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## Circular Sustainable Supply Chain Management Framework from the Perspective of Triple Bottom Line

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### Abstract

Society has demanded sustainable development from organizations with a socially and environmentally responsible attitude in their management. corporate social responsibility (CSR) and circular economy (CE) are necessary to achieve sustainable development. However, organizations have faced difficulties implementing CSR and adopting CE in their supply chain. The literature shows a lack of research on CE as part of companies' strategies and on its relationship with CSR. To fill this research gap, this study aims to develop a first version of a conceptual framework for CSR aiming at the CE from the perspective of sustainable supply chain management (SSCM). The methodology used presents a scoping review with an elaboration of the fundamental architecture of the framework. The results obtained are descriptive of the Scoping Review and the framework with guidelines on how to adopt CSR and CE as a proposed artifact.

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### 1. Introduction

Consumers increasingly demand companies' environmental responsibility and Sustainable Supply Chains [1]. With this, if an organization's actions result in irrevocable damage to the ecosystem and do not guarantee safety, salary, health, a better working environment for employees, and a better standard of living for the neighboring community and society in general, there is a question mark over the sustainable performance of the organization [2]. The

Sustainable Supply Chain aims to strategically integrate material, information, and capital flows and manage cooperation between companies along the supply chain to achieve the goals of the three dimensions of sustainable development [3]. The Sustainable Supply Chain contributes to sustainable growth, focusing on maintaining long-term environmental, economic, and social stability [4,5] and became a relevant topic in the operations and supply chain management (OSCM) [6] towards achieving Sustainable Development Goals (SDGs) [7]. In this context, it is worth mentioning closed-loop Supply Chain Management, where the front and reverse networks are integrated within a centrally managed system [8]. In this way, closed-loop Supply Chains can be said to have distinct attributes when compared to traditional supply chains, thanks to the reprocessing of product flows and aftermarket recovery operations [9]. One possibility is to connect Supply Chain Management with Circular Economy (CE) through closed-loop supply chains. At a Supply Chain level, different configurations are adopted to implement CE principles [10]. In this scenario, companies must consider to be sustainability in the long term [11]. Ashby says the core of CE lies in recovering the value of tangible commodities through a narrower cycle of reuse and restoration that can elevate economic and environmental performance in recycling and energy recovery [12]. CE contributes to sustainable development by creating links between social, environmental, and economic activities [13]. This is because, at the end of the CE consumption process, products can be recycled, reused, remanufactured, redesigned, reduced, or recovered. This process is compatible with the 6Rs of CE, which have expanded to 10Rs in which circularity extends from (recovery to refusal and repurposing of products) [14]. Moving away from the linear economy (i.e., extraction, production, disposal), CE advocates rethinking how resources are used in an intentionally and permanently regenerative system [15]. In CE, waste could be reduced by redesigning products, manufacturing procedures, and supply chains to keep resources flowing continuously in a closed loop [16].

In a context where the CE model is taking root, applying the corporate social responsibility (CSR) approach is relevant for companies and can provide different advantages and aspects [17]. However, there is a problem that corresponds to the difficulty of implementing CSR in organizations. This is supported by the literature as companies develop and implement a myriad of CSR programs and policies to generate contributions to society and the natural environment [18]. CSR involves initiatives and practices that address the concerns and interests of diverse stakeholders of organizations to balance sustainability and enterprise needs [19]. Within the scope of this research, stakeholders are individuals or groups of people who affect or may be affected by the actions, objectives, and policies of an organization, for example, shareholders, creditors, directors, employees, government, suppliers, customers, unions, and the community from which the business draws its resources [20]. It is important to consider the opinions of stakeholders and CSR [21]. Companies' commitments to CSR initiatives are demonstrated by organizations' resource commitment to building relationships with the community and its stakeholders [22]. The presentation of the elements that make up CSR is relevant as CSR is included in the organizational structure [23]. In this case, the question arises regarding the appropriate hierarchical level, departmental allocation, the number of people involved, and the form of their insertion. CSR is current for its role of ensuring economic, environmental, and social values, being an appropriate approach to ensure the authenticity of socially responsible initiatives and practices on the part of companies [24]. In this context, CSR supports the implementation of corporate sustainability, a corporate governance model that considers corporations' short- and long-term economic, social, and environmental performance [21].

To establish the connection between CE and CSR, it is necessary to consider new business models presented as vehicular instruments of transition to CE. In this way, new business models connect supply and demand innovations while driving other forms of innovation linked to product design, manufacturing, logistics, reverse logistics, and end-of-life product management and recovery [15]. The theme of how CSR and CE are related is little explored in the literature [25]. Most academic studies on CSR take a macro view and are oriented toward the industry [26]. The literature offers few studies that consider the social impacts of CE at the meso level when companies are involved in symbiotic projects to strengthen material ties. Macro level deals with questions about organizations' structure, design, and actions within socioeconomic contexts [27]. The meso level deals with issues related to work teams with different functions and constituent positions of the same chain of activities of an organizational process [28].

Few recent studies focus on sustainability, CE, CSR services, and selecting the most effective and ideal training for each employee to improve their sustainability-related competencies by a conceptual model (framework) for developing a decision support system. In addition, companies can thus effectively improve what contributes to their competitive advantage in knowledge and skills [29]. Thus, the literature also presents a lack of research on different forms of CE to understand whether this model is becoming part of the company's strategies and to investigate what is the role of

external actors in influencing the implementation of CE practices in the sustainability agenda of an organization [25]. The relationship between CE and CSR and other models that direct companies toward an environmental and socially-oriented approach also deserves academic attention [25]. Finally, it is still necessary to investigate how the forms of work of CE which are the Rs of CE (Recycling, Reuse, Reduction, Recovery, Remanufacturing, Repair, and Restoration) are disseminated, reproduced, and even institutionalized to focus on how regional CE networks emerge (public, market, and civil society actors) and the duty of government institutions in intersectoral collaboration for the implementation of CSR [30]. This aligns with [31], who admits the need for a structured framework that decision-makers can use to promote sustainability within their SC.

Therefore, to deepen the knowledge of the relationship between CE and CSR, this work aims to develop a first version of a framework to support companies in implementing CSR and thus adhere to a CE from the perspective of sustainable supply chains. This paper is part of an on-going research and its theoretical contributions are a way for academics to learn more about sustainable supply chain management through the proposed framework.

## 2. Literature Review

CSR approach makes the concept of CE relevant in resolving corporate sustainability issues and evaluating companies' contribution to achieving the sustainability goal, which is related to the efficient use of limited natural resources [21]. The CE model presented by [32] provides four components (Circular Inputs, Product Design, Process Design, and Circular Flows) that form the heart of the circular supply chain, as presented in [33][34].

Pursuing a product design that promotes the return of a pure, non-toxic, or at least easy-to-separate product adds potential value to the recycling process. In this case, the higher the purity of the material and the quality of the products and components, the higher the value obtained [32]. CE can be understood as a regenerative system in which a process design and closure of circular flows and narrowing of materials minimizes circular inputs and waste. This can be achieved through long-term projects, Recycling, Reuse, Reduction, Recovery, Remanufacturing, Repair, and Restoration [35]. Potential value creation arises from keeping products, components, and materials in use longer and from reuse policies, either by several remanufacturing cycles or by increasing the lifespan. Consequently, there is a reduction in the demand for virgin materials[36]. Consistency between interpersonal equity provided to internal stakeholders (employees) and responsible behaviors that benefit external stakeholders can lead to employee beliefs in the sincere motives underlying organizations' CSR [37].

Empirical investigations of companies that have adopted a circular business model could also be made [38]. Evidence of changes in circular business models must be analyzed to build a new conceptual framework of the influences driving the integration of CE with sustainability accounting and reporting [38]. Analysis of the literature indicates that for the CE model, companies would have to adopt broader measurement frameworks for decision-making, considering potential social impacts to the same extent as those of an economic and environmental nature [38]. Some studies have used CSR reports to investigate companies' adherence to this new CE model. However, CE activities implemented by companies are usually analyzed regarding the "Triple Bottom Line" (TBL) of sustainability [39].

## 3. Methodology

The Scoping Review is suitable in function of being a methodology that serves to identify the types of evidence available in a given field, clarify the main concepts/definitions in the literature, examine how research is conducted on a given topic, and identify the main characteristics or factors related to a concept[40–42]. To build the framework Two processes were conducted to develop the framework: The execution of the Scoping Review itself and the elaboration of the fundamental architecture of the framework.

The first process was done with the scoping review (SR) that synthesizes the literature of a specific subject since it compares the results obtained from different studies to present the state of the art on a certain theme and highlight possibilities for conducting new studies [43]. SR has been described as a process of mapping existing literature or evidence base [44]. To strengthen the rigor of this method of literature review, [44] developed a framework for conducting a scoping review. This includes five stages: identify the research problem, identify relevant studies, select studies, analyze results and group, summarise, and present results. The first step was to formulate the research problem

and objective presented in the introduction of this work. The second stage includes identifying studies carried out with the Scopus database. The Scopus database is suitable due to its relevance to operations management[45]

Initially, a search was performed for articles that addressed the main themes of this study. The keywords used were "Circular Economy", "Corporate social responsibility" and "Sustainable supply chain management". The third stage was the selection of relevant studies. The criteria for selecting studies were articles using concepts of Circular Economy, Corporate Social Responsibility, and Sustainable Supply Chain Management written in English. The exclusion criteria used were articles without the constructs of Rs of CE, three dimensions of TBL, CSR, promoters, and four components of Circular Supply Chain Management useful for constructing the framework. Still, the selection criteria were presented in the third stage (selection of studies). With this research, a total of 617 articles were raised. Then files were removed before screening which corresponded to two articles not written in English, two duplicate articles, and 247 papers were deleted for not presenting well-founded concepts of Circular Economy, Sustainable Supply Chain Management, and Corporate Social Responsibility.

A total of 251 articles were deleted. In the screening and eligibility, there were 366 articles. These articles were evaluated for eligibility to be used in the scoping review. Data mapping of these articles was performed to survey the constructs for the construction of the framework. The constructs correspond to the three dimensions of the Triple Bottom Line (environmental, social, and economic), the Rs of CE (Recycling, Reuse, Reduction, Recovery, Remanufacturing, Repair, and Restoration), and the four components that form the circular supply chain (Circular Inputs, Product Design, Process Design, Circular Flows) and CSR and its promoters. Then, 316 articles were excluded because they did not present such constructs. Finally, 50 articles were selected for scope review. The remaining articles were analyzed in the fourth stage according to their results. And finally, in the last and fifth stage of the scoping review, these articles were grouped, and their results were presented and summarized according to works that offer concepts of how companies can implement corporate social responsibility in the vision of circular and sustainable supply chain management, what are the main practices of the circular economy adopted by socially responsible companies (the Rs of circular economy) and how the Corporate social responsibility drives the circular economy. The key expression for Scopus search was: (ALL (circular AND economy) AND ALL (corporate AND social AND responsibility) AND TITLE-ABS-KEY (sustainable AND supply, chain, AND management)) AND (LIMIT-TO (LANGUAGE, "English")) AND (EXCLUDE (PUBYEAR, 2023)). This record was carried out to find the relationship between the constructs obtained in the scoping review and close the construction of the framework. The second process was the elaboration of the Fundamental architecture of the framework. The framework was constructed through interrelation between the articles researched in the first process. First, articles with the four circular supply chain management components were identified. The articles with the three components of the TBL. Other articles with the Rs and CE. And finally, papers that present promoters as a construct. In addition, the results and discussions about the framework are shown below.

#### 4. Results and Discussion

Circular supply chain management aims to achieve zero waste and encompasses multiple dimensions, including closed-loop supply chain, remanufacturing, recycling, and industrial symbiosis [46]. According to [32], the four components of the circular supply chain are Circular Inputs, Product Design, Process Design, and Circular Flows. For the adoption of sustainable supply chain management, it is important to take into account these components. As presented by [33] and [34], these four components form the heart of the circular supply chain. In addition, they contribute to sustainability along the supply chain and adherence to a CE.

CE and circular business models generate value along the supply chain with reuse, waste reduction, and reuse with the sustainable management and contextual considerations of circular business models [47]. The proposed artifact model relates the four components of circular supply chain management with the dimensions of the TBL as context and the Rs of Circular Economy as predominant links along this chain. Also, according to the model of [32], the Rs of the Circular Economy are Reuse, Recycling, Recovery, Reduction, Remanufacturing, Repair, and Restoration. From the perspective of the Rs of the Circular Economy, the authors [48] and [36] mention that they are fundamental to maintaining the Circular Supply Chain. In addition, the artifact encompasses the three dimensions of the TBL that presents the environmental, social, and economic aspects. From this perspective, sustainable development begins to incorporate the elements of social equity, economic foundations, and environmental responsibility [49]. Addressing

all the Rs of CE and the dimensions of TBL and sustainable supply chain management is vital to explore the relationships between social pressure, environmental commitment, green economic incentives, supply chain management, sustainable circular supply chain design, and saving capacity. First, green economic commitments and incentives positively impact the supply chain's relationship with the sustainable management and design of this chain. Second, the role of supply chain relationships and sustainable design improve CE capability. Third, social pressure positively affects environmental commitment and green economic incentives for sustainable supply chain management [5]. Companies and supply chain management can implement the framework by following the steps presented. They can also use the Rs of CE as business models that interrelate with CSR practices to obtain benefits for the triple bottom line (TBL) of sustainability. Having as constructs the four components of circular supply chain management and the TBL as context is extremely relevant for the functioning of the organizational sustainable chain, considering the environmental, social, and economic aspects. The Rs of CE is another essential construct, as they are pieces that work as a director of what will be accomplished throughout the production process in the supply chain. Promoters are another key construct because they are the agents responsible for promoting corporate social responsibility and putting into practice sustainable supply chain planning and management. Promoters considering the corporate social responsibility perspective benefit from putting sustainable supply chain management into practice. Another advantage of this perspective is to meet expectations and improve relationships with various stakeholders, such as managers, customers, shareholders, suppliers, regulatory bodies, government, and NGOs along the chain. Figure 1 shows below the proposed framework for better sustainable supply chain management.

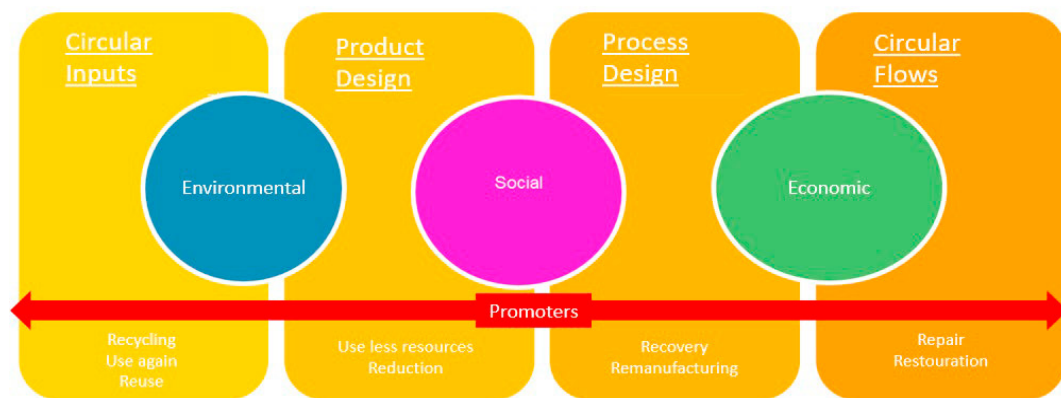


Fig. 1. Circular and Sustainable Supply Chain Management Framework from the Perspective of TBL

## 6. Conclusion

From the perspective of TBL sustainability, the Circular and Sustainable Supply Chain Management framework is an artifact that makes it possible to improve sustainable supply chain management in corporations and can be a useful tool to improve business management and sustainability. Thus, this work presents the preliminary findings of an ongoing result on the topic proposing a management artifact through a first version of a framework conceived from the constructs: circular supply chain management components and TBL, Rs of CE, and Promoters. The approach used was the scoping review. Initially, a search was carried out in the Scopus database with the themes of Sustainable Supply Chain Management, CSR, and CE. Second, the interrelation between articles performed the elaboration of the fundamental architecture of the framework. Theoretical implications are related to academia in the sense of contributing to research in the area of sustainable supply chain management and practical contributions of the research is the possibility of companies and business models adopting a more sustainable stance by taking into consideration CSR, Rs, and EC from the perspective of the triple bottom line. This work also provides opportunities for future

research related to the constructs presented in the framework to obtain different configurations and relationships between them. For example, it addresses variables that make up social, environmental, and economic aspects in the context of CSR. The framework should go through different improvement and validation steps next. Finally, the authors suggest that further research could apply this framework (as well as its next versions) through a case study and thus make it possible to put into practice the expected benefits generated.

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## References

- [1] Zeng H, Chen X, Xiao X, Zhou Z. Institutional pressures, sustainable supply chain management, and circular economy capability: Empirical evidence from Chinese eco-industrial park firms. *J Clean Prod* 2017;155:54–65. <https://doi.org/10.1016/j.jclepro.2016.10.093>.
- [2] Messerli, P., Murniningtyas, E., Eloundou-Enyegue, P., Foli, E. G., Furman, E., Glassman, A., ... & van Ypersele JP. Global Sustainable Development Report 2019 - The Future is Now: Science for Achieving Sustainable Development 2019:214–6. <https://doi.org/10.18356/22f1902c-en>.
- [3] Narimissa O, Kangarani-Farahani A, Molla-Alizadeh-Zavardehi S. Evaluation of sustainable supply chain management performance: Indicators. *Sustainable Development* 2020;28:118–31. <https://doi.org/10.1002/sd.1976>.
- [4] Kazakova E, Lee J. Sustainable Manufacturing for a Circular Economy. *Sustainability* (Switzerland) 2022;14. <https://doi.org/10.3390/su142417010>.
- [5] Scavarda A, Daú G, Scavarda LF, Chhetri P, Jaska P. A conceptual framework for the corporate sustainability higher education in Latin America. *International Journal of Sustainability in Higher Education* 2023;24:481–501. <https://doi.org/10.1108/IJSHE-07-2021-0272>.
- [6] Machado E, Scavarda LF, Caiado RGG, Thomé AMT. Barriers and Enablers for the Integration of Industry 4.0 and Sustainability in Supply Chains of MSMEs. *Sustainability* 2021;13:11664. <https://doi.org/10.3390/su132111664>.
- [7] Caiado RGG, Scavarda LF, Azevedo BD, de Mattos Nascimento DL, Quelhas OLG. Challenges and Benefits of Sustainable Industry 4.0 for Operations and Supply Chain Management—A Framework Headed toward the 2030 Agenda. *Sustainability* 2022;14:830. <https://doi.org/10.3390/su14020830>.
- [8] Rezapour S, Farahani RZ, Fahimnia B, Govindan K, Mansouri Y. Competitive closed-loop supply chain network design with price-dependent demands. *J Clean Prod* 2015;93:251–72. <https://doi.org/10.1016/j.jclepro.2014.12.095>.
- [9] Van Engeland J, Beliën J, De Boeck L, De Jaeger S. Literature review: Strategic network optimization models in waste reverse supply chains. *Omega* (Westport) 2020;91:102012. <https://doi.org/10.1016/j.omega.2018.12.001>.
- [10] Masi D, Day S, Godsell J. Supply Chain Configurations in the Circular Economy: A Systematic Literature Review. *Sustainability* 2017;9:1602. <https://doi.org/10.3390/su9091602>.
- [11] Konietzko J. Business Innovation Towards a Circular Economy: An Ecosystem Perspective: Konietzko, Jan: 9789463663519: Amazon.com: Books. 2020.
- [12] Ashby A. Developing closed loop supply chains for environmental sustainability. *Journal of Manufacturing Technology Management* 2018;29:699–722. <https://doi.org/10.1108/JMTM-12-2016-0175>.
- [13] de Mattos Nascimento DL, Mury Nepomuceno R, Caiado RGG, Maqueira JM, Moyano-Fuentes J, Garza-Reyes JA. A sustainable circular 3D printing model for recycling metal scrap in the automotive industry. *Journal of Manufacturing Technology Management* 2022;33:876–92. <https://doi.org/10.1108/JMTM-10-2021-0391>.

- [14] Kazancoglu I, Kazancoglu Y, Yarimoglu E, Kahraman A. A conceptual framework for barriers of circular supply chains for sustainability in the textile industry. *Sustainable Development* 2020;28:1477–92. <https://doi.org/10.1002/sd.2100>.
- [15] de Jesus A, Lammi M, Domenech T, Vanhuyse F, Mendonça S. Eco-Innovation Diversity in a Circular Economy: Towards Circular Innovation Studies. *Sustainability* 2021;13:10974. <https://doi.org/10.3390/su131910974>.
- [16] Jawahir IS, Bradley R. Technological Elements of Circular Economy and the Principles of 6R-Based Closed-loop Material Flow in Sustainable Manufacturing. *Procedia CIRP* 2016;40:103–8. <https://doi.org/10.1016/j.procir.2016.01.067>.
- [17] Stoyanova T. Applied CSR Strategies in Circular Economy Terms 2019. [https://www.researchgate.net/profile/Tsvetana-Stoyanova/publication/334598351\\_CSR\\_Strategies\\_Applied\\_in\\_Terms\\_of\\_Circular\\_Economy/links/5d3456c592851cd0467907f5/CSR-Strategies-Applied-in-Terms-of-Circular-Economy.pdf](https://www.researchgate.net/profile/Tsvetana-Stoyanova/publication/334598351_CSR_Strategies_Applied_in_Terms_of_Circular_Economy/links/5d3456c592851cd0467907f5/CSR-Strategies-Applied-in-Terms-of-Circular-Economy.pdf) (accessed May 14, 2023).
- [18] Cezarino LO, Liboni LB, Hunter T, Pacheco LM, Martins FP. Corporate social responsibility in emerging markets: Opportunities and challenges for sustainability integration. *J Clean Prod* 2022;362:132224. <https://doi.org/10.1016/j.jclepro.2022.132224>.
- [19] Lee M-K, Park H, Noh J, Painuly JP. Promoting energy efficiency financing and ESCOs in developing countries: experiences from Korean ESCO business. *J Clean Prod* 2003;11:651–7. [https://doi.org/10.1016/S0959-6526\(02\)00110-5](https://doi.org/10.1016/S0959-6526(02)00110-5).
- [20] Shi W, Veenstra K. The Moderating Effect of Cultural Values on the Relationship Between Corporate Social Performance and Firm Performance. *Journal of Business Ethics* 2021;174:89–107. <https://doi.org/10.1007/s10551-020-04555-9>.
- [21] Blinova E, Ponomarenko T, Knysh V. Analyzing the Concept of Corporate Sustainability in the Context of Sustainable Business Development in the Mining Sector with Elements of Circular Economy. *Sustainability* 2022;14:8163. <https://doi.org/10.3390/su14138163>.
- [22] Patuelli A, Carungu J, Lattanzi N. Drivers and nuances of sustainable development goals: Transcending corporate social responsibility in family firms. *J Clean Prod* 2022;373:133723. <https://doi.org/10.1016/j.jclepro.2022.133723>.
- [23] Welzel E, Haupt R, Martins CB. Impacts of adopting corporate social responsibility activities in the organizational structure: a study of german multinationals in Brazil. *Revista Ibero-Americana de Estratégia* 2015;14:108–26. <https://doi.org/10.5585/ijsm.v14i1.2191>.
- [24] Tiep Le T, Huan NQ, Thuy Hong TT, Tran DK. The contribution of corporate social responsibility on SMEs performance in emerging country. *J Clean Prod* 2021;322:129103. <https://doi.org/10.1016/j.jclepro.2021.129103>.
- [25] Del Baldo M, D'Anghela M. Circular Economy and Corporate Social Responsibility: A Literature Review. *Symphonya Emerging Issues in Management* 2020;70. <https://doi.org/10.4468/2020.1.06delbaldo.danghela>.
- [26] Yu W, Hassan A, Adhikariparajuli M. How Did Amazon Achieve CSR and Some Sustainable Development Goals (SDGs)—Climate Change, Circular Economy, Water Resources and Employee Rights during COVID-19? *Journal of Risk and Financial Management* 2022;15:364. <https://doi.org/10.3390/jrfm15080364>.
- [27] Siqueira MMM. Medidas do comportamento organizacional. *Estudos de Psicologia (Natal)* 2002;7:11–8. <https://doi.org/10.1590/S1413-294X2002000300003>.
- [28] Julianelli V, Caiado RGG, Scavarda LF, Cruz SP de MF. Interplay between reverse logistics and circular economy: Critical success factors-based taxonomy and framework. *Resour Conserv Recycl* 2020;158:104784. <https://doi.org/10.1016/J.RESCONREC.2020.104784>.
- [29] Abina A, Batkovič T, Cestnik B, Kikaj A, Kovačič Lukman R, Kurbus M, et al. Decision Support Concept for Improvement of Sustainability-Related Competences. *Sustainability* 2022;14:8539. <https://doi.org/10.3390/su14148539>.
- [30] Ho C, Böhm S, Monciardini D. The collaborative and contested interplay between business and civil society in circular economy transitions. *Bus Strategy Environ* 2022;31:2714–27. <https://doi.org/10.1002/bse.3001>.
- [31] Schaltegger S, Burritt R. Measuring and managing sustainability performance of supply chains. *Supply Chain Management: An International Journal* 2014;19:232–41. <https://doi.org/10.1108/SCM-02-2014-0061>.

- [32] Weetman C. A circular economy handbook for business and supply chains : repair, remake, redesign, rethink. 2016.
- [33] Batista L, Bourlakis M, Smart P, Maull R. In search of a circular supply chain archetype – a content-analysis-based literature review. *Production Planning & Control* 2018;29:438–51. <https://doi.org/10.1080/09537287.2017.1343502>.
- [34] Prieto-Sandoval V, Jaca C, Ormazabal M. Towards a consensus on the circular economy. *J Clean Prod* 2018;179:605–15. <https://doi.org/10.1016/j.jclepro.2017.12.224>.
- [35] Geissdoerfer M, Savaget P, Bocken NMP, Hultink EJ. The Circular Economy – A new sustainability paradigm? *J Clean Prod* 2017;143:757–68. <https://doi.org/10.1016/j.jclepro.2016.12.048>.
- [36] Sandin G, Peters GM. Environmental impact of textile reuse and recycling – A review. *J Clean Prod* 2018;184:353–65. <https://doi.org/10.1016/j.jclepro.2018.02.266>.
- [37] Ghosh K. How and when do employees identify with their organization? Perceived CSR, first-party (in)justice, and organizational (mis)trust at workplace. *Personnel Review* 2018;47:1152–71. <https://doi.org/10.1108/PR-08-2017-0237>.
- [38] Scarpellini S. Social impacts of a circular business model: An approach from a sustainability accounting and reporting perspective. *Corp Soc Responsib Environ Manag* 2022;29:646–56. <https://doi.org/10.1002/csr.2226>.
- [39] Scarpellini S, Marín-Vinuesa LM, Aranda-Usón A, Portillo-Tarragona P. Dynamic capabilities and environmental accounting for the circular economy in businesses. *Sustainability Accounting, Management and Policy Journal* 2020;11:1129–58. <https://doi.org/10.1108/SAMPJ-04-2019-0150>.
- [40] Munn Z, Peters MDJ, Stern C, Tufanaru C, McArthur A, Aromataris E. Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Med Res Methodol* 2018;18:143. <https://doi.org/10.1186/s12874-018-0611-x>.
- [41] de Paula Vidal GH, Caiado RGG, Scavarda LF, Ivson P, Garza-Reyes JA. Decision support framework for inventory management combining fuzzy multicriteria methods, genetic algorithm, and artificial neural network. *Comput Ind Eng* 2022;174:108777. <https://doi.org/10.1016/j.cie.2022.108777>.
- [42] Maldonado Paes J, Scavarda LF, Ceryno P, Machado E. Human technology organizational dimensions for sustainable logistics: a context mechanism outcome model. *Brazilian Journal of Operations & Production Management* 2022;19. <https://doi.org/10.14488/BJOPM.2022.002>.
- [43] Fink A. Conducting research literature reviews : from the internet to paper. 2019.
- [44] Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol* 2005;8:19–32. <https://doi.org/10.1080/1364557032000119616>.
- [45] Magon RB, Thomé AMT, Ferrer ALC, Scavarda LF. Sustainability and performance in operations management research. *J Clean Prod* 2018;190:104–17. <https://doi.org/10.1016/j.jclepro.2018.04.140>.
- [46] Zhang A, Wang JXJX, Farooque M, Wang Y, Choi T-MT-M. Multi-dimensional circular supply chain management: A comparative review of the state-of-the-art practices and research. *Transp Res E Logist Transp Rev* 2021;155:102509. <https://doi.org/10.1016/j.tre.2021.102509>.
- [47] Ferasso M, Beliaeva T, Kraus S, Clauss T, Ribeiro-Soriano D, Ribeiro-Soriano D. Circular economy business models: The state of research and avenues ahead. *Bus Strategy Environ* 2020;29:3006–24. <https://doi.org/10.1002/bse.2554>.
- [48] Lahane S, Kant R. Evaluating the circular supply chain implementation barriers using Pythagorean fuzzy AHP-DEMATEL approach. *Cleaner Logistics and Supply Chain* 2021;2:100014. <https://doi.org/10.1016/j.clscn.2021.100014>.
- [49] Welford R, Starkey R. The Earthscan reader in business and sustainable development. Earthscan Publications; 2001.
- [50] Centobelli P, Cerchione R, Esposito E, Passaro R, Shashi. Determinants of the transition towards circular economy in SMEs: A sustainable supply chain management perspective. *Int J Prod Econ* 2021;242:108297. <https://doi.org/10.1016/j.ijpe.2021.108297>.