

Social indicators for businesses' circular economy: multi-faceted analysis of employment as an indicator for sustainability reporting

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Abstract

In recent years, the introduction of the circular economy's principles at the micro level is receiving attention in different areas of the business literature. Although several studies have focused on the environmental or economic impacts of the adoption of the circular economy at a micro level, a detailed

analysis of the social aspects of the circular economy in businesses is still necessary. From a triple bottom line perspective, social dimensions of the circular economy are one of the three pillars for sustainability accounting and reporting and must be considered in the relationship between firms and their stakeholders. Thus, the main objective of this study is to reflect on the social impact of the business circular economy at the micro level by analysing job generation. To this end, this study' approaches the definition of specific indicators to measure different dimensions of the employment in a circular economy framework through the qualitative analysis of semi-structured interviews collected in a regional case study in Spain. This article summarises different metrics to be applied to the measurement of the multi-faceted employment generated by companies in a circular model. Furthermore, a contribution derived from the synopsis of this study is the definition of the linkage of circular businesses' and the sustainability accounting and reporting.

Keywords: Social corporate responsibility; Circular economy; Social indicators; Social accounting; Social impacts

1. Introduction

In recent years, attention to the circular economy (CE) has been increasing in different domains, including business (Centobelli et al., 2020; Urbinati et al., 2017). Notably, the CE model has gained ground among academics, policymakers, and practitioners as an effective way to manage the urgent issues related to climate change and sustainability (Marco-Fondevila et al., 2020). The concept of CE arises with the objectives of keeping products, components, and materials useable and useful to return to the cycles (Rossi et al., 2020). In summary, the aim of a CE is to create circular (closed) loops in which raw materials and other resources are used repeatedly in different phases (Yuan et al., 2006) while contributing to waste reduction (Aranda-Usón et al., 2018).

At present, the CE is being implemented worldwide at the micro (company or consumer level), meso (eco-industrial parks), and macro (nations, regions, provinces, and cities) levels (Ghisellini et al., 2016). In the European Union (EU), a series of communications reports and plans have been implemented to expand the CE principles throughout Europe (European Commission, 2014, 2015, 2020).

To date, the CE-related research has been mainly developed at the macro level (Korhonen, Honkasalo, et al., 2018; Merli et al., 2018; Pomponi & Moncaster, 2017). At the micro level, the knowledge on the introduction of the CE model is still in an early stage of development (Aranda-Usón et al., 2020). Studies have focused mainly on the competitiveness of firms, the implementation of circular business models (Bocken et al., 2016; Witjes & Lozano, 2016), or the analysis of the CE in the general principles of sustainability (Geissdoerfer et al., 2017; Kravchenko et al., 2019). Thus, the adoption of the CE by businesses requires the definition and measurement of the impacts generated by adopting circular business models in terms of social, economic, and environmental as pillars of the sustainability paradigm. Moreover, the CE systems are considered beneficial for different sustainability dimensions such as resource productivity, job creation, and gross domestic product (European Commission, 2020). However, little detailed analysis has been conducted on the impact of the CE on different business sectors, in particular, on the resultant social consequence of the introduction of the CE-related activities in firms.

In particular, from the triple bottom line (Elkington, 2001), companies must implement indicators that also capture the relationship between circular activities and their repercussions on the corporate sustainability report, which is the leading vehicle for communication through which companies transmit to stakeholders their core ideas and progress on the CE (Marco-Fondevila et al., 2020). Additionally, the improvement of environmental impacts has been related to the closing of material loops espoused by the EC, and the economic aspects are considered intrinsic to the circular business model; however, social implications of the EC remain little explored in business literature.

Reports and studies have focused on the social aspects of the CE, and they reference mostly job creation as a positive externality of a transition to the CE, which is focused primarily on resource efficiency and recycling and on waste reduction (Llorente-González & Vence, 2020). Notably, the CE model can include generating new jobs, improving employees' quality of life, and linking a system's functioning with the social dimension of management in organisations (Mathews & Tan, 2011).

CE implementation is a complex process, and the role of employees is crucial (Khan et al., 2020). In particular, new employment opportunities are largely related to recycling and the reuse of waste, sectors that generate direct employment (European Commission, 2015). Studies that have analysed the impact of the CE on the labour market predict that the waste sector (classification and management of waste for

reuse and recycling) will generate a large number of jobs and that most CE-related employment opportunities will demand medium- or high-skilled workers (Morgan & Mitchell, 2015).

In summary, a sustainable future can be a reality only if the economies are rearranged on circular principles characterised by a balanced assessment of the economic, social, and environmental needs (Momete, 2020) and employment is a relevant pillar for a CE for market and stakeholder's aspects (Rossi et al., 2020). However, some questions emerge regarding the selection of social indicators to monitor progress towards a CE at the micro level.

An analysis of the literature reveals two gaps. First, there is a general need for detailed knowledge of the implications of the CE on society because the majority of studies have not specifically analysed employment generation as a social impact derived from the business CE. In addition, the fragmented approach to this topic by scholars has made an enhanced analysis of the CE-related employment necessary. Thus, this paper fills these two gaps by providing a joint approach to the definition and measurement of the social impact of CE, by analysing job generation at the micro level. As one of the contributions to the literature, this study reflects on the indicators inherent to employment and its different facets as the social impacts of firms in their relationship with stakeholders for sustainability accounting and reporting.

To achieve these objectives, the remainder of this paper is structured as follows: the next section investigates the general background, the third section describes the methodological considerations, and the fourth section summarises the findings to state conclusions and reflects on future perspectives of and challenges for the measurement of social impacts of the CE at micro level.

2. Background

The adoption of the CE by firms contributes to more efficient use of raw materials and resources, to cleaner production, and greater efficiency by increasing the circularity of materials (Aranda-Usón et al., 2020; Jun & Xiang, 2011; Li et al., 2010; Liu et al., 2009; Van Berkel, 2010). Currently, private sector initiatives include technologies and processes for closing the material loops and for circular business models, the introduction of related environmental standards, or specific actions in the framework of

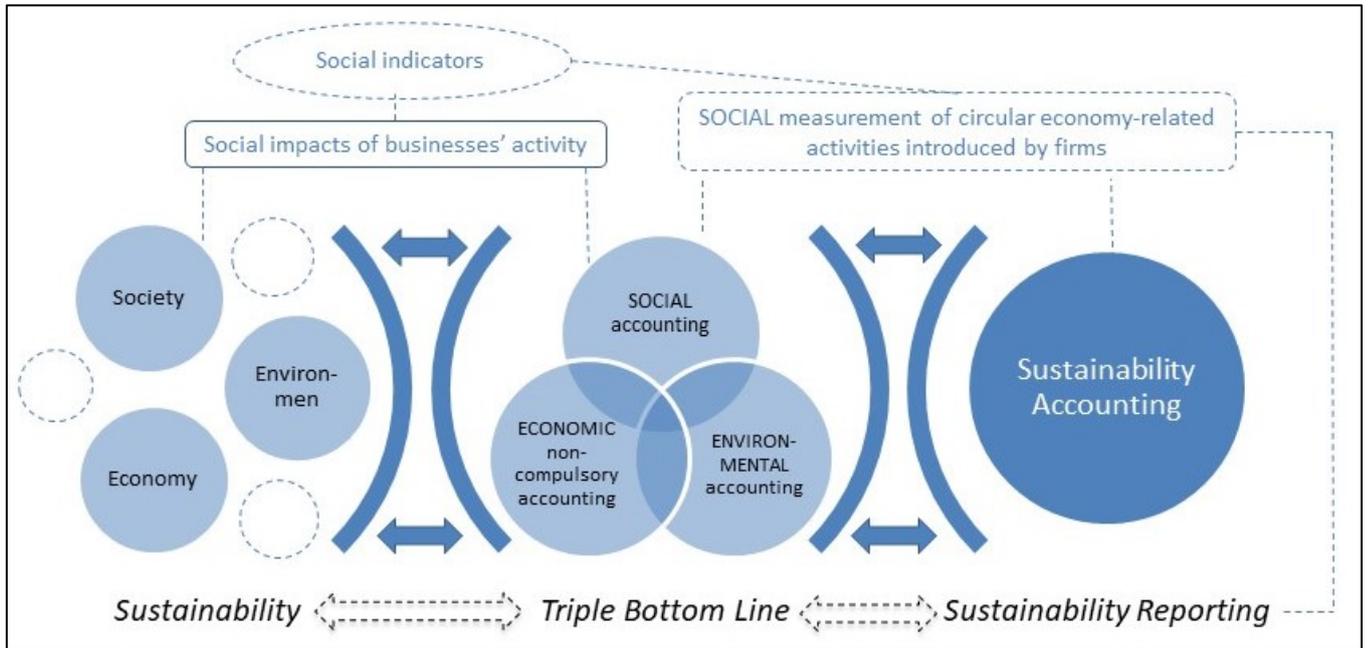
Corporate Social Responsibility (CSR). These initiatives are considered important drivers of the CE transformation in many European countries (European Commission, 2020).

Different authors have pointed out that the concept of CE plays a role in sustainable development (Ghisellini et al., 2016; Korhonen, Honkasalo, et al., 2018; Marco-Fondevila et al., 2020). Some definitions of CE are evolving towards enhanced concepts based on the pillars of sustainability (environment, economy, society), and the measurement of these three dimensions in a CE model is a topic in business literature (Kristensen & Mosgaard, 2020; Rossi et al., 2020),: (Korhonen, Honkasalo, et al., 2018; Korhonen, Nuur, et al., 2018). Nevertheless, it has been argued that the CE literature has prioritised the economic system with primary benefits for the environment and only implicit gains for social aspects (Padilla-Rivera et al., 2020). Besides, the analysis of the diversity and scope of existing CE indicators on all levels points out the prevalence of macro level indicators, while indicators on the meso and micro level are less prevailing.

Based on these premises, the introduction of the CE in businesses raises the integration of the sustainability paradigm into management practices claimed by the environmental and social-accounting scholars (Adams & Frost, 2008; Adams & Larrinaga-González, 2007; Adams & McNicholas, 2006). Notably, because conventional accounting seems most suited to the linear cause-effect relationships (Bebbington et al., 2017), the introduction of the CE model in firms requires a radical transformative programme based on sustainability that responds to the of inter-locking of the social, environmental, and economic systems that have been pointed out for accounting practices (Bebbington & Larrinaga, 2014). Moreover, despite the difficulties connected to sustainability and social accounting, their potentially significant benefits continue to attract the attention of scholars and practitioners (Mauro et al., 2020) for reporting to the internal and external stakeholders through sustainability indicators to accomplish sustainability performance management (Warhurst Alyson, 2002).

The relationship between sustainability accounting and the measurement of the social dimension of the CE is summarised in the synopsis of this study (Figure 1).

Figure 1. Synopsis of the study



Source: Author's elaboration

In a CE context, accounting indicators for internal or external reporting are being used in the framework of environmental management accounting to measure flows of materials and waste, for liability management, or the definition of accounting capabilities of firms for the introduction of circular business models (Scarpellini et al., 2020). However, companies sparsely use micro level indicators for the social dimension of the CE and further research is necessary (Elia et al., 2017; Rossi et al., 2020; Saidani et al., 2019). In particular, companies need to indicate to stakeholders the social impacts of circular investments and activities.

The approach used in this study is not specifically theory-driven, and the research objective is to enhance the knowledge about how to measure the social impacts related to the introduction of the CE in businesses. Nevertheless, different authors point out that the stakeholders play an essential role in the adoption by companies of CE principles (Banaite & Tamosiuniene, 2016; Lieder & Rashid, 2016; Stewart & Niero, 2018) and the links of the CE with sustainability accounting and reporting bring this study closer to the

stakeholder theory in line with Aranda-Usón et al. (2020). From the perspective of the social impact, circular business models have been associated with a high potential in terms of job creation (Burger et al., 2019; European Commission, 2014; Ghisellini et al., 2016; Manninen et al., 2018; Rizos et al., 2016). Notably, the generation of new jobs is one of the most cited social impacts in the literature and is often presented as a measure of the positive social outcome of the CE (Llorente-González & Vence, 2020). However, this requires further research.

Although the CE is now understood as a promising model for creating jobs in local infrastructures (Fizaine, 2020), or elsewhere (Larsson & Lindfred, 2019; Padilla-Rivera et al., 2020), further attention must be paid to net job creation in the CE context. Researchers have argued that the transition to a CE has helped create jobs in the last decade (Sánchez-Ortiz et al., 2020; Yuan et al., 2006). An increasing number of authors have used the new jobs related to the CE as an indicator (Coats & Benton, 2015; Hysa et al., 2020; Kristensen & Mosgaard, 2020; Morgan & Mitchell, 2015). Aranda-Usón et al. (2018) determine the impact on employment at the micro level in a region by using the volume of income of the CE-related activities in companies. Girard and Nocca (2019) define 'circular jobs' as those jobs related to the CE's principles, and Rossi et al. (2020) highlight that employment is a social pillar. Moreover, the job creation from circular business and different supply chain activities is an indicator of CE's social implications (Pieroni et al., 2019).

Some authors have analysed the possible adverse effects on workers in sectors with environmental impacts, and there is broad agreement that adopting a CE could result in job creation in some sectors and in job losses in others (Aranda-Usón et al., 2018). Also, Morgan and Mitchell (2015) consider that labour requirements of a growing CE are replacing elsewhere in the economy, for instance, in the production of virgin materials or new products. Thus, new jobs are differentiated from those created by substitution or those resulting from the re-definition of redundant jobs.

Within this social dimension, some studies have also analysed the required skills and education related to a CE (Burger et al., 2019; Kravchenko et al., 2019). In this sense, education and training contribute to the development of these skills, increase labour productivity, and manage the latest technologies for closing the material loops (Chiappetta Jabbour et al., 2020), advancing sustainable development. Stahel (2016) affirms that the remanufacturing and repairing of old goods, buildings, and infrastructure creates

skilled jobs in local workshops. Khan et al. (2020) highlight the relevance of recruiting employees for CE objectives and the need for technical training of production workers to operationalise new plants. Additionally, skills and circular jobs remain too generic and difficult to adequately inform CE policy (Padilla-Rivera et al., 2020). Thus, we can argue that the social performance of CE related to jobs also includes employee skills development and specific training (Golinska et al., 2015).

From another perspective, Azevedo et al. (2017) include other factors that must be measured for CE-related jobs, including work accidents, precarious work, or percentage of contracted women. In addition, the harmfulness of the manufacturing process level of comfort at work has been analysed by Golinska et al. (2015) and Veleva & Bodkin (2017). Notably, the CE can also contribute to setting the disappearance of low-level occupations (Padilla-Rivera et al., 2020), and the social re-valorisation of circular activities could lead to an improvement in working conditions and should be considered from a social perspective (Kirchherr & Piscicelli, 2019). Therefore, indicators applied to these impact categories should include more employment conditions to understand the real social dimension of the CE measured through employment (Kravchenko et al., 2019). Nevertheless, at present, the limited number of indicators considering the social dimension makes it difficult to determine a general approach to this dimension (Kristensen & Mosgaard, 2020).

In some studies, the social goals of a CE have been linked to the sharing economy and participative democratic decision-making that increases the collaborative culture and the number of public partners involved (Girard & Nocca, 2019; Rossi et al., 2020). In this context, sustainability culture must be promoted among employees and suppliers (Khan et al., 2020), and the measurement of the employment in a CE context would include community relationships and user relationships (Kravchenko et al., 2019). Notably, the employee's engagement and awareness in circular businesses is a relevant factor (Chiappetta Jabbour et al., 2020) and Veleva & Bodkin (2017) and provides a starting point for developing specific indicators for CE strategies and employee engagement.

Another factor related to jobs in a CE framework is the innovative character of circular technologies (Momete, 2020). Rossi et al. (2020) argue that innovations required for new product designs and patents related to recycling and secondary raw materials are social indicators of a CE (Golinska et al., 2015; Hysa et al., 2020). Therefore, knowledge for innovation should be promoted among businesses to develop

intellectual capital for the adoption of the CE by firms, because some traditional jobs are likely to suffer in the transition to a circular model (EEA, 2016).

In summary, the CE-related activities introduced in businesses involve specific technical and organisational capabilities embedded in a sustainable, productive paradigm (Llorente-González & Vence, 2020). Thus, the measurement of CE-related employment should include more aspects than the number of new jobs. These specific facets that integrate circular employment and the main studies on this topic are summarised in Table 1.

Table 1. CE-related studies classified by different factors of circular employment at the micro level

Jobs creation as the social indicator of the CE	(Aranda-Usón et al., 2018; Burger et al., 2019; Girard & Nocca, 2019; Horbach et al., 2015; Hysa et al., 2020; Iacovidou et al., 2017; Kristensen & Mosgaard, 2020; Llorente-González & Vence, 2020; Mesa et al., 2018; Momete, 2020; Morgan & Mitchell, 2015; Pieroni et al., 2019; Rossi et al., 2020; Stahel, 2016; Yuan et al., 2006)
Engagement in the CE principles	(Chiappetta Jabbour et al., 2020; Veleva & Bodkin, 2017)
Collaborative culture	(Girard & Nocca, 2019; Khan et al., 2020; Kravchenko et al., 2019; Rossi et al., 2020)
Net balance of employment generation	(Aranda-Usón et al., 2018; Morgan & Mitchell, 2015)
Skills and training	(Burger et al., 2019; Chiappetta Jabbour et al., 2020; Golinska et al., 2015; Khan et al., 2020; Kravchenko et al., 2019; Padilla-Rivera et al., 2020; Stahel, 2016)
Workers' conditions/safety	(Azevedo et al., 2017; Golinska et al., 2015; Kirchherr & Piscicelli, 2019; Kravchenko et al., 2019; Padilla-Rivera et al., 2020)
Knowledge for innovation	(EEA, 2016; Golinska et al., 2015; Hysa et al., 2020; Llorente-González & Vence, 2020; Momete, 2020; Rossi et al., 2020)

Source: Author's elaboration

Despite the studies listed in Table 1, relatively little is known of jobs created by businesses through their CE-related activities. In particular, the analysis of other aspects of circular employment remains fragmented. Thus, this paper aims to assist organisations in reporting on their social perspective of the introduction of the CE, and the following research questions are raised:

RQ1. How can companies measure CE-related jobs at micro level?

RQ2. What are the different dimensions of the employment related to the circular business model that could be reported by companies?

In the following sections, these research questions are answered by reflecting on a different dimension of CE-related employment through a double-focus qualitative methodology.

3. Research design

This study is eminently reflective, and the methodology is mainly based on a desk research method. However, different aspects of the CE-related employment and other social impacts of the introduction of the CE in businesses were explored through a regional case study in Spain.

This study comprises three steps: first, to estimate the impact of the CE in the region, desk research was conducted with a set of specific indicators; second, to analyse perceptions of the adoption of the main CE-related activities in the region at the levels of society, public administrations, and the private sector, 21 semi-structured (in-depth) interviews were conducted; and third, to measure the CE's impacts, employment as a social indicator was analysed.

Semi-structured interviews have also been used in other CE-specific studies because they allow for processing information that otherwise could not be systematically collected through key informants (Geng et al., 2009; Uddin, 2020). Specifically, the methodology for the analysis was adapted to fit the regional context in which CE was in an incipient state of implementation (Everingham et al., 2013) and it is coherent with the methodological insights provided by previous studies (Crowe et al., 2011; Eisenhardt, 1989; Yin, 2009).

The CE in the region was measured through 21 interviews of experts selected by the authors as key informants according to the guidelines of the commitment. Owing to confidentiality agreements with the interviewees, their identities remain with the authors; however, the list of their profiles is included in Table 2. Due to the general objective of the study, one-third of the interviewees represents the regional public administrations, one-third represents society, and one-third represents companies or the business sector, in line with the three main stakeholder categories pointed out by Banaitė and Tamošiūnienė (2016) for a CE.

Table 2. Profile of the experts selected as key informants

Type of organisation	Profile of the experts
Public administration	Four engineers, two lawyers, one economist
Industries and private companies	Five engineers, one economist, one other
R&D institutes, NGOs and other organisations	One engineer, two lawyers, one chemist, one architect, one sociologist, one journalist

Source: Author's elaboration

The interviews, each lasting approximately 30 minutes, were recorded, transcribed and analysed for trends and patterns of response (Dolowitz & Medearis, 2009). All the interviews are analysed in an aggregated manner by using a qualitative method. In addition, experts were asked to assign a value to each opinion using a Likert-type scale ranging from 0 to 10, with 0 being the score that expresses total disagreement or that the interviewee believes the statement to be of no relevance and 10 being the highest valuation, expressing total agreement, or that the interviewees believed the statement to be highly relevant. From the Likert-type scale thus constructed, the opinions expressed are divided into three levels: 0–3 is slightly or not at all relevant, 4–7 is moderately relevant and equal to or greater than 8 is very relevant.

The case is the Spanish region of Aragón, and based on the CE having significant economic, environmental, and social impacts at the territorial level (Aranda-Usón et al., 2018), the impact on employment of the introduction of the CE-related activities in businesses is analysed. This region was selected because of the regional government's commitments to the author that enabled an analysis of the territorial impact of the CE.

In recent years, the selected region has experienced an increase in the number of local, small-scale initiatives to implement some of the circular principles (Aranda-Usón et al., 2018; Portillo-Tarragona et al., 2017; Scarpellini et al., 2019). To date, these initiatives have been mainly adopted in the waste management sector, according to the recommendations for the introduction of the CE (European Commission, 2020), the Spanish Government (Gobierno de España, 2020), and the regional planning for a CE.

This study presents the results of additional analysis of the social impacts of business circular activities. As such, the next section attempts to summarise the perception of experts on the impact on employment from the introduction of the CE in regional businesses.

4. Main results

This study analyses the experts' perceptions of (1) the relevance of the barriers due to a lack of stakeholders' interest, (2) the relevance of the barriers because of a lack of specialised employees, (3) the effectiveness of subsidised training plans for employees, (4) the potential impact of the CE on society, and (5) the potential CE-related job generation. For each question, the average and the frequency of the answers are calculated. Table 3 presents the main results.

Table 3. Summarised results of the interviews

	Lack of stakeholders' interest	Lack of specialised employees	Subsidised training plans for employees	Potential impact of CE on society
MEAN	5.30	5.70	6.38	2.60
MEDIAN	2.00	7.00	8.00	3.00
MODE	5.50	6.50	7.00	3.00
SD	3.15	2.79	2.36	1.23

Source: Author's elaboration

For social impact, informants considered that the implementation of a CE would generate different jobs but would not increase the total volume of employment in the region. They pointed out that the CE would require professionals trained in advanced techniques from different scientific backgrounds. In particular, chemists, biologists, physicists, specialised technicians, and specialised lawyers and economists were demanded in the future. The relationship between employment and CE was stated by most of the experts, but the general impact of the CE on society was not corroborated.

In summary, from the analysis of the semi-structured interviews, the opinion of the experts interviewed differs according to the organisations they represent (Table 4).

Table 4. Summarised results of the interviews, according to the profile of the experts interviewed

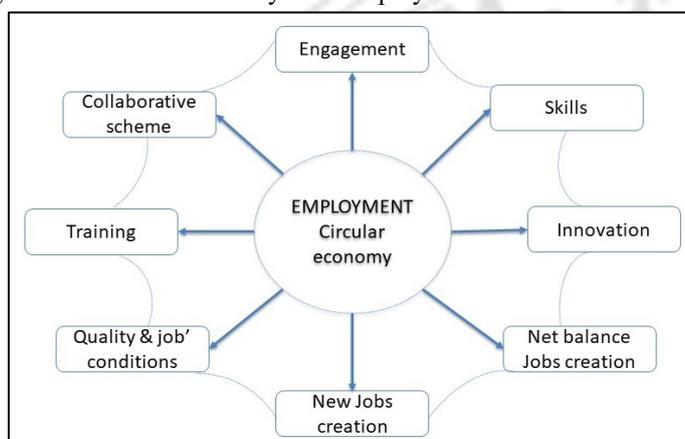
	Lack of stakeholders' interest	Lack of specialised employees	Subsidised training plans for employees	Potential impact of CE on society	Potential CE-related job generation
Private Firms	4.6	4.8	6	2.5	6.8
Public Administration	4	6.2	7.7	2.4	7.2
Society	7.1	5.8	5.5	2.8	6.5
Total	5.3	5.7	6.3	2.6	5.8

Source: Author's elaboration

The most remarkable differences between the respondents' opinions of representatives of public administrations, society, or private companies are detected in the interest of the stakeholders in a CE and the effectiveness of the subsidised training plans.

The improvement of the employability of the workforce through training plans related to CE is one of the results obtained through the interviews. Figure 2 summarises a schematic classification of the different factors related to employment in a CE context.

Figure 2. Multi-faceted analysis of employment as a social indicator of CE in businesses.



Source: Author's elaboration

Based on the results, the leading indicators linked to the employment generated by companies that adopted a circular business model companies are selected. However, Table 4 shows some differences between the respondents' perception and the relevance of these different aspects of the employment and a hierarchic scheme cannot be elaborated for prioritising these dimensions.

It could be argued that the concern of the respondents in this case slightly diverges from the interest expressed by researchers, to date. In particular, academics have widely approached the impact of the CE on employment, but the other specific factors of CE-related jobs are still understudied.

Figure 2 has been elaborated through the results obtained to outline the close relationships between the employment generated and the multiple factors that affect it. It can be seen how all the dimensions of the circular employment are considered connected to each other. However, its arrangement indicates the conjunctions between the various factors in terms of measurement. For example, innovation is closely

linked to the skills of the employees, which in turn form the necessary engagement for the collaborative scheme required in circular environments. Thus, the higher training supposes better work and employability considerations as new jobs generated that imply the net creation of employment that needs to be measured in this multi-faceted social impact in business CE models.

4.1 Discussion

This study is eminently reflective, and the methodology is mainly based on a desk research method. However, the results of a regional case study are summarised in this study with the mere objective of reflecting on the implications of this analysis from different stakeholders' perceptions of this topic. In addition, the approach used in this study is not specifically theory-driven, and the research objective is to enhance the knowledge on how to measure the social impacts related to the introduction of the CE in businesses. Nevertheless, a summarised discussion is presented in next to outline the multiple facets of employment as an indicator of CE.

Generally, the social dimension of the CE addresses the identification, accounting, and management of the values and needs of different stakeholders of a company (Kravchenko et al., 2019). Notably, engagement of stakeholders is necessary to enable a transition towards a CE (Rossi et al., 2020), in line with the results obtained for social and environmental governance of firms (Ortas et al., 2019; Rivera et al., 2017) and carbon disclosure (Guenther et al., 2016). Hence, the analysis of social impacts from the firms' view in a circular context advances the literature to be closer to the stakeholder' theory for reporting processes, in line with Aranda-Usón et al. (2020). Notably, through the reporting, companies may attempt to maintain their licence to operate in a CE and reduce the possible gaps between their stakeholders' expectations in terms of sustainability (Hahn & Kühnen, 2013; Rossi et al., 2020; Stewart & Niero, 2018).

I acknowledge that it would be unrealistic to be unaware of the potential resistance within the institutions of accountancy that makes changes due to the multidimensional character of the CE difficult. Nevertheless, I posit that over the years, accountants have evolved towards sustainability principles, and the presence of environmental accounting standards favours the integration of measurement and reporting in all the dimensions that a CE requires. Since the critical debate initiated by Moneva et al. (2006) on the possible camouflaging of social and environmental accounting and reporting by firms and CSR,

environmental and social accounting and the triple bottom line are now concepts more frequently used in the accounting fields, also in CE studies (Urmanaviciene & Arachchi, 2020).

Nonetheless, this study corroborates the arguments of Kristensen and Mosgaard (2020) on the scarcity of the measurement of social impacts in a CE context, an indication of the development of economic and environmental indicators through standards; notably, indicators for the social dimension have not reached the same level of consensus (Kristensen & Mosgaard, 2020). Therefore, the path to the inclusion of the three pillars of sustainability must include moving towards the CE also through accounting and reporting practices.

5. Conclusions

The original purpose of proposing the concept of CE was to close material loops as a conjunction of economic and environmental improvements, and the interaction with society is a more recently considered aspect in the CE framework. Notably, today's business literature has focused mainly on environmental and economic aspects of the CE, not its complex social implications that must be measured for sustainability accounting and reporting in the relationship of firms with stakeholders.

This study highlights that experts scarcely consider the relevance of CE in society in the current phase of development of the CE introduction at micro level. The scarcity of social measurements of CE-related activities introduced by businesses is also corroborated, and it highlights the origins of the concept of CE, more focused on eco-efficiency and the economy versus the environment than on the social foundations of the model.

Undoubtedly, a CE provides substantial environmental and economic opportunities (raw materials saving, competitiveness, and business opportunities) that imply social benefits (jobs generation). However, the forecasted positive social impacts of a CE have not been demonstrated. For this purpose, the companies are required to implement a triple bottom line perspective in which social dimensions of the CE are integrated with environmental and economic aspects as one of the three pillars of sustainability.

In this context, this study fills the gap in the literature by investigating the different aspects of the employment linked to CE-related activities introduced by businesses. The multiple facets of employment must be measured by companies to report social concerns to different categories of stakeholders. Social

indicators are a key pillar of sustainability accounting and reporting and have important legitimacy in reporting to the internal and external stakeholders to accomplish sustainability performance businesses' management in a CE framework.

A contribution derived from the synopsis of this study is the definition of the linkage of circular businesses' and the sustainability accounting and reporting in a CE framework. Moreover, these results claim that novel circular business models must enable an explicit analysis of social implications in a triple bottom line perspective. Notably, conventional accounting seems unsuited to capture the introduction of the CE model in firms. Thus, the integration of the sustainability paradigm into management practices, as has been claimed by environmental and social-accounting scholars, is claimed again regarding the introduction of the CE in businesses.

One challenge facing practitioners is the enhanced measurement of social impacts derived by their CE by integrating specific circular indicators in sustainability reporting. Therefore, managers seeking CE business investments should increase the engagement among employees to improve specific innovation and management capabilities within firms, with the participation of the accounting structures. Similarly, policymakers can further promote CE by providing incentives to firms not only based on the number of new jobs generated but also on the net balance of derived jobs and other indicators for qualitative factors inherent to the employment in a CE framework.

The limitations of this study suggest that further interdisciplinary work on this topic is necessary because of the systemic nature of the CE at a firm level. Further research must also consider employment generated at a meso level when more companies are involved. Empirical investigations of the social impacts of companies that adopt a circular business model could also enhance the results of further research.

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