

# The Enabling Role of Managerial Practices in R10 Strategies: A Novel Framework for Circular Economy Adoption

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## Abstract

The design of a circular business model should be coherent with the circular strategy implemented by the company. Circular managerial practices are the levers to design circular business models coherently with circular strategies. However, the role of circular managerial practices in enabling circular strategies and the coherent design of a circular business model is still unclear. We bridge this gap and develop a novel research framework based on two dimensions: circular managerial practices – for value creation, transfer, capture – and R10 strategies. Leveraging a systematic literature review, our findings unveil eighty-two matches between each circular managerial practice and each R strategy. This study provides a conceptual decision-support framework for managers, helping them to design a circular business model that is consistent with the R strategies to be implemented in their company. We posit that scholars are still focused on investigating strategies characterized by low circularity levels and value creation practices and urge them to move forward.

**Keywords** Circular Business Models · Circular Managerial Practices · Circular Strategies · R10

## 1. Introduction

The traditional economy has been named linear economy as it is based on a “take-make-dispose” paradigm, which takes resources from the natural environment, uses them to make products, and disposes of them at the end of their lifecycle (Jugend et al., 2024; Merli et al., 2018). The linear economy is thus based on an open-loop system, and it has led to several grand challenges, such as pollution and resource depletion (Ghisellini et al., 2016; Panchal et al., 2021). Recently, an alternative economy model emerged and was named circular economy (Bocken et al., 2016). It aims to respond to those grand challenges by valuing resources and extending the lifecycle of products and the resources embedded in them (Palea et al., 2023). Circular economy is based on a closed-loop system, whose core is represented by resources (Figge et al., 2023; Moreno-Mondéjar et al., 2021). Several technical cycles are available to value resources, all aimed to preserve their value as long as possible (Ellen MacArthur Foundation, 2025; Kirchherr et al., 2023).

The transition towards circular economy is hampered by several challenges (Kirchherr et al., 2018; Tosi et al., 2024; Urbinati et al., 2021). In addition, progress on the circularity transition path has recently been characterized by a regressive trend (Circle Economy Foundation, 2024). In order to promote the transition towards circularity, scholars have focused on understanding how it can be implemented (Ghisellini & Ulgiati, 2020). Several strategies have been identified to support the implementation of circular economy (Bocken et al., 2016; Ellen MacArthur Foundation, 2015; Morsetto, 2020). These strategies refer to “bundles of actions aimed at implementing circular economy solutions” (Morsetto, 2020, p. 3). They are characterized by

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diversified objectives and support the implementation of circular economy in various ways, such as how to design a product according to circular economy principles (Jugend et al., 2024; Sassanelli et al., 2020). It should be noted, however, that the sole identification of circular economy strategies is not enough to implement circular economy and fully achieve its transition (Centobelli et al., 2020; Jonker et al., 2022; Urbinati et al., 2017). The design of a product according to circular economy principles should be complemented by the design of a comprehensive business model according to circular economy principles (Franzò et al., 2021; Frishammar et al., 2025; Lüdeke-Freund et al., 2019). Business models refer to “a set of strategic decisions that defines how companies create, transfer, and capture value” (Urbinati et al., 2017, p. 489), and circular business models incorporate circularity in those decisions to create, transfer, and capture circular value (Aarikka-Stenroos et al., 2022; Centobelli et al., 2020; Lüdeke-Freund et al., 2019; Woldeyes et al., 2025). Companies undergoing the transition towards circularity need not only to implement the circular economy strategies but also to design a comprehensive circular business model coherent with the selected circular economy strategy (Centobelli et al., 2020; Jonker et al., 2022; Pruhs et al., 2024). Accordingly, this research aims to merge two research fields: circular economy strategies and circular business models.

First, current literature on circular economy strategies has focused on various topics, such as the identification of circular economy strategies (Bocken et al., 2016; Potting et al., 2017), the identification of circular economy strategies focused on specific stages of the products' lifecycle, such as design (Gautam et al., 2024; Sassanelli et al., 2020), and the identification of enablers to the implementation of circular economy strategies, such as digitalization (Liu et al., 2022; Sgambaro, Chiaroni, & Frattini, 2025).

Second, current literature on circular business models has developed to investigate various topics (Woldeyes et al., 2025), such as the development of taxonomies to classify companies according to their circular business model (Urbinati et al., 2017), the design process of a circular business model (Lewandowski, 2016; Lüdeke-Freund et al., 2019), the identification of the relevant dimensions that form a circular business model (Centobelli et al., 2020) and barriers to circular business models (Brändström et al., 2024; Frishammar et al., 2025). A literature stream focused particularly on identifying the circular managerial practices (Woldeyes et al., 2025), which “represent the actions that top managers can implement in the business model of the companies in which they operate to ensure such companies move toward adoption of a circular business model” (Aarikka-Stenroos et al., 2022, p. 323). Circular managerial practices enable the implementation of a circular business model that is consistent with the strategies and objectives to be achieved by the company. Circular managerial practices represent thus the connection point between the strategy to be achieved and the circular business model through which the selected strategy can be achieved (Franzò et al., 2021).

However, a research gap remains in the interplay between circular economy strategies and circular business models. Prior literature clearly identifies circular economy strategies and circular managerial practices (Franzò et al., 2021; Morsetto, 2020). In addition, existing research acknowledges the relevance of circular economy strategies and the crucial role of circular managerial practices in enabling them through the design of a coherent circular business model (Centobelli et al., 2020; Franzò et al., 2021; Urbinati et al., 2017). Still, scholars fail to link them and shed light on the role of circular managerial practices in enabling circular economy strategies. Indeed, scholars call for further research concerning both circular economy strategies and circular managerial practices (see, e.g., Aarikka-Stenroos et al., 2022; Pruhs et al., 2024) at the company level (see, e.g., Tosi et al., 2024). The investigation of the identified research gap is relevant, as it unveils how to implement circular economy strategies enabled by circular managerial practices to design a coherent circular business model that creates, transfers, and captures circular value (Frishammar et al., 2025; Jonker et al., 2022). The objective of this paper is to unfold the role of circular managerial practices in enabling the design of a circular business model coherent with circular strategies. Accordingly, we respond to the following research question: “*What is the role of circular managerial practices in enabling circular economy strategies?*”.

This paper provides novel results compared to previous research, as it unveils the role of circular managerial practices in enabling the design of a circular business model that is coherent with the circular strategies to be achieved by the company. We leverage the literature streams concerning, first, circular strategies (Morsetto, 2020; Potting et al., 2017) and, second, circular business models and managerial practices (Centobelli et al., 2020; Franzò et al., 2021). Scholars have already investigated these two research areas, still with an in silos approach (see, e.g., Woldeyes et al., 2025, which focuses solely on circular business models) and scarce evidence in their nexus (see, e.g., Jonker et al., 2022). We provide a novel contribution as we merge these two research areas in an effort to investigate circular managerial practices as the enabling lever that bridges circular strategies and circular business models. To do so, we deploy the systematic literature review methodology to leverage previous literature in the interplay between circular economy strategies and circular managerial

practices and synthesize our findings in a novel research framework. Compared to previous literature, our novel framework enables to unveil how circular managerial practices can be leveraged to enable the implementation of circular economy strategies. Through the evidence provided in our framework, circular business models can be designed coherently with the circular economy strategies to be achieved through specific circular managerial practices.

This paper has relevant implications for scholars as well as practitioners. On the academic side, this research advances the debate on how to achieve the transition towards circularity and how to reverse the regressive trend by jointly considering circular economy strategies and the role of circular managerial practices in enabling the design of a coherent circular business model. On the practical side, this research gives evidence on how to leverage circular managerial practices to implement circular economy strategies. Thus, it equips managers with a conceptual decision-support framework. It unveils how to implement circularity enabled by circular managerial practices to design a circular business model coherent with the circular strategy implemented. Still, the framework should be complemented with firm-specific and contextual information to be applied.

This paper is structured as follows. Section 2 presents current understanding about circular economy strategies and circular managerial strategies, and presents our novel research framework. Section 3 describes the methodology. Section 4 presents the findings of our research and unveils the role of each circular managerial practice in enabling each circular strategy. Section 5 presents the magnitude of the academic discourse related to this matter, points out relevant implications for research as well as practitioners, and acknowledges limitations and future research avenues. Section 6 provides the conclusions and main takeaways of this research.

## 2. State-of-the-art

### 2.1. Circular Economy: definition of the concept and the R10 strategies

Circular economy represents a hot topic in academic literature that investigates it in several research fields, such as operations management (Rossi & Srai, 2024) and innovation (Calabrese et al., 2024; Sgambaro, Chiaroni, & Urbinati, 2025). The concept of circular economy originated from the concerns about resource consumption to meet the continuously increasing demand of products and services (Merli et al., 2018). The continuous demand growth of products and services leads to a steady growth in resource consumption (Ghisellini et al., 2016). Such growth does not allow the regeneration of the resources produced from our planet, and we consume more and more resource stocks to meet demand, with negative consequences for future generations (Global Footprint Network, 2025; Kirchherr et al., 2023). Therefore, the concept of circular economy emerged with the objective to decouple resource consumption from demand (Kjaer et al., 2019; Palea et al., 2023). The very definition of circular economy was initially vague with distinct interpretations (Merli et al., 2018). Lately, the recent contribution by Kirchherr et al. (2023) defined circular economy as “a regenerative economic system which necessitates a paradigm shift to replace the ‘end of life’ concept with reducing, alternatively, reusing, recycling, and recovering materials” (p. 4).

Various strategies have been identified to implement circular economy and achieve a closed-loop system. Scholars developed several strategies, such as closing, slowing, and narrowing, which respectively aim to use again, longer, and fewer resources when implementing circular economy (Aarikka-Stenroos et al., 2022; Bocken et al., 2016). The seminal contribution by Potting et al. (2017) developed ten distinct strategies to implement circular economy with the final objective to develop a closed-loop system. Those ten circular economy strategies are commonly referred to with the acronym 10R, as they all start with an R. Besides, the R10 strategies are an extension of the originally developed 3R strategies, namely reduce, reuse, recycle (Huang et al., 2018) progressively extended to 4R (Moreno-Mondéjar et al., 2021) and 6R (Ding et al., 2023). The R10 strategies build upon it to provide a more comprehensive and detailed understanding of the various strategies available to implement circular economy. The R10 strategies have largely been recognized as a major framework concerning circular economy strategies (Morseletto, 2020), and they have already been considered together with other enablers of circular economy, such as digital technology (see, e.g., Liu et al., 2022). We thus refer to the R10 strategies to investigate the enabling role of circular managerial practices. The R10 strategies are particularly relevant to respond to our objective and investigate this topic as they refer to distinct

options to implement circular economy with a distinct focus that calls for distinct activities, and circular managerial practices have a distinct role in enabling those ten strategies. Accordingly, investigating the interplay between the R10 strategies and circular managerial practices enables to identify the circular managerial practices that fit with each strategy and that thus have a role in enabling each strategy. The R10 strategies developed by Potting et al. (2017) identify ten circular economy strategies depicted and described in Figure 1.

Smarter product use and manufacture	R0	Refuse	Make product redundant by abandoning its function or by offering the same function with a radically different product	High          Circularity and innovation*          Low
	R1	Rethink	Make product use more intensive (e.g., through sharing products or by putting multi-functional products on market)	
	R2	Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources	
Extend lifespan of product and its parts	R3	Reuse	Re-use by another consumer of discarded product which is still in good condition and fulfils its original function	
	R4	Repair	Repair and maintenance of defective product so it can be used with its original function	
	R5	Refurbish	Restore an old product and bring it up to date	
	R6	Remanufacture	Use parts of discarded product in a new product with the same function	
	R7	Repurpose	Use parts of discarded product in a new product with a different function	
Useful application of materials	R8	Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality	
	R9	Recovery	Incineration of material with energy recovery	

(\*) Innovation concerning revenue model, product design, technology.

**Figure 1.** R10 strategies, adapted from Potting et al. (2017).

## 2.2. The concept of circular business models and the identification of circular managerial practices

The implementation of circular economy requires designing not only products and services but also a comprehensive business model according to circular economy principles (Jonker et al., 2022; Urbinati et al., 2017). A circular business model depicts the way a company creates, transfers, and captures value according to circular economy principles (Lüdeke-Freund et al., 2019; Woldeyes et al., 2025). The review work by Centobelli et al. (2020) identified three dimensions of a circular business model: value creation, value transfer, and value capture. First, value creation refers to the design of a circular product or service performed by the company implementing circular economy. The new product or service should embed circularity from its design, not only to create economic value but also to preserve the environmental value of resources through their efficient use (Toxopeus et al., 2021; Ünal et al., 2019). Second, value transfer refers to the dimension that creates a connection between the company and the users of the newly designed product or service. Communication, promotion, and customer relationship management activities are key to transferring the economic and environmental value of the new circular product or service to the users (Aarikka-Stenroos et al., 2022). Third and last, value capture refers to the way the value created through circular design and transferred to the user is back and captured by the company. The company captures back the value created with the design of the new circular product or service mainly through novel revenue sources, such as product-service-systems that entail a shift from selling a product to selling a service with reference to the functions offered by the product (Toxopeus et al., 2021). A circular business model requires designing all three dimensions of a circular business model in a coherent and simultaneous manner (Centobelli et al., 2020; Frishammar et al., 2025; Lüdeke-Freund et al., 2019). For instance, it is possible to capture value from a circular product through the

implementation of the remanufacture strategy, only if the circular product is designed in a way that enables disassembling it and leveraging its parts and components that are still in good condition into a new product with the same functionalities (Aarikka-Stenroos et al., 2022; Franzò et al., 2021; Sassanelli et al., 2020).

The concept of circular business model is strictly linked to the concept of circular managerial practices that represent specific actions, activities through which a company can actually create, transfer, and capture value (Centobelli et al., 2020; Ünal et al., 2019; Woldeyes et al., 2025). As stated by Ünal et al. (2019), “a circular business model represents a holistic system of [...] managerial practices for [...] value creation, delivery and capture” (p. 291). Each dimension of the circular business model can be implemented through the implementation of distinct circular managerial practices (Franzò et al., 2021). Circular managerial practices are distinguished by value creation, transfer, and capture (Aarikka-Stenroos et al., 2022). Each company, when designing a circular business model, needs to consider the various circular managerial practices available to create, transfer, and capture value and select the ones that are most appropriate with its circular economy strategies (Lüdeke-Freund et al., 2019). For instance, if a company aims to implement the remanufacture strategy, then it needs to implement coherent circular managerial practices throughout value creation, transfer, and capture, such as circular managerial practices that enable the recollection of used products, namely tack-back-systems (Sassanelli et al., 2020). Therefore, the implementation of a circular economy strategy, with reference to an R10 strategy, is enabled by the implementation of certain circular managerial practices that together form a coherent circular business model to create, transfer, and capture circular value (Franzò et al., 2021; Jonker et al., 2022; Lüdeke-Freund et al., 2019).

Several circular managerial practices have been identified by previous contributions (see, e.g., Ünal et al., 2019). The contribution by Franzò et al. (2021) synthesized the main circular managerial practices that refer to each dimension of a circular business model, i.e., value creation, transfer, and capture. Table 1 presents and describes the synthesized circular managerial practices, adapted from Franzò et al. (2021), in which we added the abbreviation column to be recalled in our research framework, presented in Figure 2. We take as reference the circular managerial practices by Franzò et al. (2021) for two main reasons. First, the identified circular managerial practices refer to all three relevant dimensions of a circular business model, i.e., value creation, transfer, and capture, and thus enable a comprehensive and coherent design of circular business models. Second, it includes all the relevant circular managerial practices identified by seminal works (see, e.g., Centobelli et al., 2020; Urbinati et al., 2017) and integrates them with other contributions to consider also other relevant practices, such as the relevance of engaging with customers and maintaining relationships with them to fully capture circular value (Ünal et al., 2019). Third, the contribution by Franzò et al. (2021) focuses on circular managerial practices that can be implemented at the company level. It excludes circular managerial practices that can be implemented at wider levels, such as the supply chain (see, e.g., Aarikka-Stenroos et al., 2022). Thus, the focus of Franzò et al. (2021) is consistent with that of this study.

**Table 1.** Circular managerial practices, adapted from Franzò et al. (2021).

Circular business model dimensions	Circular managerial practices	
	Abbreviation	Description
Value creation	Design for circularity	Product design for circularity [i.e., Design for X practices, Design for Recycling (DfR), Design for Remanufacturing and Reuse (DfRe), Design for Disassembly (DfD), and Design for Environment (DfE)]
	Resource optimization	Product and process optimization for resource efficiency [i. e., resource efficiency measures (REMs) or practices at the supply side, demand side, and life cycle to reduce the resources needed for goods or services, re-design of processes, and life cycle assessment (LCA) techniques]
	Partners and ecosystem	Selection of partners along the supply chain (related to key activities) and development of a suitable ecosystem of several stakeholders, building trusting and long-term partnerships along the supply chain
	Key activities	Interventions on key activities (e.g., production system, reverse logistics system, R&D&I, sales/after-sales)
	Efficiency	Energy efficiency and usage of renewable sources of energy [i.e., use and improvement of virgin (raw) materials (i.e., DfE)]
	Waste as resource	Exploitation of waste as a resource (i.e., design out waste)

**Table 2 (cont.).** Circular managerial practices, adapted from Franzò et al. (2021).

Circular business model dimensions	Circular managerial practices	
	Abbreviation	Description
Value transfer	Commercials	Commercial and promotional initiatives, such as direct involvement of customers in the same initiatives and extensive communication
	Communication	Communication of circularity through all channels (i.e., in-store advertising, website, sales personnel, etc.)
	Customers selection	Offering the right value to the right customers (who should be carefully selected and deeply aware of the value proposed by the company)
	Customers management	Management of changes in customer habits (or even changes of customers) due to selling circular products or services
Value capture	Product-service system	Shift from product selling toward a product-service system (PSS)
	Lifecycle extension	Extend the product lifecycle through collaborative consumption and virtualization of services
	Customers relationship	Building and maintaining relationships with customers (to achieve waste elimination and closing loops, for example, incentives and benefits offered to the customers for taking back used products)

### 2.3. Towards a research framework unfolding the role of circular managerial practices in enabling the R10 strategies

In order to answer our research question and unveil the role of circular managerial practices in enabling the R10 strategies, we developed a novel research framework. In particular, our research framework crosses the two dimensions referring to R10 strategies (referring to the work by Potting et al., 2017) and circular managerial practices (referring to the work by Franzò et al., 2021). The linkages between each R10 strategy and each circular managerial strategy will unveil the role of each circular managerial practice in enabling each R10 strategy. Accordingly, Figure 2 depicts our research framework.



**Figure 2.** Research framework.

So far, we have identified the two relevant dimensions to unveil the role of circular managerial practices in enabling circular strategies. The next step refers to the identification of the matches between each R10 strategy and each circular managerial practice. To do so, we deployed a systematic literature review.

### 3. Methodology

A systematic literature review was deployed in order to answer our research question and identify the matches among the R10 strategies and the circular managerial practices (Denyer & Tranfield, 2009). The systematic literature review methodology was selected because we developed our research framework leveraging two specific dimensions, and the systematic literature review is deemed suitable when reviewing specific topics and synthesizing previous evidence concerning them (Denyer & Tranfield, 2009; Fan et al., 2022). The objective of our review is to expand knowledge through a synthesis effort (Krlev et al., 2025). We leverage the well-developed yet fragmented debate in the nexus between circular economy strategies and circular managerial practices to develop a novel framework concerning the role of circular managerial practices in enabling circular economy strategies. In the following, we provide an in-depth description of the search criteria as well as exclusion and inclusion criteria that we adopted to select the relevant contributions, to ensure quality (Grant & Booth, 2009; Snyder, 2019).

We started from the search criteria to be applied when investigating the interplay between circular economy strategies, precisely R10 strategies, and circular managerial practices. We considered the databases of Scopus as well as Web of Science in order to retrieve relevant contributions in this interplay, as previous literature acknowledges them as relevant databases to conduct systematic literature reviews (see, e.g., Merli et al., 2018; Panchal et al., 2021; Rosa et al., 2020). These databases provide access to a wide array of high-quality, peer-reviewed literature essential for a thorough and robust systematic review. We refined our search criteria to exclude conference articles and conference reviews in order to ensure quality and academic rigor (in accordance with previous research, see, e.g., Awan et al., 2021; Centobelli et al., 2020). Besides, we selected contributions related to the business, managerial, and economics research areas as we focus on circular managerial practices and circular economy strategies (in accordance with, e.g., Chauhan et al., 2022; Toth-Peter et al., 2023). Lastly, only contributions in English were selected. The search queries, presented in Table 2, generated 241 contributions after the aforementioned refinements and after removing duplicates on August 2<sup>nd</sup>, 2024. The retrieved contributions were then screened in order to select only contributions relevant to answering our research question according to exclusion and inclusion criteria, which are presented in Table 3. Overall, we included only contributions that considered the connections between circular strategies, precisely R10 strategies, and circular managerial practices that represent relevant contributions to our research question. Lastly, the snowball method was also applied to the selected contributions to enlarge our theoretical base. The same filters, inclusion, and exclusion criteria were applied by the authors to screen articles and ensure consistency. The authors then compared results in order to agree on the final set of relevant contributions to be included in this study. A total of thirty-nine contributions were thus selected, as shown in Figure 3. Thereafter, a content analysis (Weber, 1990) was conducted on the selected contributions in order to retrieve relevant information from the full-text of the articles. In particular, the full-text of the selected contributions was analyzed and deductively coded to identify the R10 strategies considered in each study, together with the circular managerial practices for value creation, transfer, and capture that enable the implementation of the considered R10 strategies in companies. As an example, the sentence “collaborated [...] by using the waste bark as interior wall covering of a university hall in New York” (Ünal et al., 2019; p. 298) was deductively coded to match the Repurpose strategy (R7) (as parts of discarded products, i.e., waste bark, are used in a product with a different function, i.e., interior wall covering) with the circular managerial practice related to waste as resource (as what was previously considered as a waste, i.e., waste bark, is valued again to create another circular product, i.e., interior wall covering). In addition, the sentence “The high design flexibility characterizing 3-D printing enables adopting the design for repair principles” (Urbinati et al., 2024, p. 9347) was deductively coded to match the Repair strategy (R4) with the circular managerial practice related to design for circularity (as the implementation of the repair strategy is enabled by its integration into product design through design for repair). Lastly, the sentence “computer algorithms can decide whether to repair, recycle, or discard items based on the results from examining the returned product for scratches and defects” (Liu et al., 2022, p. 2180) was deductively coded to match the Repair and Recycle strategy (R4, R8) with the circular managerial practice related to resource optimization (as the use of algorithms related to processes optimization enables to implement repair or recycling strategies, based on the condition of the returned products). We acknowledge that personal interpretation represents a limitation to this methodology. To mitigate this interpretation bias, the full-text of the selected articles was coded with a two-step approach. First, the authors

coded the full-text independently. Second, the authors shared the coding among each other and compared it with the objective to achieve convergence.

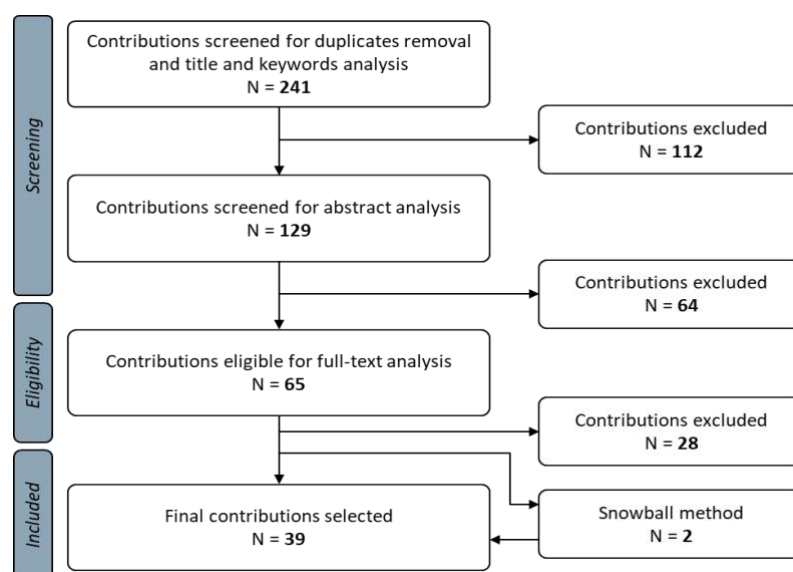
Overall, the systematic literature review allowed us to identify the matches between the R10 strategies to be implemented in companies with the circular managerial practices for value creation, transfer, and capture that enable their implementation. As a result, we unveil the role of circular managerial practices in enabling circular economy strategies, answering our research question by taking as a reference point the two dimensions of analysis presented in Figure 2.

**Table 3.** Search queries.

Database	Query
Scopus	TITLE-ABS-KEY ( "circular economy" ) OR TITLE-ABS-KEY ( circularity ) AND TITLE-ABS-KEY ( "circular economy strateg*" ) OR TITLE-ABS-KEY ( "R strateg*" ) OR TITLE-ABS-KEY ( "circular economy managerial practice*" ) OR TITLE-ABS-KEY ( "circular managerial practice*" ) )
Web of Science	TS=(("Circular economy strateg*") OR ("circularity") AND ("circular economy strateg*" ) OR ("R strateg*") OR ("circular economy managerial practice*") OR ("circular managerial practice*"))

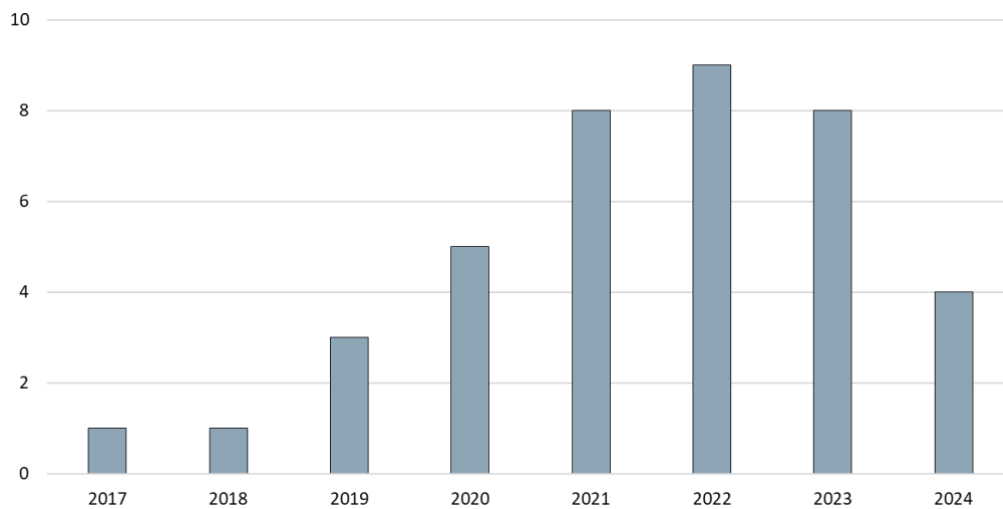
**Table 4.** Exclusion and inclusion criteria.

Criteria	Description
Exclusion	Contributions analyzing solely circular managerial practices without connections with the implementation of circular economy strategies.
	Contributions not focusing on how circular managerial practices enable the implementation of circular economy strategies in companies.
	Contributions considering the topic of circular economy strategies solely, without analyzing how they can be implemented through circular managerial practices.
Inclusion	Contributions focusing on the general concept of circular economy without a focus on R10 strategies or circular managerial practices.
	Contributions with an identification and analysis of the role of specific circular managerial practices in enabling the implementation of specific R10 strategies at the company level.
	Contributions with an identification and analysis of how R10 strategies can be implemented through circular managerial practices to create, transfer, and capture value in companies.
	Contributions identifying and analyzing how companies can create, transfer, and capture value through circular managerial practices to enable the implementation of R10 strategies.

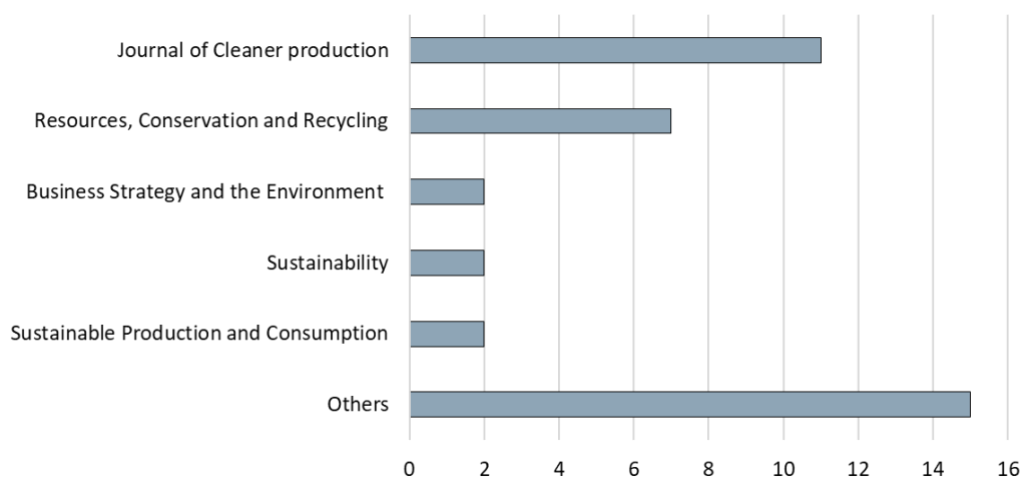


**Figure 3.** PRISMA diagram.

A data extraction form was structured in order to extract relevant information from the selected contributions with reference to: (i) general information, e.g., year and publication outlet, (ii) methodology, e.g., empirical or conceptual contributions, (iii) main content, e.g., the considered R10 strategies and circular managerial practices, and (iv) main findings, e.g., main implications and avenues for future research. The main descriptive information extracted from the selected contributions is presented in Figures 4 and 5. The former presents the year of publication of the selected contributions. The latter presents the publication outlet of the selected contributions. Considering Figure 4, the majority (21) of the selected contributions in the interplay between R10 strategies and circular managerial practices were published in the last three years (i.e., 2022, 2023, 2024). Considering Figure 5, the most selected outlet for contributions in this interplay is the Journal of Cleaner Production (11), followed by Resources, Conservation and Recycling (7). However, the publication outlets are very diversified, as fifteen contributions were published in fifteen different publication outlets (see “Others”, Figure 5).



**Figure 4.** Number of contributions by publication year.



**Figure 5.** Number of contributions by publication outlet.

## 4. Findings

We leverage our novel research framework, presented in Figure 2, to unveil the role of circular managerial practices in enabling the R10 strategies. The systematic literature review enabled us to investigate the interplay between circular managerial practices and the R10 strategies based on what stems from previous contributions. Accordingly, the systematic literature review enabled us to match each circular managerial practice with the enabled R10 strategy. In particular, the matching logic follows three steps. First, the starting point is represented by the selected R-strategy to be implemented. Second, our framework identifies the circular managerial practices for value creation, transfer, and capture that enable the implementation of the selected R-strategy. Third and last, the identified circular managerial practices enable the design of a circular business model that creates, transfers, and captures value according to the selected R-strategy.

Figure 6 reports our novel research framework with the matches between each circular managerial practice and each R10 strategy. We identify a total of eighty-two matches between circular managerial practices and the R10 strategies. Thus, the research framework unveils the role of each circular managerial practice in enabling each R10 strategy. Each of the following paragraphs refers to a dimension of the circular managerial practices and discusses the role of circular managerial practices belonging to each dimension in enabling the R10 strategies.

		R10 strategies											
		Smarter product use and manufacture			Extend lifespan of product and its parts				Useful application of materials				
		R0 Refuse	R1 Rethink	R2 Reduce	R3 Reuse	R4 Repair	R5 Refurbish	R6 Remanufacture	R7 Repurpose	R8 Recycle	R9 Recovery		
Circular managerial practices	Value creation	Design for circularity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Value transfer	Resource optimization	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
		Partners and ecosystem	✗	✓	✗	✓	✗	✓	✗	✓	✓	✓	✓
		Key activities	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Efficiency	✓	✓	✓	✗	✗	✗	✗	✗	✓	✓	✓
		Waste as resource	✓	✗	✗	✓	✗	✗	✗	✓	✓	✓	✓
		Commercials	✗	✓	✓	✓	✗	✗	✗	✓	✗	✗	✗
	Value capture	Communication	✗	✗	✓	✓	✗	✗	✗	✓	✗	✗	✗
		Customers selection	✗	✓	✗	✓	✓	✗	✗	✗	✗	✗	✗
		Customers management	✗	✓	✗	✓	✓	✓	✓	✓	✓	✓	✗
		Product-service system	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Lifecycle extension	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
		Customers relationship	✗	✓	✓	✓	✗	✗	✗	✗	✓	✓	✗

**Key:** ✓ The selected R strategy is enabled by the selected circular managerial practice    ✗ The selected R strategy is not enabled by the selected circular managerial practice

**Figure 6.** Research framework with matches between the circular managerial practice and the enabled R10 strategy.

*Value creation.* Six circular managerial practices refer to the value creation dimension. *Design for circularity* enables all the R10 strategies. The design of a product or service according to the principles of circularity is pivotal to the implementation of circular economy strategies. The design of the product or service must be tailored to meet the requirements and criteria of the R strategy that the company aims to implement. *Resource optimization* refers to a key concept in circular economy, namely resources, and it enables all R strategies, but Refuse (R0) and Recovery (R9). On the one side, R0 refers to the manufacturing of redundant products, a concept that contrasts with the optimization of resources. On the other side, the recovery of resources when products reach the end of their lifecycle is not related to resource optimization, as the objective is merely recovering the value of resources and not optimizing their use throughout the product lifecycle. The remaining eight R strategies are enabled by resource optimization as resources represent the key to manufacturing products according to circularity principles and to extend products' lifecycle. *Partners and ecosystem* refers to the implementation of a collective approach and a collaborative environment in circularity. In particular, it enables the collective Rethink (R1) of products to make their use more intensive and Reuse

them (R3) through novel and interconnected approaches, such as the sharing-based approaches. Partners and ecosystem enables also two other strategies to extend the lifecycle of products, i.e., Refurbish (R5) and Repurpose (R7), in which collaboration is key in order to keep products updated with novel components provided by novel suppliers (R5) and to turn the by-product of a production process into a valuable input of another one (R7). Lastly, partners and ecosystem also enables to establish a network to Recycle (R8) and Recover (R9) resources. *Key activities* enables all R strategies, but Refuse (R0). Circular economy “necessitates a paradigm shift” (as noted by Kirchherr et al., 2023, p. 4) that involves all the activities usually performed by a company. Therefore, the implementation of this circular managerial practice enables the change of the main activities performed by a company to meet circular strategies requirements. Surprisingly, we did not find evidence concerning the role of key activities in enabling Refuse (R0). Nonetheless, the implementation of the Refuse strategy entails a change in design and production activities, so key activities could potentially also enable the Refuse strategy even though no theoretical evidence has been found yet. *Efficiency* enables five R strategies. On the one side, it enables the R strategies that refer to the early stages of the circular product lifecycle and aims to design and manufacture circular products with an efficient use of its resources (R0, R1, and R2). On the other side, it enables the R strategies that refer to the late stages of the circular product lifecycle, and it aims to recycle products and recover resource value and energy through efficient processes. Lastly, *Waste as resource* enables five R strategies. In particular, it refers to turning what was previously considered a waste into a valuable resource, and thus it enables the Reuse (R3) of products that are still in good condition and to Repurpose (R7) by-products to use them in other processes in which they are still valuable. It also refers to designing out waste in manufacturing processes, enabling Refuse (R0) strategy, recycling processes, enabling Recycle (R8) strategy, and recovery processes, enabling Recover (R9) strategy.

*Value transfer*. Four circular managerial practices refer to the value transfer dimension. *Commercials* enables four R strategies. It refers to an extensive communication and engagement of customers that enables to Rethink (R1) product design and Reduce (R2) resource usage, if implemented in the early stages of the circular product lifecycle. Through the engagement of customers, it is possible to enable the Reuse (R3) of products that are still in good condition and can be shared with other users. Promotion and engagement activities are also crucial to engage various entities involved in the manufacturing of Repurposed (R7) products that integrate components provided by various suppliers. *Communication* enables three R strategies. Communication activities conducted through various channels (e.g., online, in-store) increase awareness concerning resource scarcity and the principles of circular economy among a wide set of entities, such as manufacturers and users. Communication towards companies that manufacture products enables to Reduce (R2) resource consumption in circular product manufacturing and to implement the Repurpose (R7) strategy by valuing functioning components of discarded products to manufacture different products. Communication towards users enables promoting the Reuse (R3) of used products that are still in good condition. *Customers selection* enables three R strategies. The careful selection of the target market segment, to which the company offers the circular product, enables Rethink (R1), Reuse (R3), and Repair (R4) the product more effectively, as it is designed bearing in mind the needs and desiderata of the target customers. Lastly, *customers management* enables seven R strategies. Customer management focuses on considering changes in consumer habits and properly modifying the production, management, and offering of the circular product to accommodate those changes. Consumer habits are central in the usage stage of the circular product lifecycle, and so consumer management enables R strategies aimed to extend its lifecycle, namely Reuse (R3), Repair (R4), Refurbish (R5), Remanufacture (R6), and Repurpose (R7). Consumers are also central to Rethink (R1) the products based on changes in their needs and to identify when the product lifecycle could no longer be extended, and Recycling (R8) is the viable strategy to be implemented.

*Value capture*. Three circular managerial practices refer to the value transfer dimension. Product-service-system enables all the R10 strategies, similarly to *design for circularity* in the value creation dimension. The offering of a service is central to the concept of circular economy. Companies need to retain ownership of the products to value resources and extend the lifecycle of products more effectively. To do so, consumers will turn into users, and products will be offered as a service by the companies producing them. The offering of products as a service entails a change in the whole lifecycle of products from design to end-of-life activities. Thus, the implementation of a product-service-system enables the implementation of all R strategies. *Lifecycle extension* enables eight R strategies. It promotes collaborative approaches and virtualization whenever possible to reduce resource consumption. Lifecycle extension of products and resources enables all R strategies but Refuse (R0) and Recovery (R9). On the one hand, the Refuse strategy is focused on redesigning circular products in order to make them redundant. On the other hand, the Recovery strategy is focused on recovering

resource value through incineration at the end of the circular product lifecycle. Thus, these two strategies do not aim to value resources by extending their lifecycle. Lastly, *customers relationship* enables four R strategies. Building and maintaining a relationship with customers has a role in enabling to implement Rethink (R1) and Reduce (R2) strategies by designing a product according to circular economy principles while considering consumers' needs. It also enables to implement the Reuse (R3) and Recycle (R8) strategy, as, on the one side, used products could be used again by different consumers, leveraging the relationship built and nurtured with different consumer groups, and, on the other side, consumers could signal used products no longer in good condition that need to be recycled.

## 5. Discussion and implications

### 5.1. Implications for research

Figure 7 presents the number of articles that are related to each match between the circular managerial practice and the R10 strategy. Thus, it gives an overview of the magnitude of the academic discourse related to each match and indicates the level of maturity of research related to each match.

		R10 strategies										Total number of articles (duplicates removed)	
		Smarter product use and manufacture			Extend lifespan of product and its parts				Useful application of materials				
		R0 Refuse	R1 Rethink	R2 Reduce	R3 Reuse	R4 Repair	R5 Refurbish	R6 Remanufacture	R7 Repurpose	R8 Recycle	R9 Recovery		
Circular managerial practices	Value creation	Design for circularity	5	8	9	10	3	4	10	4	15	4	24
	Value transfer	Resource optimization	-	2	7	3	2	2	3	2	7	-	14
		Partners and ecosystem	-	2	-	5	-	1	-	5	8	2	12
		Key activities	-	2	8	8	5	3	5	2	7	2	16
	Value capture	Efficiency	2	1	4	-	-	-	-	-	1	2	6
		Waste as resource	1	-	-	2	-	-	-	4	8	4	11
		Commercial	-	2	1	2	-	-	-	-	2	-	6
		Communication	-	-	2	2	-	-	-	-	4	-	4
		Customers selection	-	2	-	1	1	-	-	-	-	-	4
		Customers management	-	2	-	3	2	1	2	1	2	-	6
		Product-service system	2	3	1	5	6	2	1	1	2	1	10
		Lifecycle extension	-	4	4	5	5	2	2	3	3	-	11
		Customers relationship	-	1	1	3	-	-	-	-	2	-	6
Total number of articles (duplicates removed)		8	13	17	28	15	8	17	17	31	9		

**Figure 7.** Research framework with the number of articles related to each match between the circular managerial practice and the enabled R10 strategy.

The most debated match in academic literature is the one between *design for circularity* and the Recycle (R8) strategy, with fifteen articles dealing with it. This can show that, even if the academic debate concerning circular economy has enormously grown in recent years (Kirchherr et al., 2023), there is still a long way to go (as noted by, e.g., Frishammar, 2025). On the one hand, the major focus on Recycling (R8) hints that scholars are still focusing on the investigation of a traditional strategy, namely recycling (in accordance with previous research, e.g., Panchal et al., 2021; Woldeyes et al., 2025). In particular, recycling is characterized by a low level of circularity as noted by Potting et al. (2017), and it can also be implemented in the linear economy (see, e.g., Berlin et al., 2022; Moreno-Mondéjar et al., 2021). On the other hand, the major focus on *design for circularity* suggests that scholars are still concerned with how to create value according to circularity principles (see, e.g., Jugend et al., 2024; Pruhs et al., 2024) and disregard how that value can be transferred externally and captured by the company implementing circular strategies. Considering the two pieces of evidence together, we posit that the major focus on the match between *design for circularity* and Recycle (R8) is a limit, an obstacle to a full transition towards circular economy that should, in contrast, implement R strategies with a higher circularity level and embrace practices not only to create but also to transfer and capture value.

The matches among circular managerial practices for value transfer and circular economy strategies are characterized by a very scarce academic debate. These matches concern a few circular economy strategies. The highest debated match is the one between *communication* and, again, Recycle (R8), with four articles dealing with it. Communication activities in order to properly implement recycling activities are paramount, as they raise consumer awareness on their crucial role in separating waste to foster their recyclability (in accordance with, e.g., Gritsch & Lederer, 2023; Stangherlin et al., 2023). Nonetheless, this strategy is not characterized by a high circularity level, as it can also be performed in the traditional linear economy, and scholars advocate going beyond it (see, e.g., Woldeyes et al., 2025).

The matches among circular managerial practices referred to the value transfer dimension, and circular economy strategies are characterized by a relatively scarce academic debate concerning the implementation of circular economy strategies. The highest debated match concerning the value capture dimension is the one between product-service-system (PSS) and Repair (R4), with six articles dealing with it. This suggests that the academic focus is driven by the investigation of product-oriented PSS, in which the product is central to the value proposition of companies that supplement it with side services mainly referring to repair services (Khitous et al., 2022), mainly enabled by innovative digital services, such as preventive and predictive maintenance (Liu et al., 2022). This match hints at a higher circularity level compared to the most debated matches in the value creation and transfer dimension, which involved the Recycle strategy (R8). Nonetheless, other types of PSS are available to implement more circular strategies and fully offer a truly circular service centered around the provision of performance, such as result-oriented PSS, rather than the offering of a product with side services (in accordance with, e.g., Kjaer et al., 2019).

We thus posit that the academic debate concerning circular managerial practices and circular strategies is still characterized by a limited maturity level as it is focused on value creation practices, mostly design for circularity (twenty-four articles out of a total sample of thirty-nine articles), and on R strategies characterized by lower circularity levels, mostly Recycle (R8, thirty-one articles out of a total sample of thirty-nine articles). Considering academic literature on *circular strategies and R strategies*, we urge scholars to shift towards strategies with higher circularity levels. It is imperative that scholars shift their focus from the Recycle (R8) strategy – which has been the focus of the academic debate also in the past years (see, e.g., Woldeyes et al., 2025), and which is characterized by a low level of circularity – to strategies characterized by higher levels of circularity. A positive sign in this direction is the rather lively debate concerning the Reuse (R3) strategy (twenty-eight articles out of a total sample of thirty-nine articles). Nevertheless, further research is required into the full range of R strategies that are available to ensure the comprehensive implementation of circularity. This should not be limited to mere Reuse or Recycling, but should encompass the entire spectrum of options for the valuation of used products based on their condition. Considering academic literature on *circular managerial practices*, we urge scholars to fully and more deeply investigate the role of circular managerial practices in enabling the implementation of circular economy strategies. The investigation should prioritize value transfer and, most crucially, value capture dimensions to achieve profitability in circular economy (as also recently pointed out by, e.g., Frishammar, 2025). Understanding not only how to create but also how to transfer and, above all, capture circular value is crucial to reverse the regressive trend of circularity implementation (Circle Economy Foundation, 2024).

## 5.2. Implications for practitioners

Our research offers relevant implications for practitioners. From the managerial standpoint, managers of companies striving to understand how to implement a certain R strategy can leverage our research framework, depicted in Figure 6. Indeed, it can act as a conceptual decision-support framework for managers by showing the circular managerial practices that enable each R strategy. Managers can leverage our research framework to understand the circular managerial practices based on the R10 strategy(ies) that their company aims to pursue. By identifying the circular managerial practices, our results support managers in the design of a circular business model coherent with the circular economy strategy that they are willing to implement to undergo the transition towards circularity. The framework can act as a compass for managers, who can follow the matching logic of our framework to retrieve relevant information. First, they have to identify the R-strategy to be implemented in their company. Second, they can identify the circular managerial practices that enable the selected R-strategy thanks to our framework. Third, they can design a circular business model based on the identified practices for value creation, transfer, and capture according to the selected R-strategy. Lastly, we

acknowledge that the framework is intended to support conceptual reasoning and strategic reflection, rather than to provide prescriptive or empirically validated solutions. Managers should complement the information provided in our framework with firm-specific and contextual information to apply the framework.

From a policymaker's standpoint, we provide evidence of the still relatively low level of maturity of the debate concerning the implementation of circular economy, which is still mostly focused on Recycle (R8) and value creation. This represents a call to action to move forward not only for scholars but also for policymakers. Regulations and support mechanisms should consider the wide span of strategies and practices to fully achieve circularity and enable to decouple resource consumption from demand.

### 5.3. Limitations and future research avenues

We acknowledge that this research comes with three main limitations. First, we investigate the role of circular managerial practices in enabling circular economy strategies, with reference to the R10 strategies. However, other factors have been recognized as circular economy enablers, such as skills and competences, digital technologies, and open innovation approaches. We did not consider the combined enabling role of multiple factors in our research, and this could present a promising avenue for future research. Scholars could investigate, for instance, the combined role of competences and circular managerial practices in enabling circular economy strategies. Second, our research deployed a systematic literature review, as our objective was to synthesize previous contributions in the interplay of circular strategies and circular managerial strategies to investigate the enabling role of the latter. Thus, our research does not provide empirical evidence, and we call for further empirical research, qualitative as well as quantitative, on this matter. In particular, scholars can further test and validate our novel framework through empirical evidence with reference to, e.g., case studies or workshops. In this regard, we point out that our framework can serve as a conceptual decision-support framework. To apply it, managers should complement it with firm-specific and contextual information. Third, our study identifies the maturity of research related to each match through the magnitude of the academic discourse related to each match. Still, we acknowledge that the magnitude of the academic discourse can be influenced by several factors, such as historical interest or ease of measurement. This aspect leads to the generalization of results, also known as “analytical generalization” and not to “statistical generalization” that explains the entire population (Baškarada, 2014; Yin, 2009; Zittoun, 2017). Scholars can further expand our analysis to consider other factors as well as quantitative empirical evidence.

Lastly and most importantly, we urge scholars to move forward. So far, the academic debate is mainly focused on recycling and value creation practices. It is imperative that research investigates strategies characterized by higher levels of circularity and how to transfer and, most importantly, capture circular value. In addition, we urge scholars to investigate the rationale behind the focus on recycling and value creation practices. Future research can unveil the barriers that lead to these results, such as policy bias or industrial path dependency, and it can leverage theoretical lenses, such as transition theory or innovation diffusion theory.

## 6. Conclusions

Circular economy strategies support the implementation of circular economy in various ways. Among circular economy strategies, the R10 strategies stand out as they are characterized by distinct objectives that call for distinct activities to design circular products and services. However, the sole implementation of the R10 strategies is not enough to fully achieve the transition towards circular economy. Not only products and services but also business models should be designed according to circular economy principles. A circular business model needs to be designed coherently with the designed circular product or service. Circular managerial practices represent activities through which a company can actually create, transfer, and capture value. Therefore, a circular business model can be implemented through the implementation of circular managerial practices referring to three dimensions: value creation, transfer, and capture.

We investigate the role of circular managerial practices in enabling circular strategies, with particular reference to the R10 strategies. A systematic literature review was conducted to synthesize evidence on this matter. A novel research framework was developed based on the two relevant dimensions under analysis: R10 strategies (referring to the work by Potting et al., 2017) and circular managerial practices (referring to the work by Franzò et al., 2021). Our findings identify the role of each circular managerial practice in enabling each

R10 strategy, reported in Figure 6. We identify a total of eighty-two matches between circular managerial practices and the R10 strategies. Besides, we investigate the magnitude of the academic discourse related to each match, which hints at the level of maturity of the research related to each match. We posit that the academic debate concerning the interplay between R10 strategies and circular managerial practices is still characterized by a low level of maturity. In particular, scholars focus on investigating the role of circular managerial practices referred to value creation, mostly design for circularity, in enabling strategies characterized by a low circularity level, mostly Recycle (R8). We urge scholars to move the academic discourse forward and to investigate the full spectrum of strategies and practices to fully achieve circular economy.

To conclude, this study constitutes a novel contribution to the field, as it unearths the pivotal role of circular managerial practices in enabling circular economy strategies. A novel framework has been developed to guide future research and support decision-making in companies to facilitate the transition to circular economy.

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## Declarations

**Competing Interests** The authors declare no competing interests.

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