Received: 30 April 2021 | Revised: 3 November 2021 | Accepted: 16 November 2021

DOI: 10.1002/csr.2226

RESEARCH ARTICLE

Corporate Social Responsibility and Environmental Management

WILEY

Social impacts of a circular business model: An approach from a sustainability accounting and reporting perspective

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Funding information
Gobierno de Aragón, Grant/Award Numbers: Research Group Ref., S33_20R

Abstract

Although several studies have approached the environmental or economic impacts derived from the adoption of the circular economy's principles by businesses, the social dimension of the circular model at the micro-level is underexplored in the literature. To fill this gap, this study defines and analyses different categories of social impacts related to a circular business model to assess and report the holistic dimension of the circular economy at the micro-level. This paper is eminently reflective, and the methodology is mainly based on a desk research method. In addition, the results of 137 brief surveys collected in Spain are summarised to reflect the social metrics of a circular business model proposed in the literature. This study contributes to the existing knowledge on circular economy from a sustainability accounting perspective and invites scholars towards new research topics from the triple bottom line approach of the circular business model.

KEYWORDS
circular economy, corporate social responsibility, social indicators, sustainability accounting

1 | INTRODUCTION

The circular economy (CE) is gaining interest as a pathway to sustainable development among scholars, practitioners, and policymakers, who are fostering CE to achieve sustainable development goals (Pizzi et al., 2020). The increased use of the CE concept started in recent years from the cradle-to-cradle movement in response to the scarcity of resources and the awareness that businesses are unsustainable (Azevedo et al., 2017).

Some scholars affirm that the emphasis on the role of businesses and economic performance constitutes the novelty of CE compared with the sustainable development concept in a macro analysis (Lewandowski, 2016; Urbinati et al., 2017), and the literature on CE has addressed the micro-level focused on business activities and consumers to a greater extent (Kirchherr & Piscicelli, 2019; Merli et al., 2018).

At the micro-level, CE means the improvement of material intensity and energy saving and the introduction of renewables, the reduction of environmental impacts, and a high efficiency rate of closing material loops (Jun & Xiang, 2011; Van Berkel, 2010). In summary, a circular business model implies reducing companies' dependence on raw materials, transitioning from fossil resources to renewables, and adopting sustainable processes in the value chain (Linder & Williander, 2017; Zamfir et al., 2017).

In the micro dimension, the implementation of CE principles impacts companies' environmental management and the linked changes in accounting systems, particularly in aspects related to sustainability accounting (Scarpellini, Marín-Vinuesa, et al., 2020). The society has increased its demand for corporations to mitigate the effects of their activities on the quality of life of local communities, and there is an increasing demand for information and accountability to shape the common good (Pesci et al., 2020). Therefore, CE would

imply changes to companies' environmental management and accounting practices regarding natural resources and the introduction of processes and controls to close the material loops.

In a triple bottom line framework (Elkington, 2001), companies that adopt a circular business model must consider the social dimension of CE, and the measurement of its social impacts at a micro-level is a relevant routine. Thus, by adopting a circular business model, changes are also envisaged in reporting practices (Barnabè & Nazir, 2021), and the measurement of corporate social responsibility (CSR), including CE-related activities, by companies. Moriguchi (2007) argued that any measure to evaluate corporate actions concerning CE is important to enable managers to visualise their contribution to a circular model. However, studies focused on CE usually do not take a holistic view of environmental quality, economic prosperity, and social equity as the three dimensions of sustainability (Kirchherr et al., 2017; Lieder & Rashid, 2016).

Research claims that the CE concept largely neglects social equity (Kirchherr et al., 2017; Moreau et al., 2017; Murray et al., 2017). Some scholars have partially approached the three dimensions of sustainability of CE in businesses (Girard & Nocca, 2019; Hysa et al., 2020; Iacovidou et al., 2017; Kravchenko et al., 2019). Meanwhile, the measurement of social impacts linked to the circular business model is still an incipient line of enquiry. Generally, one or two of the three dimensions of sustainable development often prevail, with fewer social considerations (Kirchherr et al., 2017).

In a recent study, Llorente-González and Vence (2020) pointed out the contrast between the abundance of research on CE from engineering, industrial organisations, or supply chain management and the relatively small number of scientific studies from the social sciences. This research gap is further accentuated when considering the CE-related activities adopted by businesses and their social implications from an accounting perspective.

From a macroeconomic dimension, some analyses focus on the economic structure and its socio-economic implications (Llorente-González & Vence, 2020), cultural cities' landscape and social cohesion (Girard & Nocca, 2019), education (Kirchherr & Piscicelli, 2019), job creation (European Commission, 2014; Horbach et al., 2015), resource efficiency and the social welfare (Wijkman et al., 2016), or innovation and gross domestic product (GDP) (Moraga et al., 2019; Vuţă et al., 2018). However, the development of indicators for measuring the CE's adoption by a company as a whole is at an incipient stage (Aranda-Usón et al., 2020).

Considering that there are still gaps in the framework for reporting social impacts from the CE perspective at the micro-level, this study intends to reflect on corporate sustainability in a circular scenario. Thus, it analyses social indicators to define CE's implications for companies from a social perspective, which is the least measured of the three dimensions of sustainability in previous literature.

The remainder of this paper proceeds as follows. Following a review of the literature summarised in the background section, the methodology is briefly described. Finally, the results are analysed from the sustainability accounting and reporting perspective to outline the main conclusions and potential future research avenues.

2 | BACKGROUND

This background provides an overview of the state of knowledge by reviewing prior literature focused on the social dimensions of a CE and their measurement at the micro-level. In particular, CE positioning in sustainability accounting is addressed within the options for integrating specific measurements and indicators of reporting in a triple bottom line framework.

2.1 | The social dimension of a CE

At the micro-level, CE's main objectives are achieved by closing the loops of materials, reducing the need for raw materials and waste disposal, maintaining added value in products for as long as possible, and minimising waste (Azevedo et al., 2017). In summary, the main aims are economic prosperity and environmental quality; however, its impact on social equity and future generations is barely mentioned in the literature (Kirchherr et al., 2017). In a seminal work, Ghisellini et al. (2016) emphasised that the transition towards CE comes from the involvement of all social actors and their capacity to link and create sustainable collaboration and exchange patterns.

At present, some scholars still consider it unclear how the CE concept leads to greater social equality in terms of equity, gender and other diversity, or social opportunities (Murray et al., 2017). They refer to socio-ecological economics to express their reluctance about the social aspects that were sufficiently included in a CE as one of the three pillars of sustainability.

Kirchherr and Piscicelli (2019) claim that the CE simultaneously accomplishes economic performance, social inclusiveness, and environmental resilience to the benefit of current and future generations via the triple bottom line concept (Geissdoerfer et al., 2017; Kravchenko et al., 2019).

In a sustainability framework, Azevedo et al. (2017) developed an integrated index at the corporate level and circularity indicators; Rossi et al. (2020) developed three-dimensional indicators applied in circular business models. Iacovidou et al. (2017) addressed the multi-dimensional value of resources in a CE at a macro-level, and Girard and Nocca (2019) analysed the leading indicators for the measurement of CE in cities. In addition, in one of the investigations closest to this study, Rossi et al. (2020) pointed out that the complexity of CE implies using a set of multi-dimensional indicators instead of a single micro-level (companies and products).

In summary, the analysis of the literature reveals that environmental indicators increasingly exceed those of an economic-financial nature, with those of a social nature, perhaps the least numerous. Thus, this study aims to analyse different categories of social indicators linking the principles of CE to the social pillar of sustainability that is understudied in circular business models.

2.2 | Social impacts of a circular business model

To date, circular business models have been analysed in management studies to explore their implementation and implications at the managerial level (Merli et al., 2018). The different strategies adopted to close the resource loops with longer life cycles and product reuse have also been studied (Bocken et al., 2016), whereas other aspects inherent to consumers and the servitisation or the sharing economy have been analysed to a lesser extent (Elia et al., 2017; Merli et al., 2018). Meanwhile, few studies holistically cover the analysis of the circular business model's implementation in companies.

In a review of the central literature provided by Lewandowski (2016), circular models are classified according to the company's particular structure, the professionals' motivation for changing the models, or in an integral way to encompass a social perspective. Likewise, the literature differentiates different scopes of adoption of business models based on the level of closure of material loops (Bocken et al., 2016; Lacy et al., 2014; Mentink, 2014; Witjes & Lozano, 2016), the circular management of supplies (renewables, recyclable materials, etc.), the recovery of resources, the extension of the product's life cycle (repair, upgrade, and second-hand markets, etc.), the sharing economy, or servitisation decoupling ownership and use (Lacy et al., 2014).

In these studies, the value of a circular business model is often associated with a high potential for job creation (Burger et al., 2019; European Commission, 2014; Ghisellini et al., 2016; Manninen et al., 2018; Rizos et al., 2016). Job creation is often presented as a positive externality of a transition to CE. Morgan and Mitchell (2015) consider that a growing CE's labour requirements are replacing other skills elsewhere in the economy, for instance, in the production of virgin materials or new products. Horbach et al. (2015) use the definition of green jobs to estimate the impact of CE on employment and introduce its links with jobs generated in green sectors or through eco-innovation (Marco-Fondevila et al., 2018). Aranda-Usón et al. (2018) determine the impact of companies' CE-related activities on employment at the micro-level in a region. Nonetheless, although those who present CE as a new business model place new job opportunities at the centre stage, relatively little is known about this aspect (Burger et al., 2019), and the definition and measurement of employment derived from CE-related activities introduced by businesses are currently under investigation.

Rossi et al. (2020) highlighted the quantity of job creation along the supply chain, income related to these jobs, and employee participation as social indicators. Some scholars analysed skills and education related to a CE within other social dimensions of a CE (Burger et al., 2019). Stahel (2016) affirmed that the remanufacturing and repair of old goods, buildings, and infrastructure creates skilled jobs in local workshops. In this line, the categories under the social dimension analysed in the literature are community relationships, employee empowerment, employee health and safety, employee training and education, labour practices and decent work, equality and human rights, supplier relationships and product responsibility, or user relationships (Kravchenko et al., 2019; Padilla-Rivera et al., 2020). In addition, Azevedo et al. (2017) also explored work accidents, precarious work, absenteeism worker rotation, the percentage of women contracted by the organisation, and the percentage of temporary workers.

Other indicators linked to the social dimension of a CE are associated with environmental tax revenue, private investments, the GDP generated by introducing the CE in businesses, or patents and innovation related to recycling (Hysa et al., 2020). Hysa et al. (2020) presented the indicator of environmental tax revenues as the proportion of environmental tax revenues in GDP, and it is considered an internal market factor that includes the contribution of all actors, such as consumers and producers, to the CE. Furthermore, private investments in tangible goods, the value-added at factor costs in the recycling, repair and reuse, and rental and leasing sectors are also regarded as social impacts of CE (Hysa et al., 2020), as well as the benefits generated for clients and other communication actions identifying correlations with information on the adoption of circular practices or sustainability (Rossi et al., 2020).

Collaborative actions in the framework of a CE can also be considered a social impact of a circular model measuring the percentage of residents who participated in a dialogue related to CE systems, the partners involved in industrial symbiosis (Girard & Nocca, 2019), or the involvement of stakeholders in the decision-making process, and the partnership (Rossi et al., 2020). Some researchers point out that people of all ages and skills are central to the circular model (Stahel, 2016), which gives way to stewardship, and consumers become users and creators (Iacovidou et al., 2017), thus increasing the transparency of production processes to enable citizens to select more circular products and services (Jaeger-Erben et al., 2021). Finally, the humanistic dimension related to CE is included in some studies that consider the impacts on human well-being, education, health and living, and living conditions (Girard & Nocca, 2019).

Based on the literature analysis, Table 1 summarises the main categories of social impacts linked to a circular business model and previous studies on this topic.

Notably, the roots of social impacts can be more complex than they seem, as socio-economic processes often affect behaviours and socio-economic processes and alter cultural and human capital (UNEP/SETAC, 2009).

2.3 | Stakeholders and sustainability reporting in a circular model

Many scholars have pointed out that stakeholders play an important role in adopting CE principles (Banaite & Tamosiuniene, 2016; EEA, 2016; Lieder & Rashid, 2016; Stewart & Niero, 2018). Indeed, contributions from various stakeholder groups are expected to enable a transition towards a CE (Gallego-Alvarez et al., 2017; Kirchherr & Piscicelli, 2019), in line with the results obtained for carbon disclosure (Guenther et al., 2016). Thus, stakeholders' involvement in decision-making processes is considered a social indicator linked to the circular business model by some authors (Rossi et al., 2020). The relevance of

TABLE 1 Previous CE-related studies classified according to the main categories of the social impact of the CE at a micro-level

Categories of impacts	Previous studies
Jobs	(Aranda-Usón et al., 2018; Burger et al., 2019; Girard & Nocca, 2019; Horbach et al., 2015; Hysa et al., 2020; Iacovidou et al., 2017; Llera-Sastresa et al., 2020; Llorente-González & Vence, 2020; Morgan & Mitchell, 2015; Rossi et al., 2020; Scarpellini, 2021; Stahel, 2016)
New profiles and skills	(Burger et al., 2019; Llorente-González & Vence, 2020; Scarpellini, 2021; Stahel, 2016)
Tax revenue and other fees	(Di Maio et al., 2017; Hysa et al., 2020; Vuță et al., 2018; Wijkman et al., 2016)
Awareness, transparency, and stakeholders	(Iacovidou et al., 2017; Jaeger-Erben et al., 2021; Kirchherr et al., 2017; Nunes et al., 2018; Rossi et al., 2020; Scarpellini, 2021)
Public health	(Droege et al., 2021; Girard & Nocca, 2019; Padilla-Rivera et al., 2020; Smol, 2021)
Education	(Burger et al., 2019; Kirchherr & Piscicelli, 2019; Nunes et al., 2018)
Partnership/ collaboration/ employee participation	(Azevedo et al., 2017; Girard & Nocca, 2019; Hofmann & Jaeger-Erben, 2020; Iacovidou et al., 2017; Nunes et al., 2018; Rossi et al., 2020; Stahel, 2016; Urbinati et al., 2017)
Patents/innovations	(Droege et al., 2021; Hysa et al., 2020; Scarpellini, Valero-Gil, et al., 2020)
CE Investments/Gross value added	(Gimeno et al., 2020; Hysa et al., 2020)

the relationship between companies and their stakeholders has been highlighted as a common point between the sustainability paradigm and the CE model (Geissdoerfer et al., 2017),

In the context of social business sustainability, the more proactive stakeholder groups are usually employees, customers, suppliers, and the community (Kravchenko et al., 2019). In a CE framework, a strong interaction is expected between the key stakeholder groups involved because of the social interactions and relationships created in the context of resource extraction, processing, manufacturing, assembly, marketing, sale, use, recycling, and disposal, among others (Iacovidou et al., 2017).

The previous consideration—that of multiple stakeholders beyond the firm-centric view of a circular business model—brings us closer to the stakeholder theory when our research focuses on the measurement of social impacts reported to different categories of stakeholders, in line with various scholars (Aranda-Usón et al., 2020; Rivera et al., 2017). Thus, when implementing CE activities in a business, a company should consider its dynamic environment and stakeholders' movements, positions, and preferences (Garcés-Ayerbe et al., 2019), so that specific dynamic capabilities can significantly facilitate CE implementation in businesses (Khan et al., 2020).

The CE's social dimension addresses the identification, accounting, and management of the values and needs of different stakeholders of private companies (Kravchenko et al., 2019) and public organisations (Droege et al., 2021). Franco (2017) explains the influence of firms because they are subject to pressure from a wide range of stakeholders in a CE context, such as research institutes (Rattalino, 2017), value-chain actors (Tyl et al., 2015), and customers (Boons & Lüdeke-Freund, 2013). Hence, sustainability accounting and reporting will play a legitimate role for companies in a CE framework, and through such communication tools, they may seek to maintain their licence to operate and reduce possible gaps between their stakeholders' expectations in terms of corporate sustainability (Daddi et al., 2019; Hahn & Kühnen, 2013; Stewart & Niero, 2018).

In recent decades, the largest companies have increased their disclosure practices (Michelon et al., 2015; Orazalin & Mahmood, 2018) to signal their superior commitment to social and environmental issues (Llena et al., 2007), with a clear alignment with the Global Reporting Initiative (GRI) index (GRI, 2013) and a mixture of standalone sustainability reports and combined annual/financial reports (Moneva et al., 2006). The tendency to increase the number of indicators to measure sustainability progress seems clear, and reporting practices have shown a surge in the number of standalone reports, including economic, environmental, and social information (Cho et al., 2012; Schaltegger et al., 2017).

At present, disclosure of circular achievements is mainly linked to more general trends in sustainability reporting. However, the combination of social, environmental, and economic indicators does not necessarily represent the impact of a circular business model, and the social measurement of the CE is still under investigation. Thus, this study contributes to the literature by reinforcing and pointing to a relevant line of future research for sustainability accounting and reporting in a CE framework by defining specific social indicators to measure the impact of a circular business model.

2.4 | Research questions

Based on the analysis of this background and the literature, it is clear that previous studies have mainly focused on the CE's environmental effects rather than its impacts on society. Thus, it is necessary to deepen the social impact categories that companies can measure and report when adopting a circular business model. To fill this gap, the following research questions are raised:

> **RQ1.** *How can measured social impacts be linked to the circular business model?*

> **RQ2.** *How could businesses report social impacts related to CE in sustainability reporting in their relationships with stakeholders?*

The following sections answer these research questions by reflecting on each category of social impact.

TABLE 2 Main social impacts categories considered in the questionnaire

Code	Categories of social impacts	Description
SOC	Social Impact	Likert scale from 0 to 5, being 0 no relevant, 5 highly relevant; NA
EMP	Job creation	
PRO	New profiles/skills	
TAX	Tax revenue	
CON	Awareness/transparency	
EDU	Environmental education	
HEAL	Public health	
COL	Collaboration	

3 | RESEARCH DESIGN AND DISCUSSION

This study is eminently reflective, and the methodology is based on a desk research method. However, different social impact categories were analysed from a double perspective using the literature review and the results of a brief survey collected in Spain in 2019 during training activities focused on the CE and specifically aimed at professionals and postgraduate students, as CE's dissemination practices (Merli et al., 2018). The survey is carried out to approach an underexplored research topic by understanding the awareness levels of firms and consumers with regard to the social aspects of the CE analysed in the previous literature (Table 1).

Nine sessions of ~6 h were carried out with an average of 28 different participants per session, with 253 participants answering 137 surveys. The respondents' profile comprised self-employed persons (25%), employees (17%), civil servants or university employees (26%), postgraduate students (31%), and other categories (5%). In terms of training, 75% were university graduates, aged between 31 and 50 years (43%), younger than 30 years (35%), and older than 50 years (21%). The respondents answered the surveys voluntarily and anonymously.

The questionnaire was designed to obtain data for the qualitative analysis of the main categories of social impacts studied in the literature (Table 1). The first part of the survey aimed to characterise, identify, and classify respondents who completed the questionnaire. In the second section, a 5-point Likert scale was used to determine the extent to which each impact category had a social impact, ranging from 0 (not relevant) to 5 (highly relevant) (Table 2).

The main results obtained from the valid observations are summarised in the next section.

3.1 | Main results

For each category of social impact, the average and frequency of answers were calculated. Table 3 includes the percentages of respondents who provided ratings of four and five, and the average value of all the answers collected.

TABLE 3 Results of the survey

Code	Questions	Results
EMP	To what extent do you consider that the circular economy in businesses will generate new jobs?	65% very relevant or highly relevant. Average 3.8
PRO	To what extent do you think that the circular economy in businesses will need new professional profiles?	79% very relevant or highly relevant. Average 4.1
SOC	To what extent do you think the circular economy in businesses will positively impact society in general?	82% very relevant or highly relevant. Average 4.3
TAX	To what extent do you consider that collecting taxes will have a positive social impact on the circular economy in businesses?	19% very relevant or highly relevant. Average 2.5
CON	To what extent do you think that the circular economy in businesses will increase citizens' awareness of sustainability and transparency?	33% very relevant or highly relevant. Average 2.9
EDU	To what extent do you think that the circular business model will contribute to the environmental education of young people?	75% very relevant or highly relevant. Average 3.9
HEAL	To what extent do you consider that the circular economy in businesses will improve public health (due to the environmental improvements)?	72% very relevant or highly relevant. Average 4.0
COL	To what extent do you consider that the circular economy in businesses will increase collaboration between people in sharing goods and services?	38% very relevant or highly relevant. Average 2.8

The results show that most of the respondents (82%) consider that CE-related activities carried out by businesses positively impact society as a whole. The contribution to young people's environmental education is noted by nearly 75% of the respondents, and 79% report the development of a new professional profile as a highly relevant impact. In addition, 65% of the respondents pointed out a positive impact on employment. Only approximately one-third of the surveyed respondents reported that CE-related activities carried out by businesses will increase collaborative schemes or citizens' awareness of sustainability. Finally, tax collection is considered the most negligible social impact, as shown by the lower percentage (19%).

The average results for the categories of impacts were classified according to the respondents' profiles (Table 4).

The responses provided by self-employed workers showed the lowest average score. In contrast, the categories of respondents employed workers and postgraduate students found more relevance in the social impacts of business activities related to the CE. In particular, there are some differences between the professional profiles for the impact categories related to tax collection and citizens' awareness of sustainability, which are considered less relevant by self-employed

TABLE 4 Scores of the social impacts categories classified by the respondents' profiles

Profiles	EMP	PRO	SOC	TAX	CON	EDU	HEAL	COL	Total
Employee (private sector)	4.09	4.19	4.43	2.79	2.83	3.94	4.00	2.97	3.66
Public Administration/University	3.53	3.65	3.59	3.00	2.41	3.00	3.69	2.76	3.20
University students (postgraduate)	3.65	4.60	4.09	2.29	3.26	4.30	4.10	3.02	3.66
Self-employed	3.43	4.00	3.43	1.83	2.00	3.29	3.71	2.71	3.05
Other	3.97	4.24	4.03	2.52	2.79	4.00	3.91	2.36	3.48
Total	3.82	4.26	4.07	2.54	2.86	3.92	3.96	2.80	

Note: The scores indicated in red are those of less relevance and the green ones of more relevance. Intermediate values are indicated in shades of orange and yellow.

TABLE 5 Scores of the social impacts categories classified by the respondents' age

Age	EMP	PRO	SOC	TAX	CON	EDU	HEAL	COL	Tot.
<=30	⇨3.71	↑4.19	↑4.60	↓2.21	⇨3.23	↑4.19	↑4.06	↓2.88	3.63
>50	⇨3.79	↑4.04	↑4.17	↓2.87	↓2.86	⇨3.66	↑4.00	↓2.89	3.53
31-50	⇨3.92	⇨3.98	↑4.02	↓2.65	↓2.57	⇨3.83	⇨3.85	↓2.70	3.44
Total	**3.82**	**4.07**	**4.26**	**2.54**	**2.86**	**3.92**	**3.96**	**2.80**	

Note: The scores indicated in red are those of less relevance and the green ones of more relevance. Intermediate values are indicated in shades of orange and yellow.

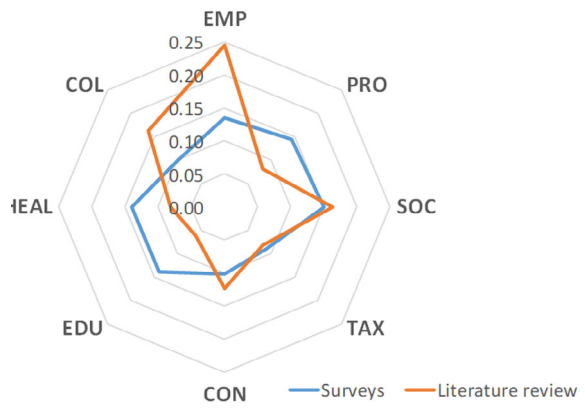

FIGURE 1 Qualitative analysis compared the results obtained through the literature review and the survey

workers. The differences related to the age of the respondents are summarised in Table 5.

In general, younger respondents are slightly more optimistic than others, except regarding tax collection and collaborative schemes. It is reasonable to expect that the older respondents awarded lower scores than younger people, but the intermediate age group response yielded the lowest scores in most impact categories.

The main categories of social impacts linked to companies' circular business models are corroborated based on the results. However, Figure 1 shows some differences between the respondents' perceptions and the number of studies that have analysed these impacts in terms of the most relevant impact categories. Figure 1 indicates each impact category's percentage of the average score awarded (sum of the average of all categories). For the literature review, the number of studies classified in Table 1 in percentage terms was considered.

It could be argued that the respondents' concerns slightly diverge from the interest expressed by researchers to date. In particular, academics have widely approached the CE's impact on employment, but other impact categories are still understudied. The qualitative analysis summarised in Figure 1 is approached only as a visual observation of the comparison between the literature trend and the respondents' appreciation, with the limitations that this type of qualitative analysis entails.

The number of studies that measure the diverse social implications derived from the adoption of CE-related activities by businesses is increasing. However, to the best of our knowledge, most companies adopting CE principles do not report the specific impacts on society achieved through the activities for closing the material loops in a circular model.

3.2 | Discussion and implications for sustainable reporting

The approach used in this study is not specifically theory-driven, and the lack of previous studies that define and classify various categories

of social impacts of the EC, specifically at the micro-level, makes it difficult to discuss the results presented here. Nevertheless, a summarised discussion is presented to outline this study's potential contributions and highlight the points of analysis shortly from the research that focuses on the social implications of a circular business model.

In addition, a theoretical contribution is not proposed here; reporting processes of social impacts from the firms 'perspective in a circular context is considered closer to the stakeholder theory than other theoretical frameworks summarised by Padilla-Rivera et al. (2020) for CE. In line with previous studies, the stakeholder theory provides a framework for the definition of social performance in a circular business model (Padilla-Rivera et al., 2020; Scarpellini, 2021) because the measurement and reporting of social impacts directly related to the introduction of the CE by companies respond to stakeholders' expectations in terms of sustainability. Thus, the more significant the pressure of the company's stakeholders in terms of sustainability, the greater the measurement of CE's social implications at the micro-level in businesses.

From the stakeholder perspective, some scholars claim that all groups need to be considered in the evaluation process, because they play a role and have responsibilities in the CE/city implementation at different levels (Girard & Nocca, 2019). Meanwhile, some stakeholder groups have been studied in the CE literature, such as those involved in higher education (Kirchherr & Piscicelli, 2019; Kopnina, 2018), who will play an increasingly relevant role in adapting the skills required for jobs within the framework of a CE.

In this context, some approaches, such as corporate environmental management, CSR, and sustainability reporting, have been developed to help corporations manage various aspects of sustainability (Azevedo et al., 2017; Orlitzky et al., 2011) in response to stakeholder pressure. Likewise, a focus on the environmental impacts of individual organisations may give way to an interest in collective impacts, and reporting may gain salience as effective monitoring (Bebbington et al., 2020), thus improving the positive social impacts derived by a circular business model. Notably, the measurement of the CE at the micro-level has to be expanded and specialised in sustainability. Hysa et al. (2020) reviewed 155 papers covering the CE to select the most relevant variables linked to the three components of sustainable development and revealed that the macro approach is still predominant. In addition, the lack of consensus regarding the conceptual definition of CE and the delimitation of sectors related to the CE are also difficult when measuring impacts at the micro-level (Llorente-González & Vence, 2020). Girard and Nocca (2019) measured circular jobs included in different sectors, such as recycling of packaging, green sectors, and industrial ecology systems. Even though their contribution is relevant and widens the proposal of Aranda-Usón et al. (2020) regarding CE activities, their approach is also more macro-level.

Given this state of affairs, some countries have launched certain standards to implement CE principles in organisations and monitoring strategies. However, their application in business is still in the incipient stage (Pauliuk, 2018) and does not provide concrete guidelines for sustainability accounting and reporting. Murray et al. (2017) pointed out the need to consider broader business and accounting decision systems, which have become prevalent in environmental management and sustainability reporting (Bebbington & Gray, 2001; Bebbington & Larrinaga, 2014). Rossi et al. (2020) introduced potential changes in the cost and revenue structure linked to the circular business model which are still limited and incipient through collaboration with other agents and customers (service economy and sharing economy). Even though full cost accounting has been characterised in the past as more of a tool to engage in accountability, from the Anthropocene approach to accounting developed by Bebbington et al. (2020), full cost accounting might become a more salient tool as externalities could be seen as an early indication of the future system, including that of a CE model.

Specific accounting capabilities applied by businesses to manage CE-related activities and processes have been recently explored by Scarpellini, Marín-Vinuesa, et al. (2020). However, there is still a need to introduce specific standards and metrics at a micro-level into the accounting processes (Aranda-Usón et al., 2020). Thus, this analysis is related to more general collaborative, sustainable business models (Ordonez-Ponce et al., 2020) or collaborative cross-sector business models for sustainability innovation (Rey-Garcia et al., 2020) that do not explicitly focus on the impacts of a circular business model.

One of the keys to understanding corporate sustainability is the integration of its three pillars, and this study seeks to provide practical advice on how businesses that adopt a circular business model might adapt and improve current sustainability accounting and reporting practices by measuring specific social impacts. Thus, sustainability accounting could help firms capture the impact of closing the loops on society, partially solving the paradoxical tensions in corporate sustainability related to the circular business model pointed out by Daddi et al. (2019).

A connection to the micro-level can then be made by defining indicators that reflect how firms fulfil societal needs when adopting a circular business model. Thus, this work represents an approach to sustainability accounting and reporting implementation in a 'circular triple bottom line' perspective.

4 | CONCLUSIONS

The objective of this study was to determine how to measure the social impacts related to the introduction of CE in businesses for reporting them in a triple bottom line framework. While the social dimensions of a CE are explored, the classification of social impacts and the development of appropriate indicators are still unaddressed in the literature. This study fills the gap by investigating specific CE social metrics at the corporate level, which provides a basis for valuable advances in tackling social value accounting's problem to the circular model a company achieves as a whole.

The analysis of the literature indicates that for the CE model, companies would have to adopt broader measurement frameworks for decision-making, taking into account the potential social impacts to the same extent as those of an economic and environmental nature. This study reveals that existing frameworks, methods, and

tools do not adequately account for the complexity of the CE's social dimension. Additionally, previous CE literature at the micro-level mostly neglects the social considerations of the businesses' activities.

This study is the first attempt to introduce specific metrics for sustainability accounting and companies' reporting in a circular model, as a bridge between the macro- and micro-levels in response to societal needs in the context of CE. In particular, specific social indicators are needed when disclosing information on CE performance considering the collaborative scheme at a meso-level, the social impacts derived from sharing behaviours and the active participation of Stakeholders.

Changing from a linear economy to a CE raises the need to measure the social impacts underexplored in the literature, beyond job creation. Thus, this study claims that novel circular business models have to enable precise measurement and reporting of the social implication of their improvement in closing the material loops, in addition to the impact on employment more typical of the macro-level. A major challenge facing business scholars is to channelise the discussion on the social impacts of CE into conversation with research into sustainability accounting and reporting.

For practitioners, this study offers insights to define specific social impacts of CE-related activities adopted by businesses, as the measurement of social implications of investments in closing the material loops is a precondition in selecting the suite of social metrics needed to integrate the three pillars of sustainability accounting and reporting in a circular business model. For decision-making processes regarding investments in circular businesses, managers can apply the results of this study to report the main categories of social impacts related to the circular business model.

For policymakers, a better understanding of the different categories of social impacts linked to businesses' CE will contribute to designing policies that can enhance the CE's deployment in a territory. Furthermore, disseminating acceptable CE practices at the micro-level can sharpen the CE's social impact among practitioners and stakeholders.

The limitations detected in this study suggest a more interdisciplinary work on this topic, owing to the CE's systemic nature at the firm level and in the framework of the sustainable development goals. Future studies must also consider the CE's social impacts at the meso-level when companies are involved in symbiotic projects to close material loops. Empirical investigations of companies that have adopted a circular business model could also be done.

Evidence from changes in circular business models must be analysed in future to construct a new conceptual framework of the influences that drive the integration of the CE with sustainability accounting and reporting. In addition, possible points of connection between the Anthropocene and accounting scholarship might be specifically applied to the CE model as a future research topic.

ACKNOWLEDGEMENTS

This study was partially co-financed by the Regional Government of Aragon in the framework of Research Group Ref.: S33_20R.

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How to cite this article: Scarpellini, S. (2022). Social impacts of a circular business model: An approach from a sustainability accounting and reporting perspective. *Corporate Social Responsibility and Environmental Management*, *29*(3), 646–656. https://doi.org/10.1002/csr.2226