

GREEN ENTREPRENEURIAL ORIENTATION AND COMPETITIVE PERFORMANCE: A LITERATURE REVIEW

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Abstract: The growing importance of sustainability in strategic management has intensified research on the relationship between green entrepreneurial orientation (GEO) and the competitive performance of companies. The main objective of this study is to identify and synthesize key research streams linking GEO with competitiveness and competitive advantage. A bibliometric analysis based on the Scopus database was conducted using VOSviewer to generate co-occurrence and overlay visualizations. The analysis (up to February 2026) identified four thematic clusters. The findings show that GEO plays a central role in connecting strategic management concepts, green innovation, sustainability performance, and contexts related to small and medium enterprises (SME). Recent research increasingly emphasizes capability-based perspectives, including green innovation capabilities, green intellectual capital, and digital technologies. The study offers a structured overview on the research landscape of GEO competitiveness and outlines the direction for future studies.

Keywords: bibliometric analysis, competitive advantage, competitiveness, green entrepreneurial orientation, green innovation

JEL Classification: L26, O31, Q56, M10

Introduction

The growing environmental challenges faced by contemporary economies, including climate change, resource depletion, and increasing regulatory pressures, have significantly reshaped strategic priorities of companies (Kura & Raimi, 2025).

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Organizations are no longer evaluated solely on financial performance but are increasingly expected to integrate environmental responsibility into their core strategies. In this context, green entrepreneurial orientation (GEO) has emerged as a key construct at the intersection of entrepreneurship, sustainability, and strategic management. By extending the traditional concept of entrepreneurial orientation into the environmental domain, GEO reflects the strategic posture of a company characterized by risk-taking, innovativeness, and proactiveness directed toward ecological objectives (Alwakid & Dahri, 2025).

At the same time, competitiveness remains a central concern for both scholars and practitioners. Companies operating in dynamic and environmentally turbulent markets must reconcile sustainability imperatives with the need to maintain or improve their competitive position. Consequently, increasing attention has been devoted to examining whether and how environmentally oriented entrepreneurial strategies translate into competitive advantage and improved competitive performance (Pratono et al., 2019). Existing studies suggest that GEO may foster green innovation, enhance environmental and financial performance, and contribute to sustainable competitive advantage. However, the rapidly expanding body of literature is fragmented across different theoretical perspectives, empirical contexts, and performance measures.

Despite the increasing number of empirical investigations, a structured synthesis of the research landscape linking GEO and competitiveness remains necessary. The diversity of conceptual approaches, mediating mechanisms, and contextual moderators makes it challenging to clearly identify dominant themes and emerging trends. A systematic bibliometric review can provide a comprehensive overview of the field's intellectual structure, reveal its developmental trajectory, and highlight areas requiring further investigation.

Therefore, the main objective of this study is to systematically identify, structure, and synthesize the key research streams that examine the relationship between green entrepreneurial orientation and competitiveness, including competitive advantage and competitive performance.

Literature review

GEO is rooted in the concept of entrepreneurial orientation, one of the most widely recognized and empirically validated conceptualizations of entrepreneurship at the organizational level (Covin & Slevin, 1989). GEO captures the strategic posture of a company reflected in its propensity to take risks, innovate, and be proactive. GEO extends this foundational framework by embedding it within the sustainability paradigm, aligning entrepreneurial behaviors with environmental objectives and ecological responsibility (Khan et al., 2023; Wang et al., 2023a). In doing so, GEO represents not only a strategic orientation, but a sustainability-driven entrepreneurial mindset that integrates environmental considerations into the company's opportunity recognition and exploitation processes.

From a strategic perspective, GEO reflects a configuration of organizational capabilities and decision-making patterns that enable companies to systematically identify, evaluate, and capitalize on environmental opportunities arising from regulatory pressures, changing stakeholder expectations, and technological advances in green solutions (Mouawad, 2025). The risk-taking dimension manifests itself in the willingness to invest in uncertain long-term environmental initiatives, such as clean technologies, renewable energy systems, or circular economy models. Innovativeness refers to the development of environmentally friendly products, services, and processes that reduce ecological footprints and create new market value. Proactiveness, in turn, involves anticipating environmental trends, responding to sustainability-related changes before competitors, and even shaping emerging green markets (Adiguzel & Sonmez Cakir, 2025). Through these dimensions, GEO enables companies not only to adapt to sustainability demands, but also to take advantage of them for strategic competitive positioning.

A growing body of empirical research demonstrates that GEO is a significant driver of sustainable innovation. Companies characterized by strong GEO are more likely to introduce green product and process innovations and implement environmentally responsible operational practices (Zahoor & Gerged, 2021; Riaz, 2026). Furthermore, GEO has been shown to positively influence entrepreneurial outcomes (Aftab et al., 2022) and overall organizational success (Jiang et al., 2018). Its effects extend to operational performance, where it enhances efficiency and resource optimization (Adiguzel & Sonmez Cakir, 2025), and to financial performance, contributing to improved profitability and long-term economic stability (Asad et al., 2023).

Significantly, GEO also strengthens sustainable performance by integrating economic, environmental, and social outcomes into a coherent strategic framework (Kura & Raimi, 2025; Ma et al., 2025). These positive relationships have been observed not only in large corporations but also in small and medium-sized enterprises (SMEs), indicating that GEO is applicable across organizational sizes (Hamur et al., 2026).

Taken together, these innovations, performance, and sustainability outcomes are expected to contribute to the development of sustainable competitive advantage. Consistent with the resource-based and dynamic capabilities perspectives, GEO can be viewed as a strategic capability that fosters unique, environmentally-oriented competencies that are difficult to imitate. Empirical evidence further suggests a direct positive relationship between GEO and the competitiveness of a company (Li et al., 2022). Therefore, GEO represents a strategic mechanism that integrates entrepreneurship with sustainability, allowing companies to simultaneously generate economic value and environmental benefits while improving their long-term competitive position.

Methods

This study provides a systematic review of the literature that examines the relationship between GEO and company competitiveness using bibliometric methods. The analysis was conducted using the Scopus database, selected for its broad

disciplinary coverage, high indexing standards, and the ability to export comprehensive bibliographic records suitable for quantitative mapping. The bibliometric analysis was supported by VOSviewer, which enabled the visualization and structured exploration of the field's intellectual architecture. Through co-occurrence mapping of keywords, it was possible to identify dominant thematic configurations, trace the temporal evolution of research interests, and examine the internal connectivity of concepts within the GEO-competitiveness domain.

The data collection process was carried out in the Scopus database on 10 February 2026. The search yielded 32 publications that met the inclusion criteria and were subsequently included in the bibliometric analysis. The following search query was applied: *(green entrepreneurial orientation) AND (competitiveness OR competitive performance OR competitive advantage OR competitive edge)*. This query ensured a focused, yet inclusive, dataset that captures studies that explicitly link GEO to various dimensions of competitive outcomes.

Bibliometric analysis was conducted using VOSviewer, which enabled the generation of two complementary types of visualizations.

First, an overlay visualization was developed to present the temporal distribution of keywords. This time-based map reflects the average publication year for each concept, enabling the identification of emerging themes and shifts in academic attention. The overlay visualization distinguishes earlier, more foundational topics from more recent capability- and innovation-oriented developments.

Second, a network visualization of keyword co-occurrence was generated to illustrate the field's structural composition. A minimum threshold of four occurrences per keyword was applied to ensure analytical clarity and conceptual relevance. Based on the clustering algorithm implemented in VOSviewer, four thematic clusters were identified, representing the principal research streams within the GEO and competitiveness literature:

- Cluster 1: artificial intelligence; business; competition; competitive advantage; dynamic capabilities; entrepreneurial orientation; green entrepreneurship; green knowledge management; green marketing; industrial research; intellectual capital; knowledge management; sustainable competitive advantage; sustainable development; sustainable success.
- Cluster 2: competitiveness; entrepreneur; environmental impact; environmental performance; green absorptive capacity; green competitive advantage; green process innovation; green product innovation; industrial performance; innovation; manufacturing; Pakistan; sustainability; sustainability performance.
- Cluster 3: green creativity; green economy; market conditions; Saudi Arabia; small and medium-sized enterprises; sustainable performance.
- Cluster 4: green entrepreneurial orientation; green innovation; green innovation capability; green intellectual capital; SMEs.

The applied bibliometric approach enabled a structured and integrative representation of the current state of research at the intersection of GEO and competitiveness, while simultaneously revealing areas of thematic concentration and potential avenues for further theoretical and empirical development.

Results

The evolution of research topics in GEO, as presented in the bibliometric map (Figure 1), reveals noticeable shifts in scholarly attention during 2022-2025. The color overlay, indicating the average year of keyword occurrence, allows tracing the field's chronological development, from more general strategic constructs to increasingly capability-oriented and innovation-focused themes.

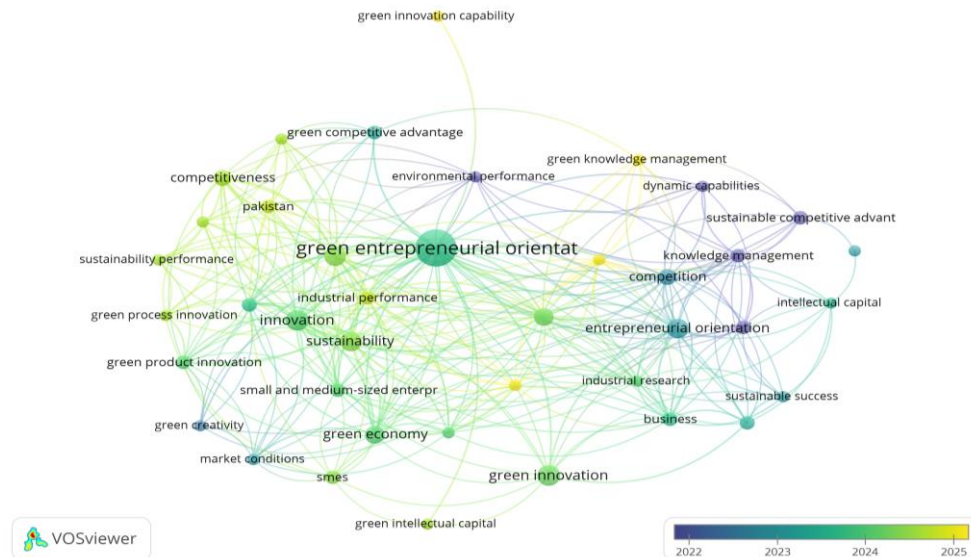


Figure 1. Overlay visualization (VOSviewer software)

Source: Own elaboration

In the earlier phase (around 2022-2023), the darker-colored nodes correspond to foundational concepts such as entrepreneurial orientation, knowledge management, intellectual capital, dynamic capabilities, competition, and sustainable development. At this stage, the research focused mainly on embedding GEO within established strategic management frameworks and the examination of its links to competitive advantage and sustainable success. The emphasis was placed on theoretical positioning and understanding how environmentally oriented entrepreneurial behavior relates to company resource configurations.

In the intermediate period (2023-2024), attention shifted toward more specific outcome-related constructs, including environmental performance, sustainability performance, green product innovation, green process innovation, and green absorptive capacity. This indicates a growing interest in empirically testing the impact of GEO on innovation activities and measurable performance indicators. Studies have increasingly explored the mechanisms of mediating and sectoral contexts, particularly within manufacturing industries and emerging economies.

research direction that links digital transformation with environmentally oriented strategic renewal (Alwakid & Dahri, 2025). Overall, this cluster aligns with the resource-based view and dynamic capabilities theory, framing GEO as a driver of sustainable competitive advantage through knowledge integration and capability orchestration (Martínez-Falcó et al., 2025).

The second cluster emphasizes performance outcomes and environmental innovation. It includes environmental performance, sustainability performance, green product innovation, green process innovation, green absorptive capacity, and competitiveness (Zhang et al., 2021). This stream represents the empirically dominant line of inquiry, focusing on testing the performance implications of GEO. The strong interconnections between innovation-related constructs and performance indicators suggest that green innovation operates as a key mediating mechanism through which GEO enhances both environmental and industrial performance. The inclusion of manufacturing and country-specific contexts further indicates that many empirical studies are conducted in industrial sectors and emerging economies, where sustainability pressures and institutional dynamics create fertile ground for examining the practical implications of GEO (Dahri et al., 2025).

The third cluster highlights contextual and organizational boundary conditions, particularly in relation to SMEs, market conditions, and national settings (Manigandan & Raghuram, 2024). Compared to the previous clusters, this stream is more focused on contextual embeddedness. It underscores the importance of green creativity and green economy dynamics in shaping sustainable performance outcomes (Jiang et al., 2018). Concentration on SMEs suggests that GEO is increasingly studied beyond large corporations, acknowledging that smaller companies face distinct resource constraints and institutional pressures (Mouawad, 2025). This cluster signals a growing recognition that GEO's effectiveness depends on environmental turbulence, market maturity, and regional sustainability agendas.

The fourth cluster represents the field's conceptual and innovation-focused core (Qin et al., 2024). It directly connects GEO to green innovation, green innovation capabilities, green intellectual capital, and SMEs. This configuration suggests a more recent shift toward examining the micro-foundations and capability-building mechanisms that translate orientation into measurable innovation outcomes. Rather than focusing solely on performance effects, this stream investigates how companies develop innovation capabilities rooted in environmentally oriented intellectual capital (Jiang et al., 2024; Wats et al., 2025). The temporal colouring of the map indicates that constructs such as green innovation capability and green intellectual capital are among the most recent additions to the discourse, reflecting a refinement of earlier performance-oriented models toward more process-based explanations. The four clusters illustrate the multidimensional structure of the GEO research domain. The field appears to have evolved from foundational discussions linking entrepreneurial orientation with sustainability to more sophisticated analyses integrating knowledge-based resources, innovation capabilities, and contextual moderators (Widjajanti et al., 2025). The network structure suggests increasing theoretical convergence around capability-based explanations while simultaneously expanding into digitalization and emerging

economy contexts. This pattern indicates both conceptual consolidation and thematic diversification, positioning GEO as a central construct at the intersection of entrepreneurship, sustainability, and strategic management research (Alwakid & Dahri, 2025).

Conclusions

This study provides a comprehensive bibliometric examination of the research landscape linking GEO with competitiveness and related performance outcomes. By applying co-occurrence network analysis and temporal overlay visualization to publications indexed in the Scopus database, the study systematically mapped the intellectual structure, thematic evolution, and emerging directions of this growing field.

The findings reveal that GEO occupies a central and integrative position within the literature, connecting strategic management concepts, innovation mechanisms, and sustainability-oriented performance outcomes. The network structure demonstrates that research has evolved from embedding GEO within established theoretical frameworks – such as dynamic capabilities and intellectual capital – toward more empirically grounded analyses focusing on green innovation, absorptive capacity, and environmental performance. More recent contributions increasingly emphasize capability development, green intellectual capital, and the integration of digital technologies, such as artificial intelligence, reflecting a shift toward more fine-grained and process-oriented explanations.

The identification of four thematic groups highlights the multidimensional character of the field, which includes strategic foundations, innovation and performance implications, contextual and SME-focused perspectives, and capability-based mechanisms. This fragmentation, combined with strong interconnections among clusters, suggests a process of theoretical consolidation accompanied by growing contextual diversification, particularly in emerging economies and manufacturing sectors.

Despite its contributions, the study is subject to certain limitations. The analysis relies exclusively on the Scopus database, which, although comprehensive, may not capture all relevant publications available on other indexing platforms such as Web of Science or Google Scholar. Consequently, some influential works might have been excluded from the dataset. Additionally, the bibliometric approach is inherently quantitative and based on keyword co-occurrence patterns, which restricts the possibility of in-depth qualitative interpretation of the substantive content and theoretical nuances of individual studies.

Overall, the bibliometric evidence indicates that the GEO-competitiveness nexus is a maturing yet dynamically expanding research domain. Future studies may benefit from developing integrative, multi-level models that simultaneously address strategic resources, innovation processes, contextual moderators, and long-term competitive outcomes. Greater attention to longitudinal designs, cross-country comparisons, and digital–sustainability intersections may further strengthen theoretical clarity and empirical robustness in this field.

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AI Declaration: During the preparation of this manuscript, the author utilized ChatGPT and Grammarly to enhance translation accuracy and improve the stylistic quality of the English language.

ZIELONA ORIENTACJA PRZEDSIĘBIORCZA A WYNIKI KONKURENCYJNE – PRZEGLĄD LITERATURY

Streszczenie: Rosnące znaczenie zrównoważonego rozwoju w zarządzaniu strategicznym zwiększyło zainteresowanie badaczy relacją między zieloną orientacją przedsiębiorczą (GEO) a konkurencyjnością przedsiębiorstw. Głównym celem niniejszego badania jest identyfikacja i synteza kluczowych nurtów badawczych łączących GEO z konkurencyjnością i przewagą konkurencyjną. Przeprowadzono analizę bibliometryczną na podstawie danych z bazy Scopus, wykorzystując oprogramowanie VOSviewer do wygenerowania map współwystępowania słów kluczowych oraz wizualizacji czasowej. Analiza (do lutego 2026 r.) pozwoliła wyodrębnić cztery klastry tematyczne. Wyniki wskazują, że GEO pełni centralną rolę w łączeniu koncepcji zarządzania strategicznego, zielonych innowacji, wyników zrównoważonych oraz kontekstu MŚP. Najnowsze badania koncentrują się na podejściu zdolnościowym, obejmującym m.in. zdolność do zielonych innowacji, zielony kapitał intelektualny oraz technologie cyfrowe. Badanie porządkuje stan wiedzy i wskazuje kierunki dalszych analiz.

Słowa kluczowe: analiza bibliometryczna, przewaga konkurencyjna, konkurencyjność, zielona orientacja przedsiębiorcza, zielona innowacja

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