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REVIEW PAPER

Circling the Sustainable: A Systematic Review of Theories and the Heroic (or not) Leaders Steering to Corporate Sustainability, Circular Economy and Eco-innovation Transition

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Abstract
Understanding the leaders who guide SMEs transitioning towards corporate sustainability, circular economy, and eco-innovations is crucial for enhancing knowledge about the relationship between these leaders' characteristics and the transition to new sustainable paradigms for SMEs. However, despite the interconnectedness of corporate sustainability, circular economy, and eco-innovations, existing literature on their drivers is fragmented, often focusing on internal and external factors without isolating the role of leaders. This study allows us to delimit the most appropriate theoretical framework to analyse the behaviour of SME leaders to face to sustainability challenge after carrying a systematic literature review of research about sustainability, circular economy and eco-innovation topics following the PRISMA method. Most studies on corporate sustainability emphasize the importance of leaders' social and psychological characteristics, while research on the circular economy highlights cultural and cognitive traits, knowledge, skills, and risk attitudes; often excluding the role of leaders in driving circular economy and eco-innovation, particularly in SMEs. A systematic review of studies can provide a detailed portrait of leaders driving sustainability in SMEs and offer insights into the theoretical frameworks explaining their impact. This review of 45 studies analyzing different theories on the relationship between leader characteristics and the transition to a circular economy identifies which theories are most frequently used and why, which are underutilized, and which could be better integrated. Additionally, two leader archetypes are identified in this context.

Keywords Theory · Leader · SMEs · Systematic review · Circular economy · Management · Eco-innovation · Environmental sustainability

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Introduction

The consequences on the environment, economy, and society resulting from the ongoing exhaustion of natural resources and climate change have highlighted the necessity for individuals, businesses, and governments to change their interacting with the environment [62]. According to the World Economic Forum [128], environmental risks such as extreme weather events, critical change to earth systems; biodiversity loss and ecosystem collapse, and natural resource shortages are on the top positions in the ranking of global risks by severity over the long term (10 years). To reduce the impact of those inevitable risks, all companies (large and SMEs) must integrate sustainability principles into their corporate environmental strategy. Corporate sustainability (CS) constitutes a multidimensional framework that extends beyond environmental concerns to include social and economic imperatives for long-term value creation. Within this broad paradigm, the circular economy (CE) has gained prominence as a strategic approach to decouple resource consumption from economic growth and foster regenerative systems [36]. Increasingly, CE principles are integrated into the corporate social responsibility agendas to advance sustainable development objectives [84, 98, 106], while global policy initiatives endorse their adoption under the 2030 Agenda for achieving the Sustainable Development Goals (SDGs). However, adopting isolated circular practices is insufficient to achieve authentic circularity; it requires systemic innovation in processes, products, and business models. Eco-innovation (EI) thus acts as the critical enabler of the CE transition and reinforces CS strategies.

In recent years, a number of firms have increasingly adopted the CE perspective as a new approach to CS responsibility [39, 86]. At the firm level, this involves waste management, reduction and recycling practices to meet regulatory and market demands [44], but technological and business model innovations are essential to create circular value [26, 88]. While EI is a pre-requisite for CE, it is not sufficient [29, 67], as CE principles go beyond eco-efficiency to achieve regenerative systems by slowing, closing, and narrowing resource loops [43, 101]. Thus, CS, CE and EI are distinct yet interconnected domains.

Although prior research examines drivers of CS, CE and EI, it remains fragmented and often treats leadership in an isolated way. Studies on CS rarely explore the importance of proactive leaders for implementing sustainaibility strategies, yet few explore leaders' social and psycological characteristics [70, 73]. CE research has primarily emphasized technical and institutional drivers -such as cultural-cognitive characteristics [91], knowledge and skills, management and culture [46], socio-cultural factors [26], and risk attitudes [114]- while only a limited number of studies focus on leaders' characteristics to CE transition [103, 127]. Similarly, EI literature focuses on technological capabilities and regulatory pressures [14, 60, 113], considering leadership mainly through broad measures of environmental concerns, awareness or attitudes. Although some research highlights the pro-environmental orientation of managers and top executives [11, 21], evidence remains fragmented.

This fragmentation reflects theoretical limitations: institutional theory explains organizational responses to external pressures but neglects individual-level traits; resource-based and innovation theories capture capabilities yet overlook behavioral and cultural dimensions critical for sustainability transitions. Consequently, none of these approaches alone can fully explain how leadership influences integrated strategies across CS, CE, and EI.

Empirical evidence on leadership and these three areas also remains scarce and mixed. The reasons are several. First, most of studies treat leadership as an additional factor rather

than a central driver, focus on large firms and rely on secondary data from corporate sustainability reports [79, 95]. SMEs -representing 99% of EU businesses and provide two thirds of private-sector jobs (EC, 2023)- are underexplored despite their critical role in CE adoption. Furthermore, data on personality traits and behavioural patterns is rarely available in public databases [83, 124] making it difficult to capture leadership influence beyond demographic characteristics, such as age, religion, or ethnicity. Finally, measuring and reporting CE performance is also challenging, specially for SMEs, which complicates empirical research.

To address these gaps, this study examines how existing theories have been applied and integrated to explain leadership within the interconnected domains of CS, CE and EI. These three areas share common principles but differ in scope and operationalization, making theory integration essential for understanding leadership´s role in driving sustainable transformation. A microfoundations lens is adopted, focusing on individual-level characteristics -such as psychological traits and cognitive orientations- that influence firm-level outcomes. Specifically, we ask: How have different theories been used to explain the relationship between leader characteristics, CS, CE and EI? How have these theories been integrated for a comprehensive understanding of leadership in sustainability transitions? What is the portrait of a leader who embraces sustainability, CE and EI?

By exploring these questions, the study aims to advance knowledge on the leader who will guide firm -particularly SMEs- through the challenges of integrating CS, CE and EI under the microfoundations lens [97, 124]. Thus, the first contribution is a systematic review of theoretical perspectives on leader characteristics in CS, CE and EI, identifying which frameworks dominate and which remain underutilized. The second contribution is the development of an integrated conceptual lens that connects these domains under microfoundations theory. Finally, the study delineates the profile of sustainable leaders, mapping traits and behaviors emphasized in the literature to inform both scholarship and practice. This convergence offers an opportunity to challenge traditional management approaches and provides actionable insights for fostering leadership capable of driving circular and eco-innovative strategies.

Theoretical Background

Corporate Sustainability (CS), Circular Economy (CE) and Eco-innovation (EI)

Since Brundtland Commission states the most commonly accepted definition of sustainability as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [16], the term “sustainability” is related to the balanced and systemic integration of intra and intergenerational economic, social, and environmental performance. Based on this definition, CS includes corporate activities that proactively seek to contribute to economic, environmental, and social sustainability at short and long run by firms. Thus, the so-called triple bottom line approach arises to balancing economic, social, and environmental performance at the firm level. CS literature considers four dimensions of sustainability: economic, social, environmental, and temporal and a strategic and proactive behavior engaging a sustainability-oriented innovation process that includes multiple stakeholders [4, 73].

From a holistic view, CS "is the capacity to survive through ensuring the economic, financial, environmental, and human facets. Without innovation, the company loses competitive advantage. Without economic balance, the company also loses. Without environmental sustainability, there are not conditions to survive" ([93], p. 142). Although initially the main concern was about environmental degradation, all three dimensions have equal weight. However, the environmental dimension has recovered greater relevance within the CS strategy in recent years, as shown by the close relationship between with CE.

Environmental sustainability implies the implementation of sustainable practices and a change of management of natural resources. In this sense, CE emerges as a new paradigm for sustainable development. CE is "a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling" ([43], p. 759). Hence, circularity is a condition of sustainability (conditional relationship) and is one of possible pathways to achieve sustainability (beneficial relationship) [43]. Moreover, the implementation of more sustainable solutions requires the access of technological knowledge and innovations with environmental benefits: EIs. In this vein, "EI is crucial for creating synergies between sustainability and competitiveness towards a green economy ([78], p.1853) upholding also the idea that EI and CS are linked when implementing sustainability in an organization" [39, 86].

The relationship between CS and CE is best understood as a nested and synergistic one. CS represents a broad, multidimensional paradigm encompassing environmental, social, and economic dimensions, while CE constitutes a specific pathway within this framework that operationalizes sustainability through resource efficiency and regenerative systems [43, 122]. Effectively, the interconnection between CS and CE has been recognized extensively in the literature [84, 98], but they are not interchangeable. CS enables firms to adopt a wide array of institutional commitments to sustainability, whereas CE provides a more narrowly defined operational model [43, 65, 115]. However, CE approaches often emphasize environmental and economic benefits while underrepresenting social dimensions [7, 43]. This emphasis can lead to excessive focus on circularity can neglect other sustainability dimensions resulting in a potential trade-offs when circular initiatives are pursued without addressing broader CS objectives. Nevertheless, overlaps between the two concepts remain critical, as most of circular business models integrate the principles of sustainable development alongside CE logic [12]. Moreover, technological solutions embedded within EI emerges as the enabling mechanism that allows firms to integrate CE principles and strengthen CS strategies [29, 67].

"EI is defined as a set of technological and non-technological innovations that prevent and enable the recovery of environmental damage" ([26], p. 3014), but it is recognized that not all EI are adopted under CE principles and are compatible with CE [26, 45, 67]. Despite there is a growing number of studies that state the close link between EI and CE [25, 88], the connection of these two concepts is not always unequivocal. EI is considered a tool or an instrument for the CE [25, 67]. Effectively, EI is a facilitator of the CE and help to achieve CE, but this happens if this transformation process requires service innovations and novel organisational set-ups and be based on cooperation and multi-actor "systemic" integration [26]. This implies that technological EIs are a pre-requisite to CE sucess but the consequences in environmental and economic terms will depend on the type (i.e., eco-

design, eco-process) [29]. According to Kiefer et al., [67], CE can be achieved quickly with radical innovations and more slowly with many incremental and accumulated innovations. This idea is consistent with other scholars that argue that "managers in redirecting innovation activities from eco-efficiency toward eco-effectiveness for easing and underpinning the transition to a functional CE, eventually resulting in more sustainable and resilient economic systems" ([101], p. 1662). Regardless of the object, the novelty or the result of EI, it will enable the firms to move closer to the CE.

To achieve a CE, firms need to develop and adopt EI [44]. This highlights the importance of EI to needed challenges to initiate transition to CE and implement a CS strategy compatible with CE principles. EI is crucial to the paradigm shift towards CE but not all EI are circular because they must be guided by CE principles involving practices such as disconnecting from raw materials, repurposing waste in different processes, and introducing service and organizational innovations [5, 25]. Therefore, we do not focus on either CS, CE or EI because we understand that these concepts are interrelated. Consequently, we focus on the characteristics of leaders who advocate for the transition to CE, either through CS strategies compatible with CE principles or the adoption of circular EI.

Leaders as a Driver To CS, CE and EI

Understanding which drivers trigger the firms´ transition to a more sustainable and circular-based economy is also an interesting topic. Despite there is an extensive literature on these drivers, the studies are based on different assumptions, conceptualizations and theoretical approaches [81, 95]. To disentangle this question, we analyse how leaders are integrated in the literature related to the drivers for CS, CE and EI.

In the context of CS, leadership is the main driver of CS strategies. Although the number of studies is yet scarce, some scholars confirm that that social and psychological factors are crucial enablers of CS [70, 73]. From a holistic perspective, Lozano, [73] identify leadership and specific business cases as the most important internal sustainability drivers, whilst reputation, customer demands and expectations, and regulation and legislation are the most significant external drivers. Conceptual/strategic/visionary competencies, social/interpersonal competencies and self-leadership competencies are identified as facilitators to developing CS [93]. Leaders who embrace sustainability practices possess peculiar characteristics and mindset compared to the rest [70]. Thus, proactive leaders play a further role for the successful implementation and institutionalisation of CS in accordance with stakeholder expectations about sustainability.

Many scholars also have tried to identify the drivers to CE [46, 91]. Based on institutional theory and six case studies, Ranta et al., [91] identify general and region-specific drivers of and barriers to CE in China, the US, and Europe. Distinguishing by regulatory, normative and cultural-cognitive drivers of CE, they show that regulation is not enough to support the institutional change implicit in the CE transition. Normative and cultural-cognitive conditions also influence on the CE adoption. In this regard, the cultural-cognitive system will play a crucial role in the establishment of societal expectations and structures that guide a new way of thinking or CS. Since common beliefs, shared logics of action and isomorphism configured this cultural-cognitive system, the role of leaders in CE is acknowledged. Govindan and Hasanagic, [46] neither include clearly the potential influence of leaders on the drivers of CE (policy and economy, health, environmental protection, society, and product

development), but some of the identified barriers to CE are related to the business leader: knowledge and skill, management and culture. Since socio-cultural barriers have been identified as a main obstacle to the implementation of CE, mainly in SMEs, and risk averse behaviours by leaders [95, 114]. Despite these contributions, few studies have focused on the influence of leadership characteristics to CE transition. In a recent study, Wihler et al., [127] examined the pivotal role of leaders in reshaping organizational practices from linear to CE. Based on a case study, they support that leaders face bigger complexities when implementing circular business models and need additional leadership orientations related to progress, principle, performance, and people. Based on distributed leadership assumption, defined as sharing of leadership between employees and managers, Soni et al., [103] identified collaborative approaches, intuitive working relations, institutionalised practice, and planful alignment as leadership characteristics to facilitate CE adoption. These findings are consistent with studies that assume that EI is the primary tool for the transition to CE. In this regard, De Jesus and Mendonça, [25] distinguishes between "harder" (technical, economic) and "softer" drivers (social, institutional, regulatory). Following them, the institutional and regulatory drivers have been the factors more analysed in the existing literature, positioning policies at the centre to help towards this CE transition. However, regulatory changes alone will not be enough to achieve a more circular production system [56]. A change in stakeholders' behaviour and attitudes is needed. One of these stakeholders are firm managers. If CE is seen as a business opportunity, firm leaders would have a positive view towards its implementation. Therefore, managers who look for new and innovative solutions can assist them by developing an alternative vision [34].

Nor are there too many differences to what has already been pointed out, with reference to the drivers of EI. There is a very extensive literature, which distinguishes between regulatory push/pull, technology push and market pull [60]; external and internal factors [14], or the influence of cooperation or stakeholders [113], but there are also fewer studies that focuses exclusively on the influence of the leader characteristics on EI. As Bossle et al., [14] points out "the construct managerial environmental concern is perhaps the strongest determinant of environmental innovation strategy", but the empirical studies have not deeply analysed what are the characteristics of the eco-innovative leader being considered in the analysis variables such pro-environmental awareness, environmental managerial attitudes, environmental leadership, environmental culture or environmental capability. The studies that are probably most successful are those that distinguishes between pro-active and reactive green innovators. Chen et al., [21] distinguishes between the internal and external origins of EI and argue that only internal origins can facilitate pro-active EI processes. These internal origins of EI are environmental leadership, environmental culture, and environmental capability. Therefore, environmental managerial concerns, environmental leadership, environmental culture and environmental capability has been studied as drivers of EI but there is need more information about the peculiar characteristics of these leaders. Although it is recognised that environmental managerial concerns play an important role in the adoption of EI and the integration of sustainability of CE principles in their CS strategy, the environmental leadership and culture are essential to adopt EI [11, 21]. This environmental culture of leaders inside the firm is related to a "symbolic context about environmental management and protection within which interpretations guide behaviours and processes of members´ sense-making and set of values and norms describing how the company perceives the environmental variable" ([18], p. 80). Undoubtedly, a pro-environmental organizational

culture is needed to adopt EI and integrate the principles of CE inside CS. Therefore, the characteristics of leaders must be analysed in more detail.

According to Urbinati et al., [115], it is important to note that leaders are prompted to implement sustainability due to diverse stakeholder influences or pressures. (See Fig. 1). This way, their perception and attitude will help overcome internal difficulties such as insufficient knowledge [92]. Furthermore, stakeholder demand will lead to a proactive or non-proactive attitude toward environmental initiatives [49]. This leaders' proactivity positively impacts environmental issues and makes teams more willing to collaborate [27]. Also, their commitment makes them accept their legitimate responsibility towards the environment issues [32].

Therefore, behind many of the responses to the actions that lead a company to engage in the adoption of CS, CE and EI are the attitudes of the leaders [123]. The upper echelons theory suggests that organizations become reflections of their top managers [52] and has been widely used into research in sustainability and leaders. Recent studies recognise the importance of leaders in the move towards sustainability [41, 42, 63, 109]. If the role of leaders is essential to bring about sustainability, it is necessary to explore their characteristics [124]. Interactions and pressures with the business context are also incorporated on studies on environmental CS and EI [32, 49, 124]. In a context of uncertainty, individuals may have different opinions and ideas about what can work and what cannot. Therefore, it seems appropriate to analyse these leaders' personality traits to see how difficulties are overcome differently by them [37].

Microfoundations and Drivers To CS, CE and EI

Since the individual analysis of leaders is a critical issue, focusing on microfoundations in the context of CS, CE and EI are necessary. The microfoundations literature is divided into

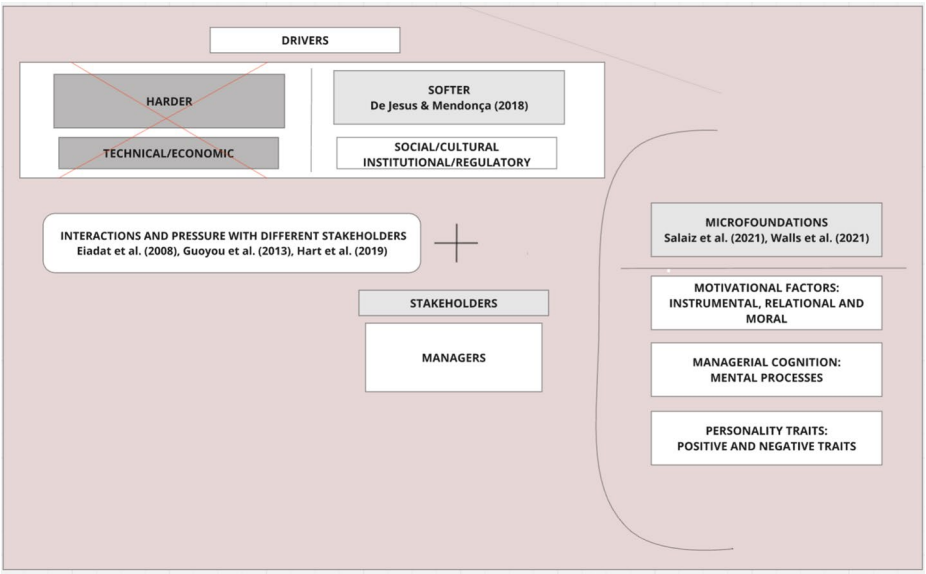

Fig. 1 Microfoundation perspective: leaders as a driver

(1) motivational drivers, (2) managerial cognition, and (3) personality traits [97, 124]. Motivational drivers refer to motivations, general belief system, or ideologies. Cropanzano et al., [22] differentiate into three drivers: instrumental, relational, and moral drivers. Instrumental drivers refer to the psychological need to overcome concerns and are rooted in economics. If CS brings a financial benefit, then the activities around CS will be justified. From the individual analysis perspective, these drivers, will lead to decisions that will benefit the decision-maker, that is, are based on self-interest or respond to a need to alleviate pressure from stakeholder groups [55, 87]. In the first case, as the agency theory explains, leaders get involved in sustainability because it benefits them directly, for example, through an economic reward. In the second case, from a conflict-resolution perspective leaders feel very exposed to others and do not want problems [97]. Relational drivers activate the part of belonging to a social group to develop certain relationships. This driver is activated by leaders who act under the premise of being responsible. These leaders will not only direct their interests towards shareholders but also keep stakeholders in mind. This driver has a lot to do with responsible leadership, which includes ethical decisions, value-based leadership, and stakeholder relations. Leaders with a well-being orientation develop an integrative leadership style with a dual sense of achieving financial and non-financial stakeholder goals [74]. Moral drivers concern personal values and drive the need for a meaningful existence. From the company's point of view, leaders can act towards or against CS, depending on their social and environmental values. The difference between these moral drivers and ethical leadership is that the former does not correspond to rational ethical behavior, but to an automatic and non-deliberate reaction to an action or activity within sustainability [121]. Other researchers argue that ideology also affects decision-making when implementing sustainable strategies [50].

Managerial cognition research on socio-psychological perspectives analyses everything that has to do with cognition and the individual traits of these leaders as they may affect the results of the enterprise. Cognition encompasses cognitive processes, including attention, recall and reasoning [116, 131]. These mental processes also contribute to leaders' different behaviors and capabilities. In sustainable managerial behavior two aspects must be considered: the integrative cognitive complexity to meet the challenges and the individual experience, including emotions. These experiences filter the mechanisms and complexity to achieve [97].

Personality traits studies refer to distinct attributes, qualities or personal characteristics that are considered enduring [120]. In this group, it is interesting to explore the predominant traits in firms' leaders who want to carry out a transformation towards sustainability, such as positive traits (humility or an open mind) and negative traits (narcissism, egocentrism, or arrogance). Lastly, emotions play a fundamental role on the one hand because they situate us in how the person is placed before a message and how emotions help to overcome certain situations if we know what is happening in the person [124]. In the literature on emotions and sustainability, a distinction is made between different types of emotions. First, moral emotions such as shame, guilt, or gratitude appear as the most common emotional drivers in CS microfoundations research [35, 97]. Moral emotions play a crucial role in most ethical judgments and decisions [90]. Second, basic emotions such as contempt, sadness, or anger are more direct and can appear early in development, when culture has less influence; they are considered universal and can be recognized through direct bodily expressions [61]. These emotions have also been examined as predictors of moral behaviors [35]. Finally,

emotions directly connected to the natural environment, such as biophilia or biophobia, express either love or fear toward nature and generate an affective response for or against the natural environment [124]. See Fig. 1.

The scarcity of literature about microfoundation of leaders in the context of sustainable and circular business innovative models has prompted us to carry out the following systematic literature review. This review includes the literature on CE, CS, and EI, and intends to scrutinize the most relevant perspectives and topics to research on the role of leaders characteristics. This convergence offers an opportunity to challenge traditional management approaches within the portrait of the leader and enables us to know more about the archetype of a SMEs manager who show a high awareness with sustainability, CE and EI adoption.

Method

Methodology: Systematic Literature Review

In the first step, we examine papers selected through the "SUBJECT" field (Title, Abstract and Keywords) in the Web of Science Core Collection database, including the databases SCI-EXPANDED and SSCI. Although we could have also used other databases such as Scopus or EBSC, WoS appears most widely for systematic reviews in our discipline in most cited publications [14, 80]. Our review process employed a key-inform search strategy to locate academic articles pertinent to identifying the most relevant words within the domains of sustainability, CE, and EI, as well as the individual characteristics of the leaders when adopting practices from the above domains. Specifically, we focused on articles published from 1956 for SSCI and 1900 for SCI-EXPANDED, which is the default; we do not modify these dates because we are interested in displaying all publications in English, no matter how old. We utilized the following Boolean algorithm (see Table 1):

$$\begin{gathered}[\mathrm{TS} = (\text{combination of the keywords with circular economy, eco} - \text{innovation, corporate sustainability})] \\ \text{AND} \\ [\mathrm{TS} = (\text{combination of the keyword leader})] \\ \text{AND} \\ [\mathrm{TS} = (\text{combination of the keyword microfoundation})]\end{gathered}$$

In the second step, we reviewed all the titles of the 176 articles, the works that Boolean algorithm identified. We screened all the manuscripts to select those that evaluated the characteristics of leaders in the sustainable domains. The exclusion criteria were as follows: (1) studies not written in English as the standard language criteria, (2) studies analysing the characteristics of employees rather than leader and (3) studies in the field of CSR (corporate social responsability) those addressing the social and ethical impact.

In this screening step, we excluded 5 of them as we detected from the title that they did not correspond to the topic under consideration. We manually reviewed the abstracts and keywords of the 171 articles. We excluded those irrelevant (128 articles) to our research, as indicated in the exclusion criteria above. In the last step, we read the full content of 43 articles in detail and discarded those that could not be discarded by reading the abstract. The final sample consisted of 45 articles (see Table 2), 41 from close reading, and 4 from cross-citation.

Table 1 Combinations of each of our main words for the study

Keywords	Combinations of the key with "OR"	Database	Advanced search
Corporate Sustainability Circular economy Eco-innovation	"corporate sustainability", "circular economy", "sustainable business model", "circular business model" "environmental sustainability", "eco business model", "green innovation*", "environmental innovation*", "eco-innovation" "responsible innovation"	Web of Science	TS = Topic Advanced Search WOS Core Collection English All years SCI-EXPANDED SSCI
Leader	"CEO*", "board* of director*", "leader*", "manager*", "director*", "entrepreneur*"		
Microfoundation	"microfoundation*", "person*", "trait*", "emotion*", "behavio* strateg*", "managerial cognition*", "cognition*", "positive organizational scholarship", "individual level"		

The identification, screening, and inclusion process rigorously adhered to the PRISMA principles (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), adopted as a method for conducting systematic literature reviews [9, 99]. Implementing the PRISMA methodology in the literature review provides an adequate set of elements that guarantee the review process is conducted in a structured and consistent manner [59]. See Fig. 2 for the search and PRISMA methodology.

Results

The synthesis of existing evidence is ordered into two subsections: first the perspectives and theories used in the literature are briefly described. See Fig. 3; second, the portrait of the leaders from firms who adopt CE are presented. See Fig. 4.

Perspectives and Theories on the Adoption of CE and their Leaders

Observing the adoption of CE at the company's most individual level, the main perspectives the studies use to approach the intersection of CE and leaders are: (1) Psychological perspective (24.4% of the total studies); (2) Strategic Management perspective (53.3%:) and (3) Other perspectives (4.4%).

Table 2 Categories of microfoundations [97], theory/perspective, methodologies and keywords of each Article of the systematic review

Reference of papers Systematic Literature Review	Research method	Micro foundations	Theory/perspective	Themes/keywords
Abatecola and Cristofaro, [1]	Conceptual (systematic review)	Personality traits	Upper echelons theory (strategic management)	Power, behavioral strategy, sustainability, managerial discretion, narcissism, and hubris
Agyabeng-Mensah et al., [2]	Quantitative		Leader-member exchange theory Contingency theory (strategic management)	Ethical leadership, circular economy, sustainable chain ethical leadership, circular sustainable chain
Arena et al., [6]	Quantitative	Personality traits	Upper echelons theory (strategic management)	Managerial discretion, hubris, CEO, eco-innovation, individual level
Ben Amara and Chen, [10]	Quantitative	Motivator driver	Institutional theory (strategic management)	Entrepreneurs, Eco-innovation, driving forces
Boiral et al., [13]	Mixta	Managerial cognition	Theory of consciousness development (psychological)	Developmental psychology, organizational citizenship behaviors, corporate greening, environmental beliefs.
Bouguerra et al., [15]	Quantitative			MNE, Machiavellian collaboration, individual Machiavelli, operational agility
Chassé and Courrent, [19]	Quantitative	Motivator driver	Upper echelons theory Managerial discretion theory (strategic management)	SME, owner-managers, sustainability behaviors, attitude
Cheffi et al., [20]	Quantitative	Motivator driver	Upper echelons theory (strategic management)	Ethical leadership, SME, circular economy
Eide et al., [33]	Quantitative		Self-determination theory (psychological)	Transformation leadership, sustainability, leaders' motivation, firm performance
Friedrich and Wüstenhagen, [40]	Conceptual		Institutional theory Theory of grief (strategic management)	Sustainability, emotions, stages of grief, decision-making
García-Sanchéz et al. (2021)	Quantitative		Resource and capacity theory (strategic management)	Eco-innovation, board of directors, female directors
Graves et al., [47]	Quantitative		Self-determination theory (psychological)	Transformational leadership, sustainability, motivation
Gröschl et al., [48]	Qualitative	Managerial cognition	Cognitive Complexity theory (psychological)	Microfoundation, CEO, sustainability, managerial cognition
Hahn et al., [51]	Conceptual	Managerial cognition	Cognitive categorization theory (psychological) Sensemaking theory	Sustainability, managerial cognition, cognitive frame

Table 2 (continued)

Reference of papers Systematic Literature Review	Research method	Micro foundations	Theory/perspective	Themes/keywords
Haney et al., [53]	Qualitative	Motivator driver	Experiential learning theory	Sustainability leadership, experiential learning, education
Hansson et al., [54]	Qualitative			Sustainability, business model innovation process, business decisions
Herbert et al., [57]	Quantitative	Motivator driver	Value-belief-norm theory (Machiavellian)	"Bigger-than-self", biodiversity, leader, sustainability
Hoogendoorn et al., [58]	Qualitative		Theory of Institutional of entrepreneurship Theory of entrepreneurship (strategic management)	Entrepreneurs, barriers, sustainable entrepreneurship
Khanchel et al., [66]	Quantitative	Personality traits	Upper echelons theory (strategic management)	CEO narcissism, green innovation, CEO age, CEO international, dark side of narcissism
Koistinen et al., [68]	Qualitative	Personality traits	Structuration theory	Behavioral perspective, circular economy, transition, power, microfoundations
Kurki and Lähdesmäki, [69]	Qualitative	Managerial cognition	Psychological ownership (psychological)	Individual level, sustainability, MNEs
Leonelli et al., [71]	Qualitative	Personality traits	Upper echelons theory (strategic management)	Sustainability, narcissism, entrepreneur
Lin et al., [72]	Quantitative	Personality traits	Agency theory (strategic management)	Sustainability, narcissism, hubris, CEO, firm performance
Mahran and Elamer, [75]	Conceptual	Personality traits	Upper echelons theory (strategic management)	CEO characteristics, corporate environmental sustainability, environmental disclosure, environmental performance, theories, ethical leadership
Martinez, [77]	Quantitative	Managerial cognition	Institutional theory Faith development theory (strategic management)	Sustainability, faith
Murcia and Acosta, [82]	Quantitative	Managerial cognition		Sustainability, leadership, cognitive frame
Opstal and Borms, [117]	Quantitative			Circular economy, entrepreneurs, startups, B2B, B2G
Papagiannakis and Lioukas, [85]	Quantitative		Norm-activation theory (psychological)	Sustainability, microfoundation, charisma leadership, CEO
Pelster and Schaltegger, [89]	Quantitative	Personality traits	Upper echelons theory (strategic management)	Psychology theory, sustainability, dark triad,

Table 2 (continued)

Reference of papers Systematic Literature Review	Research method	Micro foundations	Theory/perspective	Themes/keywords
Rego et al., [93]	Qualitative		Sustainable strategy management approach (strategic management)	Corporate sustainability, content analysis, CEO
Ringvold et al., [94]	Qualitative			Sustainable business model innovation, microfoundation, strategy management
Robertson and Barling, [96]	Qualitative			Transformation leadership, employee, green leadership, harmonious environmental passion
Soni et al., [103]	Qualitative			Circular Economy, SMEs, leadership adaption, distributive leadership
Sun et al., [107]	Quantitative	Personality traits	Upper echelons theory Managerial discretion theory (strategic management)	Humble, CEO, Eco-innovation
Swaim et al., [108]	Quantitative		The theory of planned behavior (psychological)	Sustainability, managerial concern, firm performance
Tang et al., [109]	Quantitative	Managerial cognition		Eco-innovation, organizational behavior, supply managers sustainable, cognitive frame
Tiberius et al., [112]	Qualitative	Motivator driver	Dynamics capabilities theory (strategic management)	Microfoundations, sustainability, family firms, social, ecological and economics dimensions
Venugopal et al., [118]	Quantitative	Personality traits	Upper echelons theory	CEO, personality traits, corporate sustainability, cybernetic big five personality
Visser and Courtice, [120]	Conceptual	Personality traits		Individual characteristics, sustainability leadership, traits
Walls and Berrone, [123]	Quantitative		Institutional theory (strategic management)	CEO, power, environmental performance, behavioral strategy
Walls et al., [124]	Conceptual	Personality traits	Positive organizational scholarship (strategic management)	Leaders, microfoundation, behavioral strategy, corporate sustainability, sustainability change agent, Positive organizational scholarship
Wang et al., [125]	Quantitative		The theory of planned behavior (psychological)	Diffusion of innovation theory, eco-innovation, leaders, waste separate, social networks
Yamoah et al., [129]	Qualitative	Motivator driver		CEO, circular economy, stakeholders, and value chain

Table 2 (continued)

Reference of papers Systematic Literature Review	Research method	Micro foundations	Theory/perspective	Themes/keywords
Ye et al., [130]	Quantitative		Institutional theory (strategic management)	Green entrepreneur, push-pull-mooring, intensions
Zhang et al., [132]	Quantitative	Personality traits	Upper echelons theory Institutional theory (strategic management)	CEO, hubris, pollution, environmental performance

(*) Blank if no categorization is applied

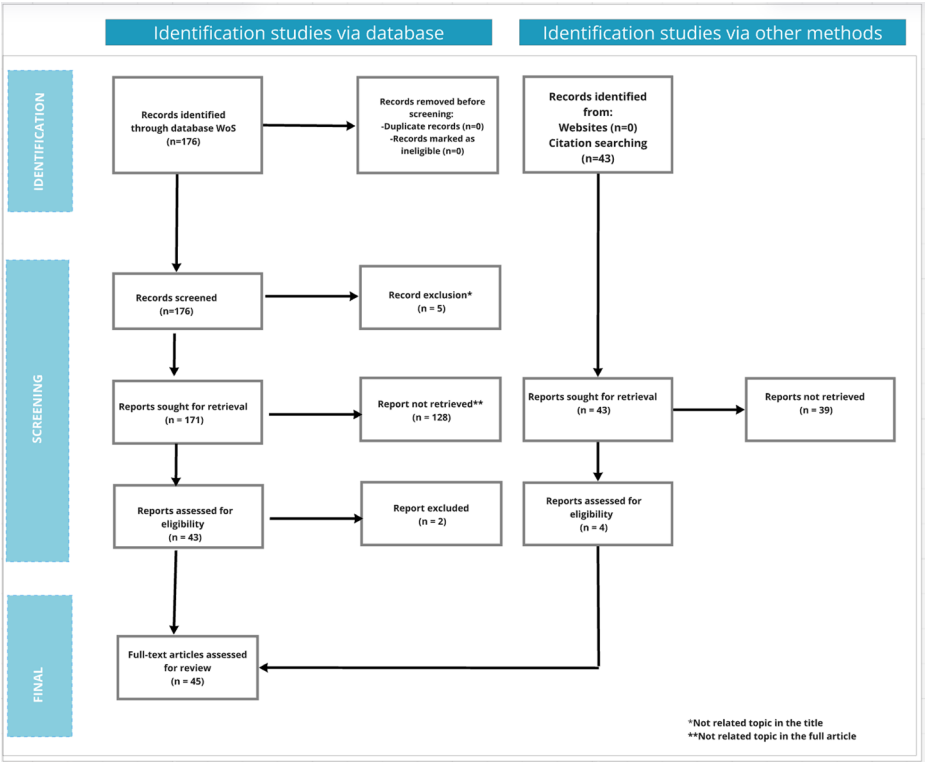

Fig. 2 PRISMA flow chart of the systematic literature review. Source. Authors' elaboration

Psychological Perspective

There are different theories under the psychological domain that are used as an approach. Most of the approaches are concerned with managers' behavior, motivation, or cognition. These three keywords were used in the systematic literature review.

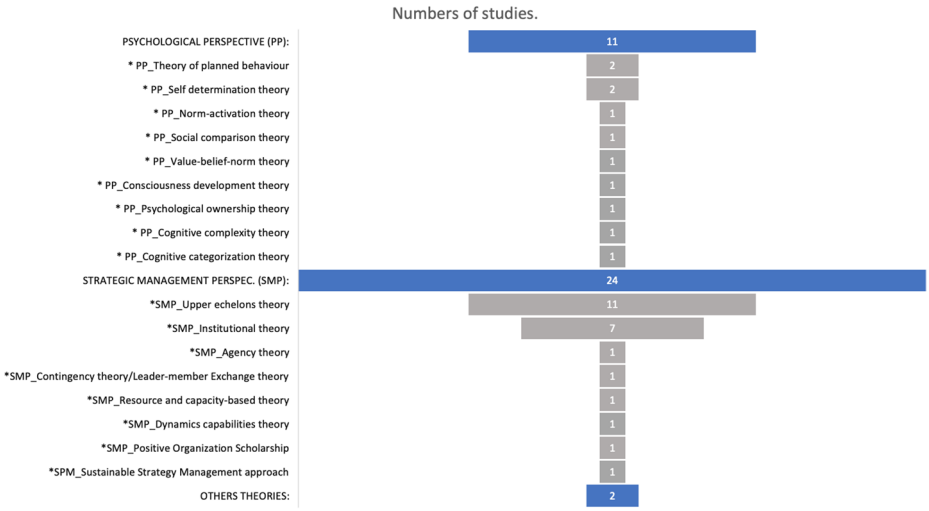

Fig. 3 Perspective and theories

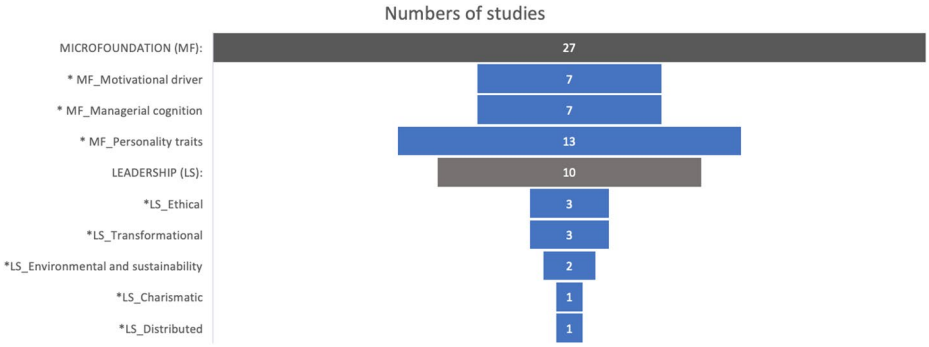

Fig. 4 Microfoundation and leadership

Behavior and motivation theories Applying psychological theories contributes to a complete understanding of behavior and motivation of business managers. 7 of the 11 total studies rely on behavior and motivation theories [33, 47, 57, 85, 96, 108, 125]. According to Papagiannakis and Lioukas [85], charisma leadership reinforces the relationship between personal norms and environmental management initiatives. This study based on the norm-activation theory [102] argues that behavior is the response to personal norms. Another behavioral theory is the value-belief-norm theory [105], explicitly showing how the set of values affects manager´s conduct. The study from Herbert et al., [57] explores whether leaders in SMEs focusing on sustainability and with a "bigger-than-self" values component prioritize biodiversity issues. The conclusion is that they do not and that being the case, it is indispensable that the importance of biodiversity loss begins to be considered both normatively and collectively. Continuing with individual values, social comparison theory [38], concludes that personal values are based on how individuals compare themselves to

others. In this case Robertson and Barling [96] draw on how leaders with transformational leadership specific to the environment can encourage pro-environmental behavior in the workplace by influencing their employees' environmental passion and behavior.

Another study applies the theory of planned behavior [3]. This theory is widely used to work out everything related to individual behavior towards waste management, e.g., the intention of waste separation. Wang et al., [125] examined leaders' views on network communication concerning EI, e.g., waste management, and how they affect attitude, but not necessarily the ability to perform such behavior. Swaim et al., [108] explore how managers' personal environmental motivation influences work behavior for sustainable suppliers. Finally, we found 2 articles applying the self-determination theory [33, 47]. Both articles conclude that a transformational leader mediates the relationship between leaders' motivation and the company's sustainability strategies. This leader generates inspiration in the company's employees towards sustainability.

Cognition theories Only 4 articles explore possession and a psychological sense of being and the cognitive process. They are based on the theory of consciousness, the psychology ownership theory, cognitive complexity theory and cognitive categorization theory [13, 48, 51, 69]. Hahn et al., [51] join cognitive categorization theory with the sensemaking perspective (see the strategy management perspective, 4.1.2). They explore the difference between the two cognitive frames of managers, "business case" -thinking in terms of profitability- or "paradox" -embracing tensions that are contradictory, e.g., collaborate and compete. Boiral et al., [13] deal with the role of consciousness and the manager's states of consciousness. Overall, this cognitive frame clearly does not focus on the company context, but on managers personal experience, history, and the leader's frame of reference. Finally, one article [69] suggests that a strong individual sense of psychological ownership of CS is a prerequisite for the development of sustainability thinking. The factors supporting this type of thinking include three key aspects: developing deep knowledge, having control, and investing in oneself.

Strategy Management Perspective

There are also different theories under the management domain that are used in the studies reviewed. Most approaches are concerned with the different elements within the company's strategy; among them are the stakeholders, resources, human capital, regulation, etc.

Upper echelons theory The upper echelons theory is the most used in our literature review and has a fundamental premise: organizations become reflections of their top managers as Hambrick and Mason [52] suggested in their seminal paper. The sociodemographic characteristics of managers can represent a proxy for cognitive values and, therefore, for decision-making. These sociological variables are, for example, age, functional background, professional experiences, education, socioeconomic background, and economic position.

11 of 24 reviewed studies use strategy management perspective. Half of these studies also work with managerial discretion theory which stays that leaders act, usually giving more priority to what affects them than to what is suitable for the company. In most of these

studies, the leader's characteristics are mostly related to their personal traits: hubris, narcissism, humility, dark triad, etc. The outcome of these studies always explore sustainable and unsustainable practices in the company, such as pollution, waste separation [132], environmental performance [75], sustainability performance [118], EI [6, 66, 107], environmental disclosure [75], environmental practices [19], environmental responsibility [89] and how to see and take advantage of environmental opportunities for the company [71].

Institutional theory The second theory used is the institutional theory which emphasizes the informal understandings and cognitive frameworks that shape the social structure of markets. The three pillars of the institution, namely the regulatory, normative, and cognitive cultural pillars, are the three elements that social theorists consider vital to the institution [31].

7 articles of 24 use this theory comprehensively or sharing the perspective with another. The study by Friedrich and Wüstenhagen [40] combines institutional theory with the psychology theory of grief. It builds a model of grief phases to explain why firms need time to adapt to institutional changes, e.g., changes in renewable energy policies. This study aims to inspire, among other things, long-term thinking on sustainability issues. Hoogendoorn et at. (2019) focus on the more institutional part of entrepreneurship, i.e., when a person or group of people work to change an institution drastically. Other studies explore what are the differences between sustainable and non-sustainable leading entrepreneurs (mostly in terms of eco-innovation) and how this is affected by the normative pillar of institutional theory [10], and both normative and regulatory pillar as mooring factor to green entrepreneurship [130]. Other topics explored include how power operates in leaders when it comes to improving environmental performance [123], how the concept of faith intersects with leadership in those seeking to guide their companies toward environmental objectives, and what types of motivations make them more aligned with sustainability [77].

Other theories Strategic management also includes other different theories or approaches. Regarding agency theory, Lin et al., [72] conclude that managers' agency narcissism and hubris positively affect the company's sustainable development. This research strengthens the literature on how CEO personality traits influence the relationship between CS practices and enterprise performance. Furthermore, the combination of leader-member exchange theory and contingency theory is applied in the Agyabeng-Mensah et al., [2] study, where the former theory is used to explain the relationship between sustainable chain ethical leadership and circular sustainable chain practices, while the latter one addresses the moderation between environmental orientation and sustainable chain practices on sustainable performance. The study concludes that a sustainable chain ethical leadership coupled with circular sustainable chain practices and an environmental orientation improve sustainable performance.

Another approach widely used in management, and which only appears in one of our articles [41] is the resource and capabilities-based theory [8, 126]. García-Sánchez et al., [41], use the resource and capabilities-based theory to conclude that more independent and knowledgeable managers achieve best environmental strategies. Tiberius et al., [112] explore microfoundations related to dynamic capabilities and conclude that sustainability's

social dimension is related to an innovative mindset, investment in human capital and active participation in decision-making. However, they do not find a relationship with the environmental part of sustainability.

Finally, three additional approaches are found in the literature review: the sensemaking theory [23] and two more recent ones, the positive organization scholarship theory [17] and the sustainable strategy management [104] theories. The sensemaking theory is applied in various studies [51, 109], (see psychological perspective, cognition theories, 4.1.1) These studies show which framework the leader interprets through the three stages of the sensemaking process: managerial scanning, interpreting, and responding to sustainability issues. The positive organization scholarship theory is used by the study by Walls et al., [124] who analyse how positive deviance can serve as inspiration for leaders pursuing sustainability, defining different leadership styles such as servant leadership, transformational leadership, and ethical leadership. Lastly, the article by Rego et al., [93] explores the different CEOs discourses have around the definition of CS. It searches for what an integrative approach within sustainability means to them. They conclude that this approach is challenging to realistically put into practice since, in a globalized world and in many cases unsophisticated in innovation, it is difficult for managers to embrace this integrative perspective of the three dimensions: economic, environmental, and social concerns [51].

Other Perspectives

In this section, we group two theories from other scientific disciplines: the structuration theory (sociology), and the experiential learning theory (education).

The study by Koistinen et al., [68] examines leaders' power and agency towards the CE transition and conclude that while the leaders are perceived as having maximum power in the firm, structural constraints often limit their agency where different levels must be managed. On the other hand, the study by Haney et al., [53] analyses the soft side of sustainability competencies, more within the personal dimension, values, motivations, and ethics. They conclude that in experiential programs for sustainability learning, the emotional aspects must be incorporated to link to the individual's connection to the learning.

Combining Theories To Understand the Leaders' Role

Literature review confirms that managers' behavior, motivation, and cognition are explanatory factors of managerial conduct and that norms and sets of values also shape how managers act [40, 51, 109]. Personality traits and aspects such as managers' agency, narcissism, and hubris, as well as the presence of more independent and knowledgeable managers, are also relevant in understanding how leadership influences organizational responses to sustainability challenges [41, 72, 112].

Therefore, as stated by the upper echelons theory, it is reasonable to assume that the psychological characteristics of leaders influence the kind of organizations they create and manage, and that CEOs' personality traits affect the relationship between CS practices and firm performance [6, 52, 66, 107]. However, as suggested by institutional theory, shared beliefs, cultural values, social norms, and cognitive frameworks that exist in society also influence both organizations and their leaders [10, 31, 40, 58, 130]. These studies explore how firms need time to adapt to institutional changes, identifying which factors—such as

norms, values, regulations, or psychological, cultural, and structural barriers—anchor or stabilize behavior and hinder change, and which ones—such as personal, ethical, or reputational beliefs—motivate transitions toward sustainability [53, 68, 77, 124].

Taken together, these perspectives suggest both potential tensions and complementarities: while upper echelons theory emphasizes leaders' individual characteristics and discretion, institutional theory highlights how those leaders operate within broader normative and regulatory constraints. Building on this, the following combinations of psychological and management theories illustrate more concretely how individual-level and context-level factors jointly shape sustainable leadership and transitions toward the circular economy.

By harnessing the potential of the above theories and combining them, we can gain a comprehensive understanding of how leaders can overcome barriers and promote the transition to the circular economy. This approach opens up a world of possibilities and can lead to significant advancements in sustainable leadership. The first combination is cognitive categorisation theory (psychology) and sensemaking perspective (management). The former explores how leaders perceive and organise information and the latter how they interpret and respond. The join use of these theories helps manage tensions between the "business case" and "paradoxes" (such as collaboration and competition), which is fundamental for adopting circular economy strategies (Hanh et al., 2014). Second, by connecting the psychological ownership theory (psychology) with resource and capabilities-based theory (management), leaders can channel their resources and skills towards practices that drive sustainability—implying the leader's commitment to strategic advantage for the organisation. The third combination, social comparison theory (psychology) and institutional theory (management), sheds light on the crucial role of leaders' personal and contextual influences in guiding decisions towards sustainability. Finally, the theory of planned behaviour (psychology) and the upper echelon theory (management) highlight the importance of leaders' sustainability intentions and the degree of discretion they have in their roles.

Portrait of (SME) Leaders Focused on CE

In this section, we analyze the literature found regarding microfoundation, divided into three groups of studies: motivational drivers, managerial cognition, personality traits, and leadership styles into five groups: ethical, transformation, environmental and sustainability, charismatic and distributed leadership. See Fig. 4.

Motivational Driver

If we look at the motivational drivers (instrumental, relational, and moral) that lead leaders to adopt CE, the literature presents leaders who are fundamentally motivated by achieving enterprises' performance and business growth [10, 19, 112]. The traditional mindset is tough to change in family businesses, and the economic goals ultimately drives these leaders [112]. If we compare the motivation that drives them towards a more environmental or social behavior, the study by Chassé and Courrent [19] makes clear the separation between the two above: the more social aspect may be driven by the emotional factors and the environmental one by the market and the organizational environment. Ben Amara and Chen, [10] add a new instrumental motivation: regulation. Thinking in economic and financial terms, regulation is an essential driver for adopting CE as investing in regulation will

compensate the cost of compliance (reducing pollution). Thus, specific emotional internal factors showed by the leaders interacts with external factors on the adoption of CE practices.

Regarding the moral drivers, we have observed several studies showing the importance of values when carrying out CE [20, 53, 57, 129]. From values that are embedded in the type of leadership (e.g., ethical values such as fairness and reliability [20] to more concrete values such as "bigger-than-self" [57] or "softer" values (soft side of sustainability competencies: values) [53]. In the study by Yamoah et al., [129], we see how both moral and relational drivers intersect and how values can influence or deter the commitment of different stakeholders to implement circularity.

Managerial Cognition

From the cognitive frame, a perception of the world is shaped by an individual's experiences – background, education, work, the companies one has been part of, the individuals encountered, and the projects engaged in – all these experiences form a collection of knowledge that shapes the perspective. A paradoxical cognitive frame hints at providing "superior business contributions to sustainable development" ([51], p. 237). In contrast to a business case frame, it aims to harmonize business risks, encompassing operational, ecological, and societal considerations, with financial goals. Neither concludes by opting for one of these frames in which managers gamble on this adoption. Hahn et al., [51] conclude that both frames could fit this profile, as the authors consider sustainability a complex issue and do not advocate simplifying it into just one frame. However, Murcia and Acosta, [82] opt for an intermediate frame between the two frames proposed by Hahn et al., [51]. Martinez, [77] adopts a more spiritual approach, highlighting faith as a development process where we reaffirm our actions preserving the ability to accept or reject our principles. The study concludes that the higher the level of faith and spirituality of the leaders, the easier it is to reject activities that are not sustainable.

Other aspects of cognition that influence CE are the feelings of the leaders. Feelings are the mental representation of the physiological changes that characterize emotions [24]. Two studies inquire about two contrasting feelings. The first concludes that concern in leaders causes them to act on EI issues; it moderates EI to translate it into company performance [109]. The second study considers the positive sense of psychological ownership, the feeling of possession over a target, that formal ownership may or may not support. Psychological ownership is found to be an essential precondition for managers to be part of the transition and become creative and autonomous thinkers [69].

Two other elements regarding managerial cognition are experience and cognitive complexity. Experience shapes how leaders process information and acts as a mental filter mechanism [97]. Boira et al., (2018), focus on the role of the manager's awareness and states of consciousness, concluding that they do not depend on the company's environment but on personal experience, history, and frame of reference. So, the higher the level of awareness, the more environmental commitment. Finally, regarding mental complexity, Gröschl et al., [48] conclude that low cognitive complexity of the leader represents a significant impediment to achieving proactivity in sustainability issues.

Personality Traits

Several empirical studies do more than describe simple associations and indicate that leaders' personality traits can have a direct influence on corporate sustainability (CS), environmental innovation (EI), and related outcomes. Some studies evaluate leaders' personality traits and development to understand how these traits are transformed into skills and behaviors that drive sustainability [124]. There are two differentiated streams: the first concerns more negative personality traits such as narcissism, hubris, and the dark triad (machiavellianism, narcissism and psychopathy) and the second stream focus more on positive traits.

On many occasions, narcissism, and hubris are confused by the simple fact that both have the effect of excessive self-esteem. However, narcissistic leaders tend to want to maintain a very favorable image and receive continuous public attention, whereas hubristic leaders tend not to consider the opinions of others and over-rely on their own judgment [72]. Quantitative analyses show that CEO narcissism and hubris significantly affect corporate sustainability and firm performance, suggesting that these traits can causally shape strategic choices and sustainability outcomes [72]. If we focus on EI, Arena et al., [6] show the relationship between a leader's hubris and EI, finding that higher levels of hubris are associated with greater environmental innovation and indicating that overconfidence can push leaders to pursue bold green initiatives. In the same way a leader's narcissism is influenced by international experience and age to adopt EI [66], who find that these factors increase the likelihood of adopting green innovation, suggesting that narcissistic traits can drive investments in EI.

In the field of CS, narcissism positively affects the company's sustainability [71] and leaders with hubris and narcissism traits influence sustainable practices and corporate performance [72], supporting a pathway from personality traits to CS strategies and outcomes. Pelster and Schaltegger, [89] show that considering these traits when hiring middle managers for sustainability objectives can benefit the company, implying that dark-triad traits matter for the effectiveness of sustainability roles. However, two studies show a negative relationship. Zhang et al., [132] deduces that the more hubris in the SMEs leaders, the less performance towards combating a pollution effect, showing that higher levels of CEO hubris reduce firms' efforts to combat pollution. Venugopal et al., [118] conclude that the shareholders' power acts as a moderating variable to lower the negative impact of neurotic leaders towards CS, suggesting that governance mechanisms can temper harmful personality-driven effects on sustainability performance.

Regarding positive traits, the humble trait is highlighted in two studies [107, 124]. Sun et al., [107] provide evidence that humble CEOs foster corporate green innovation, supporting a link between humility and EI outcomes. Walls et al., [124] introduce optimism and consciousness, and show how conflict can be seen as an opportunity for leaders who act as positive deviants in advancing sustainability practices. Koistinen et al., [68] also highlight the characteristics of pioneering, competitiveness, problem-solving, and resilience, as attributes that enhance leaders' capacity to drive circular economy transitions. A less recent study also highlighted certain aspects that complement the above: being caring, a holistic mindset, an open mind, empathy, and courage [120], which are presented as foundational attributes of sustainability-oriented leadership. Taken together, these studies suggest that both dark and positive personality traits do not merely correlate with sustainability and circular practices,

but contribute to shaping how leaders initiate, enable, or hinder organizational responses to sustainability challenges.

Leadership Styles To CS, CE and EI

Although microfoundations analysis does not contemplate leadership style, we consider it relevant to add this perspective after reviewing the literature. Microfoundations analyze leaders towards the external – society – or towards the more internal – the more micro [124], while the leadership style has to do with the people who follow them. We found ethical leadership, which is portrayed as inspirational, stimulating and visionary, focusing more on integrity and ethical conduct in their personal and professional lives (Agyabeng et al., 2023; [20]). Several studies state how this leadership style can affect the motivation of employees towards sustainability along with their average environmental behavior and the increase in the autonomy of employees' sustainable actions (Grave et al., 2013; [96]). Environmental leadership is also considered the prerequisite for a CS (Boira et al., 2018) and sustainability leadership is seen as an inspirational, visionary, and value-driven style ([53]; Wall et al., 2021). Finally, we identified additional leadership styles. One is the charismatic style of leadership, which operates according to its own norms as noted by Papagiannakis and Lioukas [85]. The other is the distributed leadership style, as identified by Soni et al., [103], which promotes collaborative behavior among team members. This collaborative behavior is considered critical for the success of CE activities.

Venugopal et al., [118] provide a novel vision that brings precious information. This study shows parallelism between the personality trait and the type of leadership and describes its relationship with sustainable goals. They find some traits that have a positive relationship with CS performance: Agreeableness, Openness, Assertiveness, Enthusiasm and Conscientiousness. Agreeableness is a trait that is fundamentally altruistic and very focused on the welfare of others. Openness to experience is an intellectually curious, reflective, and creative trait. It has the quality of adapting to different situations and dynamically solving tasks. This type of leadership would be effective and has the emotional component of transformational leadership. Assertiveness and enthusiasm are the two characteristics that stand out in this trait. Conscientiousness means excellent discipline, work and effort and leaders with this trait follow rules and strategies that need a detailed plan and adhere their company to regulation norms with responsibility. However, Neuroticism has a negative relationship with CS. Individual tendency towards negative emotions, such as anxiety, embarrassment, anger, and irritability inhibit any leadership tools, such as motivating and convincing people [111].

Discussion and Conclusions

The systematic review displayed in this paper has shown that the literature needs to focus more on analyzing the individual leaders' characteristics. When doing so, the focus has been mainly from the followers' perspective rather than on leaders' traits, mental processes, and emotions. In addition, the studies that try to portray leaders use different theories in the individual analyses and need to be more consistent about the leadership styles. Besides,

they only measure one characteristic of the leader rather than a combination of them, which makes the analysis insufficient to get a more realistic idea of what they are like.

Theories Starting with the analysis of the different theories used from the management domain, the results of this study show the importance that the upper echelons theory has in recent microfoundations studies. This result is aligned with Salaiz et al., [97] and with behavioral strategy that shows how the socio-cognitive aspects of leaders affect the firm-level outcome [1, 123, 124]. Besides, among all the studies 8 of them are published after 2020 and the current trend is still to use this theory. However, upper echelons theory has been criticized for exploring microfoundations, because it establishes proxies (e.g., tenure) that measure different psychological constructs (e.g., power or expertise) and, in some cases, these proxies need to be more consistent [83]. Therefore, these suggest alternative perspectives in future research that not only a leader's aspect generates a general output of the company. The institutional theory is the next most applied theory in terms of the number of articles, practically all prior to 2020. This conclusion is not aligned with Salaiz et al., [97] in which review institutional theory does not appear. In our review, regulation changes are seen as an opportunity for green entrepreneurs [10, 58, 130] as policy changes may affect many companies [40, 132]. Therefore, exploring these individual characteristics of leaders can help indicate how companies could do better.

The rest of studies are very diverse and related with different theories and approaches. In contrast to various studies about different perspectives used for microfoundations towards sustainability [97, 107] the stakeholder theory does not explicitly appear in our review. However, some elements of this theory seem to emerge in three papers published after 2022 which can indicate that it may begin to be applied [2, 69, 129]. From our perspective, the literature on leaders and CE must open up to other theories that could give a new vision of the value chain, customers or communities. In this way the social entrepreneurship literature is also emerging. In this research the "post heroic" leadership paradigm is essential and emphasizes the relational, collectivist and participative nature of leadership [76, 110]. This leader has the ability to bounce back and is cultivated through teamwork with other members. They are encouraged to embody servant and shared leadership behaviors, fostering the psychological well-being of their team [100]. However, in our review, we observed how there is a need to find a leader with heroic characteristics [93, 124]. On the contrary direction, managerial discretion would denote the cohesive, logical, and unified decisions made by leaders to drive the organization's development, which would be clearly connected with upper echelons theory arguments mentioned above but not with social entrepreneurship or similar perspectives.

Perhaps these hero leaders should be able to combine their leadership with other managers' and employees' pleas in their organizations [103]. It will be possible to build a network and relationships that support the goal towards CE using soft skills, such as embracing paradox and negotiation skills [124]. This conception moves away from the single focus on an individual with exceptional characteristics, which has much to do with the upper echelons' theory. It is closer to a leader who interacts with his stakeholders, so a stakeholder theory approach could be applied.

From a psychological perspective, the main theories used in our review contain elements such as values, beliefs, motivation, cognition, and individual behaviors that help us unveil

the personality of leaders. The characteristics of leaders, particularly personality traits, are likely to be stable patterns of behavior and cognition that emerge as responses to stimuli in human environments over evolutionary periods [30] and toward sustainability [124]. Integrating different psychology and management theories within the broad fields of sustainability and leader characteristics is useful. Very much in line with what DellaVigna [28] does, integrating economics and leadership does, we observe, for example, in the studies of Hahn et al., [51] and Boiral et al., [13] where from the more cognitive part of the leader, in these cases the experience and level of awareness, there is to a greater or lesser extent a decision making or commitment of the leader towards the environmental within the firm. The sensemaking theory used in several studies in our review [51, 109] facilitates this integration of psychological theoretical frameworks by being able to do so in one of the three stages of the sensemaking process: scanning, interpreting, and identifying and evaluating the action.

Microfoundations As for microfoundations, relational motivators only appear in a single article in our review. Again, stakeholder theory has yet to emerge as a theoretical framework in any paper. However, this differs from the study of Salaiz et al., [97], where the stakeholder theory is one of the most applied theories in their review articles. Regarding the other two motivational articles, we note that the articles focused on what makes the leader move from values and the more purely economic to get involved in sustainability are articles after 2020, which indicates that this type of microfoundation studies, instrumental and moral, is in trend.

Respect to managerial cognition and cognitive complexity, the relationship between personal development and the cognitive complexity of the leader is shown in the context of adopting the CE. This review highlights the relevance of knowledge and personal development of a leader himself. This personal growth reveals that they have concerns beyond running a business. This characteristic is something typical of leaders within the sustainability environment, unlike other leaders. In this line, we emphasize the conclusion of Hay et al., (2010), where this leader is seen as an agent of change, which urges them to carry out a profound reflection with a commitment far above what is asked of the rest. Our findings lead us to consider that the union between high cognitive complexity and the leader's personal development helps achieve proactivity in sustainability issues [48]. This personal development can also be seen as a high level of consciousness or spirituality, which makes them ask themselves questions about their commitment to the world or how they can improve the world [13, 77].

Focusing on personality traits of the firm leaders there are two trends, one that is more oriented to negative traits, dark-side, such as narcissism, hubris, overconfidence and arrogance [6, 71, 72, 89], and another where traits are more oriented to the optimistic, extraversion, humbleness or open mindedness, "bright-side" [68, 107, 118, 120, 124, 132]. Within the literature on negative traits and specifically narcissistic traits, we can differentiate between vulnerable and grandiloquent narcissists. The latter is people with high self-esteem and interpersonal dominance, but the vulnerable narcissist acts in a more defensive, avoidant, and hypersensitive way. According to the study by Khanchel et al., [66], the vulnerable are not encouraged to implement EI because they are too sensitive to accept failure and take responsibility. The grandiloquent may be motivated to develop CE because this gives him a

good image and reputation, gaining recognition among his followers. The lack of consensus on this trait likely has to do with this nuance within the trait itself and would require further research.

Theoretical Implications

This study identifies the two most prominent theoretical approaches used in the identified literature to understand the role of the leader in the CE context: the strategic management and the psychological perspective. However, these theoretical propositions are derived from piecemeal and individual explanations based on diverse streams. This lack of theoretical integration explains why this research has attempted to achieve a more integrated theoretical framework than the previous ones to serve as a reference.

In this regard, it is found that the upper echelons theory proposed by Hambrick and Mason [52] is the main approach to study the role of leaders in the transition to a more sustainable and CE. This theory focuses on top-level executives and how their individual characteristics impact strategic decisions and organizational performance. Nevertheless, it cannot be that this vision is valid for leaders of companies with different sustainability concerns, especially for those that show a clear commitment to the CE. The same dress does not fit everyone. In the context of CE transition, the idiosyncratic characteristics (such as cognitive base and values) of executives influence strategic decisions and organizational outcomes to carry the challenges from linear to CE. However, the problem is that this theory only glimpses, based on a leadership perspective, the consequences of a unique dimension (the leadership) on the level of the firms' circularity of the company. The complexity of firms adopting CE-related innovations (a type of EIs) and other CE practices requires the integration of different theories.

Along with the upper echelon theory, it is necessary to consider the institutional theory because the normative and regulatory framework is essential to achieve CE transition. Therefore, integrating institutional theory related to regulation and social norms with the upper echelons' theory could provide a more comprehensive understanding of how institutions affect organizations and leadership decisions to adopt CE principles. In addition, the stakeholder perspective is also crucial to contemplate the relationships with interested parties (such as customers and suppliers). By integrating these three theories, we are broadening the perspective of this leader by considering diverse angles of the relationship between leader and CE transition.

In relation to the psychological perspective, the combination of management and psyche characteristics of leaders could enhance our understanding of how they make business decisions considering the cognitive dimension. Based on this premise, it is advisable to make a continued effort to integrate psychological theories with more purely business-oriented theories. As it is argued by Hahn et al., [51], the cognitive categorization theory combined with sensemaking theory can contribute to disentangling the entire cognitive process of leaders when making decisions related to the design of CS. In this sense, we propose the integration of both perspectives (cognitive and sensemaking) to enhance outcomes in business circularity, delving into various aspects of leadership: beliefs, motivations, cognition, and behaviour. On the other hand, our review reveals that behavioural theories are predominantly used, but understanding cognitive processes—precursors to behaviour—would provide further knowledge and insights into leaders' circular performance.

On other hand, the two archetypes[1] of leaders who promote and are committed to CE within their organizations are identified. The first archetype is a person with a dark trial personality trait, i.e., narcissism or arrogance. Within these traits, we focus on the more grandiloquent part, discarding the vulnerable, where any behaviour that brings him closer to sustainability and specifically to CE will bring him prestige, improve his image, and contribute to a reputation within the company [66]. Moreover, these leaders are not concerned about social or environmental issues [89] but about company performance. The latter gives us a clue that their cognitive frame will be more focused on a "business case", i.e., their motivation will be in pursuing economic objectives [72] and less on the environment and people impacts. They are control-oriented leaders regarding sustainability [71]. They need to be more friendly to delegate, and hence, their leadership is of the charismatic type, where they act according to their rules [85]. In addition, these people have a unique ability to attract external investors, which significantly facilitates the advancement of the sustainability project in the company [72]. When exploring this archetype, it is best to work under the theoretical framework of the upper echelons' theory.

The second archetype is focused on more positive personality traits, which we call the "bright-side". The humility is the most important trait for this type of leader [107, 120, 124]. The most prominent components of this personality trait are self-awareness and acceptance of one's limitations and involve self-transcendence and world focus [13, 107, 120]. These two characteristics bring us to managerial cognition; on the one hand, the knowledge and personal development of these leaders unveil a high cognitive complexity that makes them self-aware persons with the ability to understand their limitations and those of others [48, 120]. On the other hand, as cognitive frames are within the paradoxical [120, 124], they are leaders who embrace paradox to feel more righteous in their decisions and courageous and resilient enough to address it. Their leadership type is identified with transformational, inspirational, and motivational leadership ([33]; Grave et al., 2013), and ethical leadership, which emphasised socially responsible behaviour [2, 20, 96]. This type of archetype is analysed using psychological perspectives (combining them with managerial ones) e.g., institutional theory (Grave et al., 2013; [48, 124]). In short, we agree with Walls et al., [124] that if we had to name this archetype, it would be a heroic leader. This term emphasizes the more authenticity-seeking part and the ability to face challenges to achieve collective goals, characteristics that are undoubtedly necessary to overcome the barriers to EI for the transition to a more sustainable and CE.

Future Research and Limitations

Two key areas warrant further investigation. First, the relational motivators under the microfoundations lens. This will help us understand how leaders interact with the different stakeholders' groups. It will also allow us to use this theory to deeply understand CE leaders' characteristics. Second, the barriers these leaders face need further exploration. Since archetypes 1 and 2 could do a different interpretation of these barriers and give a distinct response, it could interest to investigate them distinguishing between both leader's types.

Theories of emotions with SME leaders' CE and EI are also lacking. Therefore, it is needed to study the relationship between emotions of these leaders and how these emotions

[1] Archetypes are archaic collective unconscious contents [64]. From the Jungian perspective, the archetype is an abstract pattern, not certain symbolic representations, which depend on each culture.

lead to action and sustainability initiatives. This highlights the importance of taking critical lens to the field of leadership and adapt it to the context of CE. It is essential to broaden our understanding of what are the characteristics of the business leaders, what do they do and how do they do it [119] to bridge the micro (leadership) and the micro, meso and macro (circularity dimensions). Indeed, we are committed that if we move forward on this path, we will achieve easily to shift the economy toward a sustainable, and inclusive future.

Abbreviations

CE Circular Economy
CSR Corporate social responsibility
CS Corporate Sustainability
EI Eco-Innovation

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Declarations

Ethics Approval and Consent to Participate Not applicable. This study did not involve human participants, animals, or tissues.

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