



Research article

Are we doing the same? A worldwide analysis of business commitment to the SDGs

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Abstract: The COVID-19 pandemic has set back progress toward the 2030 Agenda. This raises concerns about the ability to achieve the Sustainable Development Goals (SDGs) as outlined in this global action plan. The responsibility to act to protect the planet, eradicate poverty and improve the current and future situations of people around the world requires the commitment of all actors, especially the public and private sectors. The objective of this paper is twofold. First, it aims to demonstrate the level of business commitment to the 2030 Agenda at a global level in a post-COVID period (2020–2021). Second, it aims to analyse whether this commitment, in general, and for each of the SDGs, is determined by the institutional context in which companies operate, as associated with the regulatory frameworks and cultural values of the different continents and countries (coercive and normative isomorphism). Based on a sample of the world's leading listed companies, i.e. 8,201 observations for the period of 2020–2021, the multivariate statistical technique HJ-biplot was applied to analyse whether business commitment to the 2030 Agenda is determined by the institutional context of the companies. The results show significant differences in the level of business commitment to sustainable development across regions and countries, as well as in the prioritisation of the SDGs. Countries in Asia (the Philippines) and Europe (Spain and Portugal) stand out as leaders, with the highest levels of SDG commitment. The USA and Qatar show the lowest engagement in business contribution to the SDGs. SDG 8, SDG 13 and SDG 12 appear as the top three priorities for companies in all countries. The results show that, in countries characterised by collectivism and feminism and with strong legal systems (civil law countries), companies are under greater pressure to adopt sustainable practices, which enables countries to improve their commitment to the SDGs.

Keywords: 2030 Agenda; Sustainable Development Goals; SDG; sustainable development commitment; HJ-biplot; isomorphism

1. Introduction

The adoption of the 2030 Agenda by world leaders entailed a commitment to implement, within a decade, an ambitious action plan aimed at achieving 17 Sustainable Development Goals (SDGs). To this end, the leaders of all member states had to strengthen the institutional environment and promote the dissemination and knowledge of the SDGs, among other actions, with the ultimate aim of raising awareness and achieving the participation of all agents in the process of change. However, the annual reports that the United Nations (UN) have been producing show some progress, which does not reach the necessary magnitude and speed and, furthermore, is not generalisable to all parts of the world [1,2]. Moreover, the appearance of COVID-19 has dealt a severe blow to the achievement of certain milestones, increasing health risk, poverty and inequalities in all countries and continents [3]. In short, we cannot speak of the existence of an unstoppable transformative movement that promotes a new planet and a new society.

In this process of change, the role that the business sector can play is unquestionable, especially large multinationals, due to their capabilities and resources [4]. and their dialogue with interest groups, which is an essential factor for understanding their demands in relation to the SDG [5–8]. Through a bibliometric review of literature on business contributions to the 2030 Agenda, Pizzi et al. [9] found that more than half of the studies were conducted in a global context. Furthermore, the continents with the highest number of studies are Australasia and Europe. Research conducted in Africa and South America has provided valuable insights into the geographical contexts most exposed to the negative effects of unsustainable development. Although the recent research trend has focused on studying the business contribution to the 2030 Agenda and SDG-related issues [6,8,10,11] few studies have investigated this topic after the advent of the COVID-19 pandemic.

In this sense, based on institutional theory, this study focuses, first, on analysing the degree of business commitment to the 2030 Agenda and the SDGs in 2020 and 2021, taking as a sample the main listed companies worldwide. Our objective was to observe business awareness of this action plan in a period of economic recession by analysing the incorporation of the SDG into companies' sustainability strategy. Second, it is intended to analyse whether the degree of commitment to the 2030 Agenda, in general, and for each of the SDGs, in particular, is determined by the institutional context of the continent and the country of origin of these companies.

According to institutional theory, firms tend to adopt homogeneous behaviours to meet the expectations of the institutional environment in which they operate in response to regulatory, coercive and mimetic pressures [12–14]. Therefore, we have carried out a comparative study of business commitment to the SDGs across continents and countries in order to reveal institutional patterns and the possible existence of an isomorphism. To this end, a qualitative analysis was carried out, as well as the application of elements of descriptive statistics, such as frequency tables and bar and sector diagrams, and multivariate analyses, using the HJ-biplot statistical technique, in order to find the SDGs prioritised by companies, as well as their characterisation by country and continent.

The results obtained in our study have shown notable differences in the degree of commitment to the SDGs at the global level. In addition, it is shown that the legal, socioeconomic and cultural

characteristics associated with the companies' geographical location contribute substantially to the gap between continents and countries. The institutional structure that determines similar patterns of sustainable behaviour among companies is found in countries with strong legal and cultural development, reflecting coercive and normative isomorphism as determinants of SDG commitment.

This paper contributes to the literature by providing an overview of the influence of coercive and normative institutional pressures, at the country level, on business commitment to the SDG in a post-pandemic period. Our study not only identifies to which SDGs companies pay more and less attention, but, unlike previous studies [15], it analyses the effects of coercive and normative institutional pressures at a global level. Our study contributes to the literature by adopting a multi-region approach, considering 41 countries from five continents, rather than a single-country or a two-region approach. Additionally, the exploratory statistical technique HJ- biplot provides a useful visualisation of complex data in a low-dimensional space.

The structure of the rest of the paper is as follows. The next section presents the theoretical framework as well as the research hypothesis. The third section presents the research design, namely, the sample and methodology. The fifth section shows the results obtained from the statistical technique used. The last section discusses the results based on the literature. Finally, the main conclusions are presented.

2. Theoretical background

2.1. Business commitment to 2030 Agenda

In 2015, 193 members of the UN adopted the 2030 Agenda, along with a set of 17 SDGs and 169 targets to be achieved by 2030. This Agenda is an ambitious global plan, aimed at eradicating poverty, protecting the planet and improving people's quality of life. The 2030 Agenda established five areas of critical importance, better known as the five pillars or the '5 Ps': People, Planet, Prosperity, Peace and Partnership. Thus, the SDG can be classified by pillar, as follows: People (SDG1, SDG2, SDG3, SDG4 and SDG5), Planet (SDG6, SDG12, SDG13, SDG14 and SDG15), Prosperity (SDG7, SDG8, SDG9, SDG10 and SDG11), Peace (SDG16) and Partnership (SDG17) [16].

The 2030 Agenda calls for a symbiotic relationship between the private sector, the public sector and civil society to the commitment to the SDGs. The 2030 Agenda recognises that the private sector has a key role to play in achieving the proposed goals and, consequently, in achieving a more sustainable world for future generations. Well known for being the main holder of the global economy, advanced technologies, procedures and management systems, the 2030 Agenda challenges the private sector to make adjustments towards the success of the SDGs by adapting company policies and production processes and increasing their engagement with stakeholders, among other possible practices [13,17].

Globally, several initiatives have emerged that aim to contribute to making sustainable development a common and mainstream practice in the private sector. In 2006, the UN founded the UN Global Compact (UNGC). It is a voluntary initiative that aims to encourage companies and stakeholders to follow a more sustainable path. They created the Ten Principles on human rights, labour, environment and anti-corruption to align with business strategies and operations, as well as to serve as a bridge to the SDG commitment.

In 2015, with the announcement of the SDGs, some organisations (GRI, the WBCSD and the UNGC) came together to create a practical guide to support companies and other organisations to align

their strategies towards the SDGs, and to measure and manage their contribution: the SDG Compass. It is a guide that aims to help companies integrate the SDGs into their corporate strategy. However, it also urges companies to take a holistic approach to align their business with the SDGs [18].

Izzo et al. [10] argue that, on the one hand, the SDGs represent an opportunity for businesses to redefine their priorities and integrate sustainable development into their business models, improving stakeholder engagement and the identification of future business opportunities. On the other hand, the disclosure of SDG practices can serve as a way for companies to highlight the corporate practice of embracing the SDGs more in form than in substance. One of the main risks of this approach is to focus only on the good parts of the company's sustainable practices, thus embracing the letter but not the spirit of the SDGs. In this scenario, there is a risk that the SDGs become a compliance agenda to spread sustainability practices, where companies care more about how to look than about being.

According to Heras-Saizarbitoria et al. [19], for many stakeholders genuinely concerned about environmental and social issues, including many non-governmental organisations and civil society associations, the tendency of companies towards a superficial engagement with the SDGs—or SDG-washing—and the lack of concrete practices to engage with the Agenda 2030 targets, can be used as leverage to pressure companies to produce more coherent sustainable practices in a structured and detailed way. However, according to these authors, the empirical literature based on the specific role of organisations in relation to the SDGs and the actual contribution of business initiatives in practice is at a very early stage.

In the report entitled *State of Progress: Business Contributions to the SDGs*, the GRI [20] presents an analysis and assessment of how a sample of 206 GRI reporters have disclosed information on the SDGs in the years of 2020 and 2021, and how they are supporting and acting on the SDGs, as based on published sustainability reports and information on their websites. Most surveyed companies appear to have a good understanding of the SDGs, including identifying those that are most relevant to their business. However, most companies have not yet set targets that are explicitly aligned with the SDGs. This indicates a disconnect between the broad aims of the SDGs and individual company aims.

In addition to the recognition of the key role of the private sector and its potential to contribute to the 2030 Agenda and the SDGs, the achievements are not enough. The UNGC and Accenture [21] published 'The Decade to Deliver - A call to business action' as a survey of chief executive officers (CEOs) on sustainability, which included more than 1000 top executives from around the world who have reflected on the issue (opportunities and challenges) since the publication of the SDGs. In 2016, 49% of CEOs mentioned businesses as the most relevant factor in achieving the global goals. Moreover, 78% saw opportunities to contribute to the SDGs through their business. Finally, 90% said that they were committed to ensuring their company's leadership on the 2030 Agenda. However, in 2019, the results were not as optimistic. Only 48% of CEOs were implementing sustainability into their core business. Of all CEOs, 78% believed their companies can play a critical role in contributing to the SDGs, but only 21% felt that they were achieving that.

Business involvement in the 2030 Agenda requires companies to break down the SDGs into specific initiatives to achieve the related targets [19]. Engaging with the SDGs is not just about minimizing the negative impact of business activities. Rather, it requires a transformative approach at the core business that can accelerate the integration of the SDGs throughout the company. This involves defining the priority SDGs to be achieved, identifying the areas where companies can (want to) contribute significantly to their achievement [22].

However, socioeconomic crises, such as the COVID-19 pandemic and the Russian-Ukrainian war,

may jeopardise the achievement of the SDGs on schedule, or deviate from the planned trajectory. Indeed, according to Sharma et al. [23], the COVID-19 pandemic has derailed progress towards the SDGs. The socioeconomic impacts of COVID-19 that hinder progress on the SDGs can be explicit (e.g., SDG1, SDG2, SDG3, SDG4, SDG8, SDG10 and SDG12) or implicit (SDG5, SDG6, SDG7, SDG9, SDG11, SDG 13, SDG4, SDG15 and SDG16) [24]. It has been confirmed by [25] that SDG1 (No poverty) and SDG 8 (Decent work and economic growth) have been the most affected. Therefore, SDG17 (Partnerships) would be critical to consolidate global efforts and regain progress towards the SDGs during the post-COVID-19 period [24].

2.2. Institutional theory: Coercive and normative pressures

According to the institutional theory's tenets, business commitment to the SDGs can be explained by the influence of the institutional pressures that companies face in this regard [19,26]. The political, cultural, educational and economic institutional frameworks surrounding companies directly affect their sustainability performance by defining the 'rules of the game' that give them legitimacy [27]. Institutional theory stresses that an organisation tends to adopt common institutional practices and adhere to generally accepted norms and beliefs, becoming homogeneous in relation to other organisations in the same organisational field. Institutional theory analyses the influence of the institutional environment on organisational behaviours. DiMaggio and Powell [28] defined the institutional process of homogenisation whereby organisations adopt identical structures and practices as 'isomorphism', which implies a 'homogenisation of organisations' or a 'process of homogenisation'. The authors explain how organisational characteristics adapt to complement the characteristics of the surrounding environments. Regarding this institutional adaptation, DiMaggio and Powell [28] considered three mechanisms or types of institutional isomorphism: coercive, normative and mimetic. However, it may be difficult to determine which mechanism exerts the greatest influence on the institutionalisation of practices:

- Coercive isomorphism results from formal and informal pressures exerted on an organisation by other organisations on which it depends, such as the legal regulatory system in which organisations operate. In the field of sustainable development, the legal system can be expected to be an influential institutional factor in the commitment to the SDGs.
- Normative isomorphism is driven by the pressures exerted by professionals' practices. Normative forces reflect the way in which organisations are expected to conform to standards, norms, values or culture, as derived from the national environment, and to adopt systems and techniques considered legitimate by relevant professional groups. Thus, national culture and cultural values could be normative forces. The cultural system can be expected to be an influential institutional factor in the commitment to the SDGs.
- Mimetic isomorphism results from the process of imitation, where companies may adopt behaviours referenced from other organisations, for example, within the same sector/industry.

At the country level, institutional pressures linked to the country's legal system (coercive isomorphism), the values of the country's national culture (normative isomorphism) and the country's priorities and strategies in relation to the 2030 Agenda are influential factors in business involvement and commitment to the SDGs [8].

Regarding legal system, Amor-Esteban et al. [15] found that companies operating in countries

with similar legal systems adopt homogeneous behaviours regarding the commitment to sustainability. La Porta et al. [29] argued that historical origins of domestic legal systems affect legal rules, regulatory practices and economic outcomes. The authors classified the countries in two main roots according to their ‘legal origin’: civil law and common law (According to La Porta et al.’s. (1998) classification, the common law countries are as follows: Australia, Canada, Hong-Kong, Ireland, New Zealand, Singapore, UK, USA. Civil law countries were grouped in three categories: French (Belgium, France, Portugal, Greece, Italy, Spain, Netherlands, and Russia); Scandinavian (Denmark, Finland, Sweden and Norway) and German (Austria, Bermuda, China, Luxembourg, Germany, Iceland, Japan and Switzerland). Civil law countries have a clear stakeholder orientation, while common law countries are more sensitive to shareholders’ protection.

Literature has explored the influence of institutional conditions at the country level on companies’ SDG achievements [27,30] and reporting [8,10,13,26,31,32]. Rosati and Faria [13] analysed country-level institutional factors related to the decision to address the SDGs in sustainability reporting. The research was conducted taking into account 27 institutional factors belonging to six different national institutional systems, using data from 2,413 sustainability reports published by organisations located in 90 different countries. The results show that SDG reporting is more likely in countries with higher levels of climate change vulnerability, national corporate social responsibility (CSR), corporate spending on tertiary education, national culture characterised by indulgence, individualism, power distance and long-term orientation, lower levels of market coordination and employment protection.

From a global perspective, García-Sánchez et al. [8] analysed the evolution over the period of 2015–2019 of corporate engagement with the SDGs and SDG-related reporting practices, in the context of stakeholder engagement. Carlsen and Bruggemann [30] analysed the status and evolution of the SDGs for the years 2010, 2015 and 2019, based on the 5Ps. This study determined the impact of the SDGs in 102 countries, grouped according to their economic and regional affiliation.

Amor-Esteban et al. [33] argue that country of origin (known as ‘national identity’) is a factor that should be taken into account to explain why companies differ in their approach to CSR. Campbell [34] showed that the characteristics of the national context impose different expectations and pressures on business behaviour. Thus, companies develop CSR practices to comply with the laws and professional guidelines of their environment. In addition, Amor-Esteban et al. [33] argue that ‘[t]he historical experience of the ideological and institutional legacies leads to thinking about the existence of similar patterns of business behaviour in companies whose headquarters are located in geographically close countries, and the existence of greater discrepancies in their profile or approach to CSR at greater distances among them’. A similar idea could be applied to the topic of sustainable development. Therefore, the following hypothesis has been put forward:

H1: There is a high level of homogeneity in SDG commitment by companies whose origin country is located within the same continent, and with close geographical proximity.

Previous studies [15,35] found that companies located in civil law countries, i.e. a legal system with coercive pressures and laws aimed at stakeholder protection, are more likely to engage in responsible CSR actions and have a strong interest in reporting their behaviours. Therefore, it is expected that companies from civil law countries are more likely to demonstrate greater commitment to the 2030 Agenda.

On the other hand, the cultural values of each country can influence corporate behaviour towards sustainability. In societies with a national culture characterised by a feminist and collectivist orientation and a good level of tolerance for uncertainty, companies are expected to show a greater

commitment to sustainable development. This occurs because of the shared need of companies to meet the expectations of the same stakeholders due to the shared culture [12,36].

Pizzi et al. [31] sought to understand the role of cultural determinants in SDG reporting in European public interest entities. The results indicate that companies' long-term orientation and forward-looking approach to the SDGs positively influence SDG disclosure. Furthermore, the analysis found that preference towards constraints positively influences SDG reporting, meaning that companies operating in more optimistic societies are more oriented towards adopting sustainable behaviours. Conversely, cultural values such as individualism and masculinity demonstrated a negative impact on SDG disclosure.

Reverte [27] analysed whether differences in the level of SDG achievement among 64 countries around the world can be explained by institutional variables, such as culture, economic development, the educational and labour systems, innovation and the legal and political systems. This study shows that the countries best placed to achieve the SDGs are those with higher levels of governance, where there is greater freedom of expression and association, greater government effectiveness and political stability, a stronger rule of law and greater control of corruption.

In light of the above, institutional theory (coercive and normative isomorphism) shows that companies in different countries adopt different levels of sustainability practices as a result of discrepancies in institutional efficiency and cultural values between countries. Consequently, companies operating in a common scenario tend to show similar commitment to the SDGs. Therefore, Hypothesis 2 is proposed as follows:

H2: The level of SDG commitment is higher in those countries with a legal system characterised by stakeholder orientation, i.e. civil law countries (coercive isomorphism) and countries with a national culture characterised by a feminist and collectivist orientation (normative isomorphism).

These two forces (coercive and normative) have been introduced because they are considered the most important and robust in determining the sustainable responsible behaviour of companies [34,37].

3. Empirical research design

3.1. Population and sample

The population selected to test the research hypotheses corresponds to all listed companies whose information on their sustainability strategy, policies, actions and performance is available in the Thomson Reuters EIKON database. These companies are the largest and most visible and have attributes traditionally associated with greater volumes of resources and capability to address new demands in terms of sustainable development [4].

The sample consists of a total of 8,201 observations for the years of 2020 and 2021. The headquarters of these companies are in 41 different countries, located on five continents. Specifically, 17 countries are in Europe, 16 in Asia, five in America, two in Oceania and one in Africa. In this regard, Table 1 shows the distribution of the sample by country. Prior to the analysis of the data, only those countries with a minimum of 10 companies per year were selected to ensure a minimum homogeneous representation. The data panel was unbalanced, as it consisted of 4,458 observations in 2020 and 3,743 observations in 2021.

Table 1. Sample description.

	Country 2020	Freq.	%	Country 2021	Freq.	%
1	Australia	239	5.4%	Australia	242	6.5%
2	Austria	13	0.3%	Austria	11	0.3%
3	Belgium	21	0.5%	Belgium	18	0.5%
4	Brazil	50	1.1%	Brazil	29	0.8%
5	Canada	183	4.1%	Canada	127	3.4%
6	Chile	23	0.5%	Chile	17	0.5%
7	China	257	5.8%	China	247	6.6%
8	Denmark	23	0.5%	Denmark	23	0.6%
9	Finland	23	0.5%	Finland	20	0.5%
10	France	85	1.9%	France	73	2.0%
11	Germany	87	2.0%	Germany	76	2.0%
12	Hong Kong	96	2.2%	Hong Kong	87	2.3%
13	India	81	1.8%	India	77	2.1%
14	Indonesia	32	0.7%	Indonesia	23	0.6%
15	Ireland	30	0.7%	Ireland	25	0.7%
16	Israel	17	0.4%	Israel	10	0.3%
17	Italy	47	1.1%	Italy	42	1.1%
18	Japan	309	6.9%	Japan	281	7.5%
19	Luxembourg	11	0.2%	Luxembourg	12	0.3%
20	Malaysia	46	1.0%	Malaysia	42	1.1%
21	Mexico	37	0.8%	Mexico	24	0.6%
22	Netherlands	37	0.8%	Netherlands	31	0.8%
23	New Zealand	18	0.4%	New Zealand	18	0.5%
24	Norway	27	0.6%	Norway	24	0.6%
25	Philippines	22	0.5%	Philippines	20	0.5%
26	Poland	23	0.5%	Poland	14	0.4%
27	Portugal	11	0.2%	Portugal	11	0.3%
28	Qatar	12	0.3%	Qatar	11	0.3%
29	Russian Federation	28	0.6%	Russian Federation	22	0.6%
30	Singapore	26	0.6%	Singapore	21	0.6%
31	South Africa	78	1.7%	South Africa	74	2.0%
32	South Korea	117	2.6%	South Korea	48	1.3%
33	Spain	51	1.1%	Spain	40	1.1%
34	Sweden	48	1.1%	Sweden	45	1.2%
35	Switzerland	53	1.2%	Switzerland	49	1.3%
36	Taiwan	92	2.1%	Taiwan	45	1.2%
37	Thailand	30	0.7%	Thailand	21	0.6%
38	Turkey	17	0.4%	Turkey	14	0.4%
39	United Arab Emirates	15	0.3%	United Arab Emirates	10	0.3%
40	United Kingdom	217	4.9%	United Kingdom	191	5.1%
41	United states	1.826	41.0%	United states	1.528	40.8%
	Total	4.458	100%	Total	3.743	100%

3.2. Methodology

3.2.1. Data for analysis

To measure the commitment of the sample companies to the 2030 Agenda and the SDGs, the variables available at Thomson Reuters EIKON were used. These variables are dichotomous in nature and identify the existence of measures and activities that companies carry out to contribute to the SDGs according to the UN's international standards. Subsequently, at the level of each SDG, the degree of commitment of listed companies was evaluated (i) individually and (ii) as grouped by countries and continents. For this, comparative tables and diagrams have been used. Appendix 1 presents the frequency tables visually represented in the different sections.

3.2.2. Analysis technique: HJ-biplot

The analysis techniques used are specified in the biplot representations [38]. The biplots are useful tools for inspecting multivariate data matrices, with their main objective being the graphical representation of the data. In the same way that the joint distribution of two variables is represented by a scatter diagram, a biplot represents three or more variables.

Specifically for this study, an HJ-biplot [39] was applied, since this method allows the representation of both individuals (matrix rows) and variables (matrix columns) in the same low-level reference system with optimum rendering quality. The HJ-biplot is defined as a multivariate representation of the $X_{n \times p}$ matrix by appropriate selection of markers $j_i = (j_i, \dots, j_n)$ for its rows and $h_j = (h_j, \dots, h_p)$ for its columns. Let $X = UDV^T$ be the usual singular value decomposition of X with U and V orthogonal matrices and $D = \text{diag}(\lambda_1, \dots, \lambda_p)$ containing the singular values. Let J and H be the matrices of the first two columns of UD and VD , respectively.

The classical biplot methods, and specifically the HJ-biplot, allow the simultaneous presentation of individuals and variables of a matrix with continuous data. Therefore, for its application, we transformed the binary matrix, presence and absence of companies into a numerical matrix that presents the average presence in the different SDGs for the activity sectors, grouping the companies according to them. In this way, in the resulting representation, the row markers will refer to the activity sectors, represented by points on the map, and the column markers will correspond to the SDG under study, represented by vectors. Following the guidelines for its correct interpretation (see Figure 1): (i) the distance between points, in our case sectors, is interpreted as a difference between them, so those sectors with a close location on the map will show similar characteristics in the different SDGs studied; (ii) the angles between vectors, i.e., the SDGs in terms of correlation, have acute angles that are associated with positive correlations, obtuse angles with negative correlations and right angles independently; and (iii) the orthogonal projections of the points (sectors) on the vectors (SDGs) allow us to order the importance given to each sector for the different SDGs.

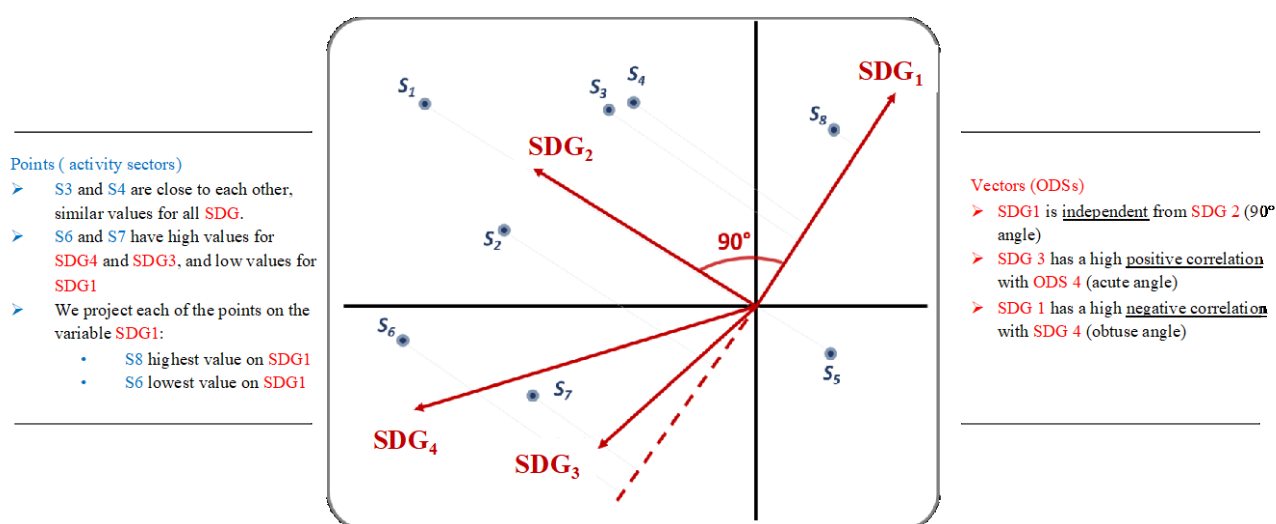


Figure 1. HJ-biplot interpretation guidelines.

4. Results

4.1. General descriptive analysis of the year-on-year evolution

Prior to studying the level of business commitment to the SDGs according to the institutional context, the global results for 2020 and 2021 are shown. For this, parallel coordinates have been applied and the information graphed, as shown in Figure 2. This analysis is associated with the fact that the approval in 2015 of the 17 SDGs as part of the 2030 Agenda by all UN member states led to the establishment of plans to achieve the goals in 15 years. It means that the different agents, in this case, the companies, have increased their involvement and commitment to the different SDGs.

Observing Figure 2, it can be confirmed that this desired trend exists, since all SDGs present a higher percentage of presence in the most current year of study (2021) in relation to 2020. In addition, there is a significant increase in the SDGs that seem to be a priority for companies, such as SDG8 ‘Decent work and economic growth’, SDG13 ‘Climate action’ and SDG12 ‘Responsible production and consumption’, with a rise of 12%. On the contrary, we can also observe that certain SDGs seem to be less present in business agendas, such as SDG2 ‘Zero hunger’, SDG14 ‘Life underwater’ and SDG1 ‘No poverty’, with an improvement of 5%. SDG1 and SDG2 are the goals that have been hit the hardest by the pandemic, presenting very significant setbacks globally since the appearance of the COVID-19 pandemic.

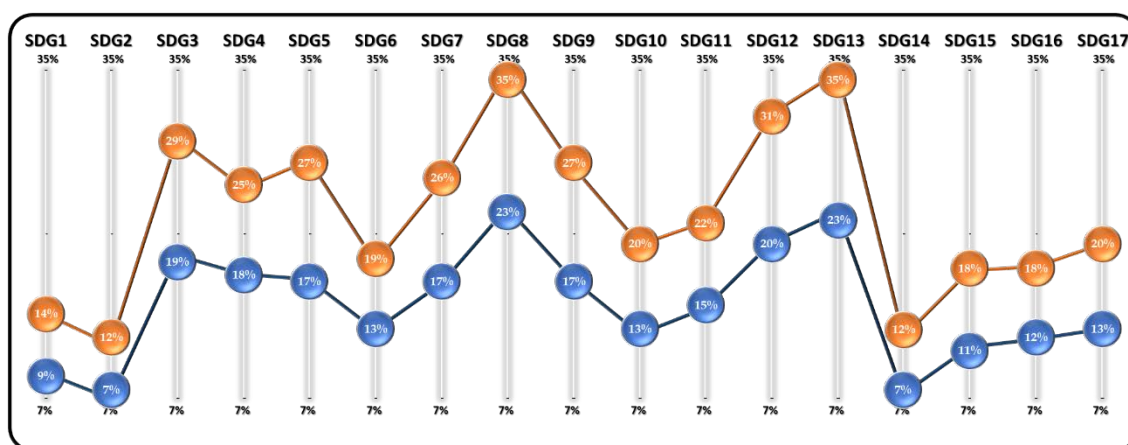


Figure 2. Parallel coordinates for global commitment to the 17 SDG in the study years, 2020 (blue) and 2021 (orange).

Figure 3 shows business commitment to the 17 SDGs, segmenting the previous graph by grouping companies by continent. Once again, we can observe a structure similar to the one already mentioned, with SDG8, SDG12 and SDG13 being the most important for companies on all continents, and SDG2, SDG14 and SDG1 showing the least commitment in the period analysed. In relation to the situation by continent, European and Asian companies appear to be the leaders in the study, with an average commitment of 40%. Regarding Europe, European firms stand out above those of the remaining continents in SDG8 ‘Decent work and economic growth’, SDG13 ‘Climate action’, SDG12 ‘Responsible production and consumption’, SDG3 ‘Health and well-being’, SDG5 ‘Gender equality’, SDG17 ‘Partnerships to achieve the goals’ and SDG16 ‘Peace, justice and strong institutions’. In relation to Asia, Asian companies stand out above the others in SDG9 ‘Industry, innovation and

infrastructure', SDG4 'Quality education', SDG7 'Affordable and clean energy', SDG6 'Clean water and sanitation', SDG1 'No poverty' and SDG14 'Life underwater'.

In a second step are the companies from the Americas (37%), with values above the rest in SDG11 'Sustainable cities and communities', SDG10 'Reduction of inequalities', SDG15 'Life of terrestrial ecosystems' and SDG2 'Zero hunger'. Finally, the company from Africa (31% commitment) does not stand out in any SDG above the rest of the continents, although Oceania, with a commitment of 19%, has the most lagging companies in the study.

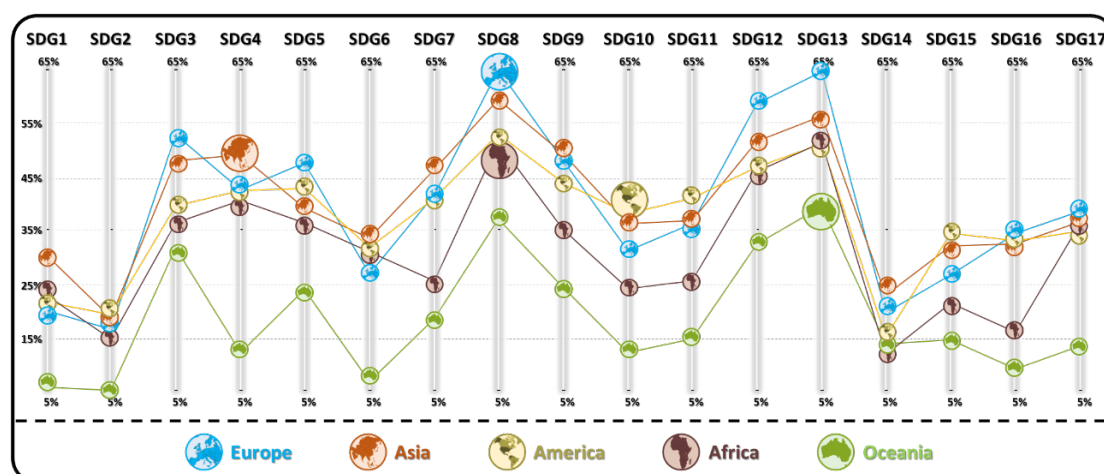


Figure 3. Parallel coordinates for the global commitment to the 17 SDGs in the different continents in 2021.

4.2. Analysis of business commitment to the SDGs at the country level

Once the global continent-level commitment was studied, we proceeded to evaluate the importance that each country gives to the SDGs, as well as their evolution over the two years of study. To evaluate these data, given their multidimensional nature, we used a multivariate statistical analysis technique, i.e. the HJ-biplot method, which allows us to represent the 41 countries in the study and the 17 SDGs in the same subspace, so that we can study their behaviour in a joint way. The HJ-biplot can be seen as a multivariate generalisation of a scatter plot of two variables, that is, in the same way that a scatter plot shows the joint distribution of two variables, a biplot represents three or more variables. In this way, the countries will be represented by a point on the map, and we will be able to evaluate their location in terms of similarity, that is, two countries with a similar position on the map will present similar characteristics regarding their commitment to the SDGs. The 17 SDGs are represented as vectors in the plane so that (i) acute angles between vectors correspond to direct relationships; (ii) right angles reveal independence; and (iii) obtuse angles refer to inverse relationships.

Several analyses have been carried out, the results and representations of which are shown below, although we will interpret them jointly. In the first analysis, Figure 4 reflects an HJ-biplot representation for the matrix composed of the 41 countries in the year 2020, and the same in the year 2021; each country is joined for both years by an orange vector, which indicates their trajectory. Thus, we will be able to know which countries have increased their commitment, which have not, and to what extent.

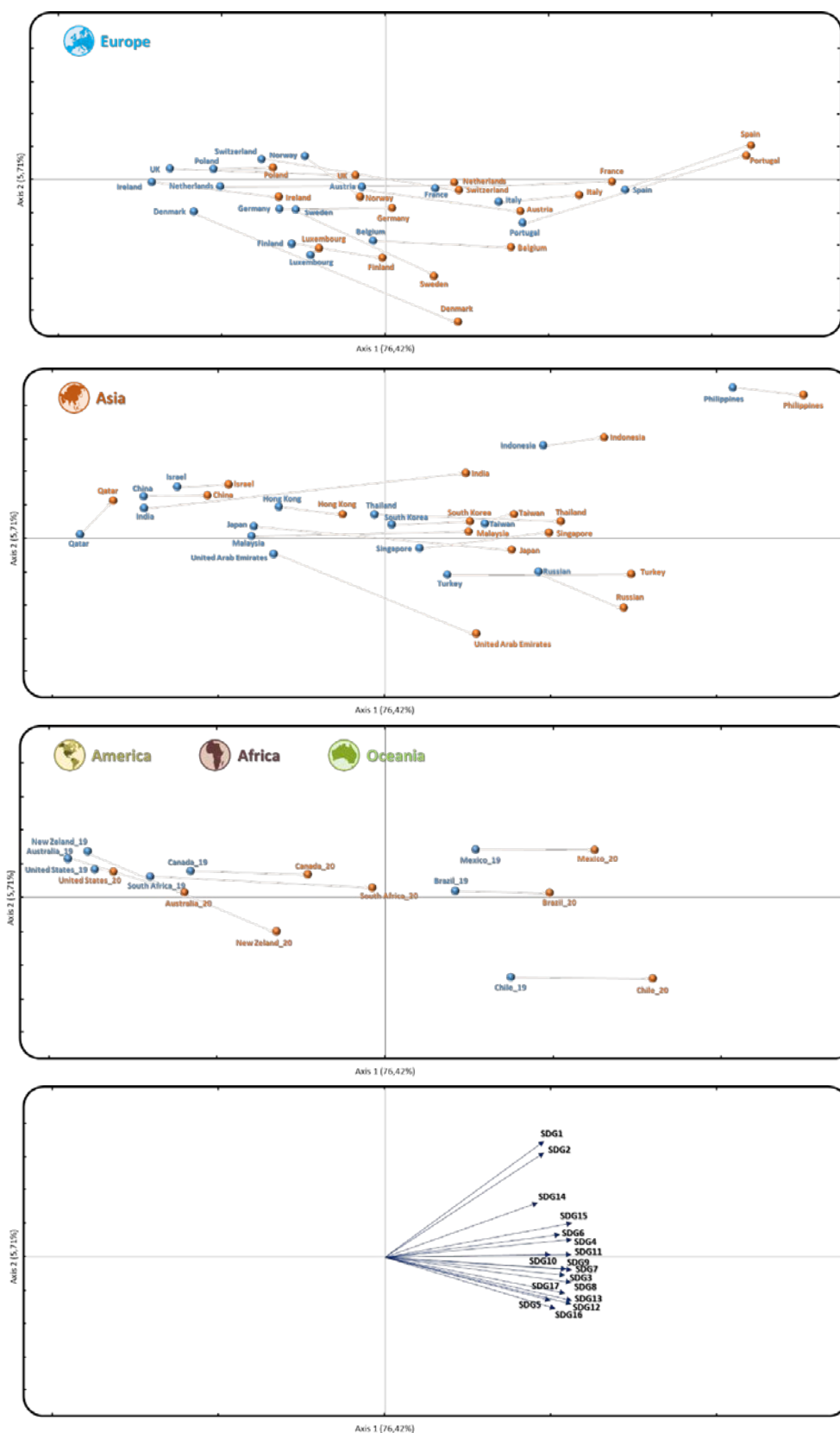


Figure 4. HJ-biplot representation for 41 countries and their commitment to the 17 SDGs, showing the evolution over 2020–2021.

In the second analysis, Figures 5, 6 and 7 reflect three HJ-biplot representations for the year 2021:

(i) matrix with the 17 European countries; (ii) matrix with the 16 Asian countries; (iii) matrix with the eight countries from the Americas, Africa and Oceania. For these analyses, a double centring of the data was used, that is, we standardised by rows and columns. In this way, the vectors will open up throughout the plan, which will allow us to characterise and create country profiles based on the SDGs to which they attach greater importance.

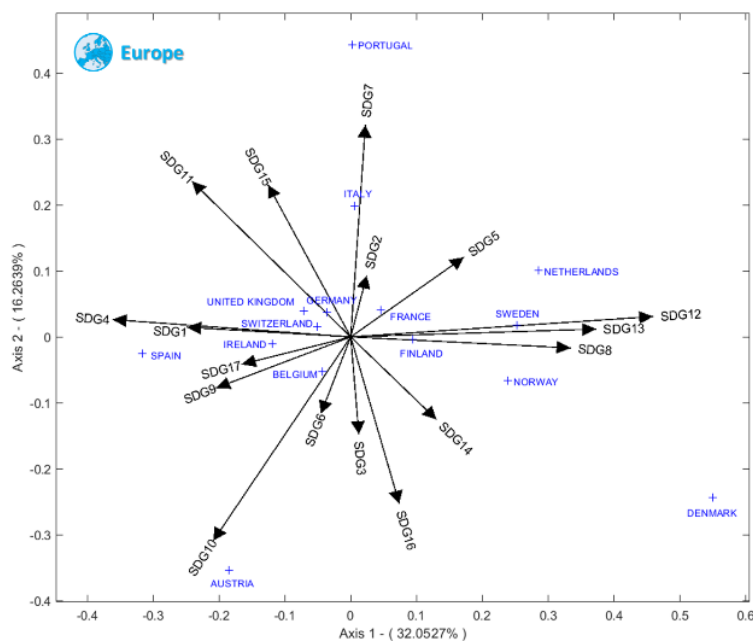


Figure 5. HJ-biplot representation for European countries and their commitment to the SDGs for year 2021.

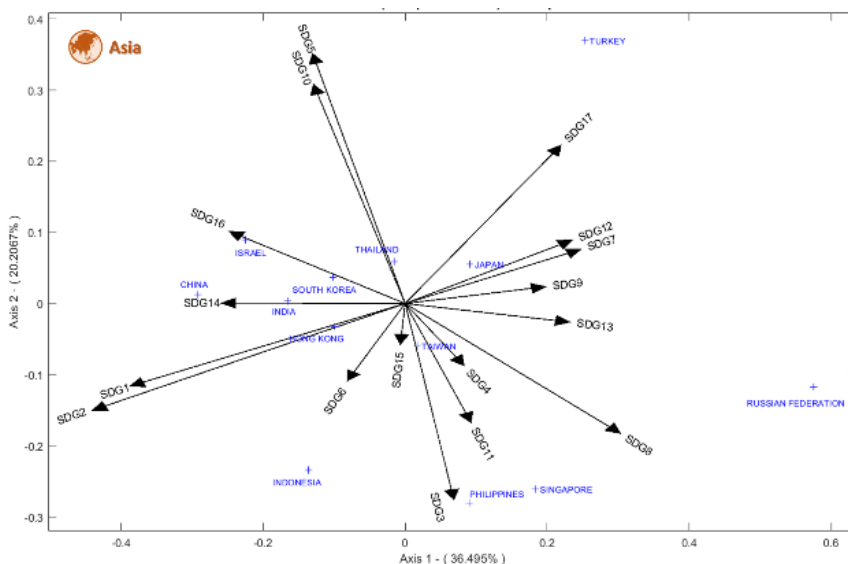


Figure 6. HJ-biplot representation for Asian countries and their commitment to the SDGs for year 2021.

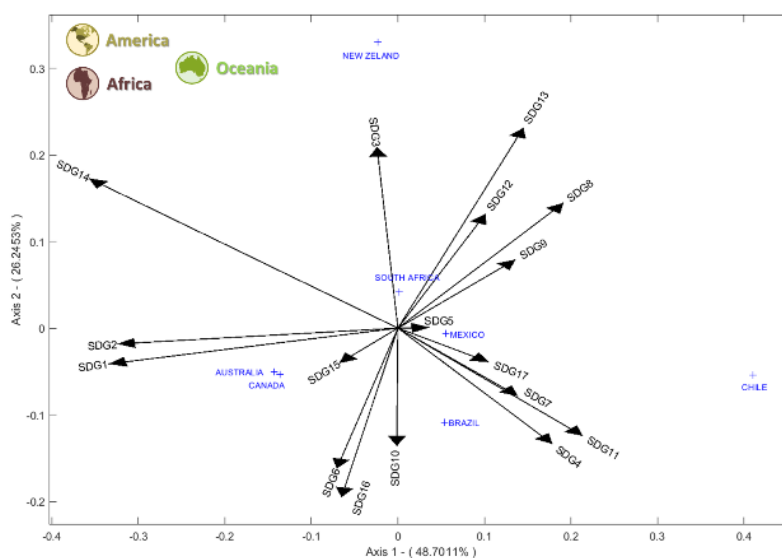


Figure 7. HJ-biplot representation for American countries, Africa and Oceania and their commitment to the SDGs for year 2021.

The first analysis, as shown in Figure 4, collects 82% of the total information with the 1-2 factorial plan, with 75% being absorbed by the first axis. Therefore, we will focus on this latent axis, which is a linear combination of the 17 SDGs, which means that the countries located further to the right show a greater commitment to the 2030 Agenda. In the first three graphs of this figure, the countries are represented; in blue is their location in the year 2020 and in orange is that in 2021. It is possible to observe how most of the countries seem to have moved to the right in 2021, showing a greater commitment. In addition, we found that the countries in Europe and Asia centre their position in the semi-right since, as mentioned earlier, they are one step beyond the countries from the Americas, Africa and Oceania. Next, some detailed information by continents is provided.

For Europe, the information related to Figure 4 reveals the business commitment and its evolution. We can observe that the leading countries are located in the south, with Spain and Portugal at the forefront, showing a commitment close to 65% (a rise of 19% stands out in the last year for Portugal), and France and Italy with 52%. In second place are the countries at the centre, such as Belgium, Austria, Switzerland, the Netherlands and Germany, with a commitment close to 40% (somewhat less for Germany, 33%). Immediately after these, we find the Nordic countries (Denmark, Sweden, Finland and Norway), with a commitment of 35% (somewhat higher for Denmark, 40%, a country that saw its commitment increased by 26% in the last year). Finally, we find countries like the United Kingdom, Ireland, Poland and Luxembourg to have a commitment below 30%. It should be noted that Poland and Luxembourg hardly increased their commitment in the years of study.

More precisely, Figure 5 shows the preference for the SDGs of each country:

- Spain stands out for its high commitment to most of the SDGs, with greater emphasis above the rest on SDG4, SDG1, SDG17, SDG9, SDG11 and SDG10.
- Portugal, like Spain, shows a high commitment, with a focus on SDG7, SDG11, SDG15 and SDG5 (The Portuguese report on the implementation of the 2030 Agenda for Sustainable Development presented in 2017 has defined as priorities for the Portuguese context SDG4, SDG5, SDG9, SDG10, SDG13 and SDG14. The results obtained in our study indicate that, in general, the priority of Portuguese companies concerning relation to the fulfilment of the SDGs is poorly aligned

with the national strategy, since only SDG4 and SDG10 are among the most addressed by Portuguese companies).

- The Nordic countries and the Netherlands focus on SDG8, SDG13, SDG 2 and SDG5.
- Austria focuses on SDG9, SDG10 and SDG16.
- The rest of the countries show a central location without highlighting particular SDGs, or their representation does not have the necessary goodness of fit to be interpreted.

Regarding Asia, Figure 4 reveals that the Philippines stands out above the rest, with a commitment of 68%, as they are located to the right of the plan (it is the country with the highest commitment of the study). In addition, it is located in the upper part with a commitment to SDG1 and SDG2 that is well above the rest of the countries. Indonesia presents a similar profile, although with lower commitments. In the background, Turkey and Russia appear, with a commitment of 54%, followed by Thailand, Singapore, Taiwan and Japan, at around 43-47%. Close to these are the United Arab Emirates, Malaysia and South Korea, which are close to 40%; and, finally, the furthest behind are India and Hong Kong, with 30%, Israel and China with 17% and Qatar, very distant from the rest, with a very poor commitment of 8%.

In reference to the evolution over the two years of study, Asian countries show a lower improvement than the rest of the continents. Thus, the countries furthest behind did not show a change in their intentions and their progress is not remarkable (close to 5%). On the contrary, it is worth stressing that there are certain countries, such as India, with an increase of 29% in its commitment, Japan with 23%, and Malaysia, the United Arab Emirates, Turkey and Thailand with an improvement of around 18%.

More precisely, Figure 6 shows the preference for the SDGs of each country:

- The Philippines presents the highest commitment, with the highest percentages, and it is above the rest on SDG1, SDG2, SDG3, SDG8 and SDG11.
- Indonesia stands out for its commitment to SDG1, SDG2 and SDG3; and, Singapore stands out for its commitment to SDG3.
- Russia focuses particularly on SDG4 and SDG17, and to a lesser extent on SDG7, SDG8, SDG 9, SDG 12 and SDG13.
- Turkey focuses on SDG5, SDG10 and SDG17.

Regarding the Americas, Africa and Oceania, the information in Figure 4 reveals their business commitment and evolution, allowing us to observe that the eight analysed countries from these continents are the furthest behind in the study. However, Chile, with a commitment of 56%, shows one of the highest commitments in the study (behind the Philippines, Spain and Portugal, and at the level of Turkey and Russia), and Mexico shows a similar commitment to the countries from the other continents, at 50%. Brazil is somewhat lower, with 46%, while the rest of the countries present commitments below 30%; the USA stands out for its very poor commitment, which is at the level of Qatar, at 8%; in addition, it remained stable in the years of study, that is to say, its trend is not upward. Regarding the evolution, these countries improve their commitment by around 10%, highlighting South Africa and New Zealand with 20%. More precisely, Figure 7 shows the SDG preferences for each country.

- Chile stands out with commitments above 70% for SDG8, SDG11, SDG13, SDG4, SDG7, SDG9 and SDG12.
- New Zealand is characterised by its commitment to SDG13 and SDG3, at 45%, and to SDG14, at 22%, which is a low percentage but is above the other seven countries.

5. Discussion

The results show significant differences in the level of business commitment to the SDGs according to the region and country, as well as in the prioritisation of the SDGs. Based on the results obtained, we can accept the hypothesis H1, which states that the country of origin is a determinant of the level of SDG commitment and its evolution, verifying the highest levels of homogeneity in companies whose country of origin is on the same continent and with a close geographical proximity.

Considering the general business commitment, we have identified the top three SDGs highlighted by companies and continents: SDG8, SDG12 and SDG13, although there are differences among countries. These SDGs belong to two of the 5Ps of the 2030 Agenda, namely, Prosperity (SDG 8) and Planet (SDG12 and SDG13). In this regard, our finding is consistent with that obtained by Carlsen and Bruggemann [30], who found that the pillar ‘Planet’ was the most important indicator for a ranking of 102 countries, which highlighted the dominance of environmental concerns worldwide.

In general, our results are in line with the most frequently addressed SDGs in the literature, namely, SDG8 ‘Decent work and economic growth’ [8,10,32,40–44]; SDG13 ‘Climate action’ [10,32,40–43] and SDG12 ‘Responsible consumption and production’ [10,40,41,43]. On the contrary, according to the literature, SDG2 ‘Zero hunger’ and SDG1 ‘No poverty’ are among the less commonly addressed goals [8,10,40–44]. SDG14 is also identified as one of those that has received less attention [6,19].

When plotting commitment levels by country, European and Asian countries stand out as leaders. In Asia, the Philippines is one of the developing countries adopting more advanced systems analysis approaches to assess and compare the alignment of the SDGs with existing development plans and strategies [45], which may justify the greater commitment of the countries under study. In Europe, southern European countries are in the lead (namely, Spain and Portugal, followed by France and Italy), followed by countries of central Europe (such as Belgium, Austria, Denmark, Germany) and the Nordic countries (Denmark, Sweden, Finland and Norway).

Our results also confirm our hypothesis H2, according to which companies that operate in countries with legal and cultural systems that are more oriented to stakeholders (i.e. characterised by high values of collectivism and femininity) are more strongly involved in SDG commitment. In this regard, Portugal and Spain are countries with religious, cultural and legal characteristics that may promote certain commitments to the 2030 Agenda [6]. Southern European countries are characterised by a cultural system with higher values of ‘femininity’ and ‘collectivism’ that pursue the common good [36] and place greater emphasis on social and environmental issues [33,36]. Companies from the Nordic countries, such as Norway and Denmark, are characterised by a high stakeholder orientation [12] and have a culture rooted in sustainability and defence of the environment and social rights [15,27,36]. The Nordic countries also received higher values in ‘femininity’, which is the cultural variable that most influences sustainability [36].

This effect of the cultural system is due both to the existence of common values, norms and management practices and to the need for all companies to meet stakeholders’ expectations, which, in turn, are determined by a legal system characterised by higher stakeholder orientation (civil law system) [12].

Our findings are in line with those obtained by García-Sánchez et al. [38]: European countries are leading an active business commitment to the fulfilment of the SDGs. This result is mainly because these countries are governed by civil law and have greater stakeholder orientation, showing a greater commitment to the sustainable development agenda and giving higher priorities to social and environmental issues [15]. Another reason for European companies’ involvement in sustainable

development is the institutional arrangements emphasizing collective action between the state, civil society and companies [36]. Despite the socioeconomic consequences of the COVID-19 pandemic, over the last 5 years, the European Union has made remarkable continuous progress towards the SDGs due to its strategy around the European Green Deal and the Action Plan for Social Rights, as well as by providing financial support to help member states [46].

Concerning Asian countries, the Philippines and Indonesia stand out as having the strongest commitment to the SDGs (particularly SDG1 and SDG2), followed by Turkey and Russia. Among Asian countries, Qatar has the worst commitment to the SDGs. India and Hong Kong, followed by China and Israel, are in the lowest positions. García-Sánchez et al. [8] also found that Hong Kong, Israel and other Asian countries (Malaysia, Taiwan, Singapore, Turkey and Emirates) do not have a strong commitment to the SDGs. These authors also identified Qatar as the one that most neglects the commitment to the 2030 Agenda.

As for the rest of the continents, companies from the Americas, Africa and Oceania are far behind those from the remain continents, with the exception of Chile and Mexico. Like other studies [8,26,30] we found that the USA shows some of the lowest involvement in terms of business contribution to the SDGs. Countries governed by common law and greater shareholder orientation pay more attention to economics aspects, namely, to increase the prices of shares and dividends [29]. In the case of the USA, it provides better protection to shareholders in the field of credit contracts and insolvency [47]. Thus, sustainable issues are not within the main purposes of common law countries. In terms of cultural orientation, the USA was also ranked high by Amor-Estebán et al. [15] for 'individualism', making it a less socially orientated country.

6. Conclusions

The business sector is called to play a key role in achieving the sustainable development established by the UN 2030 Agenda. SDG Compass puts sustainability at the centre of business strategy, offering a guide to use and optimise business contributions to the SDGs. Companies must set priorities, taking into account their positive and negative impacts on the SDGs. Afterwards, companies must set goals to achieve business success and demonstrate their commitment to the SDGs. Several studies have intended to map company involvement with respect to SDG commitment and disclosure [6,8,26]. Their findings reveal that most companies worldwide remain silent on how to incorporate the SDGs into their business strategies. Therefore, most of them are not committed or involved with the SDGs.

This paper analysed the level of business commitment to the 2030 Agenda worldwide and whether it is associated with the regulatory and cultural systems that characterise the different continents and countries. Despite the occurrence of the COVID-19 pandemic having reduced the emphasis to reach the SDGs by 2030, it is expected that governments are doing their best for the sustainable development in their countries. Our study confirms these intentions, as all SDGs have a higher percentage of presence in the most current year of study, i.e. 2021, as compared to 2020. Additionally, SDG8, SDG12 and SDG13 remain in the top three of the most important goals on all continents, as well as for companies.

Our results offer evidence that companies operating in countries with similar institutional structures tend to adopt similar behaviours in relation to SDG involvement, as their degree of commitment is influenced by coercive and normative institutional pressures. Thus, the main conclusions of this research are that legal and cultural systems can act as influential institutional factors

on SDG business commitment. Companies from civil law countries (stakeholder orientation) and that operate in countries characterised by a collectivist culture, such as European countries, tend to present the highest level of commitment to the 2030 Agenda. This corroborates the previous research based on institutional theory, which shows that political and legal conditions, as well as cultural values, are among the most important external factors explaining differences between countries in the level of SDG achievement.

Moreover, our evidence contributes to the academic literature in the following ways. First, our international approach involving 41 countries allowed us to extrapolate the arguments of institutional theory to a wider geographic spectrum. Second, our study contributes to update the results obtained in previous studies focused on CSR issues [15] introducing a specific SDG approach in a post-COVID period (2020–21). In addition, HJ-biplot analysis made it possible to classify countries and continents in terms of their companies' commitment to the SDGs.

Our findings can be highly valuable for investors, managers and policymakers. For investors, the findings provide valuable insights into the disparities in SDG commitment across different institutional contexts on an international scale. At the corporate level, our evidence enables companies to understand the coercive pressures that sustainable development issues can exert on the specific geographic environments they plan to enter. For managers, an understanding of the institutional factors that constrain sustainable development practices can help them to adjust their business practices accordingly. Our findings also have important implications for policymakers, demonstrating that increasing the level of achievement of the SDGs by countries that are lagging behind to date requires improvement in institutional quality and governance systems.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

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