

Double Materiality Approach and Sustainable Business Model Paradigm: A Three-Fold Analysis

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Abstract: Adopting the United Nations 2030 Agenda for Sustainable Development, governments commit to the 17 goals and 169 associated targets in areas of critical importance for humanity and planet, while companies manifest a growing interest in playing a significant role to SDGs prioritisation. Researchers, policymakers, stakeholders, and analysts are all preoccupied about responsible ways of redesigning the business model to mitigate the growing concerns, such as companies' failures, global multidimensional crisis, and sustainability-related issues. Under the light of institutional theory, legitimacy theory, stakeholder theory, the aim of this research is to investigate how environmental, social and governance (ESG) policies and practices included in a sustainable business model may respond to the double materiality approach in order to contribute to a balance among divergent interests of managers, investors, and other stakeholders. The financial materiality is conceptualized using ESG data, that mainly targets investor's needs. Stakeholder materiality, is concerned with external impact of companies, embodied in societal-level outcomes measured as the number of SDGs addressed in corporate reporting. In this study, company-year data are collected from Refinitiv Eikon database, starting with 2015, until current reporting period and analysed using frequency, univariate and correlation analyses. Based on Levene homogeneity, the ANOVA parametric t-test results are validated by Mann-Whitney Wilcoxon and Krushkal Wallis non-parametric tests. Three main research questions are responded. First, the findings examine and discuss the evolution of sustainability reporting measured with ESG scores, decomposed by the three pillars and ten categories, along with the SDGs prioritisation. Second, statistically significant differences in ESG and SDGs variables reported by various groups clustered on industry-related corporate characteristics are discussed. Third, the significant associations between ESG measures and SDGs are analysed from the double materiality perspective. The study contributes to the academic and practical understanding of the evolving business model under normative dimension of institutional theory, incorporating the decision to engage in current sustainability frameworks and policies.

Keywords: Double Materiality, Sustainable Business Model, Three-fold Analysis, SDGs Prioritisation, ESG Policies And Practices

1. Introduction

A comprehensive literature review of recently published research on sustainability materiality (Adams and Abhayawansa, 2022; Broadstock et al, 2021) shows an exponential increase, especially in the context of "multifaceted landscape of different international reporting standards" (Fiandrino, Tonelli, and Devalle, 2022, p. 684). Standard setters concentrate on investors and other stakeholders as main users of sustainability information, exposing the double materiality concept. Schaltegger, Ludeke-Freund, and Hansen (2016) consider that both researchers and practitioners reached the conclusion that sustainable development of the society may not be achieved without the sustainable development of organisations. From this perspective, corporate sustainability may be leveraged through an informative disclosure that reinforces the company's capabilities to gain competitive advantage.

At macroeconomic level, UNEP continuously updated its mission in covering sustainability issues, resulting in the 2030 Agenda for Sustainable Development. Released in 2015 to continue the millennium sustainability goals set in 2000, the sustainable development goals (SDGs) are the result of the UN's long-standing efforts to advance global sustainability (Delgado-Ceballos et al, 2023) and extend the awareness of addressing long-term rather than short-term development (UN, 2015), in order not to compromise the wellbeing of future generations (WCED, 1987). Complementary to their societal-oriented aim, the SDGs are also relevant for companies, by providing a framework to identify challenges and opportunities, and to contribute to long-term advantages that sustainability-oriented businesses may benefit from (Delgado-Ceballos et al, 2023). Sustainability policies and practices incorporated in business models and publicly communicated respond to stakeholders' pressure (Bebbington and Unerman, 2018) and underlie companies' accountability and their legitimacy to operate. Thus, the institutional perspective may explain how the normative pressure drives changes in businesses strategy (Whittingham et al, 2023) resulting in adjusted sustainable business models.

SDGs prioritisation along with ESG policies and practices may help companies to create value for themselves and for their stakeholders. The *double materiality concept* is approached under the light of institutional theory, legitimacy theory, stakeholder theory in order to contribute to a balance among divergent interests of managers, investors, and other stakeholders. The environmental, social and governance (ESG) policies and practices, considered pillars of a *sustainable business model*, are operated to conceptualise the financial materiality. SDGs addressed in corporate reporting measure the level of corporate prioritisation for the UN 2030 Agenda goals, as a proxy for stakeholder materiality, concerned with external impact of companies. The significant differences among firms, based on institutional characteristics, may point to selection priorities and critical gaps for companies to engage with global sustainability goals.

The aim of this research extends the analysis of business' role in solving sustainability challenges and achieving the SDGs included in the Agenda 2030. Also analysed by Delgado-Ceballos et al (2023), Whittingham et al (2023), Heras-Saizarbitoria, Urbieto, and Boiral (2021) or Khaled, Ali, and Mohamed (2021), the 17 SDGs are extensively investigated in this study individually and grouped by three dimensions environmental, social and governance, and further related to ESG policies and practices. In this regard, a reflection on how societal-level goals are prioritize within sustainable business model, including the ESG concepts and the double materiality perspective, which encompasses materiality based on both financial and stakeholder aspects. To demonstrate this connection, a three-fold analysis is applied to an overall research question: *May company-level ESG policies and practices be related to specific societal-level SDGs?* Company-year data collected from Refinitiv Eikon database for the 2015-2023 period are examined using statistical analysis, including descriptive, homogeneity tests, univariate and correlation analyses.

The study contributes to the academic and practical understanding of the evolving business model under normative dimension of institutional theory, incorporating the decision to engage in current sustainability frameworks and policies. First, this research extends the knowledge about the relationship between ESG policies and practices and SDGs prioritisation at corporate level. Arguments for the lack of contributions from accounting scholars on the current SDGs academic debate may be found in Bebbington and Unerman (2018) or Pizzi, Rosati, and Venturelli (2021). Second, the practical implications of companies' engagement with the SDGs, differentiated according to industries' specifics contributes to the gap identified in previous research (Heras-Saizarbitoria, Urbieto, and Boiral, 2021). Third, this study advances the research conducted on environmental, social, and governance dimensions of corporate sustainability policies and practices in relation with sustainable development goals, for which Correa-Mejia, Garcia-Benau, and Correa-Garcia (2024), or Delgado-Ceballos et al (2023) underline a need for future research.

The structure of the remainder of the paper is as follows. In Section 2, relevant literature, underlying theories and research questions are outlined. Section 3 describes the research methodology, including data and sample, variables and statistical tests description. Section 4 discusses the results organised according to the research questions addressed. Section 5 summarizes the main findings and concluding remarks, as well as limitations and future research horizons.

2. Literature Review, Underlying Theories and Research Questions

Considered globally, the social responsibility has been addressed from an integrative point of view, by the world leaders, at the beginning of 2000's (UN, 2015). Hence, eight Millennium Development Goals (MDGs) embodied the actions to be taken in order to fight multiple poverty dimensions. With six goals related to social aspects, one to environmental sustainability and one to global partnership development, the MDGs reshaped decision-making especially in developing countries, but also in the developed ones, by putting people and their immediate needs at the forefront. Building on the MDGs, with the aim of completing the not accomplished objectives, the list of sustainable development goals was extended in areas of critical importance for humanity and planet (people, planet, prosperity, peace, and partnership) in order to achieve global sustainability (Delgado-Ceballos et al, 2023). This first step in promoting "global awareness, political accountability, improved metrics, social feedback, and public pressures" (Sachs, 2012, p.2206) was taken further by governments that committed to 17 Sustainable Development Goals (SDGs) with 169 associated targets and 231 indicators, designed under the Agenda 2030 (UN, 2015).

Academia, governments, standards setters, stakeholders, and analysts are all concerned about responsible ways of redesigning the business model to mitigate the growing concerns, such as companies' failures, global multidimensional crisis, and sustainability-related issues. Pizzi, Rosati, and Venturelli (2021) highlight the collaborative effort in applying the Agenda 2030. Major international corporate reporting standard setters and

framework providers, unified under the Corporate Reporting Dialogue Initiative have released a position paper supporting the development of better reporting guidelines for the Sustainable Development Goals (SDGs), promoting improved coherence, consistency and comparability between corporate reporting frameworks. The new standards in reporting on sustainability, released internationally and across industries, ensure high-quality environmental, social, and governance information (Fiandrino, Tonelli, and Devalle, 2022), along with the financial ones calling for companies' accountability of integrating sustainability at policy and practice levels (Nicholls, 2020). Corporate reporting may be a driver that illustrates which SDGs are relevant to a sustainable business model, creating premises to connect the environmental, social, and governance policies and practices with the prioritisation of those SDGs most likely to impact financial performance.

The materiality concept was prior used in financial reporting to identify relevant information that may influence users' decisions, or change their judgement when omitted or misstated. This approach is nowadays identified as the economic or financial perspective of materiality (Fiandrino, Tonelli, and Devalle, 2022). With the expansion of corporate activities with impact on people and planet, the sustainability perspective of materiality became more and more important in addressing corporate accountability. The double-materiality perspective has evolved into the requirement for companies to report information on how sustainability matters affect their performance, position and development (financial materiality perspective) as well as information on their impact on people and the environment (the stakeholders materiality perspective) (European Parliament, 2022). Growing interest in achieving corporate sustainability along with stakeholders' recognition of pursuing sustainability outcomes in business, contributes to the development of double materiality concept (Delgado-Ceballos et al, 2023), linking financial interests to environmental, social, and governance (ESG) objectives (MacNeil and Esser, 2022) ensuring the achievement of global sustainability.

The adoption of sustainable business model changes corporate reporting towards sustainability, strengthened by the impact of environmental and social policies on company's activities, the focus on company's stakeholders (Huang, 2021), or the newest societal worldwide arrangements claiming for double material information (Adams and Abhayawansa, 2022). Stakeholders' awareness about corporate responsibility improves the visibility, legitimacy, and reputation of companies, hence the performance through value-creation. Accordingly, stakeholder, legitimacy and institutional theories should be considered complementary, rather than competing, when trying to explain the relationship between an organisation and the society within which it operates (Fiandrino, Tonelli, and Devalle, 2022).

Stakeholder theory explains, on normative grounding, how relationships between companies and stakeholders imbed to create long-term value (Freeman, Wicks, and Parmar, 2004). *Legitimacy theory* establishes the interconnectivity between organisations and society (Deegan 2002), while the pressure of social and political expectations acts as trigger of sustainability disclosure and explain companies' overall strategy changes to ensure its legitimacy. *Institutional theory* examines organisations from the homogeneous characteristics certified by belonging to the same institutional area (DiMaggio and Powell, 1983), sharing the political, financial, educational, cultural and economic systems. Thus, the institutional perspective may explain how the normative pressure drives changes in businesses strategy (Whittingham et al, 2023) resulting in adjusted sustainable business models.

This paper reveals the importance of double materiality concept (financial materiality and stakeholder materiality) addressing the global-company sustainability nexus by connecting the United Nations' Sustainable Development Goals (SDGs) with Environmental, Social, and Governance (ESG) factors. It pursues the extent to which the society-level goals and targets expected to address grand challenges and achieve global sustainability are associated with company-level policies and practices included in the sustainable business model. The increased evidence of meaningful normative pressure exerted by changing ESG policies and practices through prioritising the SDGs (Bebbington and Unerman, 2018) invites researchers to respond to the wide recognised gap of narrow-focused previous studies (Whittingham et al, 2023; Heras-Saizarbitoria, Urbieta, and Boiral, 2021). Aiming to fill this gap and to contribute to this area, a systematic analysis of corporate sustainability data reported following the launch of the SDGs is conducted in order to answer three main research questions.

RQ1. How has the corporate sustainability reporting evolved since the launch of UN SDGs?

To answer this question the paper examines and discusses the evolution of corporate sustainability reporting measured with ESG scores, as proxies for financial materiality, decomposed by the three pillars and ten categories, along with the evolution of SDG prioritisation, measured with SDG score, as proxy for stakeholders' materiality. Additional to Whittingham et al (2023) that analyse the impact of SDGs' launch on businesses activity by considering two periods before and after 2015, and similar to Heras-Saizarbitoria, Urbieta, and Boiral (2021),

this study includes a longitudinal analysis over a 9 year-period, starting with the year 2015, when the 17 UN SDGs (UN, 2015) were released.

RQ2. How does the double materiality approach differ by reference to corporate characteristics?

The research is conducted by clustering the database according with companies features embodied in the corporate business model and comparing the ESG and SDG scores across industries, as well as considering industry’s resource intensity (Whittingham et al, 2023). The significant differences among groups of companies based on institutional characteristics, may point to selection priorities and critical gaps for companies to engage with globally addressed sustainability challenges.

RQ3. Could the two perspectives of materiality be associated?

The importance of incorporating ESG aspects into sustainable business model and decision-making process may be motivated more by their impact on financial performance (financial materiality), than by ethical concerns linked to company’s activity on external environments (stakeholders’ materiality) (Huang, 2021). Hence, associations of ESG policies and practices with SDGs prioritisation are analysed from the double materiality perspective.

3. Research Methodology: Data and Sample, Framework, and Statistical Analysis

This research aims to investigate various facets of environmental, social and governance policies and practices along with prioritisation of sustainable development goals, framed within the double materiality approach that may contribute to changing business model towards sustainability.

Designed as a comprehensive in-depth analysis, this empirical study started with an initial sample of 52,461 company-year observations, for listed non-financial companies, included in the Thomson Reuters database collected for 2015-2023 period. This time-frame was chosen in order to explore the evolution of ESG policies and practices along with SDGs prioritisation starting immediately after the release of the UN 2030 Agenda, until the current period. Next, the observations with missing data for ESG and SDGs scores were eliminated, resulting a final sample of 36,936 company-year observations, from 88 countries around the world. For this study, data for both ESG policies and practices and SDGs prioritisation variables are collected from Refinitiv Eikon database (LSEG, 2023). The validity of this database is ensured by the complex methodology, with a history dating back to 2002, covering over 90% of global market capitalization for more than 15,500 global public and private companies, and embodying the 186 most comparable material ESG metrics collected for each company from publicly available information sources (company websites, annual reports, and sustainability reports, stock exchange fillings, or news sources).

Details on the research variables’ names and acronyms and the mapping framework are presented in Figure 1. To examine the ESG policies and practices, the 10 categories delineated for measurement grouping, further defining the three pillar scores: environmental, social, and governance, integrated in ESG score (LSEG, 2023) are considered. Their values may range from 0 (the lowest) to 100 (the highest). SDGs prioritisation reflects the 17 SDGs individually collected as dummy variables (1 if SDG is reported, and 0 if SDG is not reported). Further, three scores are constructed for this study, by grouping the 17 SDGs into the three pillars of sustainability. With the starting idea extracted from the design of Delgado-Ceballos et al (2023), Khaled, Ali, and Mohamed (2021), and Pizzi, Rosati, and Venturelli (2021), SDGs to ESG mapping underlies on the 5 Ps (Planet, People, Prosperity, Peace, and Partnership) (UN, 2015; Correa-Mejia, Garcia-Benau, and Correa-Garcia, 2024) allocating the 17 SDGs to the environmental (5 SDGs), social (6 SDGs) and governance (6 SDGs) aspects (Figure 1).

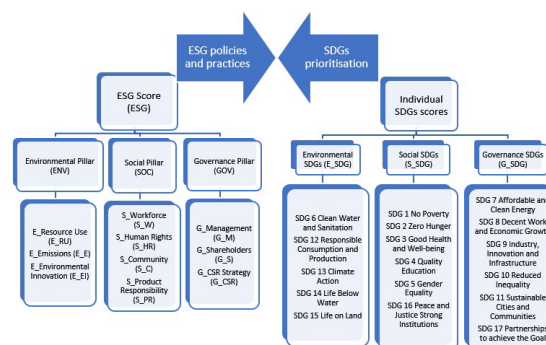


Figure 1: The research framework

To extensively examine the evolution, insights, and possible associations of ESG policies and practices with SDGs prioritisation, three research questions addressed (Section 2) are answered by operationalising variables further studied using frequency, univariate and correlation analyses. Descriptive statistics are presented for the overall sample of 36,936 observations. The analysis addressing RQ1 considers the yearly observations, also used in Heras-Saizarbitoria, Urbieto, and Boiral (2022). Industry's groups according with GICS sectors (10 sectors) and resource intensity (high and low) are examined to respond to RQ2. Muchmore, difference tests to estimate on equality of means among the industry's groups are performed to answer RQ3 using both parametric (ANOVA) and non-parametric (Mann Whitney Wilcoxon and Krushkal Wallis) tests. A first set of results is generated based on descriptive analysis, further supporting the use of static and dynamic models. Pearson and Spearman correlation coefficients complete the statistical analysis.

4. Results and Discussions

Examining the double materiality perspectives and sustainable business model, this empirical study analyses companies' potential contributions to double materiality approach and questions possible associations between ESG sustainability measures and SDG prioritisation.

4.1 Overall Analysis of ESG Policies and Practices and SDGs Prioritisation

Results are generated based on descriptive analysis of 36,936 company-year observations (Figure 2). They indicate a wide range of values from 0 (minimum) to almost 100 (maximum) for the ESG scores, with skewness and kurtosis values supporting the normal distribution of data. The ESG score has a mean value of 45.20, with governance score having the highest contribution (mean=49.23), and the environmental score, the lowest (mean=37.96). Detailing on the 10 categories, companies tend to have more policies and practices related to *Emissions* and *Resource use* for environmental pillar, to *Workforce* and *Community* for social pillar, and to *Management* and *Shareholders* for governance pillar.

Table 1: Descriptive statistics

Variables	Min.	Max.	Mean	Std. Dev.	Skewness	Kurtosis
ESG Score	0.44	95.57	45.20	20.81	0.09	-0.91
Environmental Pillar Score	0.00	99.26	37.96	28.00	0.19	-1.16
Social Pillar Score	0.23	98.78	46.65	23.91	0.09	-0.96
Governance Pillar Score	0.14	99.43	49.23	22.74	-0.05	-0.96
E_Resource Use Score	0.00	99.92	41.86	32.60	0.15	-1.33
E_Emissions Score	0.00	99.92	43.03	32.56	0.11	-1.33
E_Environmental Innovation Score	0.00	99.89	24.11	30.45	0.90	-0.56
S_Workforce Score	0.10	99.94	51.80	28.82	-0.07	-1.19
S_Human Rights Score	0.00	99.31	35.15	33.45	0.41	-1.30
S_Community Score	0.00	99.92	50.45	28.94	-0.01	-1.20
S_Product Responsibility Score	0.00	99.92	47.26	29.70	0.12	-1.19
G_Management Score	0.01	99.99	50.71	28.64	-0.03	-1.18
G_Shareholders Score	0.02	99.99	50.41	28.75	-0.01	-1.19
G_CSR Strategy Score	0.00	99.98	40.09	32.53	0.19	-1.34
E_SDG	0.00	5.00	1.18	1.67	1.09	-0.24
S_SDG	0.00	6.00	1.26	1.88	1.26	0.24
G_SDG	0.00	6.00	1.52	2.12	0.99	-0.58

Muchmore, results show that companies prioritize the governance related SDGs (with a mean of 2.12 of 6), followed by environmental related SDGs (with a mean of 1.67 of 5), while the lowest prioritisation is found for social related SDGs (with a mean of 1.88 of 6). A frequency analysis applied for the 17 individual SDGs shows that decent work and economic growth, climate action, responsible consumption and production and good health and well-being are the four most addressed SDGs in companies reporting (Figure 3).

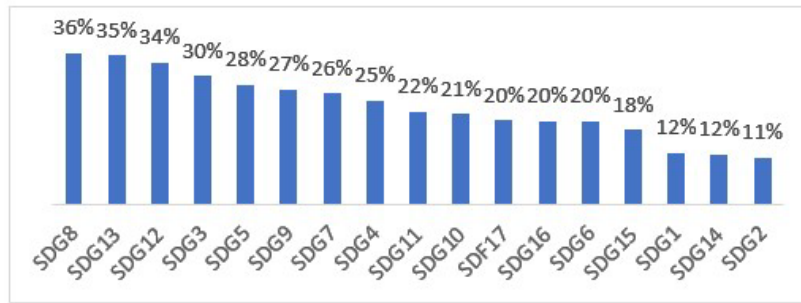


Figure 3: Frequency analysis of individual SDGs

4.2 The Evolution of ESG Policies and Practices and SDGs Prioritisation

To answer RQ1. How has the corporate sustainability reporting evolved since the launch of UN SDGs?, the evolutions of yearly ESG scores (proxies for financial materiality), complemented by the three pillars' scores and of the three SDG prioritisation scores (environmental, social and governance) as proxies for stakeholders' materiality are graphically analysed (Figures 4A and 4B).



Figure 4A: The corporate sustainability reporting: ESG policies and practices

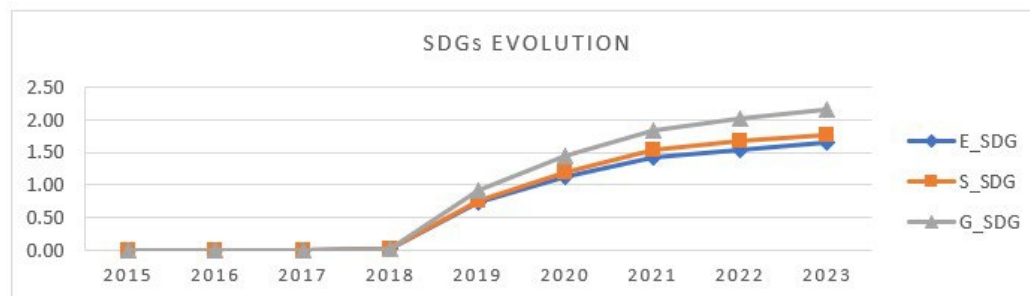


Figure 4B: The corporate sustainability reporting: SDGs prioritisation

For the ESG policies and practices, overall and by pillars, the evolution shows a pick in 2018, followed by an abrupt decrease for 2019. This may be explained by relation to the health crisis started at the end of 2019 and rapidly evolving until the middle of 2020, by the time when most of the companies prepared the annual and sustainability reports for the year 2029. Data may show that companies' reporting for the year 2029 was influenced by the severe consequences faced at the beginning of 2020. Muchmore, the companies needed a four years gap before starting to link and report their sustainability policies and practices using SDGs indicators, as findings show that 2019 is the first year when companies included references to SDGs in their statements. However, starting with 2020, both ESG and SDG variables have an increasing evolution. Governance aspects outperforms social and environmental aspects, with similar evolutions until 2023, for both types of measures. Findings reveal similar rising trends for companies from Brazil, China, and India, analysed between 2010 and 2019 (Soni, 2023).

4.3 Industry Cluster Analysis of ESG Policies and Practices and SDGs Prioritisation

The research question RQ2. *How does the double materiality approach differ by reference to corporate characteristics?* is addressed by analysing the descriptive statistics of companies clustered by industry characteristics (Figure 5). Most of the company-year observations included in the sample are from Industrials and Consumer discretionary sectors, while Energy and Utilities sectors include the smallest number of company-year observations.

Table 2: Differences in the double materiality perspectives by industry

Variable	Descriptive statistics – Means of GICS sectors										Levene Statistic (a)	F-stat (b)	Chi-Square (c)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)			
ESG	42.80	45.54	47.76	45.65	39.42	45.88	44.43	46.78	47.89	49.52	15.96***	67.09***	646.86***
ENV	29.64	39.23	44.50	40.18	22.54	40.66	33.78	44.52	44.12	47.37	12.76***	301.00***	2902.11***
SOC	44.55	46.38	47.73	46.04	45.13	46.92	46.90	45.81	49.63	48.70	26.16***	11.72***	118.91***
GOV	46.48	49.27	51.16	52.68	44.00	49.82	47.79	51.85	49.82	54.07	11.36***	56.27***	498.73***
E_SDG	0.81	1.10	1.84	1.35	0.50	1.20	0.90	1.64	1.25	1.82	600.48***	238.22***	1814.69***
S_SDG	1.23	1.14	1.84	1.34	0.67	1.29	1.11	1.58	1.31	1.64	236.68***	111.61***	1011.72***
G_SDG	1.41	1.34	1.78	1.52	0.67	1.69	1.35	1.82	1.91	2.51	385.65***	168.38***	1471.73***
Observations	2071	5027	2794	1908	4796	7357	4281	4310	2848	1544			

Notes. Total number of company-year observations=36,936. (1) Communication Services; (2) Consumer Discretionary; (3) Consumer Staples; (4) Energy; (5) Healthcare; (6) Industrials; (7) Information Technology; (8) Materials; (9) Real Estate; (10) Utilities. (a) Test of Homogeneity of Variances. (b) ANOVA t test. (c) Kruskal Wallis Test.

The industry cluster analysis with companies distributed per GICS sectors indicate *Utilities* with the highest scores for policies and practices related to ESG in general, and ENV and GOV in particular, and the highest prioritisation for governance related SDGs. *Real estate* has the highest score for ESG social pillar, while *Consumer staples* highly prioritise environmental and social SDGs. *Healthcare* is outlined as the industry with the lowest means of most of the ESG and SDG variables. The differences in the mean values are tested for significance using one-way ANOVA analysis, validated by Levene's homogeneity test. For the robustness of the results, Kruskal Wallis test is applied. The results of parametric and non-parametric tests indicate statistically significant differences among the 10 sectors, for all ESG and SDG variables. These results indicate that companies from high resources intensity, as Utilities, are more interested to incorporate double materiality perspectives in their sustainable business model, while low resource intensity industries, as Healthcare, integrate ESG policies and practices and prioritise SDGs at a lower level.

In line with the research question RQ2, the sample is split in two groups: high resource intensity, including Energy, Industrials, Materials, and Utilities, and low resource intensity, including the other six sectors. When clustering the companies in the two groups, the conclusion of previous analysis is confirmed for all variables, except SOC (Figure 6).

Table 3: Differences in the double materiality perspectives by resource intensity clustering

Variable	Low intensity industry	High intensity industry	Levene Statistic (a)	F-test (b)	Z-stat (c.)	Chi-Square (d)
ESG	44.31	46.48	3.79**	97.37***	-10.48***	109.89***
ENV	34.90	42.38	189.04***	650.09***	-27.48***	755.40***
SOC	46.63	46.67	56.36***	0.03	-0.51	0.26
GOV	47.87	51.19	3.52*	191.75***	-13.63***	185.84***
E_SDG	1.02	1.41	917.19***	492.59***	-21.35***	456.03***
S_SDG	1.15	1.42	296.00***	181.18***	-14.06***	197.70***
G_SDG	1.33	1.79	657.10***	417.43***	-20.02***	400.95***

Notes. ***, **, and * indicate 1%, 5%, and 10% significance levels. (a) Test of Homogeneity of Variances. (b) ANOVA t test. (c) Mann-Whitney Wilcoxon test. (d) Kruskal Wallis test.

The results of ANOVA t-test, complemented by Mann-Whitney Wilcoxon and Kruskal Wallis tests show statistically significant differences between the companies, and support the previous statement drawn based on sector clustering analysis. Moreover, for the social policies and practices, companies seem to behave similarly, regardless of industry characteristics.

4.4 Correlation Analysis Between ESG Policies and Practices and SDGs Prioritisation

To respond the RQ3. *Could the two perspectives of materiality be associated?*, parametric (Pearson) and non-parametric (Spearman) correlations are analysed (Figure 7), and similar values are found.

Table 4: Pearson (Spearman) correlation analysis

Variables SDG / ESG	ESG	ENV	SOC	GOV
E_SDG	0.481*** (0.509***)	0.514*** (0.535***)	0.445*** (0.472***)	0.236*** (0.249***)
S_SDG	0.443*** (0.486***)	0.455*** (0.495***)	0.422*** (0.461***)	0.221*** (0.240***)
G_SDG	0.474*** (0.509***)	0.500*** (0.521***)	0.444*** (0.469***)	0.234*** (0.245***)

Notes. *** indicates 1% significance level.

ESG is found positively correlated with all SDG scores, with significant coefficients, higher than 0.400. Muchmore, significant and positive correlations ($p < 1\%$) are identified especially between environmental policies and practices (ENV) and the three categories of SDGs (with the Pearson correlation coefficients E_SDG:0.514; S_SDG:0.455; G_SDG:0.500), the strongest association being registered for E_SDG. The weakest, however significant association is found between governance-related policies and practices and the level of SDGs prioritisation.

5. Discussions and Conclusion

Considering the topic of sustainable development as a current priority for both governments and companies, this research aims to support companies in understanding the required shift towards sustainability. It highlights the importance of connecting the ESG policies and practices with the SDGs from the double materiality perspective.

Results obtained for RQ1 delimited two periods along the evolution of corporate sustainability reporting since the launch of UN SDGs. First, right after 2015 until 2018, companies integrated ESG policies and practices in their business model with abrupt increases and stagnant or even small decreases. No connection could be observed with SDGs prioritisation as companies accounted for a delay in incorporating the societal SDGs for the first four years since their release. Second, after an inflection point with sudden decrease in ESG policies and practices for the year 2019, companies showed a light trend increase until 2023. However, in term of SDGs prioritisation at corporate level, the year 2019 is characterised by a rapid increase.

Muchmore, similar with prior studies (Khaled, Ali, and Mohamed, 2021; Whittingham et al, 2023), the answers found for RQ2 indicate that companies operating in high resource intensity industry (Energy, Industrials, Materials, and Utilities) better integrate in their business model environmental and governance policies and practices, while they prioritize all three types of SDGs (environmental, social, and governance).

Addressing RQ3, the correlation analysis highlights that when ESG policies and practices are integrated in company's business model, all types of SDGs are prioritised, while environmental SDGs are addressed the most by companies with stronger environmental policies and practices. Moreover, companies with a social-oriented business model seem to prioritise more the SDGs, compared to companies with a governance-oriented business model.

Results support the statement that the double materiality approach could be used by companies as a mechanism connecting ESG policies and practices and SDGs prioritisation, that may further help to reconcile investors' interests in sustainability (financial materiality) with corporate external impact on the natural environment and society (stakeholder materiality). Thus, societal-level SDGs and the specific targets have become relevant to investors' decisions, making them financially material for the company. Muchmore, companies' efforts to improve corporate sustainability policies and practices, reflected by ESG scores, contribute to stakeholders' interests and advance SDGs prioritisation.

This research provides a multi-layered contribution. The empirical evidence may be used both in practice for decision-making purposes with ideas for continuously adjusting corporate business model towards sustainability. For academic research, this study contributes by integrating and discussing the evolving business model under normative dimension of institutional theory. The stakeholders and legitimacy theories are complemented by examining corporate ESG policies and practices to engage in the current sustainability framework in relation with companies' incentives of prioritising specific SDGs types. It may also contribute to supporting companies to manage their complex sustainability objectives and to position within the new trend in corporate disclosure: designing a sustainable business model by prioritising specific SDGs linked to ESG policies and practices.

Although this study sheds new light on the corporate sustainability policies and practices in relation with the level of SDGs prioritisation, limitations related to the heterogeneity of the sample, the partial reference to the

specific ESG categories and the individual SDG, as well as inside management perspectives need to be presented. These limitations open the future research perspectives towards extensive analysis of each ESG policy and practice and each SDG. A geographical clustered analysis may complement the research, while causality analysis may provide cleared linkages between ESG and SDG scores.

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