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The human dimension of organizational sustainability: Exploring individuals driving organizations toward better sustainability outcomes

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Introduction[1]

The discourse surrounding the climate crisis has permeated nearly every aspect of contemporary life, underscoring its urgency and far-reaching implications. Headlines routinely warn of unprecedented global temperature records, with projections indicating that 2025 may become the hottest year on record. Documentaries vividly depict the devastating consequences of unsustainable practices, while journals and books unravel the complex mechanisms driving environmental degradation. Even corporations have joined the narrative, embedding sustainability themes into their marketing strategies to align with the values of increasingly environmentally conscious consumers. Amid this heightened awareness, the urgency to identify and address the primary drivers of the climate crisis has intensified. A growing consensus underscores the pivotal role of business organizations as significant contributors to environmental challenges, placing them at the forefront of efforts to mitigate the crisis. However, these organizations face considerable challenges in developing business models that meaningfully integrate the economic, social, and environmental dimensions of sustainability. Despite increasing awareness and unequivocal evidence of the escalating climate emergency, many companies continue to rely on superficial measures, often demonstrating a reluctance or inability to fully embed sustainability into their strategic decision-making and operational processes (Boiral et al., 2022; Mazutis & Zintel, 2020). Some organizations struggle to maintain genuine commitments, with actions that frequently deviate toward questionable standards or conflicting interests. For example, in April 2024, the European Commission, in collaboration with the Consumer Protection Cooperation (CPC) authorities, issued directives to 20 airlines companies, mandating the correction of misleading green claims within 30 days to comply with EU consumer protection laws (European Commission Press Release, 2024).

Global legislative frameworks, such as the Convention on Biological Diversity, the Sustainable Development Goals (SDGs), and the Paris Agreement, offer valuable guidelines for preserving nature, fostering equitable development, and limiting global warming. Yet, these ambitious objectives are often undermined by inconsistent implementation and unfulfilled commitments (Barragan-Jason et al., 2021). Against this backdrop, sustainability professionals have emerged as pivotal actors, guiding organizations, communities, and governments toward more sustainable futures (Strand, 2014; Wickert & Schaefer, 2015). These professionals operate within complex decision-making landscapes, balancing competing economic, environmental, and social goals while addressing the inherent trade-offs between these objectives (Hahn et al., 2014, 2015).

Despite their growing prominence and influence, relatively little is known about the individuals occupying these roles and their specific contributions to advancing organizational sustainability (Peters et al., 2019). This dissertation takes origin from these gaps and tends to delve into the understanding of the role of individuals driving organizations for better environmental and social outcomes and whether professionals within the field are necessary to push the sustainability agenda. The thesis applies a multidisciplinary approach exploring the topic of the role of sustainability professionals from different perspectives, to try and delineate a broader view of their contribution to the organization. Accordingly, the thesis is made up of three papers which investigate the phenomenon in hand with three different focuses. The first paper deals with environmental leadership in SMEs and highlights the importance of personal values and motives of the leaders to determine their behaviors and influence organizational decision-making. Following these suggestions, the second paper in-depth explores the individual level of environmental leadership, studying how the connectedness to nature affects the sustainability leaders' values and career choices. Finally, the third paper investigates the impact of sustainability leaders on organizational performance, thus observing the phenomenon to an operational level.

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[1] During the preparation of this dissertation, the author utilized Artificial Intelligence (AI) tools to assist with language refinement and enhance the manuscript's readability. All content generated or revised with AI assistance was subsequently reviewed, edited, and adapted by the author, who takes full responsibility for the final version of the dissertation.

Here below, the three papers are further discussed.
The dissertation opens with the first paper titled *Examining Leadership for Environmental Sustainability in SMEs: A Systematic Literature Review* aiming to examine what has been studied in the literature regarding leadership in environmental sustainability in SMEs. SMEs are the backbone of global economic development. According to the World Bank, they represent 90% of businesses worldwide. Moreover, leaders within SMEs often implement sustainability because they are driven by personal values, passion, and sense of responsibility rather than mandates or regulations. The methodology applied conforms with the Preferred Reporting Items of Systematic Review and Meta-Analysis (PRISMA) guidelines to ensure transparent and complete reporting of systematic research. The search strategy focused on three major databases, Scopus, Web of Science, and ProQuest ABI/Inform Collection, resulting in the selection of 27 peer-reviewed papers published in English between 2014 and 2024. The methodology integrates bibliometric and content analysis to uncover insights into the scientific structure of the research field and the core content related to leadership of the articles.

The research questions guiding the review are (1) What is the description of the structure of the field? (2) What factors have been considered to investigate leadership in environmental sustainability in SMEs? (3) What are the research methods used, and theories applied? and (4) Which areas need further exploration? In a nutshell, the results obtained for each research question are the following: (1) The analysis revealed a peak in scientific interest in leadership and the natural environment in 2023. The most productive journals in this field include Business Strategy and Development, Corporate Social Responsibility and Environmental Management, and The Journal of Environmental Planning and Management. Most of the reviewed papers had an average of four co-authors, reflecting a collaborative research approach. Geographically, a significant concentration of publications originated in Asia, with Pakistan contributing eight papers and China four papers. (2) Leadership has been examined by exploring leaders and employees. The variables focused on leaders or employees examined their environmental attitudes, beliefs, and behaviors. The leadership dimension was analyzed through the frameworks and scales applied by the reviewed authors. A total of 25 distinct leadership types were identified, underscoring the diversity within the field. However, the lack of clear and consistent terminology necessitated the inclusion of a dedicated section to clarify definitions and explain the various scales used to measure leadership constructs. (3) Out of the 27 articles, 24 applied quantitative empirical research. Two papers provided a qualitative method, in which one of them is a case study and one out of the 27 papers applied a mixed method approach. Researchers applied multiple scales to complement the relationship between leadership and environmental dimensions. Regarding theoretical frameworks, the review identified 36 distinct theories, with the Resource-Based View (RBV) being the most applied. Notably, 10 of the 27 articles integrated two theories to provide a more comprehensive analysis. (4) The suggestions for further exploration articulated by the authors of the various papers reviewed were divided into a) further exploration on leadership dimensions as part of a system of relation and antecedents of leadership, b) methodology, and c) additional variables recommended to be applied in future research. The most stressed recommendations are related to scope of the research to cover more geographical areas and research method applying a longitudinal approach.

In conclusion, the results from the systematic literature review contribute to the knowledge of leadership and environmental sustainability in SMEs. As addressed in the first research question, there is an undeniable and growing interest in the fields of leadership and environmental sustainability. This study also identifies opportunities for future research, including exploring diverse research topics, employing varied methodologies, examining additional variables, and achieving greater terminological clarity. Additionally, engaging researchers from diverse countries and fostering greater collaboration among them could help address the two main limitations identified by the authors: expanding the geographical scope of the research and incorporating longitudinal approaches to research methodologies. The findings also have practical implications, offering practitioners a foundation for informed decision-making and the development of training programs for leaders to integrate environmental sustainability more effectively into their organizations and their leaders. Nevertheless, much of the existing literature emphasizes organizational systems and relationships, often overlooking the human dimension of leadership. This gap raises important questions about the personal values and motivations of leaders who guide SMEs toward better environmental outcomes. Referring to Shrivastava's (1994) definition of environmental leadership as "a belief system that deeply values and identifies with nature," future research should delve deeper into the values and belief systems of sustainability leaders towards nature and explore the impact of their relation to nature on their work.

The second part of the dissertation builds on the findings of the literature review with an empirical study titled *Exploring the Connectedness to Nature of Sustainability Professionals: How the Relationship with the Natural Environment Shapes Their Careers*. This study delves into the human dimension of leadership, drawing on Shrivastava's (1994) definition of environmental leadership as "a belief system that deeply values and identifies with nature". It investigates how sustainability professionals' connection to nature influences their values and career choices. While sustainability professionals often serve as agents of environmental change (Visser & Crane, 2010), the role of their personal connection to nature in shaping their career choices and professional behaviors remains underexplored. Through an in-depth qualitative approach applying grounded theory, the aim of the second paper is to investigate research phenomena or objects that lack an adequate theoretical foundation. This may occur when no existing theory addresses the phenomenon in question or when existing theories are insufficient because they fail to incorporate essential concepts, the relationships between the concepts are not sufficiently detailed, or the relevance of the concepts and their interrelations has not been validated within the specific population or context under examination (Vollstedt & Rezat, 2019). Thus, a multi-theoretical perspective is adapted in order to integrate insights from human-nature relationship theories, the Value-Belief-Norm (VBN) theory, the Theory of Planned Behavior (TPB), and Career Construction Theory. This integrative approach allows for a nuanced understanding of the interplay between personal antecedents, environmental values, and professional trajectories. The concept of the Human-nature relationship emphasizes the psychological and emotional bonds individuals form with the natural environment.

Studies have found that stronger connections to nature are associated with greater environmental concern and a higher likelihood of engaging in sustainable behaviors (Schultz et al., 2005; Nisbet et al., 2009). The Value-Belief-Norm (VBN) theory suggests that personal environmental behavior stems from an interplay of values, beliefs, and personal norms, motivating individuals to support environmental initiatives. The proposed framework traces a pathway from stable, core aspects of personality and belief systems to more specific beliefs about human-environment interactions (NEP), their implications, and the individual's responsibility to take corrective action (Stern, 2000). The Theory of Planned Behavior is closely linked and often integrated together. According to Ajzen (1991) and Schwartz (1977), individuals' personal norms represent their sense of personal responsibility or moral obligation to engage in specific behaviors. Lastly, Career Construction offers a theoretical framework for understanding vocational behavior and it posits that individuals actively construct their careers by integrating their personal values, skills, and experiences. This theory underscores the importance of meaning-making, as professionals align their work with their identity and purpose.

For this study, 21 semi-structured interviews with sustainability professionals, from large, medium and small enterprises as well as external consultants, were held in which the transcriptions were done verbatim to ensure no loss of meaning and to leave no room for interpretation or assumption by the researcher. The Gioia methodology was adopted to establish a structured framework for qualitative research. This approach is commonly utilized in organizational and management studies, aiding researchers in systematically and rigorously analyzing and presenting their data (Gioia et al., 2013). The findings were supported through theory construction, building on the human-nature relationship theories, the Value-Belief-Norm (VBN) theory, the Theory of Planned Behavior (TPB), and Career Construction Theory. The categories yielded are connectedness to nature, personal norms, vocational behavior, and

career adaptability. The themes of each category are (1) for connectedness to nature: childhood exposure to nature and, spirituality and emotions towards nature, (2) personal values: awareness of consequence and, ascription of responsibility, (3) vocational behavior: behavioral intention, attitude towards behavior and, authenticity and, (4) career adaptability: proactive personality and adaptive mindset.
The paper offers various contributions. Firstly, it contributes to sustainability professions and career consultancy. By exploring the deeply personal experiences that sustainability professionals have with nature allows insight into how these experiences shape their career trajectories and sense of purpose. Secondly, it contributes to the sustainability field with the introduction of the concept of career adaptability. By integrating career adaptability into discussions of careers in sustainability, this study highlights the importance of individuals' ability to navigate dynamic challenges, embrace change, and align personal values with professional roles. Lastly, this paper contributes to theory building. As Pearce et al. (2022) argue, a comprehensive understanding of human behavior requires integrating multiple theories and models. This study supports such integrative approaches by weaving together concepts like human-nature relationship, career adaptability, authenticity, and proactive personality, just to name a few. Thus, contributing to a more holistic theoretical framework for examining sustainability professionals' motivations and behaviors.

The third paper examines the compelling question of whether the individual championing sustainability within organizations directly influences sustainability outcomes due to their personal attributes, or whether this impact is shaped by external factors, such as global sustainability standards. The third paper titled: *The impact of Chief Sustainability Officers on sustainability performance: the moderating role of CSR network membership* explores the relationship between the Chief Sustainability Officer and firm sustainability performance, with the moderating role of the UN Global Compact membership. To prioritize sustainability, organizations are increasingly appointing dedicated sustainability experts or managers. A study by PwC revealed a significant surge in CSO appointments, with more being named in 2021 than in the previous five years combined (Gassmann et al., 2022). Beyond internal governance, external frameworks such as the United Nations Global Compact (UNGC) play a pivotal role in shaping corporate sustainability strategies. Despite the growing prominence of CSOs and frameworks like the UNGC, the question of whether their interaction enhances sustainability outcomes remains unresolved. To address this gap, this study investigates the relationship between the appointment of a CSO and sustainability performance, exploring the moderating role of UNGC membership. Grounded in the upper-echelon and resource dependency theories, this research examines whether the presence of a CSO, coupled with UNGC participation, creates synergies that improve sustainability outcomes or whether these factors may conflict under certain organizational contexts. The hypotheses proposed are (1) The creation of a new Chief Sustainability Officer (CSO) position within an organization TMT has a significant and positive impact on the organization's sustainability performance, and (2) Membership in the United Nations Global Compact (UNGC) positively moderates the relationship between the creation of a CSO position and the organization's sustainability performance. In order to fill this research gap, a quantitative approach utilizing the STOXX 600 Europe sample, covering the framework from 2010 to 2023 was used. For data collection, five main sources were employed. The basis of the dataset is Refinitiv Eikon Datastream (formerly Thomson Reuters ASSET4), recognized for its extensive repository of financial and non-financial metrics for publicly listed companies. Refinitiv's methodology is widely regarded as a leading approach to CSR scoring. Regarding CSR performance, Refinitiv provides a detailed framework comprising over 630 company-level ESG indicators. These indicators are categorized into 10 groups and consolidated into three core pillar scores: environmental, social, and governance (Refinitiv, 2022). UNGC membership was also extracted from Refinitiv. Meanwhile information regarding the CSO position was made through content analysis of the company's press release and website.

The variables included in the study are: (1) dependent variable: sustainability performance (ESGS) introduced as a lagged variable, (2) independent variable: the creation of a new CSO position within the

TMT, (3) moderate variable: a company's engagement with the CSR network, and (3) control variables: firm size (SIZE) measured as the natural logarithm of total number of employees, financial performance (FP): the natural logarithm of market value, firm leverage (FL): controls for financial stability, measured as the ratio of total debt to total asset. At the macro level, control variables are GDP growth (GDP): GDP growth was adjusted in quadric terms, Corruption Perception Index (CPI): the corruption level of the country in which a company operates, Human Development Index (HDI): measures a country's average achievements in four areas. For macroeconomic variables, gross domestic product (GDP) was sourced from the World Bank website, corruption perception index (CPI) was sourced from Transparency International website and lastly human development index (HDI) from the United Nation Development Program. In this study, to analyze the structural equation model with fixed effect, Stata 18 was utilized.

The results reveal that the creation of a new CSO position within the TMT positively and significantly impacts sustainability performance, thus supporting the first hypothesis. These empirical findings align with previous studies (Kashouri, 2024). Additionally, the findings reveal that being a member of the UNGC has a positive and significant effect on ESG score. However, the relationship between NCSOP and ESGS is negatively moderated by UNGCM, which means that their joint effect reduces ESGS, thus rejecting the second hypothesis. As global sustainability frameworks like the UN Global Compact and Global Reporting Initiative (GRI) drive CSR institutionalization, organizations integrate sustainability into core operations, reducing reliance on CSR-specific roles. This shift pushes CSR managers from central strategic positions to peripheral advisory or administrative functions, aligning with institutional pressures that promote sustainability as a compliance-driven expectation rather than a specialized function (Risi & Wickert, 2017). Additionally, the result can support Peters et al. (2019)'s argument related to CSO as a symbolic governance mechanism used for greenwashing rather than the practice of genuine sustainability. For robustness check, the sample was tested in litigious and non-litigious industries as well as in sensitive and non-sensitive industries.

This research examines how organizational structure, and external frameworks jointly influence sustainability outcomes. While appointing a CSO positively impacts sustainability performance, the effect depends on factors like UNGC membership. Interestingly, the combination of a CSO role and UNGC membership can sometimes produce unexpected results. These findings highlight that structural changes alone are insufficient for driving sustainability, emphasizing the need for strategies that align internal governance with external commitments. As ESG pressures grow, firms must tailor their approaches to address specific operational challenges. Future research should further investigate the interplay between internal roles and external frameworks to guide meaningful sustainability efforts.

Conclusion

From the various methodological approaches, the thesis tries to form an interconnected picture on individuals leading organizations in the field of sustainability.

In the first chapter, the results regarding leadership have shown that leadership in the field of sustainability needs to be clearly distinguished in the context of other styles. Thus, mature terminology definitions are needed. The various scales applied allow us to cover various aspects to measure leadership. Thus, a need for a comprehensive framework to understand leadership within the various aspects of sustainability, in this case the environment, can provide a better understanding of who and what is an environmental leader.

The second chapter shifts focus to the human dimension of sustainability leadership, revealing the deeply personal experiences that sustainability professionals have with nature, such as childhood interactions, shape their career trajectory and sense of purpose. This perspective enriches our understanding of sustainability professionals, illustrating how their intrinsic connection to nature informs how they lead their lives and their career journey in order to achieve and contribute to sustainability.

Finally, the third chapter presents compelling findings on the evolving role of institutional frameworks in sustainability leadership. As global initiatives such as the UN Global Compact and the Global Reporting Initiative (GRI) drive the institutionalization of corporate responsibility, sustainability practices are increasingly embedded within core organizational operations. This shift has redefined the role of sustainability leaders, transitioning them from central strategic decision-makers to peripheral advisory figures. Institutional pressures have reframed sustainability as a compliance-driven expectation rather than a distinct leadership function, raising critical questions about the future of sustainability leadership in corporate environments.

By integrating these perspectives, this thesis highlights the necessity of viewing sustainability leadership as an emergent, systemic phenomenon, rather than as a collection of isolated efforts. A Gestalt-informed approach offers a more nuanced and holistic understanding, emphasizing that true leadership in sustainability arises not only from individual actors but from the interplay of personal values, organizational structures, and institutional frameworks.

Future research perspectives

The first chapter provides an overview of existing research on leadership in environmental sustainability in SMEs. To deepen this exploration, a comparative analysis of leadership in sustainability between SMEs and large organizations would offer a broader range of peer-reviewed insights and contribute to a more comprehensive and nuanced understanding of sustainability leadership across different organizational contexts.
Given the methodological limitations of qualitative research, bias is an inherent challenge when studying individuals' experiences and perceptions. Future research could benefit from experimental approaches, such as focus groups, to enhance the robustness and validity of findings by facilitating interactive discussions and capturing diverse perspectives. Moreover, the scope can be enlarged by exploring how sustainability professionals translate and transfer their values to nature within the decision-making process of organizations.
As highlighted by Case et al. (2015), quantitative research often fails to capture the complexity of individual traits and motivations. Therefore, future studies should build on the third paper by incorporating quantitative methodologies, such as survey-based primary data collection, to better assess Chief Sustainability Officers' characteristics. This would enable the inclusion of variables related to subjective perceptions of nature and lived environmental experiences, fostering a more holistic analysis. Enhancing methodological coherence across the thesis would strengthen the integration of qualitative and quantitative findings. Overall, this thesis can be further developed to make a more significant contribution to leadership and sustainability literature by deepening the focus on the individuals driving organizational through sustainability roller-coaster and exploring the interplay between personal values, institutional and organizational frameworks, and leadership effectiveness.

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Examining Leadership for Environmental Sustainability in SMEs: A Systematic Literature Review

Maura Makhoul[2]

Abstract

The purpose of this paper is to synthesize and analyze leadership within the environmental dimension of sustainability in small and medium-sized enterprises (SMEs). The study employs the PRISMA guidelines in which the search strategy focused on three major databases, Scopus, Web of Science, and ProQuest ABI/Inform Collection, resulting in the selection of 27 peer-reviewed papers published in English between 2014 and 2024. The methodology integrates bibliometric and content analysis to uncover insights into the scientific structure of the research field and the core content of the articles. The findings reveal a diversity of leadership styles and values that influence organizational sustainability. The study identifies gaps in geographical scope, sampling, and longitudinal analysis, suggesting opportunities for future research.

Introduction

Our human activities are putting immense pressure on the Earth's ecosystems, accelerating environmental degradation, and bringing the planet closer to critical tipping points. Despite the growing recognition of these challenges, the solutions to environmental problems remain complex and multifaceted, often described as "wicked" due to their interconnectedness and resistance to straightforward resolution. The last decade has seen a marked escalation in global attention toward sustainability. Milestones such as the 2015 launch of the United Nations Sustainable Development Goals (SDGs) and the 2017 Compact for Responsive and Responsible Leadership, established by the World Economic Forum, have set ambitious agendas for achieving sustainability at global and organizational levels. These initiatives underscore the critical role of businesses and their leadership in aligning organizational practices with environmental and social imperatives.

Environmental leadership has been extensively examined over the past three decades, with research emphasizing its critical role in promoting sustainability practices. As Boeske (2023) argues, the literature is wide-ranging, with discussions on sustainable, sustainability, and environmental leadership linking a variety of interconnected leader behaviors, practices, and skills that achieve sustainability outcomes. However, an examination of the leadership literature reveals a lack of agreement and understanding of the types of leadership necessary for positive sustainability. Flannery and May (1994) developed the Environmental Leadership Model (ELM), which identifies four key factors influencing managers and organizations in formulating environmental strategies: (1) moral norms and values for environmental responsibility, (2) environmental attitudes, (3) stakeholder influence, and (4) perceived behavioral control. Moreover, Case et al. (2015) conducted a systematic review of leadership research in environmental science, aligning environmental leadership with Grint's (2005) framework while incorporating Case's (2013) extension. They propose that leadership can be categorized as (1) a person, (2) a position, (3) a process, (4) a result, and (5) a purpose. More recently, Boeske (2023) highlighted four key leadership findings: (1) values, beliefs, and attitudes, (2) guiding organizations through change, (3) transformational leadership, and (4) the importance of stakeholder influence and expectations.

A critical aspect of environmental leadership is its foundational values, which shape sustainability strategies. Shrivastava (1994) describes environmental leadership as a belief system that "deeply values and identifies with nature," contrasting with conventional approaches that view the environment as a

[2] Co-contributor for the selection of the study question: Prof. Laura Maria Ferri, Università Cattolica del Sacro Cuore

resource to be exploited for human gain. Leaders dedicated to environmental stewardship transition from the dominant social paradigm (DSP), which prioritizes industrial progress and economic growth, to a new environmental paradigm (NEP) that emphasizes ecological protection and recognizes the limitations of natural resources (Egri & Herman, 2000; Boiral et al., 2009). By advocating for this shift, environmental leaders challenge conventional norms and integrate sustainability into organizational strategy (Bansal, 2003). Environmental leaders inspire positive environmental change and guide organizations toward long-term ecological sustainability (Egri & Herman, 2000; Boiral et al., 2007). Boiral et al. (2014) emphasize that environmental leadership is essential for fostering sustainable practices and redefining managerial roles in environmental change efforts. The successful implementation of sustainable practices, such as pollution prevention, industrial ecology, and employee training, relies heavily on top management engagement (Revell & Blackburn, 2007; Revell et al., 2010). Additionally, environmental leadership is dynamic, requiring constant adaptation and strategic foresight. It integrates business strategies, strategic vision, and leadership competencies to drive organizational change.
Research underscores the importance of transformational leadership behaviors, including intellectual stimulation, mentoring, coaching, and motivating employees to adopt pro-environmental behaviors (Robertson & Barling, 2013; Althnayan et al., 2022). Therefore, environmental leadership aligns closely with sustainability leadership through three key aspects: (1) the importance of moral and ethical values, attitudes, and beliefs; (2) organizational change; and (3) elements of transformational leadership (Boeske, 2023). It incorporates both transactional and relational leadership dimensions, reinforcing its interdisciplinary nature (Boeske, 2023). Transformational leadership frameworks emphasize the role of leaders in setting clear sustainability objectives, fostering internal and external networks, and engaging employees at all levels to achieve environmental goals (Portugal & Yukl, 1994; Peng et al., 2021). Organizations embracing environmental leadership benefit from both tangible and intangible advantages, including cost savings from pollution control, enhanced corporate reputation, improved employee morale, and increased productivity (Ambec & Lanoie, 2008; Roy et al., 2001).
Environmental leadership is also driven by institutional pressures to maintain social legitimacy and meet stakeholder expectations. Regulatory requirements, industry norms, and stakeholder demands shape managerial commitment to sustainability (Boiral, 2007, 2003; Sharma, 2000). Robinson and Clegg (1998) identify government regulations as a primary driver of corporate environmental practices, while Flannery and May (1994) expand this perspective to include all interest groups, parties, and institutions affected by an organization's actions. Leadership activities external to the firm—such as stakeholder engagement, negotiation, and environmental issue management—are crucial for achieving corporate environmental objectives (Portugal & Yukl, 1994).

Given the pivotal role of leaders in shaping environmentally sustainable practices and strategies, SMEs present a unique context for studying this phenomenon due to their specific challenges and advantages. Research shows that when SMEs engage positively with environmental issues, it is often due to the personal values of their owners or senior managers (Berrone et al., 2010; Brammer et al., 2012). The role of values of environmental leaders in SMEs remains underexplored. SMEs, as the backbone of many economies, represent unique opportunities and challenges in the sustainability landscape. However, most existing studies focus on large firms, either making broad distinctions between self-transcending and self-enhancing values (Florea et al., 2013; Fritzsche & Oz, 2007; Ng & Burke, 2010) or examining a narrow range of values (Chin et al., 2013; Mudrack, 2007). Despite their significant role in the economy, SMEs face various constraints, such as limited access to finance (Rao et al., 2023) and a lack of awareness regarding their environmental impact (Revell & Blackburn, 2007). However, studies also highlight the advantages of SMEs. Due to their smaller size, they are more agile and able to adapt to change more easily than larger organizations. Their organizational structures are typically independent, internally financed, and far more flexible than those of large corporations (Russo & Perrini, 2010). Moreover, unlike large organizations, SMEs are less affected by public scrutiny, making their behaviors largely dependent on the psychological traits of their leaders. As a result, the balance between profitability and social/environmental responsibility is often driven more by the values of leadership rather than external

compliance (Jenkins, 2004). Therefore, it is important to study individual values in the context of SMEs because these smaller enterprises are often founded based on personal convictions rather than purely financial motives, and owner-managers typically have greater strategic control than managers in larger firms, meaning their values can directly influence the company's direction (Spence, 2016).
This paper aims to address the knowledge gaps surrounding leadership in environmental sustainability in SMEs. Specifically, it seeks to examine what has been studied regarding leadership and environmental sustainability in SMEs. Therefore, the following systematic literature review tend to answer: how has leadership been studies in relation to environmental sustainability in SMEs, in terms of intellectual structure, theories, methodologies and constructs?

By conducting a systematic review of the literature, this study will evaluate the methodologies, theories, and constructs used in existing research while identifying key areas for future exploration. By shedding light on the complexities of leadership in environmental sustainability in SMEs, this study underscores the critical role of values, leadership styles, and organizational dynamics in fostering sustainable development. It aspires to bridge the gap between theoretical discourse and practical application, paving the way for more effective and inclusive strategies to address the pressing environmental challenges of our time. For the purpose of this study, the following research questions were formulated:

1. What is the description of the structure of the field?
2. What factors have been considered to investigate leadership in environmental sustainability in SMEs?
3. What are the research methods used? Which theories were applied?
4. Which areas need further exploration?

The systematic literature review includes bibliometric analysis and content analysis. A bibliometric analysis will complement this review, offering insights into the scientific structure of the research field, such as authors, journals, and methodological approaches. This comprehensive approach not only contributes to understanding the current state of research on leadership in environmental sustainability but also provides a foundation for advancing scientific activity. Content analysis provides information about research topics covering the whole content of the articles to understand, describe and interpret text in order to yield insight into findings from previous research (Piwowar-Sulej & Iqbal, 2023). The content analysis and the coding of the various constructs was conducted manually, without the assistance of software. This review offers several key contributions. First, it employs methodological rigor and diverse analytical techniques (Piwowar-Sulej & Iqbal, 2023). Second, it not only synthesizes existing research but also identifies future research directions as proposed by the authors included in the review. Third, it provides a comprehensive overview of leadership in environmental sustainability within SMEs and serves as a valuable resource for researchers and practitioners by highlighting relevant sources, including key journals that contribute to the advancement of knowledge on environmental leadership. Consequently, it facilitates a deeper understanding of the intellectual structure underlying the relationship between leadership and environmental sustainability. Finally, this systematic literature review establishes a foundational framework by mapping the various definitions and measurement approaches employed in the field, thereby offering a basis for future research to further develop and refine the concept of leadership for environmental sustainability.

The article is organized as follows: the next section presents the methodology of the systematic literature review following the PRISMA guidelines. The search strategy, selection criteria, quality assessment and data extraction will be discussed in detail. Then, the results are presented which are divided into four sections, each discussing a research question posited. The discussion section elaborates the practical implications and lastly the conclusion is reserved for the main contributions and limitations.

Methodology

The reporting of the following systematic review was guided by the standards of the Preferred Reporting Items of Systematic Review and Meta-Analysis (PRISMA) guidelines in order to ensure transparent and complete reporting of systematic research.

Search strategy

For this systematic search, a search strategy was developed to identify relevant literature. The research strategy was tailored to three databases: Scopus, Web of Science and ProQuest ABI/Inform Collection. See Table 1 for database queries. For each database two versions of queries were utilized to generate additional papers. All searches spanned from 2014 until 2024 and included peer-reviewed papers published in English only.
The search terms used were the following:

Scopus	TITLE-ABS (((environment* AND leader*) OR (green* AND leader*)) AND ((sme*) OR ((small) OR (medium) AND (enterprise*)))) AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (SUBJAREA , "BUSI")) AND (LIMIT-TO (LANGUAGE , "English")) AND TITLE-ABS ((((environment*) OR (green*)) AND (leader*)) AND ((sme*) OR (small AND medium AND enterprise*)))) AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (SUBJAREA , "BUSI")) AND (LIMIT-TO (LANGUAGE , "English"))	Extraction date: May 2024
Web of Science	(((TI=(environment*) OR TI=(GREEN*)) AND TI=(leader*)) AND (TI=(SME*) OR TI=(small medium enterprise*))) OR (((AB=(environment*) OR AB=(GREEN*)) AND AB=(leader*)) AND (AB=(SME*) OR AB=(small medium enterprise*))) AND (TI=(environment* leader*) OR TI=(GREEN* leader*)) AND (TI=(SME*) OR TI=(small AND medium AND enterprise*)) OR (AB=(environment*LEADER*) OR AB=(GREEN* LEADER*)) AND (AB=(SME*) OR AB=(small AND medium AND enterprise*))	Extraction date: May 2024
Proquest ABI/Inform Collection	(title("environment* leader*") OR title("green* leader*") AND title(SME*) OR title("small medium enterprise*") OR abstract("environment* leader*") OR abstract("green* leader*") AND abstract(SME*) OR abstract("small medium enterprise*")) AND ((title(ENVIRONMENT*) OR title(GREEN*) AND title(LEADER*)) AND (title(SME*) OR title("small medium enterprise")) AND (abstract(environment*) OR abstract(green*) AND abstract(leader*) AND abstract(SME*) OR abstract("small medium enterprise")))	Extraction date: May 2024

Table 1. Databases queries

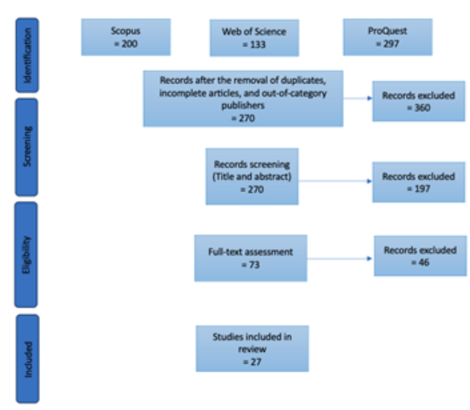

Figure 1. PRISMA flow diagram

Selection criteria

The search mainly focused on mapping existing literature on environmental leaders in SMEs in the field of business management. The following figure shows the literature inclusion and exclusion at every stage in accordance with the PRISMA statement. Figure 2 underlines the process of the paper selection.

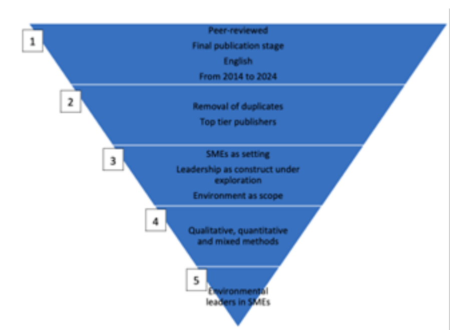

Figure 2. Process of paper selection

Step 1: In the selected database, the filters applied are peer-reviewed papers, the English language, and the period from 2014 to 2024.
Step 2: paper selection according to publisher and duplicates were removed manually. To ensure the quality of the paper, top publishers were selected. Thus, 313 out of 628 papers were excluded. 45 duplicates were removed. A total of 270 articles are valid for abstract screening.
Step 3: Screening of the titles and abstracts of 270 articles. Articles are excluded if they are out of scope, in which SMEs, leadership, and environmental or sustainability aspects are not considered.
Step 4: Full-text check of 73 articles. Qualitative, quantitative, and mixed methods papers were selected to investigate what and how leadership in environmental sustainability in SMEs has been studied
Step 5: In total, 27 papers were included in this review.

Quality assessment

The study is based on English peer-reviewed papers in their final stage published in Elsevier, Taylor & Francis, ScienceDirect, Springer, Wiley, Emerald and Academy of Management. In order to maintain the quality of the review, all duplications were checked thoroughly. Abstracts of the articles were checked for the analysis and purification of the articles to ensure the quality and relevance of the literature included in the review process. A careful evaluation of the relevant research papers was carried out to remove out of scope and unsuitable articles.

Data extraction

In the data extraction phase, 27 articles were selected for the review. Hereunder is an overview of the distribution of paper according to database extraction and publisher.

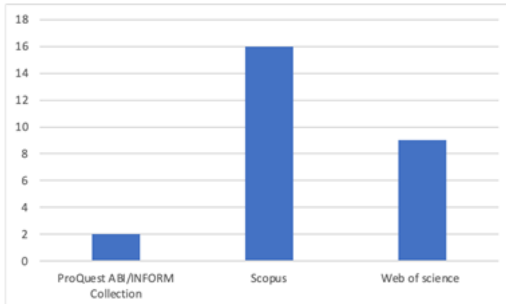

Figure 3. Number of papers per database

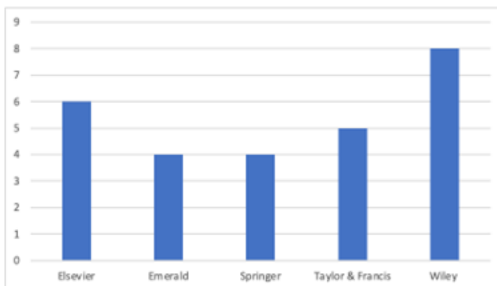

Figure 4. Number of papers per publisher

Results

1) *What is the description of the structure of the field?*

The articles were extracted in May 2024. Nevertheless, the final sample of articles in the review are dated between 2014 to 2024. The decision on restraining to the past 10 years relies on observing the development of research in accordance with the worldwide agenda on the Sustainable Development Goals that have put institutions and organizations alike on a track to refigure and rethink their practices in merit to society and the environment.

1.1) Overview of paper reviewed

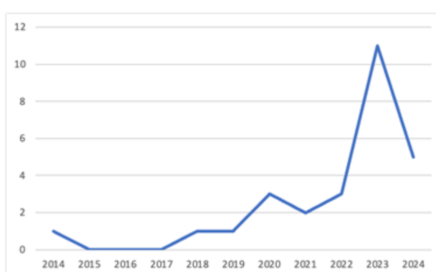

Figure 5. Number of articles published per year

The growth of publication in relation to leadership and the natural environment in SMEs can be observed starting from 2019. The decrease in 2021 can be explained by the interest of academics in COVID-19. Nevertheless, 2023 is met with a remarkable growth with 11 papers published that year. Moreover, we can estimate the growth of publication in 2024.

The 27 articles were published in 18 journals. The main and most productive journals are Business Strategy and Development, specialized in understanding how business can improve development thus focusing on the connection between competitive strategy and development with particular attention to the private sector and its role to alleviating poverty and enhancing the livelihoods of low-income populations. Corporate Social Responsibility and Environmental Management, devoted to assessing the strengths and weaknesses of various sustainability approaches through research and practical advice. The journal promotes debate on sustainability issues and publishes case studies and cross-country surveys of best practices in order to aid organizations in enhancing performance and accountability. The Journal of Environmental Planning and Management, specialized in addressing practical, technical, social, and political challenges in environmental planning and management.
Of 27 papers, nine were published in the abovementioned journals.
1.2) Overview of authors

The vast majority of the reviewed papers (9) have four co-authors. In one paper, six authors collaborated (Soni et al., 2023) and two papers were written by one author (Burawat, 2019; Panda, 2023). See Figure 6.

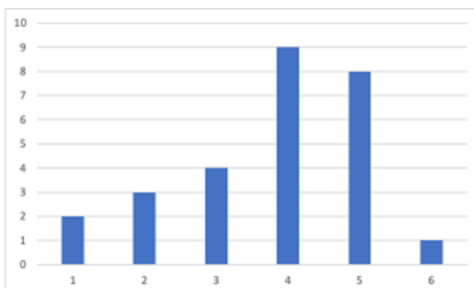

Figure 6. Number of co-authors

The total number of authors is 98. VosViewer allowed us to showcase the most productive authors in the field and their cooperation with other authors. Hameed and Naeem have two papers in cooperation. Meanwhile Khan SN and Safraz each have co-authored two papers.

1.3) Sampled countries

In regard to the countries represented in the studies included in the review, we can observe a concentration of publication generated in Asia, more specifically in Pakistan, with 8 papers, followed by China with 4 papers.

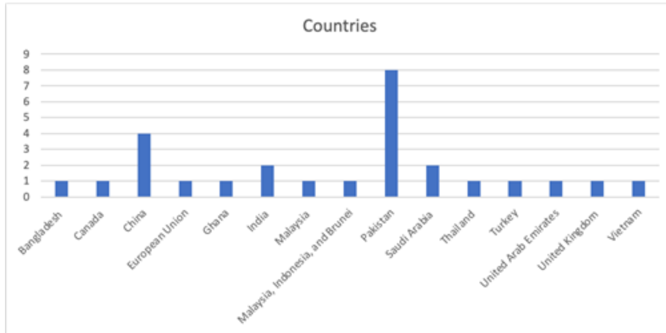

Figure 6. Number by country of study

2) *What factors have been considered to investigate leadership in environmental sustainability in SMEs?*

2.1) Leadership and related constructs

The concept of leadership in most of the reviewed papers was explored as part of a system of relationships to understand the environmental constructs and outcomes in SMEs. A thorough analysis of the variables was examined in order to capture the relationships investigated the environmental dimension in leadership.

The values and motives of leaders concerning sustainability determine their behaviors, which in turn influence decision-making and affect employees. This shapes the organization's actions, translating into environmentally friendly practices and sustainable strategies that enhance its environmental performance. In one paper, three values were explored for ***value orientation*** (Herbert et al., 2023) of leaders, biospheric values (ecological well-being and environmental protection), altruistic values (concern for the welfare of others and the society) and egoistic values (emphasis on personal benefit and individual success). Moreover, ***personal values*** (Panda, 2024) are one of the crucial factors that shape the motive and the reason in which a leader may or may not have interest in undertaking environmental CSR.

Environmental concern (Herbert et al., 2023) was studied under the lens of the perceived responsibility for biodiversity among leaders. ***Conscience development*** (Boiral et al., 2014) focuses on the way leaders make sense, experience, and act upon reality through the lens of various stages of consciousness.

Sustainable decision-making (Mai et al., 2024) refers to a process in which key leaders make choices regarding present and future business activities that consider the social, environmental, and economic implications of those activities. Sustainable decision-making is triggered by institutional pressure and leaders' cognitive factors. ***Sustainability-oriented entrepreneurial intentions*** (Khan et al., 2021) refer to the intention of individuals to engage in entrepreneurial activities that prioritize sustainability in economic, environmental, and social dimensions.

Employees psychological and mental states and environmental attitudes and behavior are fostered by the leader and the organization they operate in.

Environmental passion (Sarfraz et al., 2023) is a psychological state of positive emotions that can develop into an intrinsic bond with their workplace and drive employees towards environmentally friendly activities that can extend beyond the firm's boundaries, fostering a deep connection with nature. These employees feel a heightened sense of responsibility for protecting the environment. ***Green psychological capital*** (Chen and Yen, 2022) refers to a positive mental state that the authors defined as "one's positive psychological resources in green activities". ***Green organizational pride*** (Chen and Yen,

2022) is another psychological state that the authors defined as “sense of pleasure and positive feelings in organizational pro-environmental activities” which brings about a positive feeling, such as admiration and importance, by the employees towards their organization.

Green creative self-efficacy (Amjad et al., 2024) drives creative confidence that shapes motivation, persistence, and goal setting in employees. It allows employees to feel empowered, make suggestions and engage without fear of rejection. ***Green skill competences*** (Amjad et al., 2024) regards enhancing employees’ knowledge, abilities and attributes in order to support environmental sustainability practices and technologies related to their roles. ***Environmental values*** (Sun et al., 2022) are essential in developing a sense of responsibility among employees, which in return influence employees’ green behavior. ***Pro-environmental behavior*** (Javaid et al., 2023) of employees is described as a person’s voluntary behavior on one hand, as well as an encouraged behavior from the workplace on the other. Promoting ***green creative behavior*** (Cai et al., 2024) depends largely on the workplace creative ideas and knowledge on the environment.

2.2) Leadership frameworks

Leadership was explored through various theoretical frameworks. A clear framework of leadership was applied in 25 articles (see Table 2). Three papers used environmental leadership (Boiral et al., 2014; Wang et al., 2022; Safraz et al., 2023). While five authors applied the term green transformational leadership (Ahmad et al., 2022; Chen and Yen, 2021; Tian et al., 2023; Sun et al., 2022; Singh et al., 2020). Ethical leadership was applied in three papers (Hameed et al., 2023; Hameed et al., 2024; Sengüllendi et al., 2023) and sustainable leadership in two papers (Burawat, 2019; Iqbal et al., 2020). While two papers used the term transformational leadership (Burawat, 2019; Rehman et al., 2023).

Type of leadership	Number of papers by type of leadership
Green transformational leadership	5
Environmental leadership	3
Ethical leadership	3
Sustainable leadership	2
Transformational leadership	2
Green inclusive leadership	1
Leader's green behavior	1
Leader's environmental motivation	1
Supply Chain Ethical leadership	1
Servant leadership	1
Distributed leadership	1
Top leadership culture	1
Transactional leadership	1
Leader's beliefs and lifestyle	1
Charismatic leadership	1
Leader's competencies	1
Grand Total	**25**

Table 2. Number of papers by type of leadership

2.3) Leadership definitions

- Leader’s specific characteristics

<u>Leader’s green behavior, leader’s competencies, leader’s culture, leader’s environmental motivation and leader’s belief and lifestyle</u>

Leader’s green behavior (Javaid et al., 2023) refers to undertaking environment-friendly behavior that reflects the leader's values. Thus, leading by example includes the transmission of a leader's values to their followers. ***Leader’s competencies*** (Ishaq et al., 2024) englobes the skills, knowledge, and attributes that one mobilizes in order to lead others. ***Leader’s culture*** (Abudullahi et al., 2018) is an essential driver for a firm's transformation due to stress on leader’s efficiency in providing strategic direction and motivating, by influencing and guiding, employees. ***Leader’s environmental motivation*** (Graafland and Bovenberg, 2020) can be distinguished into two reasons upon which one may act. Intrinsic motives and extrinsic motives drive behavior of an individual. Intrinsic refers to improving environmental performance independent of other benefits, such as financial. Meanwhile extrinsic encourages environmental performance due to its instrumental values in achieving beyond just environmental benefits. ***Leader’s belief and lifestyle*** (Mai et al., 2024), the authors argue that Buddhist teaching, lifestyle and compassion consist of a sustainable framework with the integration of Knowing, Doing and Being. Buddhist practitioners tend to be flexible and skillful in making wise choices that benefit all beings, reduce suffering, and see “common humanity”.

- Types of leadership style

Leadership style in relation to the environment and sustainability

<u>Green transformational leadership, environmental leadership, sustainable leadership and green inclusive leadership</u>

Authors examining ***green transformational leadership*** (Ahmad et al., 2024; Chen and Yan, 2022; Singh et al., 2020; Sun et al., 2022; Tian et al., 2023) have utilized this perspective to propose the concept of a leader who motivates and inspires both employees and the entire organization to pursue a mission and long-term vision. It is considered a behavior of a leader that can provide a clear vision and ideas that encourage employees to acquire knowledge on organizational environmental goals and engage in green activities.
All three papers applying ***environmental leadership*** (Boiral et al., 2014; Sarfraz et al., 2023; Wang et al., 2023) highlight the strategic role of leaders in embedding environmental objectives into the organization’s vision and practices, the importance of fostering within the organization a culture of sustainability and engaging with employees in environmental initiatives as well as the positive influence of organizational performance triggered by environmental leaders. The term ***sustainable leadership*** (Burawat, 2019; Iqbal et al., 2020) was introduced as a notion in which organizations are required to contribute to the natural world in which the creation of a sustainable value is beneficial to the society and stakeholders. Both papers refer to Avery and Bergsteiner (2011) definition of sustainable leadership which is the balancing of people, profits and the planet to encourage continuance of an organization through practices based on evidence management in the process embracing a holistic approach toward organizational sustainability. In addition to the concept of inclusive leadership which highlights the importance of fostering participation, embracing uniqueness, and integrating diverse perspectives, ***green inclusive leadership*** (Amjad et al., 2024) extends the concept by integrating environmental sustainability. Green inclusive leadership promotes eco-innovation, empower green ideas, and cultivate creative confidence through psychological safety. The leader promotes eco-innovation by creating an environment of respect and recognition of the various backgrounds and encouraging the generation of innovative

solutions. In return, by providing a fertile ground for new ideas, resources can be more efficiently used and eco-friendly practices can evolve.

Other leadership styles

<u>Transformational leadership, transactional leadership, ethical leadership, charismatic leadership, servant leadership and distributed leadership</u>

Transformational leadership, applied in two papers (Burawat, 2019; Rehman et al., 2023), are regarded as trainers, educators, motivators, and developers to push the organization and its members to achieve goals through learning. The intention behind it is to elevate followers' awareness of significant issues, inspiring them to prioritize the organization's interests over their own personal gains. In order to foster a knowledge based sustainable environment, the leader builds a culture of openness, trust and allows sharing and learning. These leaders are characterized by their clear vision of the future of the organization and can communicate and transform its values. While ***transactional leadership*** (Cai et al., 2024) is more concerned with the exchange relationship between the leader and its subordinates. The leader necessitates that followers adhere to his directives and in return the employees comply with the directions and receive both material and psychological rewards for fulfilling their assigned duties. This approach of reward or punishment can influence employee behavior and motivation.

The definition applied for ***ethical leadership*** in the three papers (Hameed et al., 2023; Hameed et al,. 2024 ; Sengüllendi et al,. 2023) stems from Brown et al. (2005, 2006)'s definition, in which it states that the leader "displays normatively appropriate behavior in both personal and interpersonal contexts, actively promotes socially responsible behaviors at all organizational levels and encourages moral ethos through communication and ethical decision-making". Ethical leader seeks to be a role model. Thus, the main characteristics of such a leader are aligned with moral principles such as integrity, fairness, responsibility, human orientation, and moderation. These characteristics come into play in decision-making as well influencing the organizations' value systems, formal policies, and preferences for sustainable outcomes. ***Ethical supply chain leadership*** (Agyabeng-Mensah et al., 2023) focuses on the firm setting an example and leading the entire supply chain, emphasizing the leader-follower relationship among various entities within the supply chain. This commitment to values and norms between and within partners allows the exchange of complementary and strategic relational resources.

Charismatic leadership (Zhang and Wei, 2021) refers to the amount a leader has influence over its followers and the relation established based on the leader's behavior towards his followers. Behavior exudes an appealing vision and mission statements, determination, builds trust and expresses confidence, shapes exemplary behavior, and communicates high performance expectations. Moreover, a charismatic leader is context sensitive and aware of personal needs, in particular in situations of distress. ***Servant leadership*** (Khan et al., 2021) are servants first and then they lead. Their behavior stems from their personal values and are enhanced by their personality traits. They are required to motivate and serve the needs of their followers. ***Distributed leadership*** (Soni et al., 2023) refers to a decentralization and democratization of decision-making in which leadership tasks and functions are shared among employees and managers within the organization in order to solve specific situations. It can be beneficial in which team members should overcome differences, control team conflicts thus enhance well-being and involvement.

2.4) Leadership scales

The total number of leadership scales are shown in Table 3. Five papers applied Chen and Chang (2013) Green Transformational Leadership scale, a seven-point Likert scale used to measure the ability of leaders to motivate and inspire their subordinates to achieve better environmental performance within the organization. The second most used scale, with three papers, is Brown et al. (2005)'s Ethical Leadership scale that assesses a leader's ethical behavior. Sun et al. (2022) adopted Singh et al. (2020) scale of green transformational leadership, green product innovation, green human resource practices, and environmental performance. In turn, Singh et al. (2020) adopted a six items scale of Green Transformational Leadership from Chen and Chang (2013). Nevertheless, Sun et al. (2022) applied four of the six items of Chen and Chang (2013)'s leadership scale. Bass and Avolio (1997) Multifactor Leadership Questionnaire (MLQ) consists of nine scales that assess three leadership styles: transformational leadership (five scales), transactional leadership (two scales), and passive/avoidant behavior (two scales). Additionally, it includes three scales that measure the outcomes of leadership. Two authors (Burawat, 2019; Cai et al., 2024) applied Bass and Avolio (1997) MLQ. However, one of the authors, (Cai et al., 2024), applied the transactional style of leadership to investigate the influence of the latent type of leadership on employee green creative behavior and the mediating role of workplace learning and green knowledge management. Meanwhile Burawat (2019), applied Bass and Avolio (1997) scale to measure transformational leadership style as well as applying the sustainable leadership scale by Avery and Bergsteiner (2011).

Green transformational leadership - Chen and Chang (2013)	5
Ethical Leadership - Brown et al. (2005)	3
Authors' scale	2
Transactional leadership - Bass and Avolio (1997)	1
Transformational leadership - Bass and Avolio (1997)	1
Charismatic leadership - Waldman et al. (2001)	1
Supply Chain Ethical Leadership scale - Ilyas et al. (2020)	1
Transformational Leadership - Ting et al. (2021)	1
Environmental leadership - Su et al. (2020)	1
Servant leadership - Liden et al. (2015)	1
Green Inclusive leadership - Carmeli et al. (2010)	1
Sustainable leaders' competences - Lans et al. (2014)	1
Sustainable leadership - McCann and Holt (2010) based on Slankis (2006)	1
Sustainable leadership - Avery and Bergsteiner (2011)	1
Leader sustainability orientation - Dechant and Altman (1994)	1
Leaders' compassion - Oveis et al. (2010)	1
Leaders' Green Behavior - Kim et al. (2014)	1
Grand Total	**24**

Table 3. Number of articles per scale.

Each of the following existing scales has a different number of items within them.

Leadership Scale and authors	Number of items
Charismatic leadership - Waldman et al. (2001)	7
Environmental leadership -Su et al. (2020)	5
Ethical Leadership - Brown et al. (2005)	10
Green Inclusive leadership - Carmeli et al. (2010)	9
Green transformational leadership - Chen and Chang (2013)	6
Leader sustainability orientation - Dechant and Altman (1994)	4

Leaders' compassion - Oveis et al. (2010)	5
Leaders' Green Behavior - Kim et al. (2014)	5
Servant leadership - Liden et al. (2015)	28
Supply Chain Ethical Leadership scale - Ilyas et al. (2020)	4
Sustainable leaders' competences - Lans et al. (2014)	23
Sustainable leadership - Avery and Bergsteiner (2011)	23
Sustainable leadership - McCann and Holt (2010) based on Slankis (2006)	15
Transactional leadership - Bass and Avolio (1997)	45
Transformational Leadership - Ting et al. (2021)	9

Table 4. Number of items per scale

3) What are the research methods used? Which theories were applied?

3.1) Research method

In 24 out of the 27 papers, the authors applied quantitative empirical research. Two papers provided a qualitative method (Boiral et al., 2014; Soni et al., 2023), in which one of them is a case study. Only one out of the 27 papers applied a mixed method approach (Burawat, 2019).

Two studies adopted multi-source data by involving employees and managers of SME in the studied sample (Boiral et al., 2014; Cai et al., 2014). While the rest took a single source approach, either the employees (Chen and Yan, 2022; Javaid et al., 2023; Khan et al., 2021; Sarfraz et al., 2023; Sengüllendi et al., 2023; Sun et al., 2022) or the managers, head of department, executives or owners (Agyabeng-Mensah et al., Abdullahi et al., 2018; Amjad et al., 2024; Ahmad et al., 2022; Burawat, 2019; Hameed et al., 2023; Hameed et al., 2024; Ishaq et al., 2024; Rehman et al., 2023, Singh et al., 2020; Soni et al., 2023; Tian et al., 2023; Wang et al., 2023; Zhang and Wei, 2021) or leader (Graafland and Bovenberg, 2020; Herbert et al., Mai et al., 2024; Panda, 2023;).

Partial least square - structural equation modeling (PLS-SEM) was used in seven papers (Agyabeng-Mensah et al., 2017; Ahmad et al., 2022; Iqbal et al., 2020; Javaid et al., 2023; Rehman et al., 2023; Sun et al., 2022; Tian et al., 2023) and one SMART-PLS-SEM (Amjad et al.,2024) . SPSS Macro Process was used in three papers (Iqbal et al., 2020; Hameed et al., 2023; Panda, 2024).

3.2) Measurement scales and tools

<u>Quantitative</u>

Since most of the papers reviewed are quantitative, it was natural to explore the various scales the authors applied. In order to capture the aim of the studies, various authors used multiple scales, in which leadership scales were studied collaboratively with other scales to complement the relation between the leadership and environmental dimensions in SMEs.

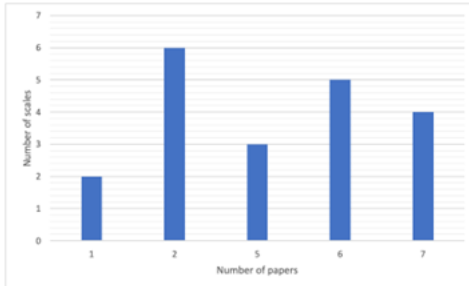

Figure 9. Number of papers categorized by number of total scales applied

As demonstrated by the above figure, seven papers applied four scales (Agyabeng-Mensah et al., 2023; Ahmad et al., 2022; Hameed et al., 2023; Hameed et al., 2024; Iqbal et al., 2020; Sarfraz et al., 2023; Singh et al., 2020), six papers applied five scales (Amjad et al., 2024; Cai et al., 2024; Chen and Yan, 2022; Ishaq et al., 2024; Sun et al., 2022; Wang et al., 2023), five papers applied three scales (Javaid et al., 2023; Khan et al., 2021; Sengüllendi et al., 2023; Tian et al., 2023; Zhang and Wei, 2021), two papers applied six scales (Burawat, 2019; Rehman et al., 2023) and lastly one paper applied two scales (Mai et al., 2024).

In two papers, the authors structured their own measurement scale for their study (Abdullahi et al. 2018; Graafland and Bovenberg, 2020). In order to generate a statistical measurement of the herbal-based SMEs' perception and opinions, Abdullahi et al. (2018) constructed a 5-point Likert scale questionnaire to measure sustainable entrepreneurship (7 items), top leadership culture (4 items) and strategic sustainability orientation (3 items). Graafland and Bovenberg (2020) measured leaders' motivation with two items for intrinsic and three items for extrinsic motivations, measurement of legal enforcement of environmental performance and voluntary initiatives by the enterprise itself and environmental performance was measured using two procedural measures which are setting targets to improve environmental outcomes and reporting of the realized targets.

A few measurements were used by authors to assess leaders' values and study leader's inner selves (Herbert et al., 2023; Panda, 2024). In Herbert et al. (2023)'s study, the values of respondents were determined using the widely respected Rokeach Value Survey. This model presents values representative of three value sets: egoistic, altruistic, and biospheric. Additionally, questions from the New Environmental Paradigm (NEP) (Dunlap, 2008) were used, along with 'awareness of consequences' (AC) and 'ascription of responsibility' (AR) questions as structured by Steg et al. (2005). Meanwhile Panda (2024) measured five constructs: (1) value, (2) motive, (3) intention, (4) reason for, (5) reason against. The construct of "value" was measured using three items from Westaby (2005), Westaby et al. (2010), Claudy and Peterson (2014). The construct of "motive" was assessed through attitude, subjective norms, and perceived control (Westaby 2005; Westaby et al., 2010; Claudy and Peterson 2014; Wagner and Westaby, 2019). "Intention" was measured with four items (Westaby 2005; Westaby et al. 2010; Claudy and Peterson 2014). The construct of "Reason for" was evaluated based on improved firm performance, competitive advantage, image, and risk mitigation. The construct of "Reason against" was measured by lack of knowledge, personal commitment, and lack of time.

<u>Qualitative</u>

Soni et al. (2023) and Boiral et al. (2014) took a qualitative approach. Soni et al. (2023) conducted interviews, composed of 20 questions, that were audio-recorded and transcribed verbatim. For the first phase they adapted a thematic approach using the Gioia et al. (2013) and applying Clarke et al. (2015) six-step approach to generate themes. The second phase involved generating codes. Meanwhile Boiral et al. (2014) used a tool particularly for leadership: The Leadership Development Profile (LDP) developed by Cook-Greuter (1999, 2004) in collaboration with Torbert (Fisher and Torbert 1991; Rooke and Torbert

1998, 2005). The tool is a language-based instrument comprising 36 sentence compilation items that assesses both conventional and postconventional stages of consciousness development in leaders.

Mixed method

One paper out of the 27 reviewed applied a mixed method approach (Burawat, 2019). The qualitative data was collected through participant observation, non-participant observation and in-depth interviews from 40 middle and senior managers

3.3) Theories applied

The theories used for understanding leadership in relation to the environment in SMEs help us identify the various theoretical lenses used by researchers while conducting their investigations. The total number of theories is 36. The number does not match the number of articles reviewed as articles used more than one theory. Of the ten out of 27 studies applied two theories: leader-member exchange theory and contingent theory (Agyabeng-Mensah et al., 2017), strategic leadership theory and capability-based view (Ahmad et al., 2022), conservation resource theory and sustainable development theory (Amjad et al., 2024), resource-based view and stakeholder theory (Hameed et al, 2024), social learning theory and stakeholder theory (Iqbal et al, 2020), upper echelons theory and resource orchestration theory (Ishaq et al., 2024), resource based view and ability-motivation-opportunity theory (Singh et al., 2020; Sun et al., 2022), ecological modernization theory and ability-motivation-opportunity theory (Tian et al., 2023) and stakeholder theory and upper echelons theory (Wang et al., 2022).

The most applied theory is resource-based view with seven articles (Abdullahi et al., 2017; Chen and Yan, 2021; Hameed et al., 2023; Hameed et al., 2024; Rehman et al., 2023; Singh et al., 2020; Sun et al., 2022). From the seven papers, three papers used only the latter theory (Abdullahi et al., 2017; Hameed et al., 2023; Rehman et al., 2023) while four out of the seven integrated other theories (Chen and Yan, 2021; Hameed et al., 2024; Singh et al., 2020; Sun et al., 2022). Two papers, that are complementary, used the resource-based view and ability-motivation-opportunity theory (Singh et al., 2020; Sun et al., 2022). The authors drew upon the above-mentioned theories, to explain and investigate the relationship between green transformational leadership and green human management. Thus, Singh et al. (2020) contributes to both theories in the context of SMEs by exploring the relationship and the internal competences for green process and product innovation that leads to sustained environmental performance this relation brings about. Moreover, the authors believe that the resource -based view can effectively leverage ability-motivation-opportunity theory on the understanding, predicting, managing of human resources within the organization. While Sun et al. (2022) argue that human resources fulfill the fundamental criteria of resource-based view in order to generate superior performance and sustained advantage.
Meanwhile in the remaining two papers, one applied the resource-based view with stakeholder theory (Hameed et al., 2024) and the other resource-based view, social exchange theory and social cognitive theory with positive psychology (Chen and Yan, 2021). In second place, we have a tie between ability-motivation-opportunity theory (Singh et al., 2020; Sun et al., 2022; Tian et al., 2023) and social exchange theory (Chen and Yan, 2021, Iqbal et al., 2020; Javaid et al. 2023) with three papers each. In addition to the three papers that only applied a resource-based view, nine out of 27 papers applied only one theory which are: development perspective theory (Boiral et al. 2014), leader-member exchange theory (Cai et al., 2024) motivation crowding theory (Graafland and Bovenberg, 2020), value-belief-norm theory (Herbert et al., 2023), social exchange theory (Javaid et al., 2023), trait theory (Khan et al., 2021), sustainability mindset (Mai et al., 2023) behavioral reasoning theory (Panda, 2024), social learning theory (Sengüllendi et al., 2024), natural-resource-based theory (Zhang and Wei, 2021).

Resource-based view	7
Ability-motivation opportunity theory	3

Social exchange theory	3
Leader-member exchange theory	2
Social learning theory	2
Stakeholder theory	2
Upper echelons theory	2
Behavioral reasoning theory	1
Capability-based view	1
Social cognitive theory	1
Positive psychology	1
Conservation resource theory	1
Contingent theory	1
Development perspective theory	1
Ecological modernization theory	1
Motivation crowding theory	1
Natural resource-based view	1
Resource orchestration theory	1
Strategic leadership theory	1
Sustainability mindset	1
Sustainable development theory	1
Trait theory	1
Value-belief norm theory	1
Grand Total	**36**

Table 5. Number of theories applied in reviewed papers

4) *Which areas need further exploration?*

The reason behind the last research question is to group the various directions to explore, as shown in Table 6, by other researchers and trigger curiosity.
The suggestions for further exploration articulated by the authors of the various papers reviewed were divided into a) further exploration on leadership dimensions as part of a system of relation and antecedents of leadership, b) methodology (scope of the research, sampling, research method, data collection and measures), c) additional variables recommended to be applied in future research (moderators, mediators, control variables and other factors to take into account). The most stressed recommendations are related to scope of the research to cover more geographical areas and research method applying a longitudinal approach. Regarding future research on leadership and environmental sustainability, the authors suggest investigating antecedents and consequences of sustainable leadership (Burawat, 2019), exploring other leadership style such as transformational, distributed and ethical leadership (Khan et al., 2021; Soni et al., 2023), examining other contextual factors that might accentuate the relationship between key leaders' sustainability mindset and their sustainability decision-making (Mai et al., 2024), analyzing in depth values, beliefs and behaviors of SME leaders (Panda, 2023), exploring the impact of green servant leadership on green organizational culture and green innovation (Sengüllendi et al., , 2023) .

Research areas		New perspective	Authors
Leadership			
		• Explore the impact of green servant leadership on green organizational culture and green innovation • Explore other leadership styles • Examine contextual factors that underlines the relationship between key leaders' sustainability mindset and their sustainable decision-making • Explore values, beliefs and behaviors of SME leaders • Investigate antecedents and consequences of sustainable leadership	Sengüllendi et al. (2023); Khan et al. (2021); Mai et al. (2024); Panda (2023); Soni et al. (2023); Burawat (2019)
Methodology			
	Scope	• Cover other countries • Cover other region of the same country • Cover other industries and sectors • Cover other cultures	Abdullahi et al. (2018); Ahmad et al. (2022); Boiral et al. (2014); Chen and Yan (2022); Graafland and Bovenberg (2020); Hameed et al. (2023); Hameed et al. (2024); Iqbal et al. (2020); Sarfraz et al. (2023); Sengüllendi et al. (2023); Soni et al. (2022); Sun et al. (2023); Wang et al. (2023)
	Sampling	• Large firms • Larger sample size	Abdullahi et al. (2018); Graafland and Bovenberg (2020); Soni et al. (2023)
	Research method	• Comparative analysis • Longitudinal studies • Qualitative exploration • Cross-sectional • Experimental research • In-depth case studies • Cross-sectoral • Mixed methods approach	Abdullahi et al. (2018); Agyabeng-Mensah et al. (2023); Amjad et al. (2024); Cai et al. (2024); Chen and Yan (2022); Graafland and Bovenberg (2020); Hameed et al. (2023); Hameed et al. (2024); Iqbal et al. (2020); Javaid et al. (2023); Khan et al. (2021); Panda (2023); Rehman et al. (2023); Sengüllendi et al. (2023); Soni et al. (2023); Tian et al. (2023); Zhang and Wei (2021)
	Data collection	• Employees • Multiple respondents and sources • Apply other strategies for data collection	Iqbal et al. (2020); Javaid et al. (2023); Singh et al. (2020); Rehman et al. (2023); Zhang and Wei (2021)

	Measure	• Apply objective measures and determining the difference between subjective and objective measurement • Apply multidimensional construct of leaders' competences	Ahmad et al. (2022); Amjad et al. (2024); Iqbal et al. (2020); Ishaq et al. (2024)
Variables			
	Moderators	• Employee training • Knowledge sharing • Innovation capabilities • Institutional context • Green ambidexterity • Green attitude • Green creativity • Personality traits • Organizational justice • Perceived organizational support • Environmental behavior • Environmental knowledge • Social ties	Agyabeng-Mensah et al (2023); Ahmad et al. (2022); Chen and Yan (2024); Ishaq et al. (2024); Javaid et al. (2023); Sengüllendi et al. (2023); Sun et al. (2022);
	Mediators	• More specific types of organizations' green capabilities (e.g. green absorptive capacity) • Organizational ambidexterity • Shared vision • Shared values • Self-leadership • Organizational team orientation • Consensual decision making	Ahmad et al. (2022); Burawat (2019);
	Control variables	• Educational level • Sector	Sengüllendi et al. (2023)
	Factors	• Leader's educational background • Ethical values held societally (e.g. leader's personal history) • Leader's context	Boiral et al (2014); Mai et al. (2024);

Table 6. Directions for future research

The above-mentioned consideration led to the formulization of future research avenues not elaborated by the authors of the selected articles. Firstly, there is a lack of representation for other geographical areas. Most studies were carried out in Asia; thus, activation of regions that are underrepresented can be a future direction for future research. Secondly, factors specific to the leader (e.g. leader's educational background and connectedness to nature) can be considered in order to verify whether these variables influence the impact of leadership on the environmental dimension of sustainability (either at the individual or organizational level). Lastly, engaging researchers from diverse countries and fostering greater collaboration among them could help address the two main limitations identified by the authors: expanding the geographical scope of the research and incorporating longitudinal approaches to research methodologies.

Discussion

Contribution to leadership in environmental sustainability in SMEs

The results regarding leadership (Research question 2) have shown that leadership in the field of sustainability needs to be clearly distinguished in the context of other styles. Thus, terminology a mature definition are needed. The various scales applied allow us to cover various aspects to measure leadership. Thus, a need for a comprehensive framework to understand leadership within the various aspects of sustainability (e.g., environment) can provide a better understanding of who and what is an environmental leader.

Contribution to methodological approach

The future research direction recommended by the authors lead to the formulation of future research avenues such as the collaboration between authors from different regions could increase the impact of co-authors and the author's proactivity and the geographical scope of the research. Additionally, exploring leaders within the environmental sustainability field through a qualitative approach would be highly beneficial, as it provides valuable insights into individuals' experiences, perceptions, and behaviors within specific contexts. This method enables a deeper understanding of the "why" and "how" behind phenomena by emphasizing subjective meanings, social processes, and underlying patterns.

Conclusion

The aim of this study was to map environmental leaders in SMEs and collect findings from previous research. The results allowed us to contribute knowledge to leadership and environmental sustainability at large as well as the linkage between both concepts. As addressed in the first research question, there is an undeniable and growing interest in the fields of leadership and sustainability. This study also identifies opportunities for future research, including exploring diverse research topics, employing varied methodologies, examining additional variables, and achieving greater terminological clarity. Moreover, due to the nature of the systematic review, the study provides transparency and replicability of the research process.

The findings also have practical implications, offering practitioners a foundation for informed decision-making and the development of training programs for leaders to integrate sustainability more effectively into their organizations.

This study has certain limitations. First, bibliometric analyses reflect the state of research at a specific point in time, meaning their results may evolve as the number of publications increases. Additionally, bibliometric indicators, such as citations, may not always accurately represent individual scientific contributions (Aksnes et al., 2019). Second, the search methodology may have excluded relevant articles if their authors did not include the specified search terms in the abstract, title, or keywords. These limitations highlight the importance of continuous updates and methodological improvements in future research. Despite the growing body of research on leadership and sustainability, there is a lack of studies investigating leaders in sustainability. Much of the existing literature emphasizes organizational systems and relationships, often overlooking the human dimension of leadership. This gap raises important questions about the personal values and motivations of leaders who guide SMEs toward better environmental outcomes. Referring to Shrivastava's (1994) definition of environmental leadership as "a belief system that deeply values and identifies with nature," future research should delve deeper into the values and belief systems of sustainability leaders towards nature and explore the impact of their relation to nature on their work.

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Exploring the connectedness to nature of sustainability professionals: how the relationship with the natural environment shapes their careers

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Abstract

The aim of this paper is to explore the connectedness to nature of sustainability professionals and its impact on their career trajectories. The grounded theory approach was adapted as outlined by Gioia et al. (2012) and Corbin and Strauss (1990) in order to develop a conceptual framework from the data. For this study, 21 sustainability professionals were interviewed. This study offers several key contributions to sustainability professions and career consultancy. By exploring the deeply personal experiences that sustainability professionals have with nature, such as formative childhood interactions, we gain unique insights into how these experiences shape their career trajectories and sense of purpose. By integrating career development theories with environmental psychology, the research seeks to bridge this gap, offering insights into the interplay between personal and professional dimensions in careers in sustainability.

Introduction

Humans engage with their environment not as passive observers but through deeply embedded relationships that reflect perceptions of meaning, value, and opportunity (Gibson, 1979). Sustainability, as a field of practice, encompasses diverse perspectives on humanity's connection to the natural world and the responsibilities it entails. Within organizational contexts, individual actions are crucial for addressing environmental challenges (Stern, 2000). The decisions of sustainability professionals, whether within formal institutions or informal settings, significantly impact environmental and societal outcomes (Bolis et al., 2021). This underscores the importance of understanding their personal connection to nature, which remains an underexplored area of study. While sustainability professionals are often positioned as agents of environmental change (Visser & Crane, 2010), the role of their personal connection to nature in shaping their career paths and professional behaviors requires further exploration. Research has highlighted the role of environmental attitudes, beliefs, and values in promoting pro-environmental behaviors (Stern, 2000). However, these studies often overlook the deeper, intrinsic connections to nature and the motivational drivers behind such behaviors (Nisbet et al., 2009). Although existing literature sheds light on general environmental behaviors, it provides limited insights into how personal relationships with nature influence the career trajectories of sustainability professionals. Understanding these individual differences is essential, as personal agency plays a dominant role in career development. Theories such as the boundaryless, protean, and career construction models emphasize individual agency over organizational and contextual factors in managing careers (Arthur & Rousseau, 1996; Savickas, 2013; Hall et al., 2018). As noted by Bansal and Roth (2000), individual concern for the environment reflects both the value organizational members place on it and the degree of discretion they have to act on their values. Managers' personal values are pivotal in shaping their pro-environmental behaviors for several reasons: values help distinguish between critical and non-critical environmental signals (Dutton, 1997), they inspire organizational members, particularly decision-makers, to champion ecological initiatives (Anderson & Bateman, 2000), and managers are more likely to implement changes aligned with their personal values (Anderson & Bateman, 2000).

Further, studies on personality traits reveal their impact on career role enactment, mediated by career role preferences (De Jong et al., 2019). Research also underscores the significance of connectedness to nature

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in environmental management, with Restall and Conrad (2015) advocating for its inclusion in environmental management strategies.
This thesis explores the connectedness to nature among sustainability professionals, focusing on how their relationship with the natural environment influences their career paths and role enactment. By integrating career development theories with environmental psychology, this research addresses a critical gap, offering insights into the interplay between personal and professional dimensions in sustainability careers. The thesis is structured into four sections: an initial discussion of key concepts and theories, followed by the methodology, then findings analyzed through iterative engagement with theory and data, and finally, the discussion and conclusion, which outline contributions, limitations, and directions for future research.

Concept and theory

This research adopts a multi-theoretical perspective, integrating insights from human-nature relationship theories, the Value-Belief-Norm (VBN) theory, the Theory of Planned Behavior (TPB), and Career Construction Theory. This integrative approach allows for a nuanced understanding of the interplay between personal antecedents, environmental values, and professional trajectories.

1. Human-Nature Relationship (HNR)

In the field of environmental management and sustainability, various frameworks were designed to explore the relation humans have with the natural environment, but the most common is Ecosystem Services (ES). Ecosystem services is a term coined by the Millennium Ecosystem Assessment (MEA) which is a framework to assess the goods and services the natural environment provides for humans, as in, the benefits that people obtain from ecosystems. The framework has been and still is debated between scholars for its anthropocentric approach (Schroeter et al., 2014) with its roots in economic principles and emphasis on quantifying the value of the goods and services provided by nature (Silvertown, 2015). Moreover, Flint et al. (2013) criticizes the literature applying Ecosystem Services as a related concept to Human-nature relationship. The authors highlight that Ecosystem Services and Human-nature relationships are explicitly separate. Even though the concept of Ecosystem Services is debated, a vast majority of research in sustainability science gave more importance to the external world of ecosystems, economic markets, social structures, and governance dynamics, which led to neglecting a critical dimension of reality which is the inner lives of individuals. This inner dimension dictates our emotions, thoughts, identities, and beliefs (Ives et al., 2019). Furthermore, it is argued that the inner world can be the root of sustainability challenges and at the same time the solutions to the greatest sustainability issues (Riechers et al., 2022).

"The Human–nature relationship goes beyond the extent to which an individual believes or feels they are part of nature. It can also be understood as, and inclusive of, our adaptive synergy with nature and our longstanding actions and experiences that connect us to nature" (Seymour, 2016). The concept of the human-nature relationship emphasizes the psychological and emotional bonds individuals form with the natural environment. Studies have found that stronger connections to nature are associated with greater environmental concern and a higher likelihood of engaging in sustainable behaviors (Schultz et al., 2005; Nisbet et al., 2009) higher human interest in environmental protection (Perkins, 2010). Most studies in the field of management, adapted the Human-nature relationship lens for research in tourism, for instance, exploring the relationship between rural tourism experiences and tourists' intentions for green consumption after their visit, in which connectedness to nature and environmental awareness both have significant influences on tourists' green consumption intentions later in life (Chen et al., 2023) or investigating the mediating and interactive effects of green human resource management (HRM) practices, connectedness to nature, and conscientiousness on employees' pro-environmental performance within the hospitality industry (Darvishmotevali & Altinay, 2022). Other studies examined Human-nature

relationship within the interaction between leaders and employees, for instance the impact of spiritual leadership on enhancing employees' voluntary eco-friendly behaviors though the mediating role of harmonious green passion and connectedness to nature (Qohin & Wihuda, 2023) or within organizational green practices and employees, such as understanding how green training directly and indirectly (through connectedness to nature) influences employees' eco-friendly behaviors outside of work (Usman et al., 2023). Boiral et al. (2019) called attention to the lack of scholarly work on the organizational applications of connectedness to nature concept. Thus, the authors investigated the meaning, manifestations, and implications of connectedness to nature in natural resources companies.
Previous research has suggested there is a linkage between human-nature relationships and pro-environmental behavior (Verbrugge et al. 2013; Pradhananga et al. 2015), yet empirical evidence of this relationship is scant (Van Ripper et al., 2018).

2. Value-Belief-Norm (VBN) Theory and Theory of Planned Behavior (TPB)

The Value-belief-norm and the Planned behavior theories are applied as complementary theories.
2.1 Value-Belief-Norm (VBN) Theory. The VBN theory has garnered empirical support and has been shown to effectively explain self-reported behaviors and behavioral intentions. Stern and colleagues (2000, 1999, 1995) integrate value theory, norm activation theory, and the New Environmental Paradigm (NEP) perspective into a causal framework explaining pro-environmental behavior. The first theory (Value theory) (Schwartz & Bilsky, 1987) explains the values that determine the attitude of a person in a given situation. The second, Normative theory (Shwartz, 1977) explicates the mechanism in which people behave in an altruistic manner. And lastly, The New Environment Paradigm (Dunlap et al., 2000) aims to look at people's worldviews and their attitude toward nature. Therefore, the Value-Belief-Norm (VBN) theory suggests that personal environmental behavior stems from an interplay of values, beliefs, and personal norms, motivating individuals to support environmental initiatives. The proposed framework traces a pathway from stable, core aspects of personality and belief systems to more specific beliefs about human-environment interactions (NEP), their implications, and the individual's responsibility to take corrective action. Most studies have applied value-belief-norm theory in order to explore employees' environmental behavior (Al-Ghazali & Afsar, 2021; Blok et al., 2015; Bissing et al., 2013; Graves et al., 2013).

This theory is particularly relevant in examining how sustainability professionals' relation to nature influences their personal norms and consequently affects their career choices and the moral imperatives guiding their work.

2.2 Theory of Planned Behavior (TPB). The TPB emphasizes the role of attitudes, subjective norms, and perceived behavioral control in shaping intentions and actions (Ajzen, 1991). According to Ajzen (1991) and Schwartz (1977), individuals' personal norms represent their sense of personal responsibility or moral obligation to engage in specific behaviors. As argued in the book Psychology of sustainable development (2002), addressing environmental challenges inherently requires individuals to act responsibly and incorporate moral considerations into their behavior (Kals & Maes, 2002). In the environmental context, numerous studies have demonstrated a clear relationship between personal norms and pro-environmental behavior. For instance, personal norms have been linked to both general pro-environmental actions (Kaiser & Shimoda, 1999) and specific behaviors such as conservation (Corral-Verdugo & Frías-Armenta, 2006), green commuting (Bamberg et al., 2007), recycling (Valle et al., 2005), and sustainable purchasing decisions (Thøgersen, 2006) and littering prevention (Kallgren et al., 2000). These findings highlight the pivotal role of personal norms in fostering environmentally responsible behavior across a variety of contexts.

Numerous researchers have applied this framework to forecast environmental intentions and behaviors at both the individual and organizational levels (Cordano and Frieze, 2000; Flannery and May, 2000).

Significantly, it has been used as a theoretical bridge linking managerial characteristics to corporate environmental practices (Flannery and May, 1994; Sharma, P., and Sharma, 2011).

While these relationships are well-documented in terms of general behavior, little is known about its role in career development, particularly among sustainability professionals who often navigate value-driven work. Thus, for the following paper, a fourth background is introduced: Career construction theory.

3. Career Construction Theory

Career construction offers a theoretical framework for understanding vocational behavior, along with counseling models and methods designed to help individuals achieve personal fulfillment and contribute to society through their work (Savickas, 2002; 2005). It posits that individuals actively construct their careers by integrating their personal values, skills, and experiences. This theory underscores the importance of meaning-making, as professionals align their work with their identity and purpose. Psychodynamic approaches place a strong emphasis on the subjective perspective, conceptualizing career choice and development as being shaped by early parent-child relationships, childhood experiences, family dynamics, and the personal significance of work and career. Within narrative and psychodynamic frameworks, career theory focuses on how individuals leverage their unique traits and assign meaning to their lives and identities through work and other life domains. Personal narratives and the recognition of recurring patterns serve as key tools for individuals to interpret their life careers, fostering deeper meaning-making and self-understanding (Savickas, 2013).

To the best of our knowledge, no study explored how the relation to the natural environment can influence the career construction of an individual, specifically when the career trajectory is oriented towards sustainability positions.

Table 1. showcases the interrelation between the concepts of each theoretical background. The value orientation and beliefs outlined in the VBN theory align with two key themes from the human-nature relationships framework. Similarly, personal norms are integral components of both the VBN and TPB theories. Finally, the implementation of the vocational self-concept reflects the expression of one's inner identity through role enactment in the external world. The following section elaborates on each theme and clarifies the relationships among them.

Human-nature relationship	Value-belief-norm theory	Theory of planned behavior	Career construction
Childhood exposure to nature	Value orientation and beliefs		
Spirituality and religion			
	Awareness of consequences	Personal norms	
	Ascription of responsibility		
		Behavioral intention	Implementation of the vocational self-concept
		Attitude towards behavior	
		Authenticity	
			Proactive personality
			Adaptative mindset

Table 1. Concept and theoretical background and the interconnected variables

Methodology

The primary aim of grounded theory is to develop new theoretical insights. As such, grounded theory studies are particularly well-suited for investigating research phenomena or objects that lack an adequate theoretical foundation. This may occur when no existing theory addresses the phenomenon in question or when existing theories are insufficient because they fail to incorporate essential concepts, the relationships between the concepts are not sufficiently detailed, or the relevance of the concepts and their interrelations has not been validated within the specific population or context under examination (Vollstedt & Rezat, 2019). Grounded theory's roots in the social sciences emphasize its focus on predicting and explaining behavior in the context of social interactions. Accordingly, Strauss and Corbin (1990) highlight the importance of action-oriented and process-driven research questions in grounded theory studies. Charmaz (2006) argues that while it is permissible for researchers to be familiar with the existing literature, theories, concepts, and hypotheses within their field of study, they must ensure that their research does not begin with these as its foundation. Instead, the theory should emerge organically through the interactions between the researcher and participants during the data collection process. She emphasizes that researchers cannot disregard their prior exposure to literature, but they can refrain from using it as the starting point for their research.

The grounded theory approach was adapted as outlined by Gioia et al. (2012) and Corbin and Strauss (1990) in order to develop a conceptual framework from the data. This methodology emphasizes a detailed evaluation of interviews through coding and classification, while maintaining a semi-ignorant stance towards prior studies (Gioia et al., 2012). The approach necessitates deriving categories and concepts directly from the data, minimizing hypothesis bias from existing literature, though complete detachment from prior research is unattainable (Bogner et al., 2014).

Data collection

For this study 21 interviews with sustainability professionals were held from 24th of July until 15th of November 2024. The interviews held were semi-structured, since they are ideal for biography research (DiCicco-Bloom & Crabtree, 2006). The guiding questions for the interviews were:

- Career journey, including role, tenure and company
- How would you describe your relation to nature?
- What drew you to sustainability?
- How did your values and experiences shape your sustainability approach in your job?
- How do you handle conflict between your values and the organization's?
- What are your long-term sustainability goals?

The selection criteria for interviewees required that they be full-time professionals with a minimum of three years of experience in sustainability within the business sector. This included individuals holding management positions within corporations as well as sustainability consultants working with business organizations. Participants were recruited through multiple channels, including LinkedIn, personal email, sustainability conferences, and snowball sampling via referrals from interviewees. Data saturation was reached after the 15th interview. The interviews with sustainability professionals lasted for a duration of 40 minutes to one hour and were recorded with mutual agreement. The transcriptions were done verbatim to ensure no loss of meaning and to leave no room for interpretation or assumption by the researcher.

The Gioia methodology was adopted to establish a structured framework for qualitative research. This approach is commonly utilized in organizational and management studies, aiding researchers in systematically and rigorously analyzing and presenting their data (Gioia et al., 2013).

Interviewee ID	Job position	Company description
A	Group sustainability manager	Fruits and vegetables production and distribution
B	Environmental engineer and consultant	Research and consultancy services
C	Senior general manager sustainability	Bank and financial services
D	Environmental management	Electricity
E	Head of sustainability and ESG	E-commerce
F	Sustainable financing	Financial, software, data and media company
G	Director Environmental and sustainability	Investment bank
H	Vice president Sustainability and Public Affairs	Consumer goods
I	Environmental Impact Expert	Consulting and professional services
J	Sustainability consultant	Consulting and professional services
K	Sustainability manager	Food and beverage manufacturing
L	Sustainability and impact manager	Private equity financing
M	Sustainability expert - decarbonization	Transportation
N	Sustainability manager	Consulting and professional services
O	Head of sustainability	Business/Productivity software
P	Global head of sustainability, corporate affairs and risks	Biopharmaceutical
Q	Sustainability manager	Aviation
R	Head of corporate sustainability and supply chain	Nuclear decommissioning
S	Sustainability manager	Electricity and heat
T	Marketing and sustainability manager	Information technology consultancy activities
U	Chief sustainability officer	Media and information services

Table 2. Overview of interviewees

Data analysis

The process began with first-order analysis, employing open coding to closely adhere to the text and summarize the essence of the excerpts without generating categories immediately. This descriptive coding technique produced a wide range of codes (Saldana, 2009). For the initial data analysis, a similar process used in Harding et al. (2014) research was applied, in which the focus was directed to passages from the verbatim transcription of the interviews where the participants used personal pronouns such as "I", "me" and "you" to refer to their subjectivity in relation to their experiences within the organizations where they work, and their personal experiences with nature. The open coding of the selected interview passages enables the tracking of passages in which sustainability professionals talked about their exposure to the natural environment during their upbringing, the emotions they hold towards the environment, their perception of the self as protector of the environment and lastly the interplay of the self within their profession. Consequently, the analysis yielded multiple first-order concepts, thus comparison of the data, identification and examination of patterns and distinctions were undertaken, a technique known as axial coding (Kendall, 1999). Axial coding aims to identify similarities and differences among these codes, consolidating and reducing their number. Then, the second-order analysis consists of grouping the codes into themes, labeling these theoretical themes as clearly as possible and providing phrasal descriptions. Adjustments, including rearrangements and reclassifications, were made as needed (Gioia et al., 2012; Saldana, 2009). Finally, selective coding was applied in order to synthesize core categories, visualized as aggregate levels, to progress toward the theoretical level of analysis. All emerging themes within these categories were carefully examined to evaluate their ability to explain the phenomena under investigation (Corbin and Strauss, 1990, 2008). The iterative process of engaging with theory, data, and analysis facilitated the development of detailed categories and relationships (Flick, 2009).

Self-narrative and social desirability biases present significant challenges in this study, particularly in relation to response bias, where participants may provide answers, they perceive as socially favorable. Social desirability bias is a well-documented concern in self-reported research (Krumpal, 2013). To mitigate this issue, ensuring confidentiality during interviews and establishing a strong rapport with participants are essential strategies to enhance the reliability and authenticity of the responses.

Findings

As shown in Figure 1, four categories were identified: connectedness to nature, personal norms, vocational behavior, and career adaptability. This chain of elements can be perceived within a framework that stretches from the inner to the outer world of an individual. As described by Ives et al. (2020), these inner dimensions—our goals, values, worldviews, and emotions—serve as the foundation for the motivations and approaches that drive and sustain efforts toward sustainability. While our outer represents the perceived world, made of us and others around us. Next, each second order-theme is developed with the narrative of the observation in order to comment on the theoretical model. Lastly, Table 4 provides selected quotations to support the interpretations as recommended for qualitative research (Pratt, 2009).

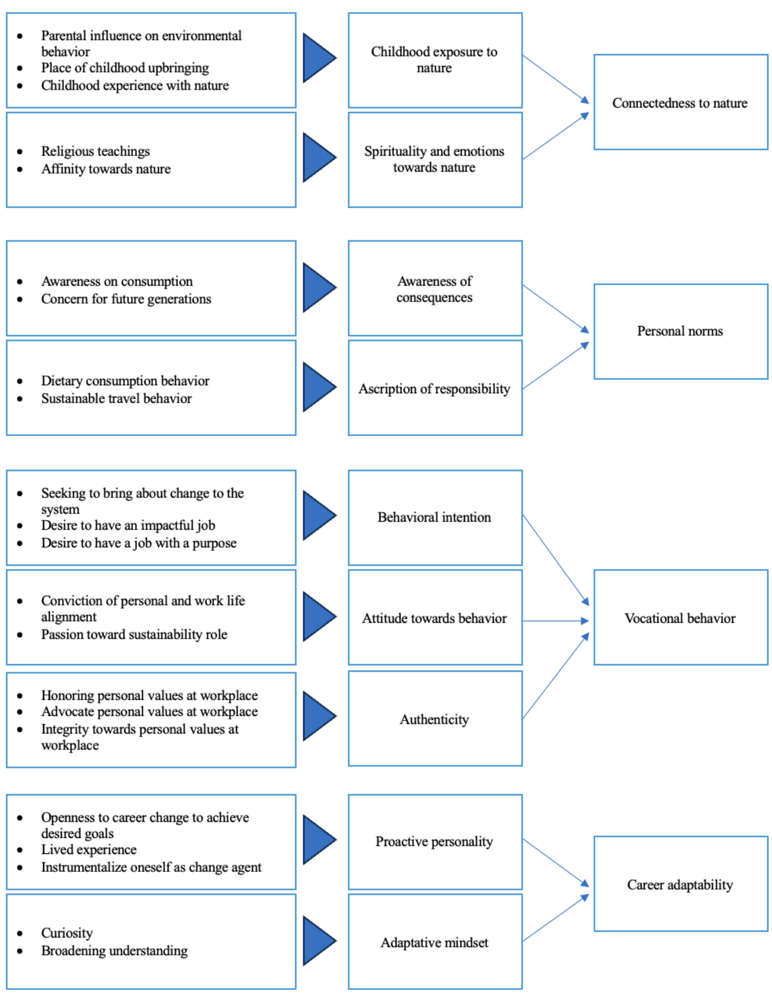

Figure 1. Data structure

Connectedness to nature

The connection to nature encompasses multiple dimensions, including psychological components (cognitive, affective, and behavioral) and structural components (connectedness, caring, and commitment) (Schultz, 2002). Within Schultz's (2002) framework of human–nature relations, the sense of connectedness to nature fosters caring, which subsequently leads to pro-environmental actions. For sustainability professionals, this connection is particularly significant, as it informs their environmental values, motivations, and behaviors. Two key aspects are gathered from the interviews: childhood exposure to nature and spirituality and emotions toward nature.
Childhood exposure to nature plays a foundational role in shaping long-term pro-environmental behaviors and commitments, including career paths in sustainability and environmental fields (Wells & Lekies, 2006). Early interactions with natural settings influence both cognitive and emotional processes, fostering environmental commitment and citizenship (Selhub & Logan, 2012). Time spent in natural environments during childhood, particularly in the company of family and friends, often becomes a source of cherished memories in adulthood (Spartz & Shaw, 2011).

Participant U: "*British childhood in the 70s and 80s, before anybody got on airplanes and went to Spain or Italy or Portugal, was going to the nearest seaside if they were lucky enough to afford to do that. Airline travel was a very big luxury. Package holidays never existed. Nobody went abroad. So, I guess that was probably the first contact with nature, and I remember the place we used to go every year was a bungalow that was rented out and it had a really big garden, like I mean 200 foot long garden and horses at the end. So that was always like a big thing I remember as a kid thinking this is a massive garden absolutely enormous. There is a freedom, isn't there, when you're in a big open space, whatever it is, a field, a beach, or just outside, you do feel a bit unencumbered by all the nonsense that we have to worry about."*

These positive experiences help cultivate a deep connection to nature, influencing how individuals perceive its role in their lives later on (Wells & Lekies, 2006). For instance, activities such as exploring forests, hiking trails, or playing outdoors contribute to an enhanced emotional affinity toward nature, stronger ecological beliefs, and an increased willingness to engage in pro-environmental behaviors (Collado et al., 2013). The mechanisms of childhood exposure, such as the type and frequency of engagement with nature, shape these lasting effects. Sustainability professionals who develop a profound connection to nature early in life often attribute their environmental values and career choices to these experiences.

The emotional and spiritual dimensions of human–nature relationships offer additional insights into the connectedness experienced by sustainability professionals. Emotional affinity is a strong predictor of nature-protective behavior, and it can be traced back to both present and past experiences in natural environments (Kals & Montada, 1999). Humans position themselves along a spectrum of relationships with nature, ranging from dominance (Master) to spiritual unity (Participant). Between these extremes, two intermediary perspectives exist: Steward, where humans assume responsibility for caring for nature, and Partner, where humans and nature are considered equals in a mutually beneficial relationship (Flint et al., 2013). These perspectives shape how individuals view their role in environmental conservation.

Participant K: *" I'm quite religious person, I'm a Muslim, I found that there's a lot within our religion that says we should be stewards of the environment. We are here as guardians of the environment. As Muslims, we preform wudu (ablution) before prayer, and there's a hadith where the Prophet advises us not to use water excessively, only the necessary amount. This teaching emphasizes water conservation and the importance of valuing and respecting the resources that have been created."*

Spirituality, although underexplored in the context of nature conservation, provides a valuable lens for understanding how values are formed and transmitted across individual and collective levels (Ives, 2024).

Religion, for instance, bridges diverse value systems by encompassing worldviews, knowledge frameworks, broad ethical principles, specific values, and actionable value indicators (Anderson et al., 2022; Raymond et al., 2023). These spiritual and value-based perspectives not only guide sustainability professionals in their work but also deepen their emotional connection to nature.

Personal norms

Personal norms are activated when individuals become aware of the consequences of their actions and recognize their own responsibility. This means that when people perceive the negative outcomes of failing to act pro-socially and acknowledge their role in preventing these outcomes, they develop a strong moral obligation to act, thereby forming a personal norm. Moreover, this sense of responsibility is often reinforced by an awareness of consequences. When individuals feel the impact of negative outcomes, they are more likely to attribute these consequences to their actions and take corrective measures. Conversely, if the negative consequences are not felt, the development of a sense of responsibility is less likely (Stern, 1999).

Participant T: *"I think that personal responsibility is a huge problem when I think about nature. I think there is a sense of entitlement, I don't know what's happening, but people have a sense of entitlement and want things for nothing in exchange. The whole concept of free absolutely blows my mind. But things aren't free. Nothing is free. There is, you know, there is because whatever it is, you've made it, that is usually at the expense of something else, right? So whether that's somebody's time, whether it's whether it's energy, whether it's a product that's been produced. For instance, when they say free delivery. It's not free because actually somebody's got to get it there and they're taking a vehicle which has an impact. That person's time has an impact."*

Vocational behavior

The behavior highlighted for this study is the role enactment of sustainability professionals. Their vocational behavior can be understood through three interconnected components: behavioral intention, attitude toward behavior, and authenticity. These elements provide a comprehensive framework for examining the motivations, evaluations, and alignment of sustainability professionals in their roles. Behavioral intention is central to vocational behavior, reflecting the motivational factors that drive individuals to act. Within the framework of the theory of planned behavior (Ajzen, 1991), behavioral intention is defined as an individual's readiness to perform a specific behavior. This intention encapsulates the effort an individual is willing to invest to achieve a particular goal. Intentions serve as critical predictors of actual behavior, with stronger intentions generally leading to a higher likelihood of behavioral performance.

Participant R: *"I will tell you that my parents gave me a nickname: United Nations. Because I wanted to be this person that would bring everyone together and would ensure that they would release and remove any conflicts and solve any conflicts. At the same time, I have a thing with justice and fairness, and I have it from I don't know when. I always remember myself like this. So that this element of sensitivity was always there. There's something about this justice and fairness that drives me mad and drives my power as well to make things happen or change things."*

For sustainability professionals, behavioral intention manifests itself through the subjective mission of contributing through their work to better environmental and social outcomes. These intentions reflect not only their professional objectives but also the underlying motivations that sustain their efforts in the face of complex environmental challenges.
The attitude toward a behavior refers to an individual's evaluation of the behavior as favorable or unfavorable (Ajzen, 1991). Attitudes are formed through underlying beliefs about the behavior and its anticipated outcomes. Each belief links the behavior to certain attributes, outcomes, or associated costs.

These beliefs, in turn, shape attitudes by attaching subjective values—positive or negative—to the behavior. Sustainability professionals should walk the walk and talk the talk. Thus, they truly believe that personal and professional life should align, and passion is a key ingredient to pursue role enactment. Authenticity represents the alignment between an individual's internal values and beliefs and their external expressions and actions (Lehman et al., 2018). For sustainability professionals, authenticity is central to their vocational behavior, as it underscores the consistency between their personal environmental values and their professional practices. Authenticity involves owning one's experiences, including values, thoughts, emotions, and beliefs, and acting in accordance with one's true self (Harter, 2002). Values, as foundational elements of authenticity, represent enduring principles that guide individuals' perceptions and interactions with the world (Corraliza & Berenguer, 2000). Values, deeply embedded within individuals, shape their external actions by influencing the activities they engage in, the belongings they prioritize, the principles they adhere to, the circumstances they navigate, the careers they pursue, and the decisions they make. As such, values act as fundamental determinants of personal, social, and professional choices (Suar & Khuntia, 2010).

Participant H: *"I think being authentic in what I do. So, I do believe in what I do at home. I believe also that I can relate to that and then keep the same values at work. I couldn't kind of have two separate minds that this is for my free time, and this is for my work. So, I try to bring the similar type of thinking to my work life."*

Career adaptability

Career construction theory conceptualizes vocational behavior, adjustment, and development as evolving, dynamic processes. It emphasizes the interaction of aligning professional roles with personal and societal values, creating meaningful experiences, and ensuring one's work resonates both internally and within the broader social context (Savickas, 2002). Insights from contemporary career research shed light on navigating careers in emerging fields. For instance, the notion of "protean careers," characterized by self-direction and value-based decision-making (Hall, 2004), underscores individuals' intentional alignment with responsible values and continuous identity learning.

In interviews, participants shared profound reflections on their life themes and adaptability (Corso & Rehfuss, 2011). Life themes provide insight into the motivations, needs, values, and interests that underpin individuals' vocational choices, giving their career paths a sense of purpose and meaning. In contrast, adaptability emphasizes how individuals navigate and reshape their environments to cultivate fulfilling and meaningful careers (Savickas, 2013). This adaptability involves honing specialized skills to manage workplace transitions and address challenges encountered along their career journeys (Hou et al., 2012). Furthermore, Bateman and Crant (1993) introduced the concept of proactive personality, characterizing an individual's tendency to seek opportunities, instigate change, and take initiative to influence their surroundings. This proactive disposition reflects a willingness to engage in forward-thinking behaviors and exert control over one's environment. Research in proactivity highlights its strong association with critical indicators of organizational success (Thomas et al., 2010). Expanding on this, Zhao and Zhang (2022) examined the relationship between proactive personality and career adaptability through a moderated mediation model. Their study investigated how proactive personalities influence career adaptability via career identity and thriving at work, while also considering the moderating role of task interdependence.

Participant I: "*I thought that everything, all the methods of environment can be solved through a scientific and environmental approach. But working a lot together with organizations, NGOs, public sector, I understand that the solution can't be just a scientific and environmental approach, not just from the perspective of an engineer. But sometimes I hear people, also politicians talking about the solution of climate crisis, it is not just connected to the technical solution. But it's a problem connected to politics, to social aspects, to economic aspects. So, in my opinion, it's very important to have different perspectives,* *so a plurality of experts involved in this kind of project is so important. But of course, it's more difficult because sometimes you can clash with some perspective, it's more expensive and takes a lot of time. But in this way, I think it's possible to achieve a solution that can be sustainable. So, for me, it's very important. So, in my career and right now I'm trying to move in also to understand, well I remain an environmental engineer so I'm reading something regarding economics, regarding social, connecting to the current environmental situation, because the technical side of sustainability is just the arm, the sword, no? It's not the head. So, it's very important to involve all the body in that."*

A key dimension of career adaptability is curiosity, which involves engaging in meaningful career exploration and approaching the future with a realistic mindset (Savickas, 2013). At the level of career interventions, curiosity manifests as an individual's active pursuit of information and knowledge to navigate their career pathways effectively.

Participant H: *"I learn more all the time because I thought that I knew a lot, but it becomes clear all the time that there are so many new things. And now for instance, about biodiversity, one example is that I wasn't too keen on birds at some point. I thought that they were annoying and especially in the city centers, the seagulls, and the pigeons and all that. But now I have really gotten into them and by exploring more, I learn, and I think that is really fascinating. And those are also one of the good examples that all of us can notice when we think about the loss of biodiversity. So even the very common ones are disappearing because of our actions. And then also at work we own lots of forests, around 14,000 acres of forests in the southern part of Finland, so I try to bring that knowledge that I have developed to our organization and trying to get the others on board as well. So, we are helping there, the bird nesting and all that and teaching the school kids in that area about birds and such. And so, I'm really fortunate to be able to also, if I learn something, I can most likely somehow relate that back to my work as well. So, I keep a curious mind and I'm trying to learn myself even more all the time."*

Based on the findings, a grounded model was developed, as shown in Figure 2, that integrates the themes generated from the research as well as their interrelation between them.

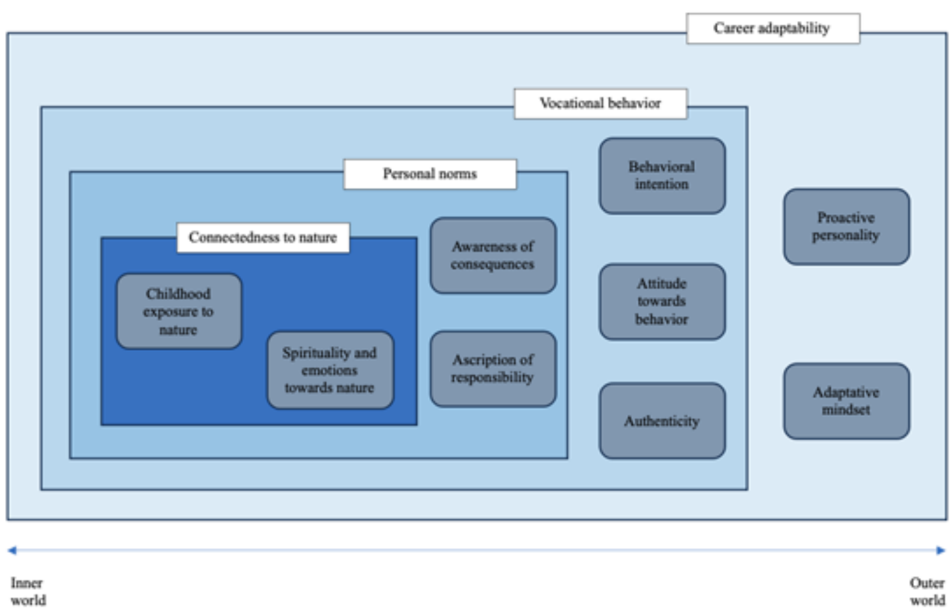

Figure 2. Grounded model

Second order themes and first-order categories	Representative quotations
Connectedness to nature	
1. Childhood exposure to nature	
1.1. Parental influence on environmental behavior	G: My stepfather was a professor at university and very committed with both environmental and social aspects. He had a very strong print on my development. My stepfather made sure we don't waste water, electricity, or any other resources so that we value nature. D: My parents were always telling us to sort the garbage, to switch the light off when leaving a room, and not to waste food. It was not necessarily because it's an environmental action, but because it was right and should be done.
1.2. Place of childhood upbringing	K: I used to live in a little village in Sri Lanka and we had a big land with big coconut trees in front and like mango trees and we had rice fields, and it was beautiful. L: I lived in rural Canada. We grew up on a small farm. We had animals. We spent all our time outside when we were kids, especially in the summer.
1.3. Childhood experience with nature	J: To fight boredom, you explore the world around you. So I think that this has led me to get closer to nature since I was a child. Q: I was a young scout. And because of this I have this inner eagerness to give something back to other persons, animals and earth, without destroying it.
2. Spirituality and emotions towards nature	
2.1. Religious teachings	K: I'm quite a religious person, I'm a Muslim, I found that there's a lot within our religion that says we should be stewards of the environment. We are here as guardians of the environment. As Muslims, we perform wudu (ablution) before prayer, and there's a hadith where the Prophet advises us not to use water excessively, only the necessary amount. This teaching emphasizes water conservation and the importance of valuing and respecting the resources that have been created. L: I went to a Catholic elementary school where it was highly valued and taught that you would just, you know, help and give back to your community. So, I think that that was part of our upbringing. But then that really has, I think, carried on.
2.2. Affinity towards nature	E: I have grown up loving thunderstorms because I always thought that it was Mother Nature talking to us. J: I am very empathetic towards animals, wildlife, birds.
Personal norms	
3. Awareness of consequences	

3.1. Awareness on consumption	M: I think about the impact I am having by buying a 3 euros shirt and how this shirt is made. You think, my 3 euros shirt is made like that, in a country where human rights are violated, the transportation footprint. I don't want to buy that. D: At the supermarket I try to look out for biological organic products
3.2. Concern for future generations	Q: I have kids and if you have kids, you will think about the future and it's very hard to think that they won't have the same future that I had. It's so important to me as well that life will go on like after me or after my children and there is a lot of saying that if we are not acting right now, then later it will be too late. K: I have a son and I want him to be able to enjoy nature as I did during my childhood.
4. Ascription of responsibility	
4.1. Dietary consumption behavior	F: When I am at home by myself, I always cook vegan food. But when I am at a restaurant, I am flexible and will order a vegetarian dish. G: I eat meat, but I try to reduce my intake.
4.2. Sustainable travel behavior	P: It is probably due to my role; I am far more conscious and take decisions to also improve my environmental footprint. I fly less, I travel far more by train. D: I always try to take the train and I don't own a car. I fly on holidays; I am not completely able to avoid that.
Vocational behavior	
5. Behavioral intentions	
5.1. Seeking to bring change to the system	J: I really want to do something to change the system. I started approaching business sustainability even though it was criticized, why should I run away from it? I should stay inside and try to change it, in my small way. U: After my experience with nature, I understood its importance. I couldn't do anything about it. I had to bring about change.
5.2. Desire to have an impactful job	H: I felt that I want to be in a business where I can affect communities and the natural surroundings through the decisions that are made by the companies. L: I've always just kind of wanted to make a positive impact and that was like an element you could be involved with.
5.3. Desire to have a job with a purpose	F: I was drawn to sustainability for the value, an internal driver, a source of motivation that makes me wake up knowing to have a meaningful purpose by helping not only the environment but as well others. T: I am driven by the sense I give to my life. And I am proud of what I am doing right now.

6. Attitude towards behavior	
6.1. Conviction of personal and work like alignment	I: There are no borders between personal and work life. Your personal life contaminates your work and vice versa. H: I can't have two separate minds, one for my free time and one for my work. I try to bring a similar type of thinking to my work.
6.2. Passion towards sustainability role	R: For me it was passion and making a difference that has driven my career. H: I am passionate about my job in sustainability, that's why I get lots of invitations to come and talk. And after my presentations, people tell me that it shows that I am passionate about what I am doing.
7. Authenticity	
7.1. Honoring personal values at workplace	B: I think you must trust in your values, trust the need for sustainability improvement. It's important to pass to the company your interest and passion about the environment and people and the importance of bringing them together with the business features and needs. L: It's about these intrinsic values that make a big impact on job satisfaction. So for instance, I find it difficult when there's a bit of hypocrisy or any sort of greenwashing.
7.2. Advocate personal values at workplace	F: I tend to push for more government institutions or investment funds focused on sustainability because I found my work more valuable inside the company because I have personal connection with my inner values. I: I trust what I do, and companies feel that I trust what I do. So, I try to share my long-term vision and find a strategy to find a solution to the company's environmental problem.
7.3. Integrity towards personal values at workplace	A: I have declined opportunities in companies in which I probably would have gained more money. But the companies didn't really reconcile with my values. M: When I find myself in a disagreement with my boss because I think about it in another way and because for me it's wrong, I don't take responsibility for something that does not represent me.
Career adaptability	
8. Proactive personality	
8.1. Openness to career change to achieve desires goals	J: My deep relation with nature is what drove me to make this work. I followed the path of studying biology with the intention of taking care of the protection of nature. Then I understood that, despite the positions of responsibility that I covered within the laboratories, I felt that I was far away from my initial passion. That's when I started approaching business sustainability. K: My first job was in a nuclear organization, where I believed nuclear energy was crucial for the climate crisis as a bridge to renewables, especially if we could manage nuclear waste effectively. Later, I joined a company in the food sector, recognizing that the food sector plays a

	major role in emissions. Given the inefficiency in food production and waste, I saw an opportunity to drive sustainability in this area and influence strategies to make a bigger impact.
8.2. Lived experience	I: Every experience I have had has equipped me with valuable skills and to develop a broader understanding of business needs. Throughout my career, I've worked with companies, NGOs, the public sector, and universities, which has taught me the importance of perspective. While I recognize the role of capitalism in improving living standards over the last century, I believe that simply relying on the market won't solve the world's problems. K: During my experience within a company, I rotated around a number of roles. For over two years I did four roles. This allowed me to have a broader understanding of the different roles that people do, even within the same discipline that you can have. My role as a strategy developer made me work closer with environmental regulators, which led me to get closer to senior management and the director of the organization. Shadowing one of the directors for over a year gave me direct mentorship from the operations director and it opened up alot of opportunities.
8.3. Instrumentalize oneself as change agent	E: I saw an opportunity to develop a sustainability agenda for a large company because I saw a room for change. Q: When you see an opportunity to do something that really matters, especially in my company that isn't that big, I would push more because I know that we aren't doing enough.
9. Adaptative mindset	
9.1. Curiosity	H: I learn more all the time because there are so many new things. So I keep a curious mind. If I learn something I can most likely somehow relate it back to my work. E: I am an avid reader and curious by nature. Curiosity and the ability to see things from a different perspective is key because it allows divergent thinking. So, curiosity drives me in everything I do.
9.2. Broadening understanding	I: In my career, I'm currently working to broaden my understanding while remaining an environmental engineer. I'm reading about economics and social issues to connect them to the current environmental situation. Technical skills are important, but they're just one part of the equation; it's essential to engage the whole body of knowledge in this work. B: The environmental framework is changing a lot. So, year by year, something changes, and you need to focus and learn different things.

Table 3. Dimensions, Themes, Categories, and Quotations

Discussion

Contribution to sustainability professional and career consultancy

This study offers several key contributions to sustainability professions and career consultancy. By exploring the deeply personal experiences that sustainability professionals have with nature—such as formative childhood interactions—we gain unique insights into how these experiences shape their career trajectories and sense of purpose. Purpose emerges as a driving force for sustainability professionals, functioning as a central, self-organizing life aim that not only directs life goals and decision-making but also provides a profound sense of meaning. As noted, purpose serves as a compass for action, offering guidance without being obligatory, yet its alignment with behavior yields sustained motivation and fulfillment through goal pursuit and attainment (By, 2021)

Contribution to the sustainability field

One notable contribution is the introduction of the concept of career adaptability within the sustainability field. By integrating career adaptability into discussions of sustainability careers, this study highlights the importance of individuals' ability to navigate dynamic challenges, embrace change, and align personal values with professional roles. This perspective enriches our understanding of how sustainability professionals cultivate resilience and effectiveness in their evolving roles.

Contribution to theory building

From a theoretical standpoint, this research underscores the limitations of relying on a single model to explain pro-environmental behaviors. As Pearce et al. (2022) argue, a comprehensive understanding of human behavior requires integrating multiple theories and models. This study supports such integrative approaches by weaving together concepts like human-nature relationship, career adaptability, authenticity and proactive personality, just to name a few. Thus, contributing to a more holistic theoretical framework for examining sustainability professionals' motivations and behaviors.

Conclusion: limitations and future research directions

This study is not without its limitations. Methodologically, the reliance on self-narratives presents challenges, including potential biases in how participants recall and interpret their experiences and social-desirability bias as in participants may exaggerate their connection to nature to protect their reputation as sustainability professionals. It is also likely that sustainability professionals feel pressured to act in ways that align with environmental and social interests. Furthermore, the study's scope could be broadened by conducting additional interviews to enhance the depth and diversity of insights. To build on these findings, future research should consider expanding the sample beyond Europe to include cross-country analyses of sustainability professionals. This would allow for a richer understanding of how cultural and geographic differences shape individuals' relationships with nature and their career trajectories. Additionally, future studies could examine the plurality of nature relationships among sustainability professionals, exploring how diverse interactions with the natural world influence their sense of purpose and career decisions. Incorporating additional variables, such as self-efficacy, into the analysis could further illuminate the interplay between personal characteristics and professional behaviors in sustainability contexts.

In conclusion, this study advances our understanding of the motivations and career adaptability of sustainability professionals while emphasizing the significance of purpose as a central organizing principle in their lives. It contributes valuable insights to both the sustainability field and theory building, setting the stage for further exploration into the personal and contextual factors that drive impactful and meaningful sustainability careers.

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The impact of Chief Sustainability Officers on sustainability performance: the moderating role of CSR network membership

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Abstract

The purpose of this paper is to argue the relationship between chief sustainability officer (CSO), sustainability performance and United Nation Global Compact membership (UNGC). This paper aims to empirically examine the moderating role of the United Nation Global Compact membership on the relationship between chief sustainability officer and sustainability performance. The study sample includes European companies listed on STOXX Europe 600 between 2010 and 2023. The findings reveal that while the creation of a CSO position positively influences sustainability performance, the impact is contingent upon contextual and external factors such as UNGC membership. Notably, the study highlights that the combined effect of appointing a new CSO and UNGC membership can yield counterintuitive results, potentially due to overlapping roles or conflicting resource priorities. It would be interesting for academics to discover the dynamic relation between external and internal governance.

Introduction

In an era marked by pressing global challenges such as climate change, resource depletion, and social inequality, businesses are under mounting pressure to take a leading role in advancing sustainable development. Sustainability has shifted from being a peripheral concern to becoming a cornerstone of organizational strategy across the globe. Central to this evolution is the Chief Sustainability Officer (CSO), a relatively new but rapidly expanding role within the Top Management Team (TMT) (Strand, 2013).

To prioritize sustainability, organizations are increasingly appointing dedicated sustainability experts or managers. A study by PwC revealed a significant surge in CSO appointments, with more being named in 2021 than in the previous five years combined (Gassmann et al., 2022). This trend underscores the growing influence of sustainability leaders, as their presence in executive decision-making circles signifies their inclusion at the highest levels of corporate governance. The rise of the CSO role highlights a company's strategic commitment to embedding environmental, social, and governance (ESG) considerations into its core operations and decision-making processes. The rapid growth in CSO appointments reflects the elevated importance of sustainability as a central business priority, signaling a fundamental shift in how organizations address global challenges and position themselves for long-term success. As a member of the TMT, the CSO wields the influence necessary to align corporate sustainability goals with broader business strategies. This role is instrumental in facilitating discussions and adjustments to ensure that sustainability initiatives are effectively integrated across all functional areas. By leveraging their strategic position, CSOs can advocate for the allocation of resources toward sustainability initiatives, ensuring alignment with the organization's overall vision and increasing the effectiveness of corporate social responsibility (CSR) strategies. The appointment of a CSO also sends a powerful signal to both internal and external stakeholders, emphasizing the firm's commitment to prioritizing sustainability at the highest strategic level. This not only enhances credibility but also drives progress through the corporate responsibility stages, as described by Lubin and Esty (2010).

Beyond internal governance, external frameworks such as the United Nations Global Compact (UNGC) play a pivotal role in shaping corporate sustainability strategies. Established in 1999 by then-UN Secretary-General Kofi Annan, the UNGC provides a general framework based on 10 principles derived from globally recognized declarations and conventions, addressing human rights, labor, the environment, and anti-corruption. These principles serve as foundational CSR values, guiding firms in adopting responsible practices to operate sustainably. Complementing this initiative, the United Nations introduced the Sustainable Development Goals (SDGs) in 2015, offering 17 actionable goals and 169 targets that address issues ranging from poverty and hunger to gender equality and climate action. Together, the UNGC and SDGs provide a comprehensive blueprint for organizations to translate sustainability values into concrete actions. Participation in the UNGC signals a firm's commitment to sustainability and requires active adherence to its principles. Companies must submit an annual "Communication on Progress" (COP) report, failing which they face delisting after two consecutive lapses. This emphasis on accountability has made the UNGC an essential framework for advancing CSR, attracting the attention of numerous scholars investigating its impact on corporate sustainability.

Despite the growing prominence of CSOs and frameworks like the UNGC, the question of whether their interaction enhances sustainability outcomes remains unresolved. To address this gap, this study investigates the relationship between the appointment of a CSO and sustainability performance, exploring the moderating role of UNGC membership. Grounded in the upper-echelon and resource dependency theories, this research examines whether the presence of a CSO, coupled with UNGC participation, creates synergies that improve sustainability outcomes or whether these factors may conflict under certain organizational contexts.

By integrating insights on internal leadership roles and external CSR networks, this study contributes to the understanding of how organizations can effectively navigate the complexities of sustainability governance. The findings offer valuable guidance for practitioners and policymakers seeking to embed sustainability into corporate strategies and align governance structures with global sustainability goals. Thus, this paper intends to fill the above research gap by employing CSR network as a moderating variable between newly appointed CSO and sustainability performance. The upper-echelon theory and resource dependency theory will be applied.

The paper is organized as follows: The next section delves into the literature review, providing a foundation for the study. This is followed by an outline of the theoretical frameworks employed and the formulation of the hypotheses. The subsequent section discusses the sample and methodology, detailing the sample characteristics, variable definitions, and analytical approaches. The empirical results are then presented, followed by a robustness check to validate the findings. Finally, the paper concludes with a summary of insights and implications.

Literature review

The Chief Sustainability Officer (CSO) is a relatively new addition to the Top Management Team (TMT) (Strand, 2013). According to Menz (2012), a key premise of research on TMT members is that the structural roles of specific functional executives have specific performance outcomes. Thus, there is an increase in recent studies that examine the role of Chief sustainability officer within organizations. For instance, a study by Wiengarten et al. (2017) looked at how the characteristics of a newly appointed CSO impacts a firm's financial performance. Similarly, Peters et al. (2019) examined the interplay between appointment of a CSO and sustainability performance. Henry et al. (2018) focused on how two distinct aspects of the TMT structural composition, that are the presence of a CSO, and the TMT's functional diversity affects the ability of an organization to achieve a high level of triple bottom line performance. Additionally, Peters and Romi (2015), explored the association between sustainability governance characteristics and the assurance of corporate sustainability reports. Thun and Zülche (2024) studied, on the other hand, the impact of CSO on sustainability reporting. Other authors have used moderators and mediators in order to understand how the effect can vary. Few studies have explored this relationship using a moderating variable approach. Fu et al. (2020) test the relationship between CSO and social performance by applying sustainability committee and industry culpability as moderators. Kanashiro and Rivera (2019) explore the moderating role of regulatory pressure on the relationship between CSO and environmental performance. As a mediator, Kashouri and Riguen (2024) used corporate governance to examine its effect on the relationship between CSO and sustainability performance.

To date, the empirical research on how CSO impacts a firm's performance is still inconclusive. According to previous research, the appointment of a CSO is not directly connected to sustainability performance, but rather a symbolic role for the purpose of greenwashing (Peters et al., 2019). The mixed results do not provide clear evidence that a CSO positively affects sustainability performance. The reason could be the marginalization of CSO when sustainability knowledge is also acquired externally (Risi & Wickert, 2017).

The critical synthesis highlights a significant gap in the literature, namely the lack of studies exploring how external factors influence the relationship between the Chief Sustainability Officer (CSO) and sustainability performance. Among the various CSR initiatives, the United Nations Global Compact (UNGC) stands out as the most widely adopted framework globally (Ortas et al., 2015; Rasche et al., 2013). The UNGC serves as a comprehensive framework offering broad guidelines for implementing responsible business practices. It assists firms in adopting standards and initiatives that promote corporate social responsibility (CSR), enabling them to operate more sustainably.

Theoretical background and hypotheses development

The upper-echelon and resource dependency theories were applied for this research to understand how the creation of a new CSO position affects sustainability performance, and to explore whether this relationship is moderated by UNGC membership. Upper echelons theory (UET) argues that a firm's strategic decisions are shaped by its senior executives' interpretation of the environment and the degree of attention they dedicate to it (Hambrick & Mason, 1984). Moreover, UET emphasizes the importance of executives in driving performance outcomes and shaping the strategic direction of the company (Hambrick & Mason, 1984). Within the top management team (TMT), sub teams play a pivotal role in determining the organization's awareness of and focus on key issues (Hambrick, 2007). The structural composition of the TMT influences interactions among its members and shapes how attention is distributed across organizational priorities (Menz, 2012). Moreover, the strategic decisions made by TMT members are inherently behavioral, reflecting the unique perspectives and values of the executives involved (Wiengarten et al., 2015). As a member of TMT, a CSO plays a crucial role in aligning corporate social responsibility (CSR) strategies with broader functional strategies. Also, through the power of being a TMT member, the CSO can drive corporate decisions related to environmental and social sustainability, persuading decision-makers to allocate more resources to support sustainability initiatives. By integrating sustainability into corporate strategies and aligning resources with sustainability goals, the CSO enhances the effectiveness of CSR efforts (Lubin & Etsy, 2010). As noted by Fu et al. (2020), CSOs are senior executives tasked explicitly with overseeing and advancing sustainability within their organizations. The appointment of a CSO can significantly improve a company's sustainability performance by shifting the organization's focus from traditional shareholder-centric approaches to innovative, sustainable development priorities (Dočekalová & Kocmanová, 2016). Moreover, these executive positions can represent a necessity for assembling, integrating, and managing a firm's strategic resources to produce desired outcomes (Peters et al. 2019). Acting as a critical partner to the CEO and other executives, the CSO helps visualize sustainability goals, redefine performance expectations, and professionalize processes for aligning sustainability vision with business strategy. This includes establishing accountability, tracking results, rewarding success, and disseminating best practices across the organization (Lubin & Etsy, 2010).

Theoretical consensus suggests that appointing a senior executive to oversee sustainability issues has significant implications for corporate performance (McGovern et al., 2004). Therefore, the creation of a

CSO position is expected to positively influence a company's sustainability outcomes. Thus, the proposed hypothesis is:

H1: The creation of a new Chief Sustainability Officer (CSO) position within an organization TMT has a significant and positive impact on the organization's sustainability performance.

Resource dependency theory posits that companies are not isolated, but rather entities that rely on resources provided by the external surrounding for their survival and success (Hillman et al., 2000). This perspective is particularly relevant to this study, as it sheds light on the role of executives responsible for sustainability, who depend on external resources such as sustainability frameworks and guidance. Various CSR networks have emerged in order to support and guide companies in addressing environmental and social challenges in their operations. By participating in these networks, companies can identify suitable CSR initiatives to develop and demonstrate their commitment to the principles of corporate social responsibility (Waddock, 2008; Gilbert et al., 2011). Among the various networks, the United Nations Global Compact (UNGC) stands out as the most widely adopted framework globally (Ortas et al., 2015; Rasche et al., 2013). The UNGC serves as a comprehensive framework offering broad guidelines for implementing responsible business practices. It assists firms in adopting standards and initiatives that promote corporate social responsibility (CSR), enabling them to operate more sustainably. Most studies have observed the UNGC membership variable through institutional theory and neo-institutional theory, stakeholder theory, resource-based view (RBV) theory, signal theory, slack resources theory, and legitimacy theory (Orzes et al., 2018). Cetindamar and Husoy (2007) highlight that firms join the UNGC for various reasons, rooted in both ethical and economic considerations. Economic motivations include enhancing corporate image and competing in the global market, while ethical drivers involve acting as responsible corporate citizens and contributing to sustainable development. The authors also identify motivations that blend ethical and economic factors, such as improving employee satisfaction and addressing stakeholder pressures (Cetindamar and Husoy, 2007, p. 167).

Despite extensive research on the UNGC, no empirical study has, to date, examined the moderating effect of UNGC membership on the relationship between the establishment of a Chief Sustainability Officer (CSO) position and sustainability performance. Building on the theoretical foundations, it is expected that a firm's commitment to a CSR network like the UNGC will strengthen the positive impact of creating a CSO position on sustainability performance. Based on this reasoning, the following hypothesis is proposed:

H2: Membership in the United Nations Global Compact (UNGC) positively moderates the relationship between the creation of a CSO position and the organization's sustainability performance.

Research methodology

Sample selection and data source

For the scope of the study, companies from the STOXX Europe 600 index were utilized, covering the framework from 2010 to 2023. The STOXX Europe 600 Index is a key benchmark for tracking European stock market activity, comparable to the role of the S&P 500 for the U.S. market (D'Amato et al., 2022). This index encompasses a diverse selection of 600 companies, including large-, mid-, and small-cap firms, spread across 17 European countries: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. Europe was chosen as the focus for this study because its companies are widely recognized as frontrunners in corporate social responsibility (CSR), adhering to well-defined CSR guidelines (KPMG, 2022). Furthermore, the European Commission has implemented numerous regulations aimed at guiding companies toward adopting sustainable and responsible business practices.

For data collection, five main sources were utilized. The basis of the dataset is Refinitiv Eikon Datastream (formerly Thomson Reuters ASSET4), recognized for its extensive repository of financial and non-financial metrics for publicly listed companies. Refinitiv's methodology is widely regarded as a leading approach to CSR scoring. It offers comprehensive coverage of financial and corporate governance data, ensures regular and timely updates, and employs a transparent and objective methodology for assessing CSR performance (Mallidis et al., 2024). Regarding CSR performance, Refinitiv provides a detailed framework comprising over 630 company-level CSR indicators. These indicators are categorized into 10 groups and consolidated into three core pillar scores: environmental, social, and governance (Refinitiv, 2022). UNGC membership data was also obtained from Refinitiv, with companies coded as 1 if they were UNGC members in a given year and 0 otherwise. Meanwhile information regarding the CSO position was made through content analysis of the company's press release and website. For macroeconomic variables, gross domestic product (GDP) was sourced from the World Bank website, corruption perception index (CPI) was sourced from Transparency International website and lastly human development index (HDI) from the United Nation Development Programme. In this study, Stata 18 was utilized for regression analysis.

Variable selection and measurements

- Dependent variable

Sustainability performance (ESGS) is obtained from Refinitiv Eikon Datastream (formerly Thomson Reuters ASSET4). The methodological framework established by Refinitiv is widely regarded as a benchmark in modern empirical research. Companies receive a score ranging from 0 to 100 for their economic, environmental, and social performance, with higher scores reflecting better performance. Sustainability performance data can be extracted from various sources such as Refinitv database (Kachouri & Riguen, 2024), TRI database (Kanashior & Rivera, 2017), KLD database (Peters & Romi, 2015; Fu et al., 2019) just to name a few. The database that the researcher uses depends on the scope and the geographical area of study. Several studies have utilized ESG scores derived from Refinitiv as a measure of sustainability performance to explore its relationship with board characteristics (Disli et al., 2022; Kamarudin et al., 2022; Almici, 2023; Menicucci & Paolucci, 2022). This study will assess sustainability performance across three dimensions, economic, social, and environmental, along with an overall sustainability performance score derived from these factors. Refinitiv consolidates over 630 company-level ESG indicators into 186 key metrics, which are then categorized into 10 groups. The environmental pillar is determined by scores in resource use, emissions, and innovation. The social pillar is based on workforce, human rights, community engagement, and corporate responsibility scores. Lastly, the governance pillar is evaluated through management, shareholder relations, and CSR strategy scores. A firm's prior sustainability performance is sticky and likely explains future performance of the firm (Chatterji and Toffel, 2010). Thus, sustainability performance was introduced as a lagged variable.

- Independent variable

The creation of a new CSO position within the TMT is obtained by content analysis of the listed companies press release. The variable NCSOP was coded as 1 in the year the company creates and first appoints a CSO dedicated to overseeing sustainability performance, 0 otherwise. Searches for the position title incorporates an array of key words (Strand 2014), including but not limited to: Sustainability Officer, Sustainability Vice President, Responsibility Officer, Corporate Responsibility Officer, Environmental Officer, Environmental Director and Environmental Health and Safety Officer, including different levels (VP, Global VP, etc.) within the same title.

- Moderate variable

This research introduces a novel aspect by utilizing a company's engagement with the CSR network. The UNGC is selected as a key moderating variable due to its recognition as one of the most prestigious CSR networks (Berliner and Prakash, 2015). The variable UNGCM was extracted from Refinitiv Eikon Datastream and was coded as 1 if the company is a member of the UNGC, 0 otherwise.

- Control variables

To control for other effects on sustainability performance, several control variables were included to serve as underlying factors in explaining ESGS. Control variables were incorporated in two categories: firm level and macro level. Commonly used variables in the literature were tested as well as other variables that measure the same concept. Most studies have applied the natural logarithm of total assets to represent a company's size (Wiengarten et al., 2017; Peters et al., 2019; Kachouri & Riguen, 2024). Nevertheless, the correlation between ESGS and SIZE (total number of employees) is higher than SIZE (total asset). Thus, the natural logarithm of total number of employees was applied. As for financial performance, previous studies have applied ROA (Peters et al., 2019; Kachouri & Riguen, 2024). However, in this study, the ROA was negative and insignificant, thus market value as the financial performance was applied. Thus, the control variables employed at the firm level are:
Firm size (SIZE): the natural logarithm of total number of employees.
Financial performance (FP): the natural logarithm of market value.
Firm leverage (FL): controls for financial stability, measured as the ratio of total debt to total asset.
The control variables at the macro level are:
GDP growth (GDP): is believed to positively impact CSR performance (Carini et al., 2017). GDP growth was adjusted in quadric terms.
Corruption Perception Index (CPI): the corruption level of the country in which a company operates in influence its sustainability performance (Hossain & Kryzanowski, 2021)
Human Development Index (HDI): it measures a country's average achievements in four areas. These are years of schooling, expected years of schooling, life expectancy at birth, and gross national income per capita (Spangenberg, 2016; Aydoğan, 2023).

Dependent	ESG score	ESGS	ESG performance score varies from 0% to 100%. ESG score lag time adjusted.	Refinitiv Eikon Datastream
Independent	New CSO position	CSOP	1 in the year the firm created a new CSO position, 0 otherwise.	Content analysis from public sources such as company's website and newsletter
Moderator	UNGC membership	UNGCM	1 if firm is member, 0 otherwise	Refinitiv Eikon Datastream
Control	Size	SIZE	Natural logarithm of total number of employees.	Refinitiv Eikon Datastream
	Financial performance	FP	Natural logarithm of market value.	Refinitiv Eikon Datastream
	Financial leverage	FL	Ratio of total debt / total asset.	Refinitiv Eikon Datastream
	GDP growth	GDP	Annual GDP growth rate. Adjusted GDP growth in quadric terms.	World Bank website
	Corruption Perception Index	CPI	Corruption perception score measured on a scale of 0 to 100. 0 being an extremely corrupt country, 100 for a country seen as free from corruption.	Transparency International website
	Human development Index	HDI	Index composed of life expectancy, education, and per capita income indicators. Score measured from 0 to 1. 0 meaning low human development, while 1 high human development within a country.	United Nation Development Programme website

Table 1. Description and measurements of research variables

Results

Descriptive statistics

Table 2 shows the summary statistics for the overall variables. The mean of the independent variable NCSOP indicates that the average score is 0.03 for the entire sample. The mean value of ESGS is 63.777 and the standard deviation is 18.158.

Variable	Obs	Mean	Std. Dev.	Min	Max
ESGS	6914	63.777	18.158	2.6	95.73
NCSOP	8400	.03	.172	0	1
UNGCM	8400	.468	.499	0	1
SIZE	7974	9.32	1.929	0	13.436
FP	7752	9.262	1.421	3.506	14.69
FL	7787	2.842	1.158	-4.605	5.598
GDP	8384	1.618	3.04	-11.2	24.5
CPI	8358	76.851	10.815	39	94
HDI	7761	.924	.024	.831	.967

Table 2. Summary statistics of the sample

Notes: ESGS= sustainability performance; NCSOP= new CSO position; UNGCM= UNGlobal Compact membership; SIZE: natural logarithm of total number of employees; FP= financial performance measured by natural logarithm of market value; FL= firm leverage measures by ratio of total debt / total asset; GDP= GDP growth; CPI= corruption perception index; HDI= human development index.

Correlation analysis

In accordance with the Pairwise Pearson correlation coefficient, Table 3 showcases the strength and direction of the linear relationship between two variables. ESGS is positively correlated with SIZE (number of employees) and FP (market value), which suggests that larger firms with better financial outcomes tend to have better sustainability performance. Moreover, firms that are members of the UNGC and are big in size with better financial outcomes tend to perform better as well. However, there is a weak but significant positive relationship between ESGS and NCSOP. This means that the creation of a new CSO position is positively correlated to better sustainability performance but with a weak magnitude.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) ESGS	1.000								
(2) NCSOP	0.094***	1.000							
	(0.000)								
(3) UNGCM	0.448***	0.057***	1.000						
	(0.000)	(0.000)							
(4) SIZE	0.489***	0.050***	0.398***	1.000					
	(0.000)	(0.000)	(0.000)						
(5) FP	0.369***	0.066***	0.411***	0.445***	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)					

(6) FL	0.188***	0.023**	0.124***	0.154***	0.070***	1.000			
	(0.000)	(0.040)	(0.000)	(0.000)	(0.000)				
(7) GDP	-0.037**	0.023**	-0.029**	-0.025**	0.040***	-0.030***	1.000		
	(0.003)	(0.036)	(0.007)	(0.027)	(0.000)	(0.007)			
(8) CPI	-0.081***	-0.009	-0.002	-0.082***	0.174***	-0.102***	0.109***	1.000	
	(0.000)	(0.410)	(0.834)	(0.000)	(0.000)	(0.000)	(0.000)		
(9) HDI	-0.008	0.041**	0.001	-0.090***	0.176***	-0.097***	0.152***	0.739***	1.000
	(0.536)	(0.000)	(0.923)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

****** p<.01, ** p<.05, * p<.1*

Table 3. Correlation analysis

Results of the regression analysis

Table 4 summarizes the results of the regression coefficient with fixed effects. It reveals that the creation of a new CSO position within the TMT positively and significantly impacts sustainability performance (β=4.523, $p < 0.01$), thus supporting H.1. These empirical findings align with previous studies (Kashouri, 2024).

Additionally, our findings reveal that being a member of the UNGC has a positive and significant effect on ESG score (β=6.713, $p < 0.01$). However, the relationship between NCSOP and ESGS is negatively moderated by UNGCM (β=−4.28, $p = 0.001$), which means that their joint effect reduces ESGS, thus rejecting H.2. These results could indicate that since the UNGC are guidelines to guide firms in adopting standards and initiatives that support sustainability, helping these companies operate in a sustainable way, CSO is limited within the framework. The creation of a new position to fulfill the UNGC standards can have an effect of "cancelling out" or "overlapping" which leads to no increase in ESG score. Risi and Wickert (2017) argue that institutionalization and professionalization are asymmetrical for CSR managers. As global sustainability frameworks like the UN Global Compact and Global Reporting Initiative (GRI) drive CSR institutionalization, organizations integrate sustainability into core operations, reducing reliance on CSR-specific roles. This shift pushes CSR managers from central strategic positions to peripheral advisory or administrative functions, aligning with institutional pressures that promote sustainability as a compliance-driven expectation rather than a specialized function. Outsourcing expert knowledge further accelerates this transition, weakening CSR professionals' influence. While some resist this marginalization, successfully embedding CSR within corporations paradoxically diminishes their own role, reinforcing the idea that organizational professionals are inherently less stable than traditional occupational professionals. An additional explanation can support Peters et al. (2019)'s argument related to CSO as a symbolic governance mechanism used for greenwashing rather than the practice of genuine sustainability.

Regarding CPI and HDI, they are highly correlated. Nevertheless, they allow capturing macro-level indicators that directly relate to ESGS. Low corruption is associated with stronger regulatory frameworks and governance standards. Even though CPI is not statistically significant, its inclusion ensures that the variation in ESG score can be due to governance quality. While HDI measures broader societal development, high HDI means a more developed society. HDI has a positive and highly significant coefficient which shows that societal development strongly predicts ESG score.

ESGS	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
NCSOP	4.523	1.121	4.03	0	2.321	6.726	***
UNGCM	6.713	.804	8.35	0	5.135	8.292	***
NCSOP##UNGCM	-4.28	1.28	-3.34	.001	-6.794	-1.766	***

SIZE	3.16	1.09	2.90	.004	1.019	5.301	***
FP	1.848	.536	3.45	.001	.796	2.901	***
FL	.636	.291	2.19	.029	.065	1.207	**
GDP	-.275	.034	-8.10	0	-.342	-.208	***
GDP growth in quadric terms	.031	.006	4.76	0	.018	.043	***
CPI	.034	.079	0.44	.662	-.12	.189	
HDI	491.355	28.797	17.06	0	434.796	547.915	***
Constant	-447.466	28.514	-15.69	0	-503.47	-391.461	***

Mean dependent var	63.318	SD dependent var	18.276
R-squared	0.375	Number of obs	5771
F-test	73.092	Prob > F	0.000
Akaike crit. (AIC)	39154.852	Bayesian crit. (BIC)	39221.458

*** *p<.01*, ** *p<.05*, * *p<.1*

Table 4. Regression coefficient with fixed effects

Robustness check

Organizations operate in multiple environments. Thus, effective tactics in one environment may not be as effective in another. Moreover, the changes to an environment may alter the value of a given tactic. Thus, for robustness check, the sample was tested in environmentally and socially sensitive and litigious industries. Table 5 is a description of the variables considered for robustness check. As per Peters et al. (2019) research, environmental litigious industries were based on the classification provided by Francis et al. (1994), where 1 is coded for litigious industries and 0 otherwise. As for industry sensitivity, environmental sensitivity (Cho and Patten, 2007) was coded 1, 0 otherwise and social sensitivity (Brammer and Millington, 2005) coded 1, 0 otherwise.

Litigious industry (SIC codes: 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370)	1 for firms operating in a high-litigation industry, 0 otherwise	Francis et al. (1994)
Environmental and social sensitive industries: Environmental sensitive industries: SIC code of 13xx (oil exploration), 26xx (paper), 28xx (chemical and allied products), 29xx and 517 (petroleum), or 33xx (metals). The 10xx (mining) and 49xx (utilities) are also sometimes listed as being more environmentally sensitive. Social sensitive industries: The alcoholic beverage (brewery: 2082, wine and distilled alcohol:	Environmental sensitive industries: 1 for firms operating in the following industries: chemicals, metals, oil exploration, paper, petroleum, and public utilities, 0 otherwise	Cho and Patten (2007)

5182, 2085: Distilled and blended liquors), tobacco (cigarettes: 2111x (tobacco: 5194), defense (sic: 3812x) and pharmaceutical industries (28x) were defined as having significant social externalities.	Social sensitive industries: 1 for firms in extractive (mining and petroleum), chemicals paper, pharmaceutical, alcoholic beverage, and defense, 0 otherwise	Brammer and Millington (2005)

Table 5. Variables to test in litigious and sensitive industries.

Litigious and non-litigious industries

Litigious industries are characterized by higher legal risks and exposure to lawsuits, often requiring firms to allocate significant resources to compliance and risk management. This distinction is particularly relevant when considering the interaction between growth initiatives and sustainability commitments. As argued by Peters et al. (2019), lawsuits are on the rise against firms employing greenwashing. Thus, firms listed as facing a higher probability of litigation might be more incentivized to hire a CSO to mitigate sustainability exposures.

Litigious industries

Table 6. Regression results Litigious industry=1

L.ESGscore	*Coef.*	*St.Err.*	*t-value*	*p-value*	*[95% Conf*	*Interval]*	*Sig*
NCSOP	*.701*	*2.24*	*0.31*	*.755*	*-3.779*	*5.181*	
UNGCM	*6.869*	*1.895*	*3.62*	*.001*	*3.079*	*10.659*	*****
NCSOP## UNGCM	*-1.426*	*2.647*	*-0.54*	*.592*	*-6.719*	*3.868*	
SIZE	*7.577*	*1.564*	*4.85*	*0*	*4.45*	*10.705*	*****
FP	*1.618*	*1.177*	*1.37*	*.174*	*-.735*	*3.971*	
FL	*.74*	*.735*	*1.01*	*.318*	*-.729*	*2.21*	
GDP_growth	*-.11*	*.075*	*-1.46*	*.149*	*-.261*	*.04*	
GDP growth in quadric terms	*.035*	*.017*	*2.05*	*.045*	*.001*	*.069*	****
CPI	*-.08*	*.253*	*-0.32*	*.752*	*-.587*	*.426*	
HDI	*355.945*	*69.822*	*5.10*	*0*	*216.329*	*495.562*	*****
Constant	*-354.409*	*74.247*	*-4.77*	*0*	*-502.876*	*-205.942*	*****
Mean dependent var	*69.507*	*SD dependent var*	*16.060*				
R-squared	*0.389*	*Number of obs*	*632*				
F-test	*13.575*	*Prob > F*	*0.000*				
Akaike crit. (AIC)	*4124.323*	*Bayesian crit. (BIC)*	*4168.812*				
**** p<.01, ** p<.05, * p<.1*							

As shown in table 6, the interaction between NCSOP and UNGCM is insignificant. This means that in litigious industries, the effect of NCSOP and UNGCM does not have an impact on ESG performance. A possible explanation can be that these industries prefer mitigating legal risks rather than focusing on sustainability embeddedness. The creation of a new CSO position has no meaningful impact on ESG score. Therefore, the result can support Peters et al. (2019) argument on firms appointing a CSO for reputational and solely for symbolic governance mechanism.

Non-litigious industries

Table 7. Regression results Litigious industry=0

L.ESGscore	*Coef.*	*St.Err.*	*t-value*	*p-value*	*[95% Conf*	*Interval]*	*Sig*
NCSOP	*5.123*	*1.238*	*4.14*	*0*	*2.692*	*7.555*	*****
UNGCM	*6.694*	*.871*	*7.69*	*0*	*4.983*	*8.405*	*****
NCSOP## UNGCM	*-4.7*	*1.407*	*-3.34*	*.001*	*-7.464*	*-1.937*	*****
SIZE	*2.955*	*1.103*	*2.68*	*.008*	*.787*	*5.123*	*****
FP	*1.82*	*.574*	*3.17*	*.002*	*.693*	*2.946*	*****
FL	*.627*	*.309*	*2.03*	*.043*	*.019*	*1.235*	****
GDP_growth	*-.293*	*.036*	*-8.23*	*0*	*-.363*	*-.223*	*****
GDP growth in quadric terms	*.031*	*.007*	*4.64*	*0*	*.018*	*.044*	*****
CPI	*.042*	*.082*	*0.51*	*.611*	*-.12*	*.204*	
HDI	*503.784*	*30.929*	*16.29*	*0*	*443.022*	*564.547*	*****
Constant	*-457.719*	*30.276*	*-15.12*	*0*	*-517.198*	*-398.24*	*****
Mean dependent var	*62.557*	*SD dependent var*					*18.389*
R-squared	*0.377*	*Number of obs*					*5139*
F-test	*65.411*	*Prob > F*					*0.000*
Akaike crit. (AIC)	*35002.305*	*Bayesian crit. (BIC)*					*35067.751*
**** p<.01, ** p<.05, * p<.1*							

The interaction between NCSOP and UNGCM is significant and negative. This robustness check supports the results in section 5.3. This means that in non-litigious industries, there might be tension between creating a new CSO position and fulfilling the UNGC commitments. Undoubtedly, non-litigious industries face fewer regulatory constraints, nevertheless they find challenges in aligning growth and sustainability efforts.

Sensitive and non-sensitive industries

Sensitive industries are those subject to heightened scrutiny due to their potential environmental, social, or ethical impacts (e.g., oil and gas, mining, tobacco). Firms in these sectors are often under pressure to demonstrate strong ESG performance while balancing operational priorities. It is assumed that firms within sensitive industries have worse sustainability performance (Peters et al., 2019).

Sensitive industries

Table 8. Regression results Sensitive industry=1

L.ESGscore	*Coef.*	*St.Err.*	*t-value*	*p-value*	*[95% Conf*	*Interval]*	*Sig*
NCSOP	*2.915*	*1.397*	*2.09*	*.039*	*.152*	*5.677*	****

UNGCM	7.826	1.622	4.83	0	4.619	11.032	***
NCSOP## UNGCM	-2.701	1.656	-1.63	.105	-5.975	.573	
SIZE	.845	1.239	0.68	.496	-1.605	3.295	
FP	2.25	1.079	2.09	.039	.117	4.384	**
FL	.474	.625	0.76	.449	-.762	1.711	
GDP_growth	-.163	.061	-2.68	.008	-.283	-.043	***
GDP growth in quadric terms	.041	.012	3.37	.001	.017	.065	***
CPI	.037	.116	0.31	.754	-.193	.267	
HDI	399.104	46.942	8.50	0	306.279	491.928	***
Constant	-340.265	44.604	-7.63	0	-428.466	-252.064	***
Mean dependent var	67.553	SD dependent var	16.390				
R-squared	0.372	Number of obs	1500				
F-test	17.686	Prob > F	0.000				
Akaike crit. (AIC)	9905.319	Bayesian crit. (BIC)	9958.452				
*** p<.01, ** p<.05, * p<.1							

The interaction between NCSOP and UNGCM is negative and not significant, thus not significantly affecting ESG performance of firms in sensitive industries. It is possible that since firms in sensitive industries face unique challenges, such as external pressure and structural or resource constraints, the creation of a new CSO position while being a UNGC member does not increase ESG performance.

Non-sensitive industries

Table 9. Regression results: Sensitive industry=0

L.ESGscore	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
NCSOP	4.947	1.358	3.64	0	2.278	7.616	***
UNGCM	6.357	.898	7.08	0	4.592	8.122	***
NCSOP##UNGCM	-4.965	1.542	-3.22	.001	-7.996	-1.934	***
SIZE	4.143	1.288	3.22	.001	1.612	6.675	***
FP	1.657	.633	2.62	.009	.414	2.9	***
FL	.615	.337	1.82	.069	-.048	1.277	*
GDP_growth	-.305	.04	-7.66	0	-.383	-.227	***
GDP growth in quadric terms	.029	.007	4.06	0	.015	.043	***
CPI	.042	.1	0.42	.675	-.154	.237	
HDI	516.782	34.74	14.88	0	448.505	585.058	***
Constant	-480.4	34.211	-14.04	0	-547.637	-413.163	***
Mean dependent var	61.831	SD dependent var	18.670				
R-squared	0.382	Number of obs	4271				

F-test	58.559	Prob > F	0.000
Akaike crit. (AIC)	29196.580	Bayesian crit. (BIC)	29260.176
**** p<.01, ** p<.05, * p<.1*			

The interaction between NCSOP and UNGCM is significant but negative. It is possible that since sustainability standards in non-sensitive industries are not rigid, the creation of CSO position and being a member of the UNGC can result in conflicting outcomes, potentially due to resource allocation inefficiencies, competing priorities. Thus, firms in non-sensitive industries can be susceptible to trade-offs between growth and sustainability.

Conclusion and future research

This research provides a nuanced perspective on the interplay between organizational structure and external frameworks in shaping sustainability outcomes. The findings reveal that while the creation of a CSO position positively influences sustainability performance, the impact is contingent upon contextual and external factors such as UNGC membership. Notably, the study highlights that the combined effect of appointing a new CSO and UNGC membership can yield counterintuitive results. Two reasons can be highlighted, first is that professionals in sustainability have their role weakened with time due to increase embeddedness of sustainability in all organization's functions caused by institutional pressures and standardization, while the second supports the idea that appointing a chief sustainability officer has superficial implications for greenwashing. These insights challenge the assumption that structural changes alone are sufficient to drive sustainability improvements and emphasize the need for integrated approaches that align internal governance with external commitments. As firms increasingly face pressures to demonstrate genuine ESG advancements, the study underscores the importance of tailoring sustainability strategies to the unique challenges and opportunities within their operational contexts. Future research should further explore the dynamic interactions between internal roles and external frameworks to provide actionable guidance for achieving impactful and authentic sustainability initiatives. Further in-depth research is necessary to gather detailed data on the professional background and personal characteristics of executive managers. This would provide valuable insights into the conditions under which a Chief Sustainability Officer (CSO) can effectively enhance a company's environmental performance.

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