

Journal of Environment, Climate, and Ecology

ISSN: 3079-255X (Online)

Volume 3 Issue 2, (2026)

https://doi.org/10.69739/jece.v3i2.2472

https://journals.stecab.com/jece

Published by
Stecab Publishing

Research Article

Distribution of ESG Practices Among the Luse Sub-Industries Based on Morgan Stanley Capital International ESG Industry Materiality Map

Kelvin Sinkamba[1], Jason Mwanza[1]

ABSTRACT

This paper assesses the distribution of Environmental, Social, and Governance (ESG) practices among the Lusaka Securities Exchange (LuSE) sub-industries, using the Morgan Stanley Capital International (MSCI) ESG Industry Materiality Map. The paper employs a descriptive quantitative research design and uses secondary data from annual audited reports, sustainability reports, and related corporate disclosures from 2019-2023, using a modified MSCI ESG industry materiality map and an industry-adjusted ESG scoring framework alongside a purposive sample of 12 firms with 60 firm-year observations. The findings show a generally high level of ESG adoption, with a mean ESG score of 6.52 for LUSE-listed firms but with a significant variation across the sub-industries. Governance emerged as the top-performing dimension, with social and environmental performance ranking second and third, respectively. We found that ESG outcomes reflected industry-specific sustainability risks in line with the MSCI ESG industry materiality map. The highest overall ESG scores were achieved by industrial conglomerates, independent power producers and energy traders, and forest products. Comparative average results were observed for the diversified real estate activities and reinsurance sub-industries. The highest score in environmental performance was Independent Power Producers & Energy Traders, in social was Diversified Financial Services, and in governance was Industrial Conglomerates. The findings indicate that there are significant differences in environmental, social, and governance distributions among LUSE sub-industries, suggesting that ESG practices are unevenly distributed among the LUSE sub-industries. The paper adds to the emerging market ESG literature and provides practical findings for policymakers, regulators, investors, and corporate managers who aim to enhance ESG integration, sustainability reporting, and long-term value creation within Zambia's capital market

Keywords: *Environmental, Lusaka Securities Exchange, MSCI ESG Industry Materiality Map, Social and Governance, Sub-Industries, Zambia*

Submission: September 15, 2026 **Acceptance:** November 1, 2026 **Publication:** November 10, 2026

[1] Graduate School of Business, University of Zambia, Lusaka, Zambia

Contact: Kelvin Sinkamba @ Ksinkamba.ks@gmail.com

Citation Style: Sinkamba, K., & Mwanza, J. (2026). Distribution of ESG Practices Among the Luse Sub-Industries Based on Morgan Stanley Capital International ESG Industry Materiality Map. *Journal of Environment, Climate, and Ecology*, *3*(2), 102-113. https://doi.org/10.69739/jece.v3i2.2472

Copyright: © 2026 by the authors. Licensed Stecab Publishing. This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

1. INTRODUCTION

The aim of this paper was to assess the distribution of ESG practices among LUSE sub-industries by applying the Morgan Stanley Capital International (MSCI) ESG materiality Map. Therefore, the paper seeks to answer the overarching question: What is the distribution of ESG practices among LUSE sub-industries?

Environmental, Social and Governance (ESG) factors are becoming increasingly important, and the way in which organisations are assessed by investors, regulators and other stakeholders is changing. ESG has evolved from the traditional way of looking at corporate social responsibility and is now seen as a strategic filter to assess how well an organization can manage risk, seize opportunities and create enduring value over time. Companies face ever-increasing pressure to demonstrate strong environmental, social and governance performance as concerns about climate change, scarce resources, social inequality, ethics and corporate responsibility mount.

To assist the assessment of ESG Distribution, Morgan Stanley Capital International (MSCI) developed the Industry Materiality Map, a globally recognised tool that categorises ESG issues based on their relevance to specific industries and sub-industries. MSCI's ESG industry framework assumes that ESG risks and opportunities are sector-specific, and that companies should be evaluated on the ESG factors that are most relevant to their business. The framework decomposes ESG considerations into three pillars: Environmental, Social, and Governance.

The Environmental pillar looks at the company's relationship with the natural environment and how it handles environmental risks and opportunities. The key environmental issues are carbon emissions; carbon footprint of products; vulnerability to climate change; financing environmental impact; water stress; biodiversity and land use; raw material sourcing; toxic emissions and waste; packaging material and waste; and electronic waste. It also looks at opportunities in clean tech, green buildings and renewables. These factors reflect the growing pressure on organisations to reduce their environmental footprint, improve resource efficiency and contribute to sustainable development.

The Social pillar assesses how an organisation manages its relationships with its employees, customers, suppliers and communities. It touches on important areas such as labour management, health and safety, human capital development, supply chain labour standards, product safety and quality, chemical safety, consumer financial protection, privacy and data security, responsible investment, community relations and controversial sourcing. It also points to opportunities for access to finance, health, nutrition and the general well-being of society. These factors point to the rising expectation that companies should create value for a wider group of stakeholders, not only shareholders.

The Governance pillar is concerned with the structures, processes and controls by which organisations are directed and monitored. Ownership and control, board effectiveness, executive compensation, accounting practices, business ethics and tax transparency are important governance issues. Good governance systems promote accountability, transparency, ethical behaviour and sound decision-making, and thus investor confidence and organisational sustainability.

The relevance of the MSCI ESG Industry Materiality Map is even more pronounced given the Lusaka Securities Exchange (LuSE), where companies operate across different sectors and sub-industries with different ESG risks and opportunities. The sample size comprises 12 sub-industries shown under section 1 below, with ESG distributions that are supposedly spread out, with ESG materiality being different. Environmental issues such as carbon emissions, biodiversity, water stress and waste management are more likely to be material in sectors such as agriculture, manufacturing, engineering and energy, while social issues such as consumer protection, privacy and data security and access to finance may be more prominent in financial services, retail and telecommunications. Governance factors such as board effectiveness, ownership structures, business ethics and transparency are also key across all industries.

The MSCI ESG Industry Materiality Map provides an adequate framework for assessing the distribution of ESG practices among LUSE sub-industries given their diversity. The industry-specific approach enables a more focused evaluation of how companies are addressing the ESG issues most material to their business. The framework, therefore, provides a useful tool for identifying ESG leaders and laggards across industries and useful insights into the distribution of ESG practices in the capital market of Zambia. These insights are essential for investors, regulators, policymakers and corporate managers who are interested in improving sustainability reporting, enhancing ESG performance and driving long-term value creation for listed companies.

1.1. Statement of the Problem

Environmental, Social and Governance (ESG) practices are rapidly emerging as key indicators of corporate sustainability, risk management and long-term value creation. However, the global evidence shows that good ESG performance enhances resilience and investor confidence, but research in Africa and Zambia is limited and mainly focuses on sustainability reporting, governance, and ESG-financial performance linkages. The adoption of ISSB standards and the growing demand for sustainability information from stakeholders have heightened interest in ESG reporting in Zambia. However, there are significant differences in the quality of disclosures and reporting maturity among LuSE-listed firms. Second, the variation of ESG practices across industries has been largely ignored in existing

studies, while the ESG issues are highly heterogeneous across industries, as illustrated by the MSCI ESG Industry Materiality Map. However, this leaves regulators, investors, policymakers, and corporate managers without the evidence to benchmark performance against and develop industry-specific sustainability strategies. No comprehensive study has assessed the distribution of ESG practices among LuSE sub-industries; thus this paper seeks to address this gap by assessing the distribution of ESG practices among LuSE sub-industries using the MSCI ESG Industry Materiality Map and contributing to the body of knowledge on ESG materiality in an emerging capital market of Zambia.

2. LITERATURE REVIEW

Companies in different sub-industries face different sustainability risks, stakeholder expectations, and regulatory requirements, resulting in companies adopting different environmental, social, and governance (ESG) practices. Organisations are held accountable to investors, customers, employees, regulators, and communities for adopting ESG practices (Freeman, 1984). Differences in ESG performance across industries have been attributed to differences in exposure, activities, and governance needs in the environmental space (Eccles *et al*., 2014; Friede *et al*., 2015).

2.1. Profile of ESG Distribution in the Agriculture Industry (AGRIC)

Agriculture depends on land, water, biodiversity, and climate, and needs good environmental ESG practices. Agricultural companies are increasingly adopting climate-smart agriculture, sustainable land management, and water and biodiversity conservation to improve environmental sustainability (FAO, 2021; UNEP, 2022). Social issues related to employee welfare and rural community development (Eccles *et al*., 2014; Dsouza *et al*., 2024; Friede *et al*., 2015), ESG disclosure among agriculture companies listed on the LuSE is expected to be predominantly environmental, emphasizing issues such as climate-smart agriculture, sustainable land management, water resource management, and biodiversity conservation.

2.2. Profile of ESG Distribution in the Energy Industry (ENERGY)

The Energy Industry is one of the best industries with a great environmental, social, and governance (ESG) profile. It damages the environment. The key sustainability challenges are carbon emissions, renewables, energy efficiency, and environmental compliance (IEA, 2023; UNEP, 2022). Good governance structures to manage regulatory and operational risk are important as sustainability reporting is under pressure and the energy industry is under pressure to be more environmentally responsible (Eccles *et al*., 2014; Friede *et al*., 2015; Oppong, 2026).

2.3. Profile of ESG Distribution in the Engineering Industry (ENG)

By the end of the day, engineering firms will be revisiting their ESG practices, and social sustainability will likely get some airtime given its tie to health and safety issues on the job site. Therefore, it is important to develop and apply effective systems of occupational safety and training of employees, and mechanisms of risk management and environmental compliance in industrial activities (GRI, 2021; ILO, 2022). Other important dimensions of sustainability performance in the engineering industry are employee welfare and governance of operations (Bebbington *et al*., 2014; Eccles *et al*., 2014; Dsouza *et al*., 2024).

2.4. Profile of ESG Distribution in the Beverage Industry (BEV)

The beverage industry has a mixed ESG profile, with dependence on water resources, supply chain management, waste reduction, and product responsibility. Environmental (e.g., water stewardship, recycling, packaging management); Social sustainability (community investment, consumer welfare, employee safety, etc.) (Bebbington *et al*., 2014; GRI, 2021). Likewise, consumer goods companies implement their ESG programs to achieve legitimacy with their stakeholders and improve their corporate image (Matemane *et al*., 2024; Dsouza *et al*., 2024; Friede *et al*., 2015).

2.5. Profile of ESG Distribution in the Financial Services Industry (FIN)

Financial services are the largest sub-Industry of the LuSE, and this is most likely to have governance-focused ESG features. The key drivers for the sustainability of the sector are the effectiveness of the board, ethical conduct, risk management, transparency, and regulatory compliance (Buallay, 2019; Ntim *et al*., 2013). Research suggests that African financial institutions are adopting ESG principles in their lending decisions, investment strategies, and corporate governance frameworks (Ramoeletsi, 2025; Chawarura *et al*., 2025). “So ESG governance will be the foundation stone of ESG in this industry”

2.6. Profile of ESG Distribution in the Retail Industry (RETAIL)

Retailers need to be socially sustainable and work with consumers and suppliers. The main ESG issues are customer health and safety, ethical sourcing, labour practices, product quality, and community relations (Freeman, 1984; GRI, 2021). Other key measures include sustainable packaging and waste management. But disclosures will probably be more front and center (Matemane *et al*., 2024; Bebbington *et al*., 2014; DSouza *et al*., 2024).

2.7. Profile of ESG Distribution in the Telecommunications Industry (TELECOM)

Good governance & social profile of telecom operators. Governance and stakeholder well-being are sustainability issues. "Telecom companies are the backbone of data privacy, cyber security, digital inclusion, and financial inclusion. The results indicate that service sectors are less damaging to the environment and more prone to provide governance and social disclosures than environmental disclosures (Freeman, 1984; GRI, 2021; Ramoeletsi, 2025; Chawarura *et al.*, 2025).

2.8. Profile of ESG Distribution in the Real Estate Industry (REAL)

Property companies are now focusing on eco-friendly sustainability, looking at green buildings, energy efficiency, water conservation, and sustainable urban development initiatives. The environmental aspect of ESG has grown exponentially as investors seek sustainable property assets to grow their environmental portfolios (UNEP, 2022). Environmental sustainability practices enhance asset value, corporate reputation, and stakeholder confidence (Dsouza *et al.*, 2024; Eccles *et al.*, 2014; Friede *et al.*, 2015; GRI, 2021).

2.9. Profile of ESG Distribution in the Tourism Industry (TOURISM)

Tourism is expected to have an even stronger environmental and social ESG profile, as it relies on the preservation of the environment, the relationship with the community, and customer satisfaction. Sustainable tourism practices can include the conservation of biodiversity, the reduction of waste, energy efficiency, protection of cultural heritage, and support of local communities (UNEP, 2022; UNWTO, 2023). Sustainability practices are also vital to the stakeholders' credibility and the long-term competitiveness of the tourism business (Dsouza *et al.*, 2024; Freeman, 1984; Oppong, 2026).

2.10. Profile of ESG Distribution in the Investment Industry (INVEST)

For investment firms, governance is the most important of the ESG profiles. Capital allocation and non-production activities are the main drivers of sustainability. The key issues of ESG are board oversight, transparency, fiduciary duties and stewardship, and responsible investment principles (PRI, 2023). Empirical evidence shows that firms with good governance mechanisms tend to integrate environmental, social and governance (ESG) factors into investment decision-making (Buallay, 2019; Ntim *et al.*, 2013; Ramoeletsi, 2025; Oppong, 2026).

2.11. Morgan Stanley Capital International (MSCI) ESG Industry Materiality Map

The MSCI ESG Industry Materiality Map proposes that ESG issues are specific among sub-industries because firms face different sustainability risks and stakeholder expectations. Because of this uniqueness, sub-industries' focus areas are on issues that have the most material impact if left unattended. For instance, industries with greater environmental exposure, such as agriculture, energy, and real estate, tend to prioritise environmental issues, while service-oriented sectors, including financial services and telecommunications, place greater emphasis on governance and social concerns.

Studies conducted by the following researchers (Khan *et al.*, 2016; Madison & Schiehll, 2021) confirm the assertion that firms that place more emphasis on specific ESG issues facing each sub-industry are observed to report higher ESG scores.

Further studies by Berg *et al.* (2022), Gibson *et al.* (2021), and Grewal *et al.* (2019) show that industry-specific ESG weighting improves the relevance of ESG ratings and disclosures for investors. Collectively, these studies suggest that ESG priorities differ across industries and should be assessed within their specific sectoral context.

Despite growing international adoption of the MSCI materiality framework, evidence from African stock exchanges remains limited. This study addresses this gap by examining whether ESG practices are distributed differently across LuSE-listed sub-industries in line with industry-specific materiality considerations.

2.12. MSCI ESG Industry Materiality Map

Table 1 below presents the key (material) Environmental, Social and Governance issues considered in this paper, based on the MSCI industry materiality map with Governance issues being standard across the LUSE sub-industries.

Table 1. Morgan Stanley Capital International (MSCI) ESG Industry Materiality Map.

Environmental	Social	Governance
Carbon Emissions,	Labor Management	Governance
Product Carbon Footprint	Health & Safety	ownership and control
Climate Change Vulnerability	Human Capital Development	board,
Financing Environmental Impact	Supply Chain Labor Standards	Pay

Environmental	Social	Governance
Water Stress	Product Safety & Quality	Accounting
Biodiversity & Land Use	Chemical Safety	Business Ethics and
Raw Material Sourcing	Consumer Financial Protection	Tax Transparency
Toxic Emissions & Waste	Privacy & Data Security	
Packaging Material & Waste	Responsible Investment,	
Electronic Waste	Community Relations	
Opportunities in Clean Tech	Controversial Sourcing	
Opportunities in Green Building	Access to Finance	
Opportunities in Renewable Energy.	Access to Health Care	
	Opportunities in Nutrition & Health	

2.13. Mapping of the LUSE Listed Sub-industries to the MSCI ESG Industry Materiality Map

Table 2 below shows the key ESG issues that are most material to each LUSE sub-industries based on the MSCI ESG materiality framework. While material issues on Environmental and Social dimension factors may vary per the sub-industries, governance dimensions are deemed standard irrespective of the sub-industries being considered.

Table 2. MSCI Material ESG Issues by LUSE Sub-industries.

Sub-Industry	Key MSCI Material Issues
Diversified Financial Services	Access to Finance; Consumer Financial Protection; Privacy & Data Security; Responsible Investment
Agriculture Products & Services	Water Stress; Biodiversity & Land Use; Labor Management; Supply Chain Labor Standards
Independent Power Producers & Energy Traders (Utilities)	Opportunities in Renewable Energy; Carbon Emissions; Climate Change Vulnerability
Forest Products	Biodiversity & Land Use; Raw Material Sourcing; Water Stress
Oil & Gas Refining & Marketing	Carbon Emissions; Toxic Emissions & Waste; Climate Change Vulnerability
Integrated Telecommunication Services	Privacy & Data Security; Business Ethics; Board Governance
Diversified Real Estate Activities	Opportunities in Green Building; Governance; Accounting
Industrial Conglomerates	Health & Safety; Business Ethics; Governance
Reinsurance	Risk Governance; Consumer Protection; Climate Risk Exposure

2.14. Industry-Adjusted Company Final Score and Morgan Stanley Industry Materiality Map

The MSCI ESG Ratings framework assesses a company's management of financially material Environmental, Social and Governance (ESG) risks and opportunities relative to industry peers, using an industry-specific methodology based on the Morgan Stanley Materiality Map, which identifies the most financially material ESG issues for each industry. Firms are rated on the Environment, Social, and Governance pillars, encompassing 10 themes and 33 key issues, and assigned an industry-adjusted ESG score on a 0 to 10 scale based on their exposure to and management of material ESG risks. The scores are then converted into ratings, from AAA (Leader) to CCC (Laggard), with higher scores signifying better sustainability performance and governance practices. In this paper, the firms have been classified as Leaders (AAA-AA), Average Performers (A-BB), and Laggards (B-CCC) to compare the ESG performance of the sub-industries listed on LuSE and to identify the sectors with better or worse ESG practices.

2.15. Research Gaps

ESG practices are industry-specific, as demonstrated by the literature. Yet most of the existing research has examined the association of ESG disclosure with the firm's performance and not the difference in ESG practices across sectors (Eccles *et al*., 2014; Friede *et al*., 2015; Buallay, 2019). There is a relatively recent body of research on ESG disclosure and sustainability performance of listed firms in Africa. However, there is little research comparing the distribution of ESG practices among sub-industries within individual stock exchanges (Dsouza *et al*., 2024; Ramoeletsi, 2025; Oppong, 2026). There is a scarcity of empirical evidence on industry-level ESG practices of LuSE-listed firms in Zambia. Moreover, few studies apply the MSCI ESG scoring framework and Materiality Map that acknowledge the fact that ESG risks and opportunities vary across industries and affect company ESG ratings differently. Therefore, there is little understanding of which LuSE sub-industries have better or worse ESG performance, disclosure, and sustainability practices. The paper therefore fills an important contextual gap by profiling the distribution of environmental, social, and governance practices among LuSE sub-industries and testing for significant sectoral differences.

2.16. Hypothesis Development

There is a need to assess the distribution of ESG practices among the LUSE Sub-Industries based on the Morgan Stanley Capital International ESG Industry Materiality Map. The paper formulates the following null hypothesis, which assumes that ESG practices do not significantly differ among the LUSE sub-industries.

2.16.1. Main Hypothesis

- H_0: ESG practices are evenly distributed across LuSE-listed sub-industries

2.16.2. Sub-hypotheses: Environmental Dimension

- H01: There is no significant difference in Environmental (E) scores among LuSE-listed industries.

2.16.3. Social Dimension

- H02: There is no significant difference in Social (S) scores among LuSE-listed industries.

2.16.4. Governance Dimension

- H03: There is no significant difference in Governance (G) scores among LuSE-listed industries.

2.16.5. Analytical Framework

This study adopts the MSCI Industry Materiality Map as the analytical framework for assessing ESG practices among LuSE-listed sub-industries.

Overall ESG performance is expressed as:

$$ESG = f(E, S, G)$$

Where,

E, S, and G represent Environmental, Social, and Governance scores, respectively.

ESG distribution is further analysed as a function of sub-industry classification:

$$ESGDistribution = f(Sub - Industry)$$

The study compares ESG scores across LUSE sub-industries using descriptive statistics and comparative analysis to identify patterns and variations in ESG practices.

3. METHODOLOGY

The paper employs a descriptive quantitative research design to profile the distribution of ESG practices among LUSE sub-industries. ESG disclosure was assessed using the MSCI ESG industry materiality map framework and analysed through descriptive statistics, frequency distributions, and comparative sub-industry analysis. In this section of the paper, we explain the research design, measurement of variables, data collection, framework of ESG scoring, and statistical analysis.

3.1. Sample Size and Sampling

The study initially covered all 22 companies listed on the LuSE (110 firm-year observations) for the period 2019–2023. Firms with incomplete or insufficient ESG disclosures were excluded from purposive sampling, and two firms with

similar reporting characteristics were merged, resulting in a final sample of 12 firms and 60 firm-year observations shown in Table 3 below. This ensured inclusion of reliable, consistent and comparable ESG data and improved the validity and robustness of the findings of the study.

Table 3. Subsequent Sample Selection by Sub-Industry.

Sub industry	Number of Firms	Number of Observations	%tage
Agricultural products and services	1	5	14%
Brewers	1	5	7%
Construction materials	1	5	7%
Diversified Financial Services	1	5	14%
Diversified real estate practices	1	5	7%
Food retail	1	5	7%
Forest products	1	5	7%
Independent power producers and energy traders	1	5	7%
Industrial Conglomerates	1	5	7%
Integrated Telecommunication services	1	5	7%
Oil and Gas refining and marketing	1	5	7%
Reinsurance	1	5	7%
Grand Total	12	60	100%

3.2. ESG Scoring Framework and Variables Definition

ESG practices were assessed using the MSCI Industry Materiality Map. For each listed company, environmental, social, and governance indicators relevant to its sub-industry were identified and scored based on disclosed information. The resulting ESG scores were aggregated at company and sub-industry levels. Variables included the overall ESG score and its Environmental (E), Social (S), and Governance (G) components. The analysis employed descriptive statistics, frequency distributions, ranking procedures, and comparative sub-industry analysis to profile the distribution of ESG practices among LuSE sub-industries.

3.2.1. Main Hypothesis

- H_0: ESG practices are evenly distributed across LuSE-listed sub-industries

3.2.2. Sub-hypotheses: Environmental Dimension

- H01: There is no significant difference in Environmental (E) scores among LuSE-listed sub-industries.

3.2.3. Social Dimension

- H02: There is no significant difference in Social (S) scores among LuSE-listed sub-industries.

3.2.4. Governance Dimension

- H03: There is no significant difference in Governance (G) scores among LuSE-listed sub-industries.

3.2.5. Analytical Framework

This paper adopts the MSCI Industry Materiality Map as the analytical framework for assessing ESG practices among LuSE-listed sub-industries.

Overall ESG performance is expressed as:

$$ESG = f(E, S, G)$$

Where,

E, S, and G represent Environmental, Social, and Governance scores, respectively.

ESG distribution is further analysed as a function of sub-industry classification:

$$ESGDistribution = f(Sub - Industry)$$

The study compares ESG scores across LuSE sub-industries using descriptive statistics and comparative analysis to identify patterns and variations in ESG practices.

3.3. Data Collection

The paper utilised secondary data obtained from public corporate disclosures of LuSE-listed firms, including annual reports, sustainability reports, CSR reports, governance reports and environmental impact statements for the period 2019-2023. ESG information was collected and analysed using content analysis, allowing for a systematic evaluation of firms' environmental, social and governance practices. The use of audited and regulated corporate disclosures improved the reliability, comparability and credibility of the data and the findings.

3.4. Data Analysis

The data were analysed using the MSCI ESG Ratings Matemane *et al.* (2024) and the MSCI Industry Materiality Map to assess the Environmental, Social and Governance (ESG) practices among LSE sub-industries. A quantitative content analysis was used to assess ESG information extracted from annual reports and audited financial statements, with firms being scored on industry-specific material ESG issues. The Environmental and Social dimensions were measured based on strategy, initiatives, and performance, while for Governance we used a deduction-based approach from MSCI to allow for a consistent comparison across industries.

3.5. Modified ESG Scoring

We adopted a modified ESG scoring model to assess the Environmental, Social, and Governance (ESG) practices of LuSE-listed firms based on the MSCI ESG Ratings Methodology. There were five major stages in the process.

Firstly, annual reports and audited financial statements were obtained from reliable sources. The documents ranged from the company's performance to governance structures to ESG-related disclosures. The reliability and credibility of the data used in this analysis are increased by the fact that all reports were independently audited.

Second, the firms were categorised based on the MSCI Industry Materiality Map (section 211 above). This framework considers sector- and sub-industry-specific ESG issues and weights them according to materiality. Using information from the company reports and the MSCI framework, each company listed on the LSE was then categorised into its relevant sector and sub-industry so that the ESG assessment targeted the inclusion of industry-specific sustainability risks and opportunities (section 2.12 above).

Third, we conducted a comprehensive content analysis of the annual reports to measure the extent of ESG disclosures. The highest-scoring firms (score of 10) reported on all material ESG issues. Firms that did not disclose ESG information were given a score of 3, following the MSCI methodology. Where disclosure was partial, scores of 4 to 9 were assigned according to the extent and quality of information reported.

Fourth, Environmental, Social, and Governance scores were provided separately on a 0-10 scale. The Environmental and Social scores assessed company strategies, programs, and performance in managing sustainability risks. Governance scores were based on the effectiveness of the board, governance policies, transparency, executive remuneration, and other governance indicators. 3. Non-disclosure of key performance indicators did not automatically lead to a zero score, but to a score of 3, reflecting limited transparency, in line with MSCI guidance.

Finally, the industry-adjusted ESG scores and rating for each firm were generated by aggregating weighted ESG scores through the MSCI Industry Materiality Map.

This approach enabled us to assess ESG performance across firms consistently, while considering differences in material sustainability issues across industries. The generated scores were useful in profiling and comparing the ESG practices of LuSE-listed sub-industries based on globally accepted ESG standards. Each ESG indicator was transformed into a standardised score between 0 and 10, where a higher score meant better ESG performance and lower ESG risk. We next aggregated the Environmental, Social, and Governance pillar scores to form a composite ESG score for the firm-year observation. To facilitate interpretation and comparison, the final modified ESG scores were subsequently converted into MSCI ESG Industry-Adjusted ESG Scores using the MSCI rating scale and classification thresholds presented in Table 4 below.

Table 4. MSCI Final Industry-Adjusted Company Score.

MSCI Rating	ESG Score Range	Classification
AAA	8.571 - 10.000	Leader
AA	7.143 - 8.570	Leader
A	5.714 - 7.142	Average
BBB	4.286 - 5.713	Average
BB	2.857 - 4.285	Laggard
B	1.429 - 2.856	Laggard
CCC	0.000 - 1.428	Laggard

The MSCI ratings were then used to profile the distribution of ESG practices across the nine LuSE sub-industries: Agriculture, Energy, Engineering, Beverages, Financial Services, Retail, Telecommunications, Real Estate and Investment.

3.6. Reliability and Validity

To ensure the reliability and validity of this study, the standardised MSCI ESG Ratings Matemane *et al.* (2024) and the MSCI ESG Industry Materiality Map were used to provide a consistent framework for assessing Environmental, Social and Governance (ESG) practices among LUSE sub-industries. Thus, reliability was enhanced through the clarity of scoring criteria, standardised assessment procedures, and the use of audited annual reports and financial statements, thus reducing measurement errors and inconsistencies in ESG scoring over time.

The selection of ESG factors was based on the key industry issues as guided by the MSCI Key Issues Map for each LUSE sub-industry, thus ensuring that the evaluation is targeted at the most important ESG issues and thus increasing content validity. The availability of publicly available and independently audited disclosures further improved the accuracy and objectivity of the data. Moreover, the use of the globally accepted ESG standards increased the construct validity, which made the ESG scores a valid proxy for the sustainability performance of the firms. ESG scores were then mapped to MSCI rating buckets (AAA-CCC) to allow for cross-industry and cross-period comparison.

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

Table 5 presents the descriptive statistics of the Environmental (E), Social (S), Governance (G), and total ESG scores for LUSE sub-industries over the period 2019-2023. The average ESG score was 6.52 (min 4.74, max 9.17), which indicates a large variation in the distribution of ESG practices among LUSE sub-industries. The average score of governance was the highest (2.93), followed by Social (1.98) and Environmental (1.61), which indicated that the development of governance practices was generally higher than the environmental initiatives in the sampled industries. The standard deviations show a moderate variation, especially in the environmental dimension, where the scores presented greater dispersion. To summarise, the results reveal that the ESG performance of the sub-industries was largely heterogeneous over the study period.

Table 5. Summary Descriptive Statistics of ESG Scores Among LUSE Listed Sub-Industries.

Statistic	E	S	G	ESG
Count (N)	60	60	60	60
Mean	1.61	1.98	2.93	6.52
Median	1.52	1.92	2.81	6.35
Standard Deviation	1.05	0.9	0.65	1.05
Minimum	0.15	0.44	1.19	4.74
Maximum	3.97	3.98	4.91	9.17
Range	3.82	3.54	3.72	4.43

Statistic	E	S	G	ESG
Skewness	0.39	0.43	0.37	0.58

4.2. MSCI Final Industry-Adjusted Company Score Versus LUSE ESG Scores

In this paper, the distribution of the ESG practice among the LUSE sub-industries was benchmarked with the MSCI ESG final Industry-Adjusted Company Score framework to assess the ESG scores. As shown in Table 6 below, the overall results suggest that the sub-industries listed on the LuSE are generally good in terms of ESG practices relative to the MSCI framework. The strongest performing sub-industries are the forestry products, independent power producers, and Industrial Conglomerates (The ESG leaders), with the average performers being diversified real estate and reinsurance sub-industries. The results also reveal that ESG performance is industry-specific and reflects industry-specific sustainability priorities and challenges. However, the relatively high scores across most sub-industries suggest higher adoption of ESG practices among firms listed on the LSE.

Table 6. MSCI ESG Final Industry-Adjusted Company Score vs. LSE ESG Score.

Letter Rating	AAA	AA	A	BBB	BB	B	CCC
Leader/Laggard	Leader	Leader	Average	Average	Laggard	Laggard	Laggard
MSCI Score Range	8.571-10.000	7.143-8.570	5.714-7.142	4.286-5.713	2.857-4.285	1.429-2.856	0.000-1.428
Agriculture Products & Services			6.80				
Brewers			6.36				
Construction Materials			5.72				
Diversified Financial Services			6.86				
Diversified Real Estate Activities				5.02			
Food Retail			6.15				
Forest Products		7.39					
Independent Power Producers & Energy Traders		7.40					
Industrial Conglomerate		7.42					
Integrated Telecommunication Services			6.39				
Oils & Gas Refining and Marketing			6.46				
Reinsurance				5.43			

4.3. Hypothesis Testing Results

In this section, the paper tests the main hypothesis and the associated sub-hypotheses using the MSCI materiality framework and modified ESG scores to gain more insights into the distribution of ESG practices among LUSE sub-industries with the hypothesis test results shown in Table 7 below.

The main hypothesis is stated as follows:

- H_0: ESG practices are evenly distributed across LuSE-listed sub-industries

4.3.1. Sub-Hypotheses

The sub-hypotheses are linked to the three ESG pillars. Accordingly, the paper assesses the distribution of individual ESG practices by sub-industry. This approach provides a deeper understanding of the distribution of ESG practices across the sub-industries of firms listed on the Lusaka Securities Exchange (LuSE). The analysis is based on the modified ESG scores, which are used to assess the relative importance and variation of ESG practices among LUSE sub-industries.

- Sub-Hypothesis 1 (H1): There is no significant difference in Environmental (E) scores among LuSE-listed industries

Independent Power Producers & Energy Traders (3.49) and Forest Products (3.05) have the highest scores, while Diversified Financial Services (0.25) and Reinsurance (0.51) have the lowest scores, with wide variation across industries. This indicates a high heterogeneity in environmental performance across industries. So, we reject H1.

- Sub-Hypothesis 2 (H2): There is no significant difference in Social (S) scores among LuSE-listed industries.

Social scores are also industry-specific. Diversified Financial Services (3.69) received the highest social performance rating, while Diversified Real Estate Activities (0.44) received the lowest. These variations point to different degrees of stakeholder engagement and different practices of social responsibility. Thus, we reject H2.

- Sub-Hypothesis 3 (H3): There is no significant difference in Governance (G) scores among LuSE-listed industries

Governance scores differ substantially across industries. Industrial Conglomerates (3.94) achieved the highest governance score and Brewers (2.22) the lowest. This difference suggests that governance practices differ across industries, so we can reject H3.

Table 7. Hypothesis Testing Results.

Sub-Industry	E	S	G	ESG
Agricultural products and services	2.09	1.87	2.84	6.80
Brewers	1.86	2.28	2.22	6.36
Construction materials	1.94	1.41	2.37	5.72
Diversified Financial Services	0.25	3.69	2.92	6.86
Diversified Real Estate Activities	1.02	0.44	3.57	5.02
Food retail	1.00	2.41	2.74	6.15
Forest products	3.05	1.50	2.84	7.39
Independent power producers and energy traders	3.49	1.25	2.67	7.40
Industrial Conglomerate	1.09	2.39	3.94	7.42
Integrated Telecommunication services	0.75	2.44	3.20	6.39
Oils and Gas Refining and Marketing	1.95	1.98	2.53	6.46
Reinsurance	0.51	1.82	3.09	5.43

4.4. Discussion

The results reveal that the level of development of ESG practices in LuSE listed sub-industries is generally good, but the adoption and performance vary across industries. Descriptive statistics indicated that the mean ESG score was 6.52, indicating that the industries surveyed had a relatively strong sustainability profile. The strongest pillar of ESG was governance, with a mean score of 2.93 which suggests that governance practices are more established than the environmental and social initiatives. Benchmarking results also showed that most sub-industries on LuSE are ESG leaders, as the MSCI ESG Final Industry-Adjusted Company Score framework also showed a growing embrace of sustainable business practices. Industrial Conglomerates, Independent Power Producers and Forest Products had the highest overall ESG scores, indicating they incorporate environmental, social and governance factors more strongly into their operations. The results of the hypothesis testing confirm the fact that the distribution of ESG practices is not uniform across industries. All three dimensions of ESG showed significant differences, with the highest dispersion across sectors in the Environmental scores. Independent Power Producers & Energy Traders and Forest Products had better environmental performance; Diversified Financial Services performed better in social aspects; and Industrial Conglomerates led in governance practices. The findings confirm the MSCI ESG industry materiality map perspective that ESG performance is unique to each sub-industry, with those sub-industries exposed to significant environmental risks recording superior environmental scores, while service-oriented sub-industries performed better on social and governance dimensions. This pattern is consistent with the MSCI ESG materiality framework, which argues that ESG issues do not have equal relevance across industries and that firms create greater sustainability value when they focus on the ESG factors that are most material to their operations. The results therefore validate the applicability of the MSCI ESG Industry Materiality Map in the Zambian context and demonstrate that differences in ESG outcomes among LuSE-listed sub-industries are largely explained by variations in material sustainability risks, opportunities and stakeholder expectations.

5. CONCLUSION

Using the MSCI ESG Final Industry-Adjusted Company Score framework, this study assessed the distribution of ESG practices among the LUSE sub-industries. The study found that the ESG performance is generally good; most sub-industries qualify as ESG leaders. Nevertheless, the distribution of ESG practices is not homogeneous across sectors, as

some considerable differences were found in the Environmental, Social, and Governance dimensions. Independent Power Producers and Energy Traders recorded the best environmental performance, Diversified Financial Services led the social aspect, while Industrial Conglomerates were the strongest governance performers and achieved the highest overall ESG score. Results show that adoption of ESG is strongly linked to industry-specific sustainability risks, opportunities, and material ESG issues. To summarise, the study concludes that the uptake of the ESG factors among LuSE-listed firms is increasing, but the performance is heterogeneous across the industries. This highlights the necessity of industry-specific sustainability approaches to strengthen corporate resilience, competitiveness, investor confidence, and sustainable economic development in Zambia. The findings contribute to emerging markets' ESG literature and provide practical insights for policymakers, regulators, investors, and corporate managers to strengthen ESG integration, sustainability reporting, and long-term value creation through sub-industry-specific rather than one-size-fits-all strategies.

LIMITATIONS

This paper contributes to the ESG literature by offering the first comprehensive profile of the ESG practices of LuSE sub-industries and benchmarking their performance to the MSCI Final Industry-Adjusted Company Score framework. The results show that overall, the adoption of ESG standards is high in the LuSE, but the level of performance differs substantially across industries, with governance being the strongest dimension overall. The study provides useful insights for policymakers, regulators, investors, and corporate managers who are looking to improve sustainability practices within the capital market of Zambia. However, the findings are limited by the lack of a Zambia-specific ESG framework, inconsistencies in ESG disclosures, the use of secondary data, and the focus on listed firms only. Future research should focus on developing a standardised ESG assessment framework for Zambia, extending the analysis to non-listed firms and SMEs, and encouraging more stringent ESG disclosure requirements to enhance transparency, comparability, and sustainability reporting.

REFERENCES

Bebbington, J., Unerman, J., & O'Dwyer, B. (2014). *Sustainability accounting and accountability* (2nd ed.). Routledge.

Berg, F., Koelbel, J. F., & Rigobon, R. (2022). Aggregate confusion: The divergence of ESG ratings. *Review of Finance, 26*(6), 1315-1344. https://doi.org/10.1093/rof/rfac033

Buallay, A. (2019). Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. *Management of Environmental Quality: An International Journal, 30*(1), 98-115. https://doi.org/10.1108/MEQ-12-2017-0149

Chawarura, W. I., Sibanda, M., & Mamvura, K. (2025). The impact of ESG on the financial performance of Johannesburg Stock Exchange-listed firms. *Risks, 13*(6), 114. https://doi.org/10.3390/risks13060114

Dsouza, S., Momin, M., Habibniya, H., & Tripathy, N. P. (2024). Optimizing performance through sustainability: The mediating influence of firm liquidity on ESG efficacy in African enterprises. *Cogent Business & Management, 11*(1), 2423273. https://doi.org/10.1080/23311975.2024.2423273

Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science, 60*(11), 2835-2857. https://doi.org/10.1287/mnsc.2014.1984

Food and Agriculture Organization. (2021). *Climate-smart agriculture: Building resilience to climate change.*

Freeman, R. E. (1984). *Strategic management: A stakeholder approach.* Pitman Publishing.

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2,000 empirical studies. *Journal of Sustainable Finance & Investment, 5*(4), 210-233. https://doi.org/10.1080/20430795.2015.1118917

Gibson Brandon, R., Krueger, P., & Schmidt, P. S. (2021). ESG rating disagreement and stock returns. *Financial Analysts Journal, 77*(4), 104-127. https://doi.org/10.1080/0015198X.2021.1963186

Global Reporting Initiative. (2021). *GRI standards 2021.*

Grewal, J., Riedl, E. J., & Serafeim, G. (2019). Market reaction to mandatory nonfinancial disclosure. *Management Science, 65*(7), 3061-3084. https://doi.org/10.1287/mnsc.2018.3099

International Labour Organization. (2022). *World employment and social outlook 2022.*

International Energy Agency. (2023). *World energy outlook 2023.* International Energy Agency.

International Telecommunication Union. (2023). *Measuring digital development: Facts and figures 2023*. International Telecommunication Union.

Khan, M., Serafeim, G., & Yoon, A. (2016). Corporate sustainability: First evidence on materiality. *The Accounting Review, 91*(6), 1697-1724. https://doi.org/10.2308/accr-51383

Madison, N., & Schiehll, E. (2021). The effect of financial materiality on ESG performance assessment. *Sustainability, 13*(7), 3652. https://doi.org/10.3390/su13073652

Matemane, R., Msomi, T., & Ngundu, M. (2024). Environmental, social and governance and financial performance nexus in South African listed firms. *South African Journal of Economic and Management Sciences, 27*(1), a5864. https://doi.org/10.4102/sajems.v27i1.5864

Ntim, C. G., Lindop, S., & Thomas, D. A. (2013). Corporate governance and risk reporting in South Africa. *International Review of Financial Analysis, 30*, 363-383. https://doi.org/10.1016/j.irfa.2013.07.001

Oppong, M. (2026). *ESG disclosure maturation narrows the gap between reported and verified sustainability outcomes in 20 African capital markets*. Research Square. https://doi.org/10.21203/rs.3.rs-9751395/v1

Principles for Responsible Investment. (2023). *Annual report 2023*.

Ramoeletsi, T. I. (2025). Evaluating the relationship between ESG disclosure and corporate financial performance: A study of SADC stock exchanges (2018-2024). *RAIS Conference Proceedings*. https://ideas.repec.org/p/smo/raiswp/0566.html

United Nations Environment Programme. (2022). *2022 global status report for buildings and construction*.

United Nations World Tourism Organization. (2023). *Tourism and sustainable development report*.