ORIGINAL ARTICLE

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A grouping of the Sustainable Development Goals (SDGs) and their influence on business results: An analysis for Spanish companies

Abstract

Research background: In 2015, the United Nations (UN) set the 2030 Agenda for Sustainable Development and established 17 Sustainable Development Goals (SDGs) containing the social, economic, and environmental pillars of sustainable development. These focus on governments, society, non-profit organisations, and the private sector. This last pillar plays a key role in the pursuit of these goals, but there remains a lack of knowledge regarding how companies achieve the SDGs.

Purpose of the article: Some authors have analysed the effect of companies' adoption of the SDGs on their business performance. However, there is a gap in the analysis of this influence when considering the groups of SDGs. This study examines the level of commitment of a sample of Spanish companies with a grouping of the SDGs and their effects on business results.

Methods: We obtained information on companies from the UNGC and developed a panel regression.

Findings & value added: We concluded that all the SDGs do not have the same effect on companies that incorporate them into their activities. Although it is possible to make progress in all the SDGs, complementarities and trade-offs influence companies' results. The results obtained in this study incorporate new ideas into this issue and provide a new vision of how companies should incorporate sustainability into their businesses. It is not a question of achieving as many sustainable development goals as possible, but rather of focusing on those that can contribute the most to improving business performance. The clustering of the SDGs that we have undertaken and their subsequent analysis facilitates this work.

Introduction

The end of the 20th century was a turning point for Sustainable Development (SD) worldwide. SD has many definitions that can be summarised as the search for humanity's aspirations for a better life while simultaneously considering the limitations imposed by nature (Fonseca *et al.*, 2020). Throughout the 1980s and 1990s, the United Nations (UN) held a series of conferences dealing with the main issues related to SD, such as poverty, population well-being, education, innovation, knowledge economy, environmental protection, and renewable energy (Fonseca *et al.*, 2020).

One key moment in this international movement was the establishment of the Millennium Development Goals (MDGs) in September 2000, based on the aforementioned UN conferences. It was an ambitious project to which all 189 UN member states unanimously agreed, and with the commitment of some international organisations, such as the World Bank and OECD (Biggeri *et al.*, 2019).

In 2015, the UN set the 2030 Agenda for Sustainable Development and established 17 Sustainable Development Goals (SDGs) (Table 1). These are

linked to the MDGs, which contain the social, economic, and environmental pillars of SD (UN, 2015). The worldwide implementation of the SDGs provides a chance to build a better future in an increasingly interconnected planet. They focus on all actors: governments, society, non-profit organisations, and the private sector. This latter plays a key role in the pursuit of these goals owing to its expertise and capacity; however, there remains a lack of knowledge regarding how companies are achieving the SDGs (Berrone *et al.*, 2019).

The UN 2030 Agenda proposed 17 goals, 169 targets, and over 300 indicators, which is a complex network that could hinder the effective development of the SDGs (Costanza *et al.*, 2016). Several authors proposed means of clustering the SDGs using different criteria. For example, (Costanza *et al.*, 2016) present three groups in which 17 goals were clustered: efficient allocation (building a living economy), fair distribution (protecting capabilities to flourish), and sustainable scale (staying within planetary boundaries). (Hirai & Comim, 2022; Ye *et al.*, 2022) classify the SDGs into social, economic, and environmental dimensions. Other authors have developed indicators based on different aggregation procedures, such as the arithmetic mean, higher-order means, and geometric mean (Biggeri *et al.*, 2019; Dalampira & Nastis, 2020; Eppinga *et al.*, 2022; Lassala *et al.*, 2021).

The inclusion of the SDGs in a company's strategy indicates that apart from economic interests, it also pursues social and environmental achievements (Lassala *et al.*, 2021). Some authors have analysed the effect that companies' adoption of the SDGs has on business performance (Alkaraan *et al.*, 2023; Grijalvo & García-Wang, 2023; Muhmad & Muhamad, 2021). However, there is a gap in the analysis of this influence when considering the groups of the SDGs. According to (Mio *et al.*, 2020), studies tend to adopt a qualitative methodology and most of them are conceptual and consider the SDGs as a complete set. Their systematic literature review reveals that some businesses have linked their activities to the SDGs. These include entrepreneurship, strategy, corporate social responsibility, and SDGs benefits. Regarding this last issue, only two papers are mentioned: (Morioka *et al.* , 2017) and (Bowie, 2019). There is also a need to go beyond companies' self-reported contributions (van Zanten & van Tulder, 2018). Considering the most recent literature (Agrawal *et al.*, 2022; Claro & Esteves, 2021; Jan *et al.*, 2023; Martínez-Falcó *et al.*, 2023) the gap that we wish to cover can be explained as follows:

– The need to investigate groups of goals and their interlinkages.
– The need to analyse the outcomes of the groups of the SDGs and their impact on companies.

As noted previously, the UN 2030 Agenda proposed a wide range of targets and indicators. This makes it challenging for companies to choose, apply, and analyse the potential effects of compliance. Hence, there is a need to group them and check how these groups can benefit companies so that managers can decide which objectives to direct their resources. The scientific contribution of this study can be specified as follows. The need to group the SDGs has been perceived, and new conclusions have been drawn on the effects of the achievement of these objectives on business performance. These two aspects have not been analysed in depth, and the literature has focused mainly on the individual analysis of the SDGs and their effects at the societal level, not at the company level.

The model developed by (Queenan *et al.*, 2017) was chosen because it criticises the approach of the UN 2030 Agenda which separates goals without recognising the potential interactions between them, both positive and negative. Considering this model, the main objective of our study is to analyse how different groups of SDGs influence business performance.

To achieve these objectives, the 'Literature review' section examines the literature on the main variables related to the SDGs, such as sustainability and corporate social responsibility. The main studies that relate commitment to the SDGs and business results are described, and the possible interrelationships that may exist among the SDGs are investigated.

Following this, the methodology section details the sample and data collection. In this study, we estimate two econometric models using panel data for the period 2017–2019. The models are run using a sample of Spanish companies (classified into two groups according to their degree of compliance with the SDGs). The aim is to identify the SDGs that determine the performance of each group of companies. Subsequently, the results can help investors and managers choose the most profitable and sustainable companies. Likewise, industrial regulators will be able to guide legislation towards certain sectors for the benefit of the economy, environment, and society. The results, discussion, and conclusions of this study are presented after the methodology.

Literature review

Sustainability, corporate social responsibility and the SDGs

It is challenging to universally define concepts related to SD. How does SD differ from sustainability? They are interlinked terms, with slight differences between them. Sustainability is considered a long-term target, while SD comprises certain procedures and practices to achieve that goal, such as recycling materials, adopting green energy, promoting healthy lives, inclusive education, gender equality, sanitation, and innovation (Pham *et al.*, 2021).

Sustainability and corporate social responsibility (CSR) are strongly linked and are usually analysed together, although they are unique concepts in some ways. Traditionally, CSR has been related to social matters, whereas sustainability has mainly been linked to environmental concerns (Goedeke & Fogliasso, 2020). Sustainability has three main objectives: economic development, environmental protection, and social development (Balcerzak *et al.*, 2023; Balcerzak & Pelikánová, 2020). These three pillars are broadly known as the Triple Bottom Line (Nechita *et al.*, 2020; Politis & Grigoroudis, 2022). CSR enhances SD across this Triple Bottom Line. The main purpose of CSR is to improve firms' practices in a way that leads them toward sustainability (Le, 2022b; Quintana-García *et al.*, 2022; Ye *et al.*, 2022).

The UN has proposed 17 SDGs to achieve desired SD worldwide. The UN Agenda is an ambitious proposal, which seeks not only sustainable development, but also new ways to measure performance and conduct business by incorporating sustainable procedures and practices into companies (Nechita *et al.*, 2020). There are profound interlinkages and cross-cutting factors among goals and targets, although Agenda 2030 simultaneously has an integrated and indivisible nature. Therefore, it is crucial to discover the synergies and trade-offs between goals and targets and whether the achievement of one SDG may have a positive or negative influence on others (Biggeri *et al.*, 2019; Brodny & Tutak, 2023).

The SDGs and business results

The relationship between sustainability practices and business performance has attracted research attention in recent years, although the inconclusive results signify that the debate remains open (Nechita *et al.*, 2020).

Several studies claim that companies involved in sustainability and CSR practices improve their performance.

Its incorporation into a company's strategy allows the company to improve its results because these CSR practices contribute to the creation of value and generate a competitive advantage. Companies can develop great strength through these practices which their competitors cannot easily mimic. Sustainability is both a necessity and an element of differentiation. Many variables are positively affected: access to financial resources, reputation, employee productivity, and customer appreciation. This wide range of consequences limits the quantification of these benefits. In general, we can say that what is achieved is the development of a more productive relationship with different stakeholders (Ang *et al.*, 2022; Mozas-Moral *et al.*, 2021; Muhmad & Muhamad, 2021; Okafor *et al.*, 2021). However, other studies have found no relationship between these types of practices and business performance (Daugaard, 2020; Ghardallou & Alessa, 2022; Kludacz-Alessandri & Cygańska, 2021; Shahbaz *et al.*, 2020), and some research shows that CSR harms companies´ results (Adamkaite *et al.*, 2023; Dubravská *et al.*, 2020; Sharma & Aggarwal, 2022).

If we focus on the SDGs, achieving them requires global cooperation from all stakeholders, of which companies are the most influential. Businesses are critical in ensuring a more sustainable world through the implementation of the SDGs in their strategies (Caldana *et al.*, 2022; Palmer *et al.*, 2019; Santos & Silva, 2021). This implementation can lead to higher performance because of the company's inclusion in rankings, higher long-term results, improvement in the company's image as perceived by society and the media, business practices, and systems that enhance decision making (Al Lawati & Hussainey, 2022; Le, 2022a). However, other studies have shown that the presence of the SDGs in company strategies, when linked to other conditions, leads to poor business results. This conclusion could be explained by the medium- to long-term strategic nature of these goals and the trade-offs among them that have been observed (Dorber *et al.*, 2023; Lassala *et al.*, 2021).

There is a need for studies that examine the adoption of the SDGs and their effects in different countries. Research has been conducted, especially in developed countries such as Sweden, the United Kingdom, and France. However, this analysis should be extended to other geographical areas to examine how these practices evolve in developing countries.

The SDGs interlinkages

All the SDGs are cross-cutting and have interlinkages, thus leading certain researchers to develop models with the intention of showing the networks within them. Some authors have criticised the UN's model, because it does not consider interactions among the SDGs. They claim that it is possible to find positive synergies and negative trade-offs among multiple goals (Dawes, 2022; Queenan *et al.*, 2017; Suárez-Serrano *et al.*, 2023; Waage *et al.*, 2015). An improvement with regard to one SDG might sometimes favour the achievement of another or, on the contrary, harm it.

Recently, the UN has considered the need to maintain coherence and integration in relation to policies linked to the SDGs. It has developed a holistic approach, recognising that certain actions in one field can have positive or negative effects in other fields. The interconnections between the SDGs, especially in terms of their effects on the environment, must be considered now that climate change is a reality. For example, Objective 8, which relates to economic growth, may undermine Objectives 12 and 13 which aim to reduce carbon emissions.

Many proposals concerning the aggregation of the SDGs in the last few years have been put forward, most of which focus on the combination of three basic parts: the contribution to SD in the dimensions of nature, the economy, and society (Costanza *et al.*, 2016). In their work, (Hirai & Comim, 2022; Ye *et al.*, 2022) divide the 17 goals into three groups with social, environmental, and economic characteristics based on the Ps, that is, 'planet, people, peace, prosperity, and partnership'. It is vital to analyse the whole network to achieve the optimum of each goal, as has occurred in recent studies (Renaud *et al.*, 2022; Singh *et al.*, 2018; Urban & Hametner, 2022).

Some authors unequivocally state that we should not discuss the universal interconnections between the SDGs. Even those that may seem universal in nature can change with the influence of cultural, geographical, or political differences between countries. Few studies have considered these

interconnections in a national context, such as studies in Sweden, Spain, and Bangladesh. Hence the important contribution made by this research.

We consider this proposal fundamental as regards determining the relationship between the SDGs and business performance. We have based our research on the model proposed by (Queenan *et al.*, 2017), which was adapted from that of (Waage *et al.*, 2015) (Figure 1).

The aforementioned authors established a model with four concentric levels. At the first level, Wellbeing, the SDGs focus on people. The second level, Infrastructure, comprises the SDGs that are considered essential for society to function. The third level, Natural Environment, includes SDGs related to natural resources. The fourth level, One Health, is all-inclusive and includes the last SDG of global partnerships. This framework groups the SDGs based on their intended outcomes, in which goals (in white) with antagonistic relationships with other goals stand out (Queenan *et al.*, 2017).

Methods

Sample and data collection

This study was conducted using the statistical method of panel data analyses. This study examined 129 Spanish companies' levels of commitment to the SDGs and their effects on business results. Information on these companies was obtained from the United Nations Global Compact[1] by consulting the *Communication on Progress* Reports of 2017, 2018, and 2019. We selected all Spanish companies for which information was available during this period. The size distribution is as follows: 10 small enterprises, 32 medium-sized enterprises, and 86 large enterprises (UN, 2014).

The two proposed models considered proxy variables of business performance as dependent (endogenous) variables to measure the impact of the SDGs in their results. The remaining independent (exogenous) variables considered proxy variables of sustainability, economic, and financial

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[1] The United Nations Global Compact is a non-binding United Nations pact to encourage businesses and firms worldwide to adopt sustainable and socially responsible policies and to report on their implementation. The UN Global Compact is the world's largest corporate sustainability (a.k.a. corporate social responsibility) initiative with two objectives: 'Mainstream the ten principles in business activities around the world' and 'Catalyze actions in support of broader UN goals, such as the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs).'

explanatory factors (the items from the SDG categories) to verify the degree of involvement de las firms with sustainability. Likewise, the instrumental variable Gross Domestic Product (GDP) was also considered as an exogenous variable since it is a macroeconomic variable that can be useful to consider the effect of the general economic situation.

In this study, models of the commitment levels of a sample of Spanish companies with a grouping of the SDGs and their effects on business results were constructed and validated. The aim was to determine the effect of companies' adoption of the SDGs on their business performance to subsequently help investors and managers choose the most profitable and sustainable companies and dedicate resources to those SDGs that lead them to obtain long-term returns. Finally, industrial regulators can lead legislation towards certain sectors to benefit the economy, environment, and society.

Proxy variables for business performance and results (with sufficient data) were collected. There is a wide range of options for measuring results, which can be grouped into accounting, market, and perceptual measures. Some researchers consider accounting measures to be better indicators than market and perceptual measures, because they reveal what a firm is doing. Market-based measures may be affected by several macroeconomic factors, which can distort the interpretation of the data. Perceptual measures, which are based on managers' considerations and opinions, are subjective and, therefore, generally unreliable (Grewatsch & Kleindienst, 2017; Margolis & Walsh, 2003). Consequently, the most appropriate measures for this study were those related to accounting. We obtained the following information from the SABI database[2]: return on total assets (ROTA) ratio, return on equity (ROE) ratio, number of employees (NEMP), income (INC), assets (ASS), and net income after tax (NIAT).

Table 2 presents all the variables employed to specify the econometric models[3].

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[2] SABI (Iberian Balance Sheet Analysis System) is a database with financial information concerning more than 2,6 million companies in Spain and Portugal. SABI reports on businesses' financial information, brands (Spanish companies only), financial strength indicators, directors and contacts, stock data for listed companies, original declarations/scanned images (Spanish companies only), detailed corporate structures, market research, business and business news, M&A deals and rumours, maps and cartographic analysis, and audit reports (Spanish companies only).

[3] During the specification process, different combinations of all proxy variables were analysed to produce the optimum models, but only significant variables were included in the

The 129 companies were first grouped according to their degree of compliance with the SDG items. In this way, a homogeneous sample is achieved that makes it possible to use the results to help investors choose the most profitable and sustainable companies, and managers of companies dedicate resources to the SDGs that lead them to obtain long-term returns. This would also be useful and allow industrial regulators to lead legislation towards certain sectors to benefit the economy, environment, and society.

The first step in grouping the companies was to consider the quantity of items from the SDG categories (see Figure 1) measured at each company to verify their degree of involvement in sustainability (Table 3):

- Well-being (six SDGs in all) includes 'people-centred' goals such as health, education, and nutrition (SDGs 1,3,4,5,10 and 16).
- Infrastructure (seven SDGs) is related to goals that are perceived as essential for modern society to function (SDGs 2, 6, 7, 8, 9, 11, and 12).
- The Natural Environment (three in all) includes goals related to the management of natural resources and the provision of ecosystem services and life-supporting systems (SDGs 13, 14, and 15).
- One Health (1). Human developmental gains often occur with unrecognised negative externalities that affect ecosystems. A paradigm shift is urgently required to de-sectoralise human, animal, plant, and ecosystem health and to take a more integrated approach to health: One Health (OH), which includes SDG 17, which is based on global partnerships.

For example, company 'A' meeting all SDG-related items 'well-being' (i.e., 1, 3, 4, 5, 10, and 16) will result in a score of 6, the maximum score for such an SDG. If company 'A' meets only the first 3 items related to the SDG 'infrastructures' (i.e., 2, 6, 7) the score would be 3. Thus, for all items. Therefore, if company 'A' meets all the items of all the SDGs evaluated (Well-being, Infrastructures, Natural Environment and One Health), it would obtain a final score of 17.

Considering that the maximum score that each company can obtain is 17, the companies analysed were grouped into two categories. Group 1 (G1): companies that obtained an average score of 0-8 during the periods considered in the sample (2017, 2018, 2019), and Group 2 (G2): those that obtained an average score of 9-17 during the periods considered in the sample (2017, 2018, 2019) (Table 4).

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final regression models estimated (see Table 5). All the descriptive statistics and contrast tests were analysed during the process.

Once the two groups of companies were established, we estimated the econometric models of efficient panel data for each group. The empirical analysis procedure is illustrated in Figure 2.

Results

The most appropriate econometric technique to carry out this study is panel data analysis, as the 129 companies were analysed for several years (2017–2019) and several measured items (SDGs); therefore, the time series was mixed with a cross-section. In addition, the panel data technique is recommended because of its advantages over temporal and cross-sectional models (Mayorga & Muñoz, 2000). First, it allows the researcher to have a greater number of observations by increasing the degrees of freedom and reducing collinearity between explanatory variables, ultimately improving the efficiency of econometric estimates. Second, the panel data assume that the companies analysed are heterogeneous and try to control for them to avoid running the risk of obtaining biased results. Finally, the panel data technique enables the development and testing of relatively complex models of behaviour compared to time series and cross-sectional analyses.

Tables 5 and 6 present the results of the regression models. Table 5 summarises the structure of the empirical analysis using the estimated classification of the model.

During the specification process, different combinations of all the collected variables (Table 2) were employed to produce the optimum model (by analysing descriptive statistics and contrast tests). However, only significant variables were included in the estimated regression models.

First, an exploratory econometric model of companies with high (G1 with a score of 9 to 17) SDG achievement was proposed (M1). Second, an exploratory econometric model of companies with low (G2 with a score of 0–8) SDG achievements was proposed (M2).

These models show that all the relationships among variables are significant, (*p*-values: *$p \leq 10$ per cent; **$p \leq 5$ per cent; ***$p \leq 1$ per cent). In addition, the correlations between the exogenous variables included in both models (M1 and M2) were compared to avoid collinearity problems. Finally, the adjusted R^2 index was employed to quantify the goodness of fit for each model. In both cases, it was greater than 95 per cent. These results indicate significant explanatory power, and there is a possible weakness: the num-

ber of observations with which the models have been estimated. However, the approach achieved with these models made it possible to obtain greater knowledge of the positive effects that a great commitment to the SDGs has on companies.

On the one hand, the first model (M1) shows that the G1 companies' incomes (INC) are determined by their profits (+NIAT) and incomes that they have been receiving (+INC-1). These are associated with the infrastructure, integration, and cooperation policies developed (+INFRAEST, +ONEH), but not with environmental policies, which may even be harmful. In the short term, -NATENV does not have a positive effect on income and +WELLB is not significant.

The model reflects the positive effect of policies on the essential productive capacity of modern society (+INFRAEST) on income (INC). However, short-term environmental policies have implied a decrease in income (NATENV and WELLB are not significant). This may be because these kinds of policies are very demanding, and their 'benefits' have not yet been perceived, or because the cost of applying environmental regulations is higher than their result in income.

On the other hand, although the same model as that employed for group G1 was estimated for group G2, the infrastructure (INFRAEST) variable was not significant. Similarly, ONEH loses significance with respect to the G1 companies, but we accept it as valid (high probability, p=0.084).

The main results obtained are, therefore, the following.

First, NATENV does not positively impact income (INC) for any group of companies (G1 and G2), indicating that an improvement in this variable does not increase income.

Second, WELLBEING is not significant for any group of companies (G1 and G2), and INFRAEST is significant only for G1 companies.
Third, G1 companies (which are those most committed to the SDGs) depend on their actions regarding Infrastructure and One Health, and their incomes (INC) will therefore depend not only on the progress of the economy (GDP). This is important because the involvement of this group of companies in improving and complying with the SDGs would help them obtain income, even in a generally unfavourable environment.

Finally, the beta parameters (structural coefficients) were standardised to determine which exogenous variable contributed to explaining the behaviour of the endogenous variable in each estimated model to a greater extent. The conclusions were similar for both groups. The net income after

taxes (NIAT) and the income of the previous year (INC-1) explain the current year income (INC) to a greater extent than GDP (M1: $\beta^*_{INC-1/INC}$ = |0.4542| > $\beta^*_{NIAT/INC}$ = |0.0697| > $\beta^*_{GDP/INC}$ = |0.01045|; M2:$\beta^*_{INC-1/INC}$ = |0.5733| > $\beta^*_{NIAT/INC}$ = |0.0030| > $\beta^*_{GDP/INC}$ = |0.0009|). Finally, regarding the SDG variables (WELLB, INFRAEST, NATENV, and ONEH), ONEH explains the behaviour of income (INC) to a greater extent for all companies considered (G1 and G2).

Discussion

In this study, we developed an analysis to clarify the influence of commitment to sustainability on business results. Taking the SDGs as a starting point, we consider that not all of them have the same effect on the companies that incorporate them into their activities. Therefore, we have developed an analysis that takes a grouping of these SDGs as a basis.

Through the analysis, we observed that the implementation of the SDGs affects business results, and we verified that the effects are different if we group the objectives.

The income achieved by the companies in the sample most committed to sustainability is determined by the infrastructure and One Health SDGs, which are related to the management of energy, agriculture, industry, water, cities, among others, along with alliances and cooperation between companies in the pursuit of a set of sustainability objectives. With regard to One Health, which is related to SDG17, this result is especially significant, as it is perhaps the most important goal since it focuses on partnerships and the creation of a shared value (Fraser, 2019).

However, companies' environmental practices (such as those related to climate, life below water, and terrestrial ecosystems, called Natural Environment) have a negative influence on their incomes, and companies' wellbeing practices (such as those related to good health, education, reduction of inequalities, and justice, called Wellbeing) have no influence on their incomes. Other studies have reported similar results. (Friedman, 1970) claims that these practices negatively affect performance. The only responsibility of businesses is to manage resources and develop activities, while seeking to enhance their profits. These activities entail more expenses, which are not advantageous for the company´s stakeholders. Managerial opportunism proposes that sustainability in businesses has an adverse

impact on performance because managers attempt to compensate for negative financial results by becoming involved in ostentatious social programs (Preston & O'Bannon, 1997). Several studies confirm this line of thinking (Alcaide González *et al.*, 2020; Dubravská *et al.*, 2020; Lassala *et al.*, 2021; Rajesh & Rajendran, 2020). Other researchers highlight the lack of a link between sustainability and performance (Daugaard, 2020; Ghardallou & Alessa, 2022; Inoue & Lee, 2011; Yilmaz *et al.*, 2020). Using a proposal similar to that shown in this study (Inoue & Lee, 2011) divide corporate social responsibility into five dimensions, noting their different impacts on performance. The long-term strategic conditions for certain SDGs should also be considered. It takes a long time to achieve the full integration and incorporation of all the SDGs into companies.

This study's results make an important contribution to the literature in the field of sustainable development for several reasons. This study employed a sample of large companies whose activities have significant impacts on society and the environment. The adoption of the SDGs by companies has been underway for a few years; therefore, the findings from the literature will allow them to be adopted more efficiently. The conclusions obtained can help investors choose the most profitable and sustainable companies by analysing the SDGs they have incorporated into their activities. In the case of company managers, these conclusions will enable them to dedicate resources to the SDGs that will lead to long-term returns. Finally, for industrial regulators, this is valuable information that will enable them to lead legislation towards certain sectors for the benefit of the economy, environment, and society.

It should be noted that, as highlighted previously, although progress in all SDGs is possible, there are complementarities and trade-offs. Therefore, improvement toward the attainment of one goal may either enhance or damage another SDG. This can explain the different results depending on the SDG grouping. For instance, economic development and industrial growth positively favour a reduction in hunger, access to sanitation, and well-being. However, it also negatively affects certain social and environmental goals (Barbier & Burgess, 2019; Fuso Nerini *et al.*, 2018).

Conclusions

The SDGs as established by the UN 2030 Agenda has made it possible to incorporate sustainable development into companies worldwide, considering the present and future needs of all individuals and organisations involved. However, little is known about how these SDGs are measured, operationalised, and interconnected. This study has allowed us to expand our knowledge of the relationships between the SDGs and how to take advantage of those relationships when a company decides to incorporate the 2030 Agenda into its strategy.

Some authors claim that research related to the SDGs is still in its infancy, as most studies have been conducted from 2020 and are focused on the macro level and analysis of the actions carried out by the UN and national governments (Moore & Sciulli, 2022). This study's results incorporate new ideas in this regard and provide a new perspective of how companies should incorporate sustainability into their businesses. It is not a question of achieving as many sustainable development goals as possible, but rather of focusing on those that can contribute the most to improving business performance. The clustering of SDGs that we have undertaken and their subsequent analysis facilitates this work.

A limitation of this study is that it was conducted in a single country and with a multi-sectoral sample of companies, limiting the generalisability of the findings.

Future research should extend the analysis to other geographical areas and include sector variables in the model. The information provided by the United Nations Global Compact is clear and complete; therefore, it is possible to replicate the study in other countries for comparative purposes, which would corroborate the conclusions extracted from this study.

This study can also be conducted in specific sectors of activity, which can facilitate business decision-making and the development of specific legislation.

References

Adamkaite, J., Streimikiene, D., & Rudzioniene, K. (2023). The impact of social responsibility on corporate financial performance in the energy sector: Evidence from Lithuania. *Corporate Social Responsibility and Environmental Management, 30*(1), 91–104. doi: 10.1002/csr.2340.

Agrawal, R., Majumdar, A., Majumdar, K., Raut, R. D., & Narkhede, B. E. (2022). Attaining sustainable development goals (SDGs) through supply chain practices and business strategies: A systematic review with bibliometric and network analyses. *Business Strategy and the Environment, 31*(7), 3669–3687. doi: 10.1002/bse.3057.

Al Lawati, H., & Hussainey, K. (2022). Does Sustainable Development Goals disclosure affect corporate financial performance? *Sustainability, 14*(13), 7815. doi: 10.3390/su14137815.

Alcaide González, M. Á., De La Poza Plaza, E., & Guadalajara Olmeda, N. (2020). The impact of corporate social responsibility transparency on the financial performance, brand value, and sustainability level of IT companies. *Corporate Social Responsibility and Environmental Management, 27*(2), 642–654. doi: 10.1002/csr.1829.

Alkaraan, F., Elmarzouky, M., Hussainey, K., & Venkatesh, V. G. (2023). Sustainable strategic investment decision-making practices in UK companies: The influence of governance mechanisms on synergy between industry 4.0 and circular economy. *Technological Forecasting and Social Change, 187*, 122187. doi: 10.1016/j.techfore.2022.122187.

Ang, R., Shao, Z., Liu, C., Yang, C., & Zheng, Q. (2022). The relationship between CSR and financial performance and the moderating effect of ownership structure: Evidence from Chinese heavily polluting listed enterprises. *Sustainable Production and Consumption, 30*, 117–129. doi: 10.1016/j.spc.2021.11.030.

Balcerzak, A. P., MacGregor, R. K., Pelikánová, R. M., Rogalska, E., & Szostek, D. (2023). The EU regulation of sustainable investment: The end of sustainability trade-offs? *Entrepreneurial Business and Economics Review, 11*(1), 199–212. doi: 10.15678/eber.2023.110111.

Balcerzak, A. P., & Pelikánová, R. M. (2020). Projection of SDGs in codes of ethics—case study about lost in translation. *Administrative Sciences, 10*(4), 95. doi: 10.3390/admsci10040095.

Barbier, E. B., & Burgess, J. C. (2019). Sustainable development goal indicators: Analyzing trade-offs and complementarities. *World Development, 122*, 295–305. doi: 10.1016/j.worlddev.2019.05.026.

Berrone, P., Ricart, J. E., Duch, A. I., Bernardo, V., Salvador, J., Piedra Peña, J., & Rodríguez Planas, M. (2019). EASIER: An evaluation model for public–private partnerships contributing to the Sustainable Development Goals. *Sustainability, 11*(8), 2339. doi: 10.3390/su11082339.

Biggeri, M., Clark, D. A., Ferrannini, A., & Mauro, V. (2019). Tracking the SDGs in an 'integrated' manner: A proposal for a new index to capture synergies and trade-offs between and within goals. *World Development, 122*, 628–647. doi: 10.10 16/j.worlddev.2019.05.022.

Bowie, N. E. (2019). International business as a possible civilizing force in a cosmopolitan world. *Journal of Business Ethics, 155*(4), 941–950. doi: 10.1007/s10 551-017-3670-8.

Brodny, J., & Tutak, M. (2023). The level of implementing sustainable development goal "Industry, innovation and infrastructure" of Agenda 2030 in the European Union countries: Application of MCDM methods. *Oeconomia Copernicana, 14*(1), 47–102. doi: 10.24136/oc.2023.002.

Caldana, A. C. F., Pacheco, L. M., Alves, M. F. R., Eustachio, J. H. P. P., & Santos, N. M. B. F. (2022). Strategy implementation for the 2030 agenda: Insights from Brazilian companies. *Business Ethics, the Environment & Responsibility, 31*(2), 296–306. doi: 10.1111/beer.12409.

Claro, P. B. d. O., & Esteves, N. R. (2021). Sustainability-oriented strategy and Sustainable Development Goals. *Marketing Intelligence & Planning, 39*(4), 613–630. doi: 10.1108/MIP-08-2020-0365.

Costanza, R., Daly, L., Fioramonti, L., Giovannini, E., Kubiszewski, I, Mortensen, L. F., Pickett, K. E., Ragnarsdottir, K. V., De Vogli, R., & Wilkinson, R. (2016). Modelling and measuring sustainable wellbeing in connection with the UN Sustainable Development Goals. *Ecological Economics, 130*, 350–355. doi: 10.1016/ j.ecolecon.2016.07.009.

Dalampira, E.-S., & Nastis, S. A. (2020). Mapping Sustainable Development Goals: A network analysis framework. *Sustainable Development, 28*(1), 46–55. doi: 10.10 02/sd.1964.

Daugaard, D. (2020). Emerging new themes in environmental, social and governance investing: A systematic literature review. *Accounting & Finance, 60*(2), 1501–1530. doi: 10.1111/acfi.12479.

Dawes, J. H. P. (2022). SDG interlinkage networks: Analysis, robustness, sensitivities, and hierarchies. *World Development, 149*, 105693. doi: 10.1016/j.wor lddev.2021.105693.

Dorber, M., Panzacchi, M., Strand, O., & van Moorter, B. (2023). New indicator of habitat functionality reveals high risk of underestimating trade-offs among sustainable development goals: The case of wild reindeer and hydropower. *Ambio, 52*(4), 757–768. doi: 10.1007/s13280-022-01824-x.

Dubravská, M., Marchevská, M., Vašaničová, P., & Kotulič, R. (2020). Corporate social responsibility and environmental management linkage: An empirical analysis of the Slovak Republic. *Sustainability, 12*(13), 5431. doi: 10.3390/su1213 5431.

Eppinga, M. B., Mijts, E. N., & Santos, M. J. (2022). Ranking the sustainable development goals: Perceived sustainability priorities in small island states. *Sustainability Science, 17*(4), 1537–1556. doi: 10.1007/s11625-022-01100-7.

Fonseca, L. M., Domingues, J. P., & Dima, A. M. (2020). Mapping the Sustainable Development Goals relationships. *Sustainability, 12*(8), 3359. doi: 10.3390/su12 083359.

Fraser, J. (2019). Creating shared value as a business strategy for mining to advance the United Nations Sustainable Development Goals. *Extractive Industries and Society, 6*(3), 788–791. doi: 10.1016/j.exis.2019.05.011.

Friedman, M. (1970). The social responsibility of business is to increase its profits [J]. *New York Times Magazine, 32*(33), 173–178.

Fuso Nerini, F., Tomei, J., To, L. S., Bisaga, I., Parikh, P., Black, M., Borrion, A., Spataru, C., Broto, V. C., Anandarajah, G., Milligan, B., & Mulugetta, Y. (2018). Mapping synergies and trade-offs between energy and the Sustainable Development Goals. *Nature Energy, 3*(1), 10–15. doi: 10.1038/s41560-017-0036-5.

Ghardallou, W., & Alessa, N. (2022). Corporate social responsibility and firm performance in GCC countries: A panel smooth transition regression model. *Sustainability, 14*(13), 7908. doi: 10.3390/su14137908.

Goedeke, M. J., & Fogliasso, C. (2020). Is CSR becoming a corporate requirement? *Journal of Managerial Issues, 32*(2), 162–175. doi: 10.3397/jmi12654.

Grewatsch, S., & Kleindienst, I. (2017). When does it pay to be good? Moderators and mediators in the corporate sustainability–corporate financial performance relationship: A critical review. *Journal of Business Ethics, 145*(2), 383–416. doi: 10.1007/s10551-015-2852-5

Grijalvo, M., & García-Wang, C. (2023). Sustainable business model for climate finance. Key drivers for the commercial banking sector. *Journal of Business Research, 155*, 113446. doi: 10.1016/j.jbusres.2022.113446.

Hirai, T., & Comim, F. (2022). Measuring the sustainable development goals: A poset analysis. *Ecological Indicators, 145*, 109605. doi: 10.1016/j.ecolind.2022.109 605.

Inoue, Y., & Lee, S. (2011). Effects of different dimensions of corporate social responsibility on corporate financial performance in tourism-related industries. *Tourism Management, 32*(4), 790–804. doi: 10.1016/j.tourman.2010.06.019.

Jan, A. A., Lai, F.-W., Asif, M., Akhtar, S., & Ullah, S. (2023). Embedding sustainability into bank strategy: Implications for sustainable development goals reporting. *International Journal of Sustainable Development & World Ecology, 30*(3), 229–243. doi: 10.1080/13504509.2022.2134230.

Kludacz-Alessandri, M., & Cygańska, M. (2021). Corporate social responsibility and financial performance among energy sector companies. *Energies, 14*(19), 6068. doi: 10.3390/en14196068.

Lassala, C., Orero-Blat, M., & Ribeiro-Navarrete, S. (2021). The financial performance of listed companies in pursuit of the Sustainable Development Goals (SDG). *Economic Research-Ekonomska Istraživanja, 34*(1), 427–449. doi: 10.108 0/1331677X.2021.1877167.

Le, T. T. (2022a). Corporate social responsibility and SMEs' performance: Mediating role of corporate image, corporate reputation and customer loyalty. *International Journal of Emerging Markets.* Advance online publication. doi: 10.1108/ijoem07-2021–1164.

Le, T. T. (2022b). How do corporate social responsibility and green innovation transform corporate green strategy into sustainable firm performance? *Journal of Cleaner Production, 362*, 132228. doi: 10.1016/j.jclepro.2022.132228.

Margolis, J. D., & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. *Administrative Science Quarterly, 48*(2), 268–305. doi: 10.2307/3556659.

Martínez-Falcó, J., Marco-Lajara, B., Sánchez-García, E., & Millan-Tudela, L. A. (2023). Sustainable Development Goals in the business sphere: A bibliometric review. *Sustainability, 15*(6), 5075. doi: 10.3390/su15065075.

Mayorga, M., & Muñoz, E. (2000). *La técnica de datos de panel una guía para su uso e interpretación*. Banco Central de Costa Rica. Documento de trabajo.

Mio, C., Panfilo, S., & Blundo, B. (2020). Sustainable development goals and the strategic role of business: A systematic literature review. *Business Strategy and the Environment, 29*(8), 3220–3245. doi: 10.1002/bse.2568.

Moore, D. R. J., & Sciulli, N. (2022). Sustainable development goal disclosures within Australian superannuation funds: An exploratory study. *Australasian Accounting, Business and Finance Journal, 16*(2), 72–90. doi: 10.14453/aabfj.v16i2.6.

Morioka, S. N., Bolis, I., Evans, S., & Carvalho, M. M. (2017). Transforming sustainability challenges into competitive advantage: Multiple case studies kaleidoscope converging into sustainable business models. *Journal of Cleaner production, 167*, 723–738. doi: 10.1016/j.jclepro.2017.08.118.

Mozas-Moral, A., Fernández-Uclés, D., Medina-Viruel, M. J., & Bernal-Jurado, E. (2021). The role of the SDGs as enhancers of the performance of Spanish wine cooperatives. *Technological Forecasting and Social Change, 173*, 121176. doi: 10.1016/j.techfore.2021.121176.

Muhmad, S. N., & Muhamad, R. (2021). Sustainable business practices and financial performance during pre- and post-SDG adoption periods: A systematic review. *Journal of Sustainable Finance & Investment, 11*(4), 291–309. doi: 10.1080/20430795.2020.1727724.

Nechita, E., Manea, C. L., Nichita, E.-M., Irimescu, A.-M., & Manea, D. (2020). Is financial information influencing the reporting on SDGs? Empirical evidence from Central and Eastern European chemical companies. *Sustainability, 12*(21), 9251. doi: 10.3390/su12219251.

Okafor, A., Adeleye, B. N., & Adusei, M. (2021). Corporate social responsibility and financial performance: Evidence from U.S tech firms. *Journal of Cleaner Production, 292*, 126078. doi: 10.1016/j.jclepro.2021.126078.

Palmer, T. B., Phadke, S., Nair, M. V., & Flanagan, D. J. (2019). Examination of sustainability goals: A comparative study of U.S. and Indian firms. *Journal of Management & Organization*. Advance online publication. doi: 10.1017/jmo.2019.9.

Pham, D. C., Do, T. N. A., Doan, T. N., Nguyen, T. X. H., & Pham, T. K. Y. (2021). The impact of sustainability practices on financial performance: Empirical evidence from Sweden. *Cogent Business & Management, 8*(1), 1912526. doi: 10.1080/23311975.2021.1912526.

Politis, Y., & Grigoroudis, E. (2022). Incorporating the sustainability concept in the major business excellence models. *Sustainability, 14*(13), 8175. doi: 10.3390/su14138175.

Preston, L. E., & O'Bannon, D. P. (1997). The corporate social-financial performance relationship: A typology and analysis. *Business & Society, 36*(4), 419–429. doi: 10.1177/000765039703600406.

Queenan, K., Garnier, J. N., Nielsen, L., & Buttigieg, C. (2017). Roadmap to a one health Agenda 2030. *CAB Reviews, 12*. doi: 10.1079/pavsnnr201712014.

Quintana-García, C., Marchante-Lara, M., & Benavides-Chicón, C. G. (2022). Towards sustainable development: Environmental innovation, cleaner production performance, and reputation. *Corporate Social Responsibility and Environmental Management, 29*(5), 1330–1340. doi: 10.1002/csr.2272.

Rajesh, R., & Rajendran, C. (2020). Relating environmental, social, and governance scores and sustainability performances of firms: An empirical analysis. *Business Strategy and the Environment, 29*(3), 1247–1267. doi: 10.1002/bse.2429.

Renaud, F. G., Zhou, X., Bosher, L., Barrett, B., & Huang, S. (2022). Synergies and trade-offs between sustainable development goals and targets: Innovative approaches and new perspectives. *Sustainability Science, 17*(4), 1317–1322. doi: 10.1007/s11625-022-01209-9.

Santos, M. J., & Silva, C. (2021). The adoption of sustainable development goals by large Portuguese companies. *Social Responsibility Journal, 17*(8), 1079–1099. doi: 10.1108/srj-07-2018-0184.

Shahbaz, M., Karaman, A., Kılıç Karamahmutoğlu, M., & Uyar, A. (2020). Board attributes, CSR engagement, and corporate performance: What is the nexus in the energy sector? *Energy Policy, 143*, 111582. doi: 10.1016/j.enpol.2020.111582.

Sharma, R., & Aggarwal, P. (2022). Impact of mandatory corporate social responsibility on corporate financial performance: The Indian experience. *Social Responsibility Journal, 18*(4), 704–722. doi: 10.1108/srj-09-2020-0394.

Singh, G. G., Cisneros-Montemayor, A. M., Swartz, W., Cheung, W., Guy, J. A., Kenny, T., McOwen, C. J, Asch, R., Geffert, J. L., Wabnitz, C. C. C., Sumaila, R., Hanich, Q., & Ota, Y. (2018). A rapid assessment of co-benefits and trade-offs among Sustainable Development Goals. *Marine Policy, 93*, 223–231. doi: 10.1016/j.marpol.2017.05.030.

Suárez-Serrano, E., González-Torre, P. L., & Covián-Regales, E. (2023). A business prioritisation of the sustainable development goals indicators: Building bridges between academics and practitioners in the Spanish case. *Environmental Development, 46*, 100827. doi: 10.1016/j.envdev.2023.100827.

UN (2014). Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty Text with EEA relevance.

UN (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*.

Urban, P., & Hametner, M. (2022). The economy–environment nexus: Sustainable Development Goals interlinkages in Austria. *Sustainability, 14*(19), 12281. doi: 10.3390/su141912281.

van Zanten, J. A., & van Tulder, R. (2018). Multinational enterprises and the Sustainable Development Goals: An institutional approach to corporate engagement. *Journal of International Business Policy, 1*(3), 208–233. doi: 10.1057/s42214-018-0008-x.

Waage, J., Yap, C., Bell, S., Levy, C., Mace, G., Pegram, T., Unterhalter, E., Dasandi, N., Hudson, D., Kock, R. A. , Mayhew, S., Marx, C., & Poole, N. (2015). Governing the UN sustainable development goals: interactions, infrastructures, and institutions. *Lancet Global Health, 3*(5), 251–252. doi: 10.1016/s2214-109x(15)70112-9.

Ye, J., Moslehpour, M., Tu, Y.-T., Vinh, N. T., Ngo, T. Q., & Nguyen, S. V. (2022). Investment on environmental social and governance activities and its impact on achieving sustainable development goals: Evidence from Chinese manufacturing firms. *Economic Research-Ekonomska Istraživanja*, Advance onnline publicaiton. doi: 10.1080/1331677X.2022.2076145.

Yilmaz, M. K., Aksoy, M., & Tatoglu, E. (2020). Does the stock market value inclusion in a sustainability index? Evidence from Borsa Istanbul. *Sustainability, 12*(2), 483. doi: 10.3390/su12020483.

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Annex

Table 1. List of sustainable development goals as defined by the UN's 2030 Agenda

Goal No.	Goal name	Goal description
SDG1	No poverty	End poverty in all its forms everywhere
SDG 2	Zero hunger	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
SDG 3	Good health and well-being	Ensure healthy lives and promote well-being for all at all ages
SDG 4	Quality education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
SDG 5	Gender equality	Achieve gender equality and empower all women and girls
SDG 6	Clean water and sanitation	Ensure availability and sustainable management of water and sanitation for all
SDG 7	Affordable and clean energy	Ensure access to affordable, reliable, sustainable, and modern energy for all
SDG 8	Decent work and economic growth	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all
SDG 9	Industry, innovation and infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialization
SDG 10	Reduced inequalities	Reduce inequality within and among countries
SDG 11	Sustainable cities and communities	Make cities and human settlements inclusive, safe, resilient, and sustainable
SDG 12	Responsible consumption and production	Ensure sustainable consumption and production patterns
SDG 13	Climate action	Take urgent action to combat climate change and its impacts
SDG 14	Life below water	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
SDG 15	Life on land	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
SDG 16	Peace, justice and strong institutions	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
SDG 17	Partnerships for the goals	Strengthen the means of implementation and revitalize the global partnership for sustainable development

Source: UN (2015)

Table 2. Variables considered to specify the econometric models

Type of variable	Proxy variable	Acronym	Concept	Database
Possible dependent variables (endogenous)	Proxy variables for the business performance and results.	ROTA	Return on Total Asset is a ratio that measures a company's earnings before interest and taxes (EBIT) relative to its total net assets.	SABI
		ROE	Return on Equity is the measure of a company's net income divided by its shareholders' equity.	SABI
		NEMP	Number of employees at each company.	SABI
		INC	Incomes show the company's profits and losses over a period (Eur mill).	SABI
		ASS	Assets represent the property or equipment that a company owns that are primarily used to run the business (Eur mill)	SABI
		NIAT	Net income after taxes is the financial term used to describe a company's profit after all taxes have been paid (Eur mill).	SABI
	Proxy variable for the economic situation.	GDP	Gross Domestic Product (Eur mill)	INE
Possible independent variables (exogenous)	Proxy variables for sustainability, economic and financial factors (SDGs items)	WELLB	Wellbeing includes 'people-centred' goals, such as health, education, and nutrition (Waage et al., 2015).	(UN, 2015)
		INFRAST	Infrastructures is related to those goals perceived as essential for a modern society to function and which are closely linked to them in the well-being variable (Waage et al., 2015).	(UN, 2015)
		NATENV	Natural environment contains goals which relate to the management of natural resources and the provision of ecosystem services and life-supporting systems (Waage et al., 2015).	(UN, 2015)
		ONEH	One Health is a further all-inclusive level, which extends to include SDG 17 for global partnerships, a cornerstone of the SDGs and of OH (Waage et al., 2015).	(UN, 2015)

Table 3. SDG quantification

Items	SDG numbers included by item	Max score for item
Well-being	1,3,4,5,10 and 16	6
Infrastructures	2, 6, 7, 8, 9, 11 and 12	7
Natural Environment	13, 14 and 15	3
Onehealth	1	1
	Total score	6+7+3+1=17

Table 4. Classification of Spanish companies analyzed according to SDGs

| G1 (9 to 17 average score) | | | | | G2 (0 to 8 average score) | | | | |
| Companies | Total score/year | | | Average | Companies | Total score/year | | | Average |
	2017	2018	2019			2017	2018	2019	
1. Abanca Corporacion Bancaria, S.A.	17	17	17	17,00	1. 1A Ingenierieros SLP	8	4	1	4,33
2. Abertis Infraestructuras	9	9	9	9,00	2. Aciturri Aeronautica	0	2	5	2,33
3. Accenture Spain	17	17	15	16,33	3. Amadeus IT Group S.A.	0	6	11	5,67
4. ACCIONA	15	14	15	14,67	4. Applus Services, S.A.	0	3	7	3,33
5. Acerinox, S.A.	8	10	12	10,00	5. Atento Spain Holdco, S.L.	0	5	7	4,00
6. Adolfo Domínguez	12	8	7	9,00	6. Inter Partner Assistance Servicios España, S.A.	0	3	8	3,67
7. Aena	10	10	9	9,67	7. Badalona Serveis Assistencials	9	8	7	8,00
8. Grupo Angel Camacho, S.L.	12	12	11	11,67	8. Banca March S.A.	0	2	3	1,67
9. Atresmedia Corporación, S.A.	17	15	9	13,67	9. Bankinter S.A.	3	4	4	3,67
10. Alcampo	17	17	17	17,00	10. Barcelona Activa SAU SPM	0	5	10	5,00
11. Balearia Eurolineas Maritimas, S.A.	11	11	10	10,67	11. BIC Graphic Europe, S.A.	0	5	10	5,00
12. Banco Sabadell, S.A	15	15	12	14,00	12. Bolton Food	0	1	3	1,33
13. BBVA, S.A.	14	15	15	14,67	13. Cabify mobility International S.L.	0	2	3	1,67
14. CaixaBank	12	12	12	12,00	14. Canal Isabel II S.A.	6	7	8	7,00
15. CEPSA (Compañía Espanola de Petróleos S.A.)	15	15	15	15,00	15. Carbonell Figueras S.A.	6	8	9	7,67
16. Comsa Corporación	10	10	10	10,00	16. Caser Residencial, S.A.U.	0	6	13	6,33
17. Consum S. Coop. V.	15	15	15	15,00	17. CESCE, S.A.	8	8	10	8,67

Table 4. Continued

	G1 (9 to 17 average score)					G2 (0 to 8 average score)			
Companies	Total score/year			Average	Companies	Total score/year			Average
	2017	2018	2019			2017	2018	2019	
18. CTL-TH Packaging S.L.U.	11	12	13	12,00	18. CIE Automotive SA	7	7	7	7,00
19. DOGA, S.A.	13	13	13	13,00	19. Cofely Espana, S.A.U.	0	3	7	3,33
20. Endesa, S.A.	13	13	13	13,00	20. Exolum (Compania Logistica de Hidrocarburos CLH, S.A.)	0	4	9	4,33
21. Equipos Nucleares S.A., S.M.E. (ENSA)	10	10	10	10,00	21. Corporacion Radio y Television de Galicia	3	2	0	1,67
22. Ercros,S.A.	9	8	12	9,67	22. Daorje, S.L.U.	10	9	5	8,00
23. Europa Mundo Vacaciones SL	15	15	12	14,00	23. Deloitte, S.L.	0	1	2	1,00
24. FCC Construccion, S.A	17	17	14	16,00	24. Disfrimur S.L.	14	9	3	8,67
25. Freixenet, S.A.	10	10	10	10,00	25. DKV Seguros y Reaseguros S.A.E.	3	4	4	3,67
26. GADISA	17	17	17	17,00	26. Ebro Foods, S.A.	9	11	11	10,33
27. Globalvia Inversiones S.A.U.	17	11	4	10,67	27. EDP España	13	9	9	10,33
28. Foodiverse Hold S.L.	10	13	15	12,67	28. EDP Renováveis S.A.	8	8	8	8,00
29. Grupo Antolin	12	12	12	12,00	29. El Corte Inglés, S.A.	4	5	5	4,67
30. Elecnor	10	12	13	11,67	30. Empresa Metropolitana Abastecimiento y Saneamiento de Aguas de Sevilla, S.A. (EMASESA)	0	5	11	5,33
31. Grupo Eroski	17	17	17	17,00	31. Emergia Contact Center S.L.	0	4	6	3,33

Table 4. Continued

	G1 (9 to 17 average score)					G2 (0 to 8 average score)			
Companies	Total score/year			Average	Companies	Total score/year			Average
	2017	2018	2019			2017	2018	2019	
32. Eulen, S.A.	13	13	16	14,00	32. Empresa Municipal de Servicios de Medio Ambiente Urbano (EMULSA)	5	5	3	4,33
33. Euskaltel, S.A.	10	11	11	10,67	33. Enagas	7	7	7	7,00
34. Grupo Gestamp	9	10	11	10,00	34. Esteve Healthcare, S.L.	7	7	7	7,00
35. LACERA Servicios y Mantenimiento, S.A.	9	9	9	9,00	35. Eurocontrol S.A.	0	1	2	1,00
36. Laboratorios Menarini, S.A.	12	13	15	13,33	36. Ferrovial S.A.	3	3	3	3,00
37. Grupo OHLA	13	13	14	13,33	37. Ficosa International, S.A.	5	5	5	5,00
38. Hero Espana, S.A.	9	10	11	10,00	38. Fluidra, S.A.	0	2	6	2,67
39. Iberdrola S.A.	14	16	17	15,67	39. Fuerte Group Hotels	6	5	2	4,33
40. Indra	15	12	10	12,33	40. Siemens Gamesa Renewable Energy, S.A.	5	7	6	6,00
41. Inditex, Industrias de Diseno Textil, S.A.	17	17	17	17,00	41. J&A Garrigues, S.L.P.	7	4	3	4,67
42. IRIZAR S. COOP.	14	15	14	14,33	42. Gomez-Acebo & Pombo Abogados, S.L.P.	0	6	13	6,33
43. Mapfre	9	9	9	9,00	43. Gonvarri Corporacion Financiera, S.L	4	4	4	4,00
44. Media Markt Espana	11	11	10	10,67	44. GRI Renewable Industries S.L	2	3	3	2,67
45. Melia Hotels International	11	12	12	11,67	45. Luis Calvo Sanz, S.A.	4	5	5	4,67
46. Mercadona S.A.	14	14	14	14,00	46. Grupo Catalana Occidente	7	7	7	7,00

Table 4. Continued

G1 (9 to 17 average score)					G2 (0 to 8 average score)				
Companies	Total score/year			Average	Companies	Total score/year			Average
	2017	2018	2019			2017	2018	2019	
47. Metro de Madrid S.A.	8	11	13	10,67	47. Diusframi, S.A. Unipersonal	7	7	7	7,00
48. Naturgy Energy Group S.A.	16	16	16	16,00	48. La Reserva de Marbella, S.L.	6	9	11	8,67
49. NH Hotel Group, S.A.	12	11	12	11,67	49. Grupo Santander	8	8	8	8,00
50. Paradores de Turismo de España, S.M.E, S.A.	6	9	13	9,33	50. Grupo Sese	3	4	7	4,67
51. Port Aventura Entertainment S.A.U.	14	11	8	11,00	51. Ibercaja Banco S.A.	5	5	6	5,33
52. Promotora de Informaciones S.A.- Prisa	17	17	17	17,00	52. Iberia L.A.E.	6	7	6	6,33
53. PROSEGUR COMPAÑÍA DE SEGURIDAD S.A.	10	9	9	9,33	53. Grupo Ilunion, S.A.	7	6	5	6,00
54. Sacyr, S.A.	17	17	17	17,00	54. Informa D&B SAU (S.M.E.)	6	9	9	8,00
55. Sociedad Estatal Correos y Telegrafos, S.A.	11	11	11	11,00	55. Iplan Gestión Integral, SL	2	1	0	1,00
56. THE SPB GLOBAL CORPORATION SL	8	11	14	11,00	56. Ingeniería de Sistemas para la Defensa de España S.A, S.M.E, M.P. (ISDEFE)	4	4	4	4,00
57. Agbar	12	9	9	10,00	57. Mahou San Miguel	5	7	10	7,33
58. Tecnicas Reunidas, S.A.	11	11	11	11,00	58. Mango MNG Holding, S.L.U. (Grupo Mango)	9	9	10	9,33
59. Textil Santanderina, S.A.	13	13	14	13,33	59. Mediaset España Comunicación S.A.	6	6	6	6,00
60. Vodafone España, S.A.U.	12	10	8	10,00	60. Red Electrica de Espana S.A.U.	7	7	11	8,33
Abanca Corporacion Bancaria, S.A.	17	17	17	17,00	61. Repsol	6	8	10	8,00

Table 4. Continued

| | G1 (9 to 17 average score) | | | | | G2 (0 to 8 average score) | | | | |
| Companies | Total score/year | | | Average | Companies | Total score/year | | | Average |
	2017	2018	2019			2017	2018	2019	
					62. Santalucia S.A. Compania de Seguros	8	8	8	8,00
					63. Schindler S.A.	7	7	7	7,00
					64. Solarig Holding, S.L.	4	5	5	4,67
					65. Tendam Retail S.A.	5	5	5	5,00
					66. Transportes Urbanos y Servicios Generales, SAL - TUSGSAL	7	7	6	6,67
					67. TYPSA (Tecnica y Proyectos S.A.)	6	7	5	6,00
					68. Unicaja Banco S.A.	8	8	5	7,00
					69. Viscofan	4	3	4	3,67

Table 5. Exploratory econometric models estimated

Sample: 2017, 2018, 2019	G1 (9 to 17 score) 67 companies	G2 (0 to 8 score) 61 companies
Dependent variable: INC Independent variables: Sustainability, economic, and financial explanatory factors	M1	M2

Table 6. Exploratory models of 129 Spanish companies' level of commitment to the SDGs and its effects on business results

| Dependent variable: INC	M1 (G1 companies. High commitment to the SDGs)	M2 (G1 companies. Low commitment to the SDGs)
Independent variables (significant and uncorrelated)	INC (-1) (+) *** NIAT (+) *** INFRAST (+) *** NATENV (-) *** ONEH (+) *** GDP (+) **	INC (-1) (+) *** NIAT (+) *** NATENV (-) *** ONEH (+) ** GDP (+) ***
Coefficients	INC (-1): 0.4736 NIAT: 0.4747 INFRAST: 157190.4 NATENV: -407488.5 ONEH: 1393087 GDP: 2.8004	INC (-1): 0.4679 NIAT: 0.4856 NATENV: -22162.13 ONEH: 27267.17 GDP: 0.60318
Standardized coefficients*(β^*)	INC (-1): 0.4542 NIAT: 0.0697 INFRAST: 0.0283 NATENV: -0.0404 ONEH: 0.0433 GDP: 0.0104	INC (-1): 0.5733 NIAT: 0.0030 NATENV: -0.0007 ONEH: 0.0006 GDP: 0.0009
R2-adjusted	0.9754	0.9955
Estimation (Hausman Test)**	FE	FE
N (groups)	130 (66 groups)	112 (60 groups)

Note: p-value *$p \leq 0.10$; **$p \leq 0.5$; ***$p \leq 0.01$

* The standardized coefficients obtained in the six models are not an output of Stata software. The standardized coefficients have been calculated directly from the unstandardized coefficients along with the standard deviations of the variables involved:

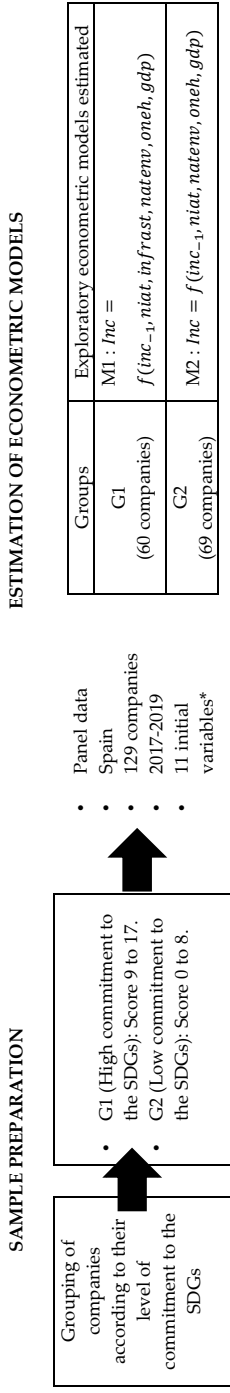$$\widehat{\beta_j}^* = \widehat{\beta}_j * \frac{SD(x_j)}{SD(y)}$$

**The Hausman test was used to determine the most appropriate estimation method – fixed effects (FE) or random effects (RE) – in order to obtain the most robust parameters in each case.

Figure 1. Grouping of SDGs
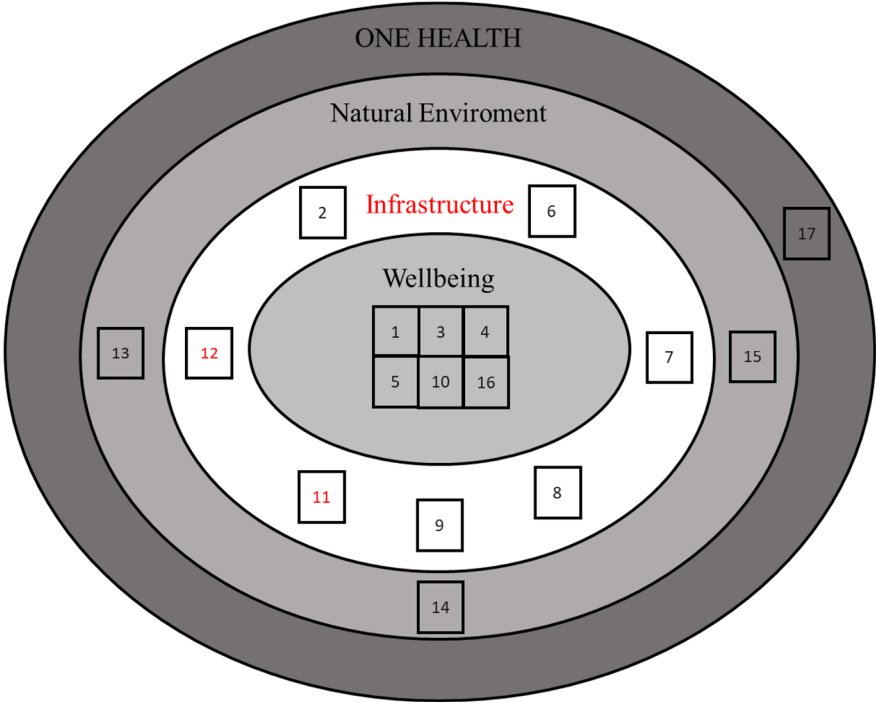
Source: Queenan *et al*. (2017) (the description of the 17 SDGs can be found in the table 1)

Figure 2. Empirical analysis procedure

SAMPLE PREPARATION

Grouping of companies according to their level of commitment to the SDGs

- G1 (High commitment to the SDGs): Score 9 to 17.
- G2 (Low commitment to the SDGs): Score 0 to 8.

- Panel data
- Spain
- 129 companies
- 2017-2019
- 11 initial variables*

ESTIMATION OF ECONOMETRIC MODELS

Groups	Exploratory econometric models estimated
G1 (60 companies)	M1 : $lnc = f(inc_{-1}, niat, infrast, natenv, oneh, gdp)$
G2 (69 companies)	M2 : $lnc = f(inc_{-1}, niat, natenv, oneh, gdp)$

Note: * During the specification process, different combinations of 11 proxy variables were tried to produce the optimum models, but only significant variables were included in the final regression models estimated. The 11 proxy initial variables are: ROTA, ROE, NEMP, INC, ASS, NIAT, GDP, WELLB, INFRAST, NATENV, ONEH.