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Article

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The circularity of the business model and the performance of bioeconomy firms: An interactionist business-environment model

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Abstract: Drawing on the Sustainable Development Goals of the UN 2030 Agenda, the implementation of circular economy business models (CEBMs) is key for reducing the impacts of business production modes on the environment and is especially suited to, and necessary in, the bioeconomy sector. The purpose of this literature review article is to analyse how firms in this sector can achieve a higher level of circularity in their business models, and how this circularity is positive for the triple bottom line. Building on the theories of social capital, new institutionalism and the triple bottom line (TBL), this article proposes a model to better understand how forest bioeconomy firms can develop high-circularity business models that lead them to excel on the TBL. This study combines internal aspects of the business (e.g., social capital, dynamic capabilities, entrepreneurial orientation) with situational variables (social/cultural, regulatory, technological, economic/financial drivers) to explain the level of circularity of business models in bioeconomy firms, as a prior step to enhancing their TBL. The interactionist model proposed is new to the

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literature and improves our understanding of how the level of circularity of a BM can be enhanced. The propositions derived will help to structure and design future research.

Subjects: Environmental Economics; Ecological Economics; Research Methods in Management; Corporate Social Responsibility &Business Ethics; Corporate Social Responsibility; Business Ethics

Keywords: circular economy; circularity level; business/environment factors; social capital; entrepreneurial orientation

1. Introduction

The relentless growth of the world's population (2.6 billion people in 1950, 6 billion in 1999, 7 billion in 2011 and 7.7 billion today) and the increasing overuse of the Earth's natural resources resulting from this intense growth has forced a call for fundamental changes to our consumption and production system and patterns to avoid overexploitation and collapse (United Nations, 2020a, 2020b). Both policymakers and firms have perceived the need to address these issues, the former by establishing a legal framework and policies to adapt to the challenging conditions, the latter by adjusting their production systems to the specificities of the new ecosystem and consumption patterns. Despite the activating role of SC -both internal and external- in leading companies to adopt CEBMs, environmental factors may act as barriers or enhancers for the DCs that both internal and external SC may generate to foster EO and for the EO to ultimately favour the adoption of CEBMs. Indeed, drawing on Powell Powell and DiMaggio's (1991) new institutionalism theory, the environment in its multiple facets (e.g., economic, regulatory, technological and social drivers) can be critical in understanding firm performance, such that the activation of EO and its influential role in the implementation of high-circularity CEBMs may be affected by these environmental factors. In fact, the institutional environment (Delmas & Montes-Sancho, 2011), the existence of individual environmental concerns (Vilchez et al., 2017) and natural resource dependence (Bergmann et al., 2016) have all recently been highlighted as aspects that play a key role in companies' adoption of environmental practices.

The circular economy (CE) is viewed as a promising approach to help reduce these global sustainability pressures. The CE is "an industrial system that is restorative or regenerative by intention and design. It replaces the 'end-of-life' concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models (MacArthur Foundation, 2012:7). Between 2015 and 2019, the number of CE studies grew multi-fold, showcasing the increasing importance of CE as a field of research. Proof of this is the substantial increase in the number of papers, scientific journals, meetings, conferences, organisations, research centres and associations dealing with the topic, which have led to its being considered not only as an academic discipline but also as a business area (Goyal et al., 2021). The majority of this investigation is focused on CE in terms of concept, meaning, metrics and its role in sustainability (Alcalde-Calonge et al., 2022; Goyal et al., 2021). The substantial change in the interest in this subject evidently indicates the existence of a series of new realities and events as motivators of such a movement. For example, its presence in business circles has led to the CE being considered part of a firms" business models, i.e., the circular economy business model (CEBM).

Bioeconomy (BE) is closely associated with the CE. It is based on the use of renewable biological resources and embraces any value chain that uses biomaterials and products of agricultural, aquatic or forestry origin as a basis (McCormick & Kautto, 2013). This concept, together with the CE, is now at the core of the political agenda of many institutions and governments, including the EU, with both being intended to transform the current linear, fossil-based economy into a more

efficient, waste-recycling one. This growing interest in CE and BE in Europe has not, however, been channelled by a sector with great potential to develop BE and CE, namely, the forest sector. There is still a lack of understanding of the factors that can most help firms in this sector to develop CEBMs that ultimately help them achieve the triple bottom line (TBL). This is important because many companies fail to achieve adequate levels of circularity in their business models (Oghazi & Mostaghel, 2018) since the level of resources that adopting CEBMs involves may deter many small and medium sized enterprises (SMEs) from implementing these business models. However, certain elements can help SMEs in this endeavour, with these being the main focus of this research.

It is known, for example, that a proactive attitude and the development of entrepreneurial initiatives that will result in process innovations in both new and established organisations can help in this regard (Linton, 2019). In fact, entrepreneurial orientation (EO), defined by Lumpkin and Dess (1996: 136) as "the methods, practices, and decision-making styles managers use to act entrepreneurially", involves processes that could be positive for the adoption of high-level CEBMs, such as experimenting with innovative and promising new technologies, a willingness to seize new product-market opportunities and a predisposition to pursue risky ventures. The generation of EO, however, depends greatly on a firm's own dynamic capabilities (DCs), which are key in determining the strategic orientation of firms (Teece et al., 1997). These DCs are important for the development of process innovations and can typically emerge from the firm's social capital (SC), defined as a collective asset consisting of shared norms, values, beliefs, trust, networks, social relationships and institutions that enable cooperation and collective action for mutual benefit and to contribute to economic and social development (Bhandari & Yasunobu, 2009). This collective asset may be internal (relationships among the members in the firm; Huber, 2009) or external (a company's relationships with other agents, either companies, NGOs or the Public Administration; Leana & Pil, 2006; Nahapiet & Ghoshal, 1998). Thus, while previous studies have examined the possible role of factors such as financial resources or technology in the adoption of CEBMs (Mboli et al., 2020), research on the impact of intangible but strategical resources such as SC is limited. It could, however, help better understand potential ways for SMEs to adopt high-circularity CEBMs that, in turn, help them to excel in terms of TBL.

Finally, although the adoption of a CEBM is held to reduce costs and thus improve firm performance, studies have reported inconsistent effects between the adoption of CEBMs and firm performance (Planing, 2015). Arguably, many of these studies failed to accurately evaluate the level of circularity of the firms' BM, measuring instead the adoption of a CEBM, which is unlikely to capture the degree to which circularity is core to the business operation and strategic line. The level of circularity may be an element that allows us to understand whether making efforts to increase the level of circularity of the BM could help firms improve their overall performance, as measured by three dimensions, namely, economic, social, and environmental (TBL) (Elkington, 2013). Thus, an analysis of the expected positive impact of the adoption of high-circularity CEBMs on a firm's TBL could shed new light on existing research and help clarify the benefits of the efforts made by these firms to increase the circularity of their BMs. All the gaps detected in the literature are intended to be addressed within this article to enrich this theoretical field, clarify its main concepts, identify the best way to act and to pave the way for the future preparation and development of an empirical article in which the propositions formulated are expected to be validated and properly tested in forest-based bioeconomy firms.

In all, the main objective of this review article is to analyse the literature in order to propose that the interrelationship between a firm's SC, the DCs that SC generates and the EO ultimately developed as a result, will provide the ingredients for firms to adopt high-circularity CEBMs. Additionally, as a second important objective, the paper aims to provide an accurate compilation of environmental factors influencing the adoption of a CEBM, especially those considered most influential in the literature. This compilation is intended to improve the understanding of the mechanisms that can favour or hinder the circularity of the BM, which will help senior management make the best decisions and design the most appropriate strategy in this regard. Finally, as

a third objective, this paper seeks to strengthen the belief that CEBMs and all the efforts involved in their adoption are worthwhile because they generate value and wealth for the company, economically, socially and environmentally. Drawing on the TBL approach (Elkington, 2013), this paper will provide solid arguments that corroborate the notion that, the higher the level of circularity of the BM, the higher is the positive impact on the TBL of forest-related BE firms, by helping them simultaneously fulfil social, environmental and economic targets.

Consequently, and in meeting all these objectives, the current paper seeks to make the following contributions to the existing literature. First, it aspires to help better understand the key role of SC in leading forest-related BE firms to adopt high-circularity BMs. Second, it aims to be useful to better comprehend the processes and mechanisms activated by SC that lead these firms to achieve this target, as well as the different environmental factors that can enhance or obstruct the expected positive impact of SC and the mechanisms it activates (DCs, EO) on the adoption of high-circularity BMs. Lastly, by justifying that the adoption of higher circularity BMs is positive for overall performance (TBL), this paper intends to help further demonstrate the positive impact CE may have on achieving not only economic, but also social and environmental performance.

2. Theoretical background and hypothesis development

2.1. Social capital, dynamic capabilities and entrepreneurial orientation: towards a circular economy business model

The concept of SC is not new, having entered academic and policy discussions in the 1990s (Schuurman, 2003). SC can be divided into external SC (i.e., as a network connecting an individual, firm or community with other external agents) and internal SC (i.e., as the nature of the interpersonal relationships among the members of a company) (Pastoriza & Ariño, 2013). Internal SC is said to allow a company to design an internal network of relationships to unite the activities carried out by the different groups and individuals that comprise it. For a company, as a collective social agent, this capital is a private asset of which it is the owner and, therefore, the benefits it provides will have a direct impact on the firm (Leana & Pil, 2006). The use of this type of SC will entail a direct benefit in the form of better complementarity between organisational resources, exploitation of synergies between its components (groups and individuals), greater effectiveness and efficiency in the coordination and control of internal collective actions (stakeholders), and a sharp reduction in the company's internal transaction costs and the costs derived from establishing internal agency relationships with these stakeholders. Such benefits could be reflected in greater performance in terms of the capacity to initiate and create new activities and operations that help the company to stay ahead of market needs (Bocigas et al., 2010).

Nahapiet and Ghoshal (1998) and Leana and Pil (2006) identified three dimensions of internal SC: a) structural, which is a reflection of the extent to which employees in an organisation are interconnected and have access to each other's intellectual capital (Nahapiet & Ghoshal, 1998); b) relational, which includes aspects of the quality of the personal relationships that employees have developed throughout their history of interactions (Granovetter, 1992; Nahapiet & Ghoshal, 1998); and c) cognitive, which refers to the sharing of a common perspective and understanding of the company's goals and of how to interact with one another (Pastoriza & Ariño, 2013).

The importance of SC lies in its power to enhance the level of a firm's EO. Originally conceptualised by Miller (1983), EO is a strategic construct that reflects the extent to which firms encompass the dimensions of innovativeness, proactiveness and risk-taking in their behaviour and management philosophies; in other words, it reflects the extent to which these firms are entrepreneurial in their strategic posture (Covin & Slevin, 1989). EO is highly related to a firm's success (Semrau et al., 2016) and is also linked to firm performance (Lumpkin & Dess, 1996), and, according to Conner (1991), EO is the core resource for sustainably enhancing a firm's competitiveness.

As far back as the late 1980s, Coleman (1988) highlighted the potential benefits for an organisation of the relationships between diverse individuals. For Coleman (1988), this network of relationships is helpful to provide easier access to integrated resources resulting from belonging to a dense network, as well as the stronger sense of confidence in the creation and fulfilment of obligations due to the greater cohesion within this network. In this regard, several authors have emphasised how a social structure's closure creates essential benefits (Covin et al., 2020), how social ties can influence EO dimensions (Luu & Ngo, 2019) and how SC is key to EO, as well as how trust emerging from the social cohesion between actors in a network can foster a firm's EO (Rodrigo-Alarcón et al., 2018).

In terms of the relationship between internal SC and the innovativeness dimension of EO, we can infer the positive relationship between the two constructs. Subramaniam and Youndt (2005) demonstrated that internal SC is critical in developing new products and increasing the degree of disruptive innovation, as it provides the necessary resources to cope with the great complexity associated with the activities that lead to greater innovativeness. Kaasa (2009) also argued that internal SC could be considered a factor in innovation as it allows more time and finances to be invested in other purposes, such as innovative actions, thanks to network confidence. Finally, Zheng et al. (2010) stated that the creation of new knowledge and development and exploitation of innovative strategies with uncertain or risky outcomes could be enhanced by the higher levels of communication and cooperation that internal SC provides. In terms of the relationship between internal SC and the proactiveness dimension, Herrero (2018) explained that internal SC is a source of information about valuable capabilities which could help to acquire information about raw materials, capital, pipelines and internal production management (Davidsson & Honig, 2003), enabling improved resource provision, emotional support and psychological enhancement (Xie et al., 2021). Such valuable information and support are likely to enhance a firm's proactiveness (Liao et al., 2003). Finally, in terms of the relationship between internal SC and the risk-taking dimension of EO, internal SC typically involves initiatives and risk-taking actions. It modifies the risk tolerance of socially connected people because it provides a way of clustering individual risks (Ferris et al., 2017) and reinforces an individual's perception of power, which leads to riskier preferences as a result (Keltner et al., 2003). Thus (see Figure 1)

Proposition 1a: *Internal SC is positively related to EO.*

The company's connections with external agents (e.g., suppliers, competitors, customers, NGOs, public administration) and the potential resources obtained from these relationships is known as external SC, which is also composed of structural, relational and cognitive dimensions (Nahapiet & Ghoshal, 1998). Its main function is to bridge or link any organisation to the external environment and to all its constituent agents (Kim, 2005). As also occurs in the case of internal SC, a firm's external SC dimensions are highly likely to help it increase its EO levels (Lumpkin & Dess, 1996, 2001).

As in the case of internal SC, external SC is likely to positively influence EO. For example, the dense networks of which SC is made up can foster rapid information flows and opportunity identification (Puhakka, 2006), which is positive for innovativeness (Corrêa et al., 2021). Negative outcomes, such as information redundancy, inertia or internal blocking, may be caused by the high

Figure 1. Relationship between social capital and entrepreneurial orientation.

density of the network relationships of a firm (Granovetter, 1992; Inkpen & Tsang, 2005). However, as discussed earlier, structural SC should help the firm improve its ability to identify innovative opportunities, which is key for EO to be developed (Evans et al., 2002). Regarding relational SC, Rodrigo-Alarcón et al. (2018) indicated that this type of capital increases trust between agents, enabling the exchange of confidential information, while reducing the need to monitor these actors and the possibility of their opportunistic behaviour, and increasing the opportunities for developing cooperative actions among all these agents. With cooperation, the limitation of access to resources is reduced (Welbourne & Pardo-del-Val, 2009). In addition, cooperation can help increase creativity and innovativeness (Alexiev et al., 2016), and, more importantly, risk is likely shared (Kusa et al., 2019), meaning risk tolerance can therefore be increased. As such, it is highly likely that relational SC may be behind higher levels of EO. Finally, a higher cognitive SC, through shared rules, aims and culture among players, encourages a similar view of how to operate, which can prevent any possible misunderstanding in interactions with the agents with which this type of capital is created (Tsai & Ghoshal, 1998). This enhances the firm's EO by supporting practices that focus on innovation, the ability to anticipate competitors in the introduction of new ideas, and a positioning that optimises the likelihood of exploiting and developing new ideas (Rodrigo-Alarcón et al., 2018).

Structural, relational and cognitive SC all have a positive impact on EO (see Figure 1). External SC connects the firm to external agents that act as channels for obtaining access to new, valuable, strategic information and resources, which is core to increasing a firm's innovativeness (Adler & Kwon, 2002). Furthermore, the knowledge and resources obtained thanks to this set of resources help a firm better predict the market, thus enhancing their proactiveness (Liao et al., 2003). Finally, external SC is likely to reduce risk-taking aversion and costs of cooperating, allowing firms to make the most of the new information and resources received to create new opportunities (Iturrioz et al., 2015). Thus, we can propose the following:

Proposition 1b: *External SC is positively related to EO.*

Although, as described above, internal and external SC can positively influence EO, the way these types of capital can achieve a positive outcome may be through a firm developing certain DCs. Described as the "processes of the firm to integrate, reconfigure, gain and release resources, to adapt and even to create market changes" (Eisenhardt & Martin, 2000:1117), DCs represent the competences that help adapt, integrate and reconfigure internal and external resources and skills to the changing environment and may be a product of a firm's SC (Teece et al., 1997). These DCs are mostly represented in the form of adaptive, absorptive and innovative capabilities (Wang & Ahmed, 2007), which, despite being highly correlated, are conceptually different. The focus of adaptive capability is to align the internal factors of the organisation with the external factors of the environment; absorptive capability underlines the significance of incorporating external knowledge, combined with internal knowledge, and absorbing it for internal purposes; and innovative capability effectively relates a firm's intrinsic innovativeness to market-based advantage with regard to new products and/or markets (Onn & Razak, 2013). The possession of each of these capabilities should be a positive for EO (Festing & Eidems, 2011), with it being suggested that DCs mediate between a firm's SC (either its internal or external dimension) and EO, as explained below.

Adaptive capability is defined as a firm's ability to identify market expectations and change its approach accordingly (Lockett et al., 2011). Internal SC plays a significant role in forming adaptive capability within the firm, since intra-organisational ties allow a firm to rapidly respond to changes in the external environment by adapting the internal resources and processes of the organisation (Helfat & Martin, 2015). External SC also plays a key role, since relationships with external agents provide access to complementary resources that could be a determining factor in adapting the

firm's resource base (Danneels, 2011). Given then that adaptive capability enables firms to achieve their objective of expanding their entrepreneurial activities to capitalise on new exploitable market opportunities (Slevin & Covin, 1997), we can suggest that adaptive capability may mediate between internal/external SC and EO.

Cohen and Levinthal (1990) referred to absorptive capability as "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends". Various previous studies have suggested a positive influence of internal SC on the generation of absorptive capability. This is because internal SC may enable faster knowledge acquisition in firms with shorter network paths (Hansen, 2002) and may help achieve a better understanding of acquired knowledge -the assimilation dimension of absorptive capacity (Kubo et al., 2001). External SC helps unlock access to external knowledge as well as helping transfer this potentially complex knowledge to the development of new products (Hughes et al., 2014). Given, then, that absorptive capacity is helpful for knowledge exploitation and for identifying and pursing entrepreneurial opportunities (Shane & Venkataraman, 2000), we can posit that absorptive capacity may mediate between internal/external SC and EO.

Finally, innovative capability reflects a company's ability to mobilise and combine the knowledge of its employees to create new products and/or expand markets by linking strategic innovative focus to innovative behaviours and processes (Wang & Ahmed, 2007). Internal and external SC are helpful in forming innovative capability, as firms with high levels of internal or external SC are better positioned to succeed in innovation and creativity (Johnson & Filippini, 2009), and are therefore more likely to develop this capability. Interestingly, the development of this capability enhances a firm's proactiveness, innovativeness and risk-taking, which leads these firms to attain higher levels of overall EO. Indeed, this capability permits the accumulation of the additional knowledge needed to exploit any available information (Liao et al., 2003). It can also help the firm to more efficiently exploit opportunities to anticipate and outpace rivals' competitive actions. Furthermore, it improves the breadth and depth of knowledge for decision-making, which enables the autonomous individual creation of new processes, products or services (K. M. Green et al., 2008). Finally, this capability may help firms minimise the potential adverse effects of business initiatives with unexpected outcomes, thus facilitating risky decision-making, the risk-taking dimension of EO. Thus, innovative capability is likely to mediate between internal/external SC and EO.

In sum, internal and external SC should be important antecedents of EO, enhancing a firm's set of dynamic capabilities, namely, their adaptive, absorptive, and innovative capabilities. Thus: Figure 2

Proposition 2: *Dynamic Capabilities (DCs) mediate the positive influence of internal social capital (SC) (a) and external social capital (SC) (b) on entrepreneurial orientation.*

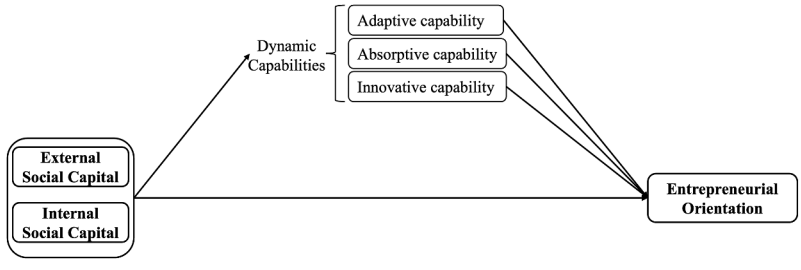

Figure 2. Relationship between social capital and entrepreneurial orientation, and the mediating role of dynamic capabilities.

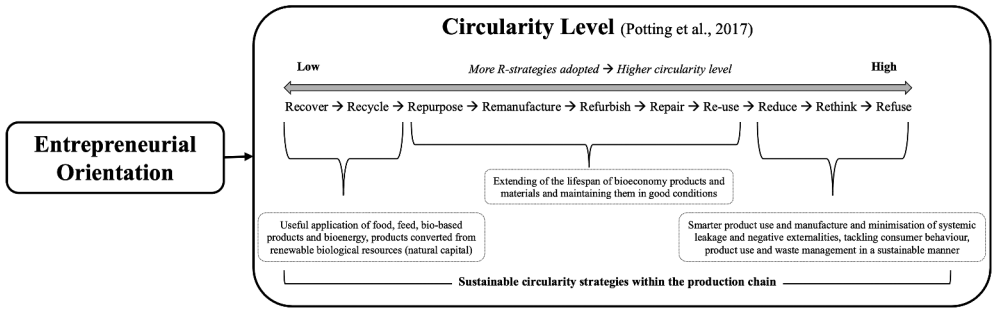

Figure 3. Relationships between a firm's entrepreneurial orientation and the increase in its circularity level.

2.2. Entrepreneurial orientation and circularity level: towards a circular economy business model (CEBM)

When firms adopt an EO—an ability to recognise and exploit entrepreneurial opportunities (Lumpkin & Dess, 1996), they are likely to see an increase in their level of circularity (Figure 3). EO, which encompasses innovativeness, proactiveness and risk-taking, may enhance sustainability-based decision-making (Lumpkin & Dess, 1996, 2001), and, consequently, a high-circularity BM is highly likely to be developed.

Indeed, understood as a firm's adoption of the highest number of circularity strategies possible (i.e., refuse, rethink, reduce, reuse, repair, refurbish, remanufacture, repurpose, recycle, recover, (Potting et al., 2017) (Table 1), the level of circularity of a firm is likely to be activated, along with a strong EO (Figure 3), as described below.

For example, Singh and Ordoñez (2016) stated that the development of a CEBM requires the firm to focus on innovativeness, a core element of EO. According to Kemp and Pearson's (2007) concept of eco-innovativeness (EI), referring to a collection of novel methods, technical or otherwise, that improve a firm's environmental performance, we believe that EI seems to be a useful indicator (Smol et al., 2017) and a crucial enabler of CE transition (de Jesus et al., 2018). Indeed, EI ensures that organisations implement acceptable circular practices for their current manufacturing processes, although it may contribute nothing novel to the industry. It is simply resource-efficient

Table 1. Potting Et Al. (2017) 10Rs Framework

Refuse (R0): Make the product unnecessary by abandoning its function or by providing the identical function with a radically different product;
Rethink (R1): Make a more intensive use of products (e.g., by sharing products or launching multifunctional products on the market);
Reduce (R2): Increase efficiency in manufacture or use by reducing consumption of natural resources or materials;
Reuse (R3): Reuse of products by another consumer which are still in good condition and continue to fulfil the purpose for which they were intended (second hand, product sharing);
Repair (R4): Maintenance and repair of a defective productive so that it can be used for its original purpose;
Refurbish (R5): Renovate a product and upgrade it;
Remanufacture (R6): Create new products from (parts of) old products with the same function;
Repurpose (R7): Reuse of products by another consumer which are still in good condition for a different purpose;
Recycle (R8): Process and reuse materials to obtain the same or lower quality;
Recover (R9): Incinerate waste streams with energy recovery (Franco et al., 2021).

(Kemp & Pearson, 2007) and focuses on reducing environmental burdens in an attempt to promote sustainable development (Rennings, 2000). Cost reduction is one of the main motivations for engaging in circularity, that is, in practices that increase process efficiency in line with sustainable development (Prieto-Sandoval et al., 2018). Thus, EI is key to increasing a firm's circularity level, since it ensures that circular methods are more innovative and suited to their current manufacturing processes, thus resulting in significant cost savings.

Another important source of a CEBM is proactiveness. Defined as an initiative for anticipating and pursuing new opportunities in emerging markets (Lumpkin & Dess, 1996), it is said to promote involvement at all levels within the organization (Luna-Arocas et al., 2020), with the aim of generating innovation outputs (Shaher & Ali, 2020). Thus, proactive firms tend to have a forward-looking view, and are said to be able to foresee and be prepared for the future (Dada & Fogg, 2016). Since the CE is a concept with a new approach and a promising long-term horizon for any firm located in any industry, it can be stated that proactiveness is likely a good driver for the adoption of higher-level CEBMs.

Finally, risk-taking represents a firm's willingness to seize opportunities in the environment, even if there is no certainty about its success or the consequences of its actions (Lumpkin & Dess, 1996). The adoption of new technologies that allow the firm to adopt R-strategies is not a risk-free decision. Indeed, adopting some of the R-strategies involved in a CEBM entails a firm committing to innovation and diversification of design, as well as a provision for more rigorous regulation or any future changes in customer patterns (Zara, 2020).

Overall, firms are likely to increase their level of circularity if they are characterised by having high levels of EO. The three aspects that are part of a firm's EO—innovativeness, proactiveness and risk-taking—fit the requirements for adopting circularity in the BM, as discussed. Furthermore, it has been suggested that EO helps clarify a firm's sustainability decision-making process, leading to an increased level of circularity in the form of a BM that adopts a higher number of R-strategies. Thus,

Proposition 3: EO positively influences the level of circularity of a firm's business model.

2.3. The role of a dynamic environment. The theory of new institutionalism

Powell and DiMaggio (1991) developed a theory of the "new institutionalism" with an organisational focus. This theory, which has its roots in the "old institutionalism" of Selznick (1949), sees institutionalisation as a state-dependent process that reduces the instrumental rationality of organisations by constraining the choices they can make. This theory emphasises the relationships between organisations and their environment and stresses the role of culture in determining organisational reality.

Various studies support the effect of coercive (following rules and norms set by external influences), normative (behaving in a professionally appropriate manner), and mimetic (matching model businesses) isomorphic and institutional constraints (Saeed et al., 2018) on the execution of environmental care actions by organizations, using the institutional theoretical framework. Thus, it is not unlikely that the presence of regulatory (coercive), market (normative) and competitive (mimetic) pressures positively force firms to look beyond traditional manufacturing techniques and organizational constraints by introducing environmental considerations into their practices (Juárez-Luis et al., 2018). In this way, the environment may play an important role in a firm's adoption of the highest possible number of R-strategies in its BM.

Based on the existing literature, four main categories of the environment affecting the development and implementation of high-circularity BMs can be identified: economic/financial, social/

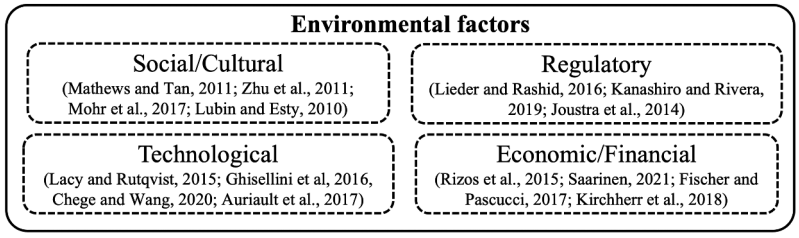

Figure 4. Environmental factors that influence a firm.

cultural, regulatory and technological (Tura et al., 2019) (see Figure 4). These categories encompass the dimensions that are external to the company's decisions and control. The success of the company in its objectives may depend on many of these environmental factors. It is therefore unsurprising that the characteristics of the environment constitute a powerful influence that may modify, model and alter their sustainable/unsustainable attitudes and/or behaviour such that these factors may play an important role in leading a firm to adopt a high-circularity BM. This may also occur in firms with a strong EO. Indeed, EO is the ability to detect and react to opportunities (Ahuja & Lampert, 2001) by developing a combination of actions, such as exploring and monitoring micro and macro environments, in order to discover new opportunities and eventually capitalise on them. As such, it is possible that the environment and each of its dimensions can also reshape or influence the possible direct impact of EO on the level of circularity of a firm's BM.

2.3.1. The moderating and direct impact of environmental factors on the level of circularity of a firm's BM

2.3.1.1. The role of the social/cultural dimension (SCD) of the environment. Several researchers have explored the role of SCD when adopting CE practices within the business, since sustainability has become a key concept for guiding societal change in a direction suitable for all stakeholders (Zhu et al., 2011) and for enhancing a company's Corporate Social Responsibility (CSR). Indeed, businesses are increasingly recognising trends that compel them to modify their behaviour, such as: a) the increase in consumers willing to change their consumption habits to support more sustainable development (Caruana & Crane, 2008), b) a growing demand from other businesses and society for sustainable goods and services, as well as for production patterns that minimise or eliminate any detrimental effects on society (Mohr et al., 2001), and c) the strong societal trend towards the fight against the climate emergency (Bansal & Roth, 2000). Indeed, researchers, such as Lubin and Esty (2010), have reported that embracing sustainability has become a requirement for company legitimation and long-term competitiveness. Thus, there seems to be a positive relationship between the socio-cultural dimension and an increase in a firm's level of circularity (Salvioni & Almici, 2020). Furthermore, it is likely that the social/cultural dimension exerts a moderating influence on the relationship between EO and the firm's circularity level, since a firm's innovativeness inherent to EO leads it to act in line with the demands of society (more sustainable consumer habits, increasing demand for sustainable goods and services) (Criado-Gomis et al., 2017), and to increase risk-taking to develop new and more efficient products (Wong, 2012) and enter new markets (Dess & Lumpkin, 2005). Thus, the following two propositions can be formulated:

Proposition 4a: The socio-cultural dimension of the environment will positively and directly influence a firm's level of circularity.

Proposition 4b: The socio-cultural dimension of the environment will strengthen the positive impact of entrepreneurial orientation on a firm's level of circularity.

2.3.1.2. The role of the regulatory dimension of the environment. Lieder and Rashid (2016) suggest that an appropriate regulatory framework is needed to achieve widespread implementation of CE at all levels. Environmental regulations are expected to continue to grow, especially in Europe, where plans and legislation have been enacted with the aim of increasing resource efficiency, tightening production legislation or stimulating the adoption of CEBMs (Joustra et al., 2014). Thus, policies such as the EU Waste Framework Directive, the Roadmap to a resource efficient Europe and the Spanish Circular Economy Strategy 2030 may play an important role in driving the private sector towards more circular BMs. As a result, it is reasonable to think that public regulation in environmental affairs has a positive impact on green product innovation, pro-environmental supply-side initiatives (cleaner production or sustainable BMs), and the adoption of environmental practices by managers, all favouring firms' implementing the CE (Prieto-Sandoval et al., 2018).

Regulation and political pressures could also play a moderating role in the positive relationship between EO and the circularity level of the BM of the firm. Studies such as that by Kanashiro and Rivera (2019) suggest that the greater the environmental regulatory pressures, the more likely this relationship is to be positive. Drawing on institutional theory (Powell & DiMaggio, 1991), these authors point to the importance of external contextual pressures in moderating the influence of top managers, leading them to be less reluctant to invest in the environmental performance of their firms. These arguments lead to the following two propositions:

Proposition 4c: The regulatory dimension of the environment will positively and directly influence a firm's level of circularity.

Proposition 4d: The regulatory dimension of the environment will strengthen the positive impact of entrepreneurial orientation on a firm's level of circularity.

2.3.1.3. The role of the technological dimension of the environment. Lacy and Rutqvist (2016) stated that companies are encouraged to adopt CE as a result of technological advances, while Auriault et al. (2017) confirmed the important role of new technologies in offering the key solution to decouple economic growth and ecological degradation. Indeed, the increase in the level of maturity of several unlocking technologies/ICTs has supported CE initiatives and facilitates a wide range of opportunities that improve the life cycle of products for greater efficiency and more responsible consumption in the short term (Tura et al., 2019). Other authors (Chege & Wang, 2020) even propose that technological innovation has a direct and positive effect on the implementation of sustainable practices, such as CE. Finally, the MacArthur Foundation (2012) affirms that platforms for exchanging information facilitate collaboration among a variety of stakeholders and improve information transparency, assisting in the adoption of high-circularity BMs.

While the previous arguments suggest the existence of a direct, positive effect of this dimension on the level of circularity of a firm's BM, it may also strengthen the direct positive impact of EO on that circular-based outcome. Innovativeness is core to EO (Lumpkin & Dess, 2001) and strong correlations exist between technology and innovation (Oakey & Cooper, 1991) and between CE and innovativeness inherent to technology (Khan et al., 2021). Thus, we propose the following two propositions:

Proposition 4e: The technological dimension of the environment will positively and directly influence a firm's level of circularity.

Proposition 4f: The technological dimension of the environment will strengthen the positive impact of entrepreneurial orientation on a firm's level of circularity.

2.3.1.4. The role of the economic/financial dimension. Rizos et al. (2015) highlighted the key role of access to financial sources for companies seeking to transition to a CEBM. Saarinen (2021) identified several financial drivers and divided them into 3 groups: (1) criteria for financing, (2) sources of financing and (3) subjects of financing. In the first group, which refers to the characteristics that investors and other financiers examine to make a decision on financing, the financing of a process of transformation towards a CEBM is a highly appreciated factor. This is because CE-based enterprises are known to experience a huge increase in profitability and financial viability (Li & Yu, 2011). In the second group, traditional banks or institutional investors, among others, are presented as sources of financing. If these banks or institutional investors see that the public sector is increasingly funding CE or modifying tax sectors to sustainable production and processes, it is easier for firms to obtain financing for a circular supply chain (Scarpellini et al., 2018). The existence of financial incentives in assisting CE transition has been acknowledged in previous research (Kirchherr et al., 2018). Finally, the third group describes a variety of issues that can be funded, whereby CE supply chains or collaborative CE projects awaken a favourable funding decision by investors (Fischer & Pascucci, 2017). In all, economic aspects of the environment can directly affect the level of circularity of a firm's BM. These aspects can also act as factors that bolster the positive impact of EO on the level of circularity of a firm's BM, by, for example, encouraging firms to apply environmental standards (Piwowar-Sulej et al., 2021). Thus,

Proposition 4g: The economic/financial dimension of the environment will positive and directly influence the firm's level of circularity.

Proposition 4h: The economic/financial dimension of the environment will strengthen the positive impact of entrepreneurial orientation on a firm's level of circularity.

2.4. High-circularity CEBMs and firm performance. The Triple Bottom Line (TBL)

According to Chiappetta Jabbour et al. (2020), CE tends to improve sustainable performance. This means the promotion of economic, social and environmental performance (Parida et al., 2019), in line with Elkington's (2013) TBL theory.

2.4.0.5. Economic performance. Firms that adopt CE principles achieve economic benefits, which include, among other things, lower costs associated with energy and raw material consumption, waste management practices, pollution control and payment of environmental taxes (Korhonen et al., 2018). This is because of the following: 1) proactive environmental management practices, such as those related to the adoption of R-strategies in the firm's BM, may increase manufacturing performance (Klassen & Whybark, 1999); 2) CE adoption aims to minimise the resources involved in operational processes, and companies with higher resource efficiency are likely to have lower input costs, which means higher financial performance (Ambec & Lanoie, 2008); 3) the shift towards environmentally friendly government regulation can encourage CE adopters to gain economic advantage (King & Lenox, 2001); 4) the reduction of a firm's dependence on resources by adopting CE could lead to a reduction in pressure from stricter environmental regulations, price volatility and risk in the supply of resources; and 5) customers may attribute a higher value to green label products/services, and may be more willing to pay a higher price for them. Overall, a positive relationship between the level of circularity of a firm's BM and its financial performance is expected.

2.4.0.6. Social performance. When companies adopt CE principles, they also generate social gains, such as the development of jobs within the operations involved in closing the loop and stronger cohesion and equal access to goods and services (Korhonen et al., 2018). According to the literature review by Padilla-Rivera et al. (2020), the most cited socio-economic aspects of CE are those related to employment, health and safety, and participation, while others, such as poverty eradication, food security and gender equity are becoming increasingly visible. Indeed, Leigh and Li

(2015) stated that CE provides companies with systematic thinking that enables their supply chain to develop more sustainably. This makes it easier for firms to achieve social goals, by orienting their business models towards local job creation or by demonstrating a commitment to customers and society as a community-oriented initiative. As a result, the level of circularity of a firm's BM is expected to increase its social performance.

2.4.0.7. Environmental performance. The positive relationship between the adoption of CE practices and environmental performance is the clearest of the three dimensions analysed. Chiappetta Jabbour et al. (2020) stated that circular economy principles are closely related to a company's environmental management and performance and Tura et al. (2019) found that more circular systems are able to help prevent negative impacts on the environment. Indeed, by adopting CE principles, firms obtain environmental benefits such as reductions in the consumption of virgin materials, waste generation and emissions (renewable waste reused or restored) (Paulraj, 2011). Thus,

Proposition 5: Increasing the level of circularity of a firm positively influences its economic, environmental and social performance.

After formulating all the propositions of this research, a comparative summary of the differences found in the literature with regard to these propositions was drawn up (see Table 2).

In Table 2, the propositions formulated in this article are compared to the existing research literature. As for the propositions studying the relationship between internal/external SC and EO and the mediation of DCs between the positive influence of internal/external SC on EO, no differences were found. Furthermore, there is a large body of literature supporting the positive impact of these variables on the development of a firm's EO (De Carolis et al., 2009; De Clercq et al., 2013; Monteiro et al., 2017). When discussing the relationship between EO and an increase in the firm's level of circularity, although there is evidence of positive influences between EO and sustainability, very few articles measure the level of circularity adopted by a firm (Bassens et al., 2020), a gap that future research is intended to address. The most significant discrepancies were found in the propositions that positively relate the environment dimensions and the firm's level of circularity (García-Quevedo et al., 2020; Jena & Sarmah, 2015; Jones et al., 2013; Urbinati et al., 2021). However, the trends analysed in every proposition point to a greater positive than negative influence of these dimensions of the increase in the level of circularity. Finally, regarding the proposition that studies the positive influence between the increase in the firm's circularity level and its economic, social and environmental performance, only in the economic part were differences found, which claim that CE could negatively impact a firm's financial performance (Zhu et al., 2011; Pullman et al., 2009). Nevertheless, these negative ideas have been systematically refuted by consistent studies, such as those of K. W. Green et al. (2012), Reverte et al. (2016), and Martínez-Conesa et al. (2017).

Our literature review allows us to propose the following model. It will attempt to improve our understanding of how businesses can achieve a higher level of circularity in their BMs, prompting them to attain high performance, in the form of three key dimensions: the economic, the social and the environmental (see Figure 5).

The first part of the model analyses the process that begins with the generation of DCs through the direct impact exerted by the internal and external SC of the firm. Additionally, this first part of the model defines how DCs direct a firm's EO towards increasing its level of circularity, measured by Potting et al.'s (2017) 10Rs framework. In a second phase of the model, we also examine the important effect of the environment in each of its dimensions (social/cultural, regulatory, technological and economical/financial) on the level of circularity of the firm's BM. We argue that these environmental factors could play a moderating role here by strengthening the direct impact of EO

Table 2. A summary reflecting and comparing the propositions formulated and the differences found in the literature

PROPOSITIONS	DIFFERENCES FOUND IN THE LITERATURE
Proposition 1a: Internal SC is positively related to EO.	Regarding internal SC, we only found articles that highlight its positive relationship with EO, such as those by Covin and Slevin (1989), Hornsby et al. (2009) and De Clercq et al. (2013). Indeed, De Clercq et al. (2013) analyse the roles of internal knowledge sharing and formalization. They validate the premise of firms with higher levels of internal knowledge-sharing exhibiting higher levels of EO. They extend research that theorises that the firm's resource base can be an important driver of firm-level entrepreneurship (Kuratko et al., 2005; Tsai & Ghoshal, 1998).
Proposition 1b: External SC is positively related to EO.	In the literature, we found no evidence of a negative relationship between external SC and EO, but various works find a positive relationship (Zaato et al., 2022; Davidsson & Honig, 2003; De Carolis et al., 2009). There is only one exception regarding external structural SC, in which researchers, such as Granovetter (1992) and Inkpen and Tsang (2005), say that 'negative outcomes, such as information redundancy, inertia or internal blocking, may be caused by the high density of the network relationships of a firm'. However, researchers like Rodrigo-Alarcón et al. (2018) detected that these negative effects can be countered if firms build and DCs.
Proposition 2: Dynamic capabilities (DCs) mediate the positive influence of internal social capital (SC) (a) and external social capital (SC) (b) on entrepreneurial orientation.	In the literature, no evidence was found of a negative influence on the mediation of DCs between SC and EO. A substantial number of articles highlight the mediation of DCs (adaptive, absorptive and innovative) in enhancing the positive influence of internal and external SC on EO. Adaptive capability enables firms to achieve their objective of expanding their entrepreneurial activities to capitalise on new exploitable market opportunities (Slevin & Covin, 1997); absorptive capability is helpful for knowledge exploitation and for identifying and pursuing entrepreneurial opportunities (Shane & Venkataraman, 2000); and innovative capability helps the firm to more efficiently exploit opportunities to anticipate and outpace rivals' competitive actions while also improving the breadth and depth of knowledge for decision-making, which enables the autonomous individual creation of new processes, products or services (K. M. Green et al., 2008). Rodrigo-Alarcón et al. (2018) and Monteiro et al. (2017) support these statements. Indeed, research is being taken further, with García-Villaverde et al. (2018) and Rodrigo-Alarcón et al. (2020) also investigating the positive influence of one specific DC (the absorptive capacity) in the relationship between the cognitive SC and EO.

(*Continued*)

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Table 2. (*Continued*)

PROPOSITIONS	DIFFERENCES FOUND IN THE LITERATURE
Proposition 3: EO positively influences the level of circularity of a firm's business model.	DiVito and Bohnsack (2017) illuminate the relationship between EO and sustainability and explain how the reflexivity, i.e. the ability of the entrepreneur to assess the constraints of the environment and envision or construct alternative opportunities or 'new social realities' of EO helps to overcome the competing priorities in economic, social and ecological sustainability. Sung and Park (2018) analyse the positive moderating effect of EO on the relationship between sustainability orientation and entrepreneurship intention. Geissdoerfer et al. (2017) already determined that the similarities and differences between 'sustainability' and 'CE' have not been made explicit in the literature, although they found that the circular economy is viewed as a condition for sustainability, a beneficial relation, or a trade-off. However, few articles measure the level of circularity adopted by a firm. Reike et al. (2018) described the different Rs extracted from the literature in order to clarify and unify the different concepts of CE and called on policymakers, businesses and researchers to continue to advance its definition, but did not delve into the study of its adoption by companies. The only example similar to the intended future research is the report by Bassens et al. (2020), who analysed the level of circularity of the retailers in the Brussels Capital Region by using a 10 Rs questionnaire. Therefore, this area of research will be advanced in our future article by measuring the level of circularity of companies in the forest-based bioeconomy sector using the 10 Rs method of analysis. Nonetheless, the theory runs along the lines proposed in this article (Lumpkin & Dess, 2001; Singh & Ordoñez, 2016; de Jesus et al., 2018).
Proposition 4a: The socio-cultural dimension of the environment will positively and directly influence a firm's level of circularity.	While various socio-cultural aspects, such as adherence to low environmental impact and good working conditions, are often perceived positively (Zhu et al., 2007; Salvioni & Almici, 2020), some variables, such as company commitment to remanufacturing or insufficient information on, for example, take-back processes for used products, can induce a negative attitude towards the adoption of circular practices and also create a negative image for some customers (Seitz, 2007; Jena & Sarmah, 2015). Kirchherr et al. (2018) also found a lack of consumer interest and awareness and a hesitant organizational culture to be cultural barriers). However, this research points to the positive trend of evolving attitudes towards a circular economy in society and industry, which mutually drive organisational transformation and shape consumer preferences, including public perception of a company's image and reputation (Gong et al., 2021).
Proposition 4b: The socio-cultural dimension of the environment will strengthen the positive impact of entrepreneurial orientation on a firm's level of circularity.	

(*Continued*)

Table 2. (*Continued*)

PROPOSITIONS	DIFFERENCES FOUND IN THE LITERATURE
Proposition 4c: The regulatory dimension of the environment will positively and directly influence a firm's level of circularity.	Companies may encounter several difficulties while adopting circularity, according to Stumpf et al. (2021), including 'a lack of definitions and/or standards' and 'a lack of government enforcement and cooperation'. García-Quevedo et al. (2020) supported this idea and found the complexity of legal procedures and the costs related to meeting regulations to be the most significant barriers to CE. However, ongoing efforts by governments to support these policies to promote end-of-life management and cleaner production are enabling companies to implement CE practices (Agyemang et al., 2019). Additionally, government policies on loans and credits push firms towards diversified investment for CE implementation (Jakhar et al., 2018). Wrålsen et al. (2021) recognised that national and international policies and regulations are important drivers of CEBM and suggested that institutions and governments can incentivise consumers and businesses to implement CEBM. As a result, this dimension is expected to have a greater positive than negative influence on increasing the firm's level of circularity.
Proposition 4d: The regulatory dimension of the environment will strengthen the positive impact of entrepreneurial orientation on a firm's level of circularity.	
Proposition 4e: The technological dimension of the environment will positively and directly influence a firm's level of circularity.	In the literature, several aspects related to technology that hinder the increase in a firm's level of circularity were found, with examples being the lack of knowledge in identifying and assessing business model innovation opportunities (Bocken & Geradts, 2020), lack of access to digital technologies that prevents use of tools to optimise product life-cycle management (Hina et al., 2022) and high complexity in materials and number of components to obtain circular products (Urbinati et al., 2021). However, the numerous positive factors of the technological dimension reported by Lacy and Rutqvist (2016), Tura et al. (2019) and Auriault et al. (2017), among others, invite us to expect a greater positive than negative influence of technology on the increase in the firm's level of circularity. Indeed, Chege and Wang (2020) proposed that technological innovation has a direct and positive effect on the implementation of sustainable practices, such as CE. Furthermore, as mentioned, innovativeness is core to EO (Lumpkin & Dess, 2001) and strong correlations exist between technology and innovation (Oakey & Cooper, 1991) and between CE and innovativeness inherent to technology (Khan et al., 2021).
Proposition 4f: The technological dimension of the environment will strengthen the positive impact of entrepreneurial orientation on the firm's level of circularity.	

(*Continued*)

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Table 2. (*Continued*)

PROPOSITIONS	DIFFERENCES FOUND IN THE LITERATURE
Proposition 4g: The economic/financial dimension of the environment will positively and directly influence the firm's level of circularity.	Financial availability of companies is essential for adopting or increasing the level of circularity within the value network, as it often requires new equipment, training, knowledge development, and, hence, substantial investments. Furthermore, even if money is not an issue, high upfront expenses might lead to the fear of lock-in (Jones et al., 2013; Matus et al., 2012; Markard et al., 2012; Metta & Badurdeen, 2012). In spite of these negative aspects within the economic/financial dimension, investors are increasingly appreciating the process of transformation towards a CEBM, as CE-based companies are known to experience a huge increase in profitability and financial viability (Li & Yu, 2011). Furthermore, financing entities see that the public sector is increasingly funding CE or modifying tax sector to sustainable production and processes, so that it is easier for companies to access such funding (Scarpellini et al., 2018; Kirchherr et al., 2018). Finally, there is evidence that CE supply chains or collaborative CE projects elicit a favourable financing decision by investors (Fischer & Pascucci, 2017). These factors help to cancel out the negative impact of the aspects mentioned above and point to a positive influence of the economic/financial dimension towards an increase in the firm's level of circularity.
Proposition 4h: The economic/financial dimension of the environment will strengthen the positive impact of entrepreneurial orientation on the firm's level of circularity.	

(*Continued*)

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Table 2. (*Continued*)

PROPOSITIONS	DIFFERENCES FOUND IN THE LITERATURE
Proposition 5: Increasing the level of circularity of a firm positively influences its economic, environmental and social performance.	Given its definition, the level of circularity positively influences the firm's environmental performance, as Chiappetta Jabbour et al. (2020) stated, arguing that circular economy principles are closely related to a company's environmental management and performance. Tura et al. (2019), supported this statement by finding that more circular systems are able to help prevent negative impacts on the environment. Thus, there is no evidence of a negative influence in the literature. Regarding the firm's social performance, the impact of the increasing level of circularity is undoubtedly positive. Esken et al. (2018) stated that CE and corporate social responsibility are increasingly interconnected and converging concepts, as the CE puts corporate social responsibility in practice. Thus, the CE concept has begun to be integrated into the corporate social responsibility agenda of firms all over the world. Indeed, since consumers have effectively and successfully banned or rejected companies and their brands for ethical or environmental reasons (Yates, 2011), companies that do not respect societal norms, such as the CE principles, have suffered reputational damage, which can cause serious damage and, resulting in an adverse effect on business performance. Finally, it is in the economic performance where more discrepancies can be found. A growing number of mostly large-sized businesses have adopted a CE strategy in recent years, which is a novel perspective on sustainability and corporate social responsibility that enables them to improve their image, reputation, and financial performance (Fortunati et al., 2020). Mazzucchelli et al. (2022) stated that the CE approach leads firms to gain a good reputation that positively affects financial performance and Kazancoglu et al. (2018) affirmed that CE practices improve corporate reputation, which, in turn, helps firms to obtain higher financial performance, especially in terms of profitability, market share, revenue, and return on investment. However, some researchers found that CE could also negatively impact a firm's financial performance (Doran & Ryan, 2016; Pullman et al., 2009). However, these negative ideas have been systematically disproven by consistent studies, such as those by K. W. Green et al. (2012), Reverte et al. (2016), and Martínez-Conesa et al. (2017).

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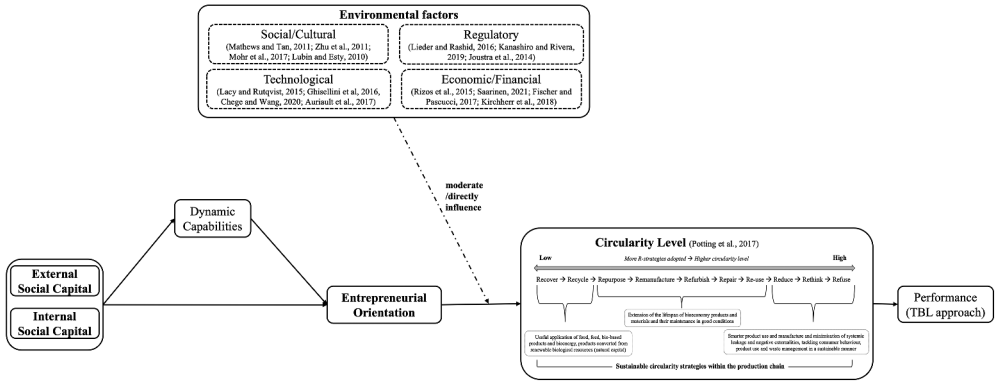
Figure 5. Business-environment interactionist model.



or even directly impacting on the level of circularity of the firm's BM. In this way, we propose that the level of circularity of a firm's BM is likely to emerge not only from internal factors that managers can control (SC, DCs, EO) but also from environmental factors that can have a direct impact on, or strengthen or weaken, the internal efforts of the firm and that favour the adoption of the most circular BM possible. Finally, in the third phase, we explain how there may be a positive effect of CEBM on firm performance in its economic, social and environmental dimensions, thus arguing that, through the adoption of CE practices, a direct improvement in firm performance in all areas, whether economic, social or environmental, is expected.

3. Conclusions

When SMEs adopt a CEBM, their performance indicators, from a TBL approach, tend to improve in economic, environmental and social performance aspects (Chiappetta Jabbour et al., 2020). However, the amount of resources that appear to be necessary to implement a CEBM may discourage companies from engaging in this type of practice (Urbinati et al., 2017). In response to this gap, this article examines how SC in its two dimensions, internal and external, and the DCs SC may generate, can foster EO and, in turn, the adoption of CE principles in the design of these SMEs' BM. However, although these previously described internal factors (SC, DCs, EO) act as drivers towards the development of more sustainable BMs in SMEs, and these internal factors provide SMEs with the possibility to achieve higher circularity in their BMs, the environment (socio-cultural, technological, regulatory, economic) can also play an important role, by strengthening the positive impact of EO on the level of circularity of the BM adopted.

Beyond the direct contributions, the theoretical model proposed is of further academic significance. The literature on CEBMs tends to be "static" in nature, with a focus on the forms that CEBMs can take (Frishammar & Parida, 2019), but with little discussion of the processes behind their implementation or adoption. Our proposal helps advance current knowledge of the potential impact of intangible but strategically beneficial resources, such as SC or DCs—to which SMEs may have access—on adopting a CEBM. Furthermore, this study explores whether and how external drivers identified by the environmental management literature (Tura et al., 2019) influence the process of adoption of circular actions, which helps us to understand how and when firms are more likely to internalise CE principles in their BMs. Thanks to our in-depth analysis, several propositions and the model itself have been formulated, opening the door to future research on this issue.

As can be seen in Table 2, where a comparison of the propositions formulated in this article and the differences found in the literature has also been elaborated, it is observed that these differences are more evident in the propositions related to the social/cultural, regulatory, technological and economic/financial dimensions of the firm's environment. However, it should be noted that the trends analysed point to a greater positive than negative influence of these dimensions on increasing the level of firm circularity. For the rest of the propositions, no significant differences

were found. Moreover, the studies and recognised authors who are conducting research, in line with the positive trends found in the literature on the relationship between internal/external SC and EO, on the mediation of DCs between internal/external SC and EO, on the relationship between EO and the increase in the firm's circularity level and between the increase in the firm's circularity level and its economic, social and environmental performance, lead us to refute any possible differences. This, in turn, leads us to assume that these propositions will be accepted in the empirical study to be conducted in the future. Furthermore, a paucity of papers measuring the level of circularity adopted by a firm was observed (Bassens et al., 2020), a gap that we intend to address in future research.

3.0.0.8. Theoretical implications. Our theoretical model and integrated literature review provides a framework that explains how firms may achieve a higher level of circularity in their BMs, not only focusing on the adoption of circular economy practices per se, but also looking into the factors that contribute to achieving a greater level of circularity (Tura et al., 2019). Furthermore, given that EO has been shown to aid innovativeness (Singh & Ordoñez, 2016) and entry into new markets (Dess & Lumpkin, 2005), we extend on previous studies that analyse how EO can also be related to a firm's sustainability orientation (Ruiz-Ortega et al., 2021) and suggest that EO may also positively influence the level of circularity of a firm's BM. Finally, our findings further suggest that, in addition to the positive relationship between external SC and EO (Adler & Kwon, 2002; Rodrigo-Alarcón et al., 2018), internal SC may also favour the development of EO (Ferris et al., 2017; Liao et al., 2003; Subramaniam & Youndt, 2005).

3.0.0.9. Practical implications. From a managerial perspective (within a firm or an eco-industrial park), several implications arise from this research. First, as a result of the analysis of internal company factors (i.e., SC) that lead the company to increase its level of circularity, eco-industrial park managers must be aware that the development of external SC between companies in the park and with others outside the park needs to be promoted. In this sense, these managers could organise formal or informal meetings in order to improve relationships between all the agents located in the parks. Furthermore, given the critical role of internal SC in building EO, there is also a need for these managers to organise workshops to provide SMEs located in the park with information on how to develop internal SC.

Another important implication is that managers of SMEs must be alert to environmental trends and changes. Given the existing trend for sustainability from all spheres (e.g., economy, society, culture, technology, law), being alert to what the environment is signalling in each moment should help firms design higher circularity-level BMs. Furthermore, eco-industrial park managers should make efforts to compile and gather information from the environment and communicate all this information to the firms located in the park in a timely and efficient manner. Thus, the likelihood of these firms adopting more circular BMs will be higher.

3.0.0.10. Limitations and Future Research Directions. We are aware that our study has as an important limitation, namely, that it is largely based on the proposition of a theoretical model that has not yet been tested, which limits or delays the possibility of presenting definitive results. Nevertheless, this research has allowed us to reach a further understanding of the processes that lead SMEs to have higher levels of circularity in their BMs. For example, while the existing CEBM literature does not focus on the processes behind their implementation, as discussed above (Frishammar & Parida, 2019), we shed light on what a firm must do to start the process to implement a high-circularity BM, namely, designing strategies oriented towards generating both internal and external SC. Moreover, this model has shed new light on how external, environmental influences (e.g., sociocultural, technological, regulatory, economic) can affect the adoption of high-circularity BMs, both directly and through reshaping the positive impact of EO on the adoption of a BM of such a nature.

As future research, various lines may be defined. First, the framework proposed is a call for scholars to test the role of environmental factors in augmenting or diminishing the (positive) influence of internal factors in both the adoption of EO and of a high-circularity BM. Second, future

research could add further elements to our model to better comprehend how a high-circularity BM is easier to adopt. Third, future studies should test whether the adoption of a high-circularity BM is positive for the economic, social and environmental performance of SMEs, and for which of these performance dimensions, a high-circularity BM has a greater impact. In this way, we could determine whether it is worthwhile for the employer to make trade-offs in terms of environmental and social dimensions, and if it is worthwhile working hard to adopt high-circularity BMs. For example, if the economic dimension is not as positively impacted as the environmental and social dimensions, should SME managers refrain from making serious efforts to implement high-circularity BMs? Using models such as the Integrated Social Value model (Retolaza et al., 2014), future research could advance our investigation by helping rationalise a positive response to this question, and by demonstrating the benefits and the monetized value achieved by firms that make great efforts to achieve a high-circularity BM. Additionally, from a reputational viewpoint, future research could extend our theoretical model by incorporating and rationalising the long-term benefits for firms of making these efforts to incorporate a high level of circularity into their BMs.

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