.

2.3 Review of Empirical Studies

2.3.1 The Effect of Sustainability Reporting on the Return on Assets (ROA) of Oil and Gas Companies Operating in South – South, Nigeria.

This research empirically examines how sales and company size affect Nigerian oil and gas firms' sustainability reporting. The report examines 24 major Nigerian oil and gas businesses' upstream, midstream, and downstream operations. The study covered 15 years, from 2004 to 2018, with six companies. Panel regression was used to assess sample companies' annual accounts and stand-alone reports. The results show that many factors affect Nigerian oil and gas firms. Sales growth and leverage hurt sustainability reporting and profitability, whereas firm size helps. Instead of relying on debt, the study advises oil and gas corporations use a capital structure of common stock, preferred shares, and retained earnings⁵⁸.

Companies are mostly responsible for climate change and global warming. Environmental issues affect nature. These include pollution, emissions, and environmental damage. Companies, especially those that affect the environment, must disclose their financial investments in environmental improvement⁵⁹. Companies who pollute and harm the environment need this. Presenting environmental data in annual reports is still being studied. Previous studies on environmental disclosure and financial performance have inconsistent results. More study is needed to explain the mixed results. This study seeks a complete analysis, examining how environmental disclosure affects the financial performance of listed oil and gas firms in Nigeria to determine the factors that affect the results.

Positive and negative impacts are listed in the review. Environmental information disclosure may affect Nigerian oil and gas firms' financial performance. Companies should include environmental information in yearly reports. Environmental disclosure in Nigeria is voluntary, which may explain the differences. Environmental information is presented using guidelines rather than accounting standards to ensure consistency. The government must set clear

environmental disclosure policies and implement them. Further research in this area can be done across industries⁵⁹.

Leverage and social sustainability reporting in listed oil and gas businesses are examined. Research was done ex-post facto due to the study's nature. We used content analysis. Nigeria had seven listed oil and gas companies. Study sample size for 2010 and 2020. Data came from secondary sources. I read the sampled firms' annual reports and accounts, as well as excerpts, analyzed using descriptive and inferential statistics like Pearson Correlation and Panel PLS regression and Hausman test using E-Views 10.0 statistics software. Analysis showed that leverage significantly affected Nigerian social sustainability reporting. Given the important leverage-related links, firms should increase empirical assessment and sustainability reporting to better comprehend sound assessments of how environmental practices and disclosures affect debt costs and financial performance⁶⁰.

This study examines how environmental expenses affect Nigerian stock exchange-listed oil and gas firms⁶¹. The major goals are to examine how environmental remediation expenses affect the Tobin's Q of Nigeria Stock Exchange-listed oil and gas businesses and how compliance costs affect it. Ex Post Facto research was used. The published financial accounts of eleven oil and gas businesses over twelve years were used to gather data. The study found that compliance and environmental remediation expenses significantly affect the Tobin's Q of Nigeria Stock Exchange-listed oil and gas companies. The experts recommend that oil and gas companies prioritize environmental sustainability to gain a competitive edge, improve financial performance, raise liquidity, and minimize environmental expenses⁶¹.

This study examined how revealing environmental expenses affected Nigeria Stock Exchange-listed oil and gas businesses' profitability from 2010 to 2019. The survey included 11 oil and gas companies. Environmental cost disclosure proxies include waste management,

employee health and safety, and environmental remediation⁶². This study measured profitability using net profit margin. To test its hypotheses, the study used content analysis and statistical analysis methods such as Pearson Correlation Coefficient and Panel Least Square (PLS) Regression analysis in STATA 13. This study found that disclosing waste management, employee health and safety, and environmental remediation expenses improves net profit margins at a 5% level. Thus, this study implies that strategic corporate decisions should account for environmental costs. Thus, oil and gas businesses must continually update their accounting system to include environmental costs. This ensures the company can appropriately calculate and allocate costs.

This study examined how sustainability reporting affected Nigerian oil and gas firms' financial performance from 2012 to 2021. This study explored how social, health and safety, and environmental disclosures affect the return on capital used. The study used an ex post facto research design and collected secondary data from the companies' annual reports and the Nigeria Exchange Group fact book. The study tested three assumptions using robust panel least square regression. The analysis indicated that social, health and safety, and environmental disclosure positively affect Nigerian oil and gas businesses' return on capital. The findings showed that sustainability reporting affects Nigerian oil and gas businesses' return on capital. Thus, oil and gas corporations should require industry-wide sustainability reporting. A uniform sustainability index should also be used to assure compliance⁶³.

This study examines how environmental costs affect Nigerian oil and gas firms' finances. A retrospective study design was utilized to collect financial statements from four Nigerian publicly traded oil and gas businesses from 2010 to 2019. Purposive sampling was used in our investigation. Multiple regression model Panel Ordinary Least Square was completed using E-views version 9.0 statistical software. The study indicated that listed Nigerian oil and gas businesses' return on assets was minimally affected by staff development costs.

Community development and employee health and safety costs also had a favorable effect, but not statistically. The companies under study's costs may not affect their performance measures. However, the studies use a small amount of data from a few companies, so their expenses and transparency may affect the findings. The analysis only covers oil and gas and a few environmental cost elements. Investigating how environmental cost variables affect financial performance. This study attempts to create a comprehensive employee health and safety cost system to create a harmonious work environment that boosts management and employee productivity⁶⁴.

The study evaluates Nigerian oil and gas sustainability reporting elements⁶⁵. The essay examines the complicated relationship between economic, environmental, and social issues on industry disclosure. Non-financial information, such as a corporation's social and environmental impact, is debated for information users' decision-making. This reporting may affect company value. The study examined the value of oil and gas enterprises using a modified Ohlson (1995) model. To ensure a focused and rigorous analysis, share price was utilized as a measure and only GRI social and environmental disclosures were explanatory factors. The study found using regression analysis that revealing social information helps make judgments that can boost share price. It was found that environmental disclosures are worthless. The report stressed that oil and gas corporations must comply with GRI social disclosures to maximize value. This compliance should increase social and communal acceptance through corporate social responsibility. The report also advises that regulatory authorities should force oil and gas businesses to declare their environmental performance using GRI metrics, taking into account their environmental effect. This comprehensive study examines sustainability reporting programmes' complexities and causes. The findings can help stakeholders and policymakers navigate Nigeria's oil and gas sector's sustainability landscape⁶⁵.

This study evaluated how sustainability reporting affects Nigerian industrial goods manufacturers' financial performance. The retrospective analysis used secondary data from the selected firms' annual reports and accounts⁶⁶. The study estimated variable relationships using panel data analysis. Descriptive statistics like mean, standard deviation, minimum, and maximum were used. Economic sustainability has a positive but insignificant effect on total assets, with a likelihood value of 0.569. Economic sustainability and stock price change have a positive and significant association (0.034). Company financial performance is positively impacted by environmental sustainability. Significant fluctuations in total assets and stock prices (with probability values of 0.025 and 0.012) support this. However, community involvement sustainability practices have a positive but not statistically significant effect on financial performance, with correlation coefficients of 0.557. The study concluded that environmental sustainability reporting practices affect the financial performance of listed industrial goods firms in Nigeria. The study shows that management should embrace sustainable measures to improve firm financial performance.

Businesses of all sizes are realizing the need for social and environmental responsibility. They know that sustainability boosts productivity, long-term growth, and shareholder value. To conserve money for future generations, sustainability is prioritized. This study examines how sustainability reporting affects Nigerian oil and gas firms' financial performance. The research conducted ex-post facto, using secondary data from listed oil and gas company annual reports. For 2011-2022, 9 of 10 Nigerian oil and gas enterprises were selected via selective sampling. Random effect panel regression estimation was used. The Hausman test was used in E-views 10 to assess the results. The study shows that reporting governance and social sustainability boosts Nigerian oil and gas companies' return on equity. The study demonstrates that disclosing governance and social sustainability improves the financial performance of Nigerian oil and gas enterprises. This study suggests that Nigerian listed oil

and gas businesses should focus on governance and social sustainability reporting. Mandating these reporting methods and setting sustainability reporting evaluation rules may force companies to reveal their sustainability efforts. This is crucial since it improves financial performance⁶⁶.

The study examined how board independence affects publicly listed oil and gas company correlation, assessing Nigerian firms' value and sustainability reporting from 2013 to 2022. The study examined nine Nigeria Exchange Group oil and gas enterprises. Purposive sampling chose seven oil and gas businesses. The company's annual report provided secondary data for the study. The study used an account and a longitudinal research design. Time-series FGLS regression showed a favorable link between listed oil and gas values. Board independence strongly affects economic performance, corporate social responsibility, and sustainability disclosure. However, the study found that board independence does not moderate environmental influences. The impact of disclosure and corporate governance on firm value suggests that oil and gas businesses must actively recruit board members using a variety of information and managerial impartiality to ensure unbiased oversight and improve the credibility of sustainability reports⁶⁷.

Sustainability reporting is important for upstream oil and gas firms. Direct environmental management engagement is essential for industrial operations to build effective policies⁶⁸. Companies are driven by environmental awareness or a goal. Critical discourse analysis is used to investigate oil and gas company sustainability reporting over the previous eleven years. The method involves systematic literature review. When implementing sustainability reporting, companies evaluate credibility, reputation, transparency, and legal threats. Since several big worldwide oil and gas corporations have not adopted the triple bottom line methodology, their sustainability reporting may be biased. Inconsistencies and deceit in Corporate Social Responsibility (CSR) activities may cause this prejudice. As a dominant

group, the organization can still govern the environment and community. This research advances academically and practically by examining surveys, case studies, experiments, and literature to develop conclusions⁶⁸.

2.3.2 Effect of Sustainability Reporting on Return on Equity (ROE) of Oil and Gas Companies Operating in South–South, Nigeria

This study examined how sustainability reporting affects Nigerian listed industrial products manufacturers' financial performance. The ex-post facto analysis used secondary data from sampling companies' annual reports and accounts. The study employed panel data analysis and descriptive statistics including mean, standard deviation, minimum, and maximum values to estimate variable relationships. The study indicated that economic sustainability practice has a positive but insignificant association on total asset change with probability 0.569 and a positive significant relationship on stock price change of 0.034. Environmental sustainability practice has a positive and significant impact on financial performance (change in total asset and stock price with probability values of 0.025 and 0.012 respectively), while community involvement sustainability practice has a positive and insignificant relationship (0.557 and 0.875). The study found that environmental sustainability reporting practices affect listed industrial products corporations in Nigeria's financial performance. The report advised management to embrace sustainable strategies to improve business financial performance⁶⁹.

Global stakeholders worry about firms' environmental impact and how it affects them. The impact of corporate performance on Nigerian social sustainability reporting was examined. Ex-post facto research design, non-probability (purposive) sampling, and Panel regression estimate were used to evaluate the effect using annual reports (secondary data) from 112 listed non-financial corporations from 2012-2021, of which 82 were selected. The E-views Hausman test (random effect) was also performed. The study found that business size

positively affects the social disclosure index of non-financial enterprises in Nigeria, whereas firm age positively and negligibly affects it. The findings show that firm performance variables strongly impact Nigerian listed non-financial enterprises' social sustainability reporting. The study advises non-financial enterprises' management to expand their firms' size relative to their total assets due to the positive multiplier effect on social sustainability reporting⁷⁰.

This study examines the link between ESG reporting and sectorial energy performance in developed and emerging nations. An ESG-score-derived independent variable is regressed against dependent performance indicator variables (operation ratio, return on equity, and Tobin's Q) using 3,311 observations from 50 countries from 2008 to 2017. The regression analysis in this study uses firm-specific and macroeconomic control variables. The empirical results of this study show that ESG and operational performance (operation ratio) are related. No substantial association exists between ESG and financial (return on equity) or market (Tobin's Q) performance. The association between ESG and operation ratio is higher in emerging economies than established ones⁷¹.

This study evaluated the correlation between environmental disclosure and financial report quality in Nigeria's industrial sector. The study aimed to investigate the impact of environmental donations, sponsorship disclosure, restoration disclosure, and waste management disclosure on financial reports in Nigerian manufacturing firms. We used an ex-post facto research approach and chose 10 manufacturing enterprises for a 10-year study. Data were acquired using content analysis. The data was analysed using descriptive and inferential statistics. The study found that Environmental Restoration (ER) and Environmental Donations and Sponsorship (EDS) do not significantly impact the integrity of financial reporting in manufacturing enterprises. The study found that disclosing accounting information on environmental restoration, donations, and sponsorship did not significantly

impact the accuracy of financial reports for industrial enterprises in Nigeria. It was suggested that standard setters and policymakers collaborate with the Ministry of Environment to provide uniform obligatory disclosures⁷².

This study explored how sustainability reporting affected Nigerian cement businesses' financial performance. Ex-post facto research was conducted on 10 cement businesses from 2016 to 2020. This study found that environmental reporting has a negative and insignificant effect on cement companies in Nigeria, economic reporting has a positive effect, and social reporting decreases financial performance. According to the data above, sustainability reporting strongly impacts Nigerian health care firms' financial success. Note that sustainability reporting components do not significantly impact cement businesses' financial performance. According to the study, government policymakers should require cement businesses to provide sustainability studies in their yearly reports. This makes sustainability reporting mandatory, not voluntary. Manufacturing enterprises should continue to release more economic information to boost performance⁷³.

2.3.3 Effect of Sustainability Reporting on the Return on Capital Employed of Oil and Gas Companies Operating in South-South Nigeria.

The research aimed to analyze the impact of sustainability reporting on the financial performance of Nigerian listed oil and gas corporations from 2012 to 2021. Independent variables utilized to assess return on capital used were social, health, safety, and environmental disclosures. The study used an ex post facto research approach and collected secondary data from the firms' annual reports and Nigeria Exchange Group fact book. A robust panel least square regression was used to assess the three research hypotheses. The research found that social, health and safety, and environmental disclosure positively impact

oil and gas businesses' return on capital in Nigeria. The study found that sustainability reporting significantly impacts return on capital for oil and gas firms in Nigeria. To ensure compliance, oil and gas corporations should mandate sustainability reporting at the industry level and establish a standardized sustainability index⁷⁴.

This report evaluated environmental responsibility and marketing performance in South South, Nigeria's oil and gas industry. The research was quasi-experimental. Of 301 questionnaires distributed, 283 were valid. Using SPSS version 23.0, discriminant validity (AVE), and Cronbach Alpha, the Spearman Rank Order Correlation Coefficient showed positive internal consistency and validity. The study found that environmental responsibility greatly affected oil and gas marketing success, increasing profitability, market share, and sales volume. According to the report, the government should encourage the creation and manufacture of environmentally friendly and efficient products. Oil and gas companies should invest and create more eco-practices to have a stronger market effect and become more environmentally conscious, paying more attention to environmentally conscientious consumers⁷⁵.

This study examined the impact of CSR on the financial performance of Nigerian oil and gas corporations from 2009-2021. It focused on the impact of donations on Net Profit Margin, Return on Assets, and Return on Equity in oil and gas enterprises. The study sample included seven listed oil and gas companies in Nigeria. E-View 9.0 was used for Pearson Coefficient correlation and basic linear regression analysis. The analysis revealed a substantial positive correlation between Net Profit Margin, Return on Assets, Return on Equity, and Donations at a 5% significance level. The data suggest that CSR adoption enhances future profitability for Nigerian oil and gas enterprises. It was suggested that Nigerian oil and gas companies should prioritize social responsibility initiatives, including community projects and environmental preservation, to enhance financial success⁷⁶.

This dissertation examined the link between corporate social responsibility and financial performance of listed Nigerian oil and gas businesses due to environmental dangers and ecosystem disturbance. The study used an ex post facto approach and collected data from nine listed oil and gas firms from 2010 to 2020. Corporate social responsibility of Nigerian oil and gas businesses was compared to financial performance. Panel least square (PLS) regression estimate was employed for data analysis. Pearson correlation, Augmented Dick-Fuller (ADF) unit root test, Breusch-Pagan-Godfrey heteroskedasticity, and Hausman test were also utilized. The research found a non-significant negative relationship between employees' training activities and return on assets, a negative and significant relationship between employees' training activities and return on equity, a significant positive relationship between environmental compliance activities and return on equity, and a non-significant positive relationship. The research found that staff training and environmental compliance expenditures increase return on equity but not return on assets. According to the findings, oil and gas businesses should thoroughly review/audit their staff training programs to improve financial performance. Further, oil and gas companies should invest more in environmental compliance activities to reduce environmental remediation programs and community development activities to promote peaceful coexistence between the company and local communities⁷⁷.

The SDGs and net zero objectives depend on social sustainability. This paper outlines the basic ideas and features of social sustainability, its theoretical and practical underpinnings, and its application in the Niger Delta oil and gas sector. The study used qualitative case study and theme analysis on numerous data sources. The research examined social sustainability by synthesizing its main concepts and aspects with the Niger Delta's socioeconomic characteristics. The research showed that social sustainability is complex and focuses on society's well-being throughout generations. For effective implementation, social

sustainability aspects must be determined case-by-case due to its multidimensionality. Equity and social justice, cooperation, employment and human capacity development, and social services and infrastructure were key to social sustainability in the Niger Delta oil and gas business. The research was framed by stakeholder theory, and partnering with host communities offers a partnership with resources to obtain legitimacy. Chevron's GMoU and stakeholder theory's value creation models of collaboration are advocated for social sustainability implementation. By demonstrating a global notion at the local level, the research advances understanding. The findings benefit social sustainability practitioners and scholars theoretically and practically⁷⁸.

This study examined how environmental remediation and pollution control, environmental law compliance and penalty, and employee health and safety costs affect corporate performance of selected Nigerian oil firms. An ex post facto study design and secondary data from oil and gas company annual reports were used. Three hypotheses were tested using descriptive statistics and multiple regression models. The investigation found that environmental restoration and pollution control costs boost Nigerian oil and gas corporations' return on assets. Study outcomes validated environmental quality cost management theory. This means environmental expenses proxies hurt Nigerian oil and gas businesses' return on assets. The study found that Nigerian oil and gas business management, accountants, and other stakeholders should be proactive in environmental preservation to save costs and improve performance. Oil and gas companies should raise understanding of environmental remediation and pollution control expenses and follow environmental legislation to reduce environmental costs⁷⁹.

This study examined how Shell Petroleum Development Company of Nigeria (SPDC) and Nigeria AGIP Oil Company (NAOC) execute corporate social responsibility (CSR) in Bayelsa state host communities. Social exchange theory provided the theoretical

underpinning, and ex post facto research was used with multi-stage sampling and survey questionnaires. Its dependability index was 0.83. The study used multi-stage sampling to collect 398 respondents from 24 host communities to answer two research questions. Data were examined using mean and chi-square. The socio-economic lives of host communities in SPDC and NAOC CSR on sustainable development in Bayelsa State was significantly correlated with their involvement. It recommended that SPDC/NAOC invest a larger percentage of their profit in educational projects, implement the Global Memorandum of Understanding (GMoU), introduce capacity-building programs, and involve host communities in CRS activities⁸⁰.

2.4 Conceptual Model

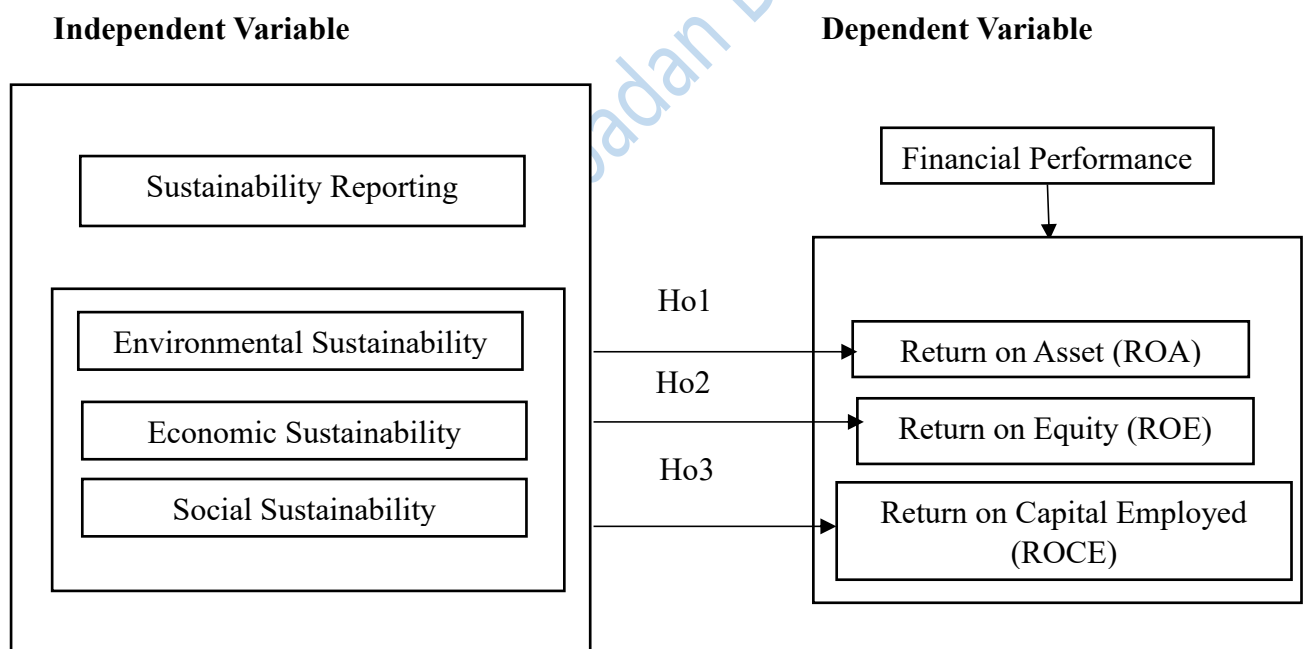


Figure 2.1 Conceptual Model of Sustainability Reporting and Financial Performance

Source: Researcher's Fieldwork, 2025

2.5 Summary of the Gap in the Literature Reviewed

Provenance of literature reviewed appeared to be a shortage of works on sustainability reporting and financial performance especially in South-South Nigeria context. Scholars

(researchers) addressing sustainability reporting are from the developed Nations such as London, Germany, America, Asia, Europe, China and very few countries in Africa^{81,82}. A good example, conducted a study on the decade effects on sustainability reporting from various industries to investigate their perceptions and conceptions of sustainability reporting and financial disclosure do not have positive relationship. Also, positive relationship exists between sustainability disclosures and financial performance⁸³. Sustainability reporting, economic reporting, environmental reporting, financial reporting is examined and impact on financial performance of companies operating in Indonesia, investigated influence of different environmental factors such as oil spill, air flaring, pollution etc. on the environment in Jordan and studies from coal sustainability reporting quality among members of the International Federation of Accountants (IFAC) that worked as directors of oil and gas companies selected in South-Africa⁸⁴.

However, a review of related studies in Nigeria indicated absence of empirical evidence on the sustainability reporting and financial performance of oil and gas companies in Nigeria⁸⁵. Studies made in Nigeria include on economic sustainability reporting, environmental sustainability reporting and on financial sustainability reporting quality among companies on return on Assets, return on Equity and return on capital employed on the banking sector and manufacturing sector. The findings show that more need to be done if oil and gas companies are to improve their operation. In spite of the progress in literature, unexpectedly, there is no detailed reporting and how it affects financial performance especially in South – South Nigeria. Oil and gas companies with framework that engages sustainability reporting, economic, environmental, financial reporting quality and financial performance, needs to be empirically investigate this gap with necessity.

From the review of the empirical studies, it appears evident that the results of most sustainability and firm performance studies are either inconclusive or contradictory - with

some reporting positive relationships^{69,71,80}. Others show negative and or no significant impact of sustainability reporting on financial performance^{77,78}. The evidences from these previous studies show that the relationship between corporate sustainability and firm performance have been grounded on empirical and theoretical arguments ranging from those that opined that sustainability practice reduces organizational profits, and those that suggest that it could be deployed for competitive advantage. This observed lack of convergence cumulating to the observed mixed results is an indication that this topic of study is far from been settled empirically, hence the need for more studies. Majority of the previous studies have been carried out in developed countries with far little attention been paid to such studies in developing countries like Nigeria. The few studies that focus on the oil and gas industry in Nigeria made use of only one dependent variable. This study is therefore justified by assessing the effect of two of the three major dimensions of corporate sustainability (environment and social) and firm's performance using three different performance indicators (dependent variables) in the entire listed oil and gas companies in the Nigerian Stock Exchange. It is expected that the outcome would contribute in reconciling the inconsistencies in extant studies especially in the Nigerian context

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Chapter Three

Methodology

In this chapter, the study's methodology, research design, data sources, and model specifications are expounded upon, with particular emphasis on data analysis techniques, econometrics, and statistical standards

3.1 Research Design

The research adopted an *ex-post facto* design, which uses past data to predict future trends and examines how an independent variable that existed prior to the study affects a dependent variable. This design is quasi-experimental, as it does not involve direct control over the independent variables, whose effects have already occurred and cannot be manipulated. Instead, the relationship between variables is inferred without intervening or varying the independent or dependent variable. The *ex-post facto* design was chosen as it allowed the researcher to examine the influence and relationship between variables that had already occurred, without the need for manipulation. Additionally, this design aligned with earlier studies in this area¹.

3.2 Population of the Study

The population of this study consist of Six (6) oil and gas companies that are focus on upstream that is exploration and production having operational base in South – South of Nigeria with nine (9 year) years Audited financial statements in the Nigeria stock exchange (NSE) from 31st December, 2015 to 31st December 2023. These are Oando Plc, Eterna plc, Total Energies SE Nigeria & Seplat Plc, Aradel Holding plc, Japaul Gold & Venture plc Sustainability Reporting Data. Thus, upstream responsible for the exploration and production of crude oil and natural gas, including finding deposits and drilling to extract raw materials

3.3 Sample Size and Data Source

The study sample size consisted of the Six (6) oil and gas companies that are focus on upstream that is exploration and production having operational base in South – South of Nigeria with nine (9 year) years Audited financial statements in the Nigeria stock exchange (NSE) from 31st December, 2015 to 31st December, 2023, representing a total of fifty-four (54) reports. Data source from annual financial reports and accounts of the individual companies

downloaded from the websites of the companies, and (3) www.nse.com.ng. The qualitative data for the independent variable (sustainability report) were sourced via content analysis procedure using sustainable practices checklist of the GRI (Global Reporting Initiative) in line with previous studies^{1,2}.

3.4 Description of Research Data

The major data used in this study oil and gas companies that are focus on upstream that is exploration and production having operational base in South – South of Nigeria Financial Statements and sustainability reports of Oil and Gas Companies in South – South of Nigeria. The nature of data used were the statement of comprehensive income and statement of financial position as well as annual sustainability reports from 2015 to 2023¹.

Model Specification

The functional model showing the relationship between sustainability reporting and Financial performance is given is as follows:

$$Y = \beta_0 + \beta_1 x_1 \dots\dots\dots (1)$$

$$X = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots\dots b_n x_n \dots\dots (2)$$

Where

y = Financial performance

x = Sustainability reporting

β_0 = intercept

β_1 = slope of co-efficient

However, functionally the relationship could be stated as below:

$$FP = f(x_1 \ x_2 \ x_3)$$

$$FP = f(ESR, ENVSR, SSR)$$

Model specification

$$FP = f(ESR, ENVSR, SSR) \dots\dots\dots (1)$$

$$FP = f(ESR) \dots\dots\dots (2)$$

$$FP = f(ENVSR) \dots\dots\dots (3)$$

$$FP = f(SSR) \dots\dots\dots (4)$$

From the functional relationship above, the model is specified as

$$FP = \beta_0 + \beta_1 ESR + e) \dots\dots\dots (5)$$

$$FP = \beta_0 + \beta_2 ENVSR + e) \dots\dots\dots (6)$$

$$FP = \beta_0 + \beta_3 FSRQ + e) \dots\dots\dots (7)$$

A prior explanation

$$\beta_1 - \beta_3 > 0$$

Where

FP = Financial Performance

ESR = Economic sustainability reporting

ENVSR = Environmental sustainability reporting

FSRQ = Financial sustainability reporting quality

e = Error term for omitted variables

β_0 is the regression co-efficient while β_1 , β_2 and β_3 represent the slope of the regression equation.

Test of significance F – test was used at 95% confidence level to establish a required statistical significance.

Measurement of Variables

The table above shows the measurement of variables that was adopted for the execution of the study in the order of the dependent variables and the independent variables. While the dependent variables were captured using the quantitative data as inherent in the financial statement of quoted companies, the independent variables were captured using a scoring index of non-financial performance indicators selected from the GPI guidelines (see Index Below in Table 3.3) as also employed by previous studies¹. From the index, the environmental sustainability reporting components have 34 items, while the social performance has 48 items. On each of the two sustainability reporting components adopted (environmental and social performance disclosure), a content analysis was conducted to calculate the number of indicators disclosed by a sampled company in a financial year. The proportion (based on the total requirement) is then taken as the measure of extent of disclosure.

3.5 Measurement of Economic, Environmental, Social Performance

The study measured social and environmental performance using content analysis via an unweighted dichotomous index, capturing the extent of disclosures in these two sustainability dimensions. This approach aligns with methodologies, and has been applied in recent studies corporate social and environmental disclosure and risk disclosure. Given the study's nature, the financial component of the social dimension (i.e., CSR) was excluded, as most companies do not monetize social dimensions like labor practices, employee management, human rights, and product responsibility beyond CSR. The focus was thus on core social sustainability issues (see Complete Disclosure Index in Appendix I). Using an unweighted dichotomous

index, as suggested minimizes subjectivity in weighting disclosed items. A disclosed item received a score of one (1) if mentioned in the corporate annual report, and zero (0) if not. The total disclosed items were then compared to the expected standard, 34 items for environmental sustainability and 48 for social performance. The proportion disclosed by each company per financial year was used as the qualitative measure.

The following formula was used in the calculations:

$QID_j \text{ index} =$

Where;

QID_j index is the disclosure weight index for the firm j . rd_j will be 0 if an item is not disclosed, and 1 if otherwise. n_j represents the maximum number of items that was disclosed by firm j .

The total qualitative disclosure score (TQID) was then converted into percentage terms by applying the following formula:

$$\frac{\text{Total no. of items appearing in the annual report}}{\text{Max. no. of items which should appear in annual reports}} \times 100$$

Max. no. of items which should appear in annual reports = 1

3.6 Validity of the Research Data

It was critical for the success of the study to ensure the validity of the research instrument. The researchers took many procedures to establish validity in this investigation. To begin, they ensured that the data acquired was relevant and appropriate for the study subject being addressed. Second, the researchers checked the legitimacy and dependability of the data sources. The data for this study was confirmed by respected professional audit agencies. Sustainability reporting' financial statements were audited and prepared in compliance with institutional and regulatory standards by respected professional audit firms. To assure the

accuracy of the data acquired, the researchers ensured that the data sources were current and up-to-date. Finally, diagnostic tests were used to guarantee that the model was reliable and error-free. Two types of diagnostic tests were employed in this study to confirm that the model was resilient and error-free. These were: The Variance Inflation Factor (VIF), a measure of the degree of collinearity between the model's independent variables. The VIF test was performed to confirm that the independent variables were not strongly linked, which might result in inaccurate findings.

Moreover, the Breusch-Pagan test was used to test for heteroskedasticity, which is a breach of the assumption of constant variance in residuals. This test was necessary because heteroskedasticity in the model might lead to inaccurate conclusions.

3.7 Reliability of the Research Instrument

To verify the reliability of the data sources, the researchers collected data from many sources. This method required gathering annual reports from Oil and Gas companies' websites and stock exchange market sources and comparing them to ensure the data's correctness and consistency. This assisted in verifying that the data obtained was consistent and accurate across several sources. Moreover, diagnostic tests were run on the statistical model to look for possible flaws or difficulties. This helped to guarantee that the outcomes were robust and dependable. To check that the model assumptions were satisfied, the researchers utilized a variety of diagnostic tests, including tests for heteroscedasticity, autocorrelation, and normality.

3.8 Method of Data Collection

This study was depended on secondary data, namely yearly reports of in South – South of Nigeria gathered from company websites between 2015 and 2023. The utilization of secondary data is a cost-effective and time-saving method of collecting data. Additionally,

secondary data is widely available, and its use can aid in ensuring consistency and comparability across time periods. To ensure the accuracy and relevance of the data utilized in the study, the researchers will carefully choose and validate the data sources. The study can draw on a broad and diversified pool of data by leveraging secondary data to deliver accurate and credible insights into the research questions.

3.9 Method of Data Analysis

Descriptive statistics and regression analysis were employed as analysis techniques in this investigation. To explain the trend of the obtained data, descriptive statistics were employed, defining its central tendency, variability, and dispersion. Multiple regression analysis was used to evaluate the combined effect of independent factors on the dependent variable in order to identify the relationship between various metrics of sustainability reporting and financial performance. The analytical results were supplied in the form of tables, charts, and graphs for easy interpretation and visualization. Unit root testing and diagnostic tests were performed prior to applying these analytical techniques.

The Panel least squares regression approach was utilized for inferential statistics, which is widely used in economics and finance for data analysis and regression model estimation. Because it allowed for the estimation of the relationship between dependent and independent variables, Panel least squares regression was ideal for this investigation. The coefficients of the independent variables were estimated to examine the impact of various metrics of sustainability reporting and financial performance. Panel least squares regression also allowed for the calculation of residuals, which were used to assess the regression model's quality of fit. The Panel least Squares regression approach was implemented using the E-VIEW software program, which is widely used in economics and finance research. These

analytical tools aided in providing a robust examination of the relationship between variables as well as testing the hypotheses proposed in this study.

Endnotes

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Chapter Four

Results and Discussion of Findings

This chapter encapsulates the outcomes and thoughtful discussions derived from the investigation. Grounded in alignment with the study's objectives, the findings unfold in response to the research questions and hypotheses meticulously formulated for the purpose of this research endeavour.

4.1 Presentation of Data

4.1.1 Presentation of Diagnostic Tests

Table 4.1 Unit Root Test

Series	Method	Statistic	Prob.	Lag
D(Return On Asset)	Levin, Lin & Chu t*	-4.47624	0.0000	1
D(Return On Equity)	Levin, Lin & Chu t*	-9.56637	0.0000	1
D(Return On Capital Employed)	Levin, Lin & Chu t*	-14.7735	0.0000	1
Environmental Reporting	Levin, Lin & Chu t*	-2.96844	0.0015	1
Economic Reporting	Levin, Lin & Chu t*	-2.33413	0.0098	1
Social Reporting	Levin, Lin & Chu	-0.70695	0.0398	1

Table 4.1 indicates the results of the unit root test conducted using the Levin, Lin & Chu method for several financial and reporting variables. The analysis reveals that the first differences of Return on Assets (D(Return On Asset)) yielded a statistic of -4.47624 with a probability (P) value of 0.0000, suggesting strong evidence against the presence of a unit root at the 1% significance level. Similarly, the first difference of Return on Equity (D(Return On Equity)) produced a statistic of -9.56637 (P = 0.0000), reinforcing the conclusion that this series is stationary as well. The analysis for Return on Capital Employed (D(Return On Capital Employed)) showed an even more pronounced result with a statistic of -14.7735 (P = 0.0000), confirming stationarity at the same significance level. In terms of environmental, economic, and social reporting, the findings were also significant. Environmental Reporting yielded a statistic of -2.96844 (P = 0.0015), while Economic Reporting had a statistic of -2.33413 (P = 0.0098), both indicating stationarity at the 1% level. However, Social Reporting presented a less robust statistic of -0.70695 (P = 0.0398), suggesting it may be stationary but with less certainty compared to the other variables. Since all series except Social Reporting are stationary at lag 1, this implies that they can be used in further analyses without concern for spurious regression issues typically associated with non-stationary data.

Table 4.2 Panel Cross-section Heteroskedasticity LR Test

Model	Environmental Reporting	Economic Reporting	Social Reporting	Constant (C)	Likelihood Ratio (Heteroskedasticity Test)
Return on Asset	Coeff: 0.005374 (p = 0.8886)	- Coeff: 0.043556 (p = 0.2369)	- Coeff: 0.025337 (p = 0.5546)	Coeff: 7.354997 (p = 0.0057)	2.6621 (p = 0.1600)
Return on Equity	Coeff: 0.012943 (p = 0.8215)	- Coeff: 0.015148 (p = 0.8123)	- Coeff: 0.004298 (p = 0.9452)	Coeff: 11.67845 (p = 0.0045)	2.6834 (p = 0.1021)
Return on Capital	Coeff: 0.108472 (p = 0.1633)	- Coeff: 0.039972 (p = 0.6020)	- Coeff: 0.114285 (p = 0.1961)	Coeff: 8.641806 (p = 0.1272)	2.7991 (p = 0.1021)

Table 4.2 presents the results of the panel cross-section heteroskedasticity likelihood ratio (LR) test for various reporting metrics, including Environmental Reporting, Economic Reporting, and Social Reporting, alongside the financial performance indicators of Return on Asset, Return on Equity, and Return on Capital Employed. The coefficients for Environmental Reporting indicate a negative relationship with Return on Asset (-0.005374 , $p = 0.8886$), which is not statistically significant. In contrast, the coefficients for Economic Reporting (-0.043556 , $p = 0.2369$) and Social Reporting (0.025337 , $p = 0.5546$) also suggest no significant impact on their respective returns. The constant term across these models shows significance ($C = 7.354997$, $p = 0.0057$), indicating that there is a statistically significant baseline effect present. For Return on Equity, the coefficients similarly reflect non-significant relationships with Environmental Reporting (0.012943 , $p = 0.8215$), Economic Reporting (-0.015148 , $p = 0.8123$), and Social Reporting (0.004298 , $p = 0.9452$). However, the constant term here is also significant ($C = 11.67845$, $p = 0.0045$), suggesting a strong baseline effect. Examining Return on Capital Employed reveals a coefficient of 0.108472 ($p = 0.1633$) for Environmental Reporting and a coefficient of 0.039972 ($p = 0.6020$) for Economic Reporting, both indicating non-significant relationships as well. The coefficient for Social Reporting is negative (-0.114285 , $p = 0.1961$), again showing no statistical significance. The likelihood ratio tests for heteroskedasticity yield values of 2.6621 ($p = 0.1600$) for Return on Asset, 2.6834 ($p = 0.1021$) for Return on Equity, and 2.7991 ($p = 0.1021$) for Return on Capital Employed, indicating that we fail to reject the null hypothesis of homoskedasticity across these models at conventional significance levels. Thus, the findings suggest a stable relationship between reporting metrics and financial performance

indicators in this study context, providing a solid foundation for further econometric modeling and analysis.

Table 4.3 Variance Inflation Factor (VIF)

Variable	Coefficient Variance	VIF
Return on Asset	0.307220	1.471238
Return on Capital Employed	0.130526	1.334688
Return on Equity	0.164463	1.118368
Environmental Reporting	0.800773	1.085952
Economic Reporting	0.701794	1.113401
Social reporting	0.101126	1.294991
C	399.8634	NA

Fieldwork, 2025

The results from Table 4.3 present the Variance Inflation Factor (VIF) analysis, which assesses multicollinearity among the independent variables in the regression models. The VIF values indicate the extent to which the variance of an estimated regression coefficient increases due to multicollinearity. For Return on Asset, the VIF is 1.471238, suggesting that there is minimal multicollinearity present. Similarly, Return on Capital Employed has a VIF of 1.334688, indicating a low level of multicollinearity. Return on Equity shows a VIF of 1.118368, further reinforcing the conclusion that this variable is not significantly affected by multicollinearity. In terms of reporting metrics, Environmental Reporting has a VIF of 1.085952, while Economic Reporting displays a VIF of 1.113401. Both values suggest that these variables are also free from significant multicollinearity concerns. Social Reporting has a VIF of 1.294991, which remains well below the threshold that would indicate problematic multicollinearity. The constant term (C) does not have a VIF value listed (NA), as it does not correlate with other variables in the same manner as the independent variables. The VIF values for all variables are comfortably below the commonly accepted threshold of 10, indicating that multicollinearity is not a significant issue in this study's context. This suggests that the regression coefficients can be interpreted reliably without concern for inflated

standard errors due to multicollinearity among the independent variables. Consequently, the models can be employed effectively for further analysis and interpretation of the relationships between financial performance indicators and reporting metrics.

4.2 Presentation of Descriptive Analysis and Correlation Matrix

Table 4.4 Descriptive Analysis

	ROA	ROE	ROCE	Environment	Economic	Social
Mean	11.91185	13.96722	14.18222	45.42593	50.16667	42.13889
Median	5.920000	10.70000	11.32500	50.00000	50.00000	40.90000
Maximum	248.0000	63.00000	71.60000	75.00000	75.00000	80.00000
Minimum	0.190000	0.330000	0.590000	10.00000	18.00000	8.000000
Std. Dev.	33.20436	11.73300	14.38773	16.49769	17.71871	16.10095
Skewness	6.836793	1.912356	2.000794	-0.021298	-0.034657	0.062048
Kurtosis	49.13462	7.749389	7.449833	2.464152	2.086169	2.680099
Jarque-Bera	5209.582	83.66650	80.58086	0.650133	1.889755	0.264908
Probability	0.000000	0.000000	0.000000	0.722479	0.388727	0.875943
Sum	643.2400	754.2300	765.8400	2453.000	2709.000	2275.500
Sum Sq.	58434.08	7296.159	10971.37	14425.20	16639.50	13739.75
Dev.						
Observations	54	54	54	54	54	54

Fieldwork, 2025

Table 4.4 presents a descriptive analysis of key financial performance indicators, including Return on Assets (ROA), Return on Equity (ROE), Return on Capital Employed (ROCE), and various reporting metrics: Environmental, Economic, and Social reporting.

The mean values for the performance indicators indicate that ROA averages at 11.91%, ROE at 13.97%, and ROCE at 14.18%. These mean values suggest a moderate level of profitability across the firms analyzed, with ROCE being slightly higher than both ROA and ROE, indicating effective capital utilization in generating profits.

The median values further illustrate the central tendency of these metrics, with ROA at 5.92%, ROE at 10.70%, and ROCE at 11.33%. The median values are significantly lower than the

mean for ROA and ROCE, suggesting a right-skewed distribution where a few firms achieve exceptionally high returns, impacting the average.

In terms of maximum and minimum values, ROA reaches a maximum of 248% and a minimum of 0.19%, indicating substantial variability in asset efficiency among firms. Similarly, ROE peaks at 63% and bottoms out at 0.33%. For ROCE, the maximum is 71.60% while the minimum is 0.59%. This wide range highlights differences in profitability strategies and operational efficiencies across firms.

The standard deviations for these metrics indicate variability: ROA has a standard deviation of 33.20%, suggesting significant dispersion in asset returns; ROE shows a standard deviation of 11.73%, while ROCE has a standard deviation of 14.39%. The reporting metrics also exhibit variability, with Environmental Reporting having a standard deviation of 16.50%, Economic Reporting at 17.72%, and Social Reporting at 16.10%.

Skewness values reveal that all three profitability ratios are positively skewed (ROA: 6.84, ROE: 1.91, ROCE: 2.00), indicating that most firms have lower returns with a few outliers achieving very high returns. In contrast, the reporting metrics show near-zero skewness, suggesting a more symmetrical distribution around their means.

The kurtosis values indicate that the distributions of profitability ratios are leptokurtic (ROA: 49.13, ROE: 7.75, ROCE: 7.45), meaning they have heavier tails than a normal distribution, which aligns with the observed skewness and suggests the presence of extreme values or outliers.

The Jarque-Bera test results confirm that all three profitability ratios significantly deviate from normality ($p = 0.0000$), while the reporting metrics do not show significant deviations from normality ($p = 0.722479$ for Environmental Reporting, $p = 0.388727$ for Economic Reporting, $p = 0.875943$ for Social Reporting).

The descriptive analysis indicates that while profitability metrics exhibit significant variability and skewness due to outliers, reporting metrics tend to be more stable and symmetrically distributed within the sample analyzed, providing insights into both operational efficiency and reporting practices across firms in this study context.

Table 4.5 Result of the Correlation Matrix

Correlation						
Probability	ROA	ROE	ROCE	Environment	Economic	Social
ROA	1.000000 -----					
ROE	0.259476 0.0581	1.000000 -----				
ROCE	- 0.073711 0.5963	- 0.239089 0.0817	1.000000 -----			
Environment	0.063726 0.6471	0.066311 0.6338	0.202454 0.1421	1.000000 -----		
Economic	- 0.009507 0.9456	- 0.065440 0.6383	- 0.070304 0.6134	0.195972 0.1555	1.000000 -----	
Social	- 0.052360 0.7069	- 0.124275 0.3706	- 0.344885 0.0107	0.039906 0.7745	0.229278 0.0954	1.000000 0 -----
Fieldwork, 2025						

Table 4.5, focusing solely on the relationships between the dependent variables—Return on Assets (ROA), Return on Equity (ROE), and Return on Capital Employed (ROCE)—and the reporting metrics without discussing the correlations among the dependent variables themselves. Table 4.5 presents the results of the correlation matrix, examining the relationships between the dependent variables—Return on Assets (ROA), Return on Equity (ROE), and Return on Capital Employed (ROCE)—and various reporting metrics: Environmental, Economic, and Social reporting.

The correlation between ROA and Environmental Reporting is positive at 0.063726, but this relationship is not statistically significant ($p = 0.6471$), indicating no meaningful association between asset returns and environmental practices. Similarly, ROA shows a negligible correlation with Economic Reporting (-0.009507, $p = 0.9456$), reinforcing the lack of a significant relationship. When examining Social Reporting, there is a slight negative correlation with ROA (-0.052360) that is also not statistically significant ($p = 0.7069$), suggesting no meaningful link between social reporting practices and asset returns. For ROE, the correlation with Environmental Reporting is 0.066311, which is not statistically significant ($p = 0.6338$). The relationship with Economic Reporting is similarly weak at 0.065440 ($p = 0.6383$), indicating that these reporting metrics do not have a substantial impact on equity returns. The correlation between Social Reporting and ROE shows a positive value of 0.124275 but remains statistically insignificant ($p = 0.3706$), further suggesting that social reporting does not significantly influence equity returns. Turning to ROCE, the correlation with Environmental Reporting is positive at 0.202454 but not statistically significant ($p = 0.1421$). The correlation with Economic Reporting is also weak at 0.070304 ($p = 0.6134$), indicating no strong relationship. Notably, there is a strong negative correlation between Social Reporting and ROCE, which shows a value of -0.344885 with a p-value of 0.0107. This indicates that higher social reporting scores are associated with lower returns on capital employed, suggesting potential inefficiencies in capital utilization among firms that emphasize social reporting. The correlation matrix reveals that while there are some weak associations between the financial performance indicators and reporting metrics, most correlations are not statistically significant, indicating limited relationships in this study's context. The notable negative correlation between Social Reporting and ROCE warrants further investigation to understand the underlying dynamics affecting firms' performance and reporting practices.

4.3 Testing of Hypotheses

Hypothesis One:

H₀₁: Sustainability reporting has no significant effect on the Return on Assets (ROA) of oil and gas companies operating in South-South Nigeria.

Table 4.6: Hussian Test

Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.130903	3	0.9879
Fieldwork, 2025			

Table 4.7 Sustainability Reporting and Return on Assets (ROA)

Variables	Fixed Effects (Prob.)	Random Effects (Prob.)
Environmental Reporting	0.130477 (0.0520)	0.137650 (0.0627)
Economic Reporting	0.13043 (0.0068)	-0.014797 (0.0066)
Social Reporting	0.241759 (0.5359)	-0.186833 (0.5958)
C	16.82657 (0.0000)	14.27425 (0.0000)
R-squared	0.148281	0.011274
Adjusted R-squared	0.313600	0.480049
F-statistic	5.979290	0.190044
Prob(F-statistic)	0.0044412	0.02693
Durbin-Watson stat	2.058449	2.038618
Fieldwork, 2025		

Table 4.6 on the Hausman test suggests that the random effects model is the most appropriate for analyzing the relationship between sustainability reporting and Return on Assets (ROA) ($\chi^2 = 0.131$, $p = 0.988$). Table 4.7 reveals that under the random effects model, environmental reporting has a positive but statistically insignificant relationship with ROA ($\beta = 0.138$, $p =$

0.063), indicating a limited impact on the financial metric. Economic reporting, however, shows a significant negative association with ROA ($\beta = -0.015$, $p < 0.01$), suggesting that higher economic reporting is linked to reduced ROA. Social reporting demonstrates a negative and statistically insignificant effect on ROA ($\beta = -0.187$, $p = 0.596$), indicating no meaningful contribution to financial performance. The constant term ($C = 14.274$, $p < 0.01$) is significant, reflecting a robust baseline level of ROA independent of the explanatory variables. Despite these individual variable results, the model overall displays weak explanatory power ($R^2 = 0.011$), with limited variability in ROA explained by the included factors. The F-statistic ($F = 0.190$, $p < 0.05$) suggests some level of model significance, while the Durbin-Watson statistic (2.039) indicates no issues with autocorrelation in the residuals. The findings suggest that sustainability reporting that is environmental, economic, and social sustainability reporting collectively have a significant influence on ROA, the explanatory power of the model remains low, suggesting that other factors may also contribute significantly to variations in financial performance.

Hypothesis Two: Sustainability reporting has no significant effect on the Return on Equity (ROE) of oil and gas companies operating in South-South Nigeria.

Table 4.8 Hassan Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	9.982464	3	0.009

Table 4.9 Sustainability reporting and Return on Equity

Variables	Fixed Effects	Random Effects
Environmental Reporting	0.017677 (0.8709)	0.020879 (0.8436)
Economic Reporting	0.031371 (0.7596)	0.028988 (0.7724)
Social Reporting	0.110055 (0.3895)	0.104864 (0.3876)
C	6.952821 (0.4075)	7.145707 (0.4193)
R-squared	0.271323	0.020780
Adjusted R-squared	0.141780	0.379074
F-statistic	2.994465	0.353675
Prob(F-statistic)	0.046263	0.786661
Durbin-Watson stat	1.927329	1.844578
Fieldwork, 2025		

Based on the Hausman test results from Table 4.8, which show a chi-square statistic of 9.982 ($p = 0.009$), the fixed effects model is deemed appropriate for the analysis of sustainability reporting and Return on Equity (ROE). Therefore, we proceed with the fixed effects model results presented in Table 4.9. Table 4.9 indicates that, under the fixed effects model, environmental reporting has a positive but statistically insignificant relationship with ROE ($\beta = 0.0177$, $p = 0.8709$), suggesting that environmental sustainability reporting does not have a meaningful impact on ROE. Similarly, economic reporting shows a positive but statistically insignificant effect on ROE ($\beta = 0.0314$, $p = 0.7596$), implying that economic sustainability reporting does not significantly influence ROE. Social reporting also presents a positive but insignificant relationship with ROE ($\beta = 0.1101$, $p = 0.3895$), reinforcing the notion that social sustainability reporting does not have a notable effect on ROE. The constant term ($C = 6.9528$, $p = 0.4075$) is not statistically significant, suggesting that the baseline effect on ROE is not significant when accounting for the sustainability reporting variables. The overall model fit, as indicated by the F-statistic ($F = 2.9945$, $p = 0.0463$), is statistically significant,

suggesting that the model as a whole provides some explanatory power for ROE. However, the relatively low R^2 (0.271) and adjusted R^2 (0.142) values indicate that the model explains a limited portion of the variation in ROE. The Durbin-Watson statistic (1.927) suggests that autocorrelation in the residuals is not a major concern. However, the fixed effects model indicates that sustainability reporting, including environmental, economic, and social reporting, does not have a statistically significant impact on ROE. This suggests that while sustainability reporting may have some relevance, it does not strongly influence Return on Equity within the context of this study. Further investigation may be needed to explore alternative variables or time periods that could provide more insight into the relationship between sustainability reporting and financial performance.

Hypothesis Three: Sustainability reporting has no significant effect on the Return on Capital Employed (ROCE) of oil and gas companies operating in South-South Nigeria.

Table 4.10 Hussan Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.349766	3	0.0174

Fieldwork, 2025

Table 4.11 Sustainability Reporting and Return on Capital Employed

Variables	Fixed Effects	Random Effects
Environmental Reporting	0.198071 (0.1127)	0.184661 (0.1231)
Economic Reporting	0.179337 (0.0051)	0.183040 (0.4605)
Social Reporting	-0.149338 (0.3032)	-0.208924 (0.1225)
C	7.497505 (0.000)	10.43183 (0.2717)
R-squared	0.379110	0.115372
Adjusted R-squared	0.268730	0.062294
F-statistic	3.434576	2.173642

Prob(F-statistic)	0.003637	0.102743
Durbin-Watson stat	1.977058	1.511529

Fieldwork, 2025

Table 4.10 presents the Hausman test results, which suggest that the fixed effects model is more appropriate for analyzing the relationship between sustainability reporting and Return on Capital Employed (ROCE) ($\chi^2 = 6.350$, $p < 0.05$). Therefore, the fixed effects model results in Table 4.11 are used for interpretation. Table 4.11 reveals that under the fixed effects model, environmental reporting has a positive but statistically insignificant relationship with ROCE ($\beta = 0.198$, $p = 0.113$), suggesting a potential but weak effect on ROCE. Economic reporting demonstrates a positive and statistically significant relationship with ROCE ($\beta = 0.179$, $p = 0.0051$), indicating that higher levels of economic sustainability reporting are associated with improved ROCE. In contrast, social reporting shows a negative, though statistically insignificant, relationship with ROCE ($\beta = -0.149$, $p = 0.303$), implying that social sustainability reporting does not have a significant effect on ROCE. The constant term ($C = 7.498$, $p = 0.000$) is statistically significant, indicating a baseline effect on ROCE independent of the sustainability reporting variables. The overall model fit, as indicated by the F-statistic ($F = 3.435$, $p = 0.0036$), is statistically significant, suggesting that the combination of sustainability reporting variables significantly influences ROCE. The R^2 value (0.379) indicates a moderate level of explanatory power, while the adjusted R^2 value (0.269) further supports the model's adequacy. The Durbin-Watson statistic (1.977) suggests no serious autocorrelation in the residuals. Thus, the fixed effects model indicates that while environmental and social sustainability reporting have limited or no impact on ROCE, economic sustainability reporting significantly influences ROCE. This suggests that economic reporting is a key driver of financial performance in terms of capital employed, while environmental and social factors require further investigation or have less impact.

4.4 Discussion of Findings

The objective one findings of this study indicate that environmental, economic, and social sustainability reporting collectively have a significant influence on Return on Assets (ROA), though the explanatory power of the model remains low. This suggests that while sustainability reporting is associated with financial performance, other factors may also play a crucial role in driving variations in ROA. This aligns with the broader literature on sustainability reporting, which suggests that the relationship between sustainability reporting and financial performance can be complex and influenced by multiple variables. Supporting the findings, the significant relationship between sustainability reporting and firm value, particularly when board independence moderates the relationship¹. This suggests that robust governance structures can enhance the effectiveness of sustainability reporting in influencing financial outcomes, supporting the notion that sustainability practices do contribute positively to firm performance, including financial metrics like ROA. Similarly, the role of corporate social responsibility disclosures (CSR) and how transparency in reporting can improve a company's reputation and performance². In this study, the finding that sustainability reporting affects ROA reinforces the broader argument that well-structured sustainability disclosures can lead to improved financial results over time.

However, the low explanatory power of the model in this study suggests that there are limitations to the direct impact of sustainability reporting on financial performance. Other external factors such as market conditions, regulatory frameworks, and firm-specific characteristics may play a significant role in influencing ROA. This is consistent with another study, that note the potential biases in sustainability reporting, particularly in the oil and gas sector, which could lead to inconsistent or insufficient data on the environmental, social, and economic aspects of sustainability³. Their systematic review underlines that while sustainability reporting is crucial, its impact on firm value and financial performance can be

diluted by factors such as incomplete disclosures, strategic misreporting, or a lack of standardization in sustainability metrics.

Additionally, while environmental product declarations (EPDs) can help in reducing environmental impacts, their practical application and integration into broader sustainability reporting frameworks remain limited in some industries, especially in sectors like oil and gas^{4,5}. This limitation further supports the finding that the model's explanatory power for financial performance is low, suggesting that environmental and social sustainability efforts might not always lead to immediate or measurable financial benefits, particularly if they are not aligned with the firm's strategic goals or if reporting practices are not fully transparent and comprehensive. Sustainability reporting can positively influence financial performance, the findings suggest that other variables such as governance structures, market dynamics, and sector-specific challenges are critical to fully understanding the relationship between sustainability reporting and ROA. Future research could explore these additional factors to provide a more comprehensive view of how sustainability disclosures translate into financial outcomes.

From objective two the findings of this study suggest that sustainability reporting, including environmental, economic, and social reporting, may have some relevance to financial performance but does not strongly influence Return on Equity (ROE) within the context of this study. The positive but statistically insignificant relationships between the various forms of sustainability reporting and ROE highlight that while these factors may play a role, their direct impact on ROE remains unclear. This suggests the need for further exploration of alternative variables or time periods that may offer more insight into the relationship between sustainability reporting and financial performance. Supporting this view, a study found that the weak relationship between sustainability reporting and financial performance in Nigeria's industrial goods sector, underscoring that while sustainability reporting practices are critical,

their direct impact on financial metrics like ROE may be limited⁶. The study finds that the degree of sustainability reporting varies across firms, and its effectiveness in influencing financial outcomes may be affected by factors such as industry characteristics, economic conditions, and corporate strategy, which may not be fully captured in ROE. Also, the link between sustainability reporting and financial performance in the cement industry and also observe that sustainability reporting does not consistently correlate with improved ROE⁷. They argue that sustainability disclosures, while important for enhancing corporate transparency and reputation, may not immediately translate into higher profitability or improved equity returns. This echoes the findings of this study, where sustainability reporting is not found to have a statistically significant effect on ROE, suggesting that other factors, such as operational efficiency, capital structure, or market conditions, might play a more decisive role in influencing ROE.

Furthermore, the financial performance impact of sustainability reporting is often influenced by the firm's ability to effectively integrate sustainability into its business strategy. The lack of a clear and strong relationship between sustainability reporting and ROE may be due to the absence of a cohesive strategy to leverage sustainability efforts for long-term financial growth⁸. These findings support the notion that while sustainability practices can improve corporate reputation and long-term viability, they may not yield immediate financial benefits reflected in metrics like ROE. Sustainability reporting has some relevance to financial performance, particularly in terms of corporate transparency and reputation, its impact on ROE appears to be limited. This suggests that further research is needed to explore other variables that could better explain the variations in ROE. Future studies might investigate the role of strategic alignment of sustainability initiatives, time lags in financial impact, and other financial metrics that could provide a more nuanced understanding of the relationship between sustainability reporting and financial performance.

The findings from objective three of this study suggest that while environmental and social sustainability reporting have limited or no impact on Return on Capital Employed (ROCE), economic sustainability reporting significantly influences ROCE. This highlights the importance of economic sustainability factors, such as profitability, cost efficiency, and resource utilization, in driving financial performance, particularly in terms of the capital employed by firms⁹. In contrast, the environmental and social sustainability aspects appear to have less influence on ROCE, or may require further investigation to fully understand their impact. Supporting these findings, a study reveals a limited role that environmental and social sustainability reporting plays in influencing financial performance within Nigerian firms. They point out that while these sustainability factors are critical for corporate responsibility and long-term sustainability goals, they do not directly impact financial performance metrics like ROCE in the short term. The study reinforces the idea that economic sustainability, which often includes cost control, resource management, and market performance, is more directly linked to efficient capital utilization and overall financial performance. However, the challenges of achieving sustainability through Environmental, Social, and Governance (ESG) reporting, noting that environmental and social factors may require longer time frames to influence financial outcomes meaningfully¹⁰. These aspects contribute to corporate reputation and long-term resilience, their immediate effect on capital employed and other financial metrics remains unclear. This aligns with the findings of the present study, where environmental and social sustainability reporting had little to no impact on ROCE.

The role of social and environmental reporting in sustainable development in developing countries and conclude that these types of reports have a less pronounced effect on financial performance in firms operating within such environments¹¹. Institutional voids and market inefficiencies may mitigate the effectiveness of social and environmental sustainability efforts, thus reducing their ability to drive immediate financial outcomes such as ROCE. This

reinforces the notion that while social and environmental sustainability reporting may align with broader corporate goals, their impact on capital employed and short-term financial performance is limited. Thus, sustainability reporting appears to be a significant driver of financial performance in terms of capital employed, the influence of environmental and social sustainability reporting is less clear and may require more detailed exploration. Future research should focus on identifying specific mechanisms through which environmental and social factors can influence ROCE, as well as exploring the role of institutional, economic, and market conditions in shaping the relationship between sustainability reporting and financial performance.

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- 12.

Chapter Five

Conclusion

5.1 Summary of Findings

The findings reveal that environmental reporting has a positive but insignificant effect on ROA ($\beta = 0.138$, $p = 0.063$). Economic reporting negatively impacts ROA ($\beta = -0.015$, $p < 0.01$), while social reporting shows no significant effect ($\beta = -0.187$, $p = 0.596$). The overall model has weak explanatory power ($R^2 = 0.011$), with the F-statistic ($F = 0.190$, $p < 0.05$) suggesting some model significance. This indicates that sustainability reporting has a limited influence on ROA, and other factors likely contribute to financial performance.

The findings reveal that environmental ($\beta = 0.0177$, $p = 0.8709$), economic ($\beta = 0.0314$, $p = 0.7596$), and social ($\beta = 0.1101$, $p = 0.3895$) reporting all show positive but insignificant relationships with ROE. The model's F-statistic ($F = 2.9945$, $p = 0.0463$) is statistically significant, but the low R^2 (0.271) and adjusted R^2 (0.142) suggest limited explanatory power. Sustainability reporting does not strongly impact ROE in this study.

The findings reveal that environmental reporting has a weak and insignificant effect on ROCE ($\beta = 0.198$, $p = 0.113$). Economic reporting shows a significant positive effect ($\beta = 0.179$, $p = 0.0051$), while social reporting has an insignificant negative effect ($\beta = -0.149$, $p = 0.303$). The model is statistically significant ($F = 3.435$, $p = 0.0036$), with moderate explanatory power ($R^2 = 0.379$). Economic reporting is a key driver of ROCE.

5.2 Conclusion

The conclusion from the findings highlights the varying impacts of sustainability reporting on financial performance measures. Economic sustainability reporting stands out as the most significant driver, particularly influencing Return on Capital Employed (ROCE). However, environmental and social sustainability reporting show minimal or no significant effects on financial performance metrics such as Return on Assets (ROA) and Return on Equity (ROE). Despite the significance of the overall models, the explanatory power remains limited, suggesting that other factors beyond sustainability reporting play a role in shaping financial outcomes. These results underscore the importance of focusing on economic aspects of sustainability reporting while recognizing the need for further investigation into the broader implications of environmental and social factors.

5.3 Recommendations

Based on the findings, the following recommendations are proposed:

Firstly, economic sustainability reporting has been shown to significantly impact Return on Capital Employed (ROCE). As such, companies should prioritize economic sustainability in their reporting practices. This involves providing clear, comprehensive, and transparent information regarding their financial strategies, resource utilization, and long-term economic goals. By enhancing this aspect of their sustainability reporting, organizations can improve their financial standing, attract investors, and optimize capital efficiency.

While environmental sustainability reporting did not demonstrate a significant effect on financial performance metrics such as Return on Assets (ROA) and Return on Equity (ROE), companies should still maintain robust environmental reporting practices. These efforts contribute to enhancing the company's corporate reputation, reducing operational costs, and ensuring compliance with environmental regulations. Although the direct financial impact

may not be immediately evident, these initiatives can provide long-term benefits that contribute to overall business sustainability.

Regarding social sustainability reporting, the findings indicated that it does not significantly influence ROA, ROE, or ROCE. Companies should reassess the emphasis placed on social sustainability disclosures within their financial reports. However, it is crucial for organizations to continue investing in socially responsible initiatives, as these contribute to improved employee satisfaction, stronger community relationships, and enhanced brand loyalty. While the direct financial outcomes may not be substantial, the indirect benefits can play a significant role in fostering long-term business growth and reputation.

Given that the explanatory power of sustainability reporting on financial performance is limited, future research should explore additional factors that might have a stronger influence on financial outcomes. Variables such as corporate governance practices, innovation strategies, and market conditions may offer more insight into the complex relationship between sustainability practices and financial performance. Expanding the scope of future studies will provide a more comprehensive understanding of what drives financial success in organizations.

Lastly, while the results highlight the significant role of economic sustainability reporting, it is recommended that companies adopt an integrated approach to sustainability. A balanced focus on environmental, social, and economic factors in their reporting can enhance stakeholder trust and foster long-term organizational success. A holistic sustainability strategy not only contributes to financial performance but also ensures broader social and environmental impacts that align with contemporary business expectations.

5.4 Contribution to Knowledge

This study makes several significant contributions to the body of knowledge, particularly in the domains of sustainability reporting, financial performance, and the application of relevant theories. The contributions span conceptual, theoretical, empirical, and practical perspectives.

The study enriches the conceptual understanding of the relationship between sustainability reporting and financial performance metrics, such as Return on Assets (ROA), Return on Equity (ROE), and Return on Capital Employed (ROCE). It advances the notion that sustainability reporting extends beyond environmental aspects to include economic and social dimensions, and their combined influence on financial performance. While the economic reporting dimension demonstrated a statistically significant impact, environmental and social dimensions were less impactful, prompting a reevaluation of how sustainability reporting should be conceptualized in financial contexts. This understanding can help reframe sustainability practices as integral to overall financial health, beyond mere regulatory compliance or corporate social responsibility.

The study applies Legitimacy Theory and Stakeholder Theory to interpret the findings, providing a robust theoretical lens for understanding the motivations behind sustainability reporting and its influence on financial performance. Legitimacy Theory suggests that companies engage in sustainability reporting to gain legitimacy from stakeholders by demonstrating their commitment to environmental, social, and economic responsibility. This research contributes to the theory by revealing that economic sustainability reporting is the most influential in gaining legitimacy and improving financial performance, particularly in terms of ROCE. It suggests that organizations may enhance their legitimacy by focusing on transparent and credible economic sustainability practices that demonstrate responsible use of capital.

Stakeholder Theory posits that organizations must manage their relationships with diverse stakeholders, including shareholders, customers, employees, and communities. This study adds to the theory by illustrating how different types of sustainability reporting—environmental, economic, and social serve distinct stakeholder interests, with economic reporting playing a crucial role in meeting the expectations of financial stakeholders. The lack of significant findings for environmental and social reporting in terms of direct financial impact underlines the importance of tailoring sustainability strategies to the specific needs and concerns of different stakeholder groups.

Empirically, the study provides valuable insights into the impact of sustainability reporting on financial performance in the context of Nigerian firms. By employing both random and fixed effects models, the research offers a nuanced understanding of how different dimensions of sustainability reporting (environmental, economic, and social) affect financial metrics. The finding that economic reporting has a significant positive impact on ROCE adds empirical evidence to the ongoing debate on the importance of economic sustainability practices for long-term financial success. Furthermore, the weak explanatory power of sustainability reporting in predicting ROA and ROE calls for further exploration of other potential factors influencing these metrics, contributing new directions for empirical research.

From a practical perspective, the study offers actionable insights for organizations, policymakers, and investors. For organizations, the findings suggest that enhancing economic sustainability reporting is crucial for improving financial performance, particularly in terms of capital efficiency. Companies are encouraged to prioritize transparent reporting of their economic sustainability initiatives, which could enhance their financial standing and stakeholder trust.

For policymakers, the study highlights the need to develop regulatory frameworks that incentivize comprehensive sustainability reporting, particularly with an emphasis on economic aspects. Encouraging firms to disclose meaningful economic sustainability metrics could drive more informed investment decisions and contribute to the overall development of sustainable business practices. For investors, the study offers guidance on the importance of reviewing sustainability reports with a focus on economic performance indicators, as these have a stronger association with financial outcomes. Understanding the impact of sustainability reporting on financial performance can help investors make better decisions and direct capital towards companies that are effectively integrating sustainability into their financial strategies.

5.5 Suggestion for Further Studies

1. The Role of Corporate Governance and Environmental, Social, and Governance (ESG) Factors in Financial Performance: A Multi-Dimensional Analysis.
2. The Influence of External Stakeholders on Sustainability Reporting Practices and Financial Performance.
3. The Impact of Sustainability Reporting on Non-Financial Performance Metrics: A Comprehensive Study.
4. The Role of Regulatory Changes in Shaping Sustainability Reporting Practices and Their Impact on Financial Performance.

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Appendix I – Indicator of Sustainability Reporting

Indicator		
	Category: ECONOMIC	Codes
	<i>Economic performance</i>	
	Direct economic value generated and distributed	G4-EC1
	Financial implications and other risks and opportunities for the organization's activities	G4-EC2

	due to climate change	
	Coverage of the organization's defined benefit plan obligations	G4-EC3
	Financial assistance received from government	G4-EC4
	<i>Market presence</i>	
	Ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation	G4-EC5
	Proportion of senior management hired from the local community at significant locations of operation	G4-EC6
	<i>Indirect economic impact</i>	
	Development and impact of infrastructure investments and services supported	G4-EC7
	Significant indirect economic impacts, including the extent of impacts	G4-EC8
	<i>Procurement practices</i>	
	Proportion of spending on local suppliers at significant locations of operation	G4-EC9
Category: ENVIRONMENTAL		
	<i>Materials</i>	
	Materials used by weight or volume	G4-EN1
	Percentage of materials used that are recycled input materials	G4-EN2
	<i>Energy</i>	
	Energy consumption within the organization	G4-EN3
	Energy consumption outside of the organization	G4-EN4
	Energy intensity	G4-EN5
	Reduction of energy consumption	G4-EN6
	Reductions in energy requirements of products and services	G4-EN7
	<i>Water</i>	

Total water withdrawal by source	G4-EN8
Water sources significantly affected by withdrawal of water	G4-EN9
Percentage and total volume of water recycled and reused	G4-EN10
<i>Biodiversity</i>	
Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	G4-EN11
Description of significant impacts of activities, products, and services on	G4-EN12

biodiversity in protected areas and areas of high biodiversity value outside protected areas	
Habitats protected or restored	G4-EN13
Total number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk	G4-EN14
<i>Emissions</i>	
Direct greenhouse gas (GHG) emissions (Scope 1)	G4-EN15
Energy indirect greenhouse gas (GHG) emissions (Scope 2)	G4-EN16
Other indirect greenhouse gas (GHG) emissions (Scope 3)	G4-EN17
Greenhouse gas (GHG) emissions intensity	G4-EN18
Reduction of greenhouse gas (GHG) emissions	G4-EN19
Emissions of ozone-depleting substances (ODS)	G4-EN20
NOX, SOX, and other significant air emissions	G4-EN21
<i>Effluents and waste</i>	
Total water discharge by quality and destination	G4-EN22
Total weight of waste by type and disposal method	G4-EN23

	Total number and volume of significant spills	G4-EN24
	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally	G4-EN25
	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the organization's discharges of water and runoff	G4-EN26
	<i>Products and services</i>	
	Extent of impact mitigation of environmental impacts of products and services	G4-EN27
	Percentage of products sold and their packaging materials that are reclaimed by category	G4-EN28
	<i>Compliance</i>	
	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	G4-EN29
	<i>Transport</i>	
	Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting members of the workforce	G4-EN30
	<i>Overall</i>	
	Total environmental protection expenditures and investments by type	G4-EN31
	<i>Supplier environmental assessment,</i>	
	Percentage of new suppliers that were screened using environmental criteria	G4-EN32

Significant actual and potential negative environmental impacts in the supply chain and actions taken	G4-EN33
<i>Environmental grievance mechanisms</i>	
Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms	G4-EN34
Category: SOCIAL	
– Sub-Category: Labor Practices and Decent Work	
<i>Employment</i>	
Total number and rates of new employee hires and employee turnover by age group, gender, and region	G4-LA1
Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation	G4-LA2
Return to work and retention rates after parental leave, by gender	G4-LA3
<i>Labor/management relations</i>	
Minimum notice periods regarding operational changes, including whether these are specified in collective agreements	G4-LA4
<i>Occupational health and safety</i>	
Percentage of total workforce represented in formal joint management–worker health and safety committees that help monitor and advise on occupational health and safety programs	G4-LA5
Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	G4-LA6
Workers with high incidence or high risk of diseases related to their occupation	G4-LA7

	Health and safety topics covered in formal agreements with trade unions	G4-LA8
	<i>Training and education</i>	
	Average hours of training per year per employee by gender, and by employee category	G4-LA9
	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	G4-LA10
	Percentage of employees receiving regular performance and career development reviews, by gender and by employee category	G4-LA11
	<i>Diversity and equal opportunity</i>	
	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	G4-LA12
	<i>Equal remuneration for women and men</i>	
	Ratio of basic salary and remuneration of women to men by employee category,	G4-LA13

	by significant locations of operation	
	<i>Supplier assessment for labor practices</i>	
	Percentage of new suppliers that were screened using labor practices criteria	G4-LA14
	Significant actual and potential negative impacts for labor practices in the supply chain and actions taken	G4-LA15
	<i>Labor practices grievance mechanisms</i>	
	Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms	G4-LA16
	– Sub-Category: Human Rights	

	<i>Investment</i>	
	Total number and percentage of significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	G4-HR1
	Total hours of employee training on human rights policies or procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained	G4-HR2
	<i>Non-discrimination</i>	
	Total number of incidents of discrimination and corrective actions taken	G4-HR3
	<i>Freedom of Association and Collective Bargaining</i>	
	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights	G4-HR4
	<i>Child Labor</i>	
	Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor	G4-HR5
	<i>Forced or Compulsory Labor</i>	
	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor	G4-HR6
	<i>Security Practices</i>	
	Percentage of security personnel trained in the organization's human rights policies or procedures that are relevant to operations	G4-HR7
	<i>Indigenous Rights</i>	

Total number of incidents of violations involving rights of indigenous peoples and actions taken	G4-HR8
<i>Assessment</i>	
Total number and percentage of operations that have been subject to human rights reviews or impact assessments	G4-HR9

<i>Supplier Human Rights Assessment</i>	
Percentage of new suppliers that were screened using human rights criteria	G4-HR10
Significant actual and potential negative human rights impacts in the supply chain and actions taken	G4-HR11
<i>Human Rights Grievance Mechanisms</i>	
Number of grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms	G4-HR12
– Sub-Category: Society	
<i>Local communities</i>	
Percentage of operations with implemented local community engagement, impact assessments, and development programs	G4-SO1
Operations with significant actual or potential negative impacts on local communities	G4-SO2
<i>Anti-corruption</i>	
Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	G4-SO3
Communication and training on anti-corruption policies and procedures	G4-SO4

	Confirmed incidents of corruption and actions taken	G4-SO5
	<i>Public policy</i>	
	Total value of political contributions by country and recipient/beneficiary	G4-SO6
	<i>Anti-competitive Behavior</i>	
	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	G4-SO7
	<i>Compliance</i>	
	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	G4-SO8
	<i>Supplier Assessment for Impacts on Society</i>	
	Percentage of new suppliers that were screened using criteria for impacts on society	G4-SO9
	Significant actual and potential negative impacts on society in the supply chain and actions taken	G4-SO10
	<i>Grievance Mechanisms for impacts on Society</i>	
	Number of grievances about impacts on society filed, addressed, and resolved through formal grievance mechanisms	G4-SO11
	– Sub-Category: Product Responsibility	
	<i>Customer Health and Safety</i>	
	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement	G4-PR1
	Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services during their life cycle, by type of outcomes	G4-PR2

	<i>Product and Service Labeling</i>	
	Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant product and service categories subject to such information requirements	G4-PR3
	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes	G4-PR4
	Results of surveys measuring customer satisfaction	G4-PR5
	<i>Marketing Communications</i>	
	Sale of banned or disputed products	G4-PR6
	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship, by type of outcomes	G4-PR7
	<i>Customer Privacy</i>	
	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	G4-PR8
	<i>Compliance</i>	
	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	G4-PR9

Source: Researcher's Compilations from GRI-G4 Implementation Manual (2015d, p.66-

Appendix II

Years	Code	RETURN ON ASSET	RETURN ON EQUITY	RETURN ON CAPITAL EMPLOYED	ENVIRONMENTAL REPORTING	ECONOMIC REPORTING	SOCIAL REPORTING
2015	1	19.5	31.2	3.12	50	64	34
2016	1	7.9	46.8	6.46	50	50	65
2017	1	14.3	6.25	4.23	26	18	33
2018	1	3	8	0.69	33	50	40
2019	1	21	63	22.3	52	50	38
2020	1	248	24.7	1.79	54	50	34
2021	1	10.5	15.3	12.3	52	75	36
2022	1	13.1	22.7	-0.59	50	50	50
2023	1	13.1	21.6	-0.59	40	50	60
2015	2	2	3	18	60	50	33
2016	2	4	10	10	31	42	52
2017	2	15	23	12	21	23	32
2018	2	19	23	7	19	18	58
2019	2	8	11	16	50	40	22
2020	2	7.2	5	4.7	10	34	70
2021	2	3.6	3.9	4.5	60	50	40
2022	2	1.4	1.5	2.1	25	55	35
2023	2	1.5	2.1	1.9	20	38	45

2015	3	0.64	1.34	1.2	52	75	40
2016	3	1.16	2.53	2.83	50	75	45
2017	3	3.3	6.79	8.64	32	50	52
2018	3	5.98	11.8	16.7	37	75	44
2019	3	4.06	8.62	12.3	65	75	40.1
2020	3	-5.42	-13.6	-15.3	37	25	25
2021	3	5.1	11.7	16.2	32	75	52
2022	3	9.67	22.2	32.1	37	75	54
2023	3	4.83	10.4	11.4	31	75	52
2015	4	4.9	9.36	11.1	75	50	64
2016	4	2.53	4.81	3.93	52	75	80
2017	4	5.68	10.2	9.38	50	50	54
2018	4	6.18	10.2	14.1	52	25	64
2019	4	4.07	7.42	8.9	75	50	52
2020	4	-6.98	-14.1	-13.6	40	75	64
2021	4	6.96	13.4	14.2	50	25	44
2022	4	15.6	27.4	31.9	44	75	50
2023	4	18.4	29.3	36.1	52	75	44
2015	5	1.76	2.98	3.14	75	50	52
2016	5	-0.19	-0.33	1.33	64	25	40
2017	5	3.62	6.15	6.38	50	50	25
2018	5	5.86	9.52	13.6	42	25	50
2019	5	22.2	36.4	4.36	50	52	75
2020	5	2.35	3.82	4.65	40	50	28
202	5	6.52	11.7	16.8	64	75	50

1							
202 2	5	13.7	25.3	35.8	75	50	40
202 3	5	8.18	13.4	18.7	52	25	25
201 5	6	2.63	4.81	11.56	25	50	25
201 6	6	-7.5	-13.81	71.6	75	45	32
201 7	6	11.08	19.4	58.66	50	60	20
201 8	6	5.73	9.43	19.64	70	35	25
201 9	6	9.6	15.27	39.7	40	50	10
202 0	6	8.8	15.04	39.3	20	25	15
202 1	6	4.31	7.22	15.76	35	50	8
202 2	6	2.98	12.96	11.25	45	35	16.7
202 3	6	2.67	9.47	5.46	15	50	41.7

Appendix III – Raw EViews Output

	RETURN_ ON_ASSE T	RETURN_ ON_EQUI TY	RETURN_ ON_CAPI TAL_EMP LOYED	ENVIRON MENTAL _REPORT ING	ECONOM IC_REPO RTING	SOCIAL_ REPORTI NG
Mean	11.91185	13.96722	14.18222	45.42593	50.16667	42.13889
Median	5.920000	10.70000	11.32500	50.00000	50.00000	40.90000
Maximum	248.0000	63.00000	71.60000	75.00000	75.00000	80.00000
Minimum	0.190000	0.330000	0.590000	10.00000	18.00000	8.000000
Std. Dev.	33.20436	11.73300	14.38773	16.49769	17.71871	16.10095
Skewness	6.836793	1.912356	2.000794	-0.021298	-0.034657	0.062048
Kurtosis	49.13462	7.749389	7.449833	2.464152	2.086169	2.680099
Jarque-Bera Probability	5209.582 0.000000	83.66650 0.000000	80.58086 0.000000	0.650133 0.722479	1.889755 0.388727	0.264908 0.875943
Sum	643.2400	754.2300	765.8400	2453.000	2709.000	2275.500
Sum Sq. Dev.	58434.08	7296.159	10971.37	14425.20	16639.50	13739.75
Observation s	54	54	54	54	54	54

Null Hypothesis: Unit root (common unit root process)

Series: D(RETURN_ON_ASSET)

Date: 11/20/24 Time: 08:14

Sample: 2015 2023

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett
kernel

Total (balanced) observations: 36

Cross-sections included: 6

Method	Stati stic	Prob .**
	-	
	4.47	0.0
Levin, Lin & Chu t*	624	000

** Probabilities are computed assuming asymptotic normality

Intermediate results on
D(RETURN_ON_ASSET)

Cross section	2nd Stage Coeffici ent	Varian ce of Reg	HAC of Dep.	Lag	Max Lag	Ban d- widt h	Obs
------------------	---------------------------------	------------------------	-------------------	-----	------------	------------------------	-----

	-	12370	4471.				
1	1.98332	.	6	1	1	6.0	6
	-	17.36	10.95				
2	1.18296	8	8	1	1	6.0	6
	-	4.357	10.12				
3	2.27580	3	1	1	1	1.0	6
	-	10.21	5.455				
4	0.49256	7	3	1	1	3.0	6
	-	68.05	37.42				
5	2.32780	5	6	1	1	6.0	6
	-	4.320	4.924				
6	1.86432	5	7	1	1	6.0	6

	Coefficient	t-Stat	SE Reg	mu*	sig*	Obs
	-			-		
	-			0.55	0.9	
Pooled	1.62549	-7.497	1.078	4	19	36

Null Hypothesis: Unit root (common unit root process)

Series: D(RETURN_ON_EQUITY)

Date: 11/20/24 Time: 08:25

Sample: 2015 2023

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Total (balanced) observations: 36

Cross-sections included: 6

Method	Statistic	Prob. **
	-	
	9.56	0.0
Levin, Lin & Chu t*	637	000

** Probabilities are computed assuming asymptotic normality

Intermediate results on
D(RETURN_ON_EQUITY)

Cross section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Max Lag	Max Lag	Bandwidth	Obs
	-	260.9	348.4				
1	2.24109	8	0	1	1	5.0	6
	-	5.629	18.52				
2	1.09462	1	7	1	1	6.0	6

	-	11.49	48.20				
3	2.52566	6	3	1	1	1.0	6
	-	23.53	25.11				
4	0.70784	2	0	1	1	2.0	6
	-	175.5	113.4				
5	2.44860	5	0	1	1	6.0	6
	-	2.921	14.97				
6	2.48329	1	4	1	1	6.0	6
	Coeffici		SE				
	ent	t-Stat	Reg	mu*	sig*		Obs
	-	-		-			
				0.55	0.9		
Pooled	1.69526	10.969	1.467	4	19		36

Null Hypothesis: Unit root (common unit root process)

Series:

D(RETURN_ON_CAPITAL_EMPLOYED)

Date: 11/20/24 Time: 08:27

Sample: 2015 2023

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Total (balanced) observations: 36

Cross-sections included: 6

Method	Statistic	Prob **
	-	
	14.7	0.0
Levin, Lin & Chu t*	735	000

** Probabilities are computed assuming asymptotic normality

Intermediate results on

D(RETURN_ON_CAPITAL_EMPLOYED)

Cross	2nd	Varian	HAC		Max	Ban	
section	Stage	ce	of			d-	
	Coeffici					widt	
	ent	of Reg	Dep.	Lag	Lag	h	Obs
	-	75.62	129.0				
1	2.40832	5	9	1	1	2.0	6
	-	16.78	39.46				
2	1.97386	9	9	1	1	2.0	6
	-	51.20	129.6				
3	2.90945	8	3	1	1	2.0	6
4	-	44.88	23.92	1	1	3.0	6

	1.07374	3	2				
	-	57.43	87.71				
5	2.46108	0	0	1	1	6.0	6
	-	17.82	512.0				
6	2.11246	8	0	1	1	6.0	6
	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
	-	-		-			
				0.55	0.9		
Pooled	2.12143	17.871	1.039	4	19		36

Null Hypothesis: Unit root (common unit root process)

Series:

ENVIRONMENTAL_REPORTING

Date: 11/20/24 Time: 08:29

Sample: 2015 2023

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Total (balanced) observations: 42

Cross-sections included: 6

Method	Statistic	Prob **
	-	
	2.96	0.0
Levin, Lin & Chu t*	844	015

** Probabilities are computed assuming asymptotic normality

Intermediate results on

ENVIRONMENTAL_REPORTING

Cross section	2nd Stage Coefficient	Varian ce of Reg	HAC of Dep.	Lag	Max Lag	Ban d-widht h	Obs
	-	62.94	30.00				
1	1.15232	3	8	1	1	7.0	7
	-	144.0	304.2				
2	2.25519	7	5	1	1	1.0	7
	-	92.42	35.49				
3	1.62499	4	3	1	1	5.0	7
	-	93.96	62.35				
4	1.46144	4	0	1	1	3.0	7
	-	97.52	157.8				
5	1.16104	5	6	1	1	3.0	7

6	-	262.5	334.1				
	0.57269	8	8	1	1	3.0	7
	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
Pooled	-			-			
	1.28916	-6.647	1.071	0.55	0.9		
				4	19		42

Null Hypothesis: Unit root (common unit root process)

Series: ECONOMIC_REPORTING

Date: 11/20/24 Time: 08:30

Sample: 2015 2023

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Total (balanced) observations: 42

Cross-sections included: 6

Method	Statistic	Prob. **
Levin, Lin & Chu t*	-2.33413	0.0098

** Probabilities are computed assuming asymptotic normality

Intermediate results on
ECONOMIC_REPORTING

Cross section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Bandwidth	Obs
1	-1.24316	219.45	80.461	1	1	7.0	7
2	-0.99715	110.40	155.29	1	1	2.0	7
3	-2.05882	210.08	111.61	1	1	6.0	7
4	-2.33333	238.10	138.11	1	1	6.0	7
5	-1.09008	256.29	305.53	1	1	1.0	7
6	-0.73732	54.050	53.125	1	1	3.0	7

	Coefficient	t-Stat	SE Reg	mu*	sig*	Obs
	-			-		
	-			0.55	0.9	
Pooled	1.35209	-6.089	1.082	4	19	42

Null Hypothesis: Unit root (common unit root process)

Series: SOCIAL_REPORTING

Date: 11/20/24 Time: 08:36

Sample: 2015 2023

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Total (balanced) observations: 42

Cross-sections included: 6

Method	Statistic	Prob **
	-	
	0.70	0.0
Levin, Lin & Chu t*	695	398

** Probabilities are computed assuming asymptotic normality

Intermediate results on SOCIAL_REPORTING

Cross section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Bandwidth	Obs
	-	82.58	114.4				
1	1.17985	6	8	1	1	3.0	7
	-	88.07	190.8				
2	2.34437	4	3	1	1	2.0	7
	-	79.28	20.49				
3	1.26031	9	4	1	1	7.0	7
	-	18.63	63.75				
4	0.42608	8	0	1	1	2.0	7
	-	211.0	75.05				
5	1.91112	1	3	1	1	7.0	7
	-	106.9	129.7				
6	1.10737	7	5	1	1	1.0	7

	Coefficient	t-Stat	SE Reg	mu*	sig*	Obs
	-			-		
	-			0.55	0.9	
Pooled	0.85395	-4.456	1.144	4	19	42

Variance Inflation Factors

Date: 11/20/24 Time: 09:38

Sample: 2015 2023

Included observations: 54

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
RETURN_ON_CAPITAL_EMPLOYED	0.130526	12.65598	1.334688
RETURN_ON_EQUITY	0.164463	12.73311	1.118368
ENVIRONMENTAL_REPORTING	0.800773	11.47456	1.085952
ECONOMIC_REPORTING	0.701794	10.20700	1.113401
SOCIAL_REPORTING	0.101126	10.33248	1.294991
C	399.8634	20.12465	NA

Panel Period Heteroskedasticity LR Test

Null hypothesis: Residuals are homoskedastic

Equation: UNTITLED

Specification: RETURN_ON_ASSET

RETURN_ON_CAPITAL_EMPLOYED

RETURN_ON_EQUITY ENVIRONMENTAL_REPORTING

Panel Cross-section Heteroskedasticity LR Test

Null hypothesis: Residuals are homoskedastic

Equation: UNTITLED

Specification: RETURN_ON_ASSET

ENVIRONMENTAL_REPORTING

ECONOMIC_REPORTING SOCIAL_REPORTING C

	Value	df	Probability
Likelihood ratio	162.66	21	0.0000

LR test summary:

	Value	df
Restricted LogL	265.068	1
	1	50

	-	
	183.737	
Unrestricted LogL	0	50

Unrestricted Test Equation:

Dependent Variable: RETURN_ON_ASSET

Method: Panel EGLS (Cross-section weights)

Date: 11/20/24 Time: 09:51

Sample: 2015 2023

Periods included: 9

Cross-sections included: 6

Total panel (balanced) observations: 54

Iterate weights to convergence

Convergence achieved after 10 weight iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
	-			
ENVIRONMENTAL_REPORTING	0.005374	0.038180	-0.140759	0.8886
	-			
ECONOMIC_REPORTING	0.043556	0.036383	1.197174	0.2369
	0.025337			
SOCIAL_REPORTING	0.0425877	0.042587	0.594944	0.5546
	7.35499			
C	7	2.548705	2.885778	0.0057

Weighted Statistics

R-squared	0.029999	Mean dependent var	43.15499
	-		
Adjusted R-squared	0.028201	S.D. dependent var	35.80497
	34.7646	Akaike info criterion	6.953223
S.E. of regression	9		7.10055
	60429.1		
Sum squared resid	9	Schwarz criterion	5
	-		
Log likelihood	183.7370	Hannan-Quinn criter.	7.010043
	0.515446	Durbin-Watson stat	1.369049
F-statistic	6		
	0.67353		
Prob(F-statistic)	4		

Unweighted Statistics

	-		
	0.03414	Mean dependent	11.9118
R-squared	3	var	5
	60429.2	Durbin-Watson	1.99628
Sum squared resid	2	stat	2

Panel Cross-section Heteroskedasticity LR Test

Null hypothesis: Residuals are homoskedastic

Equation: UNTITLED

Specification: RETURN_ON_EQUITY

ENVIRONMENTAL_REPORTING

ECONOMIC_REPORTING SOCIAL_REPORTING C

	Value	df	Probability
	28.683		
Likelihood ratio	40	6	0.0001

LR test summary:

	Value	df
	-	
	208.544	
Restricted LogL	5	50
	-	
	194.202	
Unrestricted LogL	8	50

Unrestricted Test Equation:

Dependent Variable: RETURN_ON_EQUITY

Method: Panel EGLS (Cross-section weights)

Date: 11/20/24 Time: 09:52

Sample: 2015 2023

Periods included: 9

Cross-sections included: 6

Total panel (balanced) observations: 54

Iterate weights to convergence

Convergence achieved after 8 weight iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENVIRONMENTAL_REPORTING	0.012943	0.057064	0.226818	0.8215
ECONOMIC_REPORTING	0.015148	0.063470	-0.238661	0.8123
SOCIAL_REPORTING	0.004298	0.062201	0.069106	0.9452

C	11.6784	5	3.925650	2.974908	0.0045
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Weighted Statistics					
R-squared	0.00194	Mean dependent		18.5793	
	0	var		0	
Adjusted R-squared	-				
	0.05794			13.3150	
S.E. of regression	4	S.D. dependent var		0	
	12.3087	Akaike info		7.34084	
Sum squared resid	0	criterion		4	
	7575.20			7.48817	
Log likelihood	7	Schwarz criterion		6	
	-				
F-statistic	194.202	Hannan-Quinn		7.39766	
	8	criter.		4	
Prob(F-statistic)	0.03239	Durbin-Watson		1.41116	
	7	stat		5	
	0.99206				

Unweighted Statistics					
R-squared	-				
	0.03824	Mean dependent		13.9672	
Sum squared resid	8	var		2	
	7575.22	Durbin-Watson		1.47022	
	1	stat		6	

Panel Cross-section Heteroskedasticity LR Test

Null hypothesis: Residuals are homoskedastic

Equation: UNTITLED

Specification: RETURN_ON_CAPITAL_EMPLOYED

ENVIRONMENTAL_R

REPORTING ECONOMIC_REPORTING SOCIAL_REPORTING

C

	Value	df	Probability
Likelihood ratio	25.799	13	0.0002

LR test summary:

	Value	df
Restricted LogL	214.784	6
	-	50

	-	
	201.885	
Unrestricted LogL	0	50

Unrestricted Test Equation:

Dependent Variable: RETURN_ON_CAPITAL_EMPLOYED

Method: Panel EGLS (Cross-section weights)

Date: 11/20/24 Time: 09:53

Sample: 2015 2023

Periods included: 9

Cross-sections included: 6

Total panel (balanced) observations: 54

Iterate weights to convergence

Convergence achieved after 11 weight iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENVIRONMENTAL_REPORTING	0.108472	0.076669	1.414806	0.1633
ECONOMIC_REPORTING	0.039972	0.076164	0.524819	0.6020
	-			
	0.114285			
SOCIAL_REPORTING	0.114285	0.087223	1.310267	0.1961
	8.64180			
C	6	5.572086	1.550910	0.1272

Weighted Statistics

	0.117386	Mean dependent var	17.44037
R-squared	0.064430		14.0704
Adjusted R-squared	0	S.D. dependent var	6
	14.3975	Akaike info criterion	7.625370
S.E. of regression	1		0
	10364.4		7.77270
Sum squared resid	1	Schwarz criterion	2
	-		
	201.8850	Hannan-Quinn criter.	7.682190
Log likelihood	0		0
	2.216643	Durbin-Watson stat	1.090128
F-statistic	3		
	0.097693		
Prob(F-statistic)	3		

Unweighted Statistics

R-squared	0.05532	Mean dependent	14.1822
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	0	var	2
	10364.4	Durbin-Watson	1.01650
Sum squared resid	3	stat	7

Date: 11/20/24 Time: 08:18

Sample (adjusted): 2018 2023

Included observations: 36 after adjustments

Trend assumption: Linear deterministic trend

Series: RETURN_ON_ASSET RETURN_ON_EQUITY RETURN_ON_CAPITAL EMPLOYED
ENVIRONMENTAL_REPORTING ECONOMIC_REPORTING SOCIAL_REPORTING

Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.694655	103.4295	95.75366	0.0133
At most 1	0.554595	60.72226	69.81889	0.2139
At most 2	0.390994	31.60649	47.85613	0.6337
At most 3	0.259252	13.75310	29.79707	0.8542
At most 4	0.049190	2.949702	15.49471	0.9691
At most 5	0.031004	1.133816	3.841466	0.2870

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.694655	42.70727	40.07757	0.0247
At most 1	0.554595	29.11577	33.87687	0.1666
At most 2	0.390994	17.85339	27.58434	0.5074
At most 3	0.259252	10.80340	21.13162	0.6669
At most 4	0.049190	1.815886	14.26460	0.9943
At most 5	0.031004	1.133816	3.841466	0.2870

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by $b'S11*b=I$):

RETURN_ ON_ASSE T	RETURN_ ON_EQUIT Y	RETURN_ ON_CAPIT AL_EMPL OYED	ENVIRON MENTAL_ REPORTIN G	ECONOMI C_REPORT ING	SOCIAL_R EPORTING
-0.055532	0.147096	-0.060975	0.025960	0.044287	0.020507
-0.040261	0.108231	-0.009844	-0.022670	-0.031058	-0.027827
0.041949	-0.018998	0.054005	-0.101958	0.003477	0.073287
-0.002332	0.025438	-0.129890	0.030892	-0.001840	-0.080585
0.008341	-0.144316	-0.014138	-0.038530	-0.021401	0.015252
-0.020369	0.017321	-0.028567	-0.051281	0.101061	-0.053798

Unrestricted Adjustment Coefficients (alpha):

D(RETUR N_ON_AS SET)	11.37372	19.11877	-3.089376	1.770838	0.498171	0.216440
D(RETUR N_ON_EQ UITY)	0.709769	-1.073058	-2.566322	0.104703	1.635445	0.184921
D(RETUR N_ON_CA PITAL_EM PLOYED)	5.488091	-3.022691	-0.101802	0.461126	0.363337	-0.304647
D(ENVIRO NMENTAL _REPORTI NG)	3.780487	3.648748	6.222486	-0.578167	0.803781	0.751025
D(ECONO MIC_REP ORTING)	0.590347	5.123759	2.673893	1.734082	1.649543	-2.174505
D(SOCIAL _REPORTI NG)	-6.633901	0.544980	-1.520925	5.414611	0.845957	-0.116263

1 Cointegrating
Equation(s):

Log
likelihood -831.8821

Normalized cointegrating coefficients (standard error in parentheses)

RETURN_ ON_ASSE T	RETURN_ ON_EQUIT Y	RETURN_ ON_CAPIT AL_EMPL OYED	ENVIRON MENTAL_ REPORTIN G	ECONOMI C_REPORT ING	SOCIAL_R EPORTING
1.000000	-2.648852 (0.38934)	1.098015 (0.34094)	-0.467481 (0.30300)	-0.797509 (0.27942)	-0.369287 (0.29374)

Adjustment coefficients (standard error in parentheses)

D(RETUR -0.631606

N_ON_ASSET)	(0.32618)
D(RETURN_ON_EQUITY)	-0.039415 (0.10230)
D(RETURN_ON_CAPITAL_EMPLOYED)	-0.304765 (0.07127)
D(ENVIRONMENTAL_REPORTING)	-0.209938 (0.15066)
D(ECONOMIC_REPORTING)	-0.032783 (0.19994)
D(SOCIAL_REPORTING)	0.368394 (0.14686)

2 Cointegrating Equation(s):	Log likelihood	-817.3242
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Normalized cointegrating coefficients (standard error in parentheses)

RETURN_ON_ASSET	RETURN_ON_EQUITY	RETURN_ON_CAPITAL_EMPLOYED	ENVIRONMENTAL_REPORTING	ECONOMIC_REPORTING	SOCIAL_REPORTING
1.000000	0.000000	58.52576 (48.5022)	-69.80831 (43.2734)	-106.3617 (39.8635)	-71.71999 (41.3331)
0.000000	1.000000	21.68024 (18.2497)	-26.17769 (16.2823)	-39.85279 (14.9992)	-26.93647 (15.5522)

Adjustment coefficients (standard error in parentheses)

D(RETURN_ON_ASSET)	-1.401348 (0.29008)	3.742267 (0.77234)
D(RETURN_ON_EQUITY)	0.003788 (0.12538)	-0.011734 (0.33382)
D(RETURN_ON_CAPITAL_EMPLOYED)	-0.183068	0.480129

N_ON_CA PITAL_EM PLOYED)	(0.07613)	(0.20269)
D(ENVIRO NMENTAL _REPORTI NG)	-0.356841 (0.17828)	0.951001 (0.47466)
D(ECONO MIC_REP ORTING)	-0.239071 (0.23532)	0.641386 (0.62654)
D(SOCIAL _REPORTI NG)	0.346453 (0.18122)	-0.916838 (0.48250)

3 Cointegrating Equation(s):	Log likelihood	-808.3975
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Normalized cointegrating coefficients (standard error in parentheses)

RETURN_ ON_ASSE T	RETURN_ ON_EQUIT Y	RETURN_ ON_CAPIT AL_EMPL OYED	ENVIRON MENTAL_ REPORTIN G	ECONOMI C_REPORT ING	SOCIAL_R EPORTING
1.000000	0.000000	0.000000	-1.282232 (1.32838)	2.737110 (1.27758)	3.897307 (0.98826)
0.000000	1.000000	0.000000	-0.792942 (0.37064)	0.561675 (0.35646)	1.075153 (0.27574)
0.000000	0.000000	1.000000	-1.170870 (0.72204)	-1.864115 (0.69443)	-1.292035 (0.53717)

Adjustment coefficients (standard error in parentheses)

D(RETUR N_ON_AS SET)	-1.530946 (0.33588)	3.800960 (0.76703)	-1.048560 (0.34275)
D(RETUR N_ON_EQ UITY)	-0.103868 (0.14023)	0.037022 (0.32024)	-0.171310 (0.14310)
D(RETUR N_ON_CA PITAL_EM PLOYED)	-0.187339 (0.08922)	0.482063 (0.20375)	-0.310379 (0.09104)
D(ENVIRO NMENTAL	-0.095811	0.832785	0.069614

REPORTING)			
	(0.17970)	(0.41037)	(0.18337)
D(ECONOMIC REPORTING)	-0.126903 (0.27201)	0.590586 (0.62117)	0.057970 (0.27757)
D(SOCIAL REPORTING)	0.282651 (0.21082)	-0.887943 (0.48144)	0.316999 (0.21513)

4 Cointegrating Equation(s):	Log likelihood	-802.9958
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Normalized cointegrating coefficients (standard error in parentheses)

RETURN_ON_ASSET	RETURN_ON_EQUITY	RETURN_ON_CAPITAL_EMPLOYED	ENVIRONMENTAL_REPORTING	ECONOMIC_REPORTING	SOCIAL_REPORTING
1.000000	0.000000	0.000000	0.000000	5.842152 (2.11196)	7.184718 (1.78936)
0.000000	1.000000	0.000000	0.000000	2.481855 (0.86544)	3.108112 (0.73324)
0.000000	0.000000	1.000000	0.000000	0.971254 (0.50582)	1.709865 (0.42856)
0.000000	0.000000	0.000000	1.000000	2.421591 (0.86666)	2.563819 (0.73428)

Adjustment coefficients (standard error in parentheses)

D(RETURN_ON_ASSET)	-1.535075 (0.33465)	3.846006 (0.77119)	-1.278574 (0.63918)	0.231522 (0.46585)
D(RETURN_ON_EQUITY)	-0.104112 (0.14028)	0.039686 (0.32327)	-0.184910 (0.26793)	0.307643 (0.19528)
D(RETURN_ON_CAPITAL_EMPLOYED)	-0.188414 (0.08891)	0.493793 (0.20488)	-0.370275 (0.16981)	0.235622 (0.12376)
D(ENVIRONMENTAL_REPORTING)	-0.094463 (0.17950)	0.818077 (0.41366)	0.144712 (0.34285)	-0.636867 (0.24988)
D(ECONOMIC_REPORTING)	-0.130947	0.634697	-0.167270	-0.319887

MIC_REPORTING)	(0.27049)	(0.62335)	(0.51664)	(0.37654)
D(SOCIAL_REPORTING)	0.270023 (0.18937)	-0.750206 (0.43640)	-0.386305 (0.36170)	0.137766 (0.26361)

5 Cointegrating Equation(s): Log likelihood -802.0879

Normalized cointegrating coefficients (standard error in parentheses)

RETURN_ON_ASSET	RETURN_ON_EQUITY	RETURN_ON_CAPITAL_EMPLOYED	ENVIRONMENTAL_REPORTING	ECONOMIC_REPORTING	SOCIAL_REPORTING
1.000000	0.000000	0.000000	0.000000	0.000000	-0.605776 (1.20797)
0.000000	1.000000	0.000000	0.000000	0.000000	-0.201435 (0.49489)
0.000000	0.000000	1.000000	0.000000	0.000000	0.414701 (0.29683)
0.000000	0.000000	0.000000	1.000000	0.000000	-0.665366 (0.51280)
0.000000	0.000000	0.000000	0.000000	1.000000	1.333497 (0.36539)

Adjustment coefficients (standard error in parentheses)

D(RETURN_ON_ASSET)	-1.530920 (0.33634)	3.774112 (0.97705)	-1.285618 (0.64167)	0.212327 (0.49250)	-0.114746 (0.24250)
D(RETURN_ON_EQUITY)	-0.090471 (0.13818)	-0.196335 (0.40142)	-0.208032 (0.26363)	0.244630 (0.20234)	0.020645 (0.09963)
D(RETURN_ON_CAPITAL_EMPLOYED)	-0.185383 (0.08916)	0.441358 (0.25902)	-0.375411 (0.17011)	0.221623 (0.13056)	0.327954 (0.06429)
D(ENVIRONMENTAL_REPORTING)	-0.087758 (0.17993)	0.702079 (0.52270)	0.133348 (0.34328)	-0.667837 (0.26348)	0.059601 (0.12973)
D(ECONOMIC_REPORTING)	-0.117188	0.396642	-0.190592	-0.383444	-0.162186

	(0.27045)	(0.78566)	(0.51598)	(0.39603)	(0.19500)
D(SOCIAL _REPORTI NG)	0.277079 (0.18983)	-0.872291 (0.55144)	-0.398265 (0.36216)	0.105172 (0.27796)	-0.344079 (0.13686)

Covariance Analysis: Ordinary

Date: 11/20/24 Time: 08:06

Sample: 2015 2023

Included observations: 54

Correlation						
Probability	RETURN_ ON_ASSE T	RETURN_ ON_EQUI TY	RETURN_ ON_CAPI TAL_EMP LOYED	ENVIRON MENTAL_ REPORT ING	ECONOM IC_REPO RTING	SOCIAL_ REPORTI NG
RETURN_ON_ ASSET	1.000000 -----					
RETURN_ON_ EQUITY	0.259476 0.0581	1.000000 -----				
RETURN_ON_ CAPITAL_EM PLOYED	-0.073711 0.5963	0.239089 0.0817	1.000000 -----			
ENVIRONME NTAL_REPOR TING	0.063726 0.6471	0.066311 0.6338	0.202454 0.1421	1.000000 -----		
ECONOMIC_R EPORTING	-0.009507 0.9456	0.065440 0.6383	0.070304 0.6134	0.195972 0.1555	1.000000 -----	
SOCIAL_REP ORTING	-0.052360 0.7069	0.124275 0.3706	-0.344885 0.0107	0.039906 0.7745	0.229278 0.0954	1.000000 -----

Pedroni Residual Cointegration Test

Series: RETURN_ON_ASSET

RETURN_ON_EQUITY

RETURN_ON_CAPITAL_EMPLOYED
ENVIRONMENTAL_REPORTING
ECONOMIC_REPORTING
SOCIAL_REPORTING

Date: 11/20/24 Time: 07:42

Sample: 2015 2023

Included observations: 54

Cross-sections included: 6 in non-parametric (PP) test; 0 (6 dropped)

parametric (ADF) test

Null Hypothesis: No cointegration

Trend assumption: No deterministic trend

User-specified lag length: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Alternative hypothesis: common AR coeffs. (within-dimension)

	Statistic	Prob.	Weighted Statistic	Prob.
	-		-	
	2.84454		1.99179	0.976
Panel v-Statistic	8	0.9978	7	8
	3.00640		2.89865	0.998
Panel rho-Statistic	8	0.9987	7	1
	-		-	
	3.61174		1.09080	0.862
Panel PP-Statistic	0	0.0002	0	3
Panel ADF-Statistic	NA	NA	NA	NA

Alternative hypothesis: individual AR coeffs. (between-dimension)

	Statistic	Prob.
	3.83427	
Group rho-Statistic	5	0.9999
	1.03086	
Group PP-Statistic	0	0.8487
Group ADF-Statistic	NA	NA

Cross section specific results

Phillips-Peron results (non-parametric)

Cross ID	AR(1)	Variance	HAC	Bandwidth	Obs
	-	1879.49	557.365		
1	0.207	6	4	7.00	8

	-	2.32631	2.32631		
2	0.009	6	6	0.00	8
		0.05708	0.06715		
3	0.446	6	6	2.00	8
		0.12850	0.12850		
4	0.215	5	5	0.00	8
	-	0.01631	0.02483		
5	0.955	2	2	2.00	8
		1.29360	1.21671		
6	0.258	1	8	2.00	8

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.130903	3	0.9879

Dependent Variable: RETURN_ON_ASSET

Method: Panel Least Squares

Date: 11/20/24 Time: 00:42

Sample: 2015 2023

Periods included: 9

Cross-sections included: 6

Total panel (balanced) observations: 54

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENVIRONMENTAL_REPORTING	0.130477	0.330902	0.394308	0.052
ECONOMIC_REPORTING	0.130430.24175	0.311789	-0.041831	0.0068
SOCIAL_REPORTING	9	0.387542	-0.623828	0.5359
C	16.82657	25.44464	0.661301	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.148281	Mean dependent var	11.91185
Adjusted R-squared	0.313600	S.D. dependent var	33.20436
S.E. of regression	0	Akaike info	9.99738

	9	criterion	2
	49769.4		10.3288
Sum squared resid	3	Schwarz criterion	8
	-		
	260.929	Hannan-Quinn	10.1252
Log likelihood	3	criter.	3
	5.97929		2.05844
F-statistic	0	Durbin-Watson stat	9
	0.00444		
Prob(F-statistic)	12		

Dependent Variable: RETURN_ON_ASSET
Method: Panel EGLS (Cross-section random effects)
Date: 11/20/24 Time: 00:43
Sample: 2015 2023
Periods included: 9
Cross-sections included: 6
Total panel (balanced) observations: 54
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENVIRONMENTAL_REPORTING	0.137650	0.313669	0.438838	0.0627
ECONOMIC_REPORTING	0.014797	0.298024	-0.049651	0.0066
SOCIAL_REPORTING	0.186833	0.349965	-0.533862	0.5958
C	14.27425	24.21285	0.589532	0.0000

Effects Specification		S.D.	Rho
Cross-section random		17.72861	0.2213
Idiosyncratic random		33.25639	0.7787

Weighted Statistics			
R-squared	0.011274	Mean dependent var	6.315351
Adjusted R-squared	0.480049	S.D. dependent var	31.53930
S.E. of regression	32.28813	Sum squared resid	52126.18
F-statistic	0.190044	Durbin-Watson stat	2.038618

Prob(F-statistic)	0.02693		
	Unweighted Statistics		
R-squared	0.00578	Mean dependent	11.9118
	5	var	5
Sum squared resid	58096.0		2.09830
	6	Durbin-Watson stat	4

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	9.982464	3	0.009

Dependent Variable: RETURN_ON_EQUITY

Method: Panel Least Squares

Date: 11/20/24 Time: 00:44

Sample: 2015 2023

Periods included: 9

Cross-sections included: 6

Total panel (balanced) observations: 54

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENVIRONMENTAL_REPORTING	0.017677	0.108152	0.163447	0.8709
ECONOMIC_REPORTING	0.031371	0.101905	0.307850	0.7596
SOCIAL_REPORTING	0.110055	0.126664	0.868878	0.3895
C	6.952821	8.316294	0.836048	0.4075

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.27132	Mean dependent	13.9672
-----------	---------	----------------	---------

	3	var	2
	0.14178		11.7330
Adjusted R-squared	0	S.D. dependent var	0
	10.8694	Akaike info	7.76080
S.E. of regression	7	criterion	5
	5316.54		8.09230
Sum squared resid	6	Schwarz criterion	3
	-		
	200.541	Hannan-Quinn	7.88865
Log likelihood	7	criter.	1
	2.99446		1.92732
F-statistic	5	Durbin-Watson stat	9
	0.04626		
Prob(F-statistic)	3		

Dependent Variable: RETURN_ON_EQUITY
 Method: Panel EGLS (Cross-section random effects)
 Date: 11/20/24 Time: 00:45
 Sample: 2015 2023
 Periods included: 9
 Cross-sections included: 6
 Total panel (balanced) observations: 54
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENVIRONMENTAL_REPORTING	0.020879	0.105312	0.198254	0.8436
ECONOMIC_REPORTING	0.028988	0.099697	0.290759	0.7724
	0.10486			
SOCIAL_REPORTING	0.120312	0.0871604	0.3876	
	7.14570			
C	8.775116	0.814315	0.4193	

Effects Specification		S.D.	Rho
Cross-section random		9.250416	0.4200
Idiosyncratic random		10.86947	0.5800

Weighted Statistics			
	0.02078	Mean dependent	5.09382
R-squared	0	var	8
	0.37907		10.3528
Adjusted R-squared	4	S.D. dependent var	5
	10.5475		5562.58
S.E. of regression	9	Sum squared resid	0

F-statistic	0.35367 5	Durbin-Watson stat	1.84457 8
Prob(F-statistic)	0.78666 1		

Unweighted Statistics			
R-squared	0.01817 4	Mean dependent var	13.9672 2
Sum squared resid	7163.55 7	Durbin-Watson stat	1.43233 5

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.349766	3	0.0174

Dependent Variable: RETURN_ON_CAPITAL_EMPLOYED

Method: Panel Least Squares

Date: 11/20/24 Time: 00:47

Sample: 2015 2023

Periods included: 9

Cross-sections included: 6

Total panel (balanced) observations: 54

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENVIRONMENTAL_REPORTING	0.198071	0.122421	1.617948	0.1127
ECONOMIC_REPORTING	0.079337	0.115350	0.687798	0.0051
SOCIAL_REPORTING	0.149338	0.143375	-1.041584	0.3032
C	7.497505	9.413534	0.796460	0.000

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.37911	Mean dependent	14.1822

	0	var	2
	0.26873		14.3877
Adjusted R-squared	0	S.D. dependent var	3
	12.3035	Akaike info	8.00866
S.E. of regression	8	criterion	9
	6812.01		8.34016
Sum squared resid	1	Schwarz criterion	6
	-		
	207.234	Hannan-Quinn	8.13651
Log likelihood	1	criter.	5
	3.43457		1.97705
F-statistic	6	Durbin-Watson stat	8
	0.00363		
Prob(F-statistic)	7		

Dependent Variable: RETURN_ON_CAPITAL_EMPLOYED

Method: Panel EGLS (Cross-section random effects)

Date: 11/20/24 Time: 00:47

Sample: 2015 2023

Periods included: 9

Cross-sections included: 6

Total panel (balanced) observations: 54

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENVIRONMENTAL_REPORTING	0.184661	0.117727	1.568551	0.1231
ECONOMIC_REPORTING	0.083040	0.111653	0.743731	0.4605
	-			
SOCIAL_REPORTING	0.208924	0.133000	-1.570865	0.1225
C	10.43183	9.385116	1.111530	0.2717

Effects Specification

	S.D.	Rho
Cross-section random	8.200429	0.3076
Idiosyncratic random	12.30358	0.6924

Weighted Statistics

R-squared	0.115372	Mean dependent var	6.343693
	0.062294	var	12.49425
Adjusted R-squared	4	S.D. dependent var	5

S.E. of regression	12.0988	Sum squared resid	7319.09
	4		2
F-statistic	2.17364	Durbin-Watson stat	1.51152
	2		9
Prob(F-statistic)	0.10274		
	3		

Unweighted Statistics			
R-squared	0.15785	Mean dependent var	14.1822
	6		2
Sum squared resid	9239.46	Durbin-Watson stat	1.19736
	5		5

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Bio-data

A. Personal Data

Full Name: Jones Michael BOO
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Phone Number: 07067213863
Date 15th June, 1986
Place of Birth: Toru-Ebeni
Nationality: Nigerian
Name of Next of Kin: GareneraAwayo
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B. Educational Background

Educational Institutions Attended with Dates and Qualification:

- i. **Primary Education: Community Primary School Toru-Ebeni**
 - Primary School Leaving Certificate 1998
- ii. **Secondary Education: Ogboin Grammar School Amatolo**
 - National Examinations Council School Certificate 2004
- iii. **Higher Education Institution:**
 - Niger Delta University Wilberforce Island Bayelsa State
Bachelor of Science (B.Sc) Accountancy 2008
 - Lead City University, Ibadan
Master of Science (M.Sc) Accounting In view

C. Working Experience with Dates: Federal Polytechnic Kaura Namoda Zamfara State
(NYSC) 2009-2010

D. Awards and Fellowships (if any): No

E. Membership of Academic Professional Bodies:

- Association of National Accountants of Nigeria (ANAN)

F. Publication if Any - None

(a) Published Journals/Articles

Seminal Papers Accepted For Publication: None

Seminal Papers Presented At Conference: None

Thesis/ Dissertation: None

Books/Monographs: None

Major Conference / Workshop Attended:

ANAN Annual Conference. International Conference Centre & Sheraton, Abuja Hotel
2022. Academic & Industry Edge, Department of Management and Accounting, Lead
City University, Ibadan Oyo State.

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2024

G. Notable Scholarly or Professional Accomplishment:

- Associate Member of Association of National Accountants of Nigeria (CNA)

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The University Compliance Certification

This is to certify that this thesis carried out by Jones Michael BOO with matric number **LCU/PG/002923** in the department of Management and Accounting, Faculty of Management & Social Sciences, Lead City University, Ibadan, is in Full compliance with the approved University format and style.

Signature

Date

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