The sustainability performance of Sustainable Business Models

Abstract

The literature on Sustainable Business Models (SBMs) has grown, identifying different archetypes to capture the variety of business models applied. Little is known, however, regarding to what extent such SBMs are effectively driving sustainable performance. This paper addresses this gap by exploring how SBMs relate to sustainability performance, considering both overall sustainable performance and the balance across the three dimensions – environmental, social, and economic (integrated performance). Based on original survey data on B Corps located in Italy, Spain and the United Kingdom, our findings suggest that the implementation of most SBMs results in the prioritization of one sustainability dimension over the others, especially when it comes to economically-oriented SBMs. Furthermore, our study suggests that none of the SBM archetypes considered is associated with a balanced sustainable performance, that is, none of them are inherently better able to overcome tensions across the Triple Bottom Line.

Keywords: sustainable business model, B-Corp, sustainability performance, corporate social performance, Triple Bottom Line

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1. Introduction

Reflecting the evidence that changes are needed in business models – the ways firms do business – to unlock 'the full potential of companies to solve ecological, social and economic problems' (Lüdeke-Freund et al., 2018: 145), great attention has recently been devoted in the practitioner and academic literatures to business models for sustainability (Beltramello et al., 2013; Geissdoerfer et al., 2018; Lüdeke-Freund et al., 2018a; Ritala et al., 2021). Sustainable Business Models (SBMs) are innovative architectures for the creation, delivery and capture of value, which place environmental and social goals at the core of the business and orient firms' activities (Stubbs, 2019). SBMs have the potential to solve social and environmental problems in new, more profitable ways by creating competitive advantage and value for society at large (Boons and Lüdeke-Freund, 2013; Schaltegger et al., 2016; Yang et al., 2017). But are they really fulfilling these promises?

Several classifications have been provided to describe the variety of SBMs (Bocken et al., 2014; Lüdeke-Freund et al., 2018a; Ritala et al., 2021, 2018), to provide inspiring examples for managers, and to help consolidate the academic literature. Such classifications of SBM types – also called 'archetypes'[i] – provide a detailed description of different possible configurations of firms' activities for value creation. The classifying element is often the key pillar of sustainability that drives SBM innovation activities – environmental integrity, social equity, or economic prosperity (Bansal, 2005; Carter and Rogers, 2008; Elkington, 1998). However, less is known about to what extent these SBMs "effectively contribute to real improvements in the environmental and social performance of companies" (Halme et al., 2020: 1182), i.e. to achieve sustainability performance considering the triple bottom line (TBL) approach (Bansal, 2005; Elkington, 2013). While it is assumed that each SBM entails a positive sustainability performance, the extent to which such performance is actually achieved has rarely been investigated (Evans et al., 2017; Lüdeke-Freund et al., 2018a), taking the practice-outcome relationship for granted (Halme et al., 2020). Each SBM archetype is characterized by a different path for value creation, so which SBMs are best able to achieve sustainability performance, considering its environmental, social and economic dimensions?

Against this background, this paper investigates the relationship between SBM archetypes and sustainability performance by carrying out a quantitative analysis on original survey data on 64 Certified B Corporations (B Corps) in Italy, Spain and UK. . B Corps are firms for which social and environmental goals are central to their behavior and strategic choices – in addition to their profit orientation – as witnessed through specific certification or legal form and consistent with a stakeholder approach (Chen and Kelly, 2015; Gazzola et al., 2019; Stubbs, 2017a, 2017b). In this context, we frame sustainability performance as an objective and multifaceted measure, considering both overall sustainability performance and how it is built for the Triple Bottom Line (TBL) – i.e. economic, environmental and social aspects. Moreover, we consider tensions and conflicts that might emerge among the three pillars of sustainability when developing and implementing SBMs (Brennan and Tennant, 2018; Oskam et al., 2020; Stubbs, 2019) and might result in the decoupling of economic, environmental and social performances (Halme et al., 2020). Accordingly, adopting a question-driven approach (Graebner et al., 2017), we aim to verify if any one of the SBM archetypes is more likely to drive a 'balanced' performance in terms of environmental, social and economic aspects, i.e. avoiding to achieve a high performance in just one dimension while being detrimental for the other two (Glavas and Mish, 2015; Hélène et al., 2019).

Our analysis aims to contribute to both research and practice. First, it gives a greater understanding of SBM archetypes by providing quantitative evidence of their ability to help achieve sustainability performance, addressing the call in the literature to delve in greater depth into the performance and outcomes of SBMs (Evans et al., 2017; Halme et al., 2020). Second, it accounts for possible heterogeneity in performance across the environmental and social domains (Halme et al., 2020). Third, we offer practical guidance for practitioners on which SBMs to implement in order to effectively address a firm's specific sustainability challenges, suggesting which SBMs are most likely to ensure superior performance across all three pillars. Our research also offers insights for policy-makers on which actions to prioritize to ensure the best environmental and social outcomes via the implementation of specific SBM.

The remainder of the paper is structured as follows: the second section presents the theoretical framework and outlines the research questions; the third and fourth sections describe the empirical analysis carried out and the results achieved; the fifth section focuses on the discussion, and the conclusions outline our theoretical contributions and some practical implications.

2. SBM Archetypes and Performance

2.1. Business models and sustainability

Business models (BMs) refer to a firm's approach to creating, delivering and capturing value and its value proposition. They provide a holistic description of 'how the firm does business' (Chesbrough, 2010; Magretta, 2002; Osterwalder and Pigneur, 2010, 2002; Richardson, 2008; Zott and Amit, 2010) and how the enterprise works (Magretta, 2002) and are strictly related to the concepts of strategy and innovation. One of the most widely-used definitions of a BM is provided by Teece (2010), who defines BMs as "... the design or architecture of the value creation, delivery and capture mechanisms employed" (p.179). Such a definition highlights the three underlying and connected value elements involved (Richardson, 2008): i) value proposition (the features of the offering and how they will support differentiation for a specific target group of customers); ii) value creation and delivery (the key activities, resources, capabilities and the position in the value network that will allow the firm to realize the offering); iii) value capture (i.e. the revenue model and cost structure underlying the BM).

The BM perspective has attracted increasing interest among scholars aiming to understand how sustainability and competitiveness concerns might be coupled. It has potential to offer new ways of studying business architectures and value creation opportunities and can suggest new methods for integrating sustainability in a firm's core values (Bocken et al., 2018; Schaltegger et al., 2016; Stubbs and Cocklin, 2008). Sustainability is a multifaceted and complex concept highlighting the close links between environment and society, and is used to suggest the profound changes that are needed to deal with the current environmental crisis and to pursue a just economic system (Hopwood et al., 2005; Mebratu, 1998). According to the most widely-used description, sustainability is supported by three interconnected pillars: environmental integrity, social equity, and economic prosperity (Purvis et al., 2019). In this context, the concept of the Triple Bottom Line (TBL) has been developed to refer to corporate sustainability (Bansal, 2005; Carter and Rogers, 2008; Elkington, 1998) and to highlight its threefold and interdependent nature in the business domain. Within this scenario, a Sustainable Business Model (SBM) is "about creating significantly increased positive effects and/or significantly reduced negative effects for the natural environment and society through changes in the way a company and its network create, deliver, and capture value" (Lüdeke-Freund et al., 2018: 147). Central to SBMs is the definition of a value proposition that enables the creation of environmental and social values other than economic value (Lüdeke-Freund et al., 2018a; Patala et al., 2016; Schaltegger et al., 2016). An SBM addresses stakeholders' needs and internalizes environmental and social concerns (Bocken et al., 2014; Geldres-Weiss et al., 2021; Stubbs and Cocklin, 2008) – as opposed to the focus on shareholders' needs and profit generation that is central to 'conventional' business models (Bocken et al., 2018). Indeed, moving towards an SBM requires important shifts in business purpose (Stubbs and Cocklin, 2008) so that sustainability is addressed at the core of the firm (Lee and Rhee, 2007) and in the activities in which the firm is engaged. Implementing an SBM requires a firm to innovate in the way it creates value for the firm and its stakeholders, changing one or more building-blocks of the existing BM (Bocken et al., 2018) and implementing incremental or radical improvements in existing activities (Lüdeke-Freund et al., 2018b). The latter entails the highest potential for the creation of value for the economy and the society (Lüdeke-Freund et al., 2018b; Schaltegger et al., 2012).

With the aim of helping researchers and practitioners to better grasp the phenomenon and provide examples of the broad range of SBM opportunities, efforts have been made to identify and compare types of SBM that firms might implement – 'generic strategies' that can represent an inspiration for managers and a basis for theory testing and development (Bocken et al., 2014; Lüdeke-Freund et al., 2018a; Reinhardt et al., 2020). Each of those types – also called archetypes – entails a peculiar orientation and set of activities that enable firms to create shared environmental, social and economic value (Ritala et al., 2021, 2018).

A number of classifications of SBM archetypes have been provided, spanning both the academic literature (e.g., Lüdeke-Freund et al., 2018; Ritala et al., 2018; Rosa et al., 2019) and the practitioner literature (e.g., Beltramello et al., 2013; Clinton and Whisnant, 2019; Kiørboe, 2015). We focus on the one proposed by Bocken et al. (2014), subsequently refined by Ritala et al. (2018), given: i) its widespread application in the academic literature; ii) its ability to capture a broader spectrum of sustainability-related issues while most classifications mainly focus on social issues (e.g. Dohrmann et al., 2015; Michelini and Fiorentino, 2012) or environmental ones (e.g. circular economy business models – Bocken and Short, 2016; Geissdoerfer et al., 2018; Rosa et al., 2019); iii) its ability to describe SBMs fit for different industries, ranging from electric vehicle batteries (Reinhardt et al., 2020) to agri-food production (Ulvenblad et al., 2019).

Based on a comprehensive review of the literature and practices, nine SBM archetypes are proposed and further classified in three higher-order groupings – depending on the major focus of the SBM innovation (environmental, social, or economic). Each of the SBMs identified is expected to create value in a different manner, putting more or less emphasis on the environmental, social or economic dimension (Lüdeke-Freund et al., 2018a). An overview of the nine archetypes is provided in Table 1. The *environmentally-oriented BM* grouping includes three archetypes ([1], [2], [3] as in Table 1) focusing on the management of resources within the firm and its value chain, with the aim of fostering environmental sustainability and implying deep modifications in how firms approach product development, supply chain management and production activities. The *socially-oriented BM*s include three archetypes ([4], [5], [6]) that aim to have an impact on the social dimension of firms' activities, modifying the behavior of consumers and society at large via an innovative value proposition and encouraging customers to engage in innovation and change their consumption habits. Finally, the *economically-oriented BMs* include the other two dimensions of sustainability (social and environmental) in the firm's economic goals (profit) but based on economic logic: how value is produced and how the organization is structured to incorporate a wider set of actors and their goals in internal processes.

Insert Table 1 here

2.2. Sustainability Performance of SBMs: accounting for the means-ends divide

A key specificity of firms that are innovating their BM towards sustainability is the focus on supporting society to achieve greater environmental and social performance, rather than achieving 'private' economic benefits (Evans et al., 2017; Schaltegger et al., 2012). Accordingly, the transformation of traditional business models to SBM, covering environmental, social and economic activities, is assumed to be a necessary step to achieve the best sustainable outcomes (Lozano, 2018). Corporate Social Performance (CSP) or Sustainability Performance (SP) is an increasingly hot topic among scholars and can be defined as "the degree to which an organization improves its performance in respect to its global sustainable development responsibilities" (Morioka and Carvalho, 2016, p. 135), i.e. how it improves its outcomes in terms of stewardship towards society and the environment in addition to its economic performance, considering the needs expressed by primary stakeholders (Clarkson, 1995; Helmig et al., n.d.; Orlitzky et al., 2017).

As supported by Halme et al., (2020: 1185) arguing the 'sustainability case' for Corporate Social Responsibility practices, often management studies do not make a "distinction between firms' policies and practices […] and the actual performance in terms of outcomes". In line with Evans et al., (2017), we argue that the same problem also affects SBM studies, where attention has been devoted mainly to the configuration of firms' activities for value creation, rather than their ability to effectively drive sustainability performance. The link between practice and performance cannot be assumed – a means-ends decoupling can take place and "not all kinds of implementation lead to improvements" (Halme et al., 2020: 1211). Against this background, an important research gap emerges regarding to what extent SBMs are effectively driving relevant sustainability performance. More specifically, we aim to answer the following research question: which SBM archetypes drive better sustainability performance?
Several efforts have been made to create a synthetic measure of organizational sustainability performance (often a composite index) in order to enable better communication and engagement with stakeholders (Büyüközkan and Karabulut, 2018; Hubbard, 2009). To best address the above-mentioned research question, we argue the importance to adopt a measure that can disentangle the different components of a firm's Sustainability Performance (SP), i.e., its environmental, social and economic dimensions (see, e.g., Büyüközkan and Karabulut, 2018; Hubbard, 2009; Rezaee, 2016; Silva et al., 2019). As is clear from the classification of SBMs by Lüdeke-Freund et al., (2018), not all SBMs are focused on achieving high performance in all three pillars of sustainability. One could expect SBMs that focus on the

environment to be more likely to generate environmental outcomes, and socially-oriented BMs to be more likely to achieve social outcomes, but research is needed to explore which SBM archetypes are driving the best sustainability performance, considering the environmental, social and economic dimensions.

It is also important to distinguish between the three types of performance to account for any trade-offs and conflicts emerging between the three pillars of sustainability when SBMs are developed and implemented (Brennan and Tennant, 2018; Oskam et al., 2020; Stubbs, 2019), as these might result in the decoupling of economic, environmental and social performances (Halme et al., 2020). A ‘good’ average sustainability performance might hinder very ‘unbalanced’ performance across the three dimensions, as visualized in the analysis of environmental and financial performance by Figge and Hahn (2012). To ensure higher sustainability levels, a ‘balanced’, integrative approach is advocated (Hahn et al., 2015). This should translate into the development of SBMs that do not achieve an optimal outcome in one dimension to the disadvantage of the others. Similarly, Ozanne et al. (2016) analyzed the tensions generated around the three dimensions of the TBL based on a review of similar, relevant studies for achieving a good impact on the TBL. Currently, the question remains as to whether some SBMs are more likely than others to help achieve a more integrative sustainability performance. Although it has not yet been applied to SBMs, Kleine and von Hauff (2009) propose a sustainability triangle to assess whether there is a coherent integration between the three dimensions of sustainability. This triangle makes it possible to assess whether a company's sustainable behavior is closely related to any of the three dimensions (at the points of the triangle), or whether it is committed to working with the same intensity in all three dimensions (at the center). Given the high heterogeneity across SBMs and the different relative focus they entail, we expect them to have a different impact on achieving an integrative corporate sustainability performance (Glavas and Mish, 2015; Hélène et al., 2019).

3. Sample, Variables and Methodology

To explore the above-mentioned research questions, we propose a quantitative analysis focused on original data from a sample of sustainably-oriented firms: Benefit Corporations (B Corps). The focus of several recent sustainability-related papers, B Corps aim to support a radical change in the way business is performed within a consciously capitalistic framework (Chen and Kelly, 2015; Waddock and McIntosh, 2011). B Corps are described as organizations in which social and environmental goals drive firms' behavior and strategic choices, adopting a hybrid organization perspective to achieve sustainable development goals (Gazzola et al., 2019; Stubbs, 2017a, 2017b). B Corps are firms that have passed a process of certification by a non-profit organization (B Lab) that quantifies their sustainability performance in five categories – Community, Customers, Environment, Governance and Workers. By focusing on B Corps, we ensure that data is from firms that have implemented a SBM (Wilburn and Wilburn, 2015). In addition, the fact that B Corps span different industries and different firm sizes allows for enough internal-to-the-sample variability in terms of SBMs implemented and performances.

We developed a questionnaire targeting B Corps' founders and sustainability managers, which was sent to all B Corps certified and established in Italy, Spain, and the UK, these being the countries that host the majority of B Corps certified firms in Europe[ii]. The B Corps were identified from the website of B Lab, which reports all certified firms. We then manually searched for contact information for each firm, and contacted the entrepreneur, CEO or sustainability manager. We sent out an online questionnaire and collected answers between October 2018 and January 2019. We decided to collect information for only three months in order to have a homogeneous sample of companies and to avoid a bias in the collection of data. We followed up all firms via email and phone during these three months to assist them during the survey in case help was needed. The questionnaire collected information about firms' sustainability performance, the SBMs implemented and the firms' structure, organization and values, using scales already adopted in the literature, as explained in the following paragraph. Out of the 241 B Corps contacted, we collected 71 responses (a response rate of 29.4% and a sampling error of 9.9%). To avoid missing data in our estimates and to use the same sample size throughout all the models, we omitted firms for which information on one or more of the variables used was unavailable, resulting in a final sample of 64 firms. Appendix A presents the questionnaire used to collect the information from the B Corps and Appendix B gives a table showing industry distribution of the firms in the sample.

3.1. Measuring Sustainability Performance along the TBL

To identify which SBM leads to the highest and most integrated sustainable performance, we carry out various regression analyses, considering various dependent variables aimed at capturing the firms' sustainability performance (SP). Assessing SP is quite a complex task. A variety of metrics and accounting instruments have been developed to capture this multifaceted concept (Büyüközkan and Karabulut, 2018; Hubbard, 2009; Rezaee, 2016; Silva et al., 2019). As shown in the recent review of the literature on SP evaluation by Büyüközkan and Karabulut, (2018), there are no 'well-defined, generic criteria frameworks that are easily adaptable to a wide range of applications' (p. 262) that scholars may refer to for SP analysis. As the key insight and for future research, these authors suggest that it is important to consider all three bottom lines, i.e., social, economic and environmental, and the balance between them, and to use multi-criteria measurements. In our empirical analysis, we take all these insights into account.

To measure a firm's SP, we adopted three scales developed and validated in previous literature to measure the environmental, social and economic dimensions of sustainability (reported in Appendix A). Firstly, the scale for environmental performance has 5 items and is based on the literature on environmental innovation and, in particular, on the list of environmental improvements developed within the Community Innovation Survey (Cainelli et al., 2015; Horbach et al., 2012). For the social dimensions, we leveraged the literature to analyze the impact of the social enterprise (Zamagni et al., 2015), taking into consideration both within-the-firm social impacts (on employees) and outside-the-firm social impacts (on stakeholders); the scale has 10 items. The scale for economic performance has 10 items and follows Schaltegger et al. (2012). Each item was measured on a Likert scale ranging from 1 (low involvement) to 7 (high involvement). These three scales were validated by means of factor analysis. Appendix C presents the loadings of the factor analysis.

The three factors were also used to create a performance indicator for each of the SP pillars, to identify firms that are outperforming the others in that pillar. *Higher Environmental Performance (HENVP), Higher Social Performance (HSOP)* and *Higher Economic Performance (HECP)* are the dummy variables, which take a value of 1 if the firm has a higher-than-the-sample mean performance for that specific category and 0 in all other cases[iii].

Finally, another dependent variable was created to allow us to investigate the holistic dimension of SP. *Higher Sustainability Performance* (*HSustP*) is a dummy variable that takes value 1 if the firm has a higher-than-the-sample mean performance for the three pillars of SP and 0 in all other cases.

To answer our second research question, we created a new dependent variable that explores whether specific SBM archetypes can achieve an integrated, holistic performance in all dimensions of sustainability considered (TBL). Previous literature explored the tensions generated in the firm when deciding where, across the TBL dimensions, it should invest its resources as well as the need to measure the level of integration (Liu et al., 2020; Wagner, 2015) or dispersion in the TBL (Kleine and von Hauff, 2009; Svensson et al., 2018).

We decided to adopt a similar approach and methodology to Kleine and von Hauff, (2009). These authors are the only ones that provide an empirical measure of this concept, which has been widely recognized by the literature. In fact, we aim to contribute by developing a new construct that considers dispersion from the center instead of dispersion from the points which these authors used. Specifically, via a step-wise approach we created a continuous variable that captures the total dispersion of the environmental, social and economic performances. Firstly, we calculated the average value in the five items of the scale for environmental performance (EnvP), the ten for social performance (SocP) and the ten for economic performance (EcoP). Thus, for each firm we had an average value, ranging from 1 to 7, capturing the economic, social and environmental performance the firm achieved. Secondly, we calculated the average sustainability performance as an average between the three performances (SustP) for each firm. Finally, we measured the dispersion of each of the three performances from the overall sustainable performance of each firm (SustP) and added all the dispersions, in absolute values. The *integrated* variable reports the inverse of the total dispersion and can be summarized as follows:

$$integrated = {}^{1}\!/_{(|\, \overline{SustP} - \overline{EnvP}\, | + |\, \overline{SustP} - \overline{SocP}\, | + |\, \overline{SustP} - \overline{EcoP}\, |)}$$

Higher values in this variable indicate that the firm presents a balanced sustainability performance in all the categories (economic, social and environmental) – regardless of its overall sustainability performance; lower values (closer to zero) show that the firm prioritizes one of the TBL dimensions over the others. Figure 1 reports an example of how this index is calculated, considering two different firms. Firm A scored 7, 6 and 2 on environmental, social and economic performance respectively; firm B scored 4, 5, 6. While both firms have the same average across the three dimensions (5), they have a very different pattern if the three dimensions are considered separately: the larger the area in the picture, the larger the ‘imbalance’ across the three dimensions. Table 2 shows the descriptive statistics of the dependent variables considered.

Insert Table 2 and Figure 1 here

3.2. Independent Variables and Controls

For the independent variables, we followed the taxonomy of SBMs proposed by Ritala et al. (2018). In one question, we specifically asked companies to report which SBM best represented the firm based on the list included. In order to capture the main sustainable actions of the firm, we required them to report on up to three of the archetypes. The procedure to create these variables is the same for all the SBMs: we created a dummy variable that takes value 1 if the firm adopts the specific SBM and 0 in all the other cases. The names and description of the variables are shown in Table 1. As shown in Table 2, which reports descriptive statistics of the variables included in the analysis, economic archetypes were the most widely-used in the sample; social and environmental archetypes scored almost the same, with the SBMs related to delivering functionality rather than ownership (*FUNCT*) being the least used in the sample analyzed.

Table 3 presents information on the SBMs adopted by firms and the dependent variables considered in the analysis. In general, most of the firms that adopted economically-oriented SBMs are performed well. Also, firms that adopted environmentally-oriented SBMs, attempting to maximize material and energy efficiency (*ENREF*) and substituting existing materials with renewables and natural processes (*NATPRO*), obtained better sustainable performance in all three categories of the TBL.

Insert Table 3 here

Finally, the analysis included control variables. In particular, we considered the size of the firm, given that previous literature highlighted that firms' sustainability behavior depends on their resources and capabilities (Svensson et al., 2018; van Beurden and Gossling, 2008; Wagner, 2015; Wang and Bansal, 2012). *SIZE* is measured as the logarithm of the total number of employees in the firm. We also controlled for the firms' innovation capabilities, which might allow them to achieve higher performance by supporting the change in the products made or in the services rendered, especially in the realm of environmental and economic performance (De Marchi, 2012; del Río et al., 2015). Specifically, we asked the firms whether they have a structured R&D function or not; *R&D* was assigned a value of 1 if the firm has this R&D function and 0 in all other cases. We also considered two dummy variables to control for the firms' ownership structure: '*FAMILY*' and '*GROUP*'. Previous studies suggested that family firms pay more attention to sustainability issues because they want to maintain good relations with all their stakeholders (e.g., Breton-Miller and Miller, 2016), and might be willing to do so even to the disadvantage of economic performance, in order to enhance family's reputation (de las Heras-Rosas and Herrera, 2020; Zellweger et al., 2013). *FAMILY* takes value 1 if the firm is a family firm and 0 in all other cases. In addition, we included the dummy *GROUP,* which accounts for the evidence that firms forming part of business groups might pay more attention to sustainability issues because they try to preserve the group identity and their reputation (Ray and Ray Chaudhuri, 2018). *GROUP* takes value 1 if the firm is part of a group and 0 in all other cases. Finally, we included dummy variables for the country (including just two of three dummy country variables to avoid multicollinearity problems), to account for differences in culture. Previous authors argue that countries with ethical environments where customers have higher awareness of social issues and higher technological and innovation capabilities might determine corporate social performance (Alonso-Martínez et al., 2020). The firm's location usually influences firm sustainability behavior (Mebratu, 1998). Figure 2 presents the analysis performed.

Insert Figure 2 here

3.3. Measuring the Impacts of SBMs on Sustainability Performance

To understand the extent to which each of the SBM archetypes identified in the literature supports the achievement of high sustainability and integrated performance, we adopted different methodologies based on the dependent variable considered and inspired by previous empirical analysis (Diez-Busto et al., 2021). First, we performed a logit analysis to verify the correlation between the adoption of the different SBM archetypes and environmental, social and economic performance, considering them as separate dependent variables (models 1, 2 and 3 in Table 4, respectively). Secondly, using Ordinary Least Squares (OLS) analysis, model 5 (Table 4) reports on the role of SBMs in achieving integrated sustainability results.

Insert Table 4 about here

Results suggest that there is not necessarily a positive and significant relationship between the TBL dimensions driving reconfiguration of the firm's activities and the actual performance achieved. For example, while most environmentally-oriented SBMs are statistically associated with the variable capturing high environmental performance, *RESLO* (the SBM that focuses on achieving circular economy results) exerts a negative influence (Model 1). As regards the social dimension of SP (Model 2), only one socially-oriented SBM (*ENCSUF*) is positively associated with higher social performance; and as regards the economic dimension, none of the economically-oriented SBMs is associated with high performance in that TBL area. In fact, one of them (*REPUR*) exerts a negative influence correlated with economic performance. Interestingly, it is also the case that some SBMs have higher performance in different TBL areas. For example, the economically-oriented SBM focused on developing sustainable scale-up solutions and including value creation (*VALCRE*) is positively associated with higher social performance. In addition, full integration of a firm's social and environmental objectives aiming to maximize its sustainability (*REPUR*) achieves fewer economic benefits while significantly increasing environmental performance. Similarly, the environmentally-oriented SBMs (*ENREF* and *NATPRO*) are also significantly associated with the possibility of creating higher economic value.

In general, very few SMS proved to be positively associated with more than one dimension. Although environmental SBMs are necessary to increase a firm's sustainable reputation, they sometimes require heavy investments, which might reduce profitability, at least in the short and medium term. This seems for example the case of the SBM RESLO (negatively correlated with environmental, economic and social dimensions). Model 4 in Table 4 allows measurement of the extent to which each SBM archetype is likely to be associated with an overall higher sustainability performance. The regression uses *HSustP* as a dependent variable. Confirming the preliminary evidence provided from Models, 1, 2 and 3, environmentally-oriented SBMs emerge as the most likely to drive the highest sustainability performances. Specifically, we found a positive and significant influence between the implementation of a BM aimed at maximizing material and energy efficiency (*ENREF*) and at substituting existing materials with renewable and natural processes (*NATPRO*) and a high SP. Our results confirm that actions to reduce the raw materials required, to dematerialize products and packaging or to substitute processes with renewable resources and energy sources (Dissanayake and Sinha, 2013; Laukkanen and Patala, 2014) contribute to increasing the level of performance in several ways. For example, as Zufall et al. (2020) showed in the smartphone industries, the above-mentioned environmental actions help achieve economic benefits (cost reduction, cheaper raw materials) but may also help to achieve better social performance by providing citizens with new technologies that facilitate their social connections and strengthen their relationships. Sustainable resource companies might achieve profits and economic advantages, for example, by asking for a premium price, by entering new markets or by increasing their margins via cost reductions, and superior customer value (Small-Warner et al., 2018). In addition, as Morioka et al. (2017) showed by analyzing many firms in different sectors, investing in such environmental SBMs helps to create a culture of slow fashion that in many cases allows people to emotionally reconnect with nature and "provides young students or business men and women the opportunity to be more sensible and more actively to solve problems" (Morioka et al., 2017: 728). Similarly, in the context of the automotive industry, sustainable practices proved to be related with the environment in result in new products or services that emerge as a result of less energy-intensive models, such as electric vehicles, as shown by Boons et al. (2013).

In the case of the socially-oriented SBM to encourage sufficiency, *ENCSUF* allows superior overall sustainability performance to be obtained. Implementing these SBMs results in outstanding social performance – better conditions for employees, capabilities to attract talent, improved dialogue with stakeholders and increased activities to support the local community or the most disadvantaged – as well as better economic performance, in line with the case studies reported by Bocken and Short, (2016), which advocate the business case for sufficiency, reporting on cost savings, premium pricing, and entrance in new markets. Developing better relationships with its internal and external stakeholders might directly increase a firm's productivity and performance, as demonstrated also by other studies (Zufall et al., 2020). In addition, as a result of these sustainability archetypes, new opportunities emerge for firms as well as new market niches such as car-sharing, organic foods and eco-housing (Boons et al., 2013). Moreover, through the introduction of these social archetypes, firms "inspire a new way to think and transform People-work connection (...) development and dissemination of knowledge and networking and development of local community" (Morioka et al., 2017: 729).

Finally, and interestingly, none of the economically-oriented SBMs prove to have a differential impact in terms of overall sustainability performance. Such results might be read in light of the fact that such SBMs, focused on achieving superior competitiveness, might drive firms to adopt a business-case type of approach, considering social and environmental issues merely as subordinate to economic benefits, i.e., as a new means to increase their economic performance (Ergene et al., 2020; Figge & Hahn, 2020; Gao & Bansal, 2013).

A separate discussion is needed to explain the result regarding the environmentally-oriented SBM (*RESLO)*, which aims to close resource loops instead of creating value from waste. It is negatively and significantly correlated to the variable capturing the highest sustainability performance (Model 4, Table 4) and negatively correlated with the possibility of achieving outstanding performance in all three areas (Models 1, 2 and 3). Accordingly, elimination of the concept of waste and of strategies for reuse, refurbishing and recycling seems to exert a negative effect on sustainable performance. This is a surprising result because previous literature highlighted the relevance of such practices to achieve economic, social and environmental performance. The explanation may lie in the fact that firms that adopt this kind of SBM might be excessively focused on environmental practices and thus disregard some economic and social effects, at least in the short term. Possibly, this result might also be related to the customer acceptability of the SBM. As Asif et al. (2012: 4) showed, "most of the business models may fail to fulfil its purpose if the consumers have a negative attitude towards the remanufactured product".

Model 5 allows us to verify whether any SBMs are more likely to be connected to an integrated approach to sustainability. The results of the OLS analysis indicate that none of the SBMs considered exert a significant influence with respect to having a balanced approach to sustainability. In other words, no SBM archetype is, *by definition* more or less likely to support the achievement of integrated sustainable performance – it seems that other factors, not related to the specific structure of the archetype chosen but rather cross-cutting among them, might rather explain this type of performance. Additional research should investigate this issue further to verify whether the same results hold in different contexts or to compare different measures that capture this approach. Table 5 summarizes the results of this paper. In addition, a robustness section is included in Appendix D.

Insert Table 5 here

Finally, regarding the control variables, only ownership and institutional factors exert a significant role on *HSustP*. Specifically, as shown in Table 4, if the firm is a family firm, it obtains less sustainable performance. Usually family firms tend to protect their reputation and have long-term objectives to guarantee their success in the future (Breton-Miller and Miller, 2016). However, such limitations may force firms to be less innovative in their business models or less effective in implementing them. Moreover, a firm's sustainable performance is strongly linked with institutional factors. As the previous literature argues, firms' SBMs are linked to the their country's current performance along the Sustainable Development Goals and their sustainable strategies are affected by formal and informal institutional factors such as culture, technology and the ethical behavior of citizens in their environments (Alonso-Martínez et al., 2020; Mebratu, 1998). However, innovation, size and group do not seem to exert a significant influence on *HSustP*. The fact that both large and small firms applied SBMs and that all the SBMs included innovation as a fundamental part of the sustainability strategy might be the reason for this non-significant effect.

4. Discussion

Our study provides insights that complement existing studies on SBMs (Bocken et al., 2014; Lüdeke-Freund et al., 2018a; Ritala et al., 2018; Rosa et al., 2019) by providing empirical evidence of the relationship between the SBM archetypes adopted and the SP they can achieve and by disentangling the practice-performance link in the SBM context (Halme et al., 2020). A first important result is related to a practice-outcome divide in the disconnection between SBMs and their ability to achieve SP. Not all archetypes allow high levels of SP to be achieved. The results indicate that, for firms to effectively help tackle the great challenges facing society, it is not enough for them to adopt an SBM. They also have to assess its actual performance. This is particularly important when the three sustainability dimensions are disentangled. The SBM archetypes – as adopted by the firms in our sample – relate to very different performance patterns in terms of economic, social and environmental performance. This practice-outcome divide may be justified by the fact that some SBMs are more complex than others in their underlying activities and goals. This is in line with the literature that highlights the importance of considering complexity when attempting to explain sustainability innovation potential (e.g., Cainelli et al., 2015). Take, for example, the SBM oriented at closing resource loops (RESLO), which is negatively correlated with TBL performance. Its negative effect does not mean that such environmental practices do not help increase sustainable performance but, rather, that they are evidence of trade-offs. This means that, for firms that are highly committed to sustainability, environmental practices related with the circular economy may imply an effort for the firm that cannot be made in other, more profitable sustainable practices. As such practices require the contribution of multiple stakeholders and of actors from different industries (Hahladakis and Iacovidou, 2019; Pedersen et al., 2019), they become complex and may compromise performance, at least in the shorter run. A similar discussion might relate to the SBMs focused on delivering functionality rather than ownership (the socially-oriented *FUNCT* SBM), which requires extensive restructuring of the product offering and, therefore, of the functioning of the firm's processes, but also a far-reaching change in user behavior and experience (Bocken et al., 2014). Consumers' acceptance might indeed be a powerful barrier to this SBM (Laukkanen and Patala, 2014), as in the case of the short-term garment rental SBMs described by Clube and Tennant (2020).

Our results contribute to the theoretical debate on the need for adopting a balanced analysis and approach to sustainability and sustainability performance (Hahn et al., 2015; Hussain et al., 2018; Kleine and von Hauff, 2009), as we prove that no SBM is related to a 'balanced' performance across the TBL. Such evidence could be interpreted as relating to the tensions firms experience in achieving an integrated sustainability performance (Brennan and Tennant, 2018; Schaltegger et al., 2012; Stubbs and Cocklin, 2008). The absence of a 'balance' across the three performance dimensions might be interpreted either as a strategic decision by the firm deciding upfront to focus on some dimensions rather than others, or as its inability to achieve good results, in line with the discussion by Halme et al. (2020) of CSR practices. Accordingly, our study reinforces the evidence of the difficulties firms may face in balancing the multifaced dimension of sustainability (Hahn et al., 2015, 2010; Joseph et al., 2018). By leveraging specific SBMs, it might be possible to achieve high SP, but this does not ensure that a similar performance will be obtained in all three sustainability dimensions.

A second relevant result is related to a second practice-outcome divide observed in the misalignment between the main focus of the SBMs and the different dimensions of the SP achieved. It highlights that what drives firms to develop the SBM is not necessarily achieved and that 'side-effects' might arise in the other sustainability dimensions. Our research results shed new light on the discussion on the potential negative relations in terms of the means-ends perspective, suggesting new forms of decoupling between the strategic approach adopted and the real performances achieved (Halme et al., 2020). The major innovation types underlying the three archetypes – environmental, social, and economic - may be considered a guide for managers in their strategic and investment focus, but do not necessarily lead to high SP for the firm because of potential conflicts among them (Bocken and Geradts, 2020).

A third result is related to the relative weaknesses of the economic-oriented SBMs in achieving high overall SP. Such SBMs may indeed help achieve sustainability performance, but not on the same scale as the other two groups of SBMs. This result is particularly interesting if coupled with the evidence emerging from descriptive statistics, which report that economically-oriented SBMs are the most widely-used in our sample. Considering that economically-oriented SBMs are widely adopted by firms in all sectors, our results suggest that, as a means of achieving sustainability outcomes, they should be adopted with caution. The underperformance of economically-oriented SBMs may be interpreted in light of the business-case perspective: when tensions across the three axes emerge, this might emphasize the economic role of the others, with social and environmental issues becoming subordinate to economic benefits (Figge and Hahn, 2020, 2012). Accordingly, these results contribute to the literature that suggests practice-performance decoupling (Halme et al., 2020) by highlighting both the unexpected 'positive externalities' of the implementation of the SBMs and their shortcomings.

5. Conclusions

By focusing on an original data set on European B Corps, our research provides empirical evidence on, and a critical appraisal of the relationship between SBMs and sustainability performance, taking into account the TBL perspective. Our contribution to the literature is multiple. First, we contribute to the literature on SBM archetypes investigating the practice-outcome divide by suggesting that not all SBMs provide high sustainability performance, especially economically-oriented SBMs. Despite their intention to transform the business in order to tackle the great challenges facing society, firms might not be able to fully take up this task, especially if all the sustainability dimensions – economic, environmental and social – are considered simultaneously. This evidence contributes to the literature streams that point to the importance of measuring results rather than just practices to fully understand SBM potential (e.g., Halme et al., 2020). Second, we contribute to the literature that focuses on the importance of considering sustainability as an integrated concept, in which the three interdependent areas of the TBL are pursued together. Our results point to the failure to achieve a balanced SP and support the literature reporting on sustainability tensions (e.g., Hans et al. 2015; Brennant et al 2018). They thus open up new research avenues on which firm-related aspects that are not connected to the specific SBM introduced would be most likely to be associated with balanced results.

Our research also has important managerial and policy implications. First, from a managerial viewpoint, our study suggests that the main driver for obtaining better results under the TBL perspective is a focus on re-orienting internal and sourcing processes towards sustainable, natural resources, processes and products, maximizing efficiency in energy and materials consumption, and encouraging sufficiency. Conversely, it is more difficult to achieve high SP by implementing complex environmentally-oriented SBMs such as closed resource loops. Moreover, results indicate that it is important for managers to be aware of the tensions that might arise across the TBL when SBMs are implemented and that actions must be taken to monitor performance across the three areas, not taking for granted that implementation will achieve the intended goal.

There are also important policy implications. Given the evidence that not all SBMs drive the same level of performance and to support achievement of the highest possible societal value, one policy recommendation would be to consider how to support the implementation of SBMs to achieve superior performance. Actions increasing the awareness of sustainability, supporting the re-orientation of the firms' strategy towards sustainability, and promoting social entrepreneurship can be ways of obtaining not just socially important aims but also greater competitiveness for firms. This could be particularly relevant for policies designed to disseminate competences related to process efficiency, green design and radical innovation, which are the most closely-related to the three SBMs that drive the highest performance across the TBL. Moreover, we find that in specific, more complex SBMs, more positive and integrative performances can be achieved. In this direction, policy intervention can focus on investing in infrastructures and other institutional conditions to reduce business barriers. Similarly, for firms be more aware of their TBL impacts and to achieve an integrated view of their business outcomes, it is crucial to encourage the adoption of non-financial performance management practices.

Further research should analyze how to overcome tensions in the adoption of specific SBMs, exploring whether the combination of more than one SBM could be a solution, in order to consider the time dimension of performance, evaluating performances in both the short and the long term.

Limitations in our analysis should be acknowledged. First, although the size of the sample and the response ratio are similar to those used in previous studies (Geldres-Weiss et al., 2021; Tabares, 2021; Ulvenblad et al., 2019), replicating the analysis on a large sample, possible spanning various countries, would validate the results. Further research could also attempt to verify to what extent cross-country cultural or institutional differences might influence firms' sustainable activities or perception of their outcomes (Alonso-Martínez et al., 2020; Leyva-de la Hiz et al., 2019; Rosati and Faria, 2019). Another limitation might be the use of a subjective measure of sustainability performance. While the use of scales might reduce self-reported bias, further research should attempt to evaluate sustainable performance through externally validated measures. Conducting qualitative analyses to measure the three types of impact (economic, social and environmental) in different cases might be appropriate to further interpret the results achieved in this study. Also, we perform cross-data analysis, whereas longitudinal analyses might be useful to verify whether economic, social and environmental outcomes have different time frames or are perceived differently by firms (Ortiz-de-Mandojana and Bansal, 2016). Our study is exploratory in nature and entails several limitations; however, we hope it can make an important contribution to the debate on SBMs and can advance research on sustainability strategies and TBL perspectives, opening new pathways to promote firms' strategic profiles, characteristics and outcomes in pursue of the grand societal challenges we need to face.

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Tables

Table 1. *Sustainable Business Model Archetype Groupings*

Groupings	Archetypes	Description
ENVIRONMENTAL	[1]. Maximise material and energy efficiency (ENREF)	Improving products and processes to generate less waste and fewer emissions as respect to products that deliver similar functionalities
	[2] Close resource loops (RESLO)	Transforming waste into valuable inputs, closing the loops of the renewable resources and/or non-renewable materials cycles
	[3] Substitute with renewables and natural processes (NATPRO)	Modifying products to include renewable (non-finite) resources, using environmentally-friendly materials and developing renewable energy solutions
SOCIAL	[4] Deliver functionality rather than ownership (FUNCT)	Delivering functionality through pay-per-use rather than product ownership, allowing reduction in resource consumption and enhanced efficiency in the use and durability of products
	[5] Adopt a stewardship role (STEWAR)	Ensuring the long-term health and wellbeing of all stakeholders through the manufacture and provision of products/services, tackling sustainability along the supply chain, community development and employee welfare
	[6] Encourage sufficiency (ENCSUF)	Radically reduce overconsumption by improving product durability and longevity and implement activities to educate consumers and enable second-hand consumption
ECONOMIC	[7] Repurpose for society/environment (REPUR)	Maximising the social and environmental benefits of full integration of the firm with all stakeholders and therefore aims to drive global economic change
	[8] Develop sustainable scale-up solutions (VALCRE)	Developing sustainability solutions on a large scale for multinationals, which include franchising, licensing and collaborative models
	[9] Inclusive value creation	Allowing sharing of resources and ownership, creating value for previously under-addressed user and customer segments

Note. Adapted from (Bocken et al., 2014; Ritala et al., 2018). In parenthesis the name of the variables that will be used in the empirical analysis

Table 2. *Summary Statistics*[iv]

	Variable	Mean	Frequency	Standard Deviation
	Dependent variables			
	HSustP		31	
	HECP		32	
	HSOP		29	
	HENVP		29	
	INTEGRATED[v]	1.37		1.49
	Independent variables			
Environmental SBM	1. ENREF		11	
	2. RESLO		11	
	3. NATPRO		9	
Social SBM	4. FUNCT		4	
	5. STEWAR		20	
	6. ENCSUF		14	
Economic SBM	7. REPUR		31	
	8. VALCRE		27	
Controls				
	SIZE	2.19		1.19
	INNOVATION		18	
	GROUP		15	
	FAMILY		11	
	ITALY		34	
	SPAIN		6	
	UK		24	

Number of firms= 64

Table 3. *Summary Statistics Performance for Each SBM*

	Variable	HECP	HSOP	HENVP	HSustP	Mean Integrated
Environmental SBM	ENREF	8	6	6	7	1.25
	RESLO	5	3	4	4	1.00
	NATPRO	7	5	7	7	1.36
Social SBM	FUNCT	1	2	1	2	1.57
	STEWAR	10	8	11	11	1.26
	ENCSUF	7	7	5	6	1.24
Economic SBM	REPUR	12	15	16	12	1.28
	VALCRE	13	14	11	11	1.49
Number of observations		32	29	29	31	

Number of firms= 64

Table 4. *Corporate Sustainability Performance and SBMs*

		Model 1	Model 2	Model 3	Model 4	Model 5
Independent variables		HENVP	HSOP	HECP	HSustP	Integrated
Environmental SBM	1. ENREF	0.40*	0.60**	0.62***	0.40*	0.47
		(0.24)	(0.26)	(0.24)	(0.24)	(0.68)
	2. RESLO	-0.41*	-0.46**	-0.52**	-0.41*	-0.78
		(0.23)	(0.18)	(0.21)	(0.22)	(0.56)
	3. NATPRO	0.76***	0.42**	0.62***	0.75***	0.38
		(0.24)	(0.20)	(0.21)	(0.22)	(0.61)
Social SBM	4. FUNCT	-0.11	0.24	-0.10	-0.11	0.97
		(0.27)	(0.23)	(0.23)	(0.27)	(0.78)
	5. STEWAR	0.20	0.09	0.13	0.20	-0.49
		(0.14)	(0.13)	(0.13)	(0.13)	(0.44)
	6. ENCSUF	0.11	0.36**	0.39***	0.19**	0.35
		(0.17)	(0.16)	(0.15)	(0.17)	(0.53)
Economic SBM	7. REPUR	0.19*	0.14	-0.18*	0.14	-0.41
		(0.11)	(0.12)	(0.14)	(0.12)	(0.38)
	8. VALCRE	0.14	0.37***	0.18	0.13	0.39
		(0.15)	(0.13)	(0.14)	(0.15)	(0.48)
SIZE		-0.00	-0.004	-0.002	0.00	0.00
		(0.001)	(0.01)	(0.00)	(0.00)	(0.00)
INNOVATION		-0.04	-0.01	0.02	-0.04	0.45
		(0.14)	(0.14)	(0.15)	(0.15)	(0.45)
GROUP		0.03	-0.18	-0.05	-0.04	0.65
		(0.17)	(0.17)	(0.15)	(0.17)	(0.53
FAMILY		-0.30	-0.18	-0.22	-0.30*	0.19
		(0.18)	(0.16)	(0.18)	(0.17)	(0.51)
ITALY		-0.09	-0.15	-0.26**	-0.08	-0.29
		(0.14)	(0.13)	(0.12)	(0.14)	(0.43)
SPAIN		0.16	0.13	0.58	0.16	-0.55
		(0.23)	(0.24)	(0.36)	(0.22)	(0.76)
Observations/Firms		64	64	64	64	64
LR chi2		17.19*	20.97*	29.12***	16.29*	
F						1.40***
R2		0.19	0.23	0.32	0.18	0.19

p* < .10; ** *p* < .05; * *p* < .01. B Coefficients (Std. Err.) are reported.

Table 5. *Corporate Sustainability Performance and SBMs: summary of the findings*

SBM archetypes		*HSustP*	Integrated Performance
ENVIRONMENTAL	[1]. Maximise material and energy efficiency (ENREF)	+	/
	[2]. Close resource loops (RESLO)	--	/
	[3]. Substitute with renewables and natural processes (NATPRO)	+++	/
SOCIAL	[4]. Deliver functionality rather than ownership (FUNCT)	/	/
	[5]. Adopt a stewardship role (STEWAR)	/	/
	[6]. Encourage sufficiency (ENCSUF)	++	/
ECONOMIC	[7]. Repurpose for society/environment (REPUR)	/	/
	[8]. Develop sustainable scale-up solutions (VALCRE)	/	/

Figures

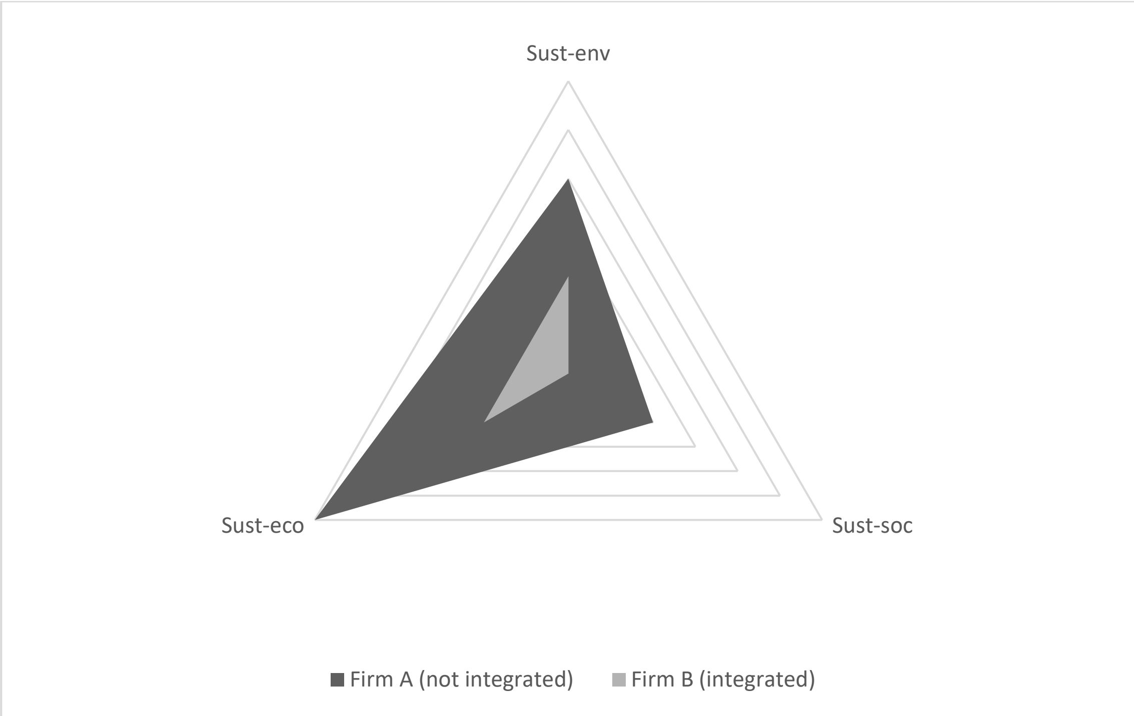


Figure 1. A visual presentation of our index of integrated sustainability

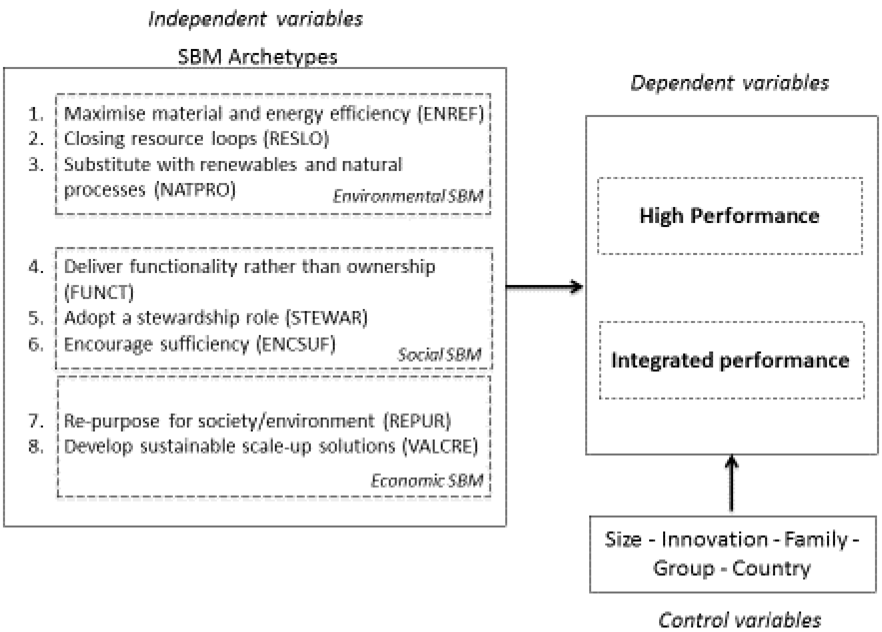


Figure 2. SBM archetypes, high performance and integrated performance (TBL).

Appendix A. Questionnaire

Questions used to build the dependent variables

13. From an economic point of view, becoming a certified B Corp has favoured your company in terms of (scale from 1 to 7):

a) Increase in profit/sales
b) Reduction in costs
c) Increase in market share
d) Risk reduction
e) Ability to innovate
f) Entry into new markets
g) Improvement of the company's reputation
h) Alignment with competition
i) Credit facilities
j) Increased media visibility

14. From a social point of view, becoming a certified B Corp has resulted in (scale from 1 to 7):

a) Increasing employment
b) Reduction in absenteeism
c) Reduction in staff turnover
d) Improved staff motivation and ability to attract talent
e) Increasing equal opportunities/reducing disparities
f) Facilitated dialogue with suppliers, customers, local, communities
g) Cooperation with other companies on sustainability issues
h) Increased financial participation in local community activities and projects

i) Activities in support of the most disadvantaged groups in the local community

j) Activities/initiatives in support of communities in emerging countries

15. From an environmental point of view, becoming a certified B Corp has resulted in (scale from 1 to 7):

a) Reduction in the use of resources (water, energy, raw materials)

b) Recycling of waste or reuse of production waste

c) Use of more sustainable raw materials

d) Reduction in negative emission levels

e) Redefinition of products to facilitate waste treatment and use

Questions used to build the independent variables

9. The business model of your company is based mainly on (allowed up to a maximum of **three options** to be indicated in order of importance):

a) Maximising material and energy efficiency

b) Closing resource loops (circular economy - reuse; recycling; reworking)

c) Substituting with renewables and natural processes

d) Delivering functionality rather than ownership (e.g. Carsharing)

e) Adopting a stewardship role

f) Encouraging sufficiency

g) Repurposing for society/environment

h) Developing sustainable scale-up solutions (e.g. sustainability incubators and crowd-sourcing platforms focusing on sustainable initiatives).

Questions used to build the control variables

25. Number of employees (at the end of 2017) ________________________

28. R&D expenditure 2017 (% of revenues) ________________________

29. Your business is a Family business ________________________

30. Your company is part of a group _______________________

Appendix B.: Industry–firm distribution

Industry	*Firms*
Sustainability consulting	12
Investment and insurance	11
Software & services/web design	8
Industrial manufacturing and machinery	6
Healthcare	5
Food & beverage	4
Marketing & communications	3
Architecture/design/planning	3
Agriculture	3
Education & training	2
Office products & printing	1
Electronics	1
Others	5

Source: authors' elaboration based on B Lab classification

Appendix C. Factor and cluster analysis

In order to measure sustainability performance, we adopted scales developed in the literature to measure the environmental, economic and social dimensions of sustainability. Table B1 of this appendix reports the loadings of the factor analysis.[vi]

Table B1. Results of Factor analysis[a]

Variable	*Factor 1: Economic*	*Factor 2: Social*	*Factor 3: Environmental*
Increase in profit/sales	**0.882**		
Reduction of costs	**0.751**		
Increase in market share	**0.821**		
Risk reduction	**0.771**		
Ability to innovate	**0.757**		
Entry into new markets	**0.746**		
Improvement of the company's reputation	**0.660**		
Alignment with competition	**0.693**		
Credit facilities	**0.622**		
Increased media visibility	**0.590**		
Increasing employment		**0.698**	
Reduction of absenteeism		**0.797**	
Reduction in staff turnover		**0.718**	
Improved staff motivation and ability to attract talent		**0.777**	
Increasing equal opportunities/reducing disparities		**0.842**	
Facilitated dialogue with suppliers, customers, local communities		**0.668**	
Cooperation with other companies on sustainability issues		**0.678**	
Increased financial participation in local community activities and projects		**0.779**	
Activities in support of the most disadvantaged and needy groups in the local community		**0.700**	
Activities/initiatives in support of communities in emerging countries		**0.663**	
Reduction in the use of resources (water, energy, raw materials)			**0.886**
Recycling of waste or reuse of production waste			**0.879**
Use of more sustainable raw materials			**0.895**
Reduction of negative emission levels			**0.898**
Redefinition of products to facilitate waste treatment and use			**0.879**
Cronbach α	**0.89**	**0.90**	**0.93**

K.M.O. = 0,80; 0.84; 0.86
Eigenvalues: Factor 1 = 5.11; Factor 2 =4.99; Factor 3 =3.98
%Varianza = 51.11%; 49.97%; 79.62%

[a] Bold indicates the factor on which each item is mainly loaded.

Appendix D. Robustness analysis

We included some robustness to check the results showed above. Meyer et al., (2017) suggested to change (1) the main construct of the variables and (2) the methodology used in the analysis. We adopted both suggestions. Firstly, we decided to transform our main dependent variable "*HSustP*" in two ways. On the one hand, we consider a continuous dependent variable of sustainable performance instead a dummy variable. This variable is created as the mean of the three TBL categories. Although by this way we are only considered the performance of the firm without pay attention to the sustainable performance of the other firms of the sample, it can serve as a proxy of the results. As reports in Model 6 of Table 6, although the magnitude of some coefficients is slightly different, the level of significance of environmental and economic archetypes are maintained. Nevertheless, social archetypes seem to be less significant considering this dependent variable.

On the other hand, we create another dependent variable through a Cluster analysis. In order to perform the cluster analysis, we follow the three-step procedure outlined by Homburg et al. (2008). First, we determined the appropriate number of clusters using the hierarchical clustering algorithm developed by Ward (1963), complemented by the cubic clustering criterion proposed by Sarle (1983). This analysis provided strong support for a two-cluster solution. Second, we assigned the cases in our sample to the appropriate cluster using the k-means clustering method. Third, we assessed the stability of this cluster assignment using McIntyre and Blashfield's (1980) cross-validation procedure. The dendrogram generated by the cluster analysis – a tree-shaped graph representing the agglomeration process taking place in a hierarchical cluster analysis – is reported in Figure C.1 and suggests the existence of two clearly differentiated groups composed of 28 and 36 companies, respectively (Table B2).

Table B2: Sustainable firms by cluster (High Performance)

Clusters	*B Corps*	*% of the total*

1 – Leaders (high overall sustainability performance)	28	43.75%
2 – Laggard (low overall sustainability performance)	36	56.25%
Total sample	64	100%

Robustness analysis further supports a high level of stability in the result[vii]. To validate whether the identified clusters allowed for meaningful interpretations (Rich, 1992), we further performed an analysis for the key variables considered comparing the two clusters, as reported in Table B3. In the case of the environmental, social and economic performance variables, a comparison of means was carried out by means of a t-test since the requirements for the normality of the variable in each cluster were met. Our results showed that the means of the economic, social and environmental performances of the first group considered (28 firms) were significantly higher than the equivalent values in the second group of the analysis (36 firms). This is a preliminary analysis to better test our first research question. In particular, it indicates that a group of firms located in one cluster obtained extraordinary results related to the TBL and opened the door to further investigation of what the particularities are of the firms that obtained these results. Accordingly, we named the first group 'sustainability leaders', while the second 'sustainability laggards'. Also, we compared the integrated level of each cluster in order to see if there are significant differences. T-test showed that firms with higher performance are less integrated. On the contrary firms with higher performance are integrated but their levels of sustainability are lower in all the categories.

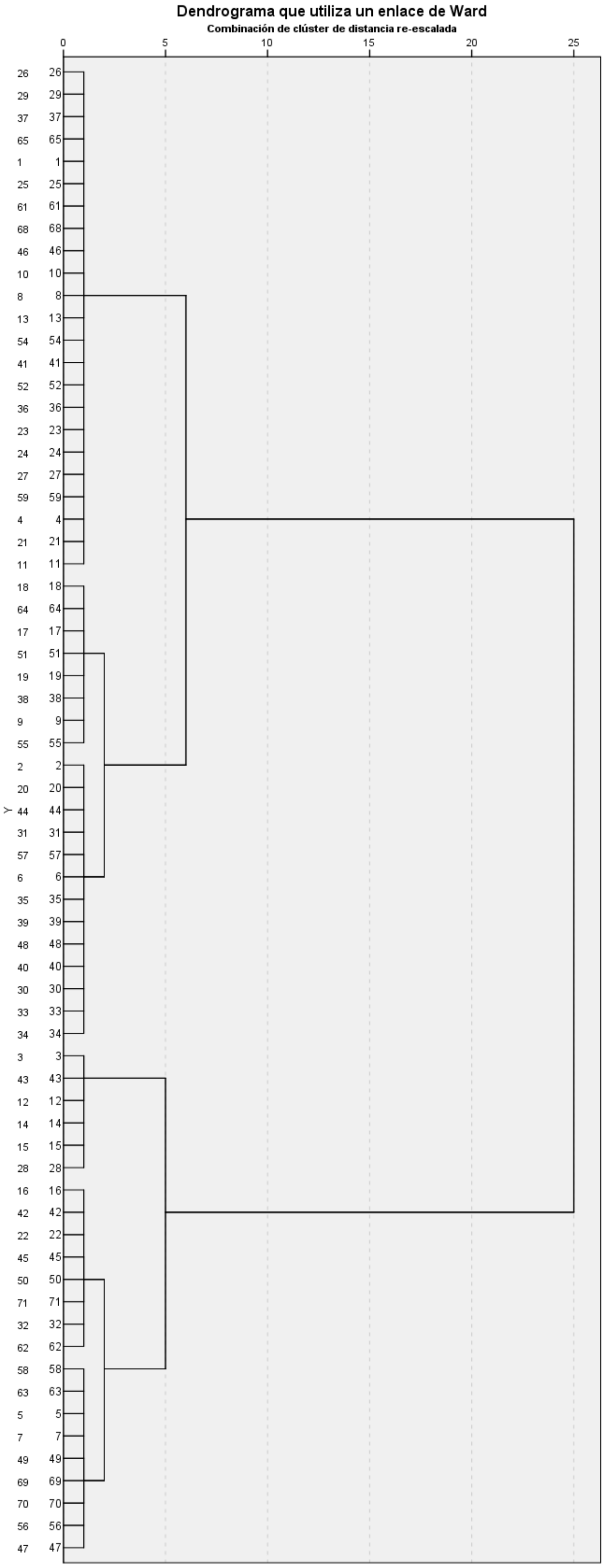
Table B3: Means and variables for cluster and discriminant analysis

		HECP	*HSOP*	*HENVP*	*Integrated firm*
Cluster analysis					
Cluster 1	N	28	28	28	28
	Mean	3.84	3.76	4.45	0.98
	Standard Deviation	0.84	1.08	1.43	0.87
Cluster 2	N	36	36	36	36
	Mean	2.01	1.97	1.82	1.61
	Standard Deviation	0.58	0.79	0.87	1.70

Total	N	64	64	64	64
	Mean	2.77	2.74	2.98	1.37
	Standard Deviation	1.20	1.31	1.79	1.49
t-test		10.33***	7.67***	9.11***	1.76**
Discriminant Analysis					
Wilks's lambda (individual)		0.514	0.368	0.428	
F (individual)		58.73***	106.65***	82.90***	

* p < 0.1; ** p < 0.05; *** p < 0.01

Figure B.1 Dendrogram based on Ward's method



Two clearly differentiated groups emerges: the first group entails of firms having high SP in all the three sustainability dimensions; the second group of firms having lower overall sustainability performance. Accordingly, the variable *HSustP* takes a value of 1 if the firm belongs to first group, and 0 if it to the second. Model 7 of Table 6 showed the results with this new dependent variable but employing the same methodology "logit". In this case, all the SBMs are still significant considering this new variable and a new social SBM is significant. Specifically, firms that includes in their business models "social actions" related with *STEWAR* seems to be in the leader group of firms.

Secondly, we used different econometric methodologies to control that results are not biased for the selected method. The fact that in Model 6 of Table 6 is a continuous variable hamper to used logit methodology. In this case an OLS is required to test the influence of the SBMs. However, this continuous variable is censored between 0 to 25. So, Tobit method was considered the best one to be adopted. Specifically, due to the fact that we have a cross section sample and a double censored dependent variable, regressions were applied at the firm level using the STATA15 program.

Moreover, due to the fact that most of the dependent variable considered in the study are dummies there is no agreement in the literature about the preferences of logit or probit methodology to test these models. Table 7 reports the analysis of models 1 to 4 through a "probit" methodology. Results of all those analyses confirms the main results presented in the main analyses.

Table 6. *Corporate Sustainability Performance and SBMs (Robustness)*

		Model 6	Model 7
Independent variables		HSustP (Continuous)	HSustP (CLUSTER)
Environmental SBM	1. ENREF	22.62*	0.60***
		(12.08)	(0.24)
	2. RESLO	-20.72**	-0.47**
		(9.95)	(0.20)
	3. NATPRO	22.64***	0.45**
		(10.86)	(0.20)
Social SBM	4. FUNCT	-5.14	-0.01
		(13.95)	(0.25)
	5. STEWAR	8.23	0.25*
		(7.49)	(0.13)
	6. ENCSUF	12.90	0.41***
		(9.42)	(0.16)
Economic SBM	7. REPUR	5.09	-0.11
		(6.75)	(0.11)
	8. VALCRE	9.53	0.21
		(8.50)	(0.15)
SIZE		-0.08	-0.001
		(0.70)	(0.002)
INNOVATION		5.77	-0.04
		(8.16)	(0.14)
GROUP		-5.61	-0.13
		(9.39)	(0.17)
FAMILY		-0.59	-0.21
		(9.01)	(0.17)
ITALY		-11.89	-0.22*
		(7.57)	(0.12)
SPAIN		21.19	0.36
		(13.45)	(0.24)
Observations/Firms		64	64
LR chi2		19.53**	21.30*
F			
R2		0.14	0.25

*$p < .10$; ** $p < .05$; *** $p < .01$. B Coefficients (Std. Err.) are reported.

Table 7. *Corporate Sustainability Performance and SBMs Probit Analysis*

		Model 8	Model 9	Model 10	Model 11
Independent variables		HENVP	HSOP	HECP	HSustP
Environmental SBM	1. ENREF	0.40	0.60**	0.63***	0.61***
		(0.24)	(0.26)	(0.24)	(0.24)
	2. RESLO	-0.38*	-0.47***	-0.53**	-0.48**
		(0.22)	(0.18)	(0.21)	(0.20)
	3. NATPRO	0.71***	0.42**	0.62***	0.46**
		(0.22)	(0.21)	(0.20)	(0.21)
Social SBM	4. FUNCT	-0.11	0.24	-0.11	-0.02
		(0.28)	(0.24)	(0.24)	(0.26)
	5. STEWAR	0.18	0.09	0.13	0.26**
		(0.13)	(0.13)	(0.13)	(0.14)
	6. ENCSUF	0.10	0.36**	0.40***	0.41***
		(0.18)	(0.16)	(0.15)	(0.16)
Economic SBM	7. REPUR	0.19*	0.13	-0.19*	-0.10
		(0.11)	(0.12)	(0.10)	(0.11)
	8. VALCRE	0.13	0.37***	0.18	0.20
		(0.15)	(0.14)	(0.14)	(0.15)
SIZE		-0.00	-0.004	-0.002	-0.001
		(0.001)	(0.01)	(0.002)	(0.002)
INNOVATION		-0.03	-0.02	0.02	-0.003
		(0.14)	(0.14)	(0.15)	(0.14)
GROUP		-0.004	-0.14	-0.05	-0.13
		(0.16)	(0.16)	(0.14)	(0.16)
FAMILY		-0.31	-0.19	-0.22	-0.21
		(0.18)	(0.17)	(0.18)	(0.17)
ITALY		-0.07	-0.14	-0.26**	-0.22*
		(0.14)	(0.13)	(0.12)	(0.13)
SPAIN		0.17	0.14	0.59*	0.33
		(0.23)	(0.23)	(0.34)	(0.22)
Observations/Firms		64	64	64	64
LR chi2		16.87	20.74*	29.55***	21.24*
R2		0.19	0.23	0.33	0.25

*$p < .10$; ** $p < .05$; *** $p < .01$. B Coefficients (Std. Err.) are reported.

[i] Such classifications have been referred to as 'types', 'ideal-types', 'archetypes', 'pattern typologies'. Considering that they are often used as synonyms (see also Lüdeke-Freund et al., 2018), in this paper we adopt the term 'archetype', as in the most widely-used classification of SBMs (Bocken et al., 2014; Ritala et al., 2018)

[ii] For more information regarding the distribution of the universe of these firms across countries, industries and size classes, see https://bcorporation.eu. The questionnaire has been translated into the three languages.

[iii] The analysis reported is based on sample averages; however, a robustness analysis has been performed also using the universe averages (i.e. measuring the averages in respect to the overall universe of B Corp) and results are consistent.

[iv] Economic and social mean performance are in a range of 0-10 and the environmental mean performance is in a range of 0-7. Note that when we asked some firms to choose their main business model (with a maximum of three archetypes), they chose only one or two archetypes. The table collected total firms that chose the archetype.

[v] Higher values indicate that the firm is better integrated in all sustainability categories.

[vi] Robustness analyses have been performed. Cronbach α supported results are robust, as they are 0.89 for economic factors, 0.90 for social factors and 0.93 for environmental factors. Convergent validity is assessed with the reliability scores of the resulting variables, which exceed the critical value of Cronbach's $\alpha=0.7$ (Nunnally, 1978). We assess discriminant validity using the Fornell and Larcker (1981) method.

[vii] Using the cross-validation procedure, we randomly split the 64 usable cases into two halves and applied the k-means clustering method to each half (cf. Homburg et al., 2008). We assigned each case in the second half to the cluster with the nearest cluster centroid from the first half (based on the lowest squared Euclidean distance). Comparing the two cluster assignments for each observation in the second half – applying the k-means clustering method and manually assigning observations based on the nearest cluster centroid.