Corporate Sustainability Strategy and Financial Performance: A Typological Classification of Firms

Estrategia de sostenibilidad corporativa y desempeño financiero: una clasificación tipológica de las empresas

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Abstract

Building on the extensive body of research that examines the relationship between Corporate Social Responsibility (CSR) practices, environmental sustainability and financial performance, this study analyzes the sustainability strategies of a diverse group of high-performing companies in Colombia. By incorporating financial performance indicators, the study aims to shed light on how leading companies integrate sustainability into their strategic framework. This research aims to identify and describe the sustainability strategies of Colombian companies from different economic sectors that have demonstrated strong financial performance. Using a quantitative research approach, this study applies clustering techniques — specifically Ward's method with Euclidean distance— to analyze both the financial and sustainability-related dimensions of the 50 largest companies in Colombia as of 2023. Key financial indicators such as total sales, net income, profit margins and risk profiles were taken into account. The resulting clusters were characterized using descriptive statistics, including measures such as mean, standard deviation and extreme values. The analysis identifies seven distinct clusters of companies with similar financial performance profiles. These clusters provide a nuanced understanding of CSR practices and sustainability strategies, allowing for the classification of leading Colombian companies according to their approach to sustainability.

Keywords: Sustainability, financial performance, clustering, Corporate Social Responsibility, Global Compact

Resumen

Basándose en el amplio cuerpo de investigación que examina la relación entre las prácticas de Responsabilidad Social Corporativa (RSC), la sostenibilidad ambiental y el desempeño financiero, este estudio analiza las estrategias de sostenibilidad de un grupo diverso de empresas de alto desempeño en Colombia. Al incorporar indicadores de desempeño financiero, el estudio busca arrojar luz sobre cómo las empresas líderes integran la sostenibilidad en su marco estratégico. Esta investigación tiene como objetivo identificar y describir las estrategias de sostenibilidad de empresas colombianas de diferentes sectores económicos que han demostrado un sólido desempeño financiero. Utilizando un enfoque de investigación cuantitativo, este estudio aplica técnicas de agrupamiento —específicamente el método de Ward con distancia euclidiana— para analizar tanto las dimensiones financieras como las relacionadas con la sostenibilidad de las 50 empresas más grandes de Colombia a 2023. Se tuvieron en cuenta indicadores financieros clave como las ventas totales, la utilidad neta, los márgenes de ganancia y los perfiles de riesgo. Los grupos resultantes se caracterizaron mediante estadísticas descriptivas, incluyendo medidas como la media, la desviación estándar y los valores extremos. El análisis identifica siete grupos distintos de empresas con perfiles similares de desempeño financiero. Estos grupos proporcionan una comprensión matizada de las prácticas de RSC y las estrategias de sostenibilidad, permitiendo clasificar a las principales empresas colombianas según su enfoque hacia la sostenibilidad.

Palabras clave: sostenibilidad, desempeño financiero, agrupamiento, responsabilidad social corporativa, pacto global.

Nawell Alvarez Lora
Undergraduate student in International Business Administration, Universidad Libre; specialization in Accounting, Economic and Administrative Studies.
Barranquilla, Colombia.
nawellj-alvarezl@unilibre.edu.co

Aura Visbal Quintero
Undergraduate student in International Business Administration, Universidad Libre; specialization in Accounting, Economic and Administrative Studies.
Barranquilla, Colombia.
auras-visbalq@unilibre.edu.co.

Edith Campos Guzmán
Professor, Industrial Engineering Program, Universidad del Atlántico.
Barranquilla, Colombia.
edithcampos@uniatlantico.edu.co

Gustavo Henríquez Fuentes
Ph.D. in Business Administration, Universidad Libre; Full-Time Professor in Accounting, Economic and Administrative Studies.
Barranquilla, Colombia.
gustavor.henriquezf@unilibre.edu.co

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1. INTRODUCTION

Corporate Social Responsibility (CSR) has emerged as a strategic imperative for organizations in all sectors, given their undeniable impact on society and the environment. As a management approach, CSR contributes not only to organizational legitimacy but also to sustainable development by promoting responsible business conduct and alignment with broader societal goals (Vallaeys & Álvarez, 2019; Higuera, Henríquez & Mejía, 2013). Despite the growing consensus on its importance, CSR continues to be the subject of academic debate, particularly with regard to its definitions, scope and measurable outcomes. These debates span administrative, ethical, and financial perspectives, emphasizing the need for coherence between corporate discourses, managerial actions, and observable practices (Buitrago, 2021; Rosano et al., 2021).

A key focus of recent empirical research has been the relationship between CSR initiatives and Corporate Financial Performance (CFP), particularly in the context of sustainability-oriented strategies. There is growing evidence that well-designed CSR practices can generate competitive advantages, mitigate operational risks and improve financial outcomes. In this context, this study seeks to identify and describe the sustainability strategies implemented by leading Colombian companies from different economic sectors that have demonstrated superior financial performance in 2023.

The study contributes to the literature on CSR and sustainability by offering a typological classification of companies based on their financial performance and reported sustainability practices. In doing so, it provides valuable insights into how financially successful firms in Colombia integrate sustainability into their core business strategies. It also highlights sectoral patterns and managerial implications for aligning profitability with long-term environmental and social commitments.

The paper is organized as follows. The next section provides a theoretical and conceptual overview of CSR and corporate sustainability, drawing on relevant academic perspectives to contextualize the relationship between sustainability practices and firm performance. This is followed by a detailed explanation of the methodological design, which includes the application of hierarchical clustering techniques to group firms with similar characteristics. The results section presents the identified clusters, highlighting sectoral affiliations and patterns in sustainability strategies. Finally, the study concludes by discussing the strategic orientations of Colombia's largest firms in 2023, with implications for policy, management practice and future research.

2. THEORETICAL FRAMEWORK OR LITERATURE REVIEW

Corporate sustainability has gained significant recognition as a pivotal catalyst for long-term economic and financial performance. It encompasses the responsible use and preservation of natural resources within ecological limits, while concomitantly fostering economic growth and improving societal conditions (Nechi, Aourit & Mrabet, 2019). Contrary to the notion of sustainability as a marginal concern, it has evolved into a pivotal aspect of business strategy, capable of generating tangible financial value through enhanced productivity, market expansion, and enhanced profitability (Carreño, 2018). To achieve this objective, organizations must identify and operationalize factors that engender shared value for the firm, society, and the environment.

In accordance with global frameworks such as the Sustainable Development Goals (SDGs), the United Nations Global Compact, and the Universal Declaration of Human Rights, corporate entities are expected to incorporate sustainability into their fundamental operations (Henríquez-Fuentes et al., 2019). A multitude of standards and reporting frameworks, including the Global Reporting Initiative (GRI), ISO 26000, AA1000, SA8000, and the SGE 21 Standard, offer comprehensive guidelines for aligning organizational behavior with social and environmental commitments (Strandberg, 2010). These instruments provide the foundation for transparent and comparable sustainability reporting and performance measurement.

The evolution of Corporate Social Responsibility (CSR) as a strategic approach to sustainability has been a subject of considerable academic interest. The concept's genesis can be traced to the mid-20th century, a period marked by global economic and wartime crises. In response to these challenges, firms began to assume social roles, marking the initial phase of CSR's development (Urdaneta et al., 2016). CSR is not merely a set of philanthropic actions; rather, it is a comprehensive management model aimed at minimizing negative impacts and maximizing positive contributions across the social, environmental, and economic spheres (Henríquez-Fuentes et al., 2019). Consequently, there is an increasing expectation for organizations to monitor and disclose their performance through sustainability reports. These reports serve as essential tools for accountability and stakeholder engagement (Fraile & Fredejas, 2012).

The theoretical underpinnings of CSR encompass a range of perspectives, including stakeholder theory, agency theory, legitimacy theory, institutional theory, the resource-based view, and impact management (Larrán & Andrades, 2015; Macías & Bastidas, 2019; Henríquez, 2021; Vallaeys & Rodríguez, 2019). Among these, the impact management perspective emphasizes the intentional and measurable mitigation of social and environmental impacts, encouraging organizations to adopt proactive strategies that not only ensure regulatory compliance but also attract investors, satisfy community expectations, and enhance internal cohesion (ISO 26000, 2010).

Recent scholarship has highlighted the correlation between employee satisfaction, corporate commitment, and the efficacy of sustainability initiatives. Macke and Genari (2019) posit that engaged professionals play a pivotal role in enhancing business performance and facilitating investment in social and environmental domains. Furthermore, Socially Responsible Investment (SRI) practices, in which investors consider Environmental, Social, and Governance (ESG) criteria in their decision-making, reflect the mounting conviction that Corporate Social Responsibility (CSR) fosters competitiveness and long-term value creation (Strandberg, 2022).

Empirical evidence continues to affirm the relationship between CSR practices and financial performance, including their effects on accounting indicators and market valuation (Cardona, Salazar & Álvarez, 2023). Effective communication of CSR is also essential; organizations must articulate their social and environmental efforts clearly to stakeholders, reinforcing legitimacy and trust. As Braam and Peeters (2018) have observed, high-performing firms are more likely to undergo external auditing of their sustainability reports, thereby enhancing transparency and stakeholder confidence.

As posited by Mercadé-Melé, Molinillo, and Fernández-Morales (2017), communication strategies and media channels play a critical role in shaping stakeholder perceptions of CSR. The format, frequency, and accessibility of sustainability disclosures significantly influence how these initiatives are understood and valued by external audiences.

In summary, the implementation of CSR strategies has been demonstrated to engender a multitude of advantages, encompassing both the realm of organizational impact management and financial performance. When communicated and integrated effectively into the firm's operational logic, these strategies contribute to the legitimacy of business activities and support sustainable development goals. A comprehensive analysis of the sustainability strategies employed by leading firms offers invaluable insights into the contributions of diverse economic sectors to the overarching agenda of social, economic, and environmental progress.

3. METHODOLOGY

This study employs a quantitative research approach with a descriptive and classificatory scope. Its objective is to analyze the relationship between Corporate Social Responsibility (CSR) strategies and financial performance among leading companies operating in Colombia. The methodological design is cross-sectional, based on secondary data extracted from corporate sustainability reports and financial statements available on company websites.

The research is founded on the findings of preceding studies that demonstrate the pertinence of quantitative methodologies for investigating CSR-finance interrelationships. For instance, Fonseca, Bernate, and Cabanzo (2024) employed a descriptive, cross-sectional design to examine CSR strategies in sports organizations. In a similar vein, Cuadrado, Rodríguez, and Cortez (2023) employed clustering methodologies to discern thematic clusters within the domain of CSR research, with a particular focus on subjects such as environmental management, supply chains, and financial performance.

To characterize the data, researchers employed descriptive statistical techniques, including measures of central tendency and dispersion. These measures included the mean, standard deviation, and coefficient of variation (Tamayo, 2015). These metrics facilitate understanding of the general behavior and variability of CSR and financial indicators across companies.

To categorize the firms into homogeneous groups based on their CSR and financial performance attributes, hierarchical cluster analysis was applied. This approach facilitates the aggregation of observations, thereby ensuring the maximization of intragroup similarity while simultaneously accentuating intergroup differences (De la Fuente, 2011). The Ward method, which is recognized for minimizing the total within-cluster variance, was used in conjunction with the Euclidean distance as a proximity measure to assess the dissimilarities between observations (Aldás & Uriel, 2005).

In addition, correspondence analysis was employed to reduce the dimensionality of the data and facilitate interpretation. This technique synthesizes large data sets into a reduced number of dimensions, preserving the relationships among variables and aiding in the visualization of CSR and financial performance patterns (De la Fuente, 2011).

To complement the quantitative analysis, a content analysis was conducted on the sustainability reports published by the selected companies. Content analysis, as defined by Bardin (1986, as cited in López, 2002), involves a set of methodological tools for analyzing both the content and format of discourses. This qualitative technique enabled the identification and categorization of CSR strategies and themes communicated by firms, thereby providing a contextual understanding of their sustainability commitments.

In summary, this study combines descriptive statistics, multivariate classification techniques (cluster and correspondence analysis), and qualitative content analysis to generate a robust understanding of how CSR practices relate to financial outcomes. The integration of these methods enables a comprehensive analysis of the heterogeneity of CSR strategies and their alignment with financial performance across companies in different economic sectors.

4. RESULTS, FINDINGS OR DEVELOPMENT

The extant data from Acosta (2024) and the EMIS[1]database have been meticulously arranged in Table 1, encompassing a comprehensive array of information on companies, including net sales, net profits, net margin, and risk profile. In order to prevent a variable from contributing more than another due to its absolute value in forming the groups, the variables are standardized or normalized, and the results are processed using SPSS software. For the purpose of standardization or normalization, the variable was defined through Equation 1:

$$Z = \frac{x - \overline{x}}{Sx} = (1)$$

Where:

Z= standardized variable

1 EMIS is a comprehensive platform offering financial and market data on companies in emerging economies and specific industry sectors. It covers a five-year period and encompasses both listed and private companies in more than 197 countries.

X= variable to be standardized

$\bar{x}$ = mean of the variable to be standardized

Sx= standard deviation of the variable to be standardized

The application of the clustering technique, specifically Ward's method, facilitates the identification of companies demonstrating optimal performance in Colombia during the year 2023. The variables considered in this study include sales, net profit, net margin, and risk profile. The results of this study are presented in Table 1.

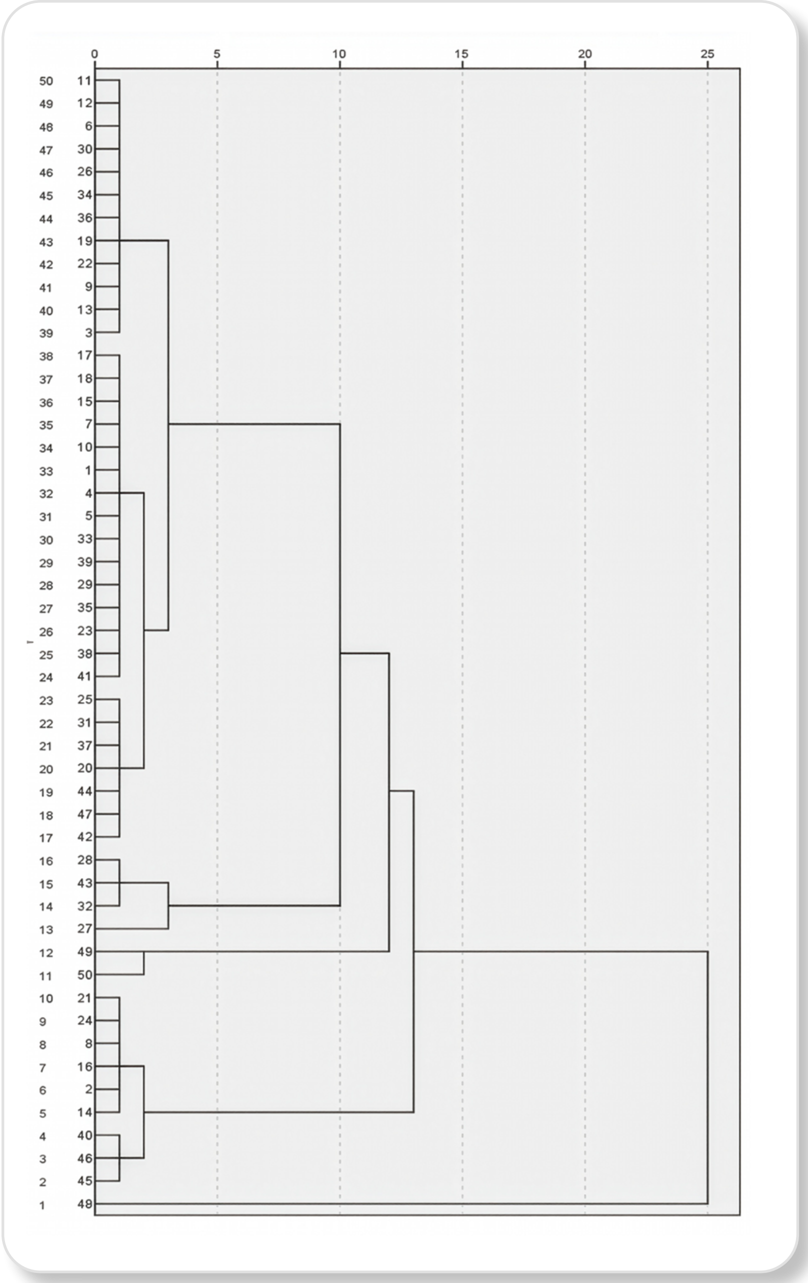
Table 1. 50 largest companies in Colombia in 2023

Companies		Net sales	Net profits	Net margin (%)	Risk profile
1	Genelec S.A.S. (Enel)	495	11	2,32	C
2	Organización Corona S.A.	165.829	122.504	73,87	0
3	Grupo Energía de Bogotá S.A. E.S. P	248.409	840.221	346,39	B
4	Fundación Cardio infantil instituto de cardiología	663.774	69.245	10,43	C
5	UNE EPM Telecomunicaciones S.A.	701.252	-148.395	-21,16	C
6	Mineros Aluvial	812.370	207.279	25,52	A
7	Parex Resources Colombia Ltd.	1.198.199	-5.025	-0,42	C
8	Colsubsidio	1.275.460	21.834	1,71	0
9	Oleoducto Central S.A	1.576.473	743.421	52,4	B
10	Grupo Agroindustrial Riopaila Castilla	1.654.276	63.232	3,87	C
11	Nestlé de Colombia S.A.	2.018.295	46.757	2,32	A
12	Interconexión eléctrica S.A. ISA ESP	2.113.428	52.374	2,48	A
13	Hocol S.A.	2.697.411	257.851	9,56	B
14	EPS Sanitas	2.722.200	89.790	3,3	E
15	Polipropileno del Caribe S.A (Esenttia)	2.739.952	199.483	7,28	C
16	EPS Sura	2.757.220	106.048	3,85	0
17	Postobón S.A.	2.937.384	46.202	1,57	C
18	Colombina S.A.	3.386.903	129.863	3,88	C
19	Cencosud S.A E.S. P	3.549.559	748.593	21,09	B
20	Empresas Públicas de Medellín (EPM)	3.625.745	585.442	16,15	C
21	Carvajal	4.244.563	76.461	1,8	0
22	Frontera Energy Corporation	4.609.881	580.459	12,59	B
23	Verano Energy (Switzerland)	4.983.930	-41.378	-8,41	C
24	Compensar Caja de Compensación Familiar	5.042.720	-32.402	-0,64	
25	Isagen S.A, ESP	5.533.065	1.035.243	18,74	C
26	Sodimac Colombia	5.761.589	306.727	5,35	B
27	Grupo Sura	5.862.525	5.008.445	14,73	0
28	Bavaria S.A.	6.535.823	2.086.547	31,92	B
29	C.I. Trafigura Petroleum Colombia	6.573.649	-25.234	-0,38	C
30	Refinería de Cartagena S.A.S. (Reficar)	6.607.577	109.749	1,66	A
31	Promigas S.A. E.S.P.	6.676.626	1.115.405	16,88	C
32	Cenit Transporte y Logística de Hidrocarburos S.A.S. (Ecopetrol)	7.063.045	4.706.947	66,54	B

Companies		Net sales	Net profits	Net margin (%)	Risk profile
33	Colombia Telecomunicaciones ESP (Movistar)	7.122.915	-689.666	-10,32	C
34	Carbones del Cerrejón Limitada	7.468.900	257.260	3,44	B
35	Supertiendas y droguerías Olímpica	7.800.992	52.183	0,67	C
36	Primax Colombia	9.016.862	88.139	0,98	B
37	Kopps Commercial	10.793.869	940.514	8,71	C
38	Colombiana de Comercio (Alkosto S.A)	11.146.931	57.586	5,17	C
39	ARA (Jerónimo Martins Colombia)	11.299.332	-659.212	-5,83	C
40	Avianca	13.575.257	224.733	1,66	E
41	D1 S.A.S	13.957.675	288.724	2,07	C
42	Comcel S.A.	14.853.249	1.408.971	9,49	C
43	Drummond	15.507.041	3.265.990	21,06	A
44	Grupo Nutresa S.A.	18.880.280	739.615	3,91	C
45	Grupo Argos	19.650.540	1.459.998	7,53	0
46	Nueva EPS	20.220.480	-341.817	-1,69	0
47	Almacenes Éxito	21.172.703	308.175	1,46	C
48	Ecopetrol S.A.	30.794.862	5.660.425	18.32	A
49	Organización Terpel	36.252.720	285.286	0,79	B
50	Salud Total	69.103.403	101.768	0,15	C

Note: *The data used in this table were sourced from the European Mathematical Information Service [EMIS] (2024) through individual searches for each company. Own elaboration.*

Figure 1. Dendrogram using Ward's linkage.



Note: *Dendrogram showing the classification of groups created using SPSS software. Own elaboration.*

The dendrogram illustrates the proximity or similarity of companies across seven distinct groups, enabling each group to identify a primary distinguishing characteristic.

Group 1 consists of 12 companies (items 3, 6, 9, 11, 12, 13, 19, 22, 26, 30, 34, and 36). These companies have demonstrated a consistent positive net margin and have not incurred any financial losses. The range of net sales in this group is from

COP 248,409 million to COP 9,016,862 million, while net profits vary between COP 88,139 million and COP 840,221 million, indicating considerable heterogeneity in financial scale. With respect to credit risk, eight companies have been assigned a B rating and four have received an A rating, indicating a generally favorable financial health status. These firms have been shown to exhibit both profitability and risk control, positioning them as relevant cases for analyzing the link between financial performance and sustainability strategies. Table 2 provides a synopsis of the salient financial and sustainability characteristics of the group under consideration.

Table 2. Characterization of Group 1.

Group 1
Companies: Grupo Energía de Bogotá S.A. E.S.P, Mineros Aluvial, Oleoducto Central SA, Nestlé de Colombia S.A., Interconexión Eléctrica S.A. ISA ESP, Hocol S.A., Cencosud S.A E.S.P, Frontera Energy Corporation, Sodimac Colombia, Refinería de Cartagena S.A.S. (Reficar), Carbones del Cerrejón Limitada, and Primax Colombia.
Main characteristic: All companies have positive net profits.
Characterization
In 2023, all companies had a positive net margin, with Grupo Energía de Bogotá S.A. E.S.P having the highest value of 346.39%.
Economic sectors: Energy, minorities, pipeline transportation, food production, electricity, oil, gas and coal, retail and wholesale (supermarkets), petroleum, home improvement retail, petroleum refining, industrial materials and mining, and wholesale fuel.
Product initiatives by 2023: Innovating product packaging processes to reduce plastic waste and strengthen recycling lines, producing low-emission hydrocarbons, conducting periodic emission inventory reviews, systematic visits, recovering used oil internally as emulsion and externally through a supplier for refining, and recovering scrap and cardboard.
Community initiatives by 2023: Training for waste management and treatment, creating local employment, generating local economic alternatives, improving urban and rural social infrastructure, providing access to health services, improving the quality of life for farmers and rural populations, contributing to the socioeconomic growth of all involved in the value chain, promoting socioeconomic growth, developing territorial alliances, transforming territories, social investment programs, preserving indigenous communities, protecting the population from pollution exposure due to operations or hazardous substances, improving living standards for neighboring communities, promoting access to water and education, and providing humanitarian aid.
Environmental initiatives by 2023: Optimizing renewable and non-renewable natural resources, reusing materials, managing waste, using resources efficiently, reducing water and energy consumption, managing plastic neutrality, protecting biodiversity, minimizing the environmental impact of operations, mitigating and adapting to climate change, producing low-carbon energy, identifying and eliminating methane emissions, reducing excess gas flaring, and developing environmental programs to protect tropical dry forests, regional fauna and flora, as well as rivers and streams to mitigate the effects of operations on air and water quality.
Global Compact affiliation by 2023: Most companies were not affiliated. Only five were affiliated.
Sustainable Development Goals (SDGs) - Agenda 2030 by 2023: Most companies did not have set goals for the SDGs. Only five having these goals.

Characterization
Global Reporting Initiative (GRI) standards by 2023: Most companies adhered to GRI standards (an international organization that sets standards for sustainability reporting). Only five did not.
ICONTEC certification by 2023: Only Carbones del Cerrejón Limitada, Sodimac Colombia, Frontera Energy Corporation, and Cencosud S.A E.S.P did not have ICONTEC certification for products, processes, and services.
ISO 26000 affiliation by 2023: All companies were affiliated with ISO 26000, except Cencosud S.A E.S.P and Primax Colombia.

Note: *The table shows common characteristics of the companies clustered in group 1. Own elaboration.*

Group 2 includes 15 companies (items 1, 4, 5, 7, 10, 15, 17, 18, 23, 29, 33, 35, 38, 39, and 41), characterized by wide variability in net sales, ranging from COP 495 million to COP 13,957,675 million. Net profits fluctuate between a loss of COP -689,666 million and a gain of COP 288,724 million, with six companies reporting negative profits and net margins. Despite the financial scale of some firms, all companies in this group are rated with a risk profile of C, indicating a higher level of financial vulnerability. Table 3 details the financial and sustainability attributes of this cluster.

Table 3. Characterization of Group 2.

Group 2
Companies: Genelec S.A.S. (Enel), Fundación Cardio Infantil Instituto de Cardiología, UNE EPM Telecomunicaciones S.A., Parex Resources Colombia Ltd., Grupo Agroindustrial Riopaila Castilla, Postobón S.A., Colombina S.A., Verano Energy (Switzerland), C.I. Trafigura Petroleum Colombia, Colombia Telecomunicaciones ESP (Movistar), Colombiana de Comercio (Alkosto SA), ARA (Jerónimo Martins Colombia), and D1 SAS.
Main characteristic: All companies have a risk profile of category C
Characterization
In 2023, most companies had a positive net margin, with Promigas S.A. E.S.P having the highest value of 10.43%.
Economic sectors: electricity, telecommunications, petroleum, general industries, beverages, food producers, fuel wholesalers, retailers.
Product initiatives by 2023: Some companies implemented initiatives such as returnable products, products based on renewable natural resources, training leaders in formulation, improvement, and verification of improvement plans for the efficiency of their actions, product innovation, and strategies for recycled and recyclable packaging.
Community initiatives by 2023: Companies engaged in local community involvement, providing access to energy, evaluating the impacts of operations on communities, protecting health, promoting economic and social development, fostering relationships with society to strengthen projects and activities to improve the quality of life for all, promoting training spaces for farmers, creating jobs, territorial development, impact mitigation, and initiatives like MiBici Postobón, which provides bicycles to children and adolescents living in rural areas far from their schools.

Characterization
Community initiatives by 2023: Companies engaged in training for waste management and treatment, creating local employment, generating local economic alternatives, improving urban and rural social infrastructure, providing access to health services, improving the quality of life for farmers and rural populations, contributing to the socioeconomic growth of all involved in the value chain, promoting socioeconomic growth, developing territorial alliances, transforming territories, social investment programs, preserving indigenous communities, protecting the population from pollution exposure due to operations or hazardous substances, improving living standards for neighboring communities, promoting access to water and education, and providing humanitarian aid.
Environmental initiatives by 2023: Companies implemented waste management, water management, biodiversity protection, use of clean energy, circular economy management, energy management, water sustainability, zero leaks, continuous improvement of processes, cleaner production practices, rational use of natural resources, ensuring proper treatment and final disposal of waste, renewable energy sources, circular economy, waste management under reuse, return, and recycling criteria, decarbonization, optimization of packaging process materials, efficient water use, energy efficiency, and waste reduction.
Global Compact affiliation by 2023: Most companies were affiliated. Only four were not.
Sustainable Development Goals (SDGs) - Agenda 2030 by 2023: Most companies did not have set goals for the SDG. Only six did.
Global Reporting Initiative (GRI) standards by 2023: Most companies did not adhere to GRI standards (an international organization that sets standards for sustainability reporting). Only six did.
ICONTEC certification by 2023: Most companies did not have ICONTEC certification for products, processes, and services. Only five did.
ISO 26000 affiliation by 2023: Most companies were affiliated with ISO 26000. Only five were not.

Note: *The table shows common characteristics of the companies clustered in group 2. Own elaboration.*

Table 4. Characterization of Group 3.

Group 3
Companies: Empresas Públicas de Medellín (EPM), Isagen S.A, ESP, Promigas S.A. E.S.P., Kopps Commercial, Comcel S.A., Grupo Nutresa S.A. y Almacenes Éxito.
Main characteristic: Companies have a range of net profits between 300,000 to 1,500,000 billion Colombian pesos.
Characterization
By the year 2023, all companies had a positive net margin, with Promigas S.A. E.S.P having the highest value at 16.88%.
Economic sectors: Electricity, gas, energy, gas, water and multiservice, wholesale beverages and tobacco, telecommunications equipment and service providers, food producers, and Almacenes Éxito respectively).
Product initiatives by 2023: Support for national innovation, increased access to technology and improvement in the quality of their services, carbon-neutral products, eco-friendly packaging, recyclable and biodegradable packaging, and renewable packaging.

Characterization
Community initiatives by 2023: Free internet services for learning, adopting inclusive labor practices, promoting the enhancement of quality and work-life balance for employees, women's cookie business network, purpose-driven brands, female entrepreneurship, English study scholarships, skills school, arts and crafts workshops, park construction, and reduction of energy poverty.
Environmental initiatives by 2023: Use of renewable energies, efficient use of natural resources, circular economy practices, volunteering for plastic collection, eco-friendly refrigeration systems, emission reduction, biodiversity conservation, water resource management, circularity, low carbon emissions, and energy transformation decarbonization.
Global Compact affiliation by 2023: Four companies were affiliated: Empresas Públicas de Medellín (EPM), Promigas S.A. E.S.P., Comcel S.A., and Almacenes Éxito, while three were not affiliated: Isagen S.A. ESP, Kopps Comercial, and Grupo Nutresa.
SDG goals alignment by 2023: Four companies did not have goals aligned with the SDGs - Agenda 2030: Empresas Públicas de Medellín (EPM), Isagen S.A. ESP, Kopps Comercial, and Almacenes Éxito. Three did: Promigas S.A. E.S.P., Comcel S.A., and Grupo Nutresa S.A.
GRI adherence by 2023: Companies that were adhered: Promigas S.A. E.S.P., Comcel S.A., and Grupo Nutresa S.A.. Companies that did not: Empresas Públicas de Medellín (EPM), Isagen S.A. ESP, Kopps Comercial, and Almacenes Éxito.
ICONTEC certification by 2023: All companies except Comcel S.A. had certification for products, processes, and services with the ICONTEC quality seal.
ISO 26000 affiliation by 2023: All companies had affiliations with ISO 26000 except Kopps Comercial.

Note: *The table shows common characteristics of companies clustered in group 3. Own elaboration.*

Group 4 comprises 4 companies (items 27, 28, 32, and 43), all reporting robust financial indicators. Net sales range from COP 5,862,525 million to COP 15,507,041 million, and net profits span from COP 2,086,547 million to COP 5,008,445 million. All companies exhibit positive net profits and net margin ratios. In terms of risk, three are rated A or B, while the Sura Group lacks a rating in the EMIS database. Table 5 details the financial and sustainability characteristics of this group.

Table 5. Characterization of Group 4.

Group 4
Companies: Drummond, Cenit Transporte y Logística de Hidrocarburos S.A.S. (Ecopetrol) Bavaria S.A. y Grupo Sura.
Main characteristics: Contain one of the largest net profits of companies.
Characterization
By 2023, all companies had a positive net margin, with Cenit Transporte y Logística de Hidrocarburos S.A.S. (Ecopetrol) having the highest value at 66.54%.
Economic sectors: (Industrial metals and mining, Oil, gas and coal, Beverages, and Financial and credit services, respectively).

Characterization
Product initiatives by 2023: Programs for the management and monitoring of water resources and the location of external landfills to avoid affecting buffer zones, automatic monitoring systems for preventive alerts, sustainable stations, progressive waste reduction, decarbonization and water conservation, returnable products, products based on renewable natural resources, in addition to investment in businesses by mobilizing resources with partners.
Community initiatives by 2023: Strengthening social ties, improving quality of life, and creating a more inclusive and equitable environment such as water supply service for neighbors near the projects (for animals and general needs during periods of drought); promoting community development through relationships with suppliers and contractors; promoting moderate consumption and contributing to an improvement in the quality of life and opportunities for their farmers; supporting professors and students in business schools; improving the education system; promoting different forms of art as an added value for individuals and societies; investing in promoting healthy lifestyles; and supporting the safe return to school.
Environmental initiatives by 2023: An organized effort that seeks to reduce negative environmental impact and promote sustainability, such as regulation services would ensure the flow of water into reservoirs during droughts; the creation of ecosystems that attract birds, reptiles, and mammals to wetland areas, thereby conserving other species; initiatives in economic circularity, biodiversity, and ecosystem regeneration; the use of renewable energy such as solar energy; water conservation; biodiversity conservation; and an increase in the share of low-carbon assets in investment portfolios, in addition to reducing carbon emissions.
Global Compact affiliation by 2023: All companies were affiliated.
SDG goals alignment by 2023: All companies counted with it (Agenda 2030).
GRI adherence by 2023: All companies had it (an international organization that sets standards for sustainability reporting compliance).
ICONTEC certification by 2023: All companies except Bavaria S.A. certified their products, processes, and services with this quality seal.
ISO 26000 affiliation by 2023: All companies were affiliated.

Note: *The table shows common characteristics of the companies clustered in group 4. Prepared by the authors.*

Group 5 consists of two companies (items 49 and 50), both exhibiting high financial performance. Net sales range from COP 36,252,720 million to COP 69,103,403 million, while net profits vary between COP 101,768 million and COP 285,286 million. Neither company reports losses, and the net margin ratio is positive in both cases. One of the companies holds a risk profile rating of C. Table 6 presents the financial and sustainability-related characteristics of the firms in this group.

Table 6. Characterization of Group 5.

Group 5
Companies: Organización Terpel y Salud Total
Main characteristic: Companies with more net sales
Characterization
Companies with more net sales in their economic sector (oil and health respectively).

Characterization
Product initiatives by 2023: Companies did not have any initiative in products (application of sustainable measures in products).
Community initiatives by 2023: Companies did not have any initiatives in communities (strengthening social ties, improving the quality of life and creating a more inclusive and equitable environment).
Environmental initiatives by 2023: Companies did not have any initiative for the environment (organized effort that seeks to reduce negative environmental impact and promote sustainability).
Global Compact affiliation by 2023: Organización Terpel was affiliated and Salud Total was not affiliated.
SDG goals alignment by 2023: Companies did not have goals set for the SDGs - Agenda 2030.
GRI adherence by 2023: All companies had it (an international organization that sets standards for sustainability reporting compliance).
ICONTEC certification by 2023: Companies had certification of products, processes and services with the ICONTEC quality seal.
ISO 26000 affiliation by 2023: Salud Total had ISO 26000 affiliations and Organización Terpel had no affiliations.

Note: *The table shows the common characteristics of the companies clustered in group 5. Own elaboration.*

Group 6 consists of six companies (items 2, 8, 14, 16, 21, 24) with net sales ranging from COP 165,829 million to COP 5,042,720 million. Net profits range from - COP 32,402 million to COP 122,504 million, with one company reporting losses and a negative net margin. Only one company in this group has a risk profile rating of E, while the rest are unrated according to the EMIS database. Table 7 shows the financial and sustainability characteristics of the companies in group 6.

Table 7. Characterization of Group 6.

Group 6
Companies: Compensar Main characteristic: Family Compensation Fund, Carvajal, EPS Sura, EPS Sanitas, Colsubsidio, and Organización Corona S.A.
Main characteristic: Companies with a risk profile coding between 5 and 6.
Characterization
By 2023, most companies had a positive net margin, with Organización Corona S.A. having the highest net margin value at 73.87%.
Economic sectors: General industries, construction and materials, health and social health insurance.
Product initiatives by 2023: Some companies employed food packaging, paper for billing made from renewable materials, investment in production techniques for the efficient use of natural and energy resources, and water reuse.
Community initiatives by 2023: Some companies employed inclusion, diversity, prevention, and promotion of safe environments for employees and contractors. They generated partnerships with organizations to develop projects that have a positive impact on the community, contributing to the solution of the social problems they face.

Characterization
Environmental initiatives by 2023: Some companies worked with reducing emissions intensity, reducing the use of coal, and re-incorporating industrial waste. Optimizing available natural resources, reducing the carbon footprint, and minimizing operational risks.
SDG goals alignment by 2023: Most companies did not have targets set for SDGs - Agenda 2030. Only two of them did.
GRI adherence by 2023: most of the companies did not have it, except for two of them.
ICONTEC certification by 2023: Most companies had products, processes, and services certified with the ICONTEC quality seal. Only two did not.
ISO 26000 affiliation by 2023: Most companies were ISO 2600-certified. Only two did not.

Note: *The table shows common characteristics of the companies clustered in group 6. Own elaboration.*

Group 7 includes three companies (items 40, 45, 46), with net sales ranging from COP 13,575,257 million to COP 20,220,480 million. Net profits range from -COP 341,817 million to COP 1,459,998 million, with one company reporting losses and a negative net margin. Only one company in this group is rated with a risk profile of E, while the others are unrated in the EMIS database. Table 8 details the characteristics of the companies included in Group 7.

Table 8. Characterization of Group 7.

Group 7
Companies: Nueva EPS, Grupo Argos and Avianca
Main characteristic: Companies with net sales between 13,000,000 and 20,000,000.000 million pesos
Characterization
By the year 2024, most of the companies have a positive net margin, Grupo Argos has the highest value of 7.53
Economic sectors: Cement, health and airlines.
Product initiatives by 2023: None of the companies had initiatives in products.
Community initiatives by 2023: None of the companies had initiatives in communities
Environmental initiatives by 2023: None of the companies had any environmental initiatives
Global Compact affiliation by 2023: Most of the companies did not have any affiliation. Only one of them did.
SDG goals alignment by 2023: None of the companies had targets set for the SDGs-Agenda 2030.
ICONTEC certification by 2023: None of the companies had any affiliation to INCONTEC.
GRI adherence by 2023: None of the companies had it (international organization that establishes standards for sustainability reporting).
ISO 26000 affiliation by 2023: Most of the companies had affiliations with ISO 2600. Only one did not.

Note: *The table shows common characteristics of the companies clustered in group 7. Own elaboration.*

As an outlier, we identified Ecopetrol, which reported net sales of 30,794,862, net profits of 5,660,425, and average sales and net profits of 21,895,709 and 5,375,139, respectively. The company's initiatives encompass the development of water management platforms aimed at enhancing the efficiency of water collection and discharge processes. Additionally, the company is engaged in renewable energy and green hydrogen projects, underscoring its commitment to sustainability. In contrast, the organization has initiated several initiatives that contribute to the development of communities. These initiatives include support for sustainable territorial development, application to access to public services, education coverage, and the reduction of inequality. In addition, the organization implements projects that contribute significantly to the consolidation of peace and the environment. These projects include water reuse, the use of renewable energies, and the production of green hydrogen. The company has established affiliations with prominent standards such as ISO 26000 and INCONTEC, in addition to adhering to standards established by the Global Reporting Initiative (GRI), an international organization that develops sustainability reporting standards.

5. CONCLUSIONS

This study successfully achieved its proposed objectives by identifying and describing the sustainability strategies implemented by Colombian companies across various sectors, using a hierarchical clustering technique (Ward's method). The findings indicate that most companies adopt sustainability practices focused on their products or services, with strong environmental and social components. Despite sectoral heterogeneity, a common pattern emerges: sustainability is approached more as a business extension than as a structural transformation, particularly among firms with stronger financial performance.

Cluster analysis revealed significant differences among groups. Companies with positive net margins and risk profiles rated A, B, or C (such as groups 1, 3, and 4), exhibited more developed sustainability strategies, oriented toward eco-efficient products, process innovation, and community engagement. In contrast, other groups (such as 6 and 7), with considerable variability in profitability or lacking risk ratings, also engaged in some environmental or social initiatives, although without a clearly articulated strategy. These findings suggest that while there is a positive association between sustainability and financial performance, it is not a necessary condition, opening avenues for interpretations through institutional theory or the symbolic logic of CSR.

Ecopetrol, identified as a financial outlier, illustrates how large corporations in emerging economies can adopt a strategic sustainability approach aligned with global frameworks such as the SDGs, ISO 26000, and GRI standards. However, its lack of affiliation with the UN Global Compact highlights that institutional commitment to sustainability can follow alternative paths—an issue of relevance in ongoing debates on legitimacy and accountability in Latin American contexts.

From a theoretical perspective, these findings enhance the understanding of corporate sustainability behavior in emerging contexts. In particular, they reinforce stakeholder theory by showing how organizations seek social legitimacy through initiatives directed at local interest groups, even when not necessarily linked to high profitability. They also raise questions about the alignment between declared practices and actual outcomes—an issue that can be further explored through frameworks such as decoupling theory.

Finally, this study proposes a research agenda focused on establishing causal relationships between sustainability practices and financial performance using econometric techniques or longitudinal models. It is also essential to deepen sectoral and regional analyses by considering the influence of institutional and cultural factors on the adoption of sustainable strategies. This will contribute to a more robust understanding of the strategic value of sustainability in emerging economies such as Colombia.

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