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Systematic Review

A Systematic Literature Review and Conceptual Framework on Green Entrepreneurial Orientation

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Abstract: Green entrepreneurial orientation (GEO) is defined as organizations' entrepreneurial efforts to integrate ecologically sustainable practices and values to undertake sustainable decisions and actions to improve their environmental performance. Though recent research has shown how important GEO is for attaining sustainability in a company setting, there is a limited understanding on the factors that determine GEO and how and when it affects a firm's performance. Additionally, it draws attention to unexplored areas of the mediating and moderating factors that affect the connections between GEO and its outcomes. This study aims to conduct a systematic literature review (SLR) of the GEO to synthesize empirical findings about how it is investigated in the literature during the period 2014–2024. The PRISMA method is used in this study to evaluate relevant GEO research, and SLR matrix utilized for analyzing the GEO literature in peer-reviewed English publications. A comprehensive evaluation of theoretical, methodological, and empirical issues pertaining to conceptual approaches, antecedents, dynamics, and results of GEO was conducted on 59 studies. This study contributes several findings to the entrepreneurship literature. These research findings give implications for both theory and practice. Within a theoretical framework, this study provides a comprehensive viewpoint on GEO research and creates novel insights for further research, enhancing the extant theories in the GEO literature. In practice, this study facilitates the perceptions of eco-conscious entrepreneurs, managers and experts, and other stakeholders of the organizations regarding developing an appropriate GEO by understanding the antecedents and outcomes of it for successful organizations and the ways to use and improve them probably.

Keywords: green entrepreneurial orientation; green entrepreneurship; systematic literature review; SLR matrix

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1. Introduction

The world is facing a number of environmental problems such as rapid population growth, limited natural resources, and decreasing biodiversity. Due to the public's increasing interest and awareness of the environment, community pressure, and media, countries are constantly taking new steps towards a green economy. The Stockholm Conference in 1972, the Rio de Janeiro Earth Summit in 1992, the Montreal Convention, and the Kyoto Protocol are just a few of the interventions that have sought to broaden our understanding of green entrepreneurial impulses (Muo and Azeez 2019). In this context, various institutions such as the United Nations have initiated various trainings and programs at different levels in order to raise awareness about companies pursuing green-oriented sustainable activities (Pacheco et al. 2010). Thus, as Jiang et al. (2018) suggests, environmental concern is not only a social issue; it has become one of the worrying agenda items in addition to the profit-maximization goal for organization managers. Furthermore, businesses have recently realized the advantages of social and environmental efforts and they consider

sustainability practices to be essential (Coskun et al. 2021; Ullah et al. 2024). Although it is accepted in the business and scientific world that green transformation is necessary, it can be said that adaptation continues worldwide. Recently, the failure of businesses and/or adaptation problems related to green business practices to demonstrate consistent and adequate performance has increased the interest of researchers on this subject (Bıçakcıoğlu 2018; Ameer and Khan 2023, p. 755; Alkatbi and Rice 2024). Regarding this reality, green entrepreneurship is growing in prominence as a method of resolving issues with company environmental performance (Hummels and Argyrou 2021, p. 4). Particularly, new studies (Ameer and Khan 2023; Golsefid-Alavi et al. 2021) indicate that an organizational setting can more easily adopt and execute environmentally conscious activities if there is a green entrepreneurial orientation (GEO).

GEO can be defined as "...a tendency to pursue potential opportunities by initiating green activities, such as introducing eco-friendly products and services" (Wang et al. 2023b, p. 519). In this sense, it is critical to understand that entrepreneurial orientation (EO) and GEO are two different but linked concepts, whereas EO refers to a strategic organizational stance that encapsulates the particular procedures, methods, and actions that allow businesses to generate value through their entrepreneurial endeavors (Şahin and Gürbüz 2020; Wales et al. 2013, p. 357). Prior studies have attempted to bring the body of knowledge on GEO research into harmony, offering valuable perspectives for researchers and practitioners alike. Although there are literature reviews on EO, the literature studies on GEO are limited. This systematic literature study aims to fill a gap in the literature, as GEO indicates a concept that is, although not entirely, different from EO. In addition, Ameer and Khan (2023, pp. 755–56), in their study, attributed the differentiation between environmental entrepreneurship and green entrepreneurship orientation literature to the fact that they express different concepts, and they claimed that the literature in the field of green entrepreneurship is limited.

Although GEO is a relatively new concept, several review studies (Ameer and Khan 2023; Golsefid-Alavi et al. 2021; Kraus et al. 2018) have been carried out in recent years in different contexts and using methods. The most current study conducted in recent years is the study of Ameer and Khan (2023), covering the period of January 2000 to August 2021. Although Ameer and Khan's (2023) review study is one of the most comprehensive studies in the context of the 'green entrepreneurial orientation-corporate setting', it requires a few criticisms. The first of these is that the study is quite comprehensive in scope with a variety of keywords. Therefore, it can be said that their work was not directly focusing on 'green entrepreneurial orientation'. Additionally, studies up to August 2021 were included in the study. However, when the literature is examined, it is seen that studies using the concept of 'green entrepreneurial orientation' in their title have reached their highest level in the last two years (see Figure 1). This indicates that a new systematic literature review may be useful to see in which direction the GEO literature is progressing. Additionally, this study differs from other reviews in that it uses Garrard's SLR Matrix in accordance with the PRISMA guide. As a result, this study differs from previous studies in that it systematically analyzes the conceptual framework and theoretical background, a point overlooked in other studies. Thus, based on the narrowed scope, this study differs from previous studies in terms of the type of literature review, the scanning techniques used, and the publication period.

As explained above, three main research gaps necessitate comprehensive analysis of the literature. Firstly, there is a need for a literature review to focus on the GEO concept as it is a relatively new concept in the entrepreneurship literature, due to the fact that the number of studies has increased in the last five years. Secondly, there are several studies in the literature examining GEO in the context of its impact on business performance, but new studies are needed to reveal other individual and environmental consequences of GEO in the context of business practices. Third and finally, previous reviews are not considered sufficient to explain the theories used in the GEO literature. In summary, it is crucial to provide a thorough and integrative systematic review study on GEO in order to bring

more clarity to the issue of inconsistency and develop a more nuanced understanding of the variable of interest, given the fragmented body of knowledge on GEO over the last ten years.

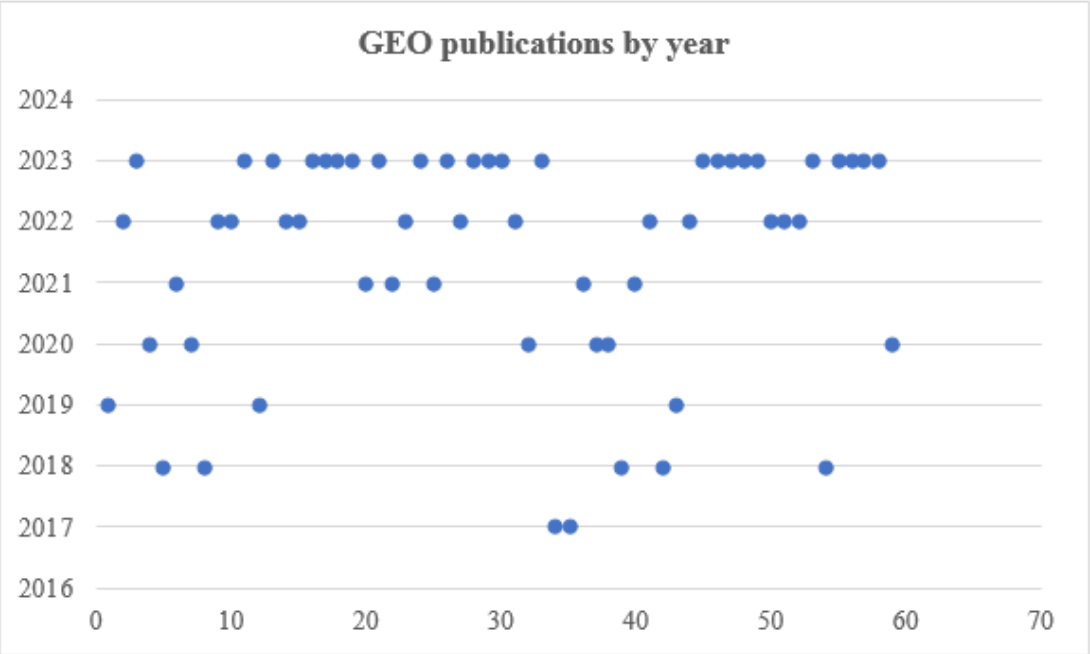

Figure 1. GEO publications by year in the literature.

In line with this, this study aims to answer following research questions:

How is the state of knowledge on GEO situated in terms of its theoretical foundations, antecedents, conceptualization, and outcomes?

Specifically:

1. What are the theoretical underpinnings of previous empirical work?
2. What are the current trends in GEO research in terms of research design?
3. What are the important topics addressed in GEO research in terms of theory, antecedents, and causal relationships?
4. What are the research gaps that can be investigated in upcoming GEO research to offer fruitful further research directions?

The next section is the literature review, which explains the originality of GEO concept. The remaining sections consist of research methodology; findings and discussions, areas for future research; and conclusions, implications, and limitation.

2. Background

The global economy is developing rapidly, but environmental problems are becoming more evident. The contradiction between the environment and the development of the economy represents a critical agenda that needs to be understood in theory and practice (Li et al. 2022, p. 2). The issue that environmental problems can create a serious constraint on companies' attempts to create sustainable advantages (Hart and Dowell 2011, pp. 1464–1465; Wei and Lin 2024) and their business performance has attracted dramatically increased attention in the last two decades. Since the 1990s, green entrepreneurship has been increasingly attracting the attention of scientists concerned with the increasingly deteriorating natural environment and policy makers striving to solve environmental problems (Harini and Meenakshi 2012, p. 80). Since 1990, the literature has expanded in parallel with developing ecological values and practices, indicating that being green does not impose a burden on the business; on the contrary, it contributes to business performance (Li et al. 2022, p. 2). While analyzing the environment and entrepreneurship together in

the literature to date, commonly used terms like green entrepreneurship (Berle 1991), environmental entrepreneurship (Keogh and Polonsky 1998), eco-entrepreneurship (Schaper 2002), and ecopreneurship (Dean and McMullen 2007) have been introduced with different definitions. However, these terms essentially capture the same concept and can be used interchangeably (Schaper 2002). This unifying theme, green entrepreneurship, is embracing the idea of business development while demonstrating concern for the ecological wishes and needs of current and future generations. Green entrepreneurship (GE), as a new form of entrepreneurship, differs from conventional entrepreneurship (Wang et al. 2023b, p. 519) in that this new concept is not only interested in short-term profit; it also consists of the green market in terms of the strategic choice to survive and develop by relying on green market trends, green consumers, and distinct ethical characteristics. GE prioritizes long-term periodicity and policy dependence (Li et al. 2022, p. 3). This also reflects the difference between green initiatives and traditional initiatives. In this context, green entrepreneurship focuses on valuing the ecological environment, economy, and society at the same time (Silajdžić et al. 2015, p. 377).

According to Gibbs (2006, p. 65), the foundation of sustainable entrepreneurship is Schumpeter's fundamental notion of "creative destruction". Green entrepreneurship is a concept that integrates business entrepreneurship and sustainable development theory, and businesses engaging in green entrepreneurship are expected to have the ability to pursue environmental and sustainable development, as well as the unique characteristics of a startup enterprise (Theodoraki et al. 2022). In other words, a green-oriented start-up, unlike others, has concerns about 'environmentally friendly business models' as well as acting in an 'economy'-oriented manner. The skills and environmental concerns here highlight the green entrepreneurial orientation as the antecedent of green entrepreneurship activities (Li et al. 2022).

Green entrepreneurial orientation (GEO) is a relatively new concept that aims to improve production processes and environmentally friendly products in order to solve economic, social, and environmental problems within the context of green entrepreneurship (Jiang et al. 2018; Muangmee et al. 2021). In light of the environmental problems we face with increasingly significant impacts, the resulting actions taken by governments, and the environmental awareness of consumers, entrepreneurship scholars have turned their attention to developing a better understanding of how entrepreneurs can recognize and take advantage of green business opportunities. In particular, recent research suggests that green entrepreneurial orientation (GEO) enables companies to adopt and use environmentally conscious strategies more easily (Jiang et al. 2018; Karimi and Nabavi Chashmi 2019).

GEO, which is an internal strategic orientation, is a tendency to pursue potential opportunities by starting green activities like introducing eco-friendly products and services, among other things (Wang et al. 2023b, p. 519). According to Guo et al. (2020), green entrepreneurial theory and entrepreneurship orientation theory form the basis of the GEO concept. A summary of GEO definitions in the literature is presented in Table 1. Based on prior research, this study defines green entrepreneurial orientation as the extent to which organizations' entrepreneurial efforts integrate ecologically sustainable practices and values to undertake sustainable decisions and actions to improve their environmental performance. In the entrepreneurship literature, GEO is mostly characterized by a focus on innovation, risk-taking, and proactiveness in implementing green practices for growth and value creation for a business, which depend on green entrepreneurial activities to identify and explore business opportunities through these characteristics (i.e., innovation, risk-taking, and proactiveness). Here, as Ameer and Khan (2023, p. 756) pointed out, the concepts of GEO and green entrepreneurship are closely related to each other but reflect different concepts. While GEO is associated with how ready and willing a company is to undertake innovative, proactive, and risky actions, green entrepreneurship, more broadly, refers to a mechanism that focuses on the identification and transformation of business opportunities that can be considered environmentally friendly, taking into account costs, risks, and uncertainty. In particular, it can be stated that green entrepreneurship is an en-

trepreneurial behavior that includes dual roles such as ecological environment orientation and market orientation (Li et al. 2022, p. 3). Therefore, the literature in the field of green entrepreneurship is relatively extensive, but studies on GEO are needed as the literature on how GEO is created and applied in practice is still limited (Muangmee et al. 2021, p. 2).

Table 1. Summary of GEO's descriptions.

Source	Definition
Fatoki (2019, p. 248)	. . . a firm's inclination to focus on opportunities that produce both financial and environmental benefits through the introduction of environmentally friendly products and services.
Feng et al. (2022, p. 2517)	. . . an inclination to sense and seize potential green opportunities proactively that provide green products, services and technologies through green practices and take risks in transforming the economic system into a socio-ecological system
Wang et al. (2023a, p. 519)	. . . a tendency to pursue potential opportunities by initiating green activities, such as introducing eco-friendly products and services, etc.
Guo et al. (2020, p. 2)	. . . a firm-level proactive strategic inclination to identify and grasp the eco-friendly business opportunity based on the comprehensive consideration of risks and benefits
Luu (2022, p. 2641)	. . . extent to which a firm is strategically proactive, risk-taking and innovative in initiating and introducing green innovative products or services into the market.
Luu (2021)	. . . extent to which a firm is strategically proactive, risk-taking and innovative in initiating and introducing green innovative products or services into the market
Pratono et al. (2019, p. 2)	. . . involves green innovations, a proactiveness to capture potential opportunities and risk-taking behaviour helps firms to bring positive impacts on their performance.
Jiang et al. (2018); Zhang et al. (2023, p. 1261)	. . . tendency to pursue potential opportunities that generate economic and ecological benefits by initiating green activities.
Yan and Hu (2023)	. . . a development approach that balances ecological environment and economic benefits, has been valued by administrators of manufacturing enterprises.
Tuan (2023, p. 640)	. . . the extent to which an organization is strategically proactive, risk-taking, and innovative in initiating and introducing green innovative products or services into the market.
Ameer and Khan (2023, p. 755)	. . . tendency of an organization to capture potential opportunities that results in improved financial and environmental performance through the introduction of eco-friendly products and services.

The benefits of green entrepreneurial orientation to businesses have been the subject of previous research in the literature. In light of the literature, firms adopting GEO observe it to be simpler to foster an eco-friendly culture and make effective environmental decisions (Jiang et al. 2018). Green entrepreneurship orientation not only increases environmental performance by providing environmentally friendly products and services (Chen and Chang 2013; Makhloufi et al. 2022, 2023) but also offers economic benefits through reduced resource costs and energy savings. Firms adopting GEO are more likely to rearrange internal and external resources in order to take advantage of possible green possibilities and capture values (Liu et al. 2014).

Additionally, as a dynamic capability, GEO results in a willingness to invest in an environment of high uncertainty (Chen and Chang 2013) and provides a competitive advantage in the market (Pratono et al. 2019). In addition, organizations that use GEO are more likely to attract and keep talented employees that are passionate about saving the environment as well as high-potential employees (Peterson 2004) because GEO fosters creative behavior. As a result, the creation of eco-friendly goods, services, or systems that satisfy customer requirements benefit firms that are committed to GEO. (Lin and Chen 2018, p. 189). Firms using GEO will find it simpler to foster an eco-friendly culture and make effective environmental decisions (Jiang et al. 2018).

In summary, recent research suggests that green entrepreneurial orientation (GEO) has a facilitating role in institutions' adoption of environmentally friendly business models (Terán-Yépez et al. 2020, p. 3). Overall, GEO refers to an organization's tendency to innovate, take risks, and act proactively in seizing potential opportunities that lead to increased financial, social, and environmental performance through the provision of environmentally friendly products and services (Silva et al. 2021, p. 3806).

3. Methodology

The global economy is developing rapidly, but environmental problems are becoming more evident.

3.1. Research Approach

This study employs a systematic review (SLR) approach to consolidate and synthesize results from extant research of GEO in a systematical process to expand the field's existing knowledge and provide potential research directions for future studies. Thus, this study utilizes the SLR approach, which is highly suggested in entrepreneurship (Kraus et al. 2020), and the protocol named Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) provided by Gaur and Kumar (2018) is used as a guideline.

3.2. Research Method

PRISMA is applied in this study to ensure a high degree of qualification, rigor, and transparency of the SLR. Thus, we have adopted four iterative steps, covering study identification, data analysis, eligibility criteria, and inclusion (see Figure 2) based on a four-phase flow diagram (Moher et al. 2009).

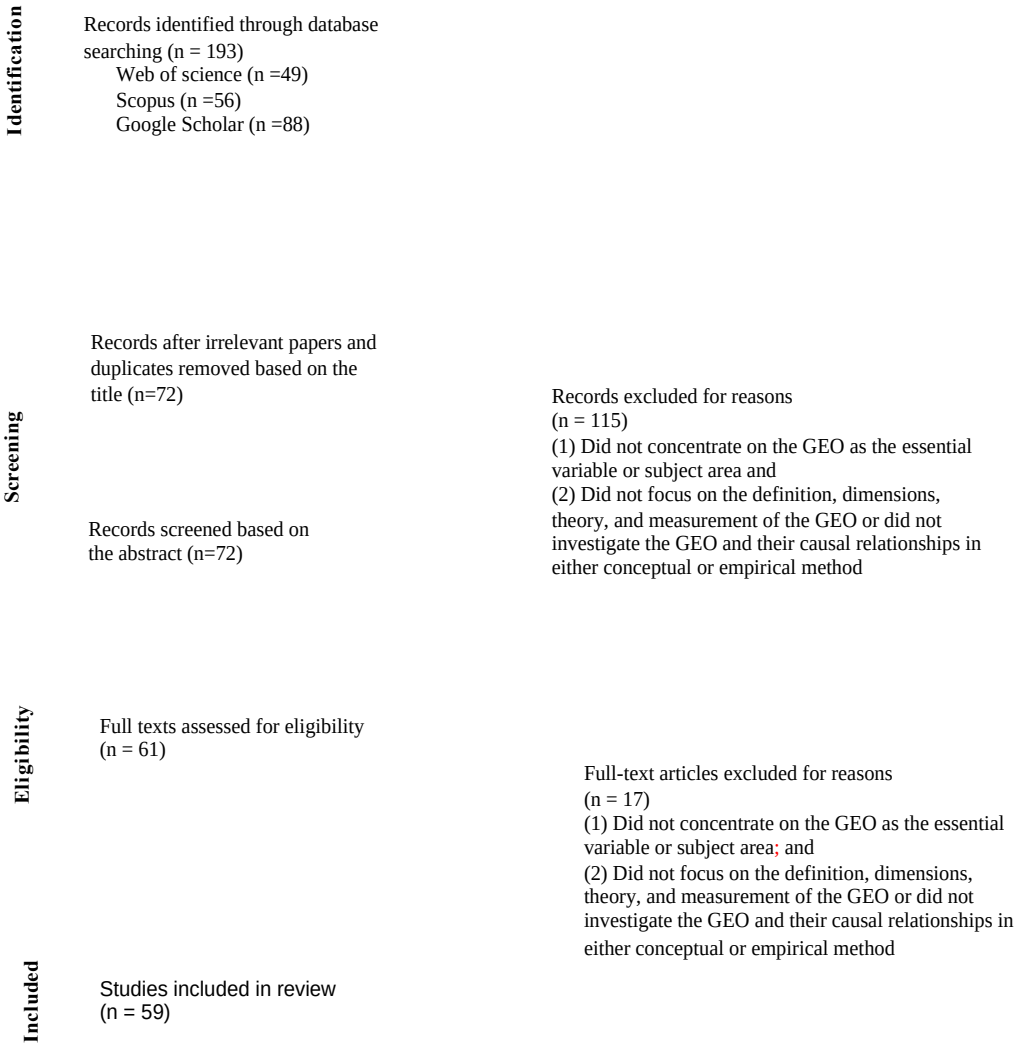

Figure 2. Summary of search strategy and sampling process.

3.2.1. Systematic Review Process: PRISMA Method

Identification

The first phase, identification, consists of two tasks, namely initial searches and the elimination of irrelevant articles as well as duplicate items that are based on the title. To ensure a comprehensive and unbiased selection of relevant articles, a comprehensive advanced search was conducted firstly in prominent databases such as Scopus, Web of Science, and Google Scholar using keywords. We used a set of keywords including "green entrepreneurial orientation", "sustainable entrepreneurial orientation", "environmental entrepreneurial orientation", which were displayed in the title, and boolean connectors like "OR" and "AND" were employed to link keywords and form search strings. We also applied the specific criteria to identify the most relevant papers. Firstly, only peer-reviewed articles published in English were included. Secondly, the paper must have been published in a journal, as they are more reliable than other resources in the literature (Thai and Mai 2023). The number of journal articles found via database searching equaled 59 journal articles, with publication dates up to 1 January 2024.

Next, we combined the qualified articles into a single publication pool while simultaneously removing the duplicate articles through skimming the title of the articles displaying in results of the search, yielding a set of 72 qualified journal articles. We carried this out by reviewing the titles of the articles appearing in the search results within the proposed databases until the irrelevant journal articles appeared primarily in the search results. The details of the first phase are shown in Table 2.

Table 2. A summary of the first phase of PRISMA—Identification—in this study.

Task	Inclusive Criteria	Keyword	Web of Science	Scopus	Google Scholar
Initial search	(1) Study which is written in English	Green entrepreneurial orientation	27	32	61
	(2) Peer-review publication	Sustainable entrepreneurial orientation	10	10	12
	(3) Journal article	Environmental entrepreneurial orientation	1	1	1
	(4) Publication date: up to 1 January 2024	Green entrepreneurship orientation	7	10	11
		Sustainable entrepreneurship orientation	4	3	3
		Total	**193**		
Elimination of irrelevant articles and duplicates based on the title			**Publication Pool**		
		Green entrepreneurial orientation	27	4	2
		Sustainable entrepreneurial orientation	10	0	0
		Environmental entrepreneurial orientation	1	0	0
		Green entrepreneurship orientation	7	3	1
		Sustainable entrepreneurship orientation	3	0	1
		Total	**59**		

Screening

In the screening stage, the 72 qualified articles were examined. For an article to be retained in our analysis it needed to concentrate on the GEO as an essential construct/concept or research field. In order to ensure that all relevant articles were included in the final database that matched the goal of this study, both authors screened the abstracts of the remaining articles using the following inclusive criteria: (1) concentrated on GEO as the essential variable or subject area, and (2) focused on the definition, dimensions, theory, and measurement of the GEO or investigated GEO and its causal relationships using either a conceptual or empirical method. This process helped to assure that all related articles were included in the final database that matched the aim of this study. Articles from unrelated disciplines, such as engineering and education sciences were excluded. The research did not include practical reports, theses, dissertations, or books. Duplicates and irrelevant papers that did not meet the selection criteria were eliminated; thus, the database declined to 61 studies.

Eligibility

In order to thoroughly reevaluate whether publications were significantly appropriated for this study, according to the two proposed criteria in the screening phase, the authors were required to independently read the full texts of the remaining 61 articles in the third stage—the eligibility phase. This allowed the authors to eliminate the irrelevant articles that did not properly focus on GEO. Following the authors' agreement on the

assessment of the articles' full texts, this phase resulted in a decrease in the final database to 59 articles.

Included

In the last stage, following these thorough stages, 59 journal articles were deemed suitable and added to the final analysis and synthesis.

3.3. Data Analysis

In order to assess and organize the key concepts that were taken from the 59 chosen research studies, we created an SLR matrix using content analysis techniques (Garrard 2004). The selected papers were analyzed using the matrix table containing the name of the author; year of publication; geographical location, journal title; article types (conceptual, qualitative, quantitative, or mixed method); industry; definition of GEO; theory foundation; its dimensions; measurement of GEO; antecedents, outcomes, mediators, and moderators of the GEO; data collection method; and data analysis technique.

4. Research Findings and Discussion

The theoretical underpinnings, methodological evaluation, and empirical aspect are the three subgroups in which the research findings are presented in this section. The conceptualization, antecedents, dynamics (moderators and mediators), and outcomes of GEO will be presented.

4.1. Theoretical Underpinnings

Table 3 presents the theoretical underpinnings of the reviewed studies. The results of the research show that eleven empirical publications (18.64%) did not have a theoretical paradigm, whereas the other empirical articles used at least one theoretical lens. The study's conclusions showed that only 62.71% of all articles used a theoretical paradigm; the rest of the articles use one or more theoretical lenses. The most often recognized theories in the body of research on GEO were the Dynamic Capability View (23.7%), Resource-Based View (15.25%), Natural-Resource-Based View (11.9%), and Stakeholder Theory (8.5%). Furthermore, there was less usage of different viewpoints and the Conservation of Resources (COR) Theory (Hobfoll 1989) as well as Upper Echelons Theory (6.78 percent) in the literature that had already been published in this field.

Dynamic Capability View (DCV) was the most frequently employed lenses in GEO research (Ameer and Khan 2023). The main reason for this is that the literature generally defines GEO mostly as the dynamic capability of firms (York and Venkataraman 2010). DCV is, in fact, an extension of the resource-based approach. Companies' resource bundles alone are not sufficient to achieve sustainable competitive advantage in the market. These resource bundles need to be processed and transformed into company-specific capabilities (Teece 2016). According to Teece (2014), firm-level capabilities are divided into two groups: ordinary capabilities and dynamic capabilities. Dynamic capabilities refer to firms' sensing, capturing, and transforming process while ordinary capabilities involve the operational performance of standard business task activities. Therefore, following DCV, GEO can be associated with the concept of dynamic capability (Asad et al. 2023; Criado-Gomis et al. 2018; Jiang et al. 2018), both with its definition and dimensions of innovation, proactiveness, and risk-taking tendency.

Regarding the Resource-Based View (RBV), a company has a variety of resources that are allocated within the company in order to exist in the market and increase company profits (Barney 1991). RBV emphasizes business resources and capabilities as "valuable, rare, imperfectly, imitable, and nonsubstitutable" in order to acquire competitive advantage. The empirical evidence demonstrates that RBV was one of the most frequently employed lenses in GEO research and was overwhelmingly used to investigate how company sustainable resources and capabilities influence the GEO (Idrees et al. 2023; Momayez et al. 2023; Muangmee et al. 2021; Shehzad et al. 2023). According to previous research, GEO has been

seen as an intangible asset that influences green innovation performance (Idrees et al. 2023) and improves the company's financial, social, and environmental performance (Momayez et al. 2023). In addition, several studies have used the integration of Stakeholder Theory and RBV as a study lens while investigating GEO (Fatoki 2019; Guo and Wang 2022).

Table 3. Theoretical Underpinnings/Paradigms.

Theoretical Approach	Key Arguments and Research Focus	Total (n = 59) %	Representative Empirical Evidence
Dynamic Capability View	Firm must transform its resources into dynamic capabilities along with operational capabilities for sustainable competitive advantage.	%23.7 (n = 14)	(Criado-Gomis et al. 2018; Jiang et al. 2018; Makhloufi et al. 2023)
Resource-Based View	Firms possess a variety of resources that are distributed inside the company in order to have a competitive advantage over the long term.	%15.25 (n = 9)	(Guo and Wang 2022; Idrees et al. 2023; Momayez et al. 2023; Muangmee et al. 2021; Shehzad et al. 2023)
Natural-Resource-Based View	Firms must create a link between their resources and capabilities and the natural environment.	%11.9 (n = 7)	(Afum et al. 2023; Al-Swidi et al. 2023; Makhloufi et al. 2022; Zhang et al. 2023)
Stakeholder Theory	Firms possess a group of relationships, either between individuals or organizations, that influence or are affected by the commercial operations of the company.	%8.5 (n = 5)	(Afum et al. 2023; Fatoki 2019; Guo and Wang 2022; Mehdi and Singh 2023; Wang et al. 2023b)

According to the Natural-Resource-Based View (NRBV), its viewpoint makes it possible to examine the relationship between environmental and financial performance in a more methodical manner (Hart 1995; Hart and Dowell 2011, p. 1467) by defining the connection between resources and capabilities and strategic outcomes. An extension of the RBV, the theory establishes the connection between resources and capabilities and the natural environment (De Stefano et al. 2016, p. 1438). NRBV is a relatively more frequently used theory in the GEO literature; it is not used alone but integrated with other theories. For example, Zhang et al. (2023) investigated the relationship between GEO and firm performance by moderating the effect of supplier engagement, green absorptive capacity, and customer engagement. Researchers used a theoretical integrated lens of NRBV and DCV.

Stakeholder Theory (ST) implies that a firm is described as a group of relationships, either between individuals or organizations that influence or are affected by the commercial operations of the company (Freeman 2023). The functioning of the organization depends on these relationships. These numerous stakeholders (e.g., suppliers, shareholders, consumers, competitors, employees, government, and media) affect the company's success, provide resources, and obtain advantages from this relationship. Clearly, these stakeholders have an impact on the environment through business activities that are shaped by their decisions because of social norms and social responsibilities (Wang et al. 2023b, p. 519). For this reason, the formation of GEO in the company and the direction in which it will be shaped can be associated with stakeholders (Afum et al. 2023; Guo and Wang 2022; Mehdi and Singh 2023; Wang et al. 2023b).

Other theoretical perspectives that did not receive enough interest (less than 5.0%) in the GEO research field can be listed as follows: Upper Echelons Theory, social capital theory, social contagion theory, Conservation of Resources Theory, resource advantage theory, knowledge-based theory, the practice-based view, contingency theory, and resource-dependence theory.

4.2. Research Context and Methodological Assessment

According to Table 3, empirical findings verify the preponderance of research on China (43.8%) and Pakistan (33.6%), followed by Spain (8.4%). This is especially clear from the fact

that, in terms of long-term growth, China, Pakistan, and Spain have emerged as the largest and fastest-growing developing economies, with the most potential to become significant global powers (Eichengreen 2006; Husain 2018). In light of these facts, research on the Asia and Pacific region has seen a spike in interest (79.2%).

In terms of unit of analysis, more than three-fifths (71.2%) of the studies pursued the firm-level as their unit of analysis, while more than one-fifth (28.8 %) employed either individual-level or none as a unit of analysis. Expectedly, all articles reviewed in the first-time period dealt with firm-level measures. Nonetheless, this pattern indicates a minor decline in the most recent period, it has been noted recently that scholars have also become interested in the individual variables that drive the inclination toward green entrepreneurship.

In terms of the industry aspect, the vast majority of empirical publications (64.6%) collected data from several industries in an effort to increase the observed variance and improve the generalizability of the findings. However, the adoption of a single-industry viewpoint was less widespread (33.3%), with a particular emphasis on the tourism sector. Regarding temporal emphasis, the majority of research (79.2%) depended on the short-term view of GEO's role since it was a more practical approach for the subject of entrepreneurship in the literature.

Regarding the analytical approach, structural equation modelling (58.3%) was the most extensively adopted statistical analysis method for empirical research, which was expected due to the short-term research designs of the reviewed studies. Consequently, hierarchical linear models (20.8%) and linear regression models (18.8%) in the recent decade are also used.

4.3. Empirical Assessment

This review study conducted an empirical assessment based on four components: (1) GEO conceptualizations; (2) GEO antecedents; (3) GEO dynamics; and (4) GEO outcomes. A comprehensive framework addressing the antecedents, conceptualization, moderators/mediators, and results of GEO is shown in Figure 3.

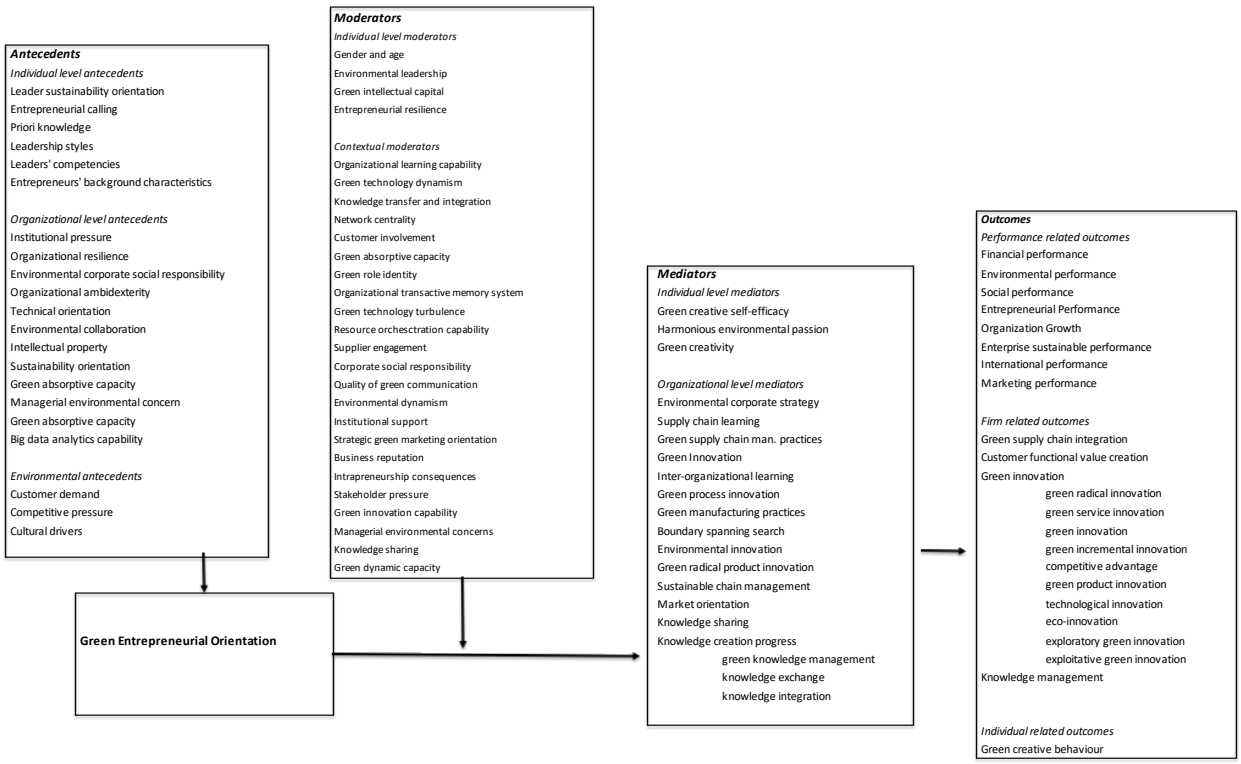

Figure 3. The nomological network of GEO research.

4.3.1. GEO Conceptualizations

The phrase "GEO" refers to the firm's environmental vision within the context of sustainability. In this regard, prior empirical evidence yields conflicting and inconclusive results on this particular field of study, despite the fact that a sizable body of research has concentrated on examining the causes and consequences of GEO in the relevant literature. The fact that every study uses a variety of methodological techniques to measure GEO and capture various facets of the concept is a significant contributing factor to this. Regarding the different ways that GEO has been conceptualized, 59 different kinds of conceptions were found for the 2014–2024 time period that this review examined.

One of the newest and most important research concept in the literature on entrepreneurship and the environment is GEO. Thus, there is no consensus view on the concept in the literature yet. According to some academics, environmental orientation and social orientation are the key two aspects of green entrepreneurial orientation (e.g., Guo et al. 2020). Additionally, some academics argue that GEO consists of social orientation and innovative orientation (e.g., Becker 2010; Cohen and Winn 2007). According to Liu et al. (2022) GEO has the following: environmental orientation, social orientation, innovative orientation, and proactive orientation.

Entrepreneurial orientation is one of the topics that has become important in the business literature. The concepts of entrepreneurial orientation and green entrepreneurial orientation are both considered to be highly relevant to many social and economic contexts. However, it has become necessary and important to understand these concepts' relationships and differences (Ameer and Khan 2023; Hernández-Perlines and Rung-Hoch 2017, p. 3). Since Miller (1983) introduced EO to the literature, many researchers have investigated this subject in depth. Despite this, there are two EO concepts that exist: unidimensional and multidimensional; the multidimensional concept is the most widely used (Lin and Chen 2018, p. 190). According to its most general definition accepted today, EO is a decision-making process that affects the firm's willingness to innovate and take risks in terms of proactiveness and aggressiveness (Hernández-Perlines and Rung-Hoch 2017, p. 3). However, some researchers define GEO as a unidimensional concept with two components, namely, proactivity and risk-taking (Lin and Chen 2018), or three components, namely, proactivity, risk-taking, and innovativeness (Luu 2021, 2022, p. 2641). Some researchers contend that EO is distinct from GEO and that it may even have been the predecessor (Criado-Gomis et al. 2018, 2020; Hernández-Perlines and Rung-Hoch 2017). In summary, while EO is a widely researched concept in the literature, new studies are needed to better understand the concept of GEO (Ameer and Khan 2023, p. 759).

4.3.2. GEO Antecedents

Identifying the drivers of GEO can help researchers better understand and predict green entrepreneurial behaviors and practices. Regarding the antecedents of GEO, the investigation encompassed the years 2014–2024 and identified 21 distinct elements. Despite some academics dividing their research into three categories of GEO concepts, such as micro–meso–macro level antecedents (Ameer and Khan 2023), the 21 elements that were identified were categorized into three main groups—(a) factors at the individual level; (b) factors at the organizational level; and (c) factors at the environmental level—in light of the previous literature (Yan and Hu 2023). In summary, the empirical data show that previous research focused mostly on organizational level factors (73.4%), with significantly less attention being paid to individual factors and environmental factors (26.5%).

Yan and Hu (2023) emphasized the importance of understanding personal factors (i.e., entrepreneurial calling and priori knowledge), organizational factors (i.e., organizational resilience), and environmental factors (customer demand and competitive pressure) as key factors in understanding GEO. According to Verma and Kumar (2022) leadership styles affect GEO. Chen et al. (2023) claimed that the backgrounds of the managers could be effective in the formation of GEO. On the other hand, some researchers have suggested that organizational factors such as green absorptive capacity, managerial environmental

concerns (Makhloufi et al. 2023), and environmental cooperation (Makhloufi et al. 2022) affect GEO.

4.3.3. GEO Dynamics

In addition to focusing on direct effects, earlier studies clarified indirect links between the constructs. Despite receiving little attention, a number of studies have been conducted on the subject of GEO to investigate potential mediators or moderators in order to improve our comprehension of the interactions between exogenous and endogenous variables. While moderating variables show that organizations are more likely to exhibit green results when they have higher levels of particular elements, mediating factors describe the method by which GEO and its outcomes are connected. The mediators and moderators that were investigated in relation to the two components of the conceptual framework—(a) the relationship between GEO and its antecedents and (b) the relationship between GEO and its outcomes—are shown in Figure 3. There were four mediators/moderators found in total. Of these, the most direct studies sought to examine the relationship between GEO and its antecedents, while only a small number of studies examined the relationship between GEO and its outcomes.

Factors such as knowledge exchange, integration (Idrees et al. 2023; Wang et al. 2023a), and green supply chain management (Habib et al. 2020) can be given as examples of mediating factors and are classified as organizational mediating factors. Green creative self-efficacy, harmonious environmental passion (Luu 2021), and green creativity (Luu 2022) are individual-level mediating factors.

The literature reveals that researchers consider moderators in two categories: individual and contextual moderators. Regarding individual factors, previous studies emphasize that positive personal (demographic and psychological) factors determine the extent to which managers will be involved in the identification and exploitation of green opportunities (Ameer and Khan 2023). Regarding this, previous studies focus on the contextual moderating role of practices like green technology turbulence (Al-Swidi et al. 2023) and customer involvement (Luu 2022), which are found to be closely associated with corporate environmental outcome and/or performance.

4.3.4. GEO Outcomes

An overview of the results covered by GEO research is shown in Figure 3. The 13 existing outcomes that were found and examined for this analysis were divided into three categories: performance-related outcomes, firm-related outcomes, and individual-related outcomes. Not surprisingly, studies focused mostly on performance-related outcomes, whereas firm-related outcomes and individual related outcomes received minimal attention.

Of the performance-related outcomes, the greatest number of reviewed articles investigated corporate performance. Many scholars in the literature argued that GEO leads to firm performance-related outcomes, such as financial, environmental, and social performance (Asad et al. 2023; Fatoki 2019; Frare and Beuren 2021; Habib et al. 2020; Jiang et al. 2018; Muangmee et al. 2021; Ullah and Qaiser Danish 2020; Zhang et al. 2023); organizational growth (Verma and Kumar 2022); and international performance (Hernández-Perlines and Ibarra Cisneros 2018). Additionally, GEO leads to organizational outcomes, such as green supply chain integration (Feng et al. 2022; Wang et al. 2023b), customer functional value creation (Criado-Gomis et al. 2018, 2020), and green innovation (Khan et al. 2023). On the other hand, GEO's individual-level outcomes are very limited, such as green creative behavior (Luu 2021).

5. Conclusions and Future Research Directions

Over the past 10 years, there has been an increase in interest in scholarly research that has focused on GEO in the context of business research due to the field's rapid growth in both the literature and the global marketplace. The recent literature reveals that GEO is an important concept attracting the attention of researchers and there is a need to clarify the

factors driving this relatively new concept (Terán-Yépez et al. 2020)—it lacks specificity; thus, this construct adds relatively little to the entrepreneurship literature. Our review shows that GEO is often used as an umbrella construct for a wide range of related terms.

The concept of GEO is important to understand because when organizations understand the determinants and consequences that enhance an organization's innovativeness, proactivity, and risk-taking capabilities, only then will they promote green initiatives. This study was conducted to synthesize, research, and analyze existing knowledge in order to identify literature gaps regarding GEO and create a future agenda.

This study has conducted a SLR of GEO to synthesize and enhance the knowledge of how GEO is examined and developed in the literature using the PRISMA method and the work of Garrard (2004). It gives several vital findings that integrate the information. First, our review revealed that GEO research has been emerged in the previous decades, especially from 2016, and there has been an increase in the number of GEO studies focused on the environment in recent years. Second, the most well-known set of theories, contexts, and measurements of GEO have been presented. Dynamic Capability View is the dominant theory applied in the GEO articles. The following and most used theories are the Resource Based Approach and Natural-Resource-Based theories, which are applied in the GEO articles. The leading country contexts where GEO is investigated are China, Pakistan, and Spain. In addition, structural equation modelling was the most extensively adopted statistical analysis method for GEO empirical research, with respect to the analytical approach. Third and finally, this study integrated the causal relationships of GEO into a nomological network, which reflects what has been researched and approved. This network reveals the moderating and mediating concepts most commonly described in GEO research, together with the antecedents and consequences of GEO.

The theoretical contexts in which GEO is discussed in the literature vary, and the antecedents and consequences of GEO are associated with various individual and organizational structures. Despite extensive and insightful studies, research on GEO is still in its infancy. Considering that the entrepreneurship literature associated with sustainability is expanding, the findings of future studies will contribute to the literature in various ways. This is primarily because there are gaps in the theoretical underpinnings and disparities in the research methodologies, which call for increased scholarly effort in the areas of theory, methodology, and empirical research with the goal of advancing current understandings.

Building on the results of our review study, we propose suggestions for future research that could make use of the insights currently available on GEO. First, our study revealed that a significant number of current GEO studies do not employ any theory. In order to increase the understanding of this concept in the literature, it may be valuable for future studies to utilize theoretical frameworks. Since GEO is a relatively new concept in the literature, addressing the theoretical framework on this basis can help improve understanding. In addition, in studies dealing with GEO, it has been observed that studies applying theory largely work with a single theory. Future studies may contribute to an individual and/or organizational understanding of GEO by providing integrated theoretical frameworks (e.g., Stakeholder Theory and Dynamic Capability View). This may be particularly important for understanding the similarities and differences between EO and GEO. Second, studies investigating the organizational antecedents of GEO dominate the literature. Therefore, future research might concentrate on filling the gap in the relevant literature. Third, the dynamics (i.e., mediating and moderating constructs) that are useful in the interaction between the causes and effects of GEO have not been sufficiently explored in the literature. Since there are currently relatively new notions that are interchangeable, similar to GEO, we, therefore, strongly encourage future academics to look into these new concepts. Fourth, and finally, the results of GEO have been found to be largely associated with the performance outcomes of the organization. This is a natural consequence in line with the definition of GEO, and there is a particular need to retest and increase the studies in this field in different contexts. Additionally, most studies have been examined in the context of developed and developing economies. Considering that the increase in sustainable organizational

activities in developing economies has a significant impact on global sustainability, we invite future studies to conduct research in the context of developing economies.

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