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A business prioritisation of the sustainable development goals indicators: Building bridges between academics and practitioners in the Spanish case

Eugenia Suárez-Serrano^a, Pilar L. González-Torre^{b,*}, Enrique Covián-Regales^c

^a *Facultad de Comercio, Turismo y Ciencias Sociales Jovellanos, University of Oviedo, Spain*

^b *Escuela Politécnica de Ingeniería de Gijón, University of Oviedo, Spain*

^c *Escuela Politécnica de Mieres, University of Oviedo, Spain*

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ABSTRACT

Taking as a starting point the 232 indicators associated with the 2030 Agenda, the purpose of this research work is to select the indicators that best assess and measure the contribution of companies to the SDGs (Sustainable Development Goals). To this end, on the one hand, through the identification and consultation of a group of Spanish experts, academics and professionals, the Delphi technique is applied to select the best indicators. On the other hand, the need to establish a weighting method for the 19 proposed indicators is addressed using the Analytic Hierarchy Process (AHP). The study discards by a consensus of numerous indicators that do not fit or are superfluous for companies and, from a managerial perspective, the ranking can be useful for companies to identify priorities for urgent action and detect gaps that must be addressed to achieve the SDGs related to all the sustainability dimensions. Finally, to assess the applicability of the proposed indicators, a company was asked to fulfil them, and the results are presented.

1. Introduction

The involvement of companies in the 2030 Agenda for Sustainable Development creates a very attractive opportunity space for enterprises that want to strengthen their business models by integrating in a more robust way in the social and environmental situations where they operate. Unlike their predecessors, the Millennium Development Goals, the SDGs offer a relevant role for business in their achievement (Battaglia et al., 2020). In this sense, UN (2015: 27) affirms that “private business activity, investment and innovation are major drivers of productivity, inclusive economic growth and job creation”, calling on all businesses –from micro-enterprises and cooperatives to multinationals– to “apply their creativity and innovation to solving sustainable development challenges”.

Similarly, when analysing business influence on the SDGs, the academic literature tends to give the private sector a very relevant role (Scheyvens et al., 2016; Battaglia et al., 2020). On the one hand, some authors highlight the role that companies can play in achieving the SDGs (Scheyvens et al., 2016; Agarwal et al., 2017; Topple et al., 2017; Rosati & Faria, 2019a, 2019b; Mukhi and Qental, 2019; Pizzi et al., 2021; Blagov and Petrova-Savchenko, 2020). In line with the same approach, some scholars focus on how

* Corresponding author.

E-mail addresses: meugenia@uniovi.es (E. Suárez-Serrano), pilargt@uniovi.es (P.L. González-Torre), covianenrique@uniovi.es (E. Covián-Regales).

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business can contribute to the implementation of the SDGs as a way to create value to society by doing good (Chakravorti, 2016; O'Connor et al., 2016; BuhmannJonsson and Fisker, 2019). Alternatively, the need for new solutions to address global challenges can generate new business and collaboration opportunities (Howard-Grenville et al., 2017; Sullivan et al., 2018; Rosati and Faria, 2019a).

Extensive research has been done on tools to measure sustainability at country level (Le Blanc, 2015; Sullivan et al., 2018; Salvia et al., 2019; Paoli and Addeo, 2019; Mauro et al., 2020), but studies at the company level have been scarce until more recently (Myllyviita et al., 2017; Lozano and Barreiro-Gen, 2022). Nonetheless, more research and empirical effort are needed to draw conclusions about business commitment to the SDGs (Battaglia et al., 2020; Heras-Saizarbitoria et al., 2021). In the same way, Scheyvens et al. (2016) propose that there is a need for indicators and metrics on the contributions of companies to the SDGs, as 2030 Agenda indicators “are designed for countries and need to be ‘translated’ to fit the spheres of influence of companies” (Van der Waal and Thijssens, 2020; 8). It is true that there is extensive literature regarding the content of companies’ sustainability reports (Bebbington and Unerman, 2018; Tsalis et al., 2020; Van der Waal and Thijssens, 2020; Pizzi et al., 2021; Heras-Saizarbitoria et al., 2021). Nevertheless, as Miles and Ringham (2020) assert, boundary setting has been largely ignored by academics, and their analysis has been carried out primarily by providers of sustainability guidance. In other words, there are many tools to measure sustainability but little information on how these tools are suitable for companies, which is often evidenced in a gap between the tools studied in research work and those used by companies (Myllyviita et al., 2017; Lozano and Barreiro-Gen, 2022).

In the literature relating to Spain, there are some recent studies that relate the sustainability dimensions of the SDGs to economic or financial performance (Yañez-Araque et al., 2021; Lassala et al., 2021). The contribution to the SDGs is also explored based on specific case studies (Jiménez et al., 2021; Campillo-Alhama and Igual-Antón, 2021) or through content analysis of company sustainability reports (López, 2020; Curtó-Pagès et al., 2021; Heras-Saizarbitoria et al., 2021; García-Sánchez et al., 2022). In some instances, the research is based on the study of the Global Reporting Initiative indicators, but the application of the 2030 Agenda indicators to the business contribution is not observed in any case, neither in Spain nor in other studies.

As we have seen, the SDGs have rapidly gained traction among a wide range of actors, including business and practitioners, and are clearly relevant to the work of academics (Battaglia et al., 2020). In this context, among the challenges to be addressed for business is the measurement of their actual contribution to the SDGs, beyond good intentions and rhetoric. Some scholars warn that the contribution to the SDGs cannot justify “cherry-picking” because of the risk of not responding to the most relevant needs (Ruggie, 2016; BuhmannJonsson and Fisker, 2019; Heras-Saizarbitoria et al., 2021). In an attempt to address the issue in an innovative way and taking as a starting point the 232 indicators associated with the 2030 Agenda (UN, 2017), the purpose of this research is to select the indicators that, in the opinion of both academics and practitioners, best assess and measure the contribution of companies to the SDGs, trying to bridge the gap between research and business.

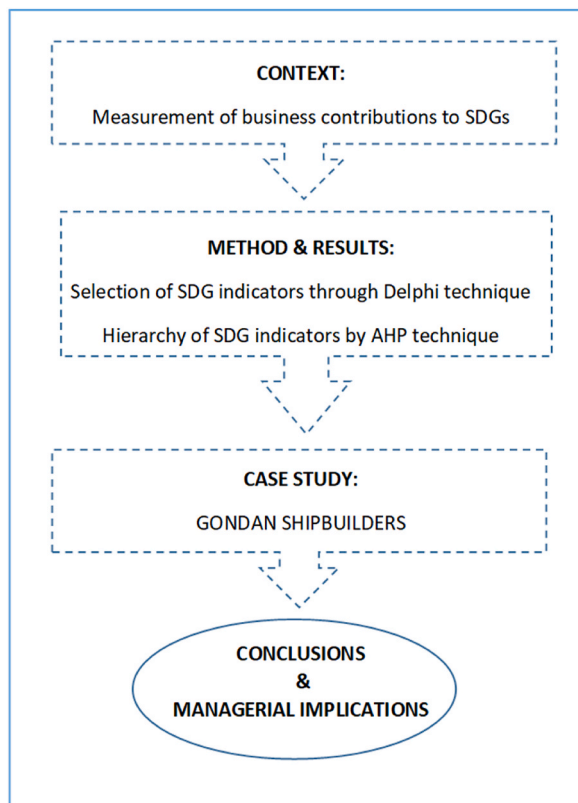


Fig. 1. Steps of the research work proposed.

Beyond what is stated in the introduction, in order to achieve this objective, the rest of the paper is structured as follows (Fig. 1). Section 2 discusses the context, or what is the same, the measurement and assessment of business contributions to the 2030 Agenda. Section 3 includes the Delphi technique by which the experts (academics and practitioners), who are going to be in charge of assessing the suitability and importance of the indicators, are identified, selected and consulted. Then, the need to establish a weighting method for the selected indicators is addressed using Analytic Hierarchy Process (AHP) technique. Finally, the last section highlights the main results, conclusions, and managerial implications of the study, after having validated the selected indicators as a measurement tool in a case study.

2. The context: measurement of business contributions to SDGs

The analysis of sustainable development in business has been conducted from different conceptual frameworks: corporate social responsibility, business ethics, stakeholder management, sustainability, and corporate citizenship. According to Schwartz and Carroll (2008), all these disciplines, which seek to contribute to unifying the business and society sphere, have three elements in common: balance, value and accountability. Sustainable development requires the integration and balancing of the different economic, social, and environmental dimensions. Secondly, companies are expected to generate shared “value” for their stakeholders. Finally, for true “accountability” to exist, companies must commit themselves to monitor and disclose accurate and verifiable information on their activities. Indeed, lack of transparency and accountability can undermine progress towards the SDGs (Agarchand and Laishram, 2017; Anasi et al., 2018).

In general terms, the debate on sustainable development is complex as sustainability assessment systems tend to include various stakeholders and different levels of analysis. Consequently, “assessing the progress towards sustainability inevitably becomes a complicated task” (Gasparatos et al., 2008: 287). In line with this statement, Lozano (2012: 24) provides an analysis of the most widely used sustainability assessment tools and concludes that “each initiative, on its own, has advantages with respect to scope and focus for the sustainability dimensions and the system elements, but also disadvantages when it comes to dealing with the complexity and broadness of sustainability, especially in addressing the four dimensions of sustainability or the entire company system”.

Measuring the contribution of organisations to the 2030 Agenda involves difficulties derived from their own conception. Firstly, it is a multilevel concept, because its application can be carried out at the level of governments, organisations, or individuals (UN, 2015; Mukhi and Quental, 2019; Paoli and Addeo, 2019). Secondly, it is a multidimensional concept, since the SDGs can be classified in different dimensions or spheres (UN, 2015; Myllyviita et al., 2017; Lafortune et al., 2020; Kasztelan, 2022). Finally, it is a multi-stakeholder concept, as SDGs are of interest to a wide range of stakeholders, including investors, managers, academics, consumers, and society (UN, 2017; Bebbington and Unerman, 2018; Cazeri et al., 2018; Messina and Van Zanten, 2021).

In relation to the conceptual difficulties of measuring the contribution to the SDGs, some authors also suggest the existence of various complementarities, interlinkages, synergies, and trade-offs among the goals (Le Blanc, 2015; Pradhan et al., 2017; Janoušková et al., 2018; Mukhi and Quental, 2019; Paoli and Addeo, 2019; Yang et al., 2020; Lozano and Barreiro-Gen, 2022; Dawes, 2022). In this sense, Janoušková et al. (2018: 1) argue and demonstrate that “without a procedurally well-designed, conceptual indicator framework for selecting and/or designing indicators, the results of SDGs assessments may be ambiguous and confusing”.

The subjectivity, complexity and often competing interests of sustainable development can be an obstacle for its integration in the business strategy and, therefore, “it is difficult to fully capture the value of social and environmentally focused actions of organisations in a broad analysis” (Sullivan et al., 2018:244). Despite these difficulties, there is little doubt today that the SDGs constitute an accepted global framework for companies to show their commitment and value creation for society (UNGC, 2017; Sullivan et al., 2018; Rosati and Faria, 2019a; Lafortune et al., 2020; GRI & SASB, 2021). Therefore, measuring, assessing, and reporting the contributions of companies to the SDGs has become a need (Rosati and Faria, 2019b; S&P Global, 2021) and even an urgency (Mukhi and Quental, 2019).

From the United Nations (UN, 2015: 27) there is a clear conviction that the 2030 Agenda will “promote a dynamic and well-functioning business sector, while protecting labour rights and environmental and health standards in accordance with other relevant international standards, agreements and initiatives”. Topple et al. (2017: 49) conclude in this regard that “these standards and guidelines are both well accepted and already adopted by multinational enterprises and have an important influence on what sustainability issues and goals they consider within their operations”.

Nowadays, one of the main tools to guide companies on how they can align, measure, and assess their contribution to the SDGs is the “SDG Compass”, a tool developed by GRI, the UN Global Compact and the World Business Council for Sustainable Development (SDG Compass, 2020). However, it cannot be forgotten that such reputation management initiatives, based on self-regulation such as the UNGC, are often associated with the greenwashing of the larger companies (Boiral et al., 2017; Testa et al., 2018; Heras-Saizarbitoria et al., 2021).

In any case, assessment tools, benchmarking processes and reporting strategies become essential for the understanding of the efforts made towards the SDGs implementation (Poveda and Elbarkouky, 2016). The relationship between business and society has changed and these organisational practices are becoming institutionalised because they are regarded as legitimate (Novokmet and Rogosic, 2017). Poveda and Elbarkouky (2016) and López-Concepción et al. (2021) also argue that companies must achieve a balance of the economic, social, and environmental needs of the different stakeholders for the sake of SDG compliance. Conversely, according to van der Waals and Thijssens (2020: 9), beyond future intentions, “basically, all companies remain silent on current actions taken, explicit business cases, measurement of SDG outcomes or ways in which SDGs can be operationalised”. In the opinion of Messina and Van Zanten (2021: 12), “a rethink on what constitutes value creation as well as how to measure and monetise it” is necessary.

In Table 1 the evolution of the most internationally recognised classifications of indicators according to sustainability dimensions is

Table 1
Evolution of indicator frameworks according to sustainability dimensions.

Number of dimensions	Names of dimensions	Reference
2	Environmental & Social Economic & Social	Prescott-Allen (1995) WBCSD -World Business Council for Sustainable Development- (1999)
3	Environmental, Economic & Social or Environment, Economy & Society (Triple Bottom Line)	Elkington (1997); Agazapic and Perdan (2000); GRI (2002); Azapagic (2004); Krajnc and Glavic (2005); Griggs et al. (2013); SDSN -Sustainable Development Solutions Network- (2015); Popovic et al. (2018); Kristensen and Mosgaard (2020); IChemE -Institution of Chemical Engineers- (2021)
4	3 P's: Planet, Profit (Prosperity) and People New 3 P's: Place, Permanence, and Persons Planet, Prosperity (Economy), People (Society), & Peace/Partnership (Governance)	European Commission (2002) Seghezzeo (2009) CSD (2001); Singh et al. (2009); Lafortune et al. (2020)
5	People, Planet, Prosperity, Peace & Partnership	UN (2015)

collected. These indicators translate sustainability into quantifiable measures (Krajnc and Glavic, 2005) to help address the key sustainability concerns (Azapagic, 2004), which are built with the information available at a reasonable cost (Gallopín, 1996) and in the right time (Van Dijk and Mingshun, 2005).

Prescott-Allen (1995) developed a barometer of sustainability that comprises of two parts, ecosystem well-being for environmental aspects and human well-being for social aspects. Although Holmberg & Karlsson (1992) developed the concept of socioecological indicators to establish the linkage between society and environment. Likewise, WBCSD (1999) assessing economic and environmental indicators to measure sustainable performance for organisations. In 1997, Elkington talked about the triple bottom line that represents 'society', 'environment' and 'economy'. That is equivalent to the idea of 3 P's: 'people', 'planet' and 'profit'. This last concept is replaced in business and governance by 'prosperity' (European Commission, 2002). A modification of this triangle of sustainability was proposed by Seghezzeo in 2009, talking about 'place' (related to three dimensions of space), 'permanence' (or fourth temporal dimension) and 'persons' (fifth one).

More recently the 2030 Agenda articulates the SDGs and their indicators around five dimensions (UN, 2015): 'people', 'planet', 'prosperity', 'peace' and 'partnership'. 'People' or social indicators are related to the attitude of the company to the treatment of its own stakeholders, internal and external, and its impacts on society (IChemE -Institution of Chemical Engineers-, 2021). 'People' dimension is linked to SDGs from 1 to 5. 'Planet' or environmental indicators concerns the "impacts for using living or non-living natural systems" (Krajnc and Glavic, 2005: 553) which are related to SDG06, SDG12, SDG13, SDG14 and SDG15. 'Prosperity' or economic indicators cover impacts on economic well-being of its stakeholders and on economic systems (Krajnc and Glavic, 2005). SDGs from 7 to 11 refer to economics issues. And, finally, governance indicators, mainly linked to SDG 16 ('peace') and 17 ('partnership') (Lafortune et al., 2020). For this study, the last classification has been chosen because it includes the four dimensions of sustainability and adjusts to the spheres of action in which the SDGs are grouped.

It seems clear that the 2030 Agenda is a developing field for the business world and requires time for companies to reflect on how to better engage with it and what position to take on the SDGs (Van der Waal and Thijssens, 2020). In this sense, Pizzi et al. (2021) state that, although GRI indicators are widespread, they have not been specifically designed to measure and assess contributions to the SDGs. These authors also affirm that the alignment of business with the 2030 Agenda remains insufficient due to the lack of knowledge that companies have regarding the role they can play. What is more, Heras-Saizarbitoria et al. (2021) recommend analysing corporate commitment and its progress through specific indicators consistent with the SDGs. In this context of a new way of assessing value, the great challenge that companies face is to be able to establish indicators that allow them to measure their scope and thus become aware of their progress in achieving the goals and dimensions of the 2030 Agenda and to ensure that the interests of internal and external stakeholders are represented and aligned.

3. Selection of indicators through a Delphi method

3.1. Method

The Delphi method, as an interactive process, seeks to achieve the consensus of a group of experts on a given issue (Hsu and Sandford, 2007). Its characteristics of application make it an appropriate technique to initially develop a topic that has been little studied or that requires improvement, as well as for the validation and confirmation of the level of importance of indices, indicators, or criteria (Chan and Lee, 2019). For its application, the research group designs and sends a questionnaire with the points to be addressed to a group of previously selected experts (Linstone and Turoff, 1975). The responses of the returned questionnaires are analysed by the researchers and sent again to the same group or to a new one (Muñiz-Rodríguez et al., 2017), for them to modify and correct the answers. The process is repeated until a certain level of consensus is reached. Feedback between researchers and experts is the driving element in the process to achieve consensus among experts (Hsu and Sandford, 2007), always guaranteeing the anonymity of the participants (Linstone and Turoff, 1975). These characteristics of the method make it an effective and reliable tool (Smith and Simpson, 1995). In this research, the method was applied virtually via email through 'Forms' questionnaires. As Muñiz-Rodríguez et al. (2017)

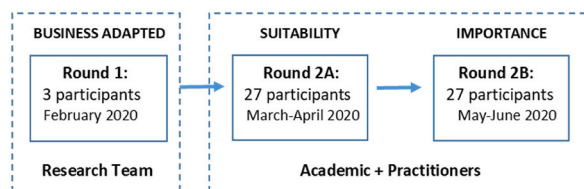


Fig. 2. Experts participating in the Delphi selection process.

point out, the online procedure has the advantage that it is not necessary to physically gather the experts, which would be time-consuming and cost-ineffective.

In the current case, three rounds were held with two different groups of participants in the Delphi application: a monitor team and an expert panel. The monitor team is made up of the members of the research group, who were in charge of the first round. As Myllyviita et al. (2017) suggest, it is convenient to build bridges between research and business, hence the experts were chosen by voluntary participation among the teaching and research staff of Spanish universities specialised in sustainability and social responsibility –CRUE Sectoral Commission for Sustainability (Conference of Rectors of Spanish Universities)–, and among several professional/business associations focused on social responsibility practitioners –the Spanish SDSN (Sustainable Development Solutions Network), the CSR Section at ACEDE (Spanish Scientific Association of Economics and Business Management) and DIRSE (Spanish Association of Sustainability Managers (ESG)– (Fig. 2).

3.2. Results and discussion

Starting from the total of 232 indicators established by UN (2017) to measure the 169 targets of the 17 SDGs, in round 1 (that took place in February 2020) those indicators that could be adapted to business were selected and monetised by the research team with full consensus, limiting the initial list to a total of 47 indicators (Table 2, first column).

Two different expert panels were involved in two more rounds, with a total of 27 Spanish experts participating in each, some of them coinciding and others not (following Muñoz-Rodríguez et al., 2017). Panel members exceed the group size of panellists previously suggested by authors such as Weidman et al. (2011) that establish the minimum appropriate size of 7 or 8 members, while Hallowell and Gambatese (2010) raise the minimum to 10 and Chan and Lee (2019), who address a work on sustainable indicators in urban environments, place it at 20 panellists.

In round 2 A (from March to April 2020), the panel consisted of 67% experts from the academic world, of which 56% were men, 77% between 40 and 60 years old, and 85% had more than 15 years of experience. In this round, the experts validated the selection of the indicators preselected in round 1 by the team of researchers. The validation criterion of an indicator was established in that 75% of the experts considered it suitable to measure the monetary contribution of a company to the 2030 Agenda. In this way, the number of validated indicators was reduced to a total of 28 (Table 2, second column). The threshold, of 75% was decided following Chan and Lee (2019: 9) who point out that “the consensus can be established based on reaching 75% or above in the respondents agreeing on a given rank”. This criterion meant in this case that the indicators were selected with a minimum of 81% consensus.

In round 2 B (May–June 2020), the new expert panel (44% from the academic world, 52% men, 66% between 40 and 60 years old, 87% with more than 15 years of professional experience) assessed the importance of each of the 28 indicators (that have been previously validated in round 2 A) using a 10-point Likert scale (from 0 without any relevance to 10 extreme importance). Although it is common to use lower-ranking scales, the Delphi method with 10-point rating scales has previously been used with success in Hallowell and Gambatese (2010) and Rodríguez-Mañas et al. (2013). Starting from the 28 indicators validated in round 2 A, we choose 19 indicators (Table 2, third column, greyed cells, and bold text) that have an average value greater than 7 (Fig. 3) and that will be used in the next phase of the research. The cut-off of 7 has been considered since in previous studies this threshold ranged between 6 and 8—or equivalent according to the scale used in each case— (AlQahtany et al., 2014; Muñoz-Rodríguez et al., 2017; Chan and Lee, 2019; Padilla-Rivera et al., 2021).

The reduction in the number of indicators by consensus is shown in Figs. 4 and 5. In addition to the quantitative evolution, it is convenient to analyse which SDGs the discarded indicators are linked to. In Fig. 5, it can be seen that, because of the experts’ preferences, in round 2 A only the representation of SDG02 is lost, while in round 2 B another 3 SDGs disappear (SDG10, SDG14 and SDG15).

Similarly, if we analyse the dimensions of sustainability, we first observe that, after screening, all dimensions remain represented (Fig. 4). In accordance with the business nature of the study, Fig. 6 shows that before and after screening, “prosperity” is the dimension with the largest number of indicators. The selection finally leaves planet in second place, followed by ‘people’ and ‘peace/partnership’. However, the high number of indicators related to ‘people’ that the experts discard is striking.

In summary, of the 17 SDGs and 232 indicators that make up the 2030 Agenda, in this phase of the study, 13 SDGs and 19 indicators

Table 2
Selection of indicators in each round.

Round 1 (from 232 to 47 indicators)	Round 2 A (from 47 to 28 indicators)	Round 2 B (from 28 to 19 indicators)
Indicator 1.5.2.	NOT VALIDATED (70%)	–
Indicator 1.A.1	VALIDATED (93%)	6.93
Indicator 1.A.2	VALIDATED (89%)	7.52
Indicator 1.B.1.1	NOT VALIDATED (74%)	–
Indicator 2.A.2	VALIDATED (78%)	6.44
Indicator 2.B.1	NOT VALIDATED (67%)	–
Indicator 3.8.2	NOT VALIDATED (74%)	–
Indicator 3.B.2	VALIDATED (89%)	7.15
Indicator 4.3.1	VALIDATED (89%)	8.59
Indicator 4.B.1	VALIDATED (85%)	6.93
Indicator 5.1.1	VALIDATED (96%)	8.44
Indicator 5.2.1	NOT VALIDATED (52%)	–
Indicator 5.4.1	NOT VALIDATED (67%)	–
Indicator 6.3.1	VALIDATED (89%)	8.04
Indicator 6.A.1	NOT VALIDATED (74%)	–
Indicator 7.2.1	VALIDATED (81%)	8.22
Indicator 7.A.1	VALIDATED (96%)	8.70
Indicator 7.B.1	VALIDATED (96%)	8.70
Indicator 8.2.1	NOT VALIDATED (67%)	–
Indicator 8.4.2	NOT VALIDATED (74%)	–
Indicator 8.8.1	NOT VALIDATED (70%)	–
Indicator 8.A.1	VALIDATED (81%)	6.00
Indicator 8.B.1	VALIDATED (93%)	7.04
Indicator 9.4.1	VALIDATED (81%)	6.74
Indicator 9.5.1	VALIDATED (85%)	8.22
Indicator 9.A.1	NOT VALIDATED (59%)	–
Indicator 10.5.1	NOT VALIDATED (70%)	–
Indicator 10.B.1	VALIDATED (78%)	6.00
Indicator 11.4.1	VALIDATED (89%)	7.15
Indicator 11.6.1	VALIDATED (85%)	8.22
Indicator 11.6.2	NOT VALIDATED (70%)	–
Indicator 11.C.1	NOT VALIDATED (70%)	–
Indicator 12.4.2	VALIDATED (89%)	8.26
Indicator 12.5.1	VALIDATED (93%)	8.00
Indicator 12.8.1	VALIDATED (93%)	8.15
Indicator 12.A.1	VALIDATED (85%)	7.93
Indicator 12.C.1	NOT VALIDATED (59%)	–
Indicator 13.A.1	VALIDATED (96%)	7.74
Indicator 14.A.1	VALIDATED (89%)	6.07
Indicator 15.B.1	VALIDATED (93%)	6.89
Indicator 16.4.1	NOT VALIDATED (52%)	–
Indicator 16.6.1	VALIDATED (89%)	8.37
Indicator 17.1.2	NOT VALIDATED (63%)	–
Indicator 17.7.1	VALIDATED (85%)	6.30
Indicator 17.9.1	NOT VALIDATED (74%)	–
Indicator 17.17.1	VALIDATED (85%)	7.81
Indicator 17.19.1	NOT VALIDATED (63%)	–

related to the four dimensions of sustainability are selected.

In relation to the reduction of SDGs in rounds 2 A and 2 B, this seems consistent with previous studies on the prioritisation of SDGs in companies (Table 3).

4. Hierarchy of SDG indicators through AHP

4.1. Method

It is usual to combine the use of the Delphi technique with other methods such as AHP (Chan and Lee, 2019), since AHP plays an important role prioritising the issues firstly developed by Delphi (Sultana et al., 2015).

With the 19 indicators of the 2030 Agenda agreed and validated by the panel of experts (Fig. 3 and Table 2), the AHP, a popular pair-wise method developed by Saaty (1995), is applied to evaluate the weightings in multi-criteria decision-making (Li et al., 2013).

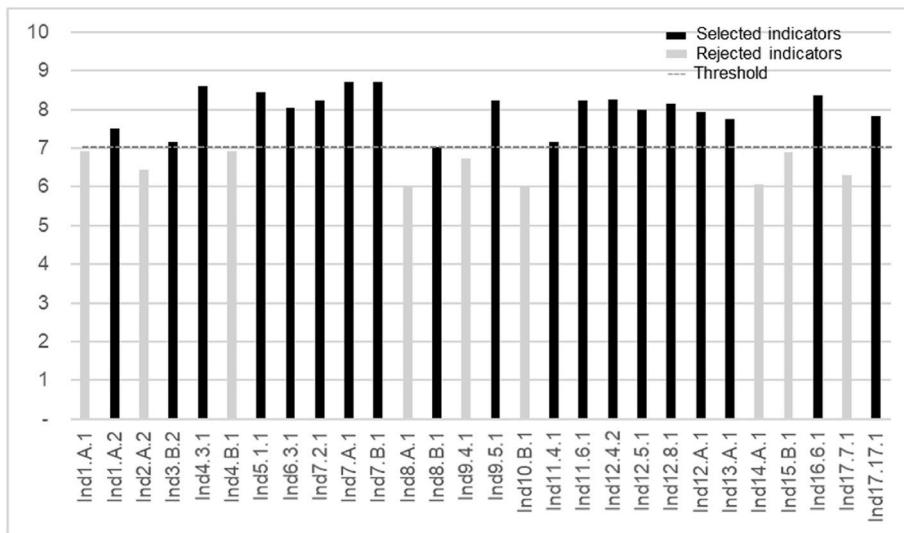


Fig. 3. Selected and rejected indicators in round 2 B.

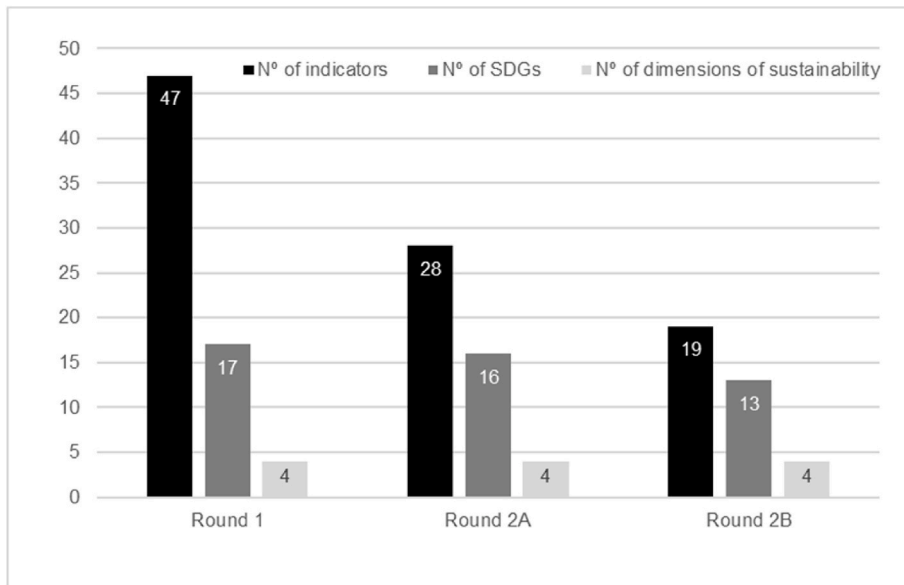


Fig. 4. Number of indicators, SDGs, and dimensions of sustainability by round.

The “AHP uses a principal eigenvalue method (EM) to derive priority vectors” (Saaty and Hu, 1998: 121), which allows obtaining a ranking among the proposed alternatives (Bana e Costa and Vansnick, 2008). It has been applied in different contexts but also in the field of sustainability (Kang et al., 2002; Krajnc and Glavic, 2005; Van Dijk and Mingshun, 2005; Chang et al., 2007). The AHP method, with a mathematical basis (Podvezko, 2009), allows to compare two preferences of a variable with the same criteria and scoring rules (Van Dijk and Mingshun, 2005).

According to Fig. 7, in the present study this ranking method is applied to establish an order of preference of the indicators of the SDGs in the business context. Considering the multi-stakeholder nature of the 2030 Agenda, a comparative analysis is also carried out, separating the panel of experts into two groups: academics and practitioners (section 4.2). In the same way, taking into account the multidimensional nature of the 2030 Agenda, an analysis of the results in relation to the SDGs and the dimensions of sustainability is presented (section 4.3).

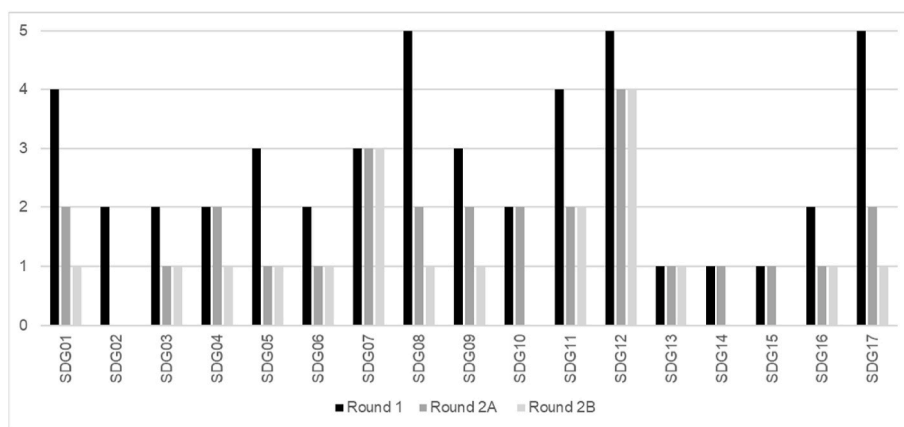


Fig. 5. Evolution of the number of indicators by SDG in the Delphi stages.

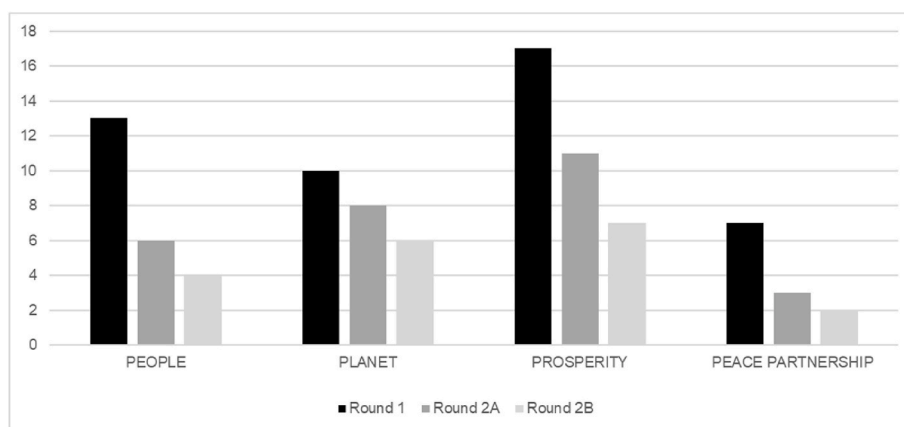


Fig. 6. Evolution of the number of indicators by dimension in the Delphi stages.

Table 3

Least prioritized SDGs.

Source	Least prioritized
WBCSD & DNV- (2018)	SDG15/SDG01/SDG10
OXFAM (Agarwal et al., 2018)	SDG14/SDG15/SDG10
KPMG (2018)	SDG15/SDG02/SDG14
Heras-Saizarbitoria et al. (2021)	SDG02/SDG01/SDG14
Present research	Round 2 A: SDG02 Round 2 B: SDG10/SDG14/SDG15

4.2. Results and discussion: hierarchy of SDG indicators and stakeholders

Table 4 presents the results of the ranking of the set of validated SDG indicators. All of them are ordered by normalised weights (from higher to lower) on the left column. In the first three positions are indicators 7.B.1, 7.A.1 and 16.6.1. The first two indicators are related to the access to renewable energies area with business potential to the achievement of 2030 Agenda according to UN (2015). The third refers to the transparent stakeholders accounting, a concern that had already been evidenced in previous works such as those of Agostino and Sidorova (2017) and Bebbington and Unerman (2018).

Table 4 and Fig. 8 also show the normalised weights calculated by applying the AHP method for academics and practitioners separately. The indicators are presented in the same order, that is, from highest to lowest hierarchy for the entire panel. In both stakeholders, the indicators related to SDG07 continue in the highest positions.

In Fig. 9 the indicators are presented from lowest to highest consensus between both stakeholders. As can be seen, the largest discrepancies are found in indicators 17.17.1 and 5.1.1. Academia is more concerned with the first indicator, which is related to the alliances and resources allocated in specific actions, plans or programmes aimed at achieving the SDGs; while practitioners have

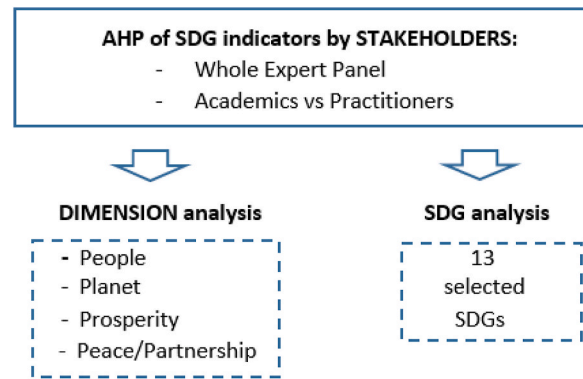


Fig. 7. Structure of the applied AHP.

greater preference for the second indicator, which refers to promoting equality and avoiding gender discrimination. The priority that managers give to gender equality could be influenced by the legal context in Spain, which has undergone an important change in 2020, compelling companies to report on the gender pay gap.

The results obtained in these two indicators fully coincide with the statement by Mukhi and Quental (2019) that managers tend to be more conditioned by the corporate environment and tend to prioritise short-term results instead of thinking holistically about the future. In this sense, the greater concern among academics regarding the resources allocated to global SDGs programmes (Indicator 17.17.1), to social protection and wage justice (Indicator 8.B.1) or to the promotion of research (Indicator 12.A.1) does not seem remarkable. On the contrary, the greater interest of practitioners in the resources allocated to general education for promoting healthy habits (Indicator 1.A.2) does seem especially striking and could be conditioned by the pandemic situation.

4.3. Results and discussion: hierarchy of SDG indicators, dimensions, and SDGs

As can be observed in Fig. 10, attending to the indicators grouped within each of the dimensions of the 2030 Agenda, 'prosperity' is the most relevant, maybe because SDGs have become drivers of sustainable economic growth (Anderson et al., 2017). Within this dimension, the indicator 7.A.1 appears in first place, while 7.B.1 is in third position. The intermediate position is occupied by indicator 9.5.1 linked to the improvement in R&D&I. SDG07 and SDG09 refers to affordable and clear energies and infrastructure, innovation, and infrastructure, respectively, both the most relevant SDGs for UN (2015) related to business creativity and innovation.

The second dimension with more weight that is collected in Fig. 10 is 'planet'. This dimension is also included in all the frameworks along the time (Table 1). The predominance of indicators linked to SDG12 could be explained by the interest that companies have in seeking solutions that enable sustainable production and consumption patterns (SDG Compass, 2020).

In relation to 'people', the indicator of education of quality is the most important, and the gender is ranked second. Empowerment of women and gender equality (SDG05) is also pointed out by UN (2015) as a field where business entities could and would contribute considerably to the 2030 Agenda. Sight should not be lost that the social dimension has been considered in all the indicator frameworks identified in the literature review (see Table 1). For this reason, it is a relevant plot in the analysis and measurement of the business contribution to the SDGs.

Regarding 'peace/partnership', the indicator related to SDG16 has a lightly higher weight than the one related to SDG17, something that at first seems consistent with the growing concern of companies to report their non-financial results (Rosati and Faria, 2019b; Mukhi and Quental, 2019; S&P Global, 2021).

Firstly, at the SDG level, the consensus among the experts in our study is remarkable since there are hardly any differences between academics and practitioners. Second, if we analyse the most prioritized SDGs in our study according to the SDG Compass (2020), the trade-off between SDG13 and SDG07 is clearly visible since the latter is considered the centre of climate change by the Guide. On the other hand, SDG03 and SDG08, which other studies highlight, are closely linked to regulatory compliance, so synergies and interlinkages are evident with SDG16. The Guide precisely highlights that SDG16 is materialised in the actions of the companies focused on compliance with laws and international standards (SDG Compass, 2020).

To contrast the final hierarchy, Table 5 presents a comparison of the different studies that prioritise the SDGs in the business field. Although they do not follow exactly the same methodologies, their outcomes can enrich the debate. In our case, since the prioritisation has been done at the level of indicators, we have had to add the weights of the indicators that make up each SDG.

Table 4
Normalised weights for indicators.

Indicator	SDG	Dimension of sustainability	Panel	Academics	Practitioners
Ind07.B.1	SDG 7	PROSPERITY	0.0887	0.0918 (2 nd)	0.0823 (1 st)
Ind07.A.1	SDG 7	PROSPERITY	0.0753	0.0691 (3 rd)	0.0741 (3 rd)
Ind16.6.1	SDG 16	GOVERNANCE	0.0665	0.0587 (8 th)	0.0679 (4 th)
Ind09.5.1	SDG 9	PROSPERITY	0.0629	0.0565 (10 th)	0.0643 (6 th)
Ind04.3.1	SDG 4	PEOPLE	0.0583	0.0424 (13 th)	0.0666 (5 th)
Ind05.1.1	SDG 5	PEOPLE	0.0578	0.0298 (18 th)	0.0751 (2 nd)
Ind11.6.1	SDG 11	PROSPERITY	0.0570	0.0675 (4 th)	0.0512 (9 th)
Ind07.2.1	SDG 7	PROSPERITY	0.0543	0.0640 (5 th)	0.0484 (10 th)
Ind17.17.1	SDG 7	GOVERNANCE	0.0538	0.0919 (1 st)	0.0402 (14 th)
Ind12.4.2	SDG 12	PLANET	0.0489	0.0242 (19 th)	0.0625 (7 th)
Ind01.A.2	SDG 1	PEOPLE	0.0475	0.0300 (17 th)	0.0577 (8 th)
Ind06.3.1	SDG 6	PLANET	0.0464	0.0442 (12 th)	0.0470 (11 th)
Ind12.A.1	SDG 12	PLANET	0.0449	0.0640 (5 th)	0.0379 (17 th)
Ind12.8.1	SDG 12	PLANET	0.0448	0.0569 (9 th)	0.0399 (15 th)
Ind12.5.1	SDG 12	PLANET	0.0443	0.0455 (11 th)	0.0443 (13 th)
Ind13.A.1	SDG 13	PLANET	0.0427	0.0335 (15 th)	0.0457 (12 th)
Ind03.B.2	SDG 3	PEOPLE	0.0369	0.0316 (16 th)	0.0383 (16 th)
Ind11.4.1	SDG 11	PROSPERITY	0.0347	0.0394 (14 th)	0.0302 (18 th)
Ind08.B.1	SDG 8	PROSPERITY	0.0344	0.0590 (7 th)	0.0264 (19 th)
					The most prioritized indicators
					The least prioritized indicators

It is important to note, however, that previously published studies have supported the prioritisation of the SDGs on what companies reported and that, at a business level, there is a clear mismatch between ‘talking’ and ‘walking’ on the SDGs (Agarwal et al., 2018; Pizzi et al., 2021). The differences observed with respect to previous studies may be due to this fact. March (2019) affirms in this sense that an analysis conducted on companies listed on the S&P 500 shows a clear divergence between the SDGs they report on and the SDGs where companies have the highest risk exposure. For example, SDG17, prioritized in our research by academics, stands out among the SDGs in terms of risk exposure by companies (March, 2019), but is not among the outreach priorities.

Although the paper focuses on the Spanish case, the question, the preceding analysis and the proposed methodology are generic in nature and internationally relevant. Moreover, the academics and many of the professionals consulted for the study tend to operate in an international context. Therefore, the authors do not consider the differences with previous studies to be primarily country-related, but rather related to the methodologies and temporalities employed.

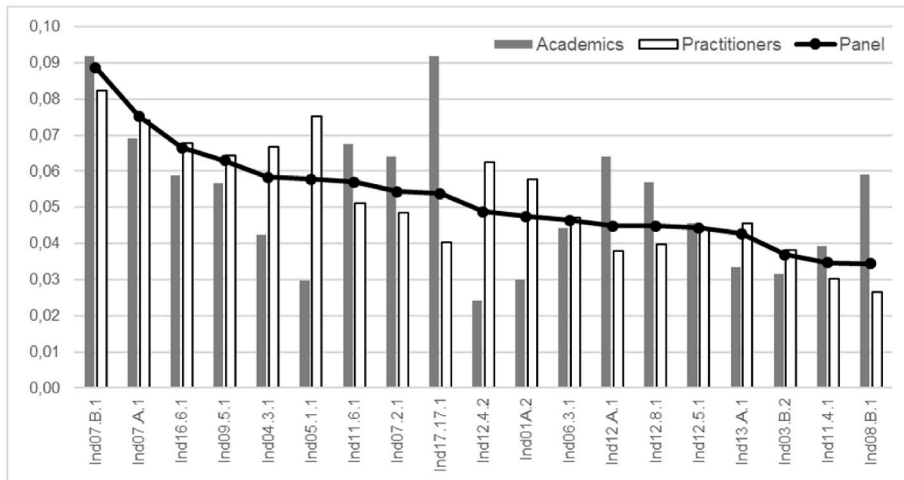


Fig. 8. Normalised weights for indicators by stakeholders.

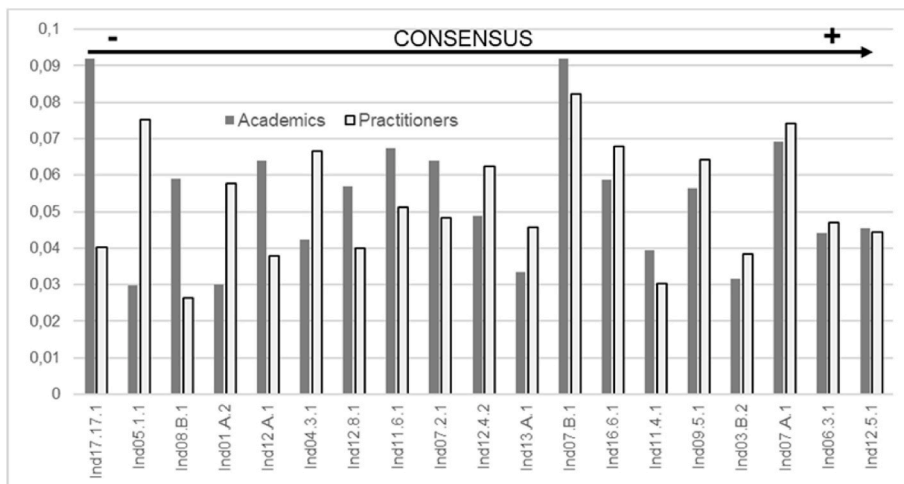


Fig. 9. Weights of academics versus practitioners ordered from lowest to highest consensus.

5. Case study

The company GONDÁN Shipbuilders was chosen in order to assess the selected SDG indicators and their applicability. It is a medium-sized shipyard with 309 workers and a turnover of some 45 M€ in 2021, which has been operating since the end of the 19th century on the north coast of Spain and has been operating since the 1970s as a manufacturer of metal-hulled ships. Specifically, in March 2022, a questionnaire with the 19 selected indicators was sent to the company and an interview was held with the shipyard manager to clarify any doubts about the completion of the questionnaire and to gather all the necessary information. The data are requested for 2016 and 2021, with the intention to observe the evolution since the adoption of the 2030 Agenda and are collected in Table 6.

According to the information gathered, the total amount that GONDAN allocates to the contribution of the SDGs in 2021, is 2.4 M€, which means 5.7% of its turnover. Five years earlier, this contribution had amounted to only 0.9%. Thus, GONDAN’s commitment to the SDGs has grown considerably.

On a disaggregated basis, the SDGs to which the company contributes most are, in this order, 9 and 3 and 4 (those last with a same contribution), to a lesser extent 12, 7 and 11, while they are zero for SDGs 6, 13 and 17. The high level of R&D&I and training is based, in the company’s view, on having the necessary resources to meet the challenges of sustainability in the coming years. In aggregate

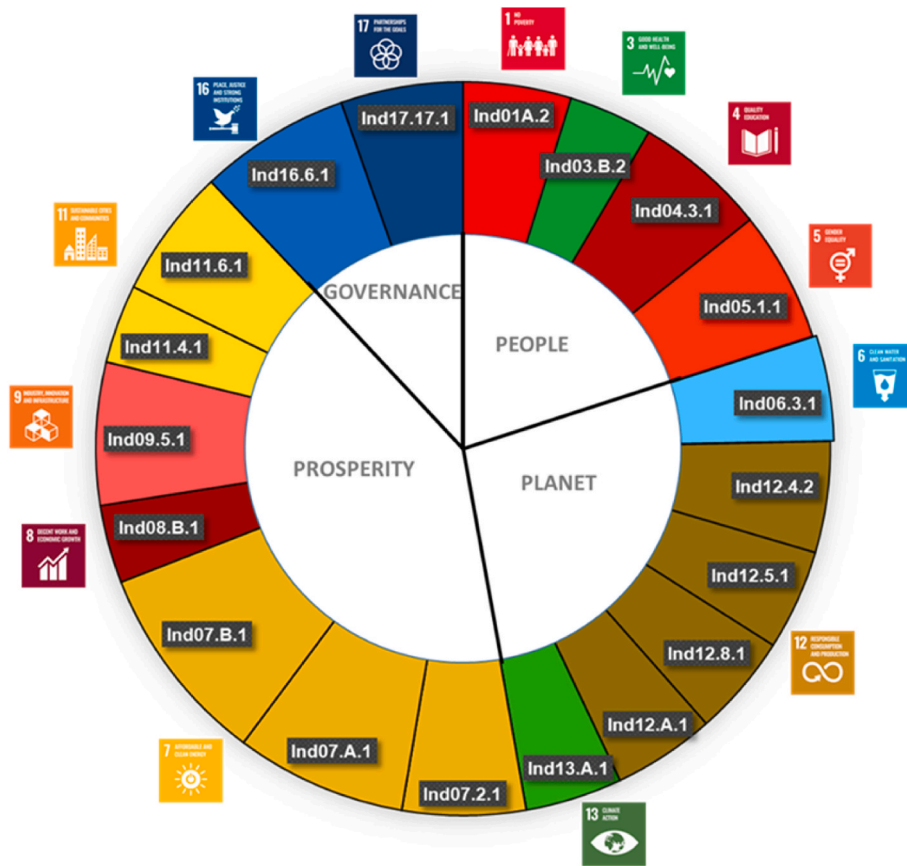


Fig. 10. Normalised weights for indicators by dimensions.

Table 5
Most prioritized SDGs.

Source	Most prioritized
WBCSD & DNV- (2018)	SDG13/SDG12/SDG08/SDG11
OXFAM (Agarwal et al., 2018)	SDG08/SDG13/SDG03/SDG12
KPMG (2018)	SDG13/SDG08/SDG03/SDG12
Heras-Saizarbitoria et al. (2021)	SDG08/SDG12/SDG13/SDG03
Present research	Panel: SDG07/SDG12/SDG11/SDG16 Academics: SDG07/SDG12/SDG11/SDG17 Practitioners: SDG07/SDG12/SDG11/SDG16

terms, the most important dimension is economic, followed by social, environmental and governance.

Until now, the company had not made an analysis of its contribution to the 2030 Agenda and did not align its annual report with the SDGs. The application of the proposed indicators has provided GONDAN greater awareness of its contributions to the SDGs and to reflect on future priorities and alignments in this area.

The application of previously selected indicators in a real company case has allowed its application and its validation as a comparable standard setting tool to assess the 2030 Agenda contribution.

6. Conclusions and managerial implications

The literature review has shown that the evaluation of the contribution of countries to the achievement of the SDGs is much more developed than that of companies. In any case, the analysis carried out in the business sphere focuses more on reporting business contributions to the SDGs than on the study and prioritisation of indicators. From a conceptual perspective, this paper can contribute to the development of the literature in this relevant emerging field, and it is an applicable attempt to bridge the gap between research and companies, indicating potential international applicability. Although the paper refers to the Spanish case, both the state of the art and the methodologies applied have a global focus. Another limitation of the study is the selection of indicators in purely monetary terms. It

Table 6
SDG indicators at GONDAN.

DIMENSION	SDG	SELECTED INDICATORS	2021	2016
SOCIAL	1	1.A.2. "Resources allocated by the organisation to general education and promotion of healthy lifestyles"	4000 €	4000 €
	3	3.B.2. "Resources allocated by the organisation in the area of occupational health"	125,000 €	147,000 €
	4	4.3.1. "Resources of the organisation allocated to staff training and capacity building (excluding sustainability and climate change training)"	125,000 €	100,000 €
	5	5.1.1. "Resources allocated by the organisation to promote gender equality and prevent gender discrimination"	20,000 €	–
	ECONOMIC	7	7.2.1. "Resources allocated by the organisation to increase the use of renewable energies"	–
		7.A.1. "Resources allocated by the organisation to the development of technologies that improve energy efficiency and promote the use of renewable energies both inside and outside the organisation"	42,000 €	35,000 €
		7.B.1. "Resources allocated by the organisation to optimise the energy consumption associated with its activity"	5000 €	30,000 €
8		8.B.1. "Resources allocated by the organisation for decent employment, job placement and improvement of the working environment both inside and outside the organisation"	3000 €	10,000 €
9		9.5.1. "Resources allocated by the organisation to improve its R + D + i"	2,000,000 €	125,000 €
11		11.4.1. "Resources allocated by the organisation to the preservation, protection and conservation of natural and cultural heritage."	15,000 €	9000 €
		11.6.1. "Resources allocated by the organisation to the treatment of solid waste generated in its activity"	16,000 €	14,000 €
ENVIRONMENTAL	6	6.3.1. "Resources allocated by the organisation for the treatment and/or reuse of wastewater both inside and outside the organisation"	–	–
	12	12.4.2. "Resources allocated by the organisation for the treatment of hazardous waste produced in its activity "	10,000 €	8000 €
		12.5.1. "Resources allocated by the organisation for the reuse and recycling of materials"	5000 €	4000 €
		12.8.1. "Resources allocated by the organisation for education and training on sustainable development"	–	–
		12.A.1. "Resources allocated by the organisation to promote and move towards more sustainable forms of production and consumption"	45,000 €	175,000 €
GOVERNANCE	13	13.A.1. "Resources allocated by the organisation to actions that mitigate the effects of climate change"	–	–
	16	16.6.1. "Resources allocated by the organisation to promote transparency and accountability to its stakeholders"	21,000 €	16,000 €
	17	17.17.1. "Resources allocated by the organisation to actions and partnerships aimed at achieving the SDGs"	–	–
Number of employees			309	406
Turnover			43.1 M€	73.6 M€

is undoubtedly a somewhat reductionist approach to consider that the contribution of companies to the SDGs depends solely on the monetary resources allocated to them. However, the use of monetary indicators allows companies to better quantify their contributions and aggregate them by SDGs and sustainability dimensions.

It is often stressed in literature that the indicators associated with the 2030 Agenda are too many, designed in a country- and region-specific way and difficult to implement. This puts a premium on any scientific attempt to apply them to the business domain. From an operational perspective, the application of the Delphi technique to reduce the number of indicators from 232 to 19, by consensus among academics and practitioners, has made it possible to discard numerous indicators that do not fit or are superfluous to companies in each SDG and dimension.

From a quantitative point of view, the number of indicators selected has a much more appropriate size so that they can be approached and monitored by companies of all sizes. From a qualitative perspective, the suitability and importance of the selected indicators have been evaluated by academic and professional experts. The fact that they have chosen 19 indicators related to 13 SDGs and linked to all dimensions of sustainability reinforces the multidimensional nature of the business contribution to the 2030 Agenda. In favour of this selection of indicators, it should be noted that the choice has ruled out SDG02, SDG10, SDG14 and SDG15, which precisely correspond to the least prioritized SDGs in other studies carried out at the business level.

The Delphi technique results are very useful for incipient research, such as the contributions of companies to the SDGs, as a way of reaching knowledge through consensus among experts. However, its limitations usually include the need to validate the starting model and calculate weights that allow the analysed elements to be ranked in a hierarchy. On the one hand, choosing the 2030 Agenda as a starting point has avoided the need to validate the model, as it is a global and generally recognised framework. On the other hand, the second limitation has been solved with the application of the AHP method on the indicators previously selected by the Delphi technique.

Measuring the attainment of each SDG-related achievement by companies is indeed an uncertainty that is difficult to quantify and is clearly a challenge. From a managerial perspective, the ranking of the 19 indicators selected by the experts, through the AHP method, can be useful to companies to identify priorities for urgent action and detect gaps that must be addressed to achieve the SDGs. In the case study of the company GONDAN Shipbuilders, which had not yet analysed or reported its contribution to the 2030 Agenda until

now, the application of these indicators has enabled it to quantify its commitment and prioritise its future contributions. It has also allowed validation of the selected SDG indicators as a comparable tool for the 2030 Agenda commitment over time.

By adding the weights of the indicators, the weight of the different dimensions and SDGs can also be calculated, enriching the research. When companies individually analyse and prioritise the SDGs or dimensions of sustainability, they are losing a lot of information, especially if the indicators are not considered. Thus, in our study we have been able to verify that if the analysis is carried out at the SDG level, the social objectives do not appear in the first positions. Nevertheless, ‘people’ indicators linked to gender equality or education are among the most prioritized indicators. We have also observed that the ‘planet’ dimension is second in importance, however there is not a single environmental indicator among the most prioritized indicators. In aggregate terms, as important as the weight of an indicator is the number of indicators that each SDG or dimension contains. Consequently, the weight of the individual indicators relative to the ‘planet’ is less than that of ‘people’, but they are more numerous. Therefore, it is essential to conduct the analysis at all levels (indicators, SDGs, and dimensions).

In addition, the actors who participate in the decisions are also very relevant. The research has revealed a high consensus among stakeholders when identifying the first positions of indicators (7.B.1 and 7.A.1), dimensions (‘prosperity’ and ‘planet’) and SDGs (7, 12 and 11). Nonetheless, it has also reflected some divergences between academics (with greater preference for SDG17 and ‘peace’/‘planet’) and practitioners (with greater preference for SDG05 and ‘people’). Consequently, to identify and understand the complementarities, interlinkages and trade-offs present in the 2030 Agenda, companies must find a balance not only among the indicators, dimensions and SDGs but also among the expected impacts on their stakeholders.

To conclude, given the firm-level mismatch between ‘talking’ and ‘walking’ on the SDGs, the main advantage of the present study has been to prioritise from the consensus of preferences of academics and practitioners and not from the contents of the reports. It is advisable that companies do not assume what they report as important, but rather regularly reflect on the real priorities detected in their internal and external stakeholders.

Future research developments could include the application of the proposed methodology to more extensive territorial scopes and/or comparative studies of different countries or communities, or even differentiation according to criteria of economic sectors or company sizes. This will contribute to the consolidation of this methodology and will inform any extrapolation of the conclusions.

Author statement

Suárez-Serrano: Conceptualization, Methodology; Validation, Investigation, Writing - Original Draft, Review & Editing, Case study. **González-Torre:** Methodology, Validation, Formal analysis, Investigation, Writing - Original Draft, Review & Editing, Case study. **Covián-Regales:** Validation, Investigation, Writing - Original Draft, Review & Editing, Case study.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data is included in the paper

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