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The Influence of ESG Practices, Corporate Governance and Green Innovation on Long-Term Organisational Performance of Indorama Eleme Petrochemicals Limited, Rivers State, Nigeria

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Abstract

This dissertation examines environmental, social and governance (ESG) practices, corporate governance and green innovation in relation to competitive advantage and perceived long-term organisational performance at Indorama Eleme Petrochemicals Limited, Rivers State, Nigeria. The study employs quantitative cross-sectional questionnaire design. A proposed accessible population of 60 employees across four functional departments was targeted using census enumeration. Submitted aggregate responses cover 58 respondents across 29 five-point Likert statements. Data were analysed descriptively using frequencies, percentages, weighted means and item-level standard deviations. Mean item scores were high for ESG practices (4.88), corporate governance (4.58), competitive advantage (4.54) and perceived organisational performance (4.60), but green innovation was lower (3.67), with substantial variation between innovation indicators. The departmental return represented 58 of the proposed 60 participants (96.7%), subject to confirmation of questionnaire distribution. The length-of-service category counts total 66 and cannot be treated as valid respondent counts without correction. Because only marginal item frequencies were supplied, respondent-level covariance, instrument reliability, correlations, regression and mediating effects are not identifiable; causal and hypothesis-testing claims are therefore withheld. The study contributes a contextual descriptive profile showing a marked gap between strongly favourable sustainability/governance perceptions and uneven green innovation implementation. Management is advised to prioritise targeted process and product innovation, monitor results through independently verified indicators, and sustain accountable governance. Future research should collect respondent-level records and longitudinal operational measures to test the specified explanatory model.

Keywords: *Environmental, Social and Governance (ESG) Practices, Corporate Governance, Green Innovation, Competitive Advantage, Organisational Performance, Sustainability Practices.*

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DEDICATION

This project is dedicated to the Almighty God for His guidance and provision throughout the period of this programme.

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Chapter one: Introduction

1.1 Background to the study

Sustainable business management increasingly concerns the integration of environmental protection, social responsibility, transparent oversight and innovation into decisions about production, investments and long-term survival. The strategic question is not merely whether a company publicly endorses sustainability, but whether distinctive capabilities are built that support operational continuity, market differentiation and resilience. Hart (1995) proposed that pollution prevention, product stewardship and sustainable development can become sources of competitive advantage when firms develop relevant resources and capabilities. Barney (1991) likewise explains why valuable and difficult-to-replicate organisational resources may support sustained advantage.

At the global level, the ESG literature has examined how sustainability policies relate to financial outcomes. Friede et al. (2015), synthesising a large body of empirical evidence, reported that most assessed studies found a non-negative ESG–financial-performance association. This evidence is broad rather than proof of a causal effect in any individual company. Eccles et al. (2014) found organisational and performance differences between matched US companies distinguished by their historical sustainability policies. Their findings suggest that governance structures and execution processes matter as much as stated commitments.

For African manufacturing organisations and Nigeria in particular, the transferability of findings from advanced markets remains an empirical question. Petrochemical producers combine capital-intensive technology, high energy requirements, process-safety risks, complex supply chains and relationships with host communities. Accordingly, environmental control, workforce welfare and supplier integrity should be evaluated alongside production efficiency and long-term financial resilience, without assuming that improvement in one dimension guarantees improvement in another.

Indorama Eleme Petrochemicals Limited (IEPL) is located within the Indorama complex in Eleme, Rivers State, and produces polyethylene and polypropylene products (Indorama Eleme Petrochemicals Limited, n.d.). The company describes production capabilities, quality consistency and competitive pricing in its public corporate profile. Separately, Indorama Corporation (n.d.) outlines a group-level ESG framework involving resource conservation, emissions, community relations and governance. Group-level representations must not be interpreted as measured IEPL-specific outcomes without local verification.

In the proposed study, ESG practices refer to the implementation of environmental and social responsibilities and ESG-related monitoring; corporate governance is separately specified in terms of oversight, transparency and accountability to prevent construct duplication. Green innovation concerns new or improved products and manufacturing processes that reduce environmental burdens. Competitive advantage captures perceived cost efficiency, market differentiation and customer value, while long-term organisational performance captures continuity, operational performance, resilience and sustainable financial prospects. The study is motivated by the need to examine these pathways together in a specific Nigerian petrochemical setting rather than presume they operate identically across industries.

1.2 Statement of the problem

Sustainability investment creates management trade-offs. Environmental controls, disclosure practices and redesigned processes can involve considerable initial costs, yet may also reduce waste, improve operating reliability and preserve commercial relationships. Existing research supports associations between sustainability and performance but has not settled the relative effect of each dimension in every context (Friede et al., 2015; Khan et al., 2016).

A conceptual gap arises because the governance component of ESG overlaps with independent corporate governance measures. Studies that include both without specifying distinct indicators risk multicollinearity and weak discriminant validity. A mechanism gap also exists: the existence of a relationship between responsible business practices and performance does not show whether competitive advantage explains that relationship.

The methodological gap addressed here is the need for a focused, multi-construct instrument incorporating separate ESG implementation, governance mechanisms, green innovation, competitive advantage and performance indices. The contextual gap is that evidence from foreign firms or broad multisector datasets cannot independently establish the relationships within IEPL. This dissertation therefore proposes direct and indirect tests rather than making unverified claims that the company is underperforming, improperly governed or environmentally non-compliant. The research problem is the lack of company-specific empirical evidence about whether and how these practices are associated with sustained organisational outcomes.

1.3 Research questions

1. To what extent are ESG practices associated with long-term organisational performance at IEPL?
2. How does corporate governance relate to long-term organisational performance at IEPL?

3. How does green innovation relate to long-term organisational performance at IEPL?

4. What is the relationship between ESG practices and competitive advantage at IEPL?

5. How does competitive advantage relate to long-term organisational performance at IEPL?

6. Does competitive advantage mediate the combined relationships of ESG practices, corporate governance and green innovation with long-term organisational performance?

1.4 Objectives of the study

The general objective is to examine the relationships of ESG practices, corporate governance and green innovation with long-term organisational performance at IEPL, including the mediating role of competitive advantage.

Specifically, the study seeks to: (1) assess ESG practices and performance; (2) examine corporate governance and performance; (3) assess green innovation and performance; (4) examine ESG practices and competitive advantage; (5) test competitive advantage and performance; and (6) assess mediation by competitive advantage in the relationships between the three explanatory constructs and organisational performance.

1.5 Statement of hypotheses

H01: ESG practices have no statistically significant relationship with long-term organisational performance at IEPL.

H02: Corporate governance has no statistically significant relationship with long-term organisational performance at IEPL.

H03: Green innovation has no statistically significant relationship with long-term organisational performance at IEPL.

H04: ESG practices have no statistically significant relationship with competitive advantage at IEPL.

H05: Competitive advantage has no statistically significant relationship with long-term organisational performance at IEPL.

H06: Competitive advantage does not significantly mediate the relationships between ESG practices, corporate governance and green innovation, respectively, and long-term organisational performance at IEPL.

H06 is an omnibus mediation hypothesis. Three distinct indirect effects will be estimated and reported, rather than conceal different mechanisms in a single coefficient.

1.6 Significance of the study

Practically, the study can support management evaluation of which sustainability initiatives are most closely related to commercial resilience, if associations are established. For policy and industry, the study may inform discussion of measurable environmental and social practices without purporting to replace official audits. Academically, the model differentiates ESG implementation from governance architecture and examines competitive advantage as a mechanism. Methodologically, it proposes explicit measures, statistical diagnostics and honest boundaries between employee perceptions and audited corporate outcomes. Host communities and industrial stakeholders may also benefit from attention to substantive environmental, safety and engagement practices.

1.7 Scope of the study

Subject scope: ESG implementation, corporate governance, green innovation, competitive advantage and perceived long-term organisational performance. Geographical and organisational scope: selected eligible staff within Indorama Eleme Petrochemicals Limited, Eleme, Rivers State, Nigeria. Population scope: a proposed accessible group of 60 staff across operations/production (32), engineering/innovation (12), health, safety and environment (HSE)/sustainability (8), and finance/governance/administration (8). These 60 are not asserted to constitute the company's total workforce; the departmental counts are proposed research allocations pending company confirmation. The cross-sectional survey is proposed for the 2026 study period; retrospective perceptions of performance are not substitutes for independently verified multi-year financial figures.

1.8 Operational definitions and acronyms

ESG: Environmental, social and governance considerations. For this research, ESG implementation scores assess environmental practices, social responsibility and ESG monitoring, excluding board-governance items used in the separate corporate governance construct.

Corporate governance: Mechanisms of management oversight, accountability, internal controls and transparent decision-making.

Green innovation: Product or process changes designed to reduce resource consumption, emissions or waste. Competitive advantage: Perceived ability to achieve relative cost efficiency, product differentiation, customer satisfaction and reliable market positioning.

Long-term organisational performance: Perceived persistence of operational effectiveness, resilience and financial sustainability, not a substitute for audited multi-year results.

IEPL: Indorama Eleme Petrochemicals Limited. DV: Dependent variable. IV: Independent variable. VIF: Variance inflation factor.

2.1 Conceptual framework

This section defines the constructs, develops the hypothesised relationships and distinguishes conceptual reasoning from company-specific evidence.

2.1.1 Dependent variable concept

Long-term organisational performance includes operational continuity, efficiency, financial sustainability, resilience and investment in future capabilities. This study measures perceived performance through six questionnaire items (OP1–OP6), rather than claiming objective longitudinal financial outcomes. Respondents report perceptions at one point in time. These observations allow assessment of associations but cannot establish that sustainable practices caused subsequent changes in performance.

2.1.2 Independent variable concepts

ESG practices represent company action concerning emissions and waste management, employee welfare, community engagement and sustainability performance monitoring. Sustainability policies must be distinguished from measured outcomes; a company may report a policy without showing implementation or impact. Friede et al. (2015) demonstrate why ESG has attracted business-performance attention, while Khan et al. (2016) emphasise that financially material sustainability issues may be particularly relevant.

Corporate governance covers oversight quality, reporting transparency, compliance responsibilities and accountability. Jensen and Meckling (1976) explain how agency costs and divergent interests may create demand for monitoring mechanisms. For construct separation, direct board oversight and internal control items belong to governance; environmental and social action items remain under ESG.

Green innovation includes product reformulation, cleaner processes, energy efficiency, pollution prevention and material recovery. Chen et al. (2006) found positive associations between green product/process innovation and corporate competitive advantage in Taiwanese firms. Such evidence warrants testing, not automatic extrapolation to a Nigerian petrochemical producer.

Competitive advantage refers to relative benefits in cost, differentiation and market position. It is proposed as an intervening mechanism because sustainability practices may yield better performance through production efficiency, quality, reputation or customer relationships rather than solely through direct effects.

2.1.3 Framework of the variables

Proposed relationships: ESG practices → competitive advantage → long-term organisational performance; corporate governance → competitive advantage → long-term organisational performance; green innovation → competitive advantage → long-term organisational performance. Each of the three independent variables also has a direct path to performance. The regression model also tests the specific ESG-to-competitive-advantage hypothesis and the competitive-advantage-to-performance hypothesis.

This framework is consistent with the resource-based view and its natural-resource extension (Barney, 1991; Hart, 1995). Its contribution lies in separately measuring governance mechanisms and examining the mediating role of competitive advantage. The diagram is conceptual and does not represent proven causal effects.

2.2 Empirical studies review

The reviews below are arranged by objective and highlight comparisons, limitations and implications for the proposed research. Because the present project lacks field data, the synthesis identifies testable gaps rather than presenting empirical conclusions about IEPL.

2.2.1 ESG practices and organisational performance

Friede et al. (2015) combined evidence from more than 2,000 empirical studies and reported that the great majority of examined relationships were non-negative. The breadth strengthens the argument that sustainability and profitability need not be incompatible; however, variation in study designs, outcome measures and industries limits inference about a particular petrochemical manufacturer. Khan et al. (2016) found that sustainability performance on financially material issues was more closely linked to subsequent performance than investment on immaterial issues. Taken together, these studies suggest careful measurement of operationally relevant ESG actions and warn against relying on a generic aggregate ESG score.

2.2.2 Corporate governance and organisational performance

Eccles et al. (2014) compared high- and low-sustainability companies and documented differences in

board responsibility, incentives, stakeholder engagement and longer-term outcomes. Their evidence indicates that internal governance systems are intertwined with sustainability execution, but such observational designs do not fully exclude self-selection and unobserved managerial quality. The current study separates board/management oversight from environmental and social implementation to test whether governance provides distinct explanatory value.

2.2.3 Green innovation and organisational performance

Chen et al. (2006) studied green product and green process innovation and found positive associations with corporate competitive advantage. Their work directly supports a proposed mechanism between green innovation and business outcomes. However, the study was conducted in Taiwan, not the Nigerian petrochemical sector, and its corporate-advantage outcome is not equivalent to sustained organisational performance. Here, innovation, advantage and performance are separately measured to avoid treating one construct as proof of another.

2.2.4 Competitive advantage and organisational performance

Barney (1991) identifies conditions under which resources may generate sustained advantage, offering an explanation for why imitable compliance activities may not lead to exceptional results. Hart (1995) extends the argument to resource and environmental capabilities. These are theoretical rather than IEPL-level statistical findings. In the current model, competitive advantage is not assumed to exist simply because sustainability projects are reported: employees assess customer value, cost position and differentiation as distinct outcomes.

2.2.5 Mediation and synthesis of gaps

Collectively, existing studies support plausible positive relationships but leave important conceptual and context questions. Some focus on ESG–financial outcomes (Friede et al., 2015), others on materiality (Khan et al., 2016), organisational processes (Eccles et al., 2014) or innovation–advantage links (Chen et al., 2006). The proposed study integrates these strands at IEPL and compares direct and indirect pathways. Its contribution remains prospective until the indirect effects and confidence intervals have actually been estimated.

2.3 Theoretical review

Three complementary perspectives explain why the chosen constructs might matter and indicate testable limitations.

2.3.1 Resource-based view

The resource-based view is associated with Barney (1991), who argued that valuable, rare, imperfectly imitable and non-substitutable resources may sustain competitive advantage. Its relevance is that organisational routines, skilled employees, process knowledge and trusted market relationships can support differentiated performance. A criticism is that identifying a resource as valuable partly from its performance can become circular; measurement should therefore distinguish capabilities from outcomes.

2.3.2 Natural-resource-based view

Hart (1995) proposed a natural-resource-based view centred on pollution prevention, product stewardship and sustainable development. This theory is especially applicable to energy- and material-intensive industrial manufacturing, where prevention and resource efficiency may lower costs and risks. However, benefits vary with capital constraints, regulations, technology and market demands. Thus positive effects should be tested rather than assumed.

2.3.3 Agency theory

Jensen and Meckling (1976) framed governance as a response to agency conflicts arising from separation of ownership and control. Monitoring, reporting and accountability can reduce the risk that managers neglect significant environmental, operational or financial exposures. The theory is useful for governance indicators but cannot alone explain all stakeholder relationships or the technological processes of green innovation. The dissertation combines it with resource-based explanations.

Chapter three: Research methodology

3.1 Research design

A quantitative, cross-sectional explanatory survey design is proposed. Structured responses collected at one point in time will measure the associations among the variables. The design is practical for a single-firm MBA dissertation and supports regression and mediation analysis if sample size and measurement quality are adequate. It does not establish temporal precedence or causality; results will therefore use terms such as "associated with" rather than unqualified causal claims. Verified documentary evidence, when accessible, can support contextual triangulation.

3.2 Research philosophy

The study adopts a predominantly post-positivist quantitative orientation: organisational practices are treated as imperfectly observable and measurable through respondents' reports, while findings remain open to uncertainty, bias and falsification.

3.2.1 Ontology

A critical-realist or cautiously objectivist ontology is appropriate: organisational systems and practices are assumed to exist independently of any single respondent, although accounts of them may differ according to role, access and experience. This avoids equating individual perception with complete organisational reality.

3.2.2 Epistemology

A post-positivist epistemology is selected because the study evaluates theoretically motivated hypotheses with observable indicators and statistical tests. Evidence is probabilistic, not conclusive; cross-sectional self-reports can reveal patterns without demonstrating causation.

3.2.3 Axiology

The researcher will protect voluntary consent, anonymity, non-retaliation and confidentiality. Data will be used only for academic purposes. Permission will be requested before accessing staff, and respondents may skip questions or withdraw before anonymous submission. Honest reporting includes nonsignificant findings and limitations; no responses or company performance values will be fabricated.

3.3 Population, sample and sampling technique

The proposed accessible population comprises 60 eligible employees of Indorama Eleme Petrochemicals Limited distributed into four functional strata. Operations/production accounts for 32 (53.33%), engineering/innovation 12 (20.00%), HSE/sustainability 8 (13.33%), and finance/governance/administration 8 (13.33%). The figures represent the proposed accessible study frame supplied for this project, not a verified count of all IEPL employees. The researcher will request departmental confirmation and permission from management before distribution. Eligibility requires employment in one of the four categories and sufficient familiarity with relevant sustainability, governance, innovation or operational practices. Employees who decline consent will not participate.

Because the proposed accessible population is only 60, the study adopts a total-enumeration (census) approach: all 60 eligible employees will be invited to complete the structured questionnaire, rather than selecting a smaller probability sample. The proposed census size is therefore n = 60, while the achieved sample will be the number of usable questionnaires actually returned. Departmental response rates will be reported separately; for example, response rate = (usable questionnaires / 60) × 100. The census covers only the defined accessible population and does not justify inference to the company's entire workforce unless that population is appropriately defined and verified. A modest number of responses may limit precision of the multivariable and mediation estimates; no statistical significance or adequate power is presumed in advance.

3.4 Methods of data collection

Primary data will be collected through the structured questionnaire prepared for this study (supplied as the accompanying Appendix I). Section A contains four profile/eligibility questions: departmental category, length of service, job level and knowledge of the relevant practices. Sections B–F contain 29 substantive statements: six ESG practices items (ESG1–ESG6); six corporate governance items (CG1–CG6); six green innovation items (GI1–GI6); five competitive advantage items (CA1–CA5); and six perceived long-term organisational performance items (OP1–OP6). Each substantive statement is rated on a five-point scale: 1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree. Unanswered items are coded missing, not neutral. Questionnaires will be administered on paper or through a restricted online form after institutional approval and informed consent; no names or employee numbers will be collected. Company and group-level documentary material may be used for background triangulation but not as fabricated or assumed plant-level performance evidence.

3.4.1 Reliability

Prior to full administration, at least two appropriately qualified reviewers will examine the items for clarity and

alignment. A small pilot involving comparable participants outside the final census will assess wording and completion time, subject to availability. For final data, Cronbach's alpha will be reported separately for ESG1–ESG6, CG1–CG6, GI1–GI6, CA1–CA5 and OP1–OP6; McDonald's omega may supplement alpha where estimable. Values around 0.70 are often treated as an initial screening guide, not a universal validation rule. Item-total relationships and the effect of removing weak items will be examined cautiously. No reliability coefficients are presented before responses are collected.

3.4.2 Validity

Face and content validity will be assessed through expert review of a questionnaire-to-objective alignment matrix. The research will distinguish ESG practice items, emphasising environmental/social implementation and sustainability communication, from corporate governance items focused on accountability and internal controls, limiting conceptual duplication. Construct validity may be explored through inter-item relationships and exploratory factor analysis if the achieved sample and factorability tests support it; 60 or fewer observations may not be adequate for a 29-item factor model. Convergent and discriminant validity must not be claimed without suitable evidence. Responses will be anonymised and participation voluntary to reduce socially desirable answers.

3.5 Technique for data analysis and model

Completed responses will be coded on the five-point scale. For each respondent, scale means will be calculated from the substantive items: ESG = mean(ESG1–ESG6), CG = mean(CG1–CG6), GI = mean(GI1–GI6), CA = mean(CA1–CA5) and LOP = mean(OP1–OP6), subject to a prespecified minimum item-completion rule (at least 75% of the items in a scale). Descriptive analysis will include frequencies, percentages, means and standard deviations. Department-specific frequencies and valid response rates will be reported. Bivariate correlations (Pearson or Spearman as appropriate) and regression estimates will assess associations, with confidence intervals and effect sizes.

Direct model: $LOP = \beta0 + \beta1\ ESG + \beta2\ CG + \beta3\ GI + \varepsilon$.

Mediator model: $CA = \alpha0 + \alpha1\ ESG + \alpha2\ CG + \alpha3\ GI + \upsilon$.

Mediation outcome model: $LOP = \gamma0 + c'1\ ESG + c'2\ CG + c'3\ GI + b\ CA + \eta$.

Indirect effects: ESG: $\alpha1 \times b$; CG: $\alpha2 \times b$; GI: $\alpha3 \times b$.

LOP denotes perceived long-term organisational performance, CA competitive advantage, CG corporate governance and GI green innovation. H01–H03 concern three direct associations, H04 the ESG–competitive-advantage relationship, H05 the competitive-advantage–performance relationship and H06 the indirect associations. Statistical tests will use two-sided $\alpha = .05$. If data quality and sample size support it, percentile bootstrap intervals will be calculated for indirect effects, recognising their instability in a small sample. Findings must not be interpreted as causal given the cross-sectional self-report design. Residual plots, variance inflation factors, influential observations, heteroskedasticity and multicollinearity will be examined; models may need simplification if valid responses are too few.

3.6 Justification of methods

A census is feasible because the defined accessible population is 60 and ensures that every eligible employee across the four strata is invited. A single standardised questionnaire provides consistent operational definitions and directly matches the six hypotheses. The four-stratum description allows differential nonresponse to be assessed, while aggregated reporting protects identities, particularly in the two eight-person strata. Regression is interpretable for an MBA dissertation, but the 60-person ceiling and potential missing responses constrain statistical power, especially for mediation. The study therefore prioritises transparent estimates, uncertainty and limitations over exaggerated significance. Single-company, single-time-point perceptions cannot establish objective long-term causation.

3.3.1 Population and achieved sample

Functional stratum	Proposed N	Observed responses	Coverage %
Operations / production	32	30	93.75
Engineering / innovation	12	12	100.00
HSE / sustainability	8	8	100.00
Finance / governance / administration	8	8	100.00
Total	60	58	96.67

The achieved 58 count is consistently supported by questionnaire sections A1, A3 and A4 and all 29 scaled items. Its interpretation as response rate assumes 60 questionnaires were in fact issued. Two nonresponses occur in operations/production if proposed allocations are accurate. A2 tenure frequencies (12 + 14 + 28 + 10 + 2 = 66) exceed the 58 respondents and are excluded from inferential and demographic percentage analyses pending checking of source sheets.

3.5.1 Measurement and identification limits

Variable	Item count	Code	Measurement
ESG practices	6	ESG	Respondent-wise item average needed for inferential tests
Corporate governance	6	CG	Respondent-wise item average needed for inferential tests
Green innovation	6	GI	Respondent-wise item average needed for inferential tests
Competitive advantage	5	CA	Respondent-wise item average needed for inferential tests
Perceived long-term organisational performance	6	OP	Respondent-wise item average needed for inferential tests

The current dataset contains only five category frequencies for each item; these support valid marginal descriptive statistics, but not respondent-wise averaged scale scores, correlations between variables, Cronbach's alpha, regression models or bootstrapped indirect effects. An item-pooled mean is the arithmetic average of the item means and is not claimed to be the observed mean of each respondent's composite score. Item standard deviations describe the spread of ratings on that item, not variability of the composite scale.

Chapter four: Data presentation and analysis

4.1 Data presentation

The researcher supplied aggregate tallies for 29 Likert-scale questions using strongly disagree (SD = 1), disagree (D = 2), neutral (N = 3), agree (A = 4), and strongly agree (SA = 5). Every item totals 58, suggesting a consistent achieved scaled-response count. Zero entries are interpreted as zero responses, as indicated by the complete 58-point totals. Responses are self-reported perceptions and are not independently validated financial, production or environmental metrics.

4.1.1 Descriptive statistics

Respondent category	Frequency	% of 58
Operations / production	30	51.72
Engineering / innovation	12	20.69
HSE / sustainability	8	13.79
Finance / governance / administration	8	13.79
Non-supervisory	30	51.72
Supervisory	12	20.69

Management	14	24.14
Prefer not to say	2	3.45
Familiarity: Yes	51	87.93
Familiarity: Partly	7	12.07
Familiarity: No	0	0.00

Department, job level and familiarity are separate variables and must not be summed together. Department counts total 58 (as do job level and familiarity). The length-of-service data are internally inconsistent (66 responses); hence valid tenure percentages cannot be computed using the apparent study denominator of 58.

4.1.2 ESG practices

Item	SD	D	N	A	SA	Mean	SD	Agree + SA %
ESG1	0	0	0	18	40	4.69	0.47	100.0
ESG2	0	0	0	5	53	4.91	0.28	100.0
ESG3	0	0	0	9	49	4.84	0.37	100.0
ESG4	0	0	0	3	55	4.95	0.22	100.0
ESG5	0	0	0	1	57	4.98	0.13	100.0
ESG6	0	0	0	6	52	4.90	0.31	100.0

The unweighted mean across the 6 item means for esg practices is 4.879 out of 5. This is a descriptive item-pooled index only. High agreement represents favourable perceptions among respondents, not independently verified operational performance.

4.1.2 Corporate governance

Item	SD	D	N	A	SA	Mean	SD	Agree + SA %
CG1	0	0	8	17	33	4.43	0.73	86.2
CG2	0	0	0	8	50	4.86	0.35	100.0
CG3	2	12	5	12	27	3.86	1.30	67.2
CG4	0	8	0	9	41	4.43	1.04	86.2
CG5	0	0	0	5	53	4.91	0.28	100.0
CG6	0	0	0	1	57	4.98	0.13	100.0

The unweighted mean across the 6 item means for corporate governance is 4.580 out of 5. This is a descriptive item-pooled index only. High agreement represents favourable perceptions among respondents, not independently verified operational performance.

4.1.2 Green innovation

Item	SD	D	N	A	SA	Mean	SD	Agree + SA %
GI1	0	40	12	6	0	2.41	0.68	10.3
GI2	0	0	4	38	16	4.21	0.55	93.1
GI3	0	17	18	13	10	3.28	1.07	39.7
GI4	0	0	0	17	41	4.71	0.46	100.0

GI5	0	0	41	7	10	3.47	0.78	29.3
GI6	0	0	11	38	9	3.97	0.59	81.0

The unweighted mean across the 6 item means for green innovation is 3.672 out of 5. This is a descriptive item-pooled index only. The wide variation between item responses highlights heterogeneous implementation and is not evidence of a single consistent organisation-wide green innovation capability.

4.1.2 Competitive advantage

Item	SD	D	N	A	SA	Mean	SD	Agree + SA %
CA1	0	0	0	11	47	4.81	0.40	100.0
CA2	0	0	0	7	51	4.88	0.33	100.0
CA3	0	0	0	5	53	4.91	0.28	100.0
CA4	0	5	12	20	21	3.98	0.96	70.7
CA5	0	7	5	21	25	4.10	1.00	79.3

The unweighted mean across the 5 item means for competitive advantage is 4.538 out of 5. This is a descriptive item-pooled index only. High agreement represents favourable perceptions among respondents, not independently verified operational performance.

4.1.2 Perceived long-term organisational performance

Item	SD	D	N	A	SA	Mean	SD	Agree + SA %
OP1	0	0	0	8	50	4.86	0.35	100.0
OP2	0	0	12	15	31	4.33	0.80	79.3
OP3	0	0	15	13	30	4.26	0.85	74.1
OP4	0	0	0	7	51	4.88	0.33	100.0
OP5	0	0	0	12	46	4.79	0.41	100.0
OP6	0	0	0	31	27	4.47	0.50	100.0

The unweighted mean across the 6 item means for perceived long-term organisational performance is 4.598 out of 5. This is a descriptive item-pooled index only. High agreement represents favourable perceptions among respondents, not independently verified operational performance.

4.1.3 Cross-construct descriptive comparison

Construct	Number of items	Mean of item means	Rank
ESG practices	6	4.879	1
Perceived long-term organisational performance	6	4.598	2
Corporate governance	6	4.580	3
Competitive advantage	5	4.538	4
Green innovation	6	3.672	5

4.2 Analyses and results

4.2.1 ESG practices and long-term organisational performance

ESG ratings are very favourable, but the provided marginal frequency data do not establish whether individuals with higher ESG scores also report higher performance scores. The corresponding null hypothesis remains untested rather than accepted or rejected.

4.2.2 Corporate governance and long-term organisational performance

Governance responses are largely favourable, although CG3 and CG4 show more disagreement than the other statements. A statistically significant relationship with perceived organisational performance cannot be inferred. The corresponding null hypothesis remains untested rather than accepted or rejected.

4.2.3 Green innovation and long-term organisational performance

GI1 is concentrated in disagreement and GI5 in neutral responses; GI4 is strongly positive. These differences support an implementation-gap interpretation at the item level, not a causal coefficient. The corresponding null hypothesis remains untested rather than accepted or rejected.

4.2.4 ESG practices and competitive advantage

Both constructs received favourable ratings. Their concurrence in aggregate means is not evidence of an individual-level association. The corresponding null hypothesis remains untested rather than accepted or rejected.

4.2.5 Competitive advantage and long-term organisational performance

Both constructs received favourable responses; lacking paired respondent records, no correlation, standard error, or significance test is possible. The corresponding null hypothesis remains untested rather than accepted or rejected.

4.2.6 Mediating effect of competitive advantage

A mediation model requires paired ESG/CG/GI, competitive-advantage and performance outcomes for each participant. The provided marginals cannot identify indirect paths. The corresponding null hypothesis remains untested rather than accepted or rejected.

4.2.7 Diagnostic analysis

Descriptive data integrity: each of 29 item rows has N = 58 and all observed ratings lie in the permitted 1–5 range. Section A2 fails the exclusivity/count check because its responses sum to 66. Cronbach's alpha, factor analyses, multicollinearity diagnostics, heteroskedasticity tests, residual normality checks, and mediation confidence intervals require a respondent-level matrix. These are reported as not computable from the data provided; no numerical statistics have been inferred.

4.3 Summary and discussion of findings

Overall, respondents endorsed ESG, governance, advantage and perceived performance more consistently than green innovation. These observations accord conceptually with theories that view environmental capabilities and well-governed resources as possible contributors to competitive advantage (Barney, 1991; Hart, 1995), but this study does not test their causal relationship. Friede et al. (2015) identify broadly non-negative links between ESG and financial results in earlier research; the present results cannot independently confirm that claim at Indorama. The strong perceptions of OP do not constitute a longitudinal evaluation of actual firm performance. Uneven green innovation ratings present a practical opportunity for managerial review and disaggregated follow-up.

Chapter five: Summary, conclusion and recommendations

5.1 Summary

Chapter One set out the strategic relevance of sustainable management within the petrochemicals sector and identified a context-specific knowledge gap. Chapter Two linked ESG practices, corporate governance, green innovation, competitive advantage and organisational performance using established research and theoretical lenses. Chapter Three defined a questionnaire-based census strategy aimed at 60 eligible employees and a planned model with competitive advantage as mediator. Chapter Four analysed 58 consistently tallied item responses using frequencies, percentages, means and standard deviations. Survey-scale data were highly favourable in four domains, while green innovation showed comparatively low and varied scores. One demographic item was inconsistent, and inferential tests could not be estimated from aggregate counts.

5.2 Conclusion

The study concludes that surveyed employees reported generally positive perceptions of ESG practices,

governance structures, competitive advantage and long-term organisational performance, while their views on green innovation were mixed and considerably weaker. This is a descriptive conclusion, not proof that sustainability activities caused higher profits, market share or durable performance. The evidence does not support accepting or rejecting any of the six relationship-based null hypotheses because matched individual observations were not available.

5.3 Recommendations

5.3.1 Recommendation 1 and implementation strategy

IEPL engineering/innovation, operations and HSE managers should audit GI1, GI3 and GI5 against the exact questionnaire wording, identify tangible operational barriers, assign a project owner and budget, and track energy intensity, waste per tonne of output, uptake rates and verified project savings quarterly.

5.3.2 Recommendation 2 and implementation strategy

The governance/compliance and internal audit teams should examine why CG3 and CG4 attracted relatively higher disagreement; institute confidential employee feedback, establish action logs and publish follow-up progress internally.

5.3.3 Recommendation 3 and implementation strategy

HSE and corporate management should maintain reported ESG strengths while corroborating claims with environmental monitoring, incident rates, training records and auditable supplier and community metrics.

5.3.4 Recommendation 4 and implementation strategy

Commercial and finance departments should compare perceived CA/OP scores with ethically obtainable objective series, including customer retention, defect rates, uptime, unit production cost and multi-year margins, controlling for market conditions.

5.3.5 Recommendation 5 and implementation strategy

An authorised data steward/researcher should reconcile A2 original questionnaires, capture anonymised respondent-by-item coded data with consent, assess reliability, and only then run regression and bootstrapped mediation with appropriate sample-size cautions.

5.4 Limitations of the study

Data were aggregate five-category item frequencies, not respondent-level records. This prevented verification of internal reliability and any multivariate hypothesis tests. Section A2 had an unexplained overcount of eight entries. The proposed population was not independently documented. Cross-sectional, single-organisation self-report data are vulnerable to common-method bias, recall error, acquiescence and nonresponse bias. The measures refer to perceived long-term performance, not observed multi-year performance. Inferential generalisation beyond the accessible respondents is therefore restricted.

5.5 Suggestions for further study

Future investigations should secure de-identified participant-level records, reconcile tenure and missing data, carry out item-level validation and reliability assessment, use multiple sites or firms, integrate externally confirmed environmental/financial indicators, and use longitudinal designs to assess actual organisational performance and the competitive-advantage mediation pathway.

5.6 Contributions to knowledge

The practical contribution from the data at hand is a transparent, item-level empirical baseline for five sustainability-related constructs in a single petrochemicals case, highlighting the relatively weaker green-innovation response profile. The study does not establish a new statistically tested causal model, mediating mechanism or verified financial-performance effect.

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Glossary

ESG — environmental, social and governance; HSE — health, safety and environment; SD — strongly disagree (or standard deviation in statistical tables, as context indicates); CG — corporate governance; GI — green innovation; CA — competitive advantage; OP — organisational performance; census — attempted inclusion of all members of a defined accessible population; mediation — an indirect relationship through a proposed intervening variable.

Appendix I: Structured questionnaire

APPENDIX I

RESEARCH QUESTIONNAIRE

Sustainable business management and competitive advantage: The influence of ESG practices, corporate governance and green innovation on long-term organisational performance of Indorama Eleme Petrochemicals Limited, Rivers State, Nigeria

Introduction and consent

Dear Respondent, this questionnaire is designed for an MBA academic study examining how environmental, social and governance (ESG) practices, corporate governance and green innovation relate to competitive advantage and long-term organisational performance. You are invited to participate because your work is relevant to one of the selected functional categories. Participation is voluntary. Please do not include your name, employee number or other identifying details. Responses will be analysed in aggregate for academic purposes only; individual responses will not be shared with management. You may skip any item or stop without penalty. It takes approximately 10–15 minutes to complete. No personnel or company performance information should be disclosed if it is confidential or restricted.

Consent: ☐ I have read the information above and voluntarily agree to participate. ☐ I do not agree (please do not complete the questionnaire).

Section A: Respondent profile

A1. Functional category: ☐ Operations / production ☐ Engineering / innovation ☐ HSE / sustainability ☐ Finance / governance / administration

A2. Length of service: ☐ Less than 1 year ☐ 1–3 years ☐ 4–6 years ☐ 7–10 years ☐ Above 10 years

A3. Job level: ☐ Non-supervisory ☐ Supervisory ☐ Management ☐ Prefer not to say

A4. Are you sufficiently familiar with your unit's sustainability and operational practices to answer these questions? ☐ Yes ☐ Partly ☐ No

Instructions for Sections B–F

Based on your knowledge and experience at Indorama Eleme Petrochemicals Limited, indicate how strongly you agree or disagree with each statement. Tick ONE option per statement. If you do not have enough information to judge an item, leave it blank rather than guessing.

Response scale: 1 = Strongly disagree (SD); 2 = Disagree (D); 3 = Neither agree nor disagree (N); 4 = Agree (A); 5 = Strongly agree (SA).

Section B: Environmental, social and governance (ESG) practices

Section C: Corporate governance

Section D: Green innovation

Section E: Competitive advantage

Section F: Long-term organisational performance (perceived)

Optional final comment

Please briefly indicate any relevant sustainability or innovation issue not covered above (optional; do not include names or confidential information):

_____

_____

Thank you for your participation.

Code	Statement	1 SD	2 D	3 N	4 A	5 SA
ESG1	Environmental impact reduction is incorporated into operational planning.	☐	☐	☐	☐	☐
ESG2	The organisation monitors and seeks to reduce waste and pollution.	☐	☐	☐	☐	☐
ESG3	Employee health, safety and welfare are prioritised in daily operations.	☐	☐	☐	☐	☐
ESG4	The organisation engages responsibly with communities affected by its activities.	☐	☐	☐	☐	☐
ESG5	Sustainability expectations are communicated clearly to employees.	☐	☐	☐	☐	☐
ESG6	Progress on environmental and social commitments is reviewed regularly.	☐	☐	☐	☐	☐
Code	Statement	1 SD	2 D	3 N	4 A	5 SA
CG1	Responsibilities for major business decisions are clearly assigned.	☐	☐	☐	☐	☐
CG2	Managers are held accountable for compliance with organisational policies.	☐	☐	☐	☐	☐
CG3	Financial and operational reporting processes support transparent decisions.	☐	☐	☐	☐	☐
CG4	Employees can report concerns through appropriate channels without fear of retaliation.	☐	☐	☐	☐	☐
CG5	Internal controls are used to identify and address operational risks.	☐	☐	☐	☐	☐
CG6	Senior management provides effective oversight of long-term strategic decisions.	☐	☐	☐	☐	☐
Code	Statement	1 SD	2 D	3 N	4 A	5 SA
GI1	The organisation introduces technologies or methods that reduce energy use.	☐	☐	☐	☐	☐
GI2	Teams actively develop or adopt processes that minimise material waste.	☐	☐	☐	☐	☐

GI3	Environmental considerations inform improvements to products or production methods.	☐	☐	☐	☐	☐
GI4	Employees are encouraged to suggest environmentally beneficial innovations.	☐	☐	☐	☐	☐
GI5	The organisation invests in skills or equipment needed for cleaner production.	☐	☐	☐	☐	☐
GI6	Green improvement initiatives are evaluated for technical and business value.	☐	☐	☐	☐	☐
Code	Statement	1 SD	2 D	3 N	4 A	5 SA
CA1	Efficiency improvements help the organisation control production costs relative to competitors.	☐	☐	☐	☐	☐
CA2	Product quality and reliability help distinguish the organisation in its market.	☐	☐	☐	☐	☐
CA3	Sustainability-related capabilities strengthen the organisation's market reputation.	☐	☐	☐	☐	☐
CA4	The organisation responds effectively to changes in customer expectations.	☐	☐	☐	☐	☐
CA5	The organisation has capabilities that competitors would find difficult to reproduce.	☐	☐	☐	☐	☐
Code	Statement	1 SD	2 D	3 N	4 A	5 SA
OP1	The organisation has maintained reliable operations over recent years.	☐	☐	☐	☐	☐
OP2	Operational efficiency has improved over recent years.	☐	☐	☐	☐	☐
OP3	The organisation appears well positioned to remain financially sustainable.	☐	☐	☐	☐	☐
OP4	The organisation is resilient in responding to regulatory or market changes.	☐	☐	☐	☐	☐
OP5	The organisation continues to invest in capabilities supporting future performance.	☐	☐	☐	☐	☐
OP6	Overall, the organisation is positioned to sustain satisfactory performance in the long term.	☐	☐	☐	☐	☐

Appendix II: Aggregate dataset and data-quality checks

Item	SD	D	N	A	SA	N
ESG1	0	0	0	18	40	58
ESG2	0	0	0	5	53	58
ESG3	0	0	0	9	49	58
ESG4	0	0	0	3	55	58
ESG5	0	0	0	1	57	58
ESG6	0	0	0	6	52	58
Item	SD	D	N	A	SA	N
CG1	0	0	8	17	33	58
CG2	0	0	0	8	50	58
CG3	2	12	5	12	27	58
CG4	0	8	0	9	41	58

CG5	0	0	0	5	53	58
CG6	0	0	0	1	57	58
Item	SD	D	N	A	SA	N
GI1	0	40	12	6	0	58
GI2	0	0	4	38	16	58
GI3	0	17	18	13	10	58
GI4	0	0	0	17	41	58
GI5	0	0	41	7	10	58
GI6	0	0	11	38	9	58
Item	SD	D	N	A	SA	N
CA1	0	0	0	11	47	58
CA2	0	0	0	7	51	58
CA3	0	0	0	5	53	58
CA4	0	5	12	20	21	58
CA5	0	7	5	21	25	58
Item	SD	D	N	A	SA	N
OP1	0	0	0	8	50	58
OP2	0	0	12	15	31	58
OP3	0	0	15	13	30	58
OP4	0	0	0	7	51	58
OP5	0	0	0	12	46	58
OP6	0	0	0	31	27	58

A1 = [30, 12, 8, 8], total 58; A2 = [12, 14, 28, 10, 2], total 66 (INCONSISTENT: original forms must be checked); A3 = [30, 12, 14, 2], total 58; A4 = [51, 7, 0], total 58. Proposed departmental population [32, 12, 8, 8], total 60. No individual record reconstruction or hypothetical observations were used.