



The Development of Green Transformational Leadership: A Bibliometric Analysis

ABSTRACT

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The latest development in the field of global leadership studies is green transformational leadership (GTL) which combines the ideas of transformational leadership with a focus on ecological responsibility and environmental sustainability. This research aims to determine the development of the concept of green leadership, especially green transformational leadership in leadership studies literature using bibliometric analysis. Data was obtained from the Scopus journal database using 187 articles published in the academic journal from 2009 to 2024 and analyzed using VOSviewer software to conduct co-authorship, co-occurrence, and citation analysis. Furthermore, the identification of dominant themes was also carried out to highlight important topics in the concept of green transformational leadership. The importance of this research lies in finding study ideas related to green transformational leadership which can help in developing a conceptual framework for future research related to the concept of sustainability in leadership research.

Keywords: Green Transformational Leadership; Bibliometric Analysis; Sustainable Leadership; Vosviewer

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INTRODUCTION

Recent environmental damage, irreversible changes in ecosystems, widespread pollution, and the implementation of environmental rules have increased pressure on businesses to conduct pro-environmental initiatives. Rising worldwide environmental concerns have prompted businesses to promote pro-environmental actions and policies at an increasing rate, allowing enterprises to become more competitive while also being ecologically friendly (Perez et al., 2023). Environmentally conscious employees at all levels of the organization must support the company's efforts to protect the environment. As a result, employees must follow higher moral standards and engage in environmentally responsible behavior (Bissing-olson et al., 2013; Ren et al., 2018; Suharti & Sugiarto, 2020), also known as pro-environmental commitment (Luu, 2018). Therefore, the company focuses on reducing waste and creating ideas to preserve the environment

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by using stairs instead of elevators, printing on both sides of paper, disconnecting and turning off unneeded machines and electronic equipment, disconnecting and turning off unnecessary machines and electronic equipment, decreasing waste, and creating ideas to protect the environment. These corporate initiatives are significant because they lead to improved environmental performance.

Human resource management (HRM) is a critical organizational role for managing human resources (Suharti & Sugiarto, 2020). HRM enables firms to foster positive behavior among their employees and other members. Human resource management is also regarded as assisting businesses in shaping their employees' environmentally responsible behavior. The literature emphasizes how leaders, particularly senior management, impact every aspect of the learning system and decisions on pro-environmental action. Previous research has found that transformational leadership best supports the learning process and leads to pro-environmental support actions (Koo & Park, 2018), so the concept of green transformational leadership is growing in popularity and attracting a lot of attention from various parties.

Green transformational leadership (GTL) is a novel idea that blends transformational leadership principles with an emphasis on environmental sustainability and ecological responsibility (Du & Yan, 2022). This leadership style highlights the critical importance of addressing environmental issues and promoting sustainable practices within organizations and society. Green transformational leaders encourage and motivate their followers to engage in sustainable behavior, develop environmentally friendly solutions, and contribute to the transition to a greener and more sustainable future (Ozgul, 2022). Previous studies have focused on the mechanisms of transformational leadership's effects on employees' responsibility-taking behavior. When transformational leadership was introduced to the field of green management and its functions were investigated, there were many differences from the initial concept of transformational leadership in various aspects such as individual and organizational sustainability (Muafi & Kusumawati, 2021). Previous studies found that green transformational leadership is associated with positive organizational member behavior and environmental member behavior (Al-Ghazali et al., 2022).

Green transformational leaders play a critical role in driving positive change and creating a more sustainable world for future generations by adopting a holistic leadership approach that considers people and the planet. This research seeks to explore the development of the concept of green transformational leadership since its inception until now using an exploratory qualitative approach with the idea of bibliometric analysis by mapping various articles published in the reputable journal database Scopus to explore its development, as well as identifying the direction of development of the leadership concept green for future research. Green Transformational Leadership (GTL), a relatively new idea in leadership studies that blends transformational leadership

principles with ecological responsibility and environmental sustainability, is introduced and methodically explored in this research, which makes it novel. The study also intends to contribute to the theoretical advancement and real-world implementation of sustainable leadership practices by addressing areas that show promise for additional research.

LITERATURE REVIEW

The Brundtland committee introduced the notion of sustainable development into the realm of organizational management (Liao, 2022). They stated that sustainable development is a method of development that serves present demands without compromising the needs of future generations. Transformational leaders play a critical role in defining and implementing a vision that leads to proactive measures toward various tasks and achieving environmental concerns and green projects (Al-Ghazali et al., 2022; Bernard M. Bass, 2000; Sun et al., 2022).

Green transformational leadership is the behavior that encourages followers to exceed the expected level of environmental performance and motivates them to achieve environmental goals (Chen & Chang, 2013). Green transformational leadership occurs when a transformational leader has green values and can enhance his subordinates' green creativity and green behavior through personalized care, intellectual stimulation, vision transmission, and charisma (Wang et al., 2018). As a result, the essence of green transformational leadership remains transformational leadership, and its dimensions, principles, modes of action, and influence motivation remain consistent with transformational leadership.

A green transformational leader can address subordinates' worries about environmental issues by developing positive relationships with them and then communicating his or her green values to them. More than one academic has identified a set of transformational styles in leaders' pro-environmental practices (Chen & Chang, 2013). For example, such a leader might push subordinates to overcome difficulties by paying greater attention to things helpful to the organizational environment, considering the organization's long-term development, and tackling environmental challenges in novel ways. When such a leader makes pro-environmental decisions and engages in pro-environmental behavior in organizations, he or she serves as a role model for his or her subordinates.

Green transformational leaders place a greater focus on the organization's green vision than typical. They are committed to delivering green ideals that benefit the organization and the environment, encouraging subordinates to see work as a reflection of their own beliefs. Previous research has also demonstrated that green transformational leadership can increase green behavior among employees (Graves et al., 2019; Wang et al., 2018). Furthermore, while engaging with subordinates, green transformational leaders typically emphasize the critical importance of their green principles, environmental challenges

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linked with the company's long-term goals, and their high-level expectations. These expressions of environmental values and expectations are critical in the value internalization process of subordinates. Green transformational leaders inspire people to learn while also involving and engaging them in green processes, eco-friendly behaviors, and activities to improve a company's environmental performance. Green transformational leaders want to instill in their followers the importance of protecting an organization's environment by encouraging green attitudes and actions.

METHODOLOGY

This study uses a bibliometric approach to investigate and evaluate authors, works, journals, and countries related to green transformational leadership research that is mostly used in business and management research. Bibliometrics is a strategy for evaluating and analyzing published academic literature (Van Eck & Waltman, 2010). A variety of bibliographic aspects are considered, including the number of publications, citations, social networking (co-authorship), and important subject trends. While conducting the study, the researcher used the VOSviewer software to view co-authors, co-occurrences, and citations.

VOSviewer can also be used to contrast and compare various goods (Van Eck & Waltman, 2010). To get results from the Scopus database, the researcher uses the research term "green transformational leadership". As shown in Figure 1, this study employed a five-step technique derived from the findings (Tranfield et al., 2003). Using the specific query of "green transformational leadership" conducted and revised on 12 June 2024 using the query "(green AND transformational AND leadership), the analysis result found 212 articles from the initial search result. Furthermore, an additional filter used "(LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English")) resulted in 187 articles used for further analysis. Every article metadata is converted into an Excel file, saved as a CSV file and RIS formatted file, and used for future data analysis for proper development. The components of journal articles and their completeness, such as year of publication, volume, number, pages, and so on, are examined first, and any incomplete articles are completed by the researcher. Additional screening used several criteria such as limitation only articles published in English resulting in final 187 articles for further analysis using Vosviewer from 2009 to 2023.

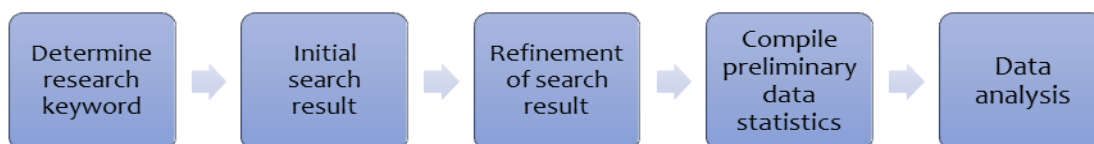


Figure 1. Steps of Bibliometrics Analysis. Sources: Tranfield et al. (2003)

RESULTS

The descriptive statistics of the published articles are provided as in Table 1 below. The descriptive result indicates that the relevant studies were published in 187 journal articles. The publication trend from 2009 to 2023 described in Figure 2.

Table 1. Article Information Data

Description	Results
Timespan	2009-2024
Sources (Journals)	187
Documents	187
Articles in English	187

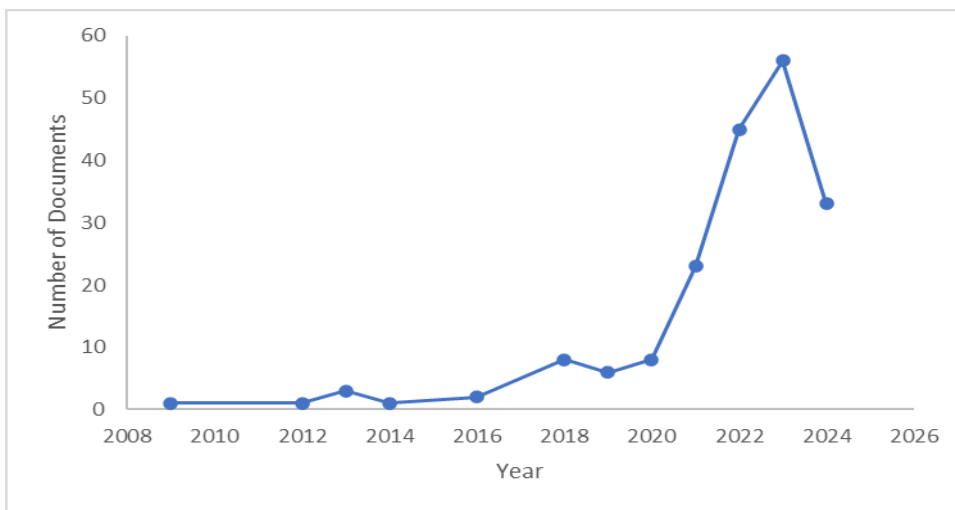


Figure 2. Numbers of papers by years

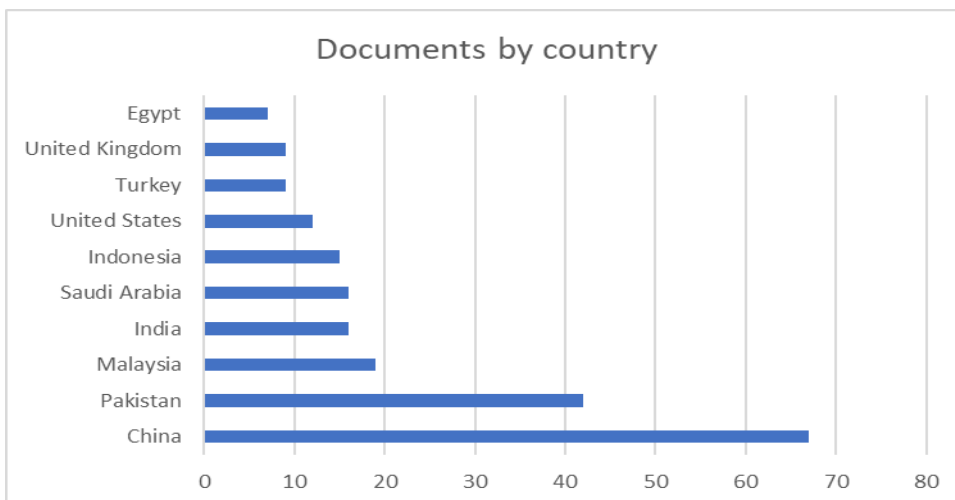


Figure 3. Numbers of papers by region

DISCUSSION

The growth in the research field can be identified by understanding the publication trend (Figure 2) which shows a significant increase in publications in the research field related to green transformational behavior for the last 15 years. Figure 3 shows the studies conducted in various regions to study green transformational leadership. Most articles were focused on China, followed by Pakistan, Malaysia, India, Saudi Arabia, Indonesia, United States, and Turkey respectively. Mostly, Asia was the dominant region where research related to green transformational behavior.

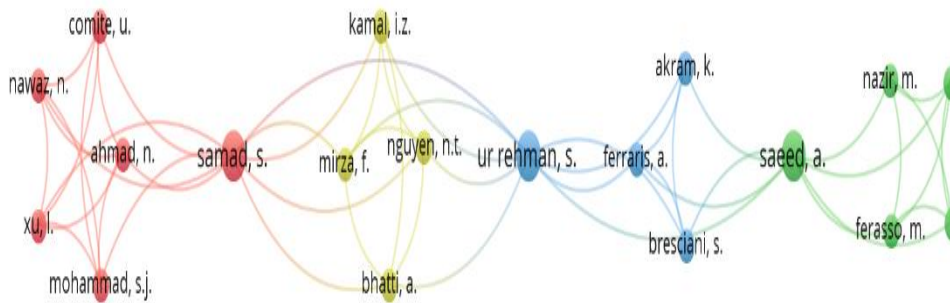


Figure 4. Co-Authorship based on Author Name

Co-authorship analysis found four clusters analyzed by several authors. Red cluster topics mostly talk about the effect of green transformational leadership on pro-environmental behavior. Yellow cluster authors' paper mostly discusses the effect of green human resource management and green transformational leadership on environmental performance. Blue cluster research is dominated by green human resources management and sustainability. Furthermore, the green cluster mostly discussed green transformational leadership, GHRM, and environmental performances.

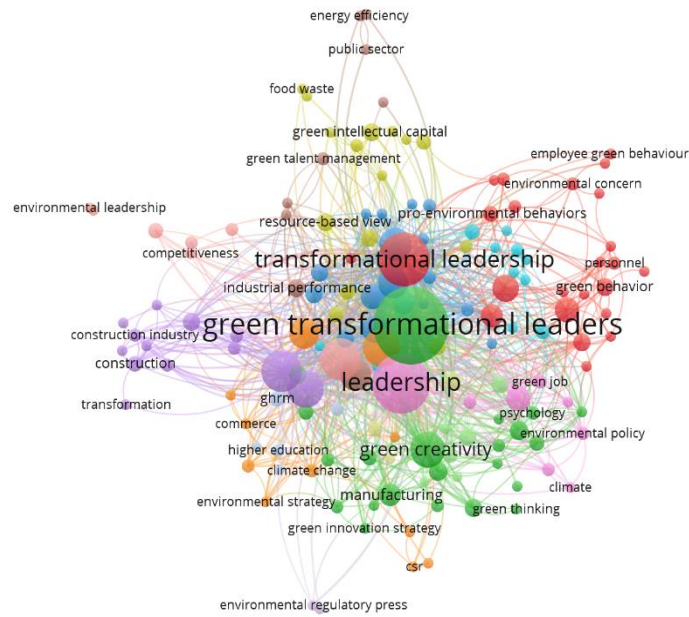


Figure 5. Co-Occurrence network visualization based on keywords

According to Figure 5, research related to green transformational behavior has a wide range of keywords that relate to sustainability issues. There were 14 clusters connected with green transformational behavior as discussed in Table 2. Figure 6 below presents the most discussed topic divided by year that is related to green transformational leadership.

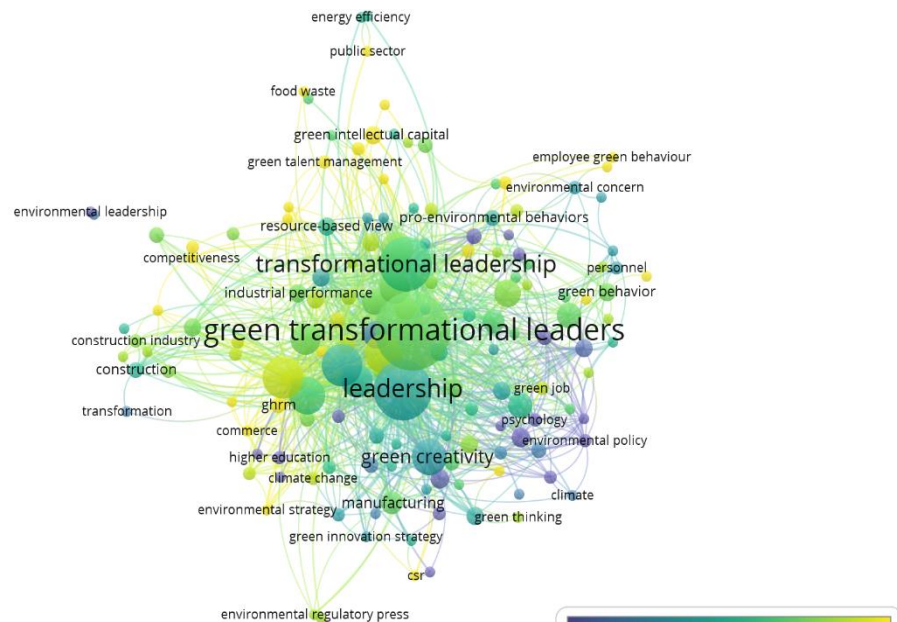


Figure 6. Co-Occurrence network visualization based on years

Table 2. Cluster Information Based on keywords

Cluster/Topic	Dominant Keyword
Cluster 1 (red lines) → Relationship of green transformational leadership with pro-environmental behavior.	Green transformational behavior, green behavior, GHRM practices, green knowledge, green motivation, green process innovation, green self-efficacy, pro-environmental behavior, OCB for the environment, transformational leader
Cluster 2 (green lines) → Relationship of environmental commitment, green innovation, and green product innovation.	Environmental commitment, green creativity, green dynamic capability, green innovation strategy, green product development, green product innovation, green psychological climate, green thinking, individual green values
Cluster 3 (blue lines) → Relationship of environmental management, GHRM practice and job satisfaction in SMEs	Environmental management, green knowledge, green HRM practice, human resource, HRM, job satisfaction, resource allocation, SMEs
Cluster 4 (yellow lines) → Relationship of competitive advantage, green performance and procurement in sustainable performance	Competitive advantage, food waste, green ambidexterity, green capability, green competitive advantage, green intellectual capital, green performance, green procurement, RBV, sustainable performance
Cluster 5 (purple lines) → Green innovation, project management and SCM	Green innovation, green process, process innovation, project management, supply chain management, perceived organizational support
Cluster 6 (sky blue lines) → Environmental sustainability protection, green economy, and organizational support	Environmental protection, business development, environmental sustainability, green behavioral intention, green economy, green leadership, organizational support, psychological green climate.
Cluster 7 (orange lines) → CSR and environmental performance	CSR, climate change, environmental performance, social responsibility, stakeholder
Cluster 8 (pink lines) → Relationship of green talent management, energy efficiency, and green psychological capability	Banking, energy efficiency, ethical leadership, green psychological capability, green talent management, sustainable development
Cluster 9 (purple lines) → Climate and green work engagement	Climate, environmental economy, green job, green work engagement
Cluster 10 (brown lines) → Green SCM and digital transformation	Green SCM, digital transformation, environmental leadership, transactional leadership
Cluster 11 (turquoise line) → Green mindfulness in the hospitality sector	Green intrinsic motivation, green mindfulness, hospitality sector
Cluster 12 (bright yellow lines) →GHRM in higher education sector	GHRM, higher education, organizational change, university sector

The outcomes of this study emphasized the need to address some future works that could provide implications and directions for practical implications and future research recommendations. According to the findings of bibliometric analysis, the researcher studying green transformational leadership has increased dramatically since 2009, with the greatest increase occurring between 2021 and 2023. The increased interest could be

attributable to a variety of factors, including international concern about global warming and climate change. Global warming, climate change, and pollution have emerged as major worldwide concerns, needing a greater awareness of environmental ethics among all parties all over the world. Organizations have been urged by stakeholders and scholars to adopt policies that will meet social, economic, and environmental objectives. Environmentally conscious employees and all members of the organization at all levels, starting from their leader, must support the company's efforts to preserve the environment. As mentioned by Bass (1985), leadership was not only the act of the leader influencing others but also the dynamic process amongst group members that might affect anybody involved. Furthermore, most study focuses on Asia, but studies in other areas require more attention to identify distinctions among varied backgrounds. The quantitative research method predominated in the selected papers, as shown by earlier literature assessments.

These findings are significant for both practitioners and academics. The increasing prominence of these themes will benefit future academics who wish to study green transformational behavior. There are a lot of areas of improvement in the research related to green transformational behavior to discuss a wide range of topics. The cluster in Table 2 can be used as a future insight to conduct research and collaborate on several keywords that have not been discussed yet. Academics and scholars have recognized that very few studies have concentrated on an interdisciplinary study of green transformational leadership over the years. In line with the latest findings, there has been a sort of studies that highlighted the importance of green transformational leadership to environmentally responsible behavior (Bissing-olson et al., 2013; Ren et al., 2018; Suharti & Sugiarto, 2020).

CONCLUSION

This research has been conducted using a bibliometric analysis of 187 articles focusing on green transformational behavior. We wanted to present insights on research trends in green transformational leadership. This analysis shows that there has been an increasing tendency in these research studies since 2009, with most of the studies focusing on Asia regions indicating that such leadership styles have been implemented in most Asian countries. From this standpoint, it may also enrich inquiries and keywords, revealing the various scientific green transformational leadership themes. Finally, the evolution of research themes could be investigated using other scientific techniques such as the Web of Science (WoS) or another database. The study highlights the growing interest in GTL since 2009, particularly in Asia, reflecting a global shift towards integrating ecological responsibility in leadership practices. The identification of various research clusters and dominant themes, such as green human resource management (GHRM) and environmental performance, provides a comprehensive framework for understanding the multifaceted nature of GTL. This bibliometric analysis underscores the importance of

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GTL in addressing global environmental concerns like climate change and pollution, suggesting that leadership extends beyond traditional influences to include fostering an environmentally conscious organizational culture. Furthermore, the study points out the need for interdisciplinary approaches and encourages future research to explore underexamined areas and diverse geographical contexts. By mapping out existing research trends and gaps, this study lays the groundwork for future scholars to develop more nuanced and effective strategies for implementing and studying GTL across different organizational and cultural settings.

Limitations and Recommendations

Several limitations occur in this research. First and foremost, the complexity of transformational leadership, specifically green transformational leadership (GTL), and its usage in multidisciplinary research serve as a limitation, notably in the dataset selection. Second, by limiting itself to the Scopus database retrieval method, this study is also limited by publications from other sources. In actuality, numerous green transformational leadership-related publications had been published outside of the Scopus retrieval system. In addition to the database constraints, the datasets were compiled using generic key phrases found solely in the titles or abstracts. This type of constraint is widespread in bibliometric studies, hence there is a need to focus on it for the findings' interpretability and generalizability. Despite these constraints, the findings showed numerous major themes that can be exploited in future research and combine different keywords as guidance to conduct research with the theme of green transformational leadership.

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